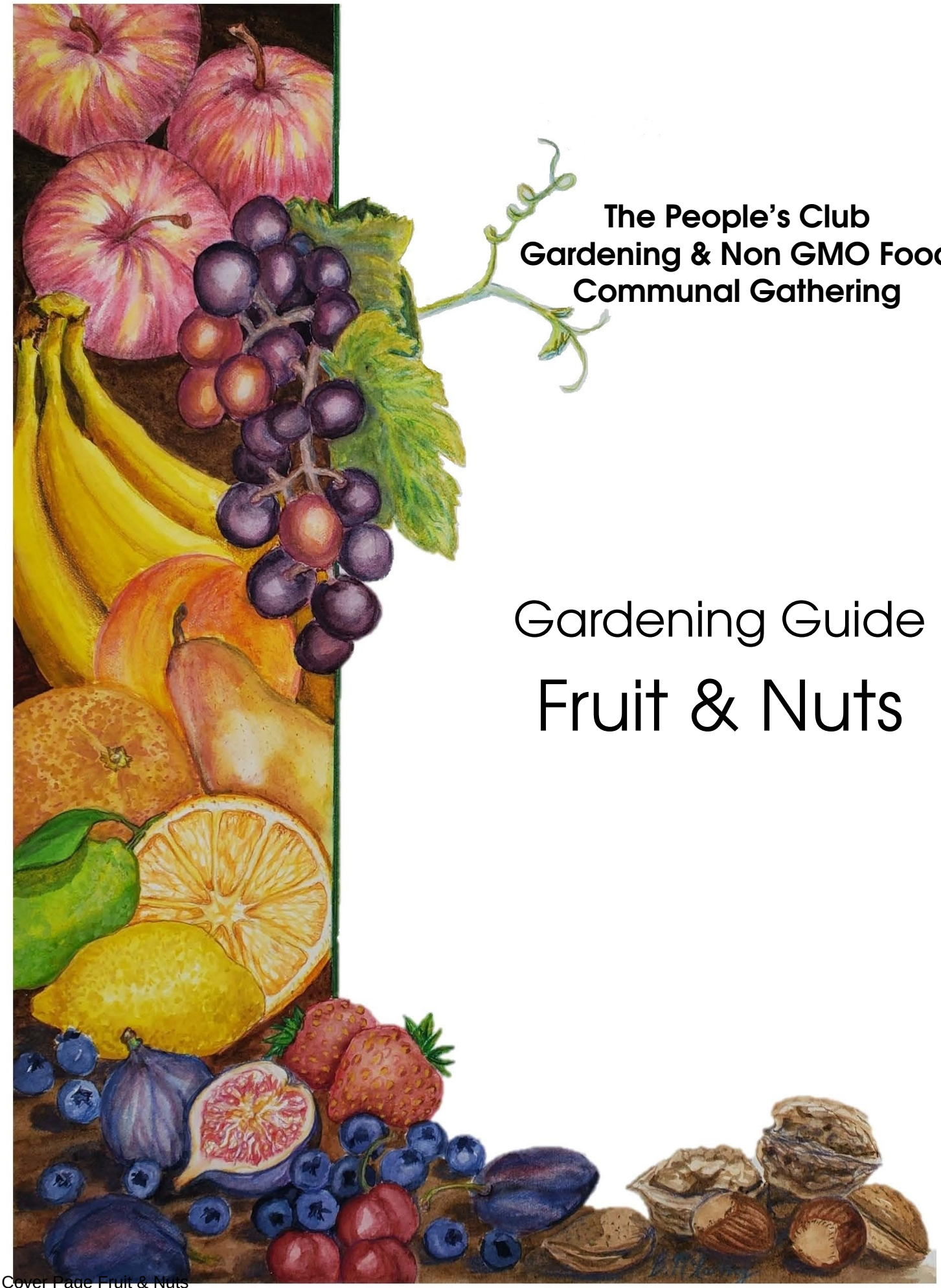

The People's Club
Gardening & Non GMO Food
Communal Gathering

Gardening Guide

Fruit & Nuts

Illustration by Rebecca McCarthy

Almond Tree

Description: The deciduous almond tree's fruit is a drupe, encased by an outer hull containing a woody shell. Within the genus Prunus, it is classified with the peach in the subgenus Amygdalus, Almonds trees produce very sweet blossoms in the spring, to attract the bees for pollination. Don't be alarmed if your trees are crawling with bees. That's what you want.

Growing Instructions

Almond trees do best with hot summers and mild winters and do not usually grow at all in colder climates, unless you have a large, carefully-controlled indoor growing setup. You have two options for starting your almond tree, either use seeds (fresh, unprocessed nuts) or seedlings (young trees). Though technically a fruit, the almond fruit is very leathery and usually just referred to as the hull or husk of the seed. It's not an edible fruit. For edible almonds, you want to plant sweet almonds not bitter almonds (very toxic if eaten). They are two different kinds of trees. It would have to be a large greenhouse to grow in because generally, they are between 13 to 33 feet tall. If you want to grow almond trees for their nuts, you must plant two trees of different varieties.

Optimal Time/Temperature for Germination: For almonds, you'll want your area to have a hardiness zone rating of at least 6, higher is better. (central and southern California as well as parts of Arizona, Texas, and inland Florida.) Begin germinating the seeds in the fall so the almond tree sprouts in early spring.

If you're growing your almond tree from a seed (which are just almond nuts surrounded by their protective husks), start by germinating the seed in a controlled environment — once it's started, you can plant it in a pot or in the ground. First, gather your seeds in a single large bowl (the more you use, the better — some may not sprout or may succumb to mold). Then, germinate them according to the following steps:

Add water and let the seeds soak overnight. The next day, use a nutcracker to crack the almond shells open slightly, the shell should still hold itself together, but you should just be able to see the nut inside. Throw away any seeds that show signs of mold. Fill a few small flowerpots with potting soil. Make sure the pots have holes on the bottom for drainage.

Plant the seeds an inch or two under the surface of the soil with the cracks pointing upward. Rest the flowerpot indoors in an area that will receive direct sunlight. Now, just wait for seedlings to sprout.

Optimal Soil Conditions: Soil PH 6.5 to 8

Almond trees do well with lots of sun. Before you get started, find a spot in your yard or garden that gets plenty of full, direct sun, free from shade. You will grow the almond tree in a pot prior to planting it in the ground, but it's still important to choose a location ahead of time (the tree will only fit in the pot for so long).

Note that shallow, heavy, and clay-rich soils have especially bad drainage. To increase the drainage capability of your soil. This can be done by mixing in plenty of extra hummus or organic matter to give it added permeability.

Almond trees don't do well if water is allowed to pool around their roots which can lead to root rot. This harmful condition is caused mainly by fungi that start to grow on the tree's roots if they're in contact with water for too long. Since root rot can be very tough to treat, the best policy is prevention. If you have a case of root rot on your hands (usually signified by drought-like symptoms, including yellowing, wilting, and dying leaves), dig up the plant's roots and cut away any dark, slimy patches. If problems persist, dispose of the plant to prevent the fungus from spreading throughout your garden.

Seed Planting Depth, Spacing and Procedure: Once your seedlings have started to grow (or, alternatively, if you bought ready-to-plant seedlings), prepare your decided-upon spot in the ground for planting. Make a small mound an inch or two tall (and slightly wider than it is tall) for each seedling. Push the seedling about an inch into the center of the mound until it's below the surface of the soil. This mound technique helps prevent water from gathering around the roots of the plant as it grows, which can cause serious problems (including root rot).

If you're planting germinated seedlings, plant them at the end of winter or in the spring. Alternatively, if you're planting un-germinated seeds, plant them in late fall so that they have a chance to sprout in the spring at the very start of the bloom season. Cover the spot with heavy wire screen to keep out the rodent pests. If planting multiple trees, space each tree at least about 20 feet (6.1 m) apart. This gives the trees' roots plenty of space and allows for easy, effective irrigation or even drip irrigation.

Example with Comparison Plants : Chicory (accumulator), Cosmos (attractor), Red Clover (fixer), Comfrey (mulcher), Garlic (repeller), Strawberries (suppressor).

Crop Maintenance

Winter is the perfect time for pruning — the tree's dormant wood makes for safe, easy removal. Note, however, that dead or diseased limbs should be removed immediately at any time of the year. To prune branches, use a pair of garden clippers to make a clean cut near the bottom of the branch. For tougher pruning jobs, use a saw.When pruning, try to thin out especially dense areas of foliage and eliminate spots where two branches rub against one another. You'll also want to prune any stray branches that grow higher or further to the side than the others to encourage even growth.

Moisture Requirements & Solutions: Immediately after planting, almond trees should be tanked (watered heavily) with at least a gallon of water to thoroughly hydrate the soil. After this initial watering, you'll want to maintain a regular watering schedule as the tree grows. Almond trees thrive in hot climates, but they're not desert plants, so watering is vital to keep the growing plant healthy. Water each almond plant at least once a week unless it rains. Established trees can survive on two or three inches of water without rain, but growing plants will usually require more. Do not over water your almond tree. Almond plants are prone to rotting and mold.

Weeding Needs & Solutions: Weeds are not a huge concern for old, established almond trees, but they can be a serious threat to young seedlings. Weeds compete fiercely for the same nutrients, water, and sun as young almond trees. If ignored, weeds can even strangle a seedling before it has a chance to grow. The best policy for weeds, especially during your plant's first few months, is to start weeding early and often. Try to keep a five foot strip along each row of seedlings free of weeds

Feeding Needs/ Optimal Natural Fertilizers: Once the growing season begins, it's appropriate to use a reasonable amount of fertilizer to boost your plant's growth (though this is not required). For young trees, you'll want to use small doses of Nitrogen every few weeks throughout the growing season. For mature trees, on the other hand, you'll want to use about two pounds of urea or 30 pounds of manure (applied once).No matter what kind of fertilizer you're using, be sure to "water it in" after you apply it. Fertilizer can have a harmful "burning" effect on the plant if it's applied without water.

Pests, Diseases & Solutions: Pruning a tree encourages healthy, even, visually appealing growth. Smart pruning choices can also make a tree stronger, sturdier, and more resistant to certain diseases.

To get rid of snails on your tree, you can use essential oils, such as peppermint and TerraShield to get rid of them. Fill half of a spray bottle with water and put 6 drops of essential oils. Spray it on the trees.

One particularly annoying almond pest is the navel orangeworm. Over the winter, this insect shelters in so-called "mummy" nuts — almonds that aren't harvested and are left on the tree into the late fall and winter. Once the spring rolls around, these grubs become active, resulting in damage to the almond crop. The best way to prevent this is simply to get rid of the mummies. Without any place to shelter over the winter, orangeworms should not appear, as they cannot penetrate healthy fruits later in the year. (After the mummies are removed from the tree, be sure to destroy them by mowing. Orangeworms can still shelter in intact mummies on the ground.)

Use a search engine query for "almond pests", contact your local garden supply store, or a local university's botany department for further info.

Harvest and Storage

When to Harvest/Number of days to Maturity: Almond trees take some time to start producing nuts. Typically, this "waiting" period lasts about five years. However, depending on the species of tree, it can take as long as 12 years for it to reach full nut-producing capacity. Be patient — a mature, healthy tree can produce over 40 pounds of nuts in a single harvest. It will bloom for a couple of years before nuts begin to grow. The number of flowers compared to the number of nuts that set and grow is quite high.

Fruit-bearing almond trees will start to grow small green fruits during the growing season — these hard, sour fruits aren't a common dish in the Western world, but are semi-popular in the Middle East. In the fall, these fruits will harden, turn brown, and crack open. Once the exposed almond husks have a dry, brown exterior, they're ready for harvesting.

How to Harvest: Almonds are usually harvested between July and October. Shake the tree and gather the almonds that drop, taking care to throw out any rotten ones you come across.

Sometimes, the fruit may fall without the tree being shaken. Unless they begin to rot, these nuts are still edible.

Once an almond tree begins bearing fruit, it will do so every year for as long as 50 years, ensuring plenty of almonds for years to come. It's important to understand that most almond trees don't produce almonds by default. The fruit of the almond tree (and, thus, the almonds themselves) are usually produced as a response to pollination as a method of sexual reproduction. This means that unless you have a self-pollinating variety of almond tree, you'll need to cross-pollinate your tree with another tree of a different variety to get almonds.

The easiest way to do this is usually just to have multiple trees of different varieties. Once you have two to three trees growing near each other, pollinators like bees will bring pollen from one tree to another as part of their natural behavior. You can also pollinate trees manually by taking a flower-bearing branch from another tree and rubbing it against the first tree's flowers, mixing the tree's pollen in the process. However, this is much more time-intensive and may not work as well as natural pollination.

Grafting will turn an unproductive tree into a productive one if the existing tree is not self-fertile and you graft on a scion from a different variety. Once the graft "sets", the grafted-on part will still have the ability to produce fruit, even if the rest of the tree doesn't. This is how the vast majority of certain crops, such as oranges, are grown.

There are several ways to graft a productive limb onto your tree. The simplest is usually a technique called T-budding that involves making a long, narrow cut on the "host" tree and slipping the new limb into the groove formed. After this, the new limb is secured with string or rubber ties until the host tree accepts it. Note that most grafting is performed in the spring when the material under the bark is moist and green. Keep in mind that grafting will not make an unproductive tree productive if it isn't producing due to poor site selection, lack of nutrients, etc.

Optimal Storage Temperature and Conditions:

It's a good idea to freeze your almond husks for 1-2 weeks to kill any residual pests.

The only way to know for sure when the drying process is complete is to sample the "nuts." Crack the shells of a few to find out whether the edible seeds within are hard or rubbery. If they are rubbery, then they are not completely dried out yet. If they are hard, then they are ready. When you have determined that your crop has dried out enough, bring the rest of the nuts, with their shells still on, indoors. Stored at room temperature, they will keep for eight months.

Note: A blanched almond is simply a fancy term for a raw almond with its skin removed so here's how to do it. Use only plain almonds, not the roasted, oiled, or salted. Place the boiling water in a pan to the side on a hot pad, put the almonds in the water only for l min. (any longer they will lose their crispness). Drain the almonds using a strainer, rinse under cold water, and dab off any excess moisture. Grip each almond between your thumb and index finger and pinch. The almond should slide right out of its skin. You can prevent the almond from

flying across the room by using your opposite hand to form a shield and catch the slippery

little almond. Sometimes the skin won't come off so easily and you'll have to use your thumbnail to scrape off any remaining skin. Simply lay them on a baking sheet for a few days, shaking the pan to turn them occasionally to dry them.

Seed Saving: The almond is the seed of the tree so germinate as described above.

Apple Tree

Description: Sturdy trees that provides shade as well as a bounty of delicious fruit that are cultivated worldwide and are the most widely grown species in the genus Malus.

Growing Instructions

Optimal Time/Temperature for Germination: There are hundreds of apple tree varieties available, each of which does best in a certain growing zone. Planting a tree that is known to thrive in your growing zone will give you the best chance of growing a successful, fruit-bearing tree. The USDA website provides a map illustrating where different growing zones begin and end.

This is especially important for apple trees because apple varieties each need a number of "chill hours" in order to begin producing fruit. Chill time is when the temperature is between 32 and 45 degrees F. Some varieties do best in the north, where the winters are long and cold, and others need fewer chill hours and do fine in southern growing zones. In addition to knowing your growing zone, and how many chill hours it typically provides, you may need account for other climate factors. Humidity levels, annual rainfall, elevation, and other factors such as your local microclimate could influence how well apple trees grow.
For growing zones 3 and 4, try Honeycrisp, Sweet Sixteen or Macoun. For zones 5 to 9, try Pink Lady, Akane or Ashmead's Kernel. For 10 or hotter, try Granny Smith or Cinnamon Spice.

Cross pollination is usually necessary in order for the trees to produce fruit. Many apple trees will not pollinate themselves or other trees of the same variety, so you may need to plant two different apple varieties in the same area to ensure they get pollinated.
Consult with a local horticulturist or nursery to find out which varieties will pollinate in your area. Golden Delicious, Red Delicious, Grimes Golden and Winter Banana are often good choices, since they are known to pollinate.

You can narrow down your list according to personal preferences. Consider taste testing a few different varieties so you can make sure the time and effort you'll put into growing an apple tree will result in fruit you enjoy eating.

You may also want to consider getting a disease-resistant variety, even if it doesn't produce your very favorite type of apple. Apple trees are prone to disease, and it would be a shame for yours to die within two or three years of planting.
Disease-resistant trees allow you to grow organic fruit, since you won't have to use as many chemicals to keep them from getting sick. Some treatment will still be necessary, but it will be less than that needed for non-resistant trees.

Most apple trees are grown from dormant, grafted nursery trees with developed root systems. These trees consist of a rootstock, the foundation of the tree, and a scion, the top part of the tree that bears the fruit. The rootstock and scion are grafted together to create trees that grow reliably and produce a certain type of fruit. Plan to plant your tree as soon as possible after purchasing it. If the roots are dry, soak them for 24 hours before planting.

When ordering a tree, you can choose a seedling rootstock, which will produce a full-sized tree that grows up to thirty feet; or a dwarfing rootstock, which produces a smaller tree more suitable for a backyard harvest. Full-sized trees bear more fruit, but they take several extra years before they start bearing. Trees can be ordered from a catalog or purchased at a local nursery. While some people like to try their hand at planting apple trees from seed, buying a bare-root tree produces much more reliable results. If you plant a seed, it won't necessarily produce an apple like the one it came from. Since apple trees are grafted, the seed is basically a wild card that could produce a tree with inedible fruit.

A dormant bare root tree is best planted in the spring, after the soil has thawed enough to dig a deep hole. This is especially important in colder regions. The trees' roots need a chance to take hold before the next winter, or they'll suffer from the frost. If you live in a place with mild winters, you can plant apple trees in the fall without worrying that they'll die from the frost before they get a chance to set.

Optimal Soil Conditions: Amend the soil for pH before planting and adjust the soil to account for nutrient deficiencies. Again, conduct research to find out how rich or poor the soil should be for the variety you're planting. Amend the soil to a depth of 18 inches (45 cm) below the planting hole, so that the tree's roots grow into healthy soil.

Apple trees need full sun, so choose a spot that gets at least six hours a day. They like soil that is moist, but not sopping wet. If your soil is clay-heavy or doesn't drain quickly, amend it by working in straw, compost, or another organic material to create better drainage. Using an organic material will also provide nutrients to the tree as it decomposes over time.

Seed Planting Depth, Spacing and Procedure: If you are planting seedlings, which will grow into full-sized trees about thirty feet tall, they should be planted fifteen to eighteen feet apart. If you're planting dwarfing rootstock, plant them four to eight feet apart.

Dwarfing trees tend to fall over under the weight of a heavy flush of apples, so it's a good idea to plant them near something sturdy, like a fence. If no fence is available, you can set up a trellis to support them. If your property is hilly or sloped, plant the trees in higher areas. During the winter, cold air settles in the lower areas, and these "frost pockets" can be harmful to the trees.

If temperatures drop below 29 °F (–2 °C) while the tree is flowering, your apple tree might not produce fruit.

Use a spade to remove all grass, weeds and stones in a circle about four feet in diameter. Dig a hole twice the diameter of the root system. It should be just deep enough so that the tips of the roots graze the bottom of the hole, and the graft union (where the scion is joined to the rootstock) is two inches above the soil line.
Put some of the loose soil back in the hole so it will surround the roots. Loosen the soil on the bottom and sides of the hole so it will be easy for the roots to penetrate as they grow. Position it in the center of the hole. Spread out the roots so they aren't cramped or curled in the hole. Replace soil around the roots to fill in the hole. After you've replaced a few inches of soil, use your fists to tamp down the soil around the roots, so no air pockets will form around the roots. Keep going until the hole is completely filled in.

As you work, check the tree to make sure the trunk is standing upright at a ninety-degree angle to the ground. If you plant the tree crooked, it will grow crooked. Don't add fertilizer to the hole. The soil should have already been amended so that it's nutritious enough for the tree to grow well. Fertilizer could burn the roots. Make sure the graft union is not buried; it must be above the soil. Water the tree well. This removes air pockets and helps the roots and soil make firm contact.

If your apple tree isn't pollinated very well, it might not produce any fruit. Experts recommend cross-pollinating apples and pears together. You could also plant crabapples and ornamental Bradford pears near your apples, as well.

Best Companion Plants and Plants that Hinder: Plants that deter pests and enrich the soil when cut back and left as mulch for apple trees: comfrey, nasturtium, chamomile, coriander, dill, fennel, basil, lemongrass, mint, artemisia, yarrow, daffodil, tansy, marigold, and hyssop. It is advised to not have cedar trees closer than 4 miles.

Crop Maintenance

Moisture Requirements & Solutions: Watering the soil deeply but infrequently is the best way to keep apple trees healthy. During the first two growing seasons, plan to water the tree deeply about twice a week. Don't water the tree after it rains, since this can cause it to become waterlogged and create rot around the roots.
If the leaves look dry and wilted during the growing season, you may need to increase watering. Check for signs of drought during the hottest times of year. As the tree gets older, water near the edges of the perimeter of the branches, since the roots grow outward and not downward.

Weeding Needs & Solutions: Mulch helps to regulate the temperature around the base of the tree, keeping it from getting too hot or too cold. It also provides nutrients as it decomposes and keeps weeds from growing. Use a few inches of straw, wood chips or compost as mulch.

Place the mulch in a wide circle around the base of the tree. Don't pile the mulch in a "volcano" shape around the base of the tree; rather, there should be a "donut" shape to keep the mulch from covering the tree's bark. Mulch will rot the bark, which can attract mice and hurt the tree.

Feeding Needs/ Optimal Natural Fertilizers: For nitrogen, rabbit or steer manure is a more organic choice. Scatter the fertilizer evenly around the tree trunk and water the soil after spreading the fertilizer.

You don't need to fertilize your apple tree if it's already growing at least 8 in (20 cm) a year. However, if your tree isn't growing that much, it probably needs fertilizer. There isn't a one-size-fits-all fertilizer for apple trees. Instead, it really depends on where you live and the current soil conditions. A soil test kit will help you pinpoint which nutrients your soil needs so you can choose a fertilizer. (Fertilizing too much can actually stunt the growth of apple trees, so it's important to evaluate growth first.) Nourish 1 to 2 year old trees twice a year- in spring and summer and if older only apply fertilizer once in the springtime to kickstart growth. Gardensalive offers worm castings, liquid kelp, and fertilizers with different N-P-K (nitrogen, phosphorous and potassium) ratios that meet the specific nutritional requirements of berry plants and fruit trees.

Pests, Diseases & Solutions: Deer, mice, rabbits and insects may be attracted to your apple tree. Keep your tree safe by protecting it in the following ways:
Keep deer out with fencing around your property. Keep mice and rabbits out by installing wire mesh around the base of the tree. You can also avoid putting mulch right at the base of the trunk to discourage rodents. Keep maggots away from fruit by trapping them with hanging balls coated in a substance called "tangle trap" throughout the summer Keep the leaves and fallen apples cleaned up to avoid attracting pests. Apply neem oil, insecticidal soaps or Bt (Bacillus thuringiensis)
if insects or other pests infest the tree. Bt is effective against leaf-eating pests, such as caterpillars and web worms. Spray when the pests are present.

Harvest and Storage

When to Harvest/Number of days to Maturity: Removing some of the fruit will help the fruit that remains be larger and tastier, as well as preventing the branch from falling under the weight. When the fruit begins to emerge, remove the smallest fruits and leave about four inches between the healthy fruits you want to keep. Different varieties peak at different times between August and October. Learn what your apple variety should look and taste like at its peak. The apples should be easy to pluck from the tree; it shouldn't be necessary to yank them off when they're ripe.

In general, the apples' background color should no longer be green (unless you're growing a green variety). Apples that are falling from the tree in the slightest breeze may be overripe, so act quickly! Apples freeze when it is frosty outside: usually 4 degrees Celsius or lower.

Optimal Storage Temperature and Conditions: They keep best at a temperature between 32 and 45 degrees F. They will stay fresh at this temperature for up to six months. Check the apple bin frequently and throw out any rotten apples. Apples can also be preserved by making apple jam, apple butter, or applesauce.

Besides apples, these other fruits are alkaline-producing foods in your body: bananas, cantaloupe, apples, avocado, coconut, grapefruit, grapes, kiwi, oranges, lemons, limes, and watermelon.

Seed Saving: Most apples are grown from grafted trees and will not come true from seed. Fruit breeders plant thousands of apple seeds every year from controlled crosses they make.

Notes: If you live in the northeastern United States, if necessary consider applying 0.5 oz (13 g) of borax to each apple tree every 3 years. In this area, the soil is notoriously low on boron. If your apple tree isn’t getting enough zinc, spray it with a mixture of 1 tbsp (52 g) of zinc sulfate and 1 US gal (3.8 L) of water. In the fall, spray the zinc all over your tree until it’s dripping wet.

A young tree doesn't need to be heavily pruned. For unbranched trees, also called whips, you can prune back 2-3 feet after planting. For other trees, remove dead branches as necessary. Then, start shaping the trees the year after planting. In order to direct growth into a few healthy branches, you can use a few techniques:

Rub off low-growing buds so that they won't grow into full-sized branches. If you want to slow growth and promote fruiting, bend a branch down horizontally (without breaking it) and tie it to a stake in the ground for a few weeks. Trees will require regular pruning to remove crossed or dead branches and promote good circulation. Cut away upright stems that grow high in the tree, and remove stems that are weak or droopy.

Try a half barrel, which has plenty of size and good strength if you’re trying to grow in a pot but it will restrict the roots.

Apricots

Description: the apricot tree (Prunus armeniaca) is healthy and delicious. Apricots are stone fruit (drupes) that are smaller than peaches, softer than plums. It's best to find good fruit shopping at the peak of their season. In the Northern Hemisphere, they are in season mid-May through mid-August. In the Southern Hemisphere, they are in season November through January.

Growing your own, you need two trees that are different varieties of the same fruit species to cross pollinate because two trees of the same variety will not.

Growing Instructions

Optimal Time/Temperature for Germination: You can start with either a sapling from a store or prepare your own seeds from a fruit. Scrub off any fruit matter with a brush and allow the surface to dry. Crack open the seed by exerting pressure on the seams with a flat tool like a board, nutcracker, or knife. Take out the almond-shaped seed, and stratify the seed (prepare it for germination) by soaking it overnight in a container of warm water.

You may wish to prepare several seeds, in case some of them don't germinate.
Squeeze damp peat moss to remove excess water, place a handful of it in a jar or plastic baggie, add the seeds, and seal the jar or bag. Place the jar in a refrigerator that is between 32 and 45 degrees Fahrenheit. Monitor daily for sprouts; when you see those, it's time to plant the seed. It can take 4 to 6 weeks for a seed to sprout.
Keep the seedlings on a sunny windowsill or under grow-lights until you are ready to pot or plant them in a garden. If starting by a sapling, Buy dormant, bare-root, 1-year-old trees if possible. Take the tree out of the plastic container. If the sapling comes in a burlap bag, carefully remove the bag before planting the tree.
Consider using a genetic dwarf species if you have limited space in your garden. Great dwarf species include "Stark Golden Glo" and "Garden Annie." Dwarf species will produce 1-2 bushels of fruit per year, while full-size species will produce 3-4 bushels.
You can choose the "Harglow" apricot species, which is resistant to brown rot.

Optimal Soil Conditions: With lots of sun. The soil should drain well but hold on to moisture. Apricots prefer a slightly alkaline soil with pH of 6.5-8.0 and does not have light or sandy soil. Avoid anywhere that has had eggplant, tomatoes, peppers, potatoes, raspberries, or strawberries growing in or near it. These crops can be a source of verticillium wilt.

Seed Planting Depth, Spacing and Procedure: Standard sized trees should be planted approximately 2.5 meters (8.2 feet) apart. Genetic dwarf varieties may be planted 1.75 meters (5.74 feet) apart.
Dig a 6 in (15 cm) hole for a germinated seedling. For saplings, the depth will vary based on the sapling's size, but make sure it's deep enough to at least cover the roots up to where they were covered in the container. Fill the hole with well-rotted compost and mix it thoroughly with the soil.

If you are using a germinated seed, cover the seed with soil and secure a layer of screen over the area to prevent animals from digging up the seeds. If you are using a sapling, carefully spread the roots in every direction in the hole, making sure that there is no potential for root breakage. Cover it with soil up to where it was while in its container and soak thoroughly.

You don't want your new tree to be stifled by its protective layer, so remove the screen when they're just starting to break through the top layer of soil. You may want to build a wire or wooden fence around your tree to help protect it from hungry animals as it grows.

With the sapling place a stake into the ground 1.5 feet (0.46 m) away on either side of the tree, and tie the center of the tree to the stakes with a soft material such as canvas straps. Metal and wire can damage the trunk. (Staking when you live in a climate that is not very windy can cause fewer roots to grow. Only stake the tree if your area is prone to strong winds or if you see the tree leaning.)

Best Comparison Plants and Plants that Hinder: Tomatoes and vegetables such as peppers and potatoes should not be planted near apricots.

Asparagus is a good plant to grow with Apricots as it will have finished cropping before the Apricot is in full growth. Strawberries are traditionally woodland plants and so will grow well under Apricot trees. It is also said that Grapes are good companions for Apricots. I can find no reasons for this but I am speculating that as Grapes and Apricots both need to be planted in South facing gardens they make good bed fellows.

Crop Maintenance: Let them grow 6' tall before pruning. Early pruning will harm the tree. You can prune whenever the top of the tree looks full and green, but the bottom looks wilted and thin. This means that the tree is not getting enough sun on the bottom because the top layers are blocking it. Prune any branches that are no longer producing fruits or ones that are over 6 years old.

Moisture Requirements & Solutions: Water once a week if you live in a cool climate, and 3 times per week if you live in a hot one.

Weeding Needs & Solutions: Ensure that the area has no weeds.

Feeding Needs/ Optimal Natural Fertilizers: Fertilizer (low-nitrogen, complete fertilizer) can be applied in later winter and once again during the fruiting period to help it cope with the added requirements of producing fruit. You don't need fertilizer when you plant the tree, as compost does the trick during that stage of the tree's life.

Pests, Diseases & Solutions: "Sick" trees will have wilted blossoms, brown, hanging leaves, and fruit that is shriveled and dark ("mummified"). It may be necessary to use anti-fungal spray on the tree to prevent the spread of an infection. To keep borer insects away from Apricot trees which will bore into the tree causing disease and eventually the death of the tree, grow members of the Allium family (onions, garlic, leeks, chives) underneath the tree protecting the trees and also suppressing weeds.

The Natural Spray Bonide All Seasons Horticultural & Dormant Spray Oil Bonide Neem Oil may help in control as well. Pollinating insects are necessary for fruit to form so don't drive away your little helpers, only use when insects are causing major damage to the tree (careful to not spray any pesticide on the fruits). Do not use sulfur-based pesticides on apricot trees. Consult your local nursery.

Fruit flies sting and release eggs into the fruits if you notice white worms inside the apricot. A suggestion is to wrap fruits with transparent protective bags. Throw infected fruit away, do not compost it.

Harvest and Storage

When to Harvest/Number of days to Maturity: Expect fruit in 3-4 years. Apricot blossoms are very susceptible to frost damage and may need to be protected in a garage or greenhouse during the winter.

Apricots are usually ready for harvesting from midsummer through early autumn. You'll know when they're ready if they're soft, fuzzy, and fully orange.

How to Harvest: A new tree should not bear a heavy crop of fruit; severely thin the fruit to prevent this.

Avoid picking your apricots too early. If they are pale, they will most likely not ripen and will rot if picked. It is a common occurrence for a tree to drop lots of apricots before they ripen (caused by the production of too many flowers). Some of the fruit will drop as there is not enough space on the branches for all of it. Small, premature apricots will drop, while the remaining buds are likely to bloom into ripened fruits.

Unripe apricots that still feel hard, can be placed in a paper bag. Carefully fold down the top of the bag to close it so the ethylene gas that the apricots produce will be trapped and help it ripen. Don't store the apricots in a plastic bag. Unlike paper, which is slightly porous so some air can pass in and out of the bag, plastic is airtight. As a result, the ethylene gas may be too effective and you may wind up with mushy, overripe apricots.

Optimal Storage Temperature and Conditions:

While the apricots are ripening, don't refrigerate them. Instead, leave the bag with the fruit out at room temperature on your counter or table. Allow the apricots to ripen for two to three days. (Make sure to place the bag in a location that's not near direct sunlight or heat.) After two days, open the paper bag to check on the apricots. Smell the fruit to see if it they have a sweet scent, which usually indicates that they're ripe. Touch the apricots too, it should give slightly when you press your finger against it lightly.

Apricots make great sauce, chutney, sweet and sour sauce, jam and stewed fruit desserts. Apricots are an excellent source of beta-carotene, and one apricot provides the daily requirement for vitamin A.

Apricots are suitable for freezing, but be aware that they lose their structure and become soft during freezing. Nevertheless, this still makes them great for using as sauce, purée, and sorbet. Pureed apricots make a great substitute for butter in cooking.

The methods of drying apricots vary from simple sun drying through solar drying to artificial dryers. The traditional sun drying of apricots involves de-stoning the fruit and placing it on flat rocks for approximately six to nine days. This produces a dried fruit with an uneven dark brown color and a tough, texture.

Seed Saving: Harvest seeds from mid- to late-season apricots. Make sure the seed comes from a fruit that is far from trees of the same genus to prevent in-breeding during pollination.

A fridge or cellar would be an ideal storage location, provided the seeds are adequately protected from moisture. Airtight resealable bags are a good option, particularly if you purchase more seeds than you expect to use within a year or so.

Notes: If you see clusters of 3 or more fruits growing close together, remove the ones that are misshapen, brown, or damaged while they are still green. Allowing the fruits enough air and light will also prevent fungal disease from spreading.

Sometimes hand pollination is needed if few insects are about.

There are two options after the years if the tree looks good but the fruit decreased to a dozen and eventually down to two, you can hire an arborist or take it out and re-plant.

When you plant the tree next to a wall to let the branches "fan out", is great for small spaces however, it limits the amount of fruit produced.

Another tree you might like to try is an aprium; this is a cross between an apricot and a plum.

Aronia (Chokeberry)

Description: Aronia is a genus of perennial deciduous shrubs, the chokeberries, in the family Rosaceae most commonly found in wet woods and swamps. This superfruit is grown for its beauty as an ornamental with deep green foliage as backdrop for its pretty white flowers in the spring, and with the contrast of its deep purple berries nestled into its red-orange leaves in the fall.

Growing Instructions:

Optimal Time/ Temperature for Germination: They are suitable to plant in Hardiness Zones 3 to 8. The aronia berry bush is a hardy and easy-to-grow plant. It has only few special requirements. Begin with a high quality bush from a reputable nursery or grower. There are several online growers that specialize in aronia bushes. Your plant should be about two years old for a successful transplant. Here in the U.S., aronia is grown in favor for its nutritional value.

Optimal Soil Conditions: Choose a sunny location, while a partially shady location will work too, you will enjoy a higher yield of berries in fuller sun. This bush is not finicky about soil. You can plant your aronia berries in most soil conditions, from moist and boggy soil to dry and sandy soil. Black chokeberries are grown in drylands; on the other hand, red berries are grown in a wetland.

A reported optimum pH is slightly acid (6-6.5), but aronia will tolerate a wider pH range (5-8.5).

Seed Planting Depth, Spacing and Procedure: Can plant in spring or Autumn. The more sunshine, the more naturally accuring sugars will be in the berries. They will be less sour, and tastier. Some are grown in rows and some as hedges. People limited in spacing can grow them in pots on a balcony or porch.

Best Companion Plants and Plants that Hinder: dwarf birch, grass pink orchid, cinnamon, royal ferns, snowberry, beauty berry, redbud, dogwood, grape holly are companions with Red Chokeberry

Dwarf birch, grass pink orchid, cinnamon and royal ferns, steeple bush, speckled alder, marsh milkweed, wild strawberry, quaking aspen, wild raspberry, and grass-leaved and swamp goldenrods are companions to Black Chokeberry.

Hindered by Pine trees may be a myth.

Crop Maintenance:

Moisture Requirements & Solutions: This resilient bush can withstand wet winters and dry summers. For the first couple years though, try to keep the moisture consistent. Water once or twice a week to provide an approximate inch of water a week to the plant. Once the plant is mature, it will require less water and will be more adaptable to whatever moisture Mother Nature provides.

Weeding Needs & Solutions: The plants do not need trellising, spraying or bird netting. Mowing the grass planted between the rows is the only task, other than harvesting the berries, that needs to be done. Aronia is easy to grow organically.

Feeding Needs/ Optimal Natural Fertilizers: Although it isn't picky, nutrients will increase its health, so add some compost to your soil as you plant this bush.

Pests, Diseases & Solutions: Aronia berry bushes are not prone to disease or to pests. They will rarely develop leaf spot or rust. (Have a reputation as immune). Both of these are fungal type infections and are cosmetic in nature. They can be avoided if you water your aronia berry bush at the ground level rather than drenching the foliage with water. Plenty of elbow room will allow good airflow around the leaves, too, which will help prevent disease or damage.

Harvest and Storage

When to Harvest/Number of days to Maturity: You can expect these highly sustainable berries around its third year.

Harvest your aronia berries in autumn when they taste ripe (Sept. to Oct.) You can even wait until after a light freeze. Late in its dormant season, prune some of the older branches of your bush down to the ground to promote a new growth and a bushier form.

How to Harvest: The round, pea-sized (1/3 inch diameter), violet-black berries hang in clusters of up to 12 berries. Berries are harvested after they are ripe in late August or early September. Aronia berries can be harvested by hand or they can be mechanically harvested with a blueberry picker.

Optimal Storage Temperature and Conditions: Can be flash frozen and stored in your freezer for up to a year. They are also a tangy burst of flavor when dried and added to a trail mix. The red chokeberries are edible but required to be mixed with a large amount of sugar for a good taste. On the other hand, black chokeberries are very useful to make other things that most people eat on routine days, jam, jelly, and juices.

You can put them in a refrigerator. It will help you to store it for a longer time. But there is no reason required to keep it in a plastic bag.

Take a plate or a bowl and put chokeberries in it and keep it in a refrigerator. It will last for a longer time than usual. After one week, you can put all the berries in a plastic bag or containers and store them in a freezer and can easily be used for the next two years.

Seed Saving: You can get new Aronia plants by slicing off the suckers and planting them in new locations.

Notes: Varieties to try - 'Viking' (and Nero) is a Russian cultivar that has recently been introduced back into the U.S. It is used commercially for its large, high- quality berries. It is a 6-8 foot tall bush that produces a large amount of berries.

`Autumn Magic' (and `Iraqis Beauty) is an ornamental that grows to about 4 feet in height. It blooms out in white flowers in late spring and explodes into autumn colors of red and orange late into the fall season. Its berries are dark purple.

Research has shown that aronia has more antioxidant power than other fruits including grapes, elderberries, blueberries, cranberries, raspberries, blackberries, prunes, cherries, bananas, oranges, apples and pears.

Aronia also makes good wildlife plantings or windbreaks. Its berries provide food for songbirds in mid- to late-winter.

Avocado Tree

Description: known as Persea Americanus serves well raw in mixed greens and guacamole and has a lot of nourishment so some us will eat it alone like an apple. You can grow this fantastic food its seed that you would usually just discard.

Growing Instructions

Optimal Time/Temperature for Germination: One method is to sprout the seed - rinse it under warm water to remove all of the avocado fruit from it. Do not remove the brown skin or "seed cover" from the seed. The top of the seed is the pointed end, while the lower part of the seed is rounded. It's important that you're able to identify the top and the bottom of your seed.
The roots will grow out of the bottom and your tree will sprout from the top of the seed.

Insert three toothpicks on a slight downward angle in the middle of the seed. The toothpicks will enable you to suspend your seed so that the roots can get enough water while the top of the seed stays dry. The toothpicks should be an equal distance apart from one another. Make sure that each toothpick is inserted firmly but not too far. Use the toothpicks to balance the seed on the brim of a cup, ensuring that the bottom half of the seed is under water. The other half of the seed should be above the water's surface.
Place the glass in a warm spot where it can get some sun.
Remember to replace the water as it evaporates. Change your water once a week to prevent mold from growing in your glass. Use room temperature water for your avocado tree. In two to six weeks, you should see your avocado tree start to sprout. You'll notice that the seed will crack and roots will begin to grow from the bottom of the seed. If your avocado tree does not sprout in eight weeks, consider starting over with a new seed.

Once your plant grows to 6 - 7 inches (15 - 17.7 centimeters), you should move it to a pot with soil. Remove the toothpicks from your seed and place it in a 8 - 10 inch (20.3 - 25.4 centimeter) deep pot filled with humus soil or a multi-purpose potting soil. The seed should be half exposed on top of the soil. Humus is loose and crumbly soil. It includes organic material like leaves, grass clippings, and peat moss. Avocado trees thrive in fast draining organic soil.

Optimal Soil Conditions: Avocados thrive in warm and humid climates and grow in zones 8 through 10. Avocado trees generally due best in tropical climates. However, there are a few species of cold hardy avocado trees that can survive in temperatures as low as 20 degree Fahrenheit. A healthy pH level for your soil is between 6.0 and 7.0. If you're using soil from your garden, make sure you sift through it and remove any weeds or roots are in it.

The best times to plant your avocado tree are March through June. Planting your avocado tree during the hottest parts of the summer increases the risk of sun damage for your tree. Burying more than one seed may increase your chances of a tree sprouting.

Seed Planting Depth, Spacing and Procedure: Another method is right into the dirt. You can use a paper towel or run your seed under water. Remove all of the avocado pulp from the seed before you continue. If your seed is giving you issues during cleaning, you can submerge it under water for one to two minutes to loosen some of the stuck on avocado. Once you've extracted your avocado seed, you'll need to peel back the brown layer over the seed, sometimes referred to as the "seed cover." Use a sharp knife and cut away at the brown cover to reveal the tan seed under it. Light scratches on the seed will not prevent growth but avoid puncturing or cracking the seed while you remove the cover.
Fill a pot with loose soil that has good drainage. Some options include sandy loam or humus. You can find these specialty potting soils online or at a home and garden store. Good drainage is essential for growth. Bury your avocado seed so that the fat rounded end is under the soil while the pointed end is exposed. An avocado grown this way may take up to two months to sprout. Return to the soil daily to make sure that it's wet enough to promote growth. It's important that your soil doesn't dry out during this period.

Best Comparison Plants and Plants that Hinder: 2 to 4 inch layer of some sort of bark, compost, leaf mold, etc. is enough to provide huge benefits to the soil/root system of your trees. weeds and green grass can hinder the avocado tree's growth.

Comfrey is a beneficial companion plant for the avocado tree and most other fruit trees by serving as a trap crop for slugs. A trap crop pushes insects away from other essential plants with a disagreeable taste or a bad smell. The comfrey plant also accumulates phosphorus, calcium and potassium and helps keep surrounding soil moist and rich. An extra note for greatest results is that comfrey needs to be harvested and applied as mulch, tea or compost to releasing nutrients instead of using them up.

Also, lavender, garlic, strawberries, and sweet potatoes are good as each plant has a different benefit, they all grow well next to, or underneath the canopy from avocado trees. Some attract pollinators, while others keep away pests or provide a living ground cover.

Crop Maintenance: Once your avocado tree grows to be about 6 - 7 inches (15 - 17.7 centimeters), cut it back about 3 inches (7.6 centimeters). Cutting the top of the stem will promote more horizontal growth on your plant. Trim the tree when using both the toothpick and potting method. Regular pruning after the first year of growth should be limited but is useful for maintaining a healthy avocado tree in some cases. You can prune smaller branches as your tree matures to limit its growth or to balance the tree.

The best times to prune your tree is in the late winter or early spring. If you don't cut your avocado plant, the stem may grow too long. Do not cut the roots on the bottom.

If you live a place where the temperature doesn't dip below 24 degrees Celsius, (75.2 degrees Fahrenheit) then you can keep your tree outdoors all year round. However, if you live in a place where it gets cold, you'll need to bring it indoors, or it will die.

For your avocado to grow fruit, it must be pollinated by insects. If you have had your plant for a long time and it hasn't grown fruit, consider moving it to an outside garden or keeping a window open so that bees and other insects can pollinate it.

Pruning the flowers have little effect on the vegetative root system. Avocado growth is rhythmic, meaning that it goes through phases of growth and phases of dormancy and alternates for the seasons. Flower growth is a sign that your shoots have stopped growing for the season.

Moisture Requirements & Solutions: Watering your tree too much can hurt the plant. A good indication of overwatering is if the plant's leaves become a light green or translucent color. Check the soil every couple of days to make sure that it isn't dried out. You can do this by pressing a finger into the soil about an inch (2.5 centimeters) deep.

A fully matured avocado tree will need about 20 gallons (75.7 liters) of water per day during the irrigation period. It doesn't need much watering in the winter. Avocado trees don't like cold, wet soil and can develop root rot.

Feeding Needs/ Optimal Natural Fertilizers: Avocados need nitrogen, first and foremost, and a little zinc . You can use a citrus tree fertilizer as an avocado fertilizer or go organic and use compost, coffee, fish emulsion, etc.

Pests, Diseases & Solutions: To protect your avocados from anthracnose disease, there are a few steps you can take: Prune dead limbs and twigs to prevent the spread of the disease. This also improves air circulation in the tree canopies, thus reducing humidity. Spray your tree with a copper fungicide every two weeks after blossoming to protect your fruit throughout development. Any crop residue should be properly disposed of to cut down on the spread of the disease. Prune and harvest during dry conditions and consume ripened fruit quickly. (Bonide-Captain Jack's Copper-Fungicide-Rtu-Natural has organic approval). Also, avocado trees are very susceptible to root rot, which is caused by the soil- borne fungus Phytophthora cinnamomi. Controlling this disease is the highest priority.

Lace bugs can damage leaves and cause yellow spots on them, weaken leaves to fall out, exposing fruits and the wood to destructive ultraviolet rays. Horticultural oils can be used for their management.

Insect borers tunnel into avocado trees and lay eggs causing branches to weaken and fall off. To prevent their spread, cut off infected branches.

Washing some pests off with water spraying can be helpful while overseeing tree growth with a solid routine of pruning, cautious regulation of issue zones, and composting.

Harvest and Storage

When to Harvest/Number of days to Maturity: Avocado trees can take 2-8 weeks to sprout. Once your taproot begins to grow, you'll know you're on the right track. The taproot will be thicker than your tree's other roots. After your avocado tree sprouts, it can take anywhere from 5-13 years for it to bear fruit. (Should your avocado tree never bear fruit and if it does, there is a chance it will not be edible.)

Optimal Storage Temperature and Conditions**:** Prune and harvest during dry conditions and consume ripened fruit quickly.

Since air is the enemy of avocados, vacuum sealing with a handheld sealer makes sense.

Citric acid in lemon or lime is a strong antioxidant that slows the browning process. Squeeze a small amount to stretch the cut fruit another day.

Plastic wrap is often used in food preparation and storage to prevent oxygen exposure. To protect an avocado that has been cut open, simply wrap the avocado as tightly as possible, making sure the exposed surface comes into full contact with the plastic, leaving no air gaps and they are freezable.

Notes: Feeding avocados to your pets is bad for them.

Banana

Description: While banana plants are technically perennial herbs, Bananas are not real trees, not even palm trees, even though they are often called banana palms. Some varieties and individuals can reach 7.6 m (25ft.) in height. Banana trunks consists of all the leaf stalks wrapped around each other. New leaves start growing inside, below the ground. They push up through the middle and emerge from the center of the crown. So does the flower, which finally turns into a bunch of bananas.

Growing Instructions

Select your planting material. You can acquire a banana sucker (small shoot from the base of a banana plant) from another grower or plant nursery, or buy one online.
A banana rhizome or corm is the base from which suckers grow. Tissue cultures are produced in laboratories to create higher fruit yield. If you're transplanting a mature plant, prepare a hole appropriate to its size and have an assistant help you. The best suckers to use are 1.8-2.1m (6–7ft) in height and have thin, sword-shaped leaves, although smaller suckers should work well if the mother plant is healthy. Big, round leaves are a sign that the sucker is trying to make up for a lack of adequate nutrition from the mother plant. If the sucker is still attached to a mother plant, remove it by cutting forcefully downward with a clean shovel. Include a significant portion of the underground base (corm) and its attached roots. A rhizome (corm) without notable suckers can be chopped into pieces. Each piece with a bud (proto-sucker) will grow into a banana plant, but this will take longer than using a sucker.

Trim the plant. Cut off any dead, insect-eaten, rotting or discolored sections of the plant. If most of the plant is affected, dispose of it away from other plants and find another planting material. If using a sucker, remove all but a few centimeters (1–2 inches) of the roots. This will limit the chance of disease. You can also remove any leaves in excess of five and/or cut the top of the plant off with a slanting cut to increase the amount of sunlight that warms the soil for root growth and rot prevention.

Optimal Time/Temperature for Germination:

Humidity should be at least 50% and as constant as possible. Ideal daytime temperatures are between 26–30°C (78–86°F), with night temperatures no lower than 20°C (67°F). Acceptable temperatures are warm and very rarely reach lower than 14°C (57°F) or higher than 34°C (93°F). Bananas can take up to a year to produce fruit, so it's important to know what range of temperatures it will experience throughout the year. If the temperature falls below 14°C (57°F), your banana plants will simply stop growing. A banana plant takes about 9 months to grow up and produce a bunch of bananas. Then the mother plant dies. But around the base of it are many suckers or pups, little baby plants.
Hardiness zones are 9 to 11.

Optimal Soil Conditions: Banana plants grow best with 12 hours of direct, bright sunlight each day. They can still grow with less (more slowly), but you should determine where in your yard receives the most sun. Bananas require a lot of water, but are prone to rotting if the water does not drain adequately.

To test drainage, dig a hole 0.3m (1 ft.) deep, fill with water, and allow to drain. Refill once empty, then measure how much water is left after 1 hour. Approximately 7-15 cm water drainage per hour is ideal for banana plants. A raised garden bed or adding 20% perlite to the soil assists drainage. This is especially important if you are using a banana plant that does not yet have leaves, or had the leaves removed for shipping. Leaves help evaporate excess water.

Remove any plants or weeds that are growing on the planting site, then dig a circular hole 30cm wide and 30 cm deep (1ft. x 1 ft.) A larger hole will provide greater support for the plant but require more soil. Leave several centimeters (a few inches) of space at the top to encourage drainage. Do not use potting soil, nor your regular garden soil unless you are sure it is suitable. Soil mixes intended for cacti can produce good results or ask other growers of the same banana variety. The ideal soil acidity for bananas is between pH 5.5 and 7. Acidity pH 7.5 or higher can kill the plant. Place the plant upright in the new soil. The leaves should be pointing upward and the soil should cover the roots and 1.5–2.5cm (0.5–1 inches) of the base. Tamp the soil down to keep it in place but don't pack too firmly.

Seed Planting Depth, Spacing and Procedure: Each banana plant requires a hole at least 30cm(1ft.) wide and 30cm (1ft.) deep. Larger holes should be used in areas of high wind (but will require more soil). Keep banana plants at least 4.5m(15ft) from trees and shrubs (not other banana plants) with large root systems that may compete with the bananas' water. Multiple banana plants help each other maintain beneficial humidity and temperature levels, as long as they are planted at the correct distance. You should plant

bananas in blocks or clumps, not single rows and definitely not single plants. If you have very little room you can grow a few banana plants together and grow something else on the outside to protect them. But you do need to give them that sheltered jungle environment if you want them to be happy. A clump could be with 2–3m(6.5–10ft.) between each one, or a large number of banana plants 3–5m(10–16ft.) from each other. Dwarf varieties require less space.

Best Companion Plants: A mature plantation is pretty much self-mulching. Just throw all the leaves and old trunks etc. back under the plants. You can also grow other plants in the understory to produce more mulch. One grower uses cassava, sweet potato, and crotolaria and another says that these beans and legumes are heavy nitrogen-giving: chick pea, soy bean, bush bean, fava beans, lima beans, mung bean, cowpea, coffee bean, and castor bean are companions when interplanted, and do not disrupt banana tree growth or fruit yield.

Crop Maintenance

Once your plant is mature and has several suckers, remove all but one to improve fruit yield and plant health. Cut all but one sucker off at ground level and cover the exposed plant with soil. Repeat with a deeper cut if they grow back. The surviving sucker is called the follower and will replace the mother plant after it dies. Exceptionally healthy plants can support two followers. Just remove any dead leaves and cut down the dead plants every now and then.

Support the plant to avoid toppling of the plant due to strong wind or bunch weight. There are 3 easy ways of doing it:

1) Wire/Rope and Bottle Method: Cut off the bottom of a plastic bottle. Insert a very long wire/very strong twine through the mouth and bottom of the bottle. Crunch the bottle to make it bendable and soft. Prop up the banana stem on the bottle, and use the wire to pull the stem slightly more upright. Tie the write to a strong support.
2) Single Bamboo Method: Use a 3m (10') long bamboo pole or other strong, durable material. Cut a piece of Y-shaped wood 10cm (4") thick and 60cm (2') wide. Let the stem rest on the middle of the "Y" and push the bamboo upwards a little bit so the stem is wedged into the "Y" tightly. Bury the other end of the bamboo (the base) deeply into the ground. Tamp very firmly.
3) Double Bamboo Method: Use two 3m (10') long bamboo poles. On one end of the poles, tie them together with strong wire 30 cm (1') from the end. Open up the poles to form a letter "X". Let the stem rest on the short end, push upwards a little bit to create pressure, and bury the other ends of both poles. Tamp very firmly.

Moisture Requirements & Solutions: Underwatering is a common cause of banana plant death, but overwatering can cause the roots to rot. In warm growing weather without rain, you may need to water your plant daily, but only if the top 1.5–3 cm (0.5–1 in.) of soil is dry. Test with your finger before watering. Reduce the amount of water per session if the plant is sitting in water for long periods. (That can cause root rot). In cooler temperatures when the banana is barely growing, you may only need to water once every week or two. Remember to check soil moisture. Leaves help evaporate excess moisture, so be careful not to soak (just moisten) a young plant that has not yet grown leaves.

Weeding Needs & Solutions: Remove dead leaves and banana plants and chop them up to place around the live plants. Other yard waste and wood ash can also be added to return nutrients to the soil. Check the mulch regularly and remove any weeds that are growing. These can compete with the banana plant. An additional 4- to 6-inch layer of mulch around the plant, but not touching the stem, helps maintain a consistent moisture level in the soil.

Feeding Needs/Optimal Natural Fertilizers: Use store bought fertilizer, compost, manure, or a mixture of these. Add fertilizer immediately after planting in an even ring around the banana plant and repeat at monthly intervals. If the temperature falls below 14°C(57°F) or if the banana plant hasn't grown since last month, skip the fertilization. Do not use manure produced in the last few weeks, as the heat it releases while decomposing can damage the plant. Water the ring of fertilizer as well to help it soak into the soil.

Pests, Diseases & Solutions: Keep an eye out for discolorations, dying leaves, and pests. If diseased plants are discovered, identify and treat them immediately, or uproot them. Insect pests should also be controlled as soon as they are found. Nitrogen and potassium deficiencies are the two most common nutritional problems for bananas, so learn to recognize the signs: a) Signs of nitrogen deficiency: very small or pale green leaves; reddish pink leaf sheathes; poor growth rate; small fruit bunches. b) Signs of potassium deficiency: rapid appearance of orange/yellow color on leaves followed by leaf death; small or broken leaves; delayed flowering; small fruit bunches. c) Examples of major plant diseases include are Bacterial Wilt/Moko Disease; Panama Disease/Fusarium Wilt; Banana Bunchy Top; Blackhead/Root Rot/Toppling Disease; and Black Leaf Streak. d) Examples of major plant pests include: Corn Weevil; Banana Aphid; Mealy Bugs. Fruit pests include: Flower Thrips; Red Rust Thrips; and Scarring Weevil.

In areas where Banana Bunchy Top exists, do not share banana suckers with friends. Only buy plants from retailers who can assure the plant is disease-free. It may not be obvious that a plant has Banana Bunchy Top so ensure you don't share plants.

The "Banana Bunchy Top Virus" is one of the most dangerous plant diseases. Once infected, even a single sucker, all the plants that are connected (including the mother plant and all its suckers) will be infected and all the plants are stunted. It's spread by a banana pest called "Banana Aphid". These pests are slow and live in colonies and they can transmit the disease in hours.

Nurture, Harvest and Storage

If temperature during winter months falls too low for your plant, there are several ways to care for it:

Cover the stem with a blanket or soil. If there is no frost and the plant is still small, this may be adequate protection until the temperature rises high enough for it to grow again.
1) Store the plant inside. Uprooting the entire plant, removing the leaves, and store in moist sand in a heated indoor area. Do not water or fertilize; the plant will go dormant until you're ready to plant it outside again.
2) Grow the plant inside. This will require a large pot with drainage hole. If you don't want to grow your banana too big for your pot, you may need to cease or reduce the fertilizer treatments.
3) Salvage pieces to plant later. If frost or cold has killed most of your plant, chances are the suckers and corm at the base are still usable. Cut these away from the dead portion and store them in their own small pots to plant outside later.

When to Harvest/Number of days to maturity: The typical banana plant flowers in 6- 7 months under ideal conditions, but may take up to a year depending on the climate. Never remove the leaves around the flower, as they protect it from the sun.

How to Harvest: Wear old clothes before cutting any part of the banana plant because the sap causes black patches that are very hard to wash out. Bananas are ready to be picked when they look well rounded with ribs, and the little flowers at the end are dry and rub off easily. You can pick them now, green, and they will start ripening as soon as you pick them, no matter their size. They will eventually ripen on the bunch, too, and those bananas taste the best. But once they start, they ripen very quickly, faster than you can eat or use them. So you may as well cut the top hands off a bit earlier and ripen them on the kitchen bench by cutting a notch halfway into the tree, opposite the side of the bunch. Carefully let the tree bend and cut off the bunch. You can also cut the whole bunch and hang it somewhere if you need to protect it from possums, birds and others. All bananas will ripen at once so be prepared. Once the bunch is picked the rest of the plant will die quickly so remove the top half of the banana stem once you harvest the fruit by cutting the top half away. Desucker the base using the same process as you have while caring for your plant. Remember to leave one sucker to replace the now-dying mother plant.

Optimal Storage temperature and conditions:

You can preserve bananas for use in cooking and baking by peeling and freezing them. Also to preserve them for eating, peel, split in half lengthwise and dry them.

Seed Saving: You cannot grow the usual bananas from seeds. These banana plants don't produce viable seeds like wild bananas do.

Notes:

If your outdoor environment is inadequate, you'll need an indoor location with similar requirements (12 hours bright light and constant warm temperature and humidity). You'll need a large planting container sufficient for its adult size, or be willing to transplant the banana into a larger pot whenever necessary. Always use a pot with a drainage hole in a location where water can drain well. Consider a dwarf variety if you don't have sufficient indoor space. Use half the amount of fertilizer when growing a plant indoors, or cease entirely if you don't have room for a larger plant. (This may be suitable for a houseplant you don't intend to harvest fruit from.)

Some people break off the "bell" (the bunch of purple flower petals at the end) about 15 cm below the last female hand. That way the banana plant puts its energy and reserves into growing big bananas, and not into growing a long stalk. Commercial banana growers also remove some of the bottom female hands, so the remaining bananas grow bigger. Not everyone thinks that way, though. One grower commented that they never cut the flower off the bananas because the hummingbirds love them too much.

The "Banana Bunchy Top Virus" is one of the most dangerous plant diseases.(29) Once infected, even a single sucker, all the plants that are connected (including the mother plant and all its suckers) will be infected and all the plants are stunted. It's spread by a banana pest called "Banana Aphid". These pests are slow and live in colonies and they can transmit the disease in hours.

If the newly planted banana is accidentally damaged (e.g. hit by ball) or if the plant is growing weak, but the plant is still alive, simply cut the plant in half. The banana plant will regrow.

Black spots appear on the skin and spread all over the ripe bananas. Is that reason to be concerned? Not at all. That's just the fruit at the peak of ripeness.

Beech Tree

Description A common deciduous tree in forests, the beech tree has a trunk with smooth gray bark, 2- to 3-feet in diameter. The leaves are up to 5 inches across, oval or elliptical in shape, dark green in color with prominent veins that end in toothy edges. Yellowish green flowers appear in April to May, and the female flowers give way to triangular- shaped beechnuts. The foliage turns golden bronze in fall. This is a large tree, often growing to 80 feet or even more.

Although sometimes used as a landscape tree, the American beech is not well suited to urban conditions; it does not like even low pollution levels. Left unattended, the shallow roots will readily sucker, gradually forming a thicket of trees. This is quite a slow-growing tree, generally adding no more than 6 to 9 inches per year, very gradually achieving a mature height.

Growing Instructions

Optimal Time/Temperature for Germination: It is normally planted as a bare- root specimen in late winter or early spring. Soak the bare roots overnight before planting. (If you purchased a ball-and-burlap tree, soak the ball thoroughly with a hose as you prepare a planting hole).

Optimal Soil Conditions: Choose a planting spot with deep, well-drained soil and where there is plenty of room. most important is a deep, well- drained soil. A soil that drains well will discourage fungi. And furnishing a deep soil may help discourage the shallow rooting so problematic for this tree. Shallow rooting can wreck nearby hardscape features, causing sidewalks and driveways to heave.

Seed Planting Depth, Spacing and Procedure: Beech trees are not fussy about sunlight. They seem to grow equally well in full sun or part shade.

To propagate from stem cutting: Take 6- to 10-inch cuttings from the tip of the branch, from new wood no more than 1 year old. The fall is the best time to start this process. Remove the bottom leaves and soak the cut end in a bucket of water. While the branch soaks, fill a small pot with a mixture of potting soil and wood-based compost (such as pine bark composts). Dip the cut end of the branch in rooting hormone, then plant it in the prepared potting mix. Moisten the potting mix and Cover the pot with a loose clear plastic bag. Place the pot in a bright location and continue to grow it until roots begin to develop and new leaves begin to sprout, Then, remove the plastic bag and continue to grow the cutting indoors over the winter (or on a patio, if you live in a warm climate). By the following spring, the cutting can be planted in the landscape to grow into a tree.

Best Companion Plants and Plants that Hinder: Beech tree's branching pattern, with its impressive density and horizontal orientation, is one of its great features. It is also a low-branching tree. The result of these traits is that the tree casts such dense shade that little will grow under it.

(Lovely picture on this: dwarf and weeping beech versions fit well in gardens planted with perennials and small shrubs. Plant purple leaved weeping beech trees as a backdrop to more brightly colored, large shrubs such as lilac and weigela.)

Crop Maintenance Newly planted trees can be susceptible to the wind, so it's a good idea to drive a stake and tie the tree trunk *loosely* to the stake for the first few months of growth. However, at this point, the stake should be removed, as the tree will develop better long-term strength if the wood is allowed to flex in the wind.

Moisture Requirements & Solutions: This plant has average water needs. Make sure it gets about 1 inch of water per week through rainfall and/or irrigation. Do not allow water to puddle around the tree, as this can cause root rot. Keep young trees well watered.

Weeding Needs & Solutions: Since beech trees are shallow rooted, mulch around the trunks to prevent damage to the roots from lawn machinery. Grass won't grow well under mature trees due to their cascading growth habits.

Feeding Needs/ Optimal Natural Fertilizers: A balanced fertilizer is acceptable. In early spring, apply 1 pound of the fertilizer per 100 square feet. Spread it over the ground directly under the tree's canopy and water it in. Older trees don't need plant food.

Pests, Diseases & Solutions: the American beech tree has been under attack from a foreign invader and suffers from a serious disease: beech bark disease. Two things working together cause this disease: a non-native insect (the beech scale) and certain fungi (*Nectria* species). The beech scale insects pierce the bark (the bark is thin, making their task easier) to remove sap. These piercings give the fungi open access to the insides of the tree. The result is bark cankers. At worst, death can result from beech bark disease. At best, the tree's looks will be marred. Control of the disease is possible, but it is difficult and best left to professionals.

Understanding what causes beech bark disease should dissuade you from engaging in the time-honored practice of carving initials in your beech tree that will be visible for decades. The thinness of the bark is what has made this tree the preferred target of such carving: A knife easily pierces the bark, leading to scarring that never heals. Just as piercings from an insect can open the way to damaging fungi, so can human-made piercings.

Beech trees have few major pest problems. Fruit drop can be a litter problem near formal gardens. Beech trees can sucker freely sending up new trees and become overcrowded. Prune in early summer to clear out these trees as needed. The tree has the ability to resist damage, effectively overcoming infections.

Harvest and Storage Though ripe nuts are deliciously edible, the unripe nuts of this tree contain small amounts of a mild toxin known as fagin, confined mostly in the skin of the nuts. Large quantities of unripe nuts need to be consumed before ill effects occur, but this does occasionally happen with dogs and grazing animals. The American beech is less toxic than the European beech, but there are instances of poisoning, usually in the fall, when dogs or other animals eat the fallen nuts. The illness is usually self-correcting in a short time, and treatment is rarely needed.

When to Harvest/Number of days to Maturity: Beech nuts begin to ripen in late August and can be harvested into October. One gatherer offered this tip "If you find trees that are putting out nuts in a certain year, spread a sheet underneath it. And let them fall on that rather than trying to pick them up out of the duff."

Furthermore, do beech trees have nuts every year? We know that, generally speaking, trees require a lot of energy to produce nuts so a tree won't produce every year. The books
say every two or three years for beech nuts and three to seven years for oaks, but take it all with a grain of salt.

Optimal Storage Temperature and Conditions: The fruit known as beechnuts or mast, is found in small burrs that drop in autumn. They are small, roughly triangular and edible, with a bitter, astringent, or in some cases, mild and nut-like taste. They have a high enough fat content that they can be pressed for edible oil.

Recipe- Peel as many beech nuts as possible. Heat the pan on low and melt 1 Tbs of butter. After the butter is melted, wait 1 minute and add the peeled nuts. Sprinkle sea salt to taste. Nibble or toss over a salad.

Seed Saving: To propagate from seeds: Gather some dried, ripe beechnuts from the tree in the fall, and plant each one in a container filled with potting mix. Cover the seeds with 1/2 inch of potting mix and place them in a sunny indoor location. Keep the potting mix moist but not wet until the seed sprouts, then continue growing in a bright location. At the end of the first year, transplant the seedling into a larger pot and continue growing it until it reaches a height of 1 to 3 feet, at which time it is ready to plant in the landscape. You'll need patience, as this can take several years.

Notes:

The beech nuts are prized food for bears and squirrels. t is grown and harvested for flooring and furniture. As a native tree, beeches serve many positive purposes for the environment. Hollow trees house birds and small mammals. Interesting shaped triangular beech nuts provide food for wildlife like birds, mammals, including mice, squirrels, chipmunks, black bear, deer, foxes, ruffed grouse, ducks, and bluejays.

Regarding pruning, these trees will readily sucker from the shallow roots. Keep these suckers cut away as they appear. Damaged or diseased limbs can be removed as you notice them. With diseased branches, it is fine to cut them back to a point a foot or so below the diseased area. Beech tends to develop a low canopy, so if you prefer a more towering tree, cut away low branches. Because large forks tend to be weak, it is best to remove one of the two branches as these forks appear. This will be easiest to do as the tree is young and still developing; mature trees will probably need an arborist to do the trimming. Late winter or early spring, before the tree has begun active new growth, is the best time to perform major trimming for shape.

Sneaking a few raw beechnuts is fine, but for the most part, they need to be cooked or roasted in small portions first because raw, they contain the toxin saponin glycoside (can cause gastric issues with raw). Add them to salads, müsli or vegetables. Their oil was used as lamp oil also.

According to experts, the tree has a lifespan of 300-400 years.

Blackberry

Description: a perennial shrub in the family Rosaceae that is grown for its aggregate black fruit. Though they grow wild in many areas of the world, the cultivated varieties produce distinctively dark berries that are juicy and sweet, and usually larger than their wild cousins. Traditional training varieties grow much like the wild blackberry, shooting out suckers and sprawling all over the place, which means they'll need to be trellised with wires and trained along them to control the growth. Old fruiting canes will need to be removed, but new primocanes (new growth) will not need to be pruned. Trailing varieties often struggle in regions with especially cold winters, and won't fruit until their second year of growth.
Evergreen, Marion, Obsidian, Chester, Hull, and Black Diamond are all popular varieties of trailing blackberry.

Growing Instructions

Optimal Time/Temperature for Germination: The wild Himalayan blackberry is a tenacious invasive species in some parts of the western United States, but cultivated varieties tend to be juicer, larger, and more firm than wild berries. If you're going to plant some, it makes sense to pick one of these varieties, wherever you live, based on the structure of the cane, its growth pattern, and whether or not the variety has thorns. There are hundreds of strains and varieties to choose from, but knowing the basic categories will help you to make an informed decision.
If you live in a region with very cold winters, it's best to select an erect variety with thorns. These stand up to the elements the best and will provide the most solid-possible base for your climate. If you live in a region with very dry, windy summers, it's best to plant trailing varieties, which will stand up to the elements in especially harsh high-desert climates. Most varieties are able to grow in regions with at least 200-300 hours per season under 45 °F (7 °C), including USDA climate zones 7, 8, and 9 in the United States.
In colder climates, blackberries can flourish and ripen more quickly inside a greenhouse. Though they're self-fertile, they'll still benefit from cross-pollination, meaning that it's a good idea to grow two different varieties, if you grow them indoors. They'll need to be exposed to at least 200 hours below 40 °F (4 °C), but kept between 60 and 70 F when inside.

Optimal Soil Conditions: Grow them in most kinds of soil, and in most regions with warm summers and relatively mild winters. You can learn to plant an appropriate variety, train the shoots, and care for your blackberry plants. Blackberries will grow in most kinds of fertile soil, especially slightly acidic soil (between 5.5 and 7 pH) that is rich in humus. Especially sandy orclay-rich soil is less desirable. Select a planting location with good drainage and maximum exposure to sunlight to make sure your berries ripen evenly, though some thornless varieties are prone to "sunburn," so some shade isn't a worry in especially sunny regions.
If you live somewhere with very cold winters, it's best to wait until spring to put your lackberries in the ground. In areas with more moderate winters, planting them in the fall is appropriate to give them a chance of setting for the growing season.

Seed Planting Depth, Spacing and Procedure: Consider the easy planting of upright, erect, or semi-erect varieties. These varieties of blackberry grow more like hedges, and will need to be supported with a T-trellis or a post of some sort. These varieties are easier to control and contain, but require vigorous pruning, shooting stiff new cane straight from the crown of the plant, rather than trailing along the ground. Many of these varieties will produce fruit in the first year of planting. Thorny erect varieties are the hardiest in cold climates. (Illini, Kiowa, Shawnee, Apache, Triple Crown, and Natchez are all popular varieties of erect and semi-erect blackberry.)
Trailing, upright, and hybrid varieties are all now available in thorny and thornless strains, meaning that you can make your harvest a whole lot easier on your fingers. Thornless varieties do tend to be somewhat more sensitive to colder weather, making the thorny varieties a much hardier choice for most climates.
Note that thornless varieties are more vulnerable to birds and other pests.

When you've selected your plot, dig into the earth at least a foot and till the soil of your plot thoroughly to aerate. Mix in a 2 inch (5.1 cm) layer of manure and a 2 inch (5.1 cm) layer of organic soil conditioner to fertilize.
It's best to start small because blackberries can really take over in the proper climate (long, dry summers), it's easy to overwhelm yourself with berries accidentally. If you want to test out how blackberries will do in your area, start with a single erect variety, placed somewhere with room to expand. Plant more rows if you don't get the kind of production you're interested in after starting with one.

If planting several rows, space the rows between 6 and 10 feet apart. Erect plants can be closer together than trailing varieties. You can plant your trellis poles before you put in your plants, or after. Trellising is discussed in the following section.
Set plant (cane) into the ground about 6-8 inches (15.2-20.3 cm) and space between 3 to 6 feet apart from one another. Upright or erect plants can be closer than trailing varieties, which should be more like 6 or 7 feet (1.8 or 2.1 m) apart from one another. Add as much as a gallon of water upon planting the canes.

Blackberry plants purchased from greenhouses will typically have 6 or 8 inches (15.2 or 20.3 cm) of dormant growth sticking out of the top of a ball of soil protecting the rootsystem. They won't always look like the prettiest plant, but will start shooting cane vigorously in the spring. Buy your blackberry starts from a greenhouse in your area a few days before you want to put them in the ground.

For erect plants, plant posts about 6 feet (1.8 m) tall adjacent to each erect plant, with a cross-bar about 3 feet (0.9 m) long, placed about 3 or 4 feet (0.9 or 1.2 m) high on the post. As the canes grow up, you can train the primocane suckers (new growth) around the post to help support the weight of the canes, leaves, and berries.

Erect and semi-erect blackberry varieties will mostly grow straight up, sometimes quite high. To promote growth, it's important to use a post-system of trellising, as you would roses, or another snaking vine. You want to give the blackberry something to climb on. Typically, you won't need to train or trellis erect plants in the first year. Blackberry posts don't need to be elaborate. Plant along existing fences, or use old fence posts to support blackberry. Ideally, posts will be about wrist-thick, so 2 x 2 boards would work fine.

When planting trailing varieties, it's important to give them a horizontal avenue on which to cling. Plant 4–6 foot (1.2–1.8 m) high posts every 5 or 6 feet (1.5 or 1.8 m) along the row, then run two rows of fence wire between the posts, one at the top of the post and one about a foot off the ground.

It's also possible to use twine, string, or wood to connect each post to the next. Use whatever materials you have on hand to let the blackberries climb on. Ideally, trailing blackberries will spread in two rows, one higher and one lower, along each wire. With proper pruning, you can train new hardy growth along the trellis and cut back less-vigorous shoots. Keeping the plants trimmed will promote fruit growth and overall plant health, allowing water and sunlight to reach the most healthy cane.

Best Comparison Plants and Plants that Hinder: Don't plant blackberries near nightshade or members of the nightshade family, including tomato, potato, and pepper. Verticillium wilt, a common blackberry blight, can be transmitted through the soil. Don't plant blackberries in the same vicinity of other brambles, or near any wild-growing blackberry. Start your blackberries on a fresh site to avoid common diseases that can be transmitted.

Crop Maintenance

Pull weeds that grow around the blackberries and continue watering the plants weekly as the seasons change. You should see leaves and maybe some blossoms in the late spring, or you might not, depending on the climate and variety.
Canes and new shoots should be significant, though you probably won't get any fruit. In the late spring, cane should be shooting aggressively and you can practice training it out along the trellis if you want to, or support it with the post. In general, though, you shouldn't worry about cutting anything back, because you won't get any fruit, so you want to let the plant establish a solid root system. In the winter, after your first season, you can cut cane back to about 4 feet (1.2 m) tall and 2 feet (0.6 m) wide, to let nutrients move back down to the roots. Depending on the kind of growth you got during the season, you can winter your plant accordingly. Winterizing blackberry is discussed in the following section.

Prune away aggressive new canes during the second year growing season.
Unburdened shoots will put on more fruit than the same shoots in a cluster of bramble.
It's to your advantage, whatever the variety, to prune the blackberry regularly.
When your plant is ready to put on fruit, take action to keep the most hardy shoots healthy by cutting back new shoots from the base of the plant. Train the most blossom-laden shoots along your trellis system, or up the post, and cut back new growth that will sap water and sunlight from the healthy shoots. Don't be afraid to aggressively cut back blackberry. Over-burdened bramble systems won't put on as much fruit in the same amount of space as a tamed and well-pruned plant. The plant will come back just as aggressively, if not more so next year, so feel free to really hack it back. It's very difficult to kill a healthy plant by pruning aggressively.

After the growing season, the shoots and canes will start browning and dying down. It's usually best, however, to wait to prune it back until it's died off significantly, waiting until the late fall or winter to prune the blackberry entirely. This gives the plant enough time to suck the nutrients back from the long shoots into the root system, keeping it healthy for the winter.

Trim back erect varieties to about 4 feet (1.2 m) tall and no more than a foot or two wide, then cover them with matting for the winter, if you're going to have lots of snow, or you can leave them exposed. It's a good idea to trim back the plant to the strongest 3 or 4 major primary canes to give the plant the best possible start in the next growing season.
Trailing vines can be pruned by removing the fruiting canes and leaving the primary branch canes intact unless they've died and no longer put on fruiting cane. Typically, blackberry canes will put on fruit for about 2 years before dying off, though new canes will continue growing from the base.

After your plants endure each winter, give them the best possible start by layering compost or the fertilizer of your choice around the blackberry before the growing season. Cared for properlyand re-energized with fertilizer, blackberry plants can continue fruiting for as many as 20 years. Invest in them, and they'll give back.

Moisture Requirements & Solutions: Blackberry plants might need between 1 and 2 inches of water per week, depending on the climate. If you've got a large plot of berries, install a drip line irrigation can be a good option, while smaller plots will be fine to hand-water.

Weeding Needs & Solutions: Mulching with pine bark, pine needles, or plastic weed matting can help to protect the soil in the immediate area surrounding the blackberries from weeds and erosion. About 2 inches (5.1 cm) of any type of mulch will be sufficient for blackberries. Be sure to leave a little space between the mulch and the plant itself.

Feeding Needs/ Optimal Natural Fertilizers: Composted manure and organic compost applied yearly in spring.

Pests, Diseases & Solutions: Since there's nothing more frustrating than going out to pick your berries and finding the best ones half-eaten, it's important that you take a few quick and easy steps to head off your bird friends at the pass. Hang something flashy at the end of each row. Strips of mylar tape or shards of broken CDs are common bird-deterrents. You want something that will catch the breeze slightly and reflect the sunlight, since bright or flashing movement will scare birds away. Plastic owls can be planted at the edge of your blackberry patch and will often frighten away the lesser birds. If the birds won't leave your berries alone, you can get some mesh bird netting to throw over the top of your plants. They'll still be able to get all the sunlight and water they need, but will keep the birds away. It's unfortunately possible for smaller birds to get stuck in some kinds of bird nets, making it a more obtrusive option for some growers.

Diseased plants and cane need to be eliminated and isolated from the rest of the plant, either by aggressive pruning or removal.
Yellowish leaves tend to be a sign of nitrogen deficiency in the soil, which you can quickly mend by spreading some coffee grounds around the base of the plants that seem to be struggling. Yellow spots, on the other hand, can be a sign of the bushy dwarf virus or blackberry calico, which means you'll need to remove the affected plants.

Mites, cane borers, aphids, and Japanese beetles can affect blackberries, depending on the region you live in. Keep an eye out for munched-on leaves and berries and take action accordingly. Soap, orange oil, and tobacco are organic insecticides you can make yourself. Larger pests can be removed by hand and disposed of in soapy water. Consider introducing natural predators, such as parasitic wasps and ladybugs, to combat your pest problem. Various fungi and blights such as crown rot, double blossom, or cane blight can be treated with fungicides like Bordeaux mixture or lime sulfur.

Harvest and Storage

When to Harvest/Number of days to Maturity: Sometime in early summer, beautiful white blackberry blossoms should form along healthy shoots, which will give way to hard green berries, which will gradually turn red, then deepen into a soft and dark purplish black color.

How to Harvest: Berries are ready when they pull easily from the stem of the vine without much effort. There should be no red remaining on the berry, especially at the top where it meets the stem. Pick in the coolest part of the day, usually the morning, before the sun heats them, and store them in the refrigerator to keep them fresh. Blackberries will stay fresh for no more than 4 or 5 days, depending on the variety, and will soften much more quickly when picked warm. It's likely you'll need to pick them every 2 or 3 days, at least, depending on the climate. They'll start coming on all at once, and it's important that you pick them before the birds get to them and before they over-ripen on the vine.

Optimal Storage Temperature and Conditions: If you can't eat all the blackberries you grow fresh, they're great for freezing. Wash, select, in tray with parchment paper leave your blackberries in the freezer overnight to ensure that they're completely frozen, then package, label and date (good for 8 months). As a general rule, you shouldn't thaw berries before using them in baking recipes, as this can throw off their moisture content.

Seed Saving: Grow blackberries from cuttings, you should take the cuttings in the fall dormancy period of the plant. You'll have to wait approximately two years for a blackberry bush to produce fruit. You cannot grow from a vine clipping. Take a root cutting and keep it damp during the transplanting process. Once you've gotten the root cutting, choose somewhere to plant it that's at least two feet away from your current blackberry bush(es). Dig a hole that's about the same depth as your existing bush(es) and place the cutting into the hole. Replace the soil, water the cutting, and then continue to water it regularly until you begin to see growth.

Notes: You can grow blackberries in containers that are at least 5 gallons in size and the container should have holes in the bottom for drainage.
If bitter berries and a hard center, they're not getting enough water, sun, or growing time. Water more, change where they're planted to get more sun (if that's the problem), and leave them on the bushes longer to mature before picking.
Blackberry bushes take over. Even if you think you have them under control, they're sending out suckers somewhere else unseen. They are considered to be a plant pest in many parts of the world.

Blueberries

Description: Bees and wind help Blueberry (Vaccinium corymbosum) bushes to cross-pollinate. Blueberries have both male and female organs on the same flower, but not all are self- pollinating. If you want to be sure that your blueberries will be pollinated, plant different varieties within 100 feet (30.5 m) of each other. Doing so allows bees to travel between plants and cross- pollinate.

Highbush is the most common type of blueberry and it yields large, dark berries on bushes six to eight feet tall. The Lowbush super-hardy variety grows low to the ground between 6 and 18 inches tall. If you do not have a lot of space to plant your blueberries, maybe opt for the lowbush or highbush variety instead of the rabbiteye variety.

Growing Instructions

Optimal Time/Temperature for Germination: Choose highbush blueberries for a warm climate. This variety grows well in hardiness zones 4 to 7.

Select lowbush blueberries for cold weather. This variety is resilient in cold weather and best for plant hardiness zones 2 to 6.

The rabbiteye bushes grow in a high heat climate. This variety does well in zones 7 to 9 and can tolerate heat and drought.

Optimal Soil Conditions: Fruit plants need as much sunlight as possible, especially when the berries begin to develop. Blueberries do well in raised beds that are 3 to 4 feet (0.9 to 1.2 m) wide and 8 to 12 inches (20.3 to 30.5 cm) high made by 1 x 8-inch cedar boards. Cedar is a good choice for a garden bed because it won't rot with age.

Choose a high or raised spot in your garden for the garden beds. Avoid low-lying areas and spaces where water tends to collect and/or flood.
Mixing peat moss into the soil can improve drain, as peat moss can absorb and hold 10 to 20 times its dry weight in water. Use a planting area approximately 2-1/2 feet in diameter and 1 foot (0.3 m) deep. Remove no more than half of the soil and mix the removed soil with an equal ratio of peat moss. Mix the peat moss/soil mixture back into the planting area.

Blueberries prefer an even more acidic soil with a pH between 4.09 and 5.0.

Your local agricultural extension office should have soil testing forms, bags and instructions available. If the pH level is higher than 5.0, enrich the soil to make it more acidic using acid compost or planting mix. If the soil pH is above 4.5, mix in granular sulfur to lower the pH level so it is closer to 4.09.
After making adjustments to the soil, always test its pH level again.

Seed Planting Depth, Spacing and Procedure: Use plants that are 2-3 years old so they will produce fruit quicker than the younger ones. Plant the bushes in early spring. The fruit will ripen toward the end of summer.

Pat the blueberry plants with the heel of your wrist to loosen the roots. Do this all around the outside of the container and then turn it sideways and slide the plant out by tapping the bottom of the pot. Do not grab the plant by the stem as this can dislodge the roots and damage the plant.
Set highbush blueberries 6 feet (1.8 m) apart.
Set lowbush blueberries 2 feet (0.6 m) apart. Set rabbiteye blueberries 15 feet (4.6 m) apart. Dig a small hole for each plant. It should be shallow enough that the top of the root base is 1 to 2 inches (2.5 to 5.1 cm) above ground. Pat soil up around the top of the plant to cover any exposed roots with ½ inch (1.3 cm) of soil.

Then, add 2 to 4 inches (5.1 to 10.2 cm) of mulch to the planting side. This helps to keep the ground moist, prevent weeds, and enrich the soil. Bark mulch, sawdust, and grass clippings are all good choices for mulch for blueberries. Replenish the mulch every couple of years. Always water the area thoroughly after planting.

If you do not want to use grown blueberry plants, you can grow blueberries from seed. Sow seed in a flat, 3-inch deep box filled with finely ground moist sphagnum moss.

Keep the moss moist in a warm room between 60 and 70 degrees Fahrenheit and covered with a sheet of newspaper.

The seed should germinate into seedlings within one month. Place the seedlings in direct sunlight and continue growing them in the moss until they are about 2 to 3 inches (5.1 to 7.6 cm) tall. You can then transfer the seedlings to a larger pot or to your garden.

Water the seedlings well and maintain them in a sunny location. After two to three weeks, fertilize the seedlings with liquid fertilizer at 1/2 the recommended rate.

Best Comparison Plants and Plants that Hinder: Basil, thyme, ferns, lilacs, strawberry, azalea, hydrangea, evergreens trees, mountain laurel, and cranberry bushes grow well with blueberries. Do not plant tomatoes, potatoes, or eggplants next to them.

Crop Maintenance The first year that you plant the blueberries, clip all of the blooms off of the plants. This will allow the plants to become resilient before they start producing fruit. Pruning also removes crowded or stagnant stems and allows productive parts of the plants to grow stronger. Every year thereafter, remove low growth around the base of the bush by clipping at an angle at the node of each branch. Remove any dead branches and/or twigs from the plants, as well as any discolored, blotchy growths. Prune lowbush blueberries by cutting the stems to ground level, but do not prune the full plant, as the pruned stems will not bear fruit the next season. To ensure your plant produces each year, only prune half of the plant each year. The pruning process should eliminate about 1/3 to 1/2 of the wood growth on each plant. Thin out the branches further if necessary.

Moisture Requirements & Solutions: Use one to two inches of water per week. Be careful not to over-water or drown your blueberry plants.

Feeding Needs/ Optimal Natural Fertilizers: If your blueberries grow less than a foot annually (or less than 4 inches for lowbush plants), try using a natural fertilizer to boost the plant's productivity. If possible, use an organic fertilizer to avoid hurting the roots and effectively deliver nitrogen to the blueberries.

Seed meals such as soybean and alfalfa are good organic options. Use 1/4 cup to 2 cups of fertilizer per plant depending on the size. Blood meal and cottonseed meal also work well as fertilizer. Fertilize the plants in early spring and again in late spring for best results.

Always water well after fertilizing.

Pests, Diseases & Solutions: Blueberry bushes are resistant to most pests and diseases. Pine needles may be a good mulch in summer, especially if there is a lot of hot sun, as they are also used to keep the base of strawberries moist in summer. They may also prevent an infestation of wood pigs/slaters and black worms in some regions.

Harvest and Storage

When to Harvest/Number of days to Maturity: can produce fruit every summer for up to 20 years. Harvest in late July or early August. Some varieties, including rabbiteye, take a bit longer to fully ripen. Each year, the time of harvest will vary slightly depending on climate conditions.

How to Harvest: Cover your blueberries with bird-proof netting in early summer to avoid getting all of your berries eaten by birds.

Optimal Storage Temperature and Conditions: Highbush variety is best for eating fresh and for making desserts. Lowbush berries are small and sweet. They are good for baking muffins and pancakes. The Rabbiteye bushes are typically smaller than highbush berries and they ripen a bit later in the summer than other varieties.

Look for berries that have white, fuzzy mold and toss them out. The mold can be found around the stem area. You will also want to discard any berries that are too soft or wilted looking; they are too ripe and will rot quickly. Sorting the bad berries from the good ones will prevent mold from spreading. Most of the stems should have fallen off on their own, but it would be a good idea to go through the berries again and pick off any remaining stems. They won't harm you if you eat them, but they will taste bitter.

In general, you should not wash berries until you are ready to eat them. Washing them too soon can lead to mold. Washing them with vinegar water, however, can kill mold spores and prevent from mold growing in the first place. Put the berries into a colander or strainer, and dunk them into a bowl filled with the vinegar water. Shake the colander or strainer, then pull it out. Rinse the berries using cool water; this will get rid of any vinegar flavor. Any moisture left on the berries will cause them to mold too soon, so you will need to make sure that they are completely dry before storing them. There are a few ways in which you can dry the berries: Line the inside of a salad spinner with a few paper towels and put the berries inside. Spin them for a few seconds until there is no more moisture. Spread the berries out on a tray and let them air dry. Use a fan to speed up the process.

Store in a clean basket (Avoid using anything made from metal. Blueberries can react with metal, leading to discoloration and stains on both the berries and the metal container.) The paper towel will help soak up moisture and prevent mold from developing. The best place to store the berries is on the middle or bottom shelf. Try not to keep them in the crisper. When kept in the fridge, blueberries can last five to ten days.

If freezing you'll be freezing the berries individually first. This will prevent them from sticking and clumping together. You can also use a pan, casserole dish, or baking sheet. If you are using something made from metal, consider lining it first with parchment paper to protect the blueberries. It will take about two to three hours for the berries to freeze completely. Close up in freezer baggie and the berries will be good for up to one year.

Seed Saving: Blueberry seeds can be harvested from fresh berries on plants, from the produce section at the grocery store or even from frozen berries in your grocer's freezer. When you plant blueberries from seeds, it can take several years before the plants produce fruit. Put 3/4 cup of blueberries in a blender and add 3/4 cup of warm water. Select healthy, ripe blueberries. Blend the blueberries for 15 seconds. Let the berries sit for five minutes. During this time, seeds will go to the bottom of the blender while pulp debris separates to the top. Pour the debris off the top of the blender very slowly. Add another cup of warm water to the blender and let the mixture sit for another five minutes. Once again, blueberry seeds that are viable will float to the bottom, and pulp and debris will remain on top. Empty the pulp off the top again, very slowly. Repeat steps 3 and 4 until there is nothing left in the blender but water and blueberry seeds. Pour the blueberry seeds into a fine mesh sieve. Use a sieve that's woven small enough that the tiny seeds won't go out through the bottom. Allow the water to drain off the seeds for several minutes. Pour the blueberry seeds out of the sieve onto paper towels or coffee filters.
Spread them out into a thin layer and allow them to dry for three days. Each day, stir the seeds around to make sure they dry evenly.

Plant dried blueberry seeds right away, or put them in a wax or paper envelope and store them in the freezer until planting time.

(If you don't have a blender, mash the blueberry seeds by hand in a bowl, then put them into a glass jar and add water and drain as in the steps above. There are around 20 seeds in a single blueberry.)

Buffaloberry Shrub

Description: Shepherdia, is dioecious and called bullberry or buffaloberry (a genus of shrubs in the Elaeagnaceae family). The plants are native to northern and western North America. Also called sakakawea silver buffaloberry is with silvery, oblong leaves and predominantly red fruit and is winter hardy, drought and alkali tolerant, and is recommended for conservation use in multi-row farmstead and field windbreaks, wildlife habitat. Native Americans worked mostly with the Russet Buffaloberry.

Growing Instructions

Optimal Time/Temperature for Germination: Zones 3 to 9. If you can offer it some protection, it may be able to grow in Zone 2 also.
Sakakawea is winter hardy down to -40°F. Mean survival ranges from 60 to 95 percent under field conditions. Buffaloberry reaches a mature height of 12 to 16 feet in 15 to 20 years. Crown width is 16 to 19 feet. Sakakawea spreads by sucker growth and can form a dense thicket. It fixes nitrogen via root nodules. Branches are spiny and have gray-brown bark. The leaves are opposite, simple, and oblong.

They are 1 to 2 inches long and ¼ to ⅜ inch wide. Both surfaces are covered with silvery scales, and side veins are indistinct. Male and female flowers grow on separate plants.

Propagation is by germinating the seeds after a period of stratification (cold storage) or by rooting cuttings. Scarifying the seeds can also aid in improving germination rates. The shrub will also naturally clone itself.

Optimal Soil Conditions:

For spring planting, stratify the seed for 90 days in damp sand at 41° F. Sakakawea is highly recommended for revegetation of surface mined lands, transportation and transmission corridors, flood plains, and other disturbed areas as well.

It performs well on a variety of soils that are deep or moderately deep, well to somewhat poorly drained, and fine to moderately fine textured. Sakakawea is tolerant of moderately saline and high pH soils. Soil pH - 5.5 to 8.0. Adapted to moderately alkaline and saline soils. Needs full sun.

Seed Planting Depth, Spacing and Procedure: Seed production is good to excellent in most years.

Seed can be planted in fall or spring. For spring planting, stratify the seed for 90 days in damp sand at 41° F. (Cultivate the site and keep it fallow for at least 1 year before planting seedlings.)

Plant the seedlings in spring as soon as the ground thaws, when soil moisture is high. Recommended spacing in the row is 3 to 4 feet. Use 2-year-old seedlings that are 12 to 24 nches tall and have a stem diameter of 3/16 to 1/2 inch just above the root collar. One-year-old seedlings that reach this height and diameter are also suitable.

If planting by seed, do 30 to 50 seeds per linear foot of row, and cover with ¼ inch of soil.

Best Comparison Plants and Plants that Hinder: frequently found in conifer / pine forests.

Crop Maintenance

Moisture Requirements & Solutions: Drought tolerant. Not adapted to wet, poorly-drained sites. Its water-seeking roots can draw down the water table in dry areas. Once established, no fertilizer or water needed.

Weeding Needs & Solutions: Establishment and rate of growth are affected by weed competition, shade, drought, and adverse soil conditions. Control weeds for 5 or 6 years.

Pests, Diseases & Solutions: It has no apparent insect problems. Common diseases include stem decay and branch canker. Deer commonly browse the twigs and leaves and bears favor the berries. Stems are sometimes broken by snow.

Harvest and Storage

When to Harvest/Number of days to Maturity: The dry, thin-walled fruit ripens in September and October and is ⅛ to ¼ inch in diameter. The fruit is predominantly red, but 12 to 20 percent of female plants produce yellow fruit. The shrubs begin producing fruit in 3 or 4 years.

How to Harvest: Mature fruit can be collected in September and processed by wet maceration.

(Good late winter food source for birds) Harvest the berries after they ripen in the fall. Place a tarp or mat below the berries and shake the branch, only the ripest berries will fall and this will allow the other berries to continue ripening.

Optimal Storage Temperature and Conditions: They are edible and can be eaten fresh or dried. They are quite tart, though they will sweeten up a bit if they are hit with frost. These fruits can be used in a variety of recipes like jams, jellies, and sauces. Buffaloberries may be whisked into a foamy froth and then combined with copious amounts of sugar to make Indian ice cream, which is a highly sought-after treat that is still popular today.

Seed Saving: Mature stands of buffaloberry can be rejuvenated by late winter coppicing (removal of all top growth leaving 2 to 4-inch stumps). Regrowth usually exceeds 50 percent of pre-coppiced height within one.

Store the seed under cool, dry conditions.

Notes: For seed or plant increase: For the purpose of establishing a seed orchard, limited quantities of seed may be available from the NRCS Plant Materials Center.

Urban/Recreational Ornamental foliage and fruit, but limited in use because of thorns and suckering habit.

CAUTION: Advised to not eat too many buffaloberries in any form for chance of diarrhea or death.

Carob Tree

Description: This is from a Carobaceae classification and the carob pods are edible. Carob (Ceratonia Siliqua) is member of the Fabaceae (Legume) family. (technically, locust trees are two genera of plants, Robinia or Gleditsia and there are more than 22 species of locust trees.

The ripe, dried, and sometimes toasted pod is often ground into carob powder where the powder and chips can be used as a chocolate alternative in most recipes. Carob flowers attract honey bees and in areas with healthy bee populations the very distinct aroma, blooming trees will be covered with thousands of bees. Information states that it is a dioecious tree, which means each tree bears male or female flowers. This evergreen tree with pinnate leaves of two to six oval pairs can grow to about 30 ft. tall. The trunk of the carob tree is a work of art by Mother Nature; with large, smooth, muscular ribs of hard, dark wood, they can grow to be 5 feet wide (1.5 meters). This tree will tend to grow in spread rather than height, giving it its distinctive protective look. The leaves are oval, dark green and shiny and 12 to 30 centimeters long. The foliage provides welcome shade in hot countries. They form a very effective curtain against noise and it's an excellent fire barrier as its leaves burn very poorly. The long, flat brown carob pods are 4 to 12 inches (10 to 30.5 cm.) long. The trees are usually single sexed so you'll need a male and female to produce pods (may be able to identify which is which by a 3rd year of growth). One male tree can pollinate about 10 to 20 females. Male and hermaphroditic flowers emit a sweet odor that also attracts butterflies, wasps, and flies. Female trees produce large, light pink blooms when mature.

Other known names are St. John's Bread, African Bean tree, Old World Locust Tree and Carob Bush. As a funny cultural note, the seeds are extremely hard, and they are called "karats" as they were used as the basic measure to weigh jewels and such.

Growing Instructions

Optimal Time/Temperature for Germination: Carob grows well anywhere that citrus grows and is grown for its fruit (pod). Sowing seed directly is probably the most common method for how to grow carob trees. Fresh seeds germinate quickly, while dried seeds need to be scarred and then soaked for a period of time until swollen two to three times in size. One plan is to ow in individual tree tubes or recycled milk cartons. The potting mix should be sandy and well-draining. Transplant seedlings when they attained a second set of leaves to reduce damage to tap roots. They can be planted in spring, summer, or autumn (germination for carob trees is only about 25 percent certain.)

For the home gardener, an established 1-gallon (4 L) carob tree start might more prudently be purchased from a nursery. Keep in mind that conditions in your garden must closely mimic those of the Mediterranean, or grow carob in a greenhouse or in a container, which can be moved into a protected area indoors. Carob trees may be grown in hardy zones 9 to 11 for it can tolerate temperature down to 20 F (-7 C) temperature.

Optimal Soil Conditions: A warm and drier climate is ideal for carob growing. Tree care dictates establishing the carob tree in an area of the landscape in full sun and well-drained soil. While carob can withstand drought and alkalinity, it does not tolerate acidic soil or overly wet conditions so having soil at pH 6.0 to 8.0 (neutral or alkaline) soil is of the essence. It is well suited to clay soil, but it will adapt to other types, as long as well-drained. Carob tree needs a position sheltered from the wind. If growing in a hot climate, it'll not mind growing in a position that receives partial sun.

Seed Planting Depth, Spacing and Procedure: Transfer the seedlings to the ground at a planting depth of 1-2 inches once they reach 3-4 inches high. (see other notes)

Companion Plants and Plants That Hinder:
Instead of list of companions or antagonists: found good learning information to combine plants suitable to a respective environment to create your own guild-

10 potential centerpieces: apple, mango, macadamia, pears, pecan, mulberry, chestnuts, carob, avocadoes, date palms. / 10 potential understory trees: papaya, hazelnut, dwarf apple, guava, coffee, citrus (anything), almonds, nectarine, peach, cacao. / 10 forms of nitrogen-fixing foliage: pigeon pea, ice cream bean, Siberian pea, lupin, clover, vetch, groundnut, kudzu, honey locust, carob. / 10 dynamic accumulators: borage, comfrey, chickweed, yarrow, nettles, chicory, amaranth, moringa, lamb's quarters, mulberry. / 10 useful ground covers: sweet potato, red clover, salad vegetables, parsley, peanuts, squash, pumpkins, cucumbers, rhubarb, strawberries. / 10 pest control plants: mint, peppermint, basil, dill, marigold, sunflower, lemongrass, citronella, lavender, coriander.

Crop Maintenance

It's a wild tree, which means you can leave it without
pruning. However, pruning carob tree when it is young helps it attaining the desired shape you want. The tree must be pruned regularly so that air and light can penetrate. Young stems can be removed without affecting the production of carob. Also remove the tangled, weak and any damaged or diseased branches from time to time.

Moisture Requirements & Solutions: Water the carob infrequently, or not at all, depending on your climate. Really, the biggest threat to the carob is its dislike for soggy soil and overly wet conditions, which lead to stunted trees and inability to absorb nutrition, causing yellowing and leaf drop. Water the carob infrequently, or not at all, depending on your climate.

Weeding Needs & Solutions: Remove weeds nearby in order to facilitate pods harvesting. So perform one or two times per year depending on your climatic conditions.

Feeding Needs/Optimal Natural Fertilizers: Generally, an established plant will not need to be fertilized, but if problems are plaguing the tree, a dose of fertilizer may be beneficial and, of course, cut back on irrigation. Fertilizer is often unnecessary for carob trees. Side dressing the plant with well-rotted manure, twice a year is
sufficient

Pests, Diseases & Solutions: Once established, carob trees are strong and resilient and are affected by few diseases or pests, although Scale may be an issue. Severe infestation of these immovable armored insects may cause oddly shaped and yellowing leaves, oozing bark, and general stunting of the carob tree. Prune out any areas that are afflicted with Scale. Some other insects, such as predatory lady beetles or parasitic wasps, may afflict the carob as well and can be treated with horticultural oil if absolutely necessary. There are only a few pests and diseases that disturbs

this tough tree. Be aware of squirrels, scale insects, and carob moths. In diseases, it gets killed due to root rot because of overwatering.

Harvest and Storage

When to Harvest/Number of days to maturity: Be patient as carob trees grow slowly at first but begin to bear in the sixth year of planting and may remain productive for 80 to 100 years. After flowering in the fall and winter, carob tree develops the edible seed pods in the spring. You can pick the pods when they are green and soft and about 4-5 inches long. You can consume the green pods raw for the sweet pulp inside. A 25 year old tree can produce 125kg of beans.

How to Harvest: The pods are normally harvested in autumn. Collection of pods can be picked once they turn a glossy brown color. Knock the fruit down with a long stick and gathering them together with the help of laid out nets. This is a delicate task because the trees are flowering at the same time and care has to be taken not to damage the flowers and next year's crop.

Optimal Storage temperature and conditions: The pod is most familiarly known for its use ground into a flour and substituted for cocoa beans. The carob can be eaten fresh. Pick and wash the ripe pods and boil in just enough water to cover, or steam until tender. Cooking softens the pods, making splitting them open fairly easy or cut them lengthwise with a sharp knife. Remove seeds, cut pods into small pieces and place on a cookie sheet. Dry in oven on low heat or in the sun. the pod pieces should be really crisp but not burned. As small amounts at a time, put the dried pieces in a blender or food processor to grind into powder and sift to remove chunks left and repeat process.

Some culinary usages are candies, deserts, dressings/marinade, jellies, preserves, sauces/. salsa, molasses, juices, and teas.

Another plan: Place the carob pods in a warm, dry place for five to 10 days, or until the seeds rattle when the pods are shaken. Snip off the ends of the pods using sharp, sturdy scissors. Pry open the pod and shake out the seeds. / Soak the carob seeds in cool water for one to two hours. Gently rub the seeds to remove the sticky, dried-on pulp. Rinse them thoroughly and lay them flat on a sheet of paper towel for a few hours to dry. / Rub the edge of each carob seed with a fine rasp to weaken the hull. Rub gently until the brown outer coat thins and the light inner hull is exposed. Do not rub all the way through the hull since the seed can die. Place the carob seeds in a bowl. Heat water on the stovetop until it begins to boil. Remove the water from the heat and pour it over the seeds until they are covered. Soak the seeds for 24 hours.

Prepare growing containers while the carob seeds soak. Fill 4-inch peat pots with a mixture of half sterile compost and half perlite. Pour water onto the mixture until it is saturated. Press the surface lightly to extract the excess moisture. / Poke a 1 ½ inch deep planting hole in each growing container. Sow one carob seed in each planting hole. Cover the seeds with sterile compost. Drizzle water onto the compost to settle it around the seed. / Place the peat pots on a shallow tray near an unshaded, south- facing window that provides eight to 12 hours of natural light daily. Provide supplemental light with a fluorescent lamp, if necessary. / Warm the bottom of the peat pots using a propagation mat or heating coil. Maintain a temperature of 70 F at all times during the germination process. Do not lower the temperature since it may cause the seeds to go dormant. / Maintain a constant level of light moisture in the growing mixture while the carob seeds germinate. Allow the surface of the growing mixture to dry out slightly before watering again.

Watch for germination in 30 to 45 days. Turn the propagation mat off once the seedlings emerge. Decrease watering to prevent a fungal infection called damping-off. Allow the top 1/2 inch of the growing mixture to dry out between waterings. / Transplant the carob seedlings once they grow to 3 inches in height. Tear off the bottom of the peat pots and transplant them directly into the garden or into
large containers filled with a soil mixture of half loam and half sand.

Notes: Propagation methods are seeds and grafting.

This food doesn't contain the theobromine which is associated with migraines by real chocolate in some people.

While people have long used the pod husks for medicinal purposes, it also contains a polysaccharide gum, which is odorless, tasteless, and colorless, and is used in many products like adhesive and manufacturing cream cheese or ice cream. (seeds are 35% gum.)

Livestock may also be fed carob pods and in times of famine, known as "the last source of (human) food in hard times".
Carob trees are used as windbreaks around orchards. Because of their dense foliage, they are sound buffers against noise from factories, roads, and railways.

Carob timber is hard and close-grained, and has been used to make utensils as well as fuel. Carob wood also was traditionally used to make slow-burning charcoal.

It turns out that leaves of the carob plant are a rich source of antibacterial plant compounds that can kill one of the microbes often responsible for causing food poisoning.

Cherry Tree

Description: any of numerous trees and shrubs of the subqenus Prunus subg. Cerasus producing a small fleshy round fruit with a single hard stone. Also valuable for its hardwood. Cherry trees are very sensitive fruit-bearing trees

Standard-sized trees tend to be more resilient and yield more cherries. They are larger in size and have a longer lifespan than dwarf trees. Dwarf trees are smaller and take up less space. They also yield fruit at a younger age, about 2 - 3 years old.

Both sizes are popular for growing cherries, and you should select the best size to suit your climate zone and growing preferences. Dwarf trees are more sensitive because they have a less vigorous root system. For sweet cherries, standard sized trees grow to about 20–40 feet (6.1–12.2 m) tall, and dwarf trees grow to 8–15 feet (2.4–4.6 m). For tart cherries, standard adult trees grow about 20 feet (6.1 m) tall, and dwarf trees reach around 8–12 feet (2.4–3.7 m).

Cherries don't grow very big until roughly 15 years of growing.

Growing Instructions Cherry trees are sensitive fruit-bearing trees that take some patience and skill to grow. Growing cherries can be slightly challenging but immensely satisfying. Choose between either sweet or tart cherries, and pick between standard or dwarf-sized trees.

You can typically purchase cherry trees by the size of their branches, from 2 inches (5.1 cm) to 8 inches (20 cm). If a particular nursery doesn't have the cherry tree you are looking for, ask them if they can place a special order or if they know of any other locations that may have your type of tree in stock.

Optimal Time/Temperature for Germination: Most cherries grow in climate zones 4-8.

Sweet cherries are harder to grow because they require a dry climate that isn't too hot and particularly well-drained soil. In the United States, cherries grow well west of the Rocky Mountains in low-humidity zones. Sweet cherries vary in type, including Bing, Black Tartarian, Emperor Francis, Kristin, and Stella.

Tart cherries also prefer well-drained soil, though they can withstand climates with more rain and greater humidity. Tart cherries tend to produce smaller trees than sweet cherries, which makes them easier to maintain. Tart cherries are great to cook with, and their tartness can be rather mild. Some of the famous Tart Cherry varieties are Meteor, Montmorency, and North Star.

Optimal Soil Conditions: Remove weeds and mix in well-rotted compost material to fertilize your soil. Leaves and tree trimmings work well as raw composting materials. Always use well-drained soil to avoid waterlogging your tree.

You can improve your soil's drainage by building raised beds or adding more rotting organic matter to existing soil.

Always make sure your trees have enough sunlight and well-drained soil. With the right growing conditions, planting preparations, and regular maintenance, you can grow juicy, tasty cherries.

High temperatures and direct sunlight can harm your trees and make it hard to root into the soil. Maintain soil pH around 6.5 (slighty acidic). You can add sulfur to increase acidity or add lime to reduce acidity.

Seed Planting Depth, Spacing and Procedure: If you plant in the fall, your trees will have adequate time to develop their root system and get stronger over the colder months.

Both sweet and tart cherries need ample sunlight in order to grow to full size. Sweet cherries in particular need as much sunlight as possible, while tart cherries can grow without quite as much sun. Full sun exposure will also help prevent pests and diseases.

For example, plant your trees on top of hills that face the morning sun. Avoid placing your cherries near other trees or buildings that cast shade.
For sweet cherries, space dwarf trees 5–10 feet (1.5–3.0 m) apart and adult trees 35–40 feet (11–12 m) For tart cherries, space dwarf trees 8–10 feet (2.4–3.0 m) and adults 20–25 feet (6.1–7.6 m)

Remove any string, burlap, or plastic tied around the roots before placing the tree in the hole. Make sure your tree's roots are spread out and have room to take root. Using your soil mix, fill in the rest of the hole until it is full. As you fill, remove any air pockets in the soil by pressing down firmly. You can stop filling the hole when the soil reaches the mark on the tree's stem marking where the old soil reached.
Position your stake about ⅓ of the height of your tree, and insert it into the soil at least 2 feet (0.61 m) deep. Tie your tree stake from the tree's trunk to a post where the tree trunk can have some movement.

Best Companion Plants and Plants that Hinder: To support include marigolds, dandelions, lavender, and rosemary. Ideally they attract pollinators, build healthy soil, repel pests, and are visually appealing. Depending on their shade tolerance, some plants can be planted under the tree itself. Potatoes as neighbors need to be avoided.

Crop Maintenance

Pruning will help your trees grow new fruiting wood. Prune the tree when it is dormant so you don't damage the fruit-bearing branches. You can use hand pruners or scissors to cut away dead, damaged, or diseased branches. Always use sharp, clean gardening tools to prevent diseases and pests.

In order to prevent winter sunscald, you should wrap the trunk with tree wrap every winter (located at garden or home improvement stores). Start at the bottom of the trunk and work your way toward the top of the trunk overlapping the layers.

Moisture Requirements & Solutions: Both sweet and tart cherries grow the strongest if they are planted in the fall. If you decide to plant your cherry tree in the spring, be sure to water it well throughout the spring, summer, and fall. When your trees will be exposed to much sunlight, it is important to keep your trees hydrated and healthy, especially for freshly planted trees. Water your trees when the top layers of soil seem dry. To check the moisture, stick your finger about 3 inches (7.6 cm) into the soil. If the soil is not moist, then water it thoroughly from the base of the tree. If the soil is still wet, you can wait another day before checking the moisture level again.

Add water to your soil immediately after you plant your tree so your tree's roots can start to take. For best results, let your water slowly trickle over the base of your tree rather than the roots soaking up the water quickly.

Water your trees with a slow trickle by turning on your hose on partial power and dropping it at the base of your tree. Leave your hose there for 1-2 hours, then turn off the water.

Weeding Needs & Solutions: When growing cherries, it is very important to maintain adequate moisture levels. Mulch can help drain away excess moisture. You should add a fresh layer of mulch in the late winter for regular cherry tree maintenance.

Feeding Needs/ Optimal Natural Fertilizers: Can use an all-purpose fertilizer or a fruit tree fertilizer (follow instructions on the package to determine the recommended amount to use). After April, only fertilize your trees after you harvest the fruit each season.
Fertilizing right before your trees bloom helps replenish nutrients and help the tree produce more fruit.

Pests, Diseases & Solutions: Birds will try to come and eat your cherries, and you can block them out with netting. Purchase netting from most home supply stores. Secure your netting at the bottom so birds can't get them at ground level. Look for heavy-duty, knitted netting with an aperture no bigger than 5 by 5 mm (0.20 in × 0.20 in) and woven no larger than 500 microns thick. Check your netting in the spring and winter. Bird sometimes peck at growing cherry buds in the late winter. Replace your netting as needed.

Pruning dead or dying branches will prevent infection or disease from spreading to other healthy part of the tree.

Common cherry tree pests include aphids, Japanese beetles, and caterpillars. If you have issues with pests, you can treat your trees with natural pesticides so you don't damage your trees or cherries with harsh chemicals. Try mixing different household vegetables, oils, or soaps with water.

Harvest and Storage

When to Harvest/Number of days to Maturity: Cherries take time to mature and develop. After about 4 years, your trees should yield about 30-50 quarts of cherries. Until then, water, prune, and fertilize your tree regularly so it grows healthy and strong. It may take some trees up to 10 years to start producing fruit. Each tree is different.

How to Harvest:

The warmth of the sun will develop the flavor of your cherries, and they will fall off the tree when ready to harvest. Pick your cherries with the stalks still attached using scissors or hand pruners. Hand picking can injure your tree and cause infection. Can also put a sheet underneath your tree to collect the falling fruit.

Cherries will appear dark red, black, or yellow when fully ripened. They will be the most sweet and delicious at this point, because the sugar content will rise a few days before they are fully ripened. Pick your cherries when they are still firm if you want to freeze them.

Optimal Storage Temperature and Conditions:
Sweet cherries should be stored at 30 to 31 F. (approximately -1 C.). Storage for sour cherries should be slightly warmer, about 32 F. (0 C). Relative humidity for both types of cherries should be between 90 and 95 percent; otherwise, the cherries are likely to dry out.

Typical cherry harvests only last 1 week, so be ready to pick. Fresh cherries must be cooled as soon as possible to slow down the ripening process, as the quality will deteriorate quickly. Keep cherries in a shady spot until you can get them into the refrigerator or another cold storage. Place the cherries in a sturdy plastic bag or container, but don't wash them yet because the moisture will speed the decaying process. Wait and rinse the cherries with cold water when you're ready to eat them. You can also freeze cherries, and they'll last six to eight months. Pit the cherries or leave them whole, then spread them on a cookie sheet, in a single layer. Once the cherries are frozen, place them in a bag or container.

Seed Saving:
While it is possible to grow cherries from pits, it is extremely difficult and requires a lot of patience. You likely will not get delicious cherries from pits your first few tries. Many pits are actually sterile. If you are up for a challenge, germinate your cherry pits by leaving them in the refrigerator for about 150 days, and then plant them in nutrient-rich soil.

Notes:
Sweet cherries are more likely to get a fungal or bacterial disease, so prune them again in the late summer to prevent diseases from spreading.

Research self-pollinating trees or a nursery/tree catalog can mention if they require another tree to pollinate, and if so, what breed the second tree would have to be.

Chestnut Tree

Description: a tree of the genus Castanea , in the beech family Fagaceae. They are any of several attractive deciduous trees yellow-brown in autumn; yield a hard wood and edible nuts in a prickly bur. The chestnut tree has male and female flowers and is pollinated with the help of insects and the wind.

Growing Instructions

Optimal Time/Temperature for Germination: Chestnut trees can grow in a range of climates and can be started from either seed or seedling. For best results, choose a variety that is blight- resistant and adapted to your climate region.

Optimal Soil Conditions: Chestnut trees grow best when grown in direct sunlight. For best results, choose a location that receives six or more hours of direct sunlight. If possible, consider planting the tree at the top of a slight slope, as well. Doing so can help drain excess water and prevent the roots from getting soggy. Never plant chestnuts at the bottom of a slope.

The best soil for chestnut trees be well-draining and slightly acidic. Chestnut trees thrive in deep, sandy loam soils. Soils that contain rocks and gravel are also acceptable. Avoid heavy clay soils. The only way a chestnut tree can survive in a clay soil is if it is planted at the top of a downward slope. Ideally, the soil should have a pH between 4.5 and 6.5. Avoid limestone soils, since the pH is often too alkaline for a chestnut tree to survive.

Seed Planting Depth, Spacing and Procedure: Make sure that each chestnut tree you plant has 40 feet (12.2 m) (12 m) of free soil space in all directions to allow for adequate growing room. If you want to rush large harvests of chestnuts, you can plant multiple chestnut trees at half that distance, roughly 20 feet (6 m) (6 m) apart, so that they start to crowd each other out and pollinate quicker.

A single chestnut tree on its own will never produce any chestnuts. If you want the tree to produce nuts, there needs to be a second tree within 200 feet (60 m). Plant two different chestnut varieties to promote cross-pollination. Check around with your neighbors. If a next-door neighbor has a chestnut tree growing in their yard, that might be sufficient for yours.

If staring from seed- place the seed nut in a plastic bag packed with damp sphagnum moss, peat moss, or sawdust. Seal the bag, then place it in your refrigerator for several months. Chestnut seeds are actually just normal, untreated chestnuts. Seed nuts need to undergo a period of chilling to germinate properly. Storing them in the refrigerator mimics the natural process while protecting them against the harsh freezes and animals found outdoors. For best results, place the chestnuts in a vegetable crisper to prevent them from accidentally freezing. The chestnuts should be stored in the refrigerator for several months,

from harvest to planting. Once the weather has warmed, you can directly sow the chilled seed nuts outdoors.

The best time to plant is early spring, usually around mid-March. You can sow the seed as soon as the soil is soft and warm enough to work in.
Dig a hole roughly 1 inch (2.5 cm) deep. Place the chestnut seed in the hole and cover loosely with additional soil or planting mix. Since most chestnuts will have sprouted before you plant them, make sure that the sprout is face-down when you plant the nut. If the seed has not sprouted yet, place it in the soil with the flat side of the seed facing downward.
After planting the seed outdoors, cover the area above it with a wire screen or basket. Doing so will protect the seed from most rodents. Make sure that the top of the wire cage extends above the ground 2 to 4 inches (5 to 10 cm). This will give the seedling a chance to grow and establish itself before the screen has to be removed.

Alternatively, plant them indoors early. Chestnuts usually begin to develop roots in early to mid February. If you want to give the tree a head start, you can plant the seed early indoors once these roots poke through. Poke a few drainage holes in the bottom of a half- gallon (2 L) cardboard milk carton. Cut the top off the carton, as well. Fill the carton with soil-free potting mix. The ideal growing medium should contain large quantities of organic fibrous material. Mixes that contain composted bark are especially good. After planting the seed, place the container in a sunny windowsill. Water the potting medium when it feels dry. A sturdy seedling should grow from the nut within two or three months. Note that seeds germinated indoors should be treated as seedlings and, as such, transplanted outdoors during the spring according to the guidelines marked in the "Starting from Seedlings" section.

The hole should be deep enough so that the established roots can fit inside without being folded. The hole should be at least two times as large as the root ball of the seedling you want to plant. It is also recommended that you aerate the sides of the planting hole with a rake, garden fork, hand-held cultivator, or hand-held plow before placing the root ball inside. **.** Carefully remove the seedling from its container and find the old nutshell clinging to the roots. Use your fingers to gently twist or break it off without damaging the roots. Many animals will be attracted to the scent of the nutshell and may dig up you seedling trees looking for that shell. Removing the shell makes your tree less of a target.

Center the root ball of the seedling inside the hole. Backfill the hole with garden soil or planting mix until the tree is secure and no longer able to move around. Pack the soil in with your hands and feet to further secure the tree. Water the soil well after you plant the tree. Water helps the soil settle and removes any air pockets that were otherwise trapped inside the packed growing medium.
Protect seedlings from rodents by surrounding them with 1/4-inch (6-mm) hard-ward cloth. Sink the hardware cloth 2 to 4 inches (4 to 10 cm) into the ground. Keep at least 18 inches (46 cm) above the ground. If deer are a problem, this cylinder of hardware cloth may need to extend as high as 4 to 5 feet (1.2 to 1.5 m).

Best Companion Plants and Plants that Hinder: they grow well with strawberries, garlic, peanuts, clover, and oats. Don't plant chestnuts with oak trees.

Crop Maintenance During the tree's first two or three years, you should train it to follow a modified central leader form. Pick a sturdy central, upright stem. This will be the tree's central leader. Pinch back, bend down, or cut off any other stems that compete with your chosen leader. Major scaffold limbs growing off your main stem should be spaced 1 foot (0.30 m) (30.5 cm) apart along the central leader, growing in a spiral rotation. After the tree establishes itself, trim the limbs so that the lowest still gives you enough room to mow under the tree. When the central leader reaches 6 to 8 feet (1.8 to 2.4 m) high, cut it down so that it is as short as a side branch. This will allow the tree to grow wider instead of higher. In the Northern Hemisphere prune from November to February. (Be sure to take care of the wounds correctly.)

Moisture Requirements & Solutions: During its first month or two, the chestnut tree will need 1 gallon (3.8 L) (4 L) of water each week. After the first month or two, you should still make sure that the tree receives 1 inch (2.5 cm) of water each week during the growing season. You do not need to water the tree when it loses its leaves and becomes dormant.

Weeding Needs & Solutions: Weeds and grasses should be kept at least 2 feet (0.61 m) (61 cm) away from new seedlings. For established trees, keep the ground bare all the way out to the ends of the tree's branches. The best way to do this is by applying organic mulch around the tree. Mulch also helps the soil retain moisture.

Feeding Needs/ Optimal Natural Fertilizers: You can apply fertilizer to the tree on a yearly basis starting its second year outdoors. Do not fertilize the seedling when you plant it. Doing so will encourage leaf production, but the tree needs to focus its efforts on root production during this time. Granular, liquid, or stake-type fertilizers can be used. Organic fertilizers, such as manure, can also produce desirable. An application of boron foliar fertilizer improves the fruiting of the chestnut.

Pests, Diseases & Solutions: Chestnut blight is the only major disease you will need to worry about, but it can present a significant threat. The fungus gathers around the trunk of the tree, fixating mostly on areas that are cracked or wounded. It eventually develops into a large canker. When the canker wraps all the way around the tree, the tree itself will die. You will need to completely remove the tree and plant any future chestnut trees in a different location. Chestnut blight is almost impossible to treat once it infects a tree, even if you use a strong fungicide. Prevention is your best option. Plant blight-resistant chestnut tree varieties and make sure that the roots are never allowed to sit in soggy, overly-wet conditions.

There are several different insect pests that may attack your tree, but the biggest problem is usually the chestnut weevil. Adult weevils lay eggs in developing nuts. When the eggs hatch, the larvae consumes the meat inside of the nut. Get rid of the weevils before they become a problem by spraying the tree once nut burs begin to develop. Alternatively, you can lay a sheet beneath the tree and give the branches a sturdy shake. Most of the weevils should fall off. You can then collect them in the sheet and dispose of it. You need to kill the adult weevils before they can lay eggs. There is no way to remove the pests once they find their way into the nuts.

Harvest and Storage

When to Harvest/Number of days to Maturity: Chestnut trees don't produce any nuts during their first few years. If there is at least one other chestnut tree nearby and the trees remain healthy during these years, they should eventually produce nuts. Chinese chestnut trees usually produce nuts after five years. American chestnut trees usually produce nuts after eight years.

How to Harvest: Chestnuts usually ripen around early October and drop off the burs they grow on once the weather cools. You can usually harvest the nuts by simply collecting them off the ground as they fall. If animals tend to grab the fallen nuts before you can, another option is to cut off the burs before the nuts drop. Carefully cut the unopened burs during early to mid October and keep them in a root cellar or similarly cool place. Once the burs naturally open, you can collect the nuts. Wear heavy rubber gloves when handling the nuts and burs to prevent yourself from getting scratched or pricked.

Optimal Storage Temperature and Conditions: If you want to use the nuts for culinary purposes, keep them in their shells and store in the refrigerator for one month. You can also keep the nuts in a freezer for roughly six months. Chestnuts have a high starch content and do not store as well or as long as many other nuts. After cooking the chestnuts, you can only store them in the refrigerator for three or four days. If placed in an airtight container and stored in the freezer, however, cooked chestnuts remain edible for up to nine months.

Seed Saving: If you want to treat the nuts as seeds instead of food, you should let them dry in a cool, open space for several days before storing them in a refrigerator. Place the chestnuts in a plastic bag filled with slightly damp sphagnum moss, peat moss, or sawdust. Seal the bag with a twist-tie and store it in your refrigerator.

Notes:

The roots grow deep and can become very big. Note that the tree grows a vertical root, and then smaller roots from the main root.

They do lose their leaves in the cooler climates. Planting it 40 feet from the house will allow it to fully mature, though you might want to locate it farther away if you like to walk barefoot.

Beware that USDA released genetically engineered (GE) Darling 58 American chestnut tree into U.S. forests. (a Trojan horse meant to open the doors to commercial GE trees designed for industrial plantations.)

Che Tree

Description: (Mandarian Melonberry) This under appreciated perennial, dioecious (male and female flowers on different plants) tree has fruit related to mulberry and fig with growing heights of 25 feet and the same width if left to grow for about 30 years. It's family is Moraceae. The bark ripples with deep furrows and in the spring thru summer both types of flowers are green and pea- sized. The male flowers turn yellow as the pollen ripens and is released, while the wind-pollinated female flowers develop many small stigmas over the surface of the immature fruit. Male plants occasionally have a few female flowers which will set fruit. Female trees are larger and more robust than male trees. The che fruit is not a berry but a collective fruit, in appearance somewhat like a round mulberry crossed with a lychee, 1 to 2 inches in diameter. The ripe fruits are an attractive red or maroon-red color with a juicy, rich red flesh inside and 3 to 6 small brown seeds per fruit. Ripe fruit have a sweet flavor which is often compared to that of a fig with notes of watermelon. Alternative names are Chinese mulberry, Silkworm tree, and Mandarin Melon Berry.

Growing Instructions

Optimal Time/Temperature for Germination: The growing hardiness zones are 5 to 10. Cooler climates may have insufficient summer heat to fully ripen the fruit. This tree only produces fruit when it is pollinated. It's important to note that planting a male pollinator tree or grafting a male branch onto an existing tree is recommended for zones 6 and below. Cold tolerance - 20°F (-28 °C).

Optimal Soil Conditions: Planting in general is easy. There's no fuss with soil types, they'll thrive from Virginia south into middle Florida. To ripen the fruit, hot summers are best. Full sun location is best. Che will grow in a range of soil types provided that the roots stay evenly moist throughout the heat of the summer. Deep, well drained loam is ideal. PH preference is 6.0 to 6.5.

Seed Planting Depth, Spacing and Procedure: Can consider spacing in a 14 ft circle but others will say the grafted trees should be planted on 20 ft (6.1) centers.
Placement of the tree should be in the open or along side of small trees like Filberts or Apples. You can obtain a grafted tree, small sized 1-2', or large size 3' tall but get one with a strong central leader. A graft example is for a root stock to be an Osage Orange, which is another relative, so that as the plant matures it will develop less of a bush and more of a standard tree form. (Che on its own roots can sucker while the Osage trees are single trunk.)

Crop Maintenance Keep it pruned for a smaller size for it's very fast growing.

Moisture Requirements & Solutions: The first year is a critical time for the establishment of a new tree. Water thoroughly twice a week on light soils and once a week on clay soils. Soak the entire root system deeply – this usually takes 40-50 minutes. It should receive at least 1 inch of water each week for best growth and fruit production. Water regularly, especially during dry periods. Fruit may drop prematurely if insufficiently irrigated during dry spells.

Weeding Needs & Solutions: For the 1st few years keep weeds and grass away from the plant and water when necessary.

Feeding Needs/Optimal Natural Fertilizers: Check the fertilizer for iron, zinc, manganese, magnesium, molybdenum, copper and boron. These minor elements are very important to plants and most soils are low in these elements. It's best to use a brand you know and trust since heavy salts in cheap brands can damage roots or can kill a plant.

Pests, Diseases & Solutions: No spraying is necessary since this tree appears to be free of pests and diseases. Birds will eat the fruit if you are late to harvest. Maybe protect young trees with a circle of wire mesh to keep the deer away.

Harvest and Storage

When to Harvest/Number of days to maturity: The Che tree yields fruit after 2-3 years. Che fruit season starts summer thru autumn with a ripened red fruit. In zone 6 such as Front Royal, VA, they ripen in late September or October.

How to Harvest: Their cropping habit is splendid. Be patient with their harvest because they are tasteless until softened and dead ripe. Do not expect the fruits to drop into your hands at that time; each che has to be plucked individually (a case for parthenocarpy). Likewise, do not expect to pick the fruits all at once, because they have a long ripening season, a month or more. A darker shade of red with some blackening of the skin is a good indication of full ripeness. You'll know the fruit is ripe when the stem doesn't bleed white sap after picking. Do not pull the fruit from the tree. If it doesn't come off with a gentle pull give it another day. If you pull the fruit off with force it will be dripping sap and will not taste good.

Optimal Storage temperature and conditions: Fruit stains like mulberries. The fruit is edible raw and good as juice, jams, preserves, cakes, or use fresh in fruit salad.

Seed Saving: The che is readily grown from seed, although the plants can take up to 10 years to bear. Seeds should be sown as soon as extracted from the fruit. The plants are often propagated from softwood cuttings taken in midsummer and treated with rooting hormone. The che is also easily grafted to Osage orange rootstock using either a cleft or whip-and-tongue graft.

Notes: (no information available for companion plants on this tree.)
The plants have been valued by the Chinese for their leaves, as feed for silkworms. Although the silk produced from them was said to produce lute strings with a particularly clear sound, their leaves were used only to supplement mulberry leaves as feed, perhaps because thorny stems make picking them more difficult.
Young plants have small thorns so terminal branches may be armed with sharp thorns that will give way in a mature tree.

No fruit is produced by the Male but without his flowers the Female won't fruit. The Male will cause seeds to be produced in the fruit of any Female Melonberry variety within pollination range. If you have a Female Melonberry that isn't producing well or drops all its fruit, and you don't mind seeds in the fruit, then plant a Male Melonberry within 15-20 ft of the Female. On the other hand, because space is usually limited, savvy gardeners have planted the male and female che in the same hole. The male is kept pruned to about ¼ of the total canopy for adequate pollination and best fruit production. Plant away from walks, drives or patio, as fallen fruit stains porous surfaces.
Unlike most Che, Seedless Che does not need a male to set fruit. Do not plant a male tree with a Seedless Che or the fruits will be seedy.

Citrus Trees

Description: Citrus is a genus of flowering trees and shrubs in the rue family, Rutaceae. important crops such as oranges, lemons, grapefruits, pomelos, and limes are in this assortment. If you live somewhere that's a bit colder than a strictly Mediterranean climate, look into cultivars bred for cold resistance. If you can taste fruit grown on a tree in your area, perhaps from a neighbor for not all oranges are alike.

Growing Instructions: Try dwarf citrus trees if you are short on space. You can even grow them in large pots, and they open up the possibility of covering the entire tree in a shelter during winter months or even bringing the tree indoors. Even though they are small, dwarf citrus trees can produce a very reasonable harvest. On the other end of the spectrum, a couple of large lemon trees can form a good-sized hedgerow. It all depends on just how much citrus you want. For a dwarf citrus tree, select a large pot. Try for two feet in diameter or a half-barrel, at least. If you are planting a dwarf citrus in a pot, use straight potting soil and fill it in to a similar level. Place the pot up on blocks and be sure there are plenty of drainage holes in the bottom. Don't let the pot sit directly in a saucer or puddle of water.

Optimal Time/Temperature for Germination: Citrus trees are relatively easy to grow, provided that you have a warm enough climate. Even if your conditions are not ideal, there may still be a citrus tree for you. Read on about how to grow an assortment of citrus. (a tree grown from an orange seed can take anywhere from seven to 15 years to bear fruit.) If you're looking for a tree that will produce fruit faster, you're better off getting a grafted tree from a nursery.

Orange seeds can be sown directly into soil, but only if the soil temperature is warm enough. The temperature needs to be between 70 and 75 F (21 and 24 C) for the seeds to germinate. Also, if the nighttime temperatures are still getting too cold, the seeds may freeze and die. If you live in a warm climate, you can safely sow the seeds directly in late spring or summer.

If seed sprouting indoors look for plump, whole, healthy seeds that don't have any spots, marks, dents, breaks, discoloration, or other blemishes or imperfections. Transfer the seeds to a bowl and fill it with clean water. Use a clean tea cloth to wipe the seeds and remove all traces of flesh and juice. Cleaning the seeds is also important for removing fungus and mold spores, and to prevent fruit flies. You can clean and germinate all the seeds in the orange, and then pick the biggest and healthiest sprouts to plant.

Fill a small bowl with clean room temperature water. Transfer the seeds to the water and let them soak for 24 hours. Many seeds have a better chance of sprouting if they're soaked first, because soaking softens the seed coating and kickstarts the germination.

When the seeds have soaked for 24 hours, drain the water and place the seeds on a clean towel. Don't soak the seeds for longer than this, as they may become waterlogged and not sprout.

Get a 4-inch (10-cm) planting pot with drainage holes in the bottom or find a good spot in your yard to plant the seed. If planting directly into the ground, then dig a small hole and place the seed in the ground. If planting in a pot, fill the bottom with a thin layer of pebbles to increase drainage, and fill the pot the rest of the way with potting soil. Make a half-inch (1.3 cm) hole in the center of the soil with your finger. Place the seed into the hole and cover it with soil.
After transplanting the seed to a pot, continue providing it with lots of direct sunlight every day. Newly sprouted seedlings will benefit from a mild fertilizer, such as compost tea. Add enough of the compost tea to moisten the soil. Repeat every two weeks. Water the soil thoroughly once a week, or if the soil starts to become dry. If the soil dries out too often, the orange tree will not survive. If keeping in pots, you will need to increase pot sizing as development grows larger.

Optimal Soil Conditions: A warm, sunny, southern or western exposure is best. Shelter is a big help, too, if cold is a concern. Choose or create someplace with well-drained soil, and avoid putting a citrus tree directly into a lawn. A nearby reflective wall, fence, or even patio can provide both shelter and a bit of extra warmth. Mix in a handful of peat moss and a handful of sand to provide the tree with well-draining and slightly acidic soil. Orange trees like a pH between 6 and 7.0. Mix in some citrus fertilizer with the soil, if you like.
Orange trees will typically not survive if they're exposed to temperatures below 25 F (-4 C), so they can't be permanently transplanted outside in cooler areas. Fully grown orange trees are large, so if you live in a cooler climate, keep the tree in a solarium or greenhouse if possible.

Planting depth, spacing and procedure: As a practical matter, make sure you know where you want to place the tree, then dig a hole that is about three feet (1 meter) in diameter and as deep as a container. Do not bury the root crown, the transition from trunk to roots, as this will cause problems down the road. Plant the tree slightly higher than the surrounding soil to allow for some settling, most container grown nursery stock has high organic matter content that will decompose causing the plant to settle in the planting hole dropping the root crown below grade if not planted slightly high.

If you have any concerns about drainage, such as in heavy clay soil, fill the hole with water and see how long it takes to drain out. If you have drainage problems (that is, if the water is

not gone by the next morning), dig the hole even deeper and plant the tree up higher. Depending on the quality of what you took out of the hole, you might try a half-and-half mixture of compost and the now-loosened soil. Create a mound of soil in the middle of the hole that supports the root ball with the crown (the base of the tree trunk where the roots begin) slightly above it.
Remove the tree from its pot or burlap around the roots. Place the tree on the mound of soil. Add or remove soil underneath to adjust the height so that the crown is level with the soil or even slightly above it.

Best Comparison Plants and Plants that Hinder: The best companion for lemon trees will attract pollinators and predatory insects. Bees and butterflies help pollinate the tree, resulting in larger harvests. Beetles, flies, and wasps attack common citrus pests. wildflowers, nasturtium, lavender, and rosemary are good companion plants. Grow comfrey or alyssum near orange trees as easy mulch to keep weeds away. Garlic and chives are great orange tree companions as they repel aphids and caterpillars.

Crop Maintenance

Moisture Requirements & Solutions: Water at least weekly until established (unless you get sufficient rain. Even water mature citrus trees regularly. Citrus trees have relatively shallow, broad root systems. Once established, the trees may tolerate some drought, but they won't produce fruit that's as good.

Needs & Solutions: They don't require heavy or regular pruning. Remove any "suckers", or shoots growing from the rootstock. Citrus trees are grafted, meaning that a tree with desirable fruit is cut and attached to a sturdier rootstock. You don't want the rootstock taking over. Moderately thin the foliage if it grows excessively dense, to promote air circulation and availability of light.

Generally, train citrus trees as shrubs or hedges. If you'd like to remove a few lower branches to give it more of a tree shape, go ahead, but don't overdo it.

Feeding Needs/ Optimal Natural Fertilizers: Stay away from organic mulch (wood chips, straw, grass clippings, chopped leaves, and compost) as it increases the likelihood of foot rot disease. A safe bet is that the roots are at least as wide as the branches, so make the mulch area at least this large. You can even add a rim of mulch around the circumference of the circle to aid in watering. Do not mulch right up to the base of the trunk. Leave a little margin so that the crown has breathing room and doesn't stay wet when you water.

Organic, seaweed-based fertilizers work very well and promote leaf/ fruit/ flower growth. You can find various citrus fertilizers on the market, as well. It would be ideal to use a more nitrogen- rich fertilizer in spring/summer, when trees' leaves and stems are actively growing. During late summer/autumn, you can use a more balanced fertilizer and then a more phosphorus/potassium based fertilizer when the tree's energy is directed toward its fruits rather than its leaves.

Pests, Diseases & Solutions: WLD (Winter Leaf Drop), CVC (citrus variegated clorosis), Black spot, Scab, Psorosis, Melanose, Anthracnose on dead citrus wood, Phytophthora, and Pseudocercospora are some of the fungal and bacterial complications but most seem to be resolvable with liquid copper, zinc sulfate, or hydrated lime.

To prevent citrus tree Root Rot, remove all decaying material such as leaves, dead weeds, and fallen fruit from the ground surrounding the tree base, and prune lower limbs to at least two feet above the ground.

The example of Citrus Canker causes necrotic dieback, tree decline, premature fruit drop, and blemished fruit. There are a variety of sprays designed to protect citrus trees from Canker infection, such as Liquid Copper Fungicide as a preventative treatment. However, already infected trees should be removed and destroyed to prevent further contamination from the contagious Citrus Canker disease.

Homemade fruit tree sprays are an effective way to keep the bugs and diseases away by using common household ingredients such as vegetable oils, boric acid, soap, water, and spices, you can create an organic pesticide to eliminate many unwanted pests. Vinegar is a fantastic way to get rid of an ant problem. A water and vinegar solution can be sprayed anywhere that ants are present. Neem oil (70%) is used to manage powdery mildew but is less effective on black spot and other leaf spot diseases. Many insecticides that use combinations of different plant oils, plant extracts, and fish oils. (common oils used in these products are garlic, canola, sesame, and soybean)

Harvest and Storage

When to Harvest/Number of days to Maturity: Oranges, lemons, and grapefruit should all be completely free of green coloring. They will not ripen off the tree. Limes are generally picked green, so go by size and season. When given proper care, they bear fruit for 50 years or more. It's not uncommon for healthy trees to live for more than a century. Trees planted in the ground produce fruit longer than container-grown orange trees.

How to Harvest: Look out for thorns. Some citrus trees grow long, sharp thorns, and getting citrus juice in the cuts from these thorns is absolutely painful. Look closely, and wear gloves or use a long-handled fruit picker. Unlike other fruits, citrus fruits do not continue to ripen once they have been picked. So it is important that they be ripe right off of the tree. A bit of green on the skin of oranges and lemons is perfectly fine. These tend to keep the longest and will be perfect for storing.

Optimal Storage Temperature and Conditions: Properly storing citrus fruit can ensure that you retain the nutritional value, flavor and juiciness of this unique fruit. Store them in your refrigerator's vegetable bin and be sure to rotate the fruit regularly to maintain airflow. Oranges stored in a refrigerator should keep for approximately one month. Do not cover the bowl with plastic wrap or foil. Airflow is important to keeping oranges and grapefruit fresh.

However, lemons need to be sealed in a baggie in the refrigerator which can preserve up to four weeks and will also retain their juiciness during that time. They can be cut into quarters,

with all membranes and seeds removed. Place them into plastic bags and freeze. Use them within three months as the longer they are stored, the more bitter they become. If you regularly use them for water, freeze sliced lemons by laying them out on a cookie sheet and setting them in the freezer for a few hours. Once they are solid, place them into a storage baggies.

Limes generally have a long shelf-life. Unlike oranges or lemons, fresh limes can last up to 2-3 weeks at room temperature. Storing limes at room temperature also allows them to yield more juice. You can freeze them like lemons as well. Cut open fruit and squeeze juice into ice cube trays to make popsicles or add to meals for additional flavoring. Use frozen lime juice to preserve guacamole or any other dishes with avocado to keep it from spoiling. Frozen orange juice popsicles are a great way for kids to get their much-needed serving of vitamin C.

Seed Saving: Using oranges as the example, slice in half to reveal the seeds. Use a spoon or knife to pick out the seeds. The tree that grows will likely produce similar fruit, so make sure you choose the seeds of an orange variety you like. Some orange varieties, such as navels and clementines, are seedless, and you won't be able to propagate orange trees this way.

The cost of seeds has increased, while the number of seeds in pre-packaged envelopes has decreased. Collecting and storing seeds from your own garden ensures that you always have backups if any of your favorite plants die. Collecting and storing your own seeds allows you to control their quality. Many pre-packaged seeds aren't harvested at the most optimal time and are also not necessarily stored in the proper way.

A good seed collecting kit will have a small pair of scissors or pocketknife to nip the plants; paper envelopes, paper bags, or small plastic bags in which to put the dried seeds; and a pen or marker to label the seeds as you gather them. You can also use small tins.

Just as when you collect seeds, it's important keep each different seed separate as you dry them for storage. It's very important to have good air circulation when drying seeds so that you can store them. Spreading out the seeds on sheets of paper or paper plates for a few days is the best way to dry. Once you've transferred the seeds to envelopes or containers, you can create a seed bank in a jar or another container. This will help you keep your seeds orderly and in one place so that you can use them whenever you like.

All seeds have a limited shelf-life that ranges from a few months to a few years.

Seeds from annual, perennial and biannual plants, as well as herbs and vegetables are excellent for storage. Less optimal are seeds from fruiting trees, shrubs, houseplants and tropical plants. You can extend the life of your seeds by keeping them in a cool and dry place. You may also want to check your seeds regularly to make sure they haven't molded or germinated in their packages.

(fyi: regulations are often put in place to make sure that no more than 10% of wild seed harvesting are collected in any year so wild species aren't endangered.)

Notes:

Navel oranges and Valencia oranges are both very sweet and make great orange juice. Florida oranges, Cara Cara, and blood oranges are try-able too.
Limes that are mostly brown are considered moldy and should not be eaten.

In citrus producing areas and other parts of the US, if there is an "epidemic" of any contagious diseases or pests, the Dept. of Agriculture may come on a person's property, rip out the trees, and haul them away to be burned. That is why it's important to ensure the health of a tree before buying it.

Don't plant your tree near septic tank lines, or the roots may eventually cause issues with clogging.

Cranberries

Description: grow on perennial thornless vines and have a tart, red berry and are related to bilberries, blueberries, and huckleberries. (subgenus *Vaccinium)*. There are several varieties of cranberry plants that can be used in home growing. The variety you choose will depend on what you intend to use the berries for. Cranberries are a ground cover, the uprights are about 8" tall and they have runners that spread out on the ground. They have slender, wiry stems that are not thickly woody and have small evergreen leaves. The flowers are dark pink, with very distinct *reflexed* petals, leaving the style and stamens fully exposed and pointing forward. They are pollinated by bees.

Howes cranberries are small, red berries native to Massachusetts. They are easy to grow and will stay fresh for a long time after harvesting, if stored correctly. Stevens cranberries are a hybrid variety of cranberry designed for productivity and disease resistance. They are large and bright red in color. Two more varieties are Ben Lear (large, burgundy-colored berries) and Early Black (small, deep red berries). However, these varieties are not recommended for first time growers as they are more difficult to care for and are more prone to disease and insect infestation than the other varieties.

Growing Instructions

Optimal Time/Temperature for Germination: Cranberries are best grown in cooler climates. Cranberries should be grown between zones 2 to 5. This includes much of the northern and Midwestern United States. Cranberries can be planted at various times throughout the year, depending on the age of the plant.

Cuttings and seedlings can be planted throughout autumn, from October to early November. They can also be planted in springtime, from the middle of April to the end of May. 3 year old rooted plants -- which are still actively growing -- can sometimes be planted in summer, provided they are purchased in pots.

Optimal Soil Conditions: When it comes to soil, cranberry plants have unique requirements.They need soil with a low pH value 4.5 to 5.5. and a high level of organic matter. As a result, it is often necessary to replace your existing soil instead of trying to alter it.
The average size for a cranberry plot is 4 foot (1.2 m) by 8 foot (2.4 m). However, if you are only growing a single plant, a 2 foot (0.6 m) by 2 foot (0.6 m) square will do just fine.

Dig out the existing soil in the cranberry plot, to a depth of 6 to 8 inches (15.2 to 20.3 cm). Fill the plot in with peat moss, then mix in 1/2 pound of bone meal and 1 pound of blood meal. Optionally, you can add 1 cup of epsom salts and 1 pound of rock phosphate as well. (These quantities are for a 32 sq. foot plot, so adjust accordingly).

Shaded afternoons should help your cranberries a lot. Full sun is okay, but the plants may burn out. Cranberries don't do well in soil that is clay-based.

Seed Planting Depth, Spacing and Procedure: Before planting, wet the soil thoroughly (but do not saturate it). You can do this by misting the plot with the garden hose, mixing the soil periodically to encourage absorption.
Cranberry plants are not grown from seeds, but from 1 year old cuttings or 3 year old seedlings.

It's important to be aware that cranberry plants do not start to produce fruit until their 3rd or 4th year. If you choose to plant cranberry cuttings, plant them in the prepared wet soil, leaving approximately one foot of space between each plant. The root ball of each plant should be about 2 inches (5.1 cm) below the surface of the soil. If you choose to plant 3 year old seedlings, leave approximately 3 feet of space between each plant.

Cranberry plants grow best in a garden plot, where they have plenty of space to spread their runners. However, it is also possible to grow a single plant in a large pot. Choose a pot that is at least twice the size of the plant's root ball.

Fill the pot with peat moss and plant a 3 year old seedling. Allow the plant to develop runners inside the pot (as these will take root and form fruit-bearing uprights), but trim any that extend beyond it. You can also fertilize the soil with low-nitrogen fertilizer, as this will limit the growth of runners. Potted cranberry plants will need to be replaced every couple of years (unlike those in plots which sustain themselves indefinitely).

Best Comparison Plants and Plants that Hinder: https: This means gooseberries, mulberries, and lingonberries are likely to complement each other. Pay attention to blueberry plant spacing as well as the other bushes, so these plants won't be competing for resources. You'll also have an array of edible berries.

Some gardeners have said zucchini, leeks, pole beans, beets, and radish can do well next to cranberry.

Crop Maintenance

Moisture Requirements & Solutions: During the first year (and beyond) cranberry plants will need constant watering. If the roots dry out, the plants will die.
It is a common misconception that cranberry plants need to be saturated or submerged in water during growing. Although the soil should always be wet (or at least damp) to the touch, it shouldn't be saturated with water. Too much water can slow down root growth and prevent the roots from reaching the necessary depth.

Weeding Needs & Solutions: Cranberry plants do not compete well against weeds, so it's very important to weed the bed regularly, particularly during the first year. Luckily, the peat moss used in the cranberry plot will inhibit the growth of many common garden weeds.

Feeding Needs/ Optimal Natural Fertilizers: The runners should grow until they fill and cover the bed. If fertilizing in the first year, fertilize the soil three times -- once at the beginning of growth, once when the flowers bud and once when the berries start forming. In order to contain the spread of runners within the cranberry plot, you may want to line the perimeter of the bed with some wooden or plastic edging. After the first year, you'll need to cut off the nitrogen supply to the runners -- this will encourage them to stop spreading so they will take root and form uprights instead. Use a non-nitrogen fertilizer from the second year onwards. At the start of the second year (and every couple of years after that) you will need to cover the soil with a thin (1/2 inch) layer of sand. This helps to root the runners and prevent weeds.

Pests, Diseases & Solutions: Cranberry plants are susceptible to certain pests and diseases, but these are relatively easy to deal with, provided you know what to look for.

Cranberry fruit-worm is a common problem, where grey moths lay their eggs inside the berries themselves. If you spot grey moths around your cranberry plants, you will need to spray the plot to kill the eggs. If you do not catch fruitworm on time, the eggs will hatch and the worms will eat the cranberries from the inside out. When this happens, the infested berries will turn red before they ripen. You can deal with this by picking off the prematurely red berries (in addition to the surrounding fruit) and disposing of them.

Two other common diseases are red spot (where bright red spots develop on the leaves of the plant) and berry fruit rot. The treatment for both of these diseases is the same, spray the cranberry plants with an organic, copper-based fungicide between late June and early August, according to the instructions on the label.

Harvest and Storage

When to Harvest/Number of days to Maturity: If you planted three year old seedlings, your cranberry plant may by producing fruit by the following autumn. But if you planted one year old cuttings, you may need to wait three or four years before your plant produces fruit.

Once your plant is producing fruit, you can harvest the berries in September and October of each year. When the berries are ripe they will be bright or dark red in color (depending on the variety) and the seeds inside will be brown.

It is important to protect your cranberry plants over the winter months to prevent them from freezing and drying out. You can do this by covering the cranberry plot with an opaque white plastic mulch before winter sets in. You can uncover the cranberry plants in springtime (around April 1st) but you should be prepared to cover them on any night when frost is expected, as a frosty night could kill any new shoots and prevent fruit from growing that year. (Never cover your cranberry plants with clear or black plastic, however, as this can raise the temperature of the bed and potentially kill the plants.)

Do not cover the plants with pine needles or leaves, as these might reduce the number of flowers and fruits that the plant produces the next year.

Based on the fact that some cranberry bogs have been in continual production for well over 100 years, the vines can live for many, many years.

How to Harvest: Although commercial growers harvest cranberries by flooding the fields in order to make the cranberries float (and therefore easier to collect), this is not necessary for home growers. The cranberries can simply be picked off the plants by hand. It is important that you harvest all of the fruit before the first hard winter frost, as cranberries cannot withstand temperatures below 30 °F (–1 °C). Cranberry plants generally produce about 1 pound (0.45 kg) of fruit for every square foot of area planted.

Optimal Storage Temperature and Conditions: Once harvested, cranberries will stay fresh for up to two months when stored in an airtight container in the refrigerator, much longer than most fruits. While this may sound strange, a great way to sort the best berries from the not as great ones is to bounce them. Quality berries are firm and springy--meaning they bounce off the ground nicely. They bounce because of the air bubbles inside the berries. Don't throw them as hard as you can at the floor, but a simple drop against a flat surface should be enough to tell you whether or not your berries have the bounce.

Fresh, bouncy cranberries will last for up to two months in the refrigerator. You can either use the fresh ones in a recipe, or freeze them for later use. Cooked cranberries (sauce) will last in the refrigerator for up to a month, while dried cranberries (similar texture to raisins) will keep for up to a year as a snack.

Notes:

From the third year of growth onwards, you will need to prune the cranberry plants each spring to control the runners and encourage uprights. You can do this by combing the cranberry plot with a landscape rake, until all of the runners are going in the same direction. This makes it easier to identify the longest runners and cut them back. Do not prune the existing uprights. As time goes on, your cranberry plants may begin to spread beyond the bounds of the original plot. If this happens, you can prune each of the plants back in the springtime, until there is only two inches of growth above the soil line. The cranberry plants will not produce fruit that year, but normal production will resume the following year.

You should avoid watering plants with water saturated with chemicals, such as fluoride and chlorine.; also, boiling alters the oxygen in the water, which plants need to survive. The best water is natural spring water or distilled water.

Currants

Description: a type of berry on small shrubs and are native to North America. Currants are a hardy, easy-to-grow berry that complement many recipes. They are self-pollinating, so multiple plants aren't necessary to produce fruits. They can grow 3-6 feet wide and tall, and can range in color from red, white, pink, or black. There is even a clove currant (Ribes odoratum), which is very fragrant.

Growing Instructions

Optimal Time/Temperature for Germination: Currants grow best in partial or full sun and need zones 3 to 7 climates and best grown from cuttings.

Optimal Soil Conditions: If your summer temperatures are in excess of 90°F, plant on the north side of your house or building. Planting on the north side will also protect your currants from a late spring frost, by delaying bloom time. You can also plant in areas that get afternoon shade

Seed Planting Depth, Spacing and Procedure: Currants should be planted in the early spring. To prepare a site for planting, add a layer of compost and dig it into the soil. Dig a hole two times as big as the currant's root ball, and loosen the soil at the bottom of the hole. If the currant bush has shoots, cut them back 6 to 10 inches before planting. Space plants 4 to 5 feet apart in rows set 6 feet apart. Water the newly planted currants with a slow trickle for 60 to 90 minutes. To make a hedge, keep a distance of around 3 feet (1 meter) between plants.

The blackcurrant bushes can be planted from mid-November to mid-March but don't plant them if the soil is water-logged or frozen. The bushes should be spaced about 6ft apart. Dig a hole wide enough to take the roots without cramming them in. The depth of planting should be around 2" deeper than they were in the pot or at the nursery if bare-rooted. Put the soil back on to the roots and firm it down with your foot. After planting you can trim every shoot to within two buds above soil level. This will encourage a strong root system to develop.

Best Companion Plants and Plants that Hinder: Wormwood is a great companion plant and can help prevent rust and mildew.

Crop Maintenance You'll be using the loppers for thicker stems, and the secateurs for thinner on pruning needs. Both tools need to be sharp so that they leave behind a nice, clean cut. If they tear through the stems, the wound won't heal as quickly or as neatly.

Unlike blackcurrants, redcurrants grow best on older stems. Once the stem hits 4 years though, it won't produce many berries, if at all. Older stems are darker and thicker, while younger ones are thinner and paler. You can use these methods to prune white currants and gooseberries as well.

Make sure that the last bud is on the outside of the plant. This way, it will develop into an outward facing stem. You are essentially cutting about a third of the stem off. Between winter and summer, the bush will grow a lot, so you will need to prune it again. Since berries like to grow on older stems, focus on pruning off the newer ones instead.
Keeping the older stems will allow them to continue to grow berries.
Trimming the newer stems will help encourage growth and give you a bushier plant. Try to finish on an outward-facing leaf rather than an inward-facing leaf.

You can prune redcurrants the same way you prune white currants however, these methods will not work on blackcurrants which have different needs.

Currants should be pruned in the early spring following the first year. For the first year of pruning, prune everything but six to eight shoots. The second year pruning, remove all but four or five healthy shoots that are one-year old and three or four healthy shoots that are two years old. Every year following, prune so that four to five shoots remain that are one year old, and three to four shoots remain that are older. Any branches older than three years old should be removed as well.

Suckers are thin, vertical stems shoots that grow from the roots. They are not connected to the base of the bush. They will show up in the summer, after the growing season; this is when you should prune them. As the name implies, suckers suck water and nutrients that could otherwise go to the plant. Removing them means that your plant will get more water and nutrients. If it still looks dead or diseased, trim it further. You may have to remove it entirely in extreme cases. Remember to clean your shears after each cut that you make. This may seem like a lot of extra work, but you don't want to transfer the infection to healthy wood. Diseases may also spread into compost and contaminate it. Burn the stems, if possible.

Moisture Requirements & Solutions: Water the shrubs regularly to keep the soil moist from the time they begin growing in spring until after harvest. Plants that don't get enough water during spring and summer may develop mildew.

Weeding Needs & Solutions: Adding mulch can help retain moisture and deter weeds.

Feeding Needs/ Optimal Natural Fertilizers: Feed currants once a year, usually in the spring. Use a potassium-rich fertilizer. For natural fertilizers, use a seaweed-based one. When mulching around the currants, add some pine needles. This will add natural acidity, which currants need. Remember to apply fertilizer in the spring. A well-rotted manure will do just fine

Pests, Diseases & Solutions: Some of the most common pests affecting currants include birds, aphids and big bud mites. Birds will completely destroy the plant's developing fruit and the only tried and true way to prevent birds from completely ridding your plants of the currants is to cover the plants with a fruit cage. Aphids are small insects that target the plant by sucking the liquid out of the new shoots. This will weaken the bush as a whole. The aphids also create a sticky liquid that covers the leaves. This sticky liquid then attracts other pests and insects. Although it is rare for aphids to kill the currant bush, they can decrease the amount of fruit produced by a substantial amount. Aphids will typically occur on the bushes from late April to May. Treat the aphids at the first sign of infestation by spraying them.

A big bud mite is a pest that almost exclusively affects currant plants. When buds begin to form in the late winter, the affected buds will become much larger and fall from the plant. There is no cure, just wait for the harvest season, harvest whatever is produced and then dig up the plant and burn it.

Common diseases affecting currants include anthracnose, leaf spot, powdery mildew that can cause stunting and lower fruit production. Redcurrants are especially susceptible to sawfly caterpillars. Keeping the base of the bush free of leaves will help deter these pests.

Harvest and Storage

When to Harvest/Number of days to Maturity: Currant plants typically aren't ready to harvest for a year after planting, but 2 year old plants should produce flowers and berries. One currant bush can produce up to 10 pounds of berries per season.

Currants are ready to harvest in early to midsummer (late June to mid July).

How to Harvest: Currants have various colors, so pick them two to three weeks after they have turned the color they are supposed to be, which could be white, black or red. To harvest, pick the entire sprig and pull off the individual berries later.

Optimal Storage Temperature and Conditions: Dry the berries off after picking them because they mold quickly. Store fresh currants in the fridge for up to four days. If you freeze the whole berry, they can be kept good for several months.

Seed Saving: It's not recommended to grow red currants from seed. People have spent years improving these fruit to give bigger, tastier berries with heavier crops. Growing from seed will nullify these advantages. Currants are very easy to grow from cuttings if you know someone with some bushes or place a package order.

Note: Restrictions on whether it is illegal to grow currants vary between states. New research into white pine blister rust and the cultivation of plants immune to the disease has caused many states to rescind or modify their restrictions.

Date Palm Tree

Description: Palms are flowering evergreen plants. They are angiosperms that belong to the Arecaceae family. The date palm has a commanding presence. It has regal fronds, a thick trunk, and large bunches of sweet fruit, making it a stately addition to your garden. The date palm can grow up to 80 feet high and 40 feet wide, bearing large, sprawling, green fronds at its peak. Late winter to early spring when flowering, this tree produces bunches of pale yellow flowers that turn into its famous clusters of dates. Palm trees grow from the top. New growth occurs on the top, with the oldest leaves at the bottom. This happens since the minerals and nutrients travel upwards from the old leaves.

Though slow-growing, these palms give large rewards to those who are patient and diligent in caring for them. Pollination takes place at 95 degrees (35 C.) and fruits need dry, hot temperatures with warm nights. Date palm trees can live for 100 years. Some spread out adventitious surface roots that anchor the plant and help it gather surface water. Take care when planting date palms to choose a location with plenty of space both vertically and horizontally. Most date palm production in is in southern California and Arizona. Florida has many palm trees too, but the dates grow during the rainy season and generally get moldy and rot before they can mature is why Florida's humidity can be a struggle for the fruit. More recently, gardeners are growing date palms in Southern Nevada, Louisiana, and Texas.

Growing Instructions

Optimal Time/Temperature for Germination: The Senegal date palm tree has multiple slender trunks with feathery fronds. With a maximum height of about 25-35 feet, it will produce dates and showy white flowers. Hardiness Zones 9B–11, the Senegal date palm is cold hardy, unfortunately, it is considered invasive in South Florida. The charming Pygmy date palm can reach a maximum height of about 12 ft. and are single-stemmed but often planted in clumps. Cold hardy in Zone 10A, they are widely grown in zone 9 as well, with cold protection or in containers to move indoors for the winter. An excellent cold-hardy option is the Pindo palm with feather-like fronds and hardy down to about 10°F in Zone 8A (intolerant of salt spray). They are slow-growing and reach a final height of about 15-20 feet. Palms that can handle North Florida's winter chill include windmill, needle, sabal, and Sylvester (called wild
date) palms.

Optimal Soil Conditions: You will need a male and female tree for fruit production. Select a location with full sun where soils are well-draining. Date palms can grow in sand, loam, or even clay soil. The tree is tolerant of drought but needs plenty of water when flowering and fruiting. Plant the trees in spring or fall for best results. Dig the hole twice as deep and wide as the actual root base to loosen the soil. Fill the bottom of the hole with soil so the plant is sitting high and roots are barely covered. Press soil around the roots and water well to compact the soil around them.
Young trees do best with supplemental irrigation for several months until they are established. You may also need to stake them for straight date palm growing.

Seed Planting Depth, Spacing and Procedure: Palms produce low growths off the trunk base called offsets, or pups. These new trees are called suckers or offshoots. These offshoots are a clone of the parent tree. Offsets are divided away from the parent plant and started in a prepared bed or pot of sand mixed with some topsoil. Take care when separating the offset to preserve the leafy green top and acquire some root. Use a root saw to divide the young plant from the parent. Offsets need the same good date palm tree care as an adult. Date palm offsets will not be mature and ready to produce fruit for up to 12 years. The plant can grow in a pot for a few years but should be planted in a bed outdoors for best results.

Best Companion Plants: Some pairing premiers for palms include Bromeliads, Cordylines, Crotons, Orchids, Caladiums, Canna plants, and Tropical Hibiscus. Take your pick of unique shaped leaves, choices of colors, and leaf sizes to create your own tropical haven. If you want to plant food around your palm trees, try: tamarillo trees, arugula, bell peppers, chilis taro, cassava, or eggplants.

Crop Maintenance In areas where production is possible, thin fruit by one-half. This increases the size of fruit and ensures a crop the next year. Tie the ripening clusters to an adjacent branch for support and use netting to protect the fruit from birds.

As the fronds begin to die off, prune close to the trunk. Do this at least twice a year. Remove dead and dying foliage, but don't remove too many healthy fronds because that will affect the quality of the dates.

Moisture Requirements & Solutions: Once trees are established, you will rarely need to water them. Date palms prefer dry soil and excess moisture can inhibit growth.

Weeding Needs & Solutions: Keep weeds and turf away from the base in a radius of five feet (1.5 m.).

Feeding Needs/Optimal Natural Fertilizers: Palms are susceptible to a number of nutrient deficiencies, especially magnesium deficiency. Manure makes an excellent fertilizer in early spring. You can also use a palm tree fertilizer high in potassium. You can give fertilizer during the late winter to prep the tree for its fruit production in the coming months.

Pests, Diseases & Solutions: The trees are long-lived, produce a heavy crop, and have relatively few pests and diseases that bother them. Watch for pests and diseases and deal with them quickly if they arise:

White Scale are tiny sap suckers who will feed on foliage as well as fruit. Although not terminal to the tree, they do affect the overall health and quality of the fruit. Coat any scale you find in horticultural oil. This smothers them by clogging their breathing pores. You know if you have white scale because the leaves will be covered in a sticky substance and little bumps appear on the fronds and stems.

Date Palm spider mites feed on the dates and wreck the quality of your yield. These mites are so common that if you have fruit dropping off prematurely, it's likely that date mites are to blame. Each year at the beginning of spring, dust the tree with a product containing sulfur. Obviously, when the tree gets beyond your reach, you might need to use an extender or ladder to get the job done. When mites are present, spray all branches with a strong blast of water to knock the mites off the tree. You can also spray trees with neem oil or insecticidal soap to control them. Alternate treatments so the mites don't develop a resistance to one or the other.

With Black Scorch Disease, your palm will look like it's been set on fire and is all blackened from the flames. The trunk and buds may rot, and the buds will fall off before setting properly. Proper sanitation is the best way to prevent this disease. Wash your tools between uses and be careful not to cut or damage the tree when working around it. When you prune, apply natural copper-based fungicide to the pruning wounds.

Bayoud Disease is a fungal disease that spreads fast once it establishes itself. The foliage on the tree will lighten or turn white. Any exposed roots turn red.
This affects both the quality and the number of fruits you'll get. It is best to remove the tree and burn it to stop the disease from spreading. There is no cure.

Harvest and Storage

When to Harvest/Number of days to maturity: It can take anywhere from 3 to 8 years before dates are produced. An important factor- when the fruit is coming in, remove about two-thirds of it while it is still green. This may sound counterintuitive, but it will allow the remaining fruit to grow larger and have a better airflow, ensuring a healthy crop. This also prevents the tree from producing a very heavy crop one year, then a very light crop the next year. Harvesting depends on the variety you plant on when you see dates forming. Immature dates are green and smooth. As they mature, they turn dark and start to wrinkle.

How to Harvest: Once your fruit is ripe, simply cut off the fruit bunch and bag the fruit to protect them from moisture and other elements. You may need to expose them to heat to allow them to further ripen. However, avoid direct sun as this can burn the fruit. To harvest, you'll remove batches of the fruits by cutting them away. You may need to use a ladder for the higher fruits. Wrap mesh netting around a strand of dates that are a nice, deep purple color. Cut the strand from the trunk and place it on the ground. Repeat until all the ripe dates are harvested. Store on a tray lined with baking paper. The dates will store like this for a couple of weeks. Keep them in a cool dark place and enjoy your harvest.

Optimal Storage temperature and conditions: They're sweet, store well, and can be used in savory dishes and desserts. To dry the dates, put them in a food dehydrator for 24 hours at 150°F. Turn them every few hours.

Seed Saving: Propagating by seed is also possible, but may produce a hybrid tree from cross-pollination. Here's how: Remove the seeds from ripe dates. / Soak the seeds for at least 24 hours, discarding any that float to the top. / Place each remaining seed in its own container of well-draining soil such as a sandy mix. Press the seeds into the soil

so they are about half covered. / Keep moist and warm. Placing them in a spot with indirect sunlight is best. You may want to place a plastic bag on top of the container to keep in more moisture. Once the seed has sprouted a couple of inches, remove the bag (if used) and move to a larger container. / Keep the palm in indirect sunlight until the end of its first summer, then slowly get it accustomed to more sunlight. By its second year, you should be able to plant it in the ground.

Notes:
Some date palms have both male and female flowers and will self-pollinate so always check when you get the tree.

Elderberries

Description: Elderberries have long been known as very beneficial plants to have growing in your garden. They are an excellent permaculture forest garden plant. The flowers, berries, leaves, stems, and branches all have uses in the home, kitchen, apothecary, or garden.

There are two main varieties of elderberry that are best for growing:

Black elderberry (*Sambucus nigra*), which is native to Europe, but has naturalized in much of Asia and North America. Another very similar species of black elderberry is the American Elderberry (*Sambucus canadensis*), which is native to eastern North America.

Blue Elderberry (*Sambucus nigra ssp. cerulea*), which is native to western North America.

Growing Instructions

Elders are partially self fertile, but will produce more berries with another variety planted nearby. Elderberry bushes are extremely easy to grow and care for, thriving in full sun or partial shade.

Depending on variety and conditions, they can grow from 10' to 20' tall, but can be pruned and kept much smaller. They do best in gardening zones 3-8.

Seed Planting Depth, Spacing and Procedure:

Elderberries can be grown from cuttings, starts, or seeds.

Elderberry bushes are very easy to propagate from cuttings, and you can often just cut some pieces off a growing tree and push them in the ground and they will grow.

Suckers from a mature plant can also be dug up and replanted elsewhere.

A more sure fire way to propagate is in late fall through early spring, when the plant is dormant. Select a branch from an elder bush you wish to grow and cut it into six inch pieces.

Remove the leaves, keeping the nodes intact, and stick them a pot of sand mixed with peat moss or potting soil.

Soaking the cuttings in a natural willow bark rooting hormone first can help the process, but isn't totally necessary as elderberry will readily root on its own.

Keep the pot moist and in sunlight. Roots should grow in a couple months, and then they can be planted out. If you live in a cold climate wait until spring to plant the cuttings.

If you don't want to grow elderberries from cuttings, you can also purchase them as starts. These tend to come in gallon or half gallon size pots. They can also be grown from seed.

Harvest and Storage

The flowers can be distilled into elderflower water, an astringent used in making eye and skin lotions. Infuse them in oil to make a salve, lotion, or cream. They can also be eaten raw or fried.

Seed Saving:

Elderberry seeds have a thick, tough seed coat and what botanists call "natural dormancy." This means that the seeds must obtain optimal conditions before waking up from their deep sleep. In the case of elderberries, the seeds must be stratified twice. This is not difficult, but it takes time, up to seven months to complete.
The stratification required to start propagating elderberry from seed should mimic nature's cycle. First expose seeds to warm conditions– like the normal conditions found indoors– for several months. This is followed by winter temperatures for another three months. Experts suggest you mix the seeds into a well-draining substrate like a mixture of compost and sharp sand. This should be moist but not wet
and there should be enough to keep the seeds apart from one another. Put the mixture and seeds into a large zip-lock bag and let it sit somewhere with temperatures of around 68 degrees F. (20 C.) for 10 to 12 weeks. After that, place it in the refrigerator at 39 degrees F. (4 C.) for 14 to 16 weeks. At this point the seeds can be sown in an outdoor seedbed, keep moist and wait for the seedlings to appear. After a year or two, move them to their final location.

Notes:
Varieties: Beauty, Black Lace, Two of the oldest and most vigorous elderberry types are Adams #1 and Adams #2, which bear large fruit clusters and berries that ripen in early September.

Fig Tree


Description: A bush or small tree, from 1 metre (3 feet) to 10 to 12 metres (33 to 39 feet) high, with broad, rough, deciduous leaves that are deeply lobed or sometimes nearly entire. The leaves and stems exude a white latex when broken. The fig has been cultivated for thousands of years.
Fig fruits are borne singly or in pairs above the scars of fallen leaves or in axils of leaves of the present season. Flowers are staminate (male) or pistillate (female) and enclosed within the inflorescence structure. Produces soft purple fruit containing many seeds with a leather skin.
Many fig types produce two crops of fruit each year. The early season crop, also known as the breba crop, fruits on old wood from the previous season and is harvested in May or June. The main fig crop fruits on newly formed spring growth. Harvest follows in August.
Since figs are self pollinating, you only need one fig tree to get fruit. This makes fig trees perfect for planting in urban and suburban gardens where space is limited.

Growing Instructions

Fruit trees can be somewhat expensive, so getting a sucker or cutting from a fig growing friend and starting your own fig tree is recommended. Fig trees are propagated from cuttings of dormant wood taken in February in the Northern Hemisphere and planted in nursery rows. These grow in one season to a height of 1 metre (3 feet) and are ready to transplant at the end of the growing season.

During the growing season, fig trees will send out suckers that can be removed from the roots and planted to start another tree.

You'll want to plant a fig variety that is known to do well in your climate. Figs do need a certain number of chill hours, although it's a very low number for all figs, so keep that in mind when you're looking at varieties.

Optimal Time/Temperature for Germination: Fig trees are best planted in late winter or early spring – this is especially important if you have long hot summers. Planting early will give the trees time to develop some roots and de-stress from being planted before the summer heat sets in.

Optimal Soil Conditions: The trees thrive in a wide range of soil types and in most Mediterranean countries receive water only from the natural rainfall.

Seed Planting Depth, Spacing and Procedure: Planting fig trees from seed lengthens the time it takes to get fruit quite considerably.

Prepare a planting medium of equal parts peat, perlite, and fine volcanic rock and place in a flat. Moisten the medium and then mix seed with horticultural sand. Strew the sand-seed mix over the surface of the flat. Place the tray where it is warm and receives sunlight for at least six hours per day.

You will see germinating fig seeds in about one to two weeks. Keep them lightly moist and warm. Once the plants have two sets of true leaves and are a few inches (8 cm.) high, it is time to move them to individual pots. Keep them in moderate light for the first couple of months. Most fig trees are part of tropical forests and receive mixed lighting but rarely full, blazing sun.

Fig trees can get quite large (20+ feet tall and just as wide) but their growth can be restricted by planting them in a pot or a "fig pit". If you live where winters are cold (zones 7 and below) planting in a container is necessary. If you have limited space then consider planting them in a container to restrict their growth.

A fig pit is basically a concrete box that's buried in the ground. The most common way to make on is to dig a large hole and line the sides with concrete garden pavers (16″X16″ or larger). In the bottom 8″ or so but rocks or broken garden pots for drainage.

A fig pit will restrict the root growth and keep the fig tree to a manageable size for a small yard.

Figs trees can grow in part shade but they may not produce fruit or produce very little fruit. For best fruit production they need at least 8 hours of full sun a day.

Once the tree is planted, but it down by one-third to one-half. This will force the plant to focus on establishing roots instead of leaves. A few weeks after we planted our first fig tree, a rabbit ate it down to the ground. Of course, don't cut it back that drastically but don't be afraid of cutting it back when you plant it.

Crop Maintenance

Moisture Requirements & Solutions: For the first year while the fig trees is being established but sure to water it regularly, especially during the hot summer. Once it's established you'll only need to water it if it didn't rain that week. Figs will drop their fruit if they dry out too much.

Weeding Needs & Solutions: While the fig tree likes heat, and is somewhat drought resistant, the roots are really shallow for the tree size. Figs don't compete well with weeds and will benefit from being well mulched.

The type of mulch doesn't really matter, you can use cardboard, hay, straw, wood chips, etc, the important thing is that it stays mulched to reduce the weeks and help conserve the soil moisture.

Feeding Needs/Optimal Natural Fertilizers: Add Compost to fig trees in the early spring. Other than that, don't use any fertilizer on them. If you want to fertilize them you can water them weekly with a high-potash tomato fertilizer while the fruits are developing.

Pests, Diseases & Solutions:

Fig trees can be relatively pest and problem free. If you don't water them enough in the summer, the leaves will get brown and dry, and fall off the tree. Leaving a very scraggly looking tree.

If you're growing figs indoors or in a greenhouse, you'll want to keep a lookout for spider mites, although they can be on an outside tree too. The leaves will be speckled with pale yellow or bronze spots.

Velvet mites and some varieties of lady beetles feed on spider mites.
So encouraging beneficial insects and limiting pesticide use (even organic pesticides) is a good first step at controlling spider mites.

Figs can also be bothered by mealybugs, scale, or root-feeding nematodes. Your best bet for controlling these is to attract beneficial insects to the garden or releasing them in the greenhouse if that's where the figs are growing. If the infestation is severe you can use insecticidal soap or horticultural oil, just know that you'll also kill the beneficial insects in doing so.

Pests such as the dried fruit beetle can bore into the end of the fruit (the eye) and cause the fruit to sour. If you notice a fig oozing syrupy liquid, the fruit is soured. You might also notice a fermented smell. There's no real way to control this other than planting fig varieties that have tightly closed eyes,

The main pests you'll probably have with growing figs are birds and squirrels. Some people will net the fig trees to protect them from the birds and squirrels but that can be hard as the tree grows.

Harvest and Storage

When to Harvest/Number of days to maturity:

It's important to let figs get fully ripe before harvesting them as they won't ripen anymore after being picked. To tell if a fig is ripe, it should be fully colored whatever color it's supposed to be – purplish, brown, or even green.

Once you start noticing the color change, you'll want to check the figs daily.
Feel the fig, it should be soft and not hard.

How to Harvest:

If it's ripe, it will probably fall off the branch as you're checking it. If not, gently tug it and it will.

If you notice any overripe figs or figs that birds have pecked into, remove them from the tree. The rotting fruit will attract pests.

Optimal Storage temperature and conditions:

Figs will only last a few days after being harvested, so make sure you have a plan for using or preserving them.

Optimal Preserving Procedures:

If you find yourself with a bunch of figs that need to be dealt with and little time, they can be frozen whole. Just put them in a ziplock bag, label it, and toss it into the freezer.

These frozen figs can be used in cooking, canning, or even thawed and dehydrated.

Seed Saving: The fruit contains many seeds that can be removed, cleaned and dried. To harvest fig seeds, acquire a fresh fig, cut it in half, scoop out the pulp and seeds, and soak them for a day or two. Viable seeds will sink to the bottom of the container. The rest can be discarded. The viable seed has already absorbed moisture and will be ready to crack and germinate quickly.

Notes: Fig Varieties

There are four main types of figs – Common Fig, Caprifigs, Smyrna, and San Pedro. The Common Fig is recommended for the backyard orchard because the other three have somewhat complicated pollinating requirements.

The Common Fig varieties develop figs parthenocarpically (without pollination). They don't have true seeds and the figs just seem to appear out of no where on current year wood. There will be no visible flowers, just fruit development.

Brown Turkey fig is a common variety in the South, producing two crops of figs – one in May and another in mid-summer. The first crop usually has large fruit while the second crop fruit is smaller.

Some say the *Texas Everbearing* fig is the same as the Brown Turkey fig – some say they aren't the same. Regardless of who is correct, to the home gardener, the only real difference between these two fig varieties is the name.

Celeste or *Malta* fig is more cold hardy than the Brown Turkey fig. It only produces one crop and needs very little pruning. The fruit is tightly closed which deters the dried fruit beetle.

Black Mission figs produce two crops of large, dark purplish figs. While their harvest is large, Black Mission fig trees are not as cold tolerant as some other varieties and are recommended for zone 8 and up

Desert King fig is cold hardy to zone 6 and will produce figs without intense summer heat. This makes it a popular fig variety for growing in colder climates.

Kadota figs are grown commercially in California and is highly adaptable to other climates. This fig variety is cold hardy to zone 5 if it's planted in a protected area. However, Kadota fig trees are more sensitive to drought and will produce rubbery fruit in drier climates (West Texas, for instance.)

Fruit Cocktail Tree

Description: It is no fantasy and has been around since the 1990s – a single tree that produces a variety of fruits. It is done by grafting different fruits from the same family onto one root system. They are self-pollinating and in spring your tree will be loaded with an abundance of blossoms. A spectacular sight for the whole neighborhood to enjoy. These Fruit Salad trees grow up to six different types of fruit all on the one tree. Dwarf Fruit Cocktail Tree Prunus – brings forward Purple Plum, Red Plum, Yellow Nectarine, Red Nectarine, Peach, and Apricot as a one tree orchard outside or inside. There are four common fruit cocktail varieties available namely: Stone fruit – peaches, plums, nectarine, apricots, and peachcots / Citrus – bears oranges, mandarins, tangelos, grapefruit, lemons, limes, and pomelos / Multi apple – puts out a variety of apples / Multi nashi – includes various Asian pear varieties. If you want some other different varieties, you'll have to look for cocktail cherry trees and other varieties that acts as its own "cocktail" yielder. Dwarf fruit trees will live between 15-20 years vs. a full-size one that lives between 35-45 years.

Growing Instructions

Optimal Time/Temperature for Germination: Fruit Salad Trees can be grown in a container, in the ground, on your balcony, or backyard and are suitable for all climates. Hardiness zones are 5 to 8. They can spread up to 10 ft. tall and 10 ft. wide and some can be as small as 2 or 3 ft.
Chill hours mean the fruit trees require a certain number of at or bellow 45 F every winter to end their dormancy to flower and bear fruit in the spring. (for example, you might need to choose a "low-chill" tree.) Heat tolerance means apples like warm days and cool nights. Peaches and nectarines love long, hot summers, pears and cherries prefer cooler climate. Make sure to choose a tree that can handle the summer heat in your area.

Optimal Soil Conditions: They are adaptable to most soil types and like soil pH 6.0 to 7.0. Most will need a full sun day but some growers do 6 to 8 hours of direct sunlight daily whereas others recommended to place the tree in a location where it can bathe in the afternoon sun. The indoor fruit cocktail tree is perfect for the fruit lover who has limited to no gardening space available.

Containers for growing dwarf fruit trees may include those made from plastic, metal, clay, ceramic, or wood, as long as there is adequate drainage provided. A general rule of thumb, however, is to start with a container approximately 6 inches (15 cm.) wider than that from which the tree is initially placed in at the nursery. The miniature fruit tree enjoys well-drained sandy soil of moderate fertility, which is suitable for most dwarf fruit trees.

Seed Planting Depth, Spacing and Procedure: The first step in the process of growing fruit cocktail trees is to soak the tree overnight in a bucket full of water. Secondly, is to dig a hole 12-18 inches deep and wide in the ground, spread out the roots, and dip the tree into the hole but make sure the grafted joint stays about two inches above the soil. You will see the joint clearly at the base of the tree. Cover with soil and compost, then mulch around the tree to help keep the soil moist. Water well.

If you plant your dwarf fruit trees in containers, then, when the portable time comes, load them up, and off you go. The miniature fruit tree should be moved indoors during cold spells and placed away from drafts. When growing dwarf fruit trees, you should repot them one size up about every two years

Best Companion Plants and Plants that Hinder: Fruit trees benefit from companion plants that attract pollinators, repel pests, improve soil conditions, conserve water, and suppress weeds. Herbs, wildflowers, legumes, alliums are helpful: Goldenrod, Bee balm, Black-eyed Susan, Borage, Poppies, Lupine, Liatris, Marigold, Mint, Nasturtium, Pansy, Phlox, Sunflower, Zinnia, Lavender, and Echinacea. Plant these plants within 25' of the tree to attract pollinators. These plants do not have to be as close to the tree as plants that repel pests or improve the soil. Create a perennial bed or a stand of wildflowers outside of the canopy so the flowers get plenty of sun. Many plants serve double-duty and attract both bees and butterflies: Milkweed, Violets, Dill, Daisies, Zinnia, Ironweed, Blue Wild Indigo, Butterfly Bush, Cornflower, Lilac, Mallow, Joe-Pye weeds, Sage, and Snapdragon. Part of planting a butterfly garden is planting flowers that are food sources for caterpillars. Milkweed is the only food source for Monarch butterfly caterpillars. However, some of these plants may be invasive in your area, so check with a local extension agent before you plant them.

Crop Maintenance -Regular pruning is sometimes necessary for proper care of fruit trees to maintain the shape of your miniature fruit tree. Most pruning is performed during dormancy, just before active growth begins in spring. However, summer pruning may be done to remove undesirable growth and maintain smaller tree size. Some dwarf fruit trees will need support especially during fruiting so tying them to a stake should do the work.

Moisture Requirements & Solutions: Although typically you should water your indoor citrus tree regularly, be mindful to not overwater your tree.
Overwatering is the most common reason for indoor fruit tree failure. Always wait till the soil is completely dry before watering, from every five days to once a week, depending on how dry or humid the tree's location is. The indoor fruit cocktail tree loves humidity and enjoys a shower of misting every now and then especially when humidity is low.

Weeding Needs & Solutions: Companion plants can also help suppress weeds. A thick carpet of clover or mustard can smother weed seedlings. A dense stand of wildflowers or herbs can shade out grasses. The key to weed suppression is limiting shade and space. Any plant can be used for weed suppression as long as it is planted close to other plants. Cover crops are the best for weed suppression because they form a dense carpet.

Feeding Needs/Optimal Natural Fertilizers: Feed the tree at least once every four to six weeks during the growing season with a fruit tree fertilizer (make sure to follow the manufacturer's fertilizing instructions). Add compost around it once in a while, water it with compost tea or add organic supplements to the soil. Especially pay attention to trees that grow in containers.

Pests, Diseases & Solutions: Covering the tree with a net during the fruiting season will be an easy enough job and ensure that *you* harvest your crop instead of the birds. No need for a huge net and ladders. Spotting a problem that needs further attention like a worm, for example, is easy enough since you can inspect all the branches easily. Plants that deter pests include: Chives, Onions, Garlic, Leeks, Anise, Basil, Bergamot, Borage, Catnip, Chervil, Cilantro, Dill, Fennel, Ginger, Hyssop, Lavender, Lemon Balm, Lemon Grass, Lemon Verbena, Lovage, Marjoram, Oregano, Parsley, Peppermint, Rosemary, Sage, Savory, Spearmint, and Tarragon.

Harvest and Storage

When to Harvest/Number of days to maturity: Around the second year, your tree should start to bear fruit. The tree typically yields crop most part of the year upon maturity, and if properly cared for can yield several pounds of fruit per crop.

How to Harvest: There's no ladder hassels with dwarf fruit trees. They reach fruit-bearing maturity very fast. No more waiting five years or more until you get to harvest fruit. All the fruits retain their own characteristics like flavor, appearance, and ripening times.

Optimal Storage temperature and conditions: This kind of tree would supply lesser counts of the yields in fruit so jams, jellies, juices may not be chosen to preserve. Washing the fruit, cutting for freezing and then packaging is another method. Storage in a refrig. bin may last a month or so but they need rotating to maintain cool air flow. Some fruits are dryable by sun/air or dehydrator use will prolong until eaten. Plucking and eating fresh right off your is satisfying in growing your own food as well.

Grafting: Grafted trees reproduce the fruit, structure, and characteristics of a similar plant in which you are propagating. Trees grafted from vigorous rootstock will grow faster and develop quicker. Most grafting is done in the winter or early spring while both rootstock and scion plants are dormant. Each type of grafting is used to accomplish various needs for grafting trees and plants. For instance, root and stem grafting are techniques preferred for small plants. Veneer grafting is often used for evergreens. Bark grafting is used for larger diameter rootstocks and often requires staking. Crown grafting is a type of grafting used to establish a variety of fruit on a single tree. Whip grafting uses a wood branch or scion. Bud grafting uses a very small bud from the branch. Cleft, saddle, splice and inarching tree grafting are some other types of grafting.

First cut a budded branch from the scion tree. A budded branch is a whip like branch that has mature (brownish) but unopened buds on it. Remove any leaves and wrap the budded branch in a damp paper towel. On the rootstock tree, select a healthy and somewhat younger (smaller) branch. About two-thirds of the way up the branch, make a T cut lengthways on the branch, only deep enough to go through the bark. Lift the two corners that the T cut creates so that it creates two flaps. Remove the budded branch from the protective wrap and carefully slice a mature bud from the branch, being careful to leave a strip of the bark around it and the wood below it still attached.

Slip the bud under the flaps in the same direction on the rootstock branch as it was cut from the budded branch. Tape or wrap the bud into place making sure you do not cover the bud itself. In a few weeks, cut the wrapping away and wait for the bud to grow. This can take until the next period of active growth. If you do your bud grafting in the summer, you may not see growth until spring. Once the bud starts actively growing, cut off the branch above the bud. One year after the bud has started actively growing, cut all branches but the grafted branch off of the tree. Trees grafted with the right kind of rootstock can create a tree that benefits from the best of both the rootstock and scion trees. Grafted trees can make a healthy and beautiful addition to your yard.

Notes:

Choose your rootstock – Some nurseries will create a `custom' tree just for you. Let's say you live in an area that has very low rainfall, you can make sure you buy a fruit tree that is grafted onto a rootstock that has high drought tolerance. This will allow you to grow kinds of fruits you didn't even consider before.

If you're looking for something a little more tropical, you can even grow lemon trees, tangelos, grapefruit, other citrus trees, and even avocado trees together, with varying results.

Ginkgo Biloba tree

Description Ginkgo biloba, also called maidenhair(family: Ginkgoaceae Genus) is a broadleaf, deciduous tree. While it loses its leaves in winter, it is classified as a conifer and is dioecious, meaning that some trees are male while others are female. The gingko biloba's uniquely fan-shaped leaves start out green but change to golden-yellow in the fall. Before the whole leaf turns golden, there is sometimes a stage during which the leaf is two-toned, with separate bands of gold and green. The bark on older specimens of the tree becomes deeply furrowed.

Growing Instructions

Optimal Time/Temperature for Germination: Plant ginkgo biloba in an area that receives full sun to part shade while it will grow well in planting zones 4 to 9, however, they can struggle in hot, dry climates.

If planting by seed, Place seeds in baggies with a bit of moist peat moss and store somewhere warm, but not hot, for six weeks.
Ginkgo trees and their dropped fruit experience true winters where they are native. That means your seeds need to have the same cold exposure. After seeds have sat in the bags for the allotted time, move them to the refrigerator for at least three months. This stratification process will allow dormancy in the embryo to break so germination can occur. You can also moisten sand and pot up the seeds, placing the containers outside for winter.

Optimal Soil Conditions: The ginkgo is not fussy about soil type or most soil conditions and will tolerate both acidic and alkaline soil as well as compacted soil. It prefers well-drained sandy soil or loam. Most of the recommended cultivars of gingko biloba grow best in full sun in the North (partial sun in the South), have average water needs, and stand up well to pollution and road salt. In fact, as salt-tolerant plants, they are good choices for those who landscape near the ocean. They are more tolerant of compacted soil than many other types of trees.

Seed Planting Depth, Spacing and Procedure: Once the allotted time has elapsed, remove the seeds and rub them with sandpaper or an emery board. Some growers recommend soaking the seed in a 3% solution of hydrogen peroxide but this is not necessary if you scrub your pots and fill them with pre-moistened medium. Plant seeds shallowly, until just covered. Cover the container with a clear plastic bag and place in a warm location. Keep the medium moderately moist. Expect germination in 30 to 60 days. Remove the bags once you see sprouts. It can take up to 20 years for your little tree to fruit on its own, but it will make a lovely houseplant for several years before you transplant it outdoors to grow to maturity.

Best Companion Plants and Plants that Hinder: good companion plants wood be Fagus, Weigela, Abies concolor candicans (White Fir), Cornus sanguinea (Bloodtwig dogwood), Euonymus alatus (Burning bush), and Continus coggygria (Smoke bush).

Crop Maintenance The male trees are preferred (unless you have allergies), because they are fruitless. Female trees bear a fruit-like product (actually a seed ball) that not only emits a foul odor but also is slippery when it drops down on sidewalks or driveways. Cleaning up after female Ginkgo biloba trees is a high-maintenance task. The problematic "fruit" is about the size of a cherry tomato. Fortunately, all- male cultivars have been created through grafting.

Moisture Requirements & Solutions: Water as needed to keep the soil moist, provided the site is well-drained. Moisture is particularly important when the tree is young; it is relatively drought-tolerant at maturity.

Feeding Needs/ Optimal Natural Fertilizers: Young ginkgo biloboa trees can benefit from a spring feeding of tree fertilizer. Mature trees typically do not need to be fed.

Pests, Diseases & Solutions: They are mostly disease-resistant and tolerate urban pollution. Complications might occur like Root rot nematodes which are tiny, soil-dwelling worms that feed on a tree's roots. Their feeding causes the ginkgo roots to form galls that prevent the roots from absorbing water and nutrients. All you can do is to start managing sick ginkgo trees by adding compost or peat to the soil to
help the trees process nutrients. If they become badly infected, you'll have to remove and destroy them. Phytophthora soil-borne pathogens can cause a tree to die within a few years if not treated by a fungicide.

Very few bugs on ginkgo trees can be found but occasionally foliage eating cicada, caterpillars, like loopers, attack them. These ravenous eaters have been known to chew through the tender leaf leaving just the veins, known as skeletonization. This feeding habit may result in defoliation, dieback, and possible death, especially if the infestation is severe. Luckily, this is rare and most random caterpillars can be hand plucked from the tree. Also, natural predators, such as lacewings and assassin bugs, can be released to naturally manage these ginkgo pests.

Harvest and Storage

When to Harvest/Number of days to Maturity: Female trees bear generous amounts of fruits in autumn.

How to Harvest: This pungent smell is due to butyric acid and is described anywhere from stinky cheese to rancid butter. The Ginkgo is called the "silver apricot" in Japan and The oldest Ginkgo Biloba tree on record is in Eastern China and is around 3,500 years old and still standing strong.

To harvest Ginkgo nuts, first: find a good pair of gloves. The fleshy fruit around the ginkgo seed, also called a sarcotesta, contains urushiol, which is the same chemical in poison ivy that can cause dermatitis and, for some people, skin blistering. Although technically edible for those who can stomach the smell, it is not recommended in case of potential skin reaction. The fruit once picked can last up to around a week, and can be submerged in water for easier removal of the outer layer (but you may want to do this outside - it will stink up your house!

Optimal Storage Temperature and Conditions: The nut inside has a shell that is similar to pistachio, but thinner, and can be roasted still in the shell. It is recommended to roast the nut, as it contains mildly toxic elements that break down and become less toxic once cooked. However, it is not recommended for adults to eat more than a handful at a time, and it is never recommended for children as it causes depletion of vitamin B6.

After roasting, the nut becomes a beautiful translucent jade color and tastes similar to edamame, pine nuts, or chestnuts. Disclaimer: Always use caution when trying a new foraged food, as often it can cause side effects. And use extra caution if you are allergic to tree nuts.

Seed Saving: Ginkgo Biloba will propagate by seed or semi-hardwood cuttings. (notes above)

Notes:

Noted that the fruit is edible only in moderation and if you can get past the nasty smell, what most folks eat is the nut inside the fruit. East Asians consider eating nuts a delicacy and ingest them, not only for their flavor, but for nutritional and medicinal properties.

You can expect your Ginkgo to flower around the winter and in the spring months from January to March (winter) and from April to June (spring).

Goji Berry

Description: Goji berry, wolfberry, matrimony vine, and gou-gi-zi are all common names for Lycium barbarum. tshade family of plants. The berries grow on shrubs of 3 to 5 feet (1-1.5 m.) in height, with long arching stems. These berries spring from bright purple, funnel-shaped flowers. Red, black or orange globular berries then form.

Growing Instructions

Optimal Time/Temperature for Germination: If planting from seed it is helpful to Start seeds indoors in pots and plant outdoors in spring when they are one year old. Expect fruits in about three years from the time of sowing.

Optimal Soil Conditions: Goji berry plants can be drought tolerant but the regular red strains produce little or no fruit in a dry year. They are hardy to at least USDA zone 5. If you are not in the right zone, you might consider growing the plant in a container, allowing you to move it between the indoors and outdoors, as needed.

Goji berry plants prefer well-draining soil with a more alkaline pH between 6.5 and 8.0. Plant the goji berry plant in a spot that receives at least 6 hours of sun.

Seed Planting Depth, Spacing and Procedure:

Goji berry plants can be purchased online or found at local nurseries. Always check the scientific name (Lycium barbarum), so that you know you are buying the correct plant.

Dried organic goji berries from the store often contain viable seeds. Clean the seeds to get them free of fruit pulp by soaking them in water, picking out the seeds and drying them on a rag or paper towel. The dried seeds can be picked off the paper towel and placed on the surface of well moistened potting soil.

Gently press seeds into the soil and put a very thin sprinkling of soil over top. Use a gentle spray bottle to moisten the soil so that the tiny seeds don't get washed all over. Keep them moist but not swampy and place them in a sunny spot or under grow lights. They need high humidity and bright light to start germinating.

Once seedlings appear over two inches they can be placed outdoors under shelter on a porch and allowed to mature for the summer. Once they reach over 6 inches they can be transplanted into larger pots. Young trees can be placed in a sheltered area, top dressed with mulch such as straw and left outside to winter over. They do better wintering over in containers if they are sitting on the earth or even partially buried in soil to benefit from the consistent soil temperature. In the spring allow them several weeks to come back to life, then transplant them out of their pots, in the garden in well prepared soil, in a permanent outdoor location. Plant young trees in either the spring or fall. When planting, mix 2/3 soil from the planting hole with 1/3 compost. Water thoroughly right after planting.

Give them lots of space to spread out over the years and become a bushy patch. Allow the plant to grow several feet tall with support. Alternatively, you may prune the plant to about 4' and grow it more like a shrub. They can make an excellent food hedge. Because they send out long branches they can be used as a landscaping feature cascading out of a rock feature, or hanging down from ledges, as long as they can have enough growing space to put down tap roots.

Best Companion Plants and Plants that Hinder: Because goji berry is a member of the nightshade family, it is advisable to keep them away from other nightshade type plants such as tomatoes, potatoes, tobacco and ground cherries. It is best to separate them out so their predators have a harder time finding them.

Because goji berries need lots of sun but like moist roots, a flowering plant that attracts pollinators and creates a living mulch such as Canadian Anemone, helps to keep the soil moist and promotes a good bacterial population for healthy shrubs.

Crop Maintenance

Goji bushes benefit from pruning, but don't prune a Goji berry plant in the first year.

- In year 2, choose a main shoot and prune all others below it about 15" from the ground
- When the plant reaches 2 feet tall in the summer, pinch out the growing tips to cause side branching where the fruit will be born
- After your main structure is established, just prune back to the height you want to keep it
- Always remove branches within 15" of the ground
- Prune any unproductive branches
- Thin out branches after the berry season.

Moisture Requirements & Solutions: Goji bushes need extra moisture when producing berries so they should be watered if you don't have a regular growing season. It is better to water mature bushes deeply and less often, so that the roots go deep to hold up the tree.

Weeding Needs & Solutions: Mulching around young bushes help prevent them from being overwhelmed by weeds but this is not a concern once they are larger and it can actually be helpful for them to be surrouunded by weeds. Bare soil is not goji berries' friend as it dries out too quickly and they like moist but not swampy roots. (See the reference to living mulches above.)

Feeding Needs/Optimal Natural Fertilizers: It is helpful to start goji bushes off in soil mixed with compost. They don't need a lot of nitrogen so top dressing annually with compost is sufficient.

Goji bushes need phosphorus to flower and produce fruit. This can be acquired naturally from compost.

Pests, Diseases & Solutions:

Birds LOVE Goji berries. You can put netting over them to keep the birds off. The fringe benefit is that the bird droppings will contain happy seeds and new goji berry seedlings that can be transplanted elsewhere or given away, will volunteer in your garden year after year.

Gojo berry seedlings will benefit from Jadam foliar sprays, especially in moist areas where mildew thrives. Goji berry is susceptible to various sucking insects such as aphids, leaf hoppers, and spider mites.

Like tomatoes, they can suffer from blossom end rot, which results from a calcium deficiency. Adding crushed and calcined eggshells to the soil corrects this. There is also a Korean Natural Farming solution for a foliar spray that solves this problem.

Harvest and Storage

When to Harvest/Number of days to maturity: The goji berry plant may flower and fruit the first growing season. The small flowers are a pretty light purplish color. As the plant gets older, you will have a longer fruiting time period. At around four years old, the plant will likely produce fruit most of the growing season, which is May through October.

How to Harvest: Berries can be hand picked. The berries can be eaten fresh, dried, or juiced.

Optimal Storage temperature and conditions: Fresh Goji Berries keep for a week in the fridge but it is best to eat them immediately or dry them to reduce loss of vitamin c.

Optimal Preserving Procedures: Goji Berries dehydrate well and can keep for many months dried in a sealed container. They also make great jams.

Seed Saving: Seeds can be extracted from fruit by soaking and patience, but the seeds stay viable in the dried berries.

Notes: Goji berry plants have been grown and used in China for centuries. Goji berries contain all the essential amino acids and are high in protein and antioxidants.

VARIETIES
Arizona Desert-Thorn – Lycium Exsertum
Desert-Thorn varieties, as an example, will always need dry climates similar to desert conditions.
Pale Desert-Thorn establish better in gardens. The rarest variety is the black goji berry shrub.

Gooseberry Shrub

Description: Usually semi-translucent and green to burghundy in color, Gooseberries are in the Family of Grossulariaceae from the genus Ribes. Wild gooseberry is a 0.5-2 m tall perennial shrub. It grows upright or spreading, and has grey to brownish branches. The nodes where the leaves are attached are armed with 1-3 chestnut-brown spikes, the internodes sometimes bear bristles. The leaves are alternate, hairy, and 2-6 cm wide with toothed margins. Its Flower colors are pink, yellow, greenish-white. Gooseberries are self-fruitful, so they will not require a pollinator plant. The two main species of gooseberries are European gooseberries and American gooseberries and there are several cultivars of each. Some varieties don't have thorns but many do.

Growing Instructions

Optimal Time/Temperature for Germination: Options- a) Gooseberry clippings from a nursery can be purchased year round, will likely come potted, and can be planted anytime between autumn and spring. Potted gooseberry plants will often be simpler to plant as they should already have small root systems established. b) Get bare-root gooseberry clippings from an older gooseberry bush**.** If you are getting your clippings from a wild bush, or your clippings are unpotted, be sure your clippings are from a 2-3 year old bush with 3-5 main branches and a head of at least 4-6 inches. You will need to keep your bare-root clippings cool and moist if not planted immediately, and they will need to be soaked in water for about 4 hours before planting. Wrap the root in a moist paper towel, place the root in a cup or glass, and set in the fridge until you are ready to plant.

Gooseberries thrive in cooler climates and will often not produce fruit until a frost has passed. Plant your gooseberries early in spring, or as soon as the ground is workable, as gooseberry clippings can survive temperatures as low as 55 degrees. The earlier you plant your gooseberries, the better and more established the plants will be. Although gooseberries will grow in warmer climates, their distinct tartness is better in cooler areas. Hardiness zones are 3 to 7.

Optimal Soil Conditions: Gooseberries are great for garden spaces with a lot of shade. Berries grown in shade will produce fruit that tastes more tart and tasty than fruit grown in the sun. Creating a nutrient rich plot is key during preparation as you will not be adding fertilizer during the planting period. If your original soil is sandy, you many need to apply generous amounts of compost. Most berry varieties will wilt with hot afternoon sun. Gooseberries can grow in a wide range of soils but well-drained sandy loam rich in organic matter is best. Sandy soil that gets hot and dry from the summer sun and heavy clay soil with poor drainage are not suitable. Some experts believe there is a distinctive flavor change in berries grown in sun versus shade. Best soil pH is Neutral to Acidic (5.5 to 6.5). In humid weather, gooseberries are especially prone to disease. This makes good air circulation all the more important, so space your plants 3 to 5 feet apart and prune them annually.

Seed Planting Depth, Spacing and Procedure:

Preparing your plot in advance of planting will include choosing a well ventilated site with adequate moisture and making sure your soil is loose to optimize growth. Take a shovel and loosen the soil to a depth equivalent to the height of the rootball, which is the mass of roots under the stem, and over a wide area to prevent compaction and improve drainage. If you have bare root clippings they will not have a root ball. Instead, loosen the soil around a depth of 3 inches. If your plot becomes waterlogged over the winter, simply loosen the soil again and plant your clippings on a slight mound, approximately 3-4 inches high.

Plant gooseberries in holes deeper and wider than their root systems**.** Gooseberry plants should have a 1 in. margin in depth and a margin approximately 3 times the diameter in width when planted. This will encourage growth and allow plenty of room for the initial roots to take hold. Once planted, gently pack the soil to firm the ground around the roots. Plant each clipping equally spaced apart. Spacing your plants apart will ensure that they have enough room and light to grow and will encourage their root systems to grow wide.

Clippings should be spaced approximately 12-15 inches apart and replanted bushes approximately 4-5 feet apart. If your clippings are having difficulty staying vertical try attaching them to a bamboo cane with horizontal wires.

Best Companion Plants and Plants that Hinder: Ideal companions are: Tomatoes, Beans, Peas, Marigold, Tansy, Fuchsias, Chives, Beans & Legumes. It's important to not plant gooseberries near white pine.

Crop Maintenance After planting, prune all clippings down to 4-6 buds above ground. This will encourage new vibrant and initial growth and the development of vigorous new stems, or canes, that will be able to last years. Prune your plant each year in late winter or early spring to encourage new growth and healthy development. The goal of

pruning is to have three to four strong canes of each age on the plant and let an equal number of new canes grow every summer.

Gooseberries don't grow very fast. To get fully grown, it takes several weeks. Trellising or staking helps keep the canes from flopping over, which happens especially when they are loaded with berries.

Moisture Requirements & Solutions:

Dry and windy conditions are especially likely to cause water shortage in your soil. Even if your soil feels damp the roots of your gooseberry plant may be dry. Set up an irrigation system or set a daily routine of watering your plant to ensure it is receiving the moisture it needs in order to produce the best fruit possible. Keep in mind that even wet and rainy summers rarely give enough moisture to plants. You will almost always need to set-up alternate means of watering.

Weeding Needs & Solutions: Scatter 2-4 inches of organic mulch like pine needles or compost immediately after your clippings are planted. Mulch cools the soil, conserves water, and suppresses weeds, which is preferable in shaded plots and essential in sunny plots. If you do not have a compost at home you can purchase mulch at your local plant nursery. Renew your mulch each year after planting.

Feeding Needs/Optimal Natural Fertilizers: Gooseberries are also high nitrogen feeders so adding composted manure is beneficial.
Gooseberries benefit from a regular source of potassium so cut up banana peels soaked in water and then strained to feed the liquid to plants can take care of that.

Pests, Diseases & Solutions: Insect and disease infestations are rare and uncommon. If they do present themselves, it is unlikely that they will ruin your entire crop. However, they are important to look for in order to keep your gooseberry bush as healthy as possible and to not affect its future fruitings. Powdery mildew can present itself during hotter months, and is therefore less common in cooler climates. However, you can prevent powdery mildew by making sure your gooseberry bush is planted in a well ventilated area with plenty of light, which will inhibit the distribution of powdery mildew spores. The best way to prevent insect infestations and diseases is to keep a healthy plant by selecting good planting soil, adequate amounts of water, plenty of light, and consistently removing dead leaves and branches. Gooseberries can be affected by anthracnose, currant worm, and gooseberry fruitworm. Your first line of defense is choosing disease and pest resistant varieties and then providing good air circulation. For anthracnose, destroy any pruned branches that are infected and use a liquid copper spray or sulfur powder starting in the early spring to prevent it. You can also use neem oil in the spring to destroy the bugs that spread the disease.

Harvest and Storage

When to Harvest/Number of days to maturity: It takes one to three years for the plants to produce berries. Knowing when to harvest Gooseberries depends on their taste and on your intended use for them. If you plan on cooking with Gooseberries try picking them while they a bit unripe and tart. If you'd like to eat them raw keep tasting until the fruit becomes sweeter. All varieties ripen between late June and mid-July.

How to Harvest: Wear gloves, long sleeves, and pants when harvesting, to protect yourself against scratches.

Optimal Storage temperature and conditions:
Gooseberries can be eaten ripe right off the bush. They're a delicious snack, but make sure you don't leave them on the bush too long when they're soft. You can freeze gooseberries as well, which is handy, because you can only make so many pies, jams, or crumbles with berries at one time.You can remove around half the crop at this time, leaving all the under-ripe berries to be finished. They are ideal for dishes requiring a crisp acidity to complement either sweet or savory dishes.

Seed Saving:

To propagate, you can do tip layering easily. Bury the tip of a cane in the soil and secure it with a rock. Once it has grown some strong roots, which can take up to one year, you can sever it from the mother plant and transplant it in a new location.

Notes:
Consult your local plant nursery for special gooseberry clippings, like strains that are disease resistant or strains that are known for larger yields. A cultivar is a plant that has been grown from a stem cutting, grafting, or tissue cultures to ensure it retains the characteristics of the plant parent. Growing a plant from one of these plant's seeds may not produce the same plant as the parent. "Variety" can often be found growing and reproducing naturally in the plant kingdom. Plants grown from its seeds will often come out true to type.

Popular cultivars of the American gooseberry are 'Hinnonmaki Red' with dark red fruit, 'Hinnonmaki Yellow' with green fruit, and 'Pixwell' with berries that turn deep purple when ripe. /'Captivator', a hybrid between European and American gooseberries, is almost thornless with red fruit. / A popular variety of the European gooseberry is 'Invicta' with very large, greenish yellow berries.

If birds are eating your gooseberries, they're probably hungry. Consider installing a bird feeder near your berries so they have easy access to another food source when they come looking for a snack. If you see them using it, remember to keep it stocked with fresh seed so the birds stay happy and your berries stay safe. You may need to net gooseberries if the birds become too interested.

Gooseberries are banned in several states due to white pine blister rust. The gooseberry is a secondary host to the disease which can kill white pine trees. Several other states require a permit to grow these ribes. Check with your local cooperative extension office to find out if gooseberries or currant canes are allowed to be grown in your area.

Goumi Berry

Description: This 6 ft. tall deciduous shrub bears thousands of juicy, red, pleasing tart fruits that taste like a cherry pie has leaves with a silver underside. The berries themselves are 1-2 cm (0.5 in.) wide, round and bright red when the fruits ripen in high summer. Its pit is edible too. Goumi berries are from the genus *Elaeagnus,* a group of plants that take nitrogen from the air and fix it into the soil. This perennial of the Elaeagnaceae family is not to be confused with goji berries though both have many health benefits. Each year in late spring, goumi is covered with delicate, white-yellow, bell-shaped flowers with a similar fragrance to lilac. It is also known as Cherry silverberry and Autumn olive. Goumi takes years to mature but has better roots for mining minerals so it doesn't require replanting every year. Goumi trees will provide food for years without growing anew.

Growing Instructions

Optimal Time/Temperature for Germination: Goumi berry shrubs are very durable. The plants can survive temperatures as low as -4 F. (-20 C.). Although the aboveground plant may die back at colder temperatures, the roots can survive as low as -22 F. (-30 C.) and will regrow again in the spring. Hardiness zones are 4 to 9.

Optimal Soil Conditions: The shrubs can tolerate any kind of soil, from sand to clay and acidic to alkaline. They will grow in nutritionally poor soil and polluted air, and will do well in full sun or partial shade. They can even tolerate salty sea air. In other words, growing goumi berries does not take a lot of care with well-draining soil. The pH goal is 6.3 to 6.8 so if needed you can mix 1-2 in. of plant based organic matter (manure, peat, and coconut coir) int the soil.

Seed Planting Depth, Spacing and Procedure: Your best option is to mix this shrub in with your other plants. If you've got fruit trees or other berries you can plant goumi berries between your other fruits and berries. You could plant an apple tree, followed by a goumi berry, and then plant another apple tree or other fruit tree or berry. Just make sure to space the fruit trees and other berries out enough so the goumi berries can get a half-day of sunlight. If you've already planted your fruit trees or other berries you can still mix in goumi berries. You might just need to plant them on the sunny side of your trees/berries depending on how much room there is between your existing plants. You can also mix goumi berries into your vegetable and flower areas. Just space the goumi berries out enough to leave plenty of room for the small plants so they can still get enough sun. Since Goumi is partially self-fertile, planting two varieties will produce crops. Plant 7 ft. apart or 4 ft. for a hedge. The smallest for container is a 25 gal. Pot.

Best Companion Plants: Planting along with Comfrey, Jerusalem artichoke, or Maximillian sunflower would be great fruit guild builders.

Crop Maintenance

Moisture Requirements & Solutions:

There are many factors, including the humidity, temperature, soil type, wind, and amount of direct sun that affect how much and how often water needs to be applied.

A general rule of thumb for plants in the ground is to ensure they receive an inch of water per week over the root zone. (that is equivalent to about ¾ to 1 gal. per square foot of soil surface area.) Apply this water once a week (twice if soil is fast draining). Do not water lightly each day because this results in a wet surface and dry root zone area. The soil should be moist but not soggy to a depth of about a foot for most growing plants. The top inch or two can feel dry, and the plant still be well watered. The trick is to have the water available where the roots are. In hotter and sunnier areas, mulch can greatly ease the burden of summer watering.

For containers, water until the soil is saturated and water comes out of the drainage holes. Let the container dry until the soil is dry to touch 1-2 in. down. A plant that has wilted can be receiving either too much or too little water. It is important to make sure plants have regular, deep watering during the first couple of growing seasons. In drier areas, or where soils do not retain water well, permanent irrigation is essential. Make sure they get the water where they need it, staring at the drip line and extending away from the tree up to several feet where the feeder roots will be.

Weeding Needs & Solutions: Other plants are known as weeds, but they do the important work of repairing or protecting soils. Goumi berry trees do both of these things. Mulch is the solution so young trees aren't crowded out.

Feeding Needs/ Optimal Natural Fertilizers: The small selection of flora that does this is called nitrogen-fixers. This natural action is beneficial to other plants because nitrogen is an integral part of fertilizer, so the plants growing near to nitrogen-fixers, like goumi, get a boost. It supplies its own fertilization via nitrogen-fixing bacteria nodules on its roots. In
natural areas, nitrogen-fixing plants tend to be some of the first plants to show up after a disturbance like a fire or a mudslide. As a general guide, if your tree is producing about one foot of new growth a year and has healthy looking foliage, it may not need any fertilizer.

Pests & Diseases: One article said that goumi is not bothered by either. Here are some solutions from another: a) deer- browsed shortened branches, munched on leaves, or plants pulled up. Try 8 ft. woven wire or plastic mesh deer fence or plastic mesh deer fence or trained large dogs patrolling perimeter. / b) bird- disappeared fruit or gaping holes in them. Can try reflective bird scare tape or bird netting. / c) vole, mouse, rabbit- bark eaten in a band from soil level up to 8 in. and roots eaten too with mulch at base of trees.

Remember to keep mulch 4-6 in. away from base of tree, keep grass short, and try vinyl tree guard wrapped until well-established. / d) aphid- pear shaped insects on underside of leaves. Get natural predators (lady bugs, wasps) to control, insecticidal soap, plant dill or yarrow, or water spray to knock them off. / e) Ant- large numerous insects scurrying on tree.

Try to eliminate pathways into tree or controlling the ants will get other insects under control. / f) Brown stink bug – feeding decay on fruits, nuts, berries, and leaves. Have to keep monitoring with traps or oils.

Harvest and Storage

When to Harvest/Number of days to Maturity: Ripening in July, the fruit yield can be 10-15 bs. but may take 2 to 3 years after planting.

How to Harvest: Goumi berries are best harvested by shaking the shrub and collecting the berries on a sheet below. This can be hard on the plant, however, and you need to be careful not to damage the tender young shoots. It helps to harvest the berries when they are at their ripest – they should be a deep scarlet color and not as acidic in flavor.

Optimal Storage Temperature and Conditions: Berries that aren't completely ripe have a notably and disappointing astringency, similar to that of persimmons but, berries that are ready for consumption are juicy, sweet, and tart, something akin to rhubarb. For the best flavor, growers have to be attentive around harvest time.

These little bright red specimens can be eaten raw or cooked into jellies, jams, sauces, and pies. Goumi fruits pair well with other fruits such as apples, cranberries, blueberries, strawberries, and quince, rhubarb, brown sugar, vanilla, grape juice, thyme, ginger, lemon, and lime juice. Whole Goumi fruits should be immediately consumed for the best quality and flavor. The fruits are highly perishable and will only keep 1 to 2 days in the refrigerator.

Seed Saving: There is also an oval, tan seed in the center of the flesh that is edible but has a fibrous, chewy texture, however, Goumi can be propagated by softwood and hardwood cuttings. (For seeds, a warm stratification for 4 weeks followed by 12-weeks cold stratification can help the seeds germinate.) Softwood cuttings of 2 ½ – 4 inches can be taken in July/August. Softwood cuttings are this year's growth, the growth that started in the spring. This wood is usually a little more reddish color and last year's wood is a little browner in color. Cut the softwood branches off of the plant. Then cut the branches down so they have two to four internodes. Internodes are any place a branch or leaf comes out. I usually go with three or four. Leave two leafs at the top and remove the bottom leafs. Hardwood cuttings of the current year's growth, 4 – 5 inches with a heel, can be taken in November in a frame. Leave in the ground for 12 months before transplanting. Dip the bottoms of the cuttings in rooting hormone. Now it is time to place the cuttings into the ground. Push them into your planting medium about two inches down. Your planting medium should be something that drains freely and easily. You do not want to saturate the soil where disease and pathogens will proliferate. These little cuttings will die if the dry out. You don't want to soak the ground, but you do want to keep the leaves wet. The best way to do this is with a mist irrigation system that automatically comes on.

Notes:

Goumi berries haven't gotten a lot of attention in supermarkets because they don't transport well. They are a great option in the home garden. In permaculture terms, it's hard to get a species much better than this.

Other native nitrogen-fixers are lupines and alders but aren't edible.
Goumi berries can be mixed in with your other plants as part of a polyculture.

Young seedlings of the Goumi bush can be fairly thorny, very useful for a hedgerow. Older, mature plants and named varieties grown from cuttings have few if any thorns.

Muscadine Grape

Description: Vitis rotundifolia, the Muscadine, is in the same genus Vitis with the other grapevine species and yet belongs to a separate subgenus, Muscadina (all other grapevine species belong to subgenus Euvitis). Muscadine grapes have two color types, black or bronze. Black varieties include those that have pink, red and deep purple colors. Bronze varieties grow with shades of yellow, green and tan. Muscadines are dioecious (require male and female plants to produce) and have smooth bark, un-forked tendrils, and fruit born in small clusters of large berries that ripen individually and fall away or shed when mature. Muscadine grapes contain 5 oval to oblong seeds Due to their additional chromosomes, muscadines are generally incompatible with bunch grapes for grafting and hybridizing. You'll have the best germination rates if you plant seeds from wild or heirloom varieties. If you want a specific muscadine grape cultivar, you have to plant its 'cutting'. (seeds don't grow true to the parent.) Both Muscadine and Scuppernong grapes are indigenous to the Southeast region. They grow both wild and domestically in backyards and on farms. While Scuppernong is a variety of Muscadine, it is not considered a hybrid or cultivar. Muscadine loves hot, humid climates and is indigenous in the Southeast. It also has the highest polyphenol content of any grape.

Pollination: Whatever you do, make sure you plant at least two different vines. Muscadine grapes need to be pollinated by a different cultivar. (grab at least 2 types with two different names.) The vines are either female or self-fertile. If you're growing on a large scale, female varieties produce larger and sweeter fruit. Self-fertile varieties in general produce higher fruit yields. Self-pollinating means they pollinate themselves and female Muscadine vines within 40 ft. so plant at least 1 self-fertile for every 3 female vines. They bear either male (staminate) or female (pistillate) flowers, but only female vines produce fruit. Both muscadines and bunch grapes are primarily wind-pollinated.

Growing Instructions

Optimal Time/Temperature for Germination: Muscadines grow best in zones 6-10. In colder locations, cold hardiness may be an important selection criterion. The time to plant muscadines is from the start of the dormant season through early spring (December through April). Do not plant dormant, bare-root plants later than May. This will help avoid hot, dry conditions that can lead to poor establishment. You can plant potted vines later in the growing season, but they perform best when planted early.

Optimal Soil Conditions: Muscadine grapevine planting should take place in an area of full sun with well-draining soil. Muscadines grow best in acidic to slightly acidic soils with a pH of 5.5 to 6.8. They are not well adapted to soils with high concentrations of calcium carbonate and a high pH. Problems with iron uptake usually occur in soils with a pH above 7.0, leading to iron chlorosis. Soils with a pH higher than 7.0 may be improved with large additions of compost, but this often does not completely solve chlorosis problems, particularly with high-alkaline irrigation water. Applying chelated iron as a foliar spray or through the drip irrigation system may mitigate this problem but may not be sufficient for highly calcareous soils.

(Generally, it is not economically feasible to acidify an alkaline soil by adding sulfur.) However, soil with a pH lower than 5.5 may be limed to raise the soil pH to a more favorable range for plant nutrients intake. Like most other fruit crops, muscadines do not tolerate "wet feet" so conduct a percolation test on the soil's absorption rate to determine whether drainage is suitable. If the drainage at your site is inadequate, set the plants on a raised row that will drain in all directions.

Seed Planting Depth, Spacing and Procedure: Start with large, healthy plants with shoots about the size of a pencil. Dig a hole to accommodate the entire root system. Plant the vine and gently firm the soil around the roots. Do not backfill with potting soil or add fertilizer to the planting hole. Once the vine is planted, water immediately to ensure good contact between roots and soil, and to prevent the roots from drying out. The most common reason a new dormant, bare-root plant dies is that the roots become too dry. After planting, cut the top of the dormant vine down to two buds. This ensures stronger shoot growth than if the vine is left untrimmed.

Muscadine vines are vigorous growers and the shoots have a downward growth habit. They are usually trained to highwire systems with cordons at 5 to 6 ft. off the ground. Cordons are the woody arms of the grapevine and are at least 2 years old. The shoots are then allowed to cascade downward. Vines are spaced anywhere from 15 to 20 ft. apart and rows are commonly spaced at 8 to 12 ft. apart. This spacing allows equipment to pass down the row. Because muscadine vines are heavy, 9-gauge soft wire can be used for load-bearing wires. The most common materials for training systems are 5 or 6 in. round treated wood posts or 2 7/8 in. drill stem pipes for end posts. Set the posts a maximum of 12 to 18 ft. apart and plant the vines between the posts. End-post configurations must be strong enough to resist the tension put on them. H-brace and dead man assemblies generally offer superior support and do not result in any unused spaces in the trellis.

Some growers training their vines, like the single-wire method, concrete in the end posts in, then hammer in center posts for support every 12-16 ft. Others like the double wire trellis, which will increase the grape yield. Attach 4 foot (1 m.) cross arms of 2 by 6 inch (5 x 15 cm.) treated lumber to treated posts to support double wires. Decide what trellis system you wish to use and construct it prior to vine planting. Use a small stake, string, or wire to train a straight trunk up to the cordon wire. Of course, muscadine grapes can be used as a shade provider over a pergola or arch as well.

Best Companion Plants and Plants that Hinder: Excellent companions for grapes include: Hyssop, Oregano, Basil, Beans, Blackberries, Clover, Geraniums, Peas, Garlic, Chives, Rosemary, Tansy, and Mint. Muscadines do well planted under elm or mulberry trees and coexist peacefully.
However, note just as people don't always get along, such is the case with grapes. Grapes should never be planted near cabbage or radishes.

Crop Maintenance - Training is bending, tying, or pruning a plant or branch into a particular shape or position onto a trellis system. In the first year, select a vigorous shoot that will grow up the training stake and become the trunk of the vine. Remove any other shoots as they develop during this time to encourage one robust, upright shoot that will develop into a healthy, permanent trunk. Allow this main shoot to grow upward until it reaches the top wire, making sure to tie it to the training stake along the way. This may occur during the first season, but if it does not, prune the main shoot back down to two buds during the dormant season before growth commences in the second year, beginning the process again. (Avoid the common mistake of retaining a small or weak cane in hopes of building a trunk more quickly.)

Once the main shoot reaches one foot beyond the top wire, cut it back to a few inches below the wire to encourage lateral shoot growth. Shoots will grow from buds just below where the shoot was cut. Select two lateral shoots—one to the right and one to the left—at or below the point where they touch the wire. Each lateral shoot will serve as an "arm" (cordon) of the grapevine and can then be trained along the cordon wire. The cordon can sometimes develop to the full length of the wire during the second growing season. Depending on the health of the vine, soil conditions, and weather, newly planted muscadines may grow anywhere from a few feet to over 10 feet within a single year. You can also retain two trunks rather than a single one.

To train vines into an arbor, during the first 2 years, train the vine up the arbor post. In the third year, establish a cordon down the wire, with horizontal bars (cross-members) spaced 24 inches apart. In January or February, prune the cordon to two or three bud spurs every 4 to 6 inches.

Prevent overgrowth by establishing cordons at least than 48 inches apart. If you use only one cultivar and want it to fruit, be sure it is a perfect plant, one that is self-fruitful and does not require a pollinizer. Choose a bronze-colored cultivar if a patio or concrete surface is below the arbor and staining from fruit drop is a concern.

Moisture Requirements & Solutions: Vines may die if they are in standing water for even a short period of time, such as after a heavy rainstorm. mulch around the bases to aid in water retention. The first year is key. After that, they may do fine with just rainfall.
Irrigation is most likely needed for vineyard establishment. It would be crucial for fruit sizing and to maintain vine health and fruit quality during dry periods. Irrigation requirements depend on soil, vine size, and weather conditions. Adjust the watering rates to compensate for extremes in soil drainage or weather events. (Water quality may need monitoring from its source.)

Weeding Needs & Solutions: Muscadine roots are very shallow. To prevent root damage, avoid mechanical tillage. Control weeds in first-year vines by either hoeing a 3-foot circle around each vine. Do not underestimate the importance of weed control. It is one of the most significant challenges for new vineyards.

Feeding Needs/Optimal Natural Fertilizers: Fertilizers, particularly nitrogen, applied after harvest stimulate late season growth which decreases cold hardiness. Feed with compost, rabbit manure, and compost tea can do well without any chemical fertilizer. Feed with slow-release organic matter like manure/compost any time. If you're using something like blood meal or 10- 10-10, however, just feed at the beginning of the year as they're waking up, then another hit or two into the summer.

Conduct a soil test before planting a muscadine vineyard to determine if pre-plant amendments are necessary. Your soil test should guide your first-year nutrition program. For instance, sandy soil has a relatively low nutrient-holding capacity. As a result, muscadines grown on sandy soil will require more frequent applications of fertilizer.

Pests, Diseases & Solutions: Compared to improved bunch grapes, muscadines have excellent disease resistance. However, a disease-control program remains necessary to maximize production and fruit quality. // Bunch rots such as bitter rot, ripe rot, and macrophoma rot are the most common threats, and often warrant control, particularly in wet years. The grape berry moth is the most common insect pest of muscadines and bunch grapes. It lays its eggs on developing flower and fruit clusters, where the larvae infest. A single larva can infest and destroy several flowers or berries, reducing yield and quality.

The grapes may be susceptible to parasitic nematodes. One grower's recipe is to have coffee, tobacco, pokeweed, pencil tree leaves, cassava leaves, habenero peppers, moringa, comfrey, dog fennel, rosemary, mint, senna alata and oregano to combat. While many species of nematodes are pests, some are actually beneficial to the garden. It is important to note that soil-borne and plant- loving nematodes are not the same species as the roundworms that sometimes inhabit humans and pets. // Japanese beetles do love a nibble, however, as do birds. Draping netting over the vines can thwart the birds.

Grow your own painted daisies and use the flowers as a fungicide for plants. Dry the flower heads, then grind them or soak overnight in 1/8 cup (29.5 mL) of alcohol. Mix with up to 4 gallons (15 L.) of water and strain through cheesecloth. Bordeaux mixture for use during the dormant season can control some fungal and bacterial diseases. Fungal disease severity is increased by dense leaf canopies which maintain high humidity. Canopy modification using proper pruning and fertility management can reduce disease problems. There are a number of disease resistant cultivars to choose from too, such as: Carlos, Nesbitt, Noble, Triumph, and Regale.

Pruning:

You're going to cut the living daylights out of the vines if you're doing it right. If you're not chopping them like mad, you're not getting them to hit their full potential. The basic framework of a vine consists of the trunk, permanent arms (cordons) and the fruiting spurs. Once the trunk and cordon are established, prune the 1- year-old shoots (canes) that arise from the cordon down to two to three buds. These short sections of cane are spurs. Space spurs 3 to 5 inches apart along each cordon. around 90 percent of the previous season's growth to control the canopy and prevent over-cropping. Periodically, tie the young cordons to the wire until each is 10 feet long, usually in the second year. To hasten the vines' development, pinch back the lateral growths on the cordons. Once the framework of trunk and cordons is established and the cordons have developed to full length, the side shoots can be allowed to develop. To maintain this framework, the vines must be pruned each dormant season. An unpruned or otherwise unhealthy vine can often be retrained by cutting back to near the trunk or cordon to re-establish a cordon or spur positions.

Harvest and Storage

When to Harvest/Number of days to maturity: Muscadine grapes are harvested starting the third season of growth. The grapes mature from late July to September and may bring an average of 60 to 80 lbs. of fruit per plant whereas some will produce even more. Most muscadine cultivars ripe muscadines are not considered to be ripe as soon as they change color. Instead, they continue to increase in sweetness, decrease in tartness (accumulate sugar and lose acid) for several weeks following their color change. When berries become fully ripe, they often take on a slightly dull appearance and are easily dislodged from the cluster.

How to Harvest: To harvest ripe grapes efficiently, place a canvas or catching frame under the vine and gently shake the vine or wire. (Large vineyards use mechanical harvesters, such as blueberry harvesters, to pick their fruit.) Muscadines are not climacteric, which means they will not ripen after they are picked. If you pick them green or sour, they will remain green and sour. Repeat this process until you learn by feel what is a ripe muscadine grape.

Optimal Storage temperature and conditions: Process cultivars or individual berries that have a wet stem-end scar directly after harvest as they do not store well. Those with a dry stem scar will keep for up to 2 weeks if refrigerated at a temperature between 34°F and 45°F. Keeping fresh: Separate the muscadines from the stems. Places the stemmed grapes in a colander. Rinse the muscadines thoroughly with cool, running water. Dry the grapes thoroughly with a clean towel. Store the muscadines in the freezer for up to one year.

Muscadine grapes are ideal for making grape butter, jelly, jam and preserves. Jams, preserves and butter are made from whole or crushed grapes. Preserves are slightly different from jams, because they typically contain larger pieces of grapes.

Muscadines are generally cooked, then the juice, hulls and pulp are frozen. When properly packaged, they will maintain flavor and quality for two or three years. Muscadine juice has a high concentration of the cholesterol-lowering nutrient reservatrol, making it a healthy beverage choice if consumed in moderation.

Since Muscadines tend to have thicker skins, when eating them out of hand, although the skin is edible, some people prefer to squeeze each grape so the pulp goes in their mouth and they can discard the skin and spit out the seeds. Some people eat the whole berry-skins, seeds, and pulp. The young leaves are edible and can be used just like "regular" grape leaves.

Seed Saving: If you want a specific muscadine grape cultivar, you have to plant a cutting from the desired variety. With that said, here's how to start the seeds:

Clean pulp from seeds with warm water and pat them dry. Scarify the seeds by nicking its coat with nail clippers or a knife. Be careful not to nick the embryo. Store the seeds in your refrig. For 3 to 4 months. Place the seeds in a sterile seed starting mixture. Grape seeds need warmth in order to germinate so place the seed starting flat on a warming pad. Leave the flat in place until germinated. When the seedlings develop two sets of leaves, re-pot into individual containers.
Plant them outside in spring when all danger of frost has passed.

Propagation: - Muscadines are most commonly propagated using soft cuttings or by layering. Layering allows the stem to root while attached to the original vine. Cuttings taken in early to late summer are most successful. Avoid selecting the tips of shoots and basal regions with bark or periderm formation. Place cuttings in a soilless potting mix or other medium and use intermittent mist until rooting takes place in approximately 2 to 4 weeks. (In a commercial setting, vines are usually grown in a field nursery for a year before they are dug and sold.) Muscadine vines are typically sold as dormant, bare-root, 1-year-old vines or in pots.

Notes:

Muscadine is America's first grape. The vines can be grown organically since they require little or no spraying. They're grown from coastal New York south to Florida, west to Missouri, Kansas, Oklahoma, Texas, parts of New Mexico, Arizona, and the coastal sides of California, Oregon, and Washington.

Cluster Thinning-- To ensure healthy vine development in the first season: Pinch off all of the clusters as they appear. If vine growth is not satisfactory after the first season, pinch off all clusters as they appear during the second season. Otherwise, pinch off approximately half of the clusters as they appear in the second season. Typically, a full crop can be harvested by the third season. If over-cropping occurs in a mature vineyard, you may need to implement cluster thinning before the fruit ripens.

All Scuppernongs are Muscadines, but not all Muscadines are Scuppernongs. The Muscadine name includes the whole category of grapes, both bronze and black varieties, including Scuppernongs.
Scuppernong is a specific and the most popular bronze grape variety, but the name has been often used to describe any bronze Muscadine grape.

Because Muscadine grapes have 40 times more resveratrol, and are about 40 times stronger in antioxidant properties, they generally have more health benefits than other grapes.

One grower's quote was "I've been growing muscadine grapes for five years now and have found them ridiculously easy to grow. I can forget to feed and water them… and they thrive. I can skimp on the pruning… and they thrive. I can let them grow in half-shade in a gravely piece of the yard… and they thrive."

Ground Cherry Shrub

Description: The annual Ground Cherry plant from the Family of Solanaceae grows easily in the garden with minimal pest and disease problems. Its small, yellow-orange fruits have a sweet-tart flavor similar to pineapple with a faint background flavor of tomato. Despite its common name, it is not closely related to true cherries. At maturity it'll be 1 to 3 ft. tall and wide. Ground Cherry plants look like small, sprawling shrubs with bright green leaves that have toothed edges.
They sport yellow flowers in the summer before bearing fruit in the late summer to early fall wrapped in a papery husk, much like their relative tomatillos. Other common names are husk tomato, cape gooseberries, sweet tomatillos and strawberry tomato. Ground Cherries self-pollinate and will attract bees and other pollinators to the garden. Warning- before planting, note that all parts of ground cherry plant, except the fruit, are toxic to people and pets.

Growing Instructions

Optimal Time/Temperature for Germination: The plants can either be started indoors about six to eight weeks before your projected last frost date in the spring or outdoors after the threat of frost has passed. Hardiness zones are 4 to 8. Ground cherries have good heat tolerance within their growing zones. They do best in temperatures of 55 to 65 degrees and can cope with temperatures rising as high as 85 degrees. However, frost can kill the plants. So if you live in a cooler climate and frost threatens your ground cherries before the fruits have ripened, cover your plants with row covers or even a large piece of fabric to protect them. (You can grow ground cherries as perennials in zone 8 and higher). Humidity typically isn't an issue for these plants. The seeds should germinate in about two weeks.

Optimal Soil Conditions: You can easily grow ground cherries in traditional garden beds, raised beds, or containers. Make sure any planting site gets lots of sunlight (at least six hours of direct sunlight on most days) They can tolerate a bit of shade, but this will likely cause them to produce fewer fruits. Have loamy, sandy, well-drained soil that's rich in organic matter. Check the area for any taller trees and shrubs that might shade your Ground Cherries too much during the day. Try for an Acidic soil pH of 6.0 to 6.5.

Seed Planting Depth, Spacing and Procedure: Ground Cherry plants should be spaced at least 2 feet apart. Young plants should be planted at the same depth they were in their previous container. And seeds should be planted only about 1/4 inch deep. A support structure, such as a tomato cage or stakes, can be helpful to prevent the plant from flopping over under the weight of the fruits.

Best Companion Plants and Plants that Hinder: Grow with these plants: Basil, Parsley, Carrots, Onions, and Hot Peppers. These are not to be grown nearby: Corn, Potatoes, Fennel, Dill.

Crop Maintenance

Moisture Requirements & Solutions: Ground Cherries like fairly moist soil and need approximately an inch of water per week. Dry conditions can cause the plants to drop their blossoms without producing fruit. So plan to water at least weekly if you haven't gotten any rainfall—and potentially more often in very hot weather if the soil is drying out.

Weeding Needs & Solutions: Mulching also helps to suppress the weeds, which can reduce air circulation in your garden. Weeds can also compete for the water in the soil.

Feeding Needs/Optimal Natural Fertilizers: They will thrive in soil that is amended with compost. You can mix in an organic fertilizer specifically for fruits and vegetables when planting if you have poor soil.

Pests, Diseases & Solutions: In general, Ground Cherry plants are hardier against pests and diseases than tomatoes and tomatillos. However, they still can struggle with some of the same issues as their cousins.
Specifically, whiteflies, flea beetles, hornworms, and cutworms might attack the plants, especially if they are weakened during a period of drought. And fungal issues can occur if there's not good air circulation around the plants.

Proper growing conditions can help to prevent many issues. Place a paper or cardboard collar around the transplanted plant and push the collar into the soil about an inch or so deep to prevent cutworms from moving. Mites like to feed on the underside of plant leaves. It's best to remove those leaves to avoid the spread, but you can also knock off the mites with a hose. If you notice your plants are coming down with verticillium wilt, its best to remove them to stop the spread of the disease. The spores can overwinter on crop debris, so keep your beds clean (spores can survive up to 7 years).

Harvest and Storage

When to Harvest/Number of days to maturity: The plant gets its common name because you typically harvest its fruits from the ground and not straight off the plant. Each plant produces around a pint of fruit per growing season in the late summer and into fall. When the fruit is ripe, the husk dries up, turns from green to tan, and drops from the plant with the fruit still inside. Ground cherries grow quickly and will be ready to harvest in the summer after a spring planting.

How to Harvest: Some growers place a cloth or containers under their plants to catch the fruits and make harvesting easier. Try to pick up the fallen fruit often. If it's left on the ground and breaks open, you might have ground cherry seedlings popping up everywhere.

Optimal Storage temperature and conditions: If you don't want to eat your ground cherries immediately, store the fruits in their husks in a refrigerator, cool basement, garage, or root cellar. They need to be kept cool for optimal storage. In the right conditions, ground cherries can store from 6 weeks to 3 months. Ground Cherries are often used fresh, such as in salads, or cooked in sauces and more. Try flash freezing- line a baking sheet with parchment paper and spread the ground cherries over the baking sheet. Put them in the freezer for about 5 hours, then transfer to a freezer safe bag or an airtight container and will stay good for several months.

Seed Saving: 3 seed-drying techniques to prolong the life of seeds and keep them from developing mold or rot while in storage. By saving organic seeds from heirlooms, as opposed to hybrids, you're ensuring that your new crop will take on the traits of the parent plant. In hybrids, you may get traits from either the male or the female plant or even a plant further back in the plant's lineage.

Dry in open air 1) Once the seed pods or fruits have been harvested from the plant, crack them open and collect the seeds. If the seeds came from a "wet" fruit or vegetable, such as a cucumber, tomato, pepper or squash, wash off the slime(If the seeds came from a "dry" seed pod or capsule, like a zinnia, marigold, parsley or cosmos plant, you can skip this step.) Once the seeds are free from their pods or fruits, spread them out on a coffee filter, wax paper or a fine window screen laid on a flat surface in a dry, cool room.

Do not use paper towels or newspaper if the seeds are wet. They'll stick to it and be nearly impossible to remove later. Spread the seeds out over the area so they don't touch. Let the seeds rest for a week to ten days before gently stirring them with your finger or a small spoon. Let them dry for another two to three weeks. At this point, they should be dry enough to put into storage.

Dry in paper bag 2) use a simple brown paper lunch bag for dry seed pods and capsules, but it should not be used for saving seeds of wet fruits, such as tomatoes, squash, peppers, melons, and the like. It is especially useful for flower seeds, vegetable, and herb seeds born on stalks, like those from lettuce, carrot, spinach and dill plants. For example, put the flower stalk into a brown paper bag, top end first, allowing the cut stem end to stick out of the bag's opening. Place the open paper bag on a table or tray in a dry, cool room with the stem end sticking up. If the bag is top heavy, you can also lay it on its side.

Allow the stem to fully die and turn brown in the bag over the course of two to three weeks. Once the stem is brown and dry, reach into the bag and use your fingers to pull the seeds out of the dead flower head or seed capsule. For some seeds, you might have to crack the seed pod open. The seeds will fall out into the bag and collect at the bottom. Pull out any non-seed materials, such as the plant stems, dried up petals and chaff, and discard it. After the seeds are collected in the bottom of the bag, leave the open bags sit in the room for another two to three weeks, shaking them occasionally to stir up the seeds.
When that time passes, your seeds are now ready for storage.

Dry with silica gel 3) This is a granular substance that pulls and absorbs moisture from the air. You'll often find little sachets of it in shoe boxes and purses when making a purchase from the store. Loose silica gel is available from craft stores and is very useful when it comes to drying seeds. To dry seeds using silica gel, prepare the seeds accordingly to separate them from their fruits or pods. Once the seeds are separated, weigh them. Place the same amount by weight of silica gel into the bottom of a glass screw-top jar. Place a small piece of screening on top of the silica gel and then place the seeds on top of the screening. Spread them out as much as possible so they sit in a thin layer. Put the lid of the jar and keep it sealed for 7 to 10 days. Large seeds, like squash and pumpkins, might need a few more days.
Once that time passes, open the jar, remove the seeds and store them appropriately.

(after washing seed in technique #1, you may need to add the fermenting part: Tomato seeds, as you may have noticed, are covered with a slimy gel, which is meant to protect the seed. This covering needs to be removed if it's going to be planted, and the way you do that is by fermenting the seeds with the gel in a jar covered with a cloth for three to four days. When you start seeing a mold appear on the surface of the liquid, you can strain the seeds through a sieve to remove the liquid and prepare the seeds for drying. However, be sure to get to the seeds before they begin to sprout—once sprouted their viability is lost.)

Propagation: Typically propagated via seeds, they also can be grown from cuttings. This is an easy and inexpensive way to start a new plant. The best time to take a cutting is in the late spring to early summer. Here's how: a) Take a 4 to 6 in. stem cutting, and remove any foliage on the lower half. b) Dip the cut end in rooting hormone. c)Plant the cutting in a small container with drainage holes that's filled soilless potting mix. Place the cutting in a warm spot with bright, indirect light. d) Keep the growing medium consistently moist but not soggy, and roots should form in a couple weeks. Once you see new growth on the stem, you'll know it's ready for transplanting.

Notes:

There are a few varieties- Aunt Molly's**:** most commonly available variety, and it has an upright, bushy growth habit. / Cossack Pineapple**:** distinct tangy-sweet flavor, much like a pineapple. / Goldie**:** similar to Aunt Molly's except that it is slightly more low- growing and spreading.

Growing Ground Cherries in a container allows you to move the plant into sufficient sunlight as needed, as well as to protect it more easily from severe storms that might damage your crop. Be sure to choose a container that is at least 8 inches deep to allow for the plant's fairly large root system. An organic potting mix made specifically for fruits and vegetables will work. The container also should have drainage holes. An unglazed clay container is ideal to allow excess soil moisture to escape through its walls. You can take your seedlings outdoors for progressively longer stretches for about a week to acclimate them to the direct sunlight before planting in your garden.

It's possible to grow ground cherries indoors, but they might need supplemental grow lights if you don't have a bright enough window.

Guava

Description: This perennial is from the family of Mytraceae. It can grow to about 12 to 15 feet with leaves that are dark green and shiny on top, but fuzzy and silver underneath. All guavas are evergreen, shallow-rooted shrubs or trees The edible blooms are said to taste like minty guava and are popular in salads and as a drink. Fruits are 2 to 3 inches long, oblong in shape (like an egg) and green. The taste has been described as a combination of banana, pineapple, guava, and kiwi.

Growing Instructions

Optimal Time/Temperature for Germination: The general Hardy zones are 8 to 10.
Guava trees thrive in areas where the summers are warm, and the winters are cool. Normal outside temperatures should be between 59 °F (15 °C) and 82 °F (28 °C). You can ask your local nursery about whether or not your current location is good for growing. Temperatures below 59 °F (15 °C) can make your fruit's quality inferior. The conditions of spring weather make it the perfect time to plant anything, including guava trees. During the spring, the soil will be easier to break and dig into, rain will help water the plants, and the sun will be out enough to give your tree the necessary light it needs.
While the most common guava, the lemon guava isn't well suited to withstand frosts as some guava varieties, like the pineapple guava of zone 7, the strawberry guava of zone 9, and the Chilean guava of zone 8.

Optimal Soil Conditions:
Make sure the spot receives at least 6 to 8 hours (half day) of sun daily. You'll want to keep your tree out of the shade, so find a place where your house and other objects won't cast a shadow throughout the day. Make sure the spot is in open space so the top of your tree doesn't collide with anything. Guava works in a wide variety of soils so long as the soil has good internal and external drainage. This just means soil that allows water to pass through It easily. To check for this kind of soil, dig a 1 foot (0.30 m) hole and pour a little water into it. If the water disappears in only a few minutes, it's good soil. If it continues to sit, then you'll need to find another location.
You should avoid shallow soil and compact, layered soil. This will make it difficult for your roots to stretch. If your soil is hard and compact, you can add compost to help it reach the correct conditions. Dig down 2 feet (0.61 m) deep and work the composite into the soil. A pH of 4.5 to 7.5 appears to be soil workable. They can tolerate salty soil and air, which makes them great choices for coastal areas. One thing they do not tolerate is soggy soil.

Seed Planting Depth, Spacing and Procedure:
The process of growing from either is roughly the same. However, while it's more common to plant guava trees by seed, cuttings are actually more optimal. Cuttings yield more fruit and fruit of better quality when compared to seeds, but seeds are cheaper. Remove rocks or other debris you come across while digging. Once you have your hole, loosen the soil a bit at the bottom with the tool you used to dig it. If using a pot, make sure it too is at least 2 feet (0.61 m) feet deep.

Fill the hole to about the length of your index finger to create a mound. For seeds, place them on top of this mound. For cuttings, hold it by the graft line or crown (the part of the plant where the stem meets the roots) and place it on top of the dirt, making sure that the graft line is above ground level. Then spread the roots across the hole. As the added dirt mound is created from already broken soil, it allows new roots to have an easier time penetrating the ground. If you're planting multiple trees, plant them 10 feet (3.0 m) to 12 feet (3.7 m) apart, so they don't cannibalize each other's water source. Don't compact the soil after you fill the hole, keep it loose. You want to make sure that your tree has room to spread its roots and grow with little resistance. For cuttings, take care that no roots are above the soil and that the graft line is. Cut off any roots above the graft line if necessary. Get low to the ground to make sure your cuttings are completely vertical once planted. Mark where you've placed seeds with little flags that can be easily removed once the seed has sprouted.

Many varieties are considered self-fertile, however planting a second tree as a cross-pollinator will increase the fruit production of both trees. To guarantee a rich yield, hand-pollinating can be done between the two trees.

Best Companion Plants and Plants that Hinder: Some of the best Companion Plants include: citrus trees, chives, marigold, comfrey, and borage. Some of the worst companion plants are cucumber, eggplant, and potato.

Crop Maintenance
You'll want to start pruning around 3 to 4 months after the tree has sprouted. If your tree has multiple trunks, find the middlemost one and cut the others away at their base. Trim up the side branches to keep them around 2 feet (0.61 m) to 3 feet (0.91 m) in length. Cut any branches that sprout from other branches and any dead or damaged branches you find as well.

Exposure to extreme cold can severely damage or kill a guava tree. You can use tarps or blankets to protect the top of the tree. You don't need to drape the entire tree, just the top. Anchor the corners of whatever you used to cover the tree to the ground. In addition to this, you can place another heat source below the tree to give it practically complete freeze protection.

Moisture Requirements & Solutions:
While the tree is young, you should water it 2 to 3 times a week. Once it matures, however, it won't need as much water so 2 to 3 times a month should suffice. Guava trees are sensitive to waterlogging, so be sure to regulate what you give. Guava trees are mainly rain-fed.Remove any weeds and grass from the tree's area as a young guava tree cannot compete very well against them for water and nutrients.

Weeding Needs & Solutions:
Maintain a grass and weed free area 2 to 5 or more feet away from the trunk. Never hit the tree trunk with lawn mowing equipment and never use a weed- eater near the trunk.

Feeding Needs/Optimal Natural Fertilizers:
Your tree should be well established before performing this step. Scatter the fertilizer around the tree while making sure not to come in contact with the stem. Once you've done that, water the tree and fertilizer thoroughly. It's preferred that you wait a year before fertilizing your tree. When potted, these trees do best when fertilized twice a year. Adding a fresh layer of compost annually will also help provide needed nutrients.

Pests, Diseases & Solutions: One of the most common pests that attack guava fruits are fruit flies. These insects lay eggs inside the guava, and these eggs hatch into maggots that eat the flesh of the fruit. There are a couple of ways to combat fruit fly infestations. One method is to pick the fruit before it ripens fully. Fruit flies only infest fruit that is already ripe and beginning to soften. You can also create a trap with vinegar and liquid dish soap.

Guava wilt disease symptoms include wilting and yellowing or bronzing of the leaves, noticeable sagging, and the premature shedding of fruits. There is no cure for this, but heavy doses of nitrogen after fruiting and protecting the roots from damage can stave it off.
Stylar End Rot only affects the fruit of the tree, discoloring it to brown or black. Infected fruit cannot be saved, but a natural fungicidal spray can save the rest of your crop.

Anthracnose causes young shoots to die rapidly while leaving the fruit and leaves attached. It also causes fruit and leaves to develop dark lesions. Like Stylar End Rot, this is a fungal infection and fruits not affected can be saved with a natural fungicidal spray.

Harvest and Storage

When to Harvest/Number of days to maturity:
You'll know when your fruit is ripe and mature enough to pick by the change of both its color and texture. Color will change from green to yellow, and then the fruit will soften. These trees bear fruit after two or three years from planting, ripening in August or September.

How to Harvest:
When picking guavas, look for fruit with a rough, green skin. These guavas aren't yet ripe, which will give you more time to enjoy them. Other gardeners will allow the fruits will fall off the tree to collect them from the ground.

Optimal Storage temperature and conditions: it's a tropical fruit that tends to go bad quickly after ripening. To prolong the life of your guava, you can refrigerate. P lace the entire fruit in a bag to protect it in the refrigerator. Other fruits can give off gasses that encourage ripening, and the bag will ensure that the guava is safe. Make sure the bag is clean and dry before putting the guava in it. Dirt and water can cause the guava to ripen further in the refrigerator. Remember to label the bag with the date for future reference. Be sure to set the crisper drawer to a medium humidity to ensure that the guava doesn't become too dry or too moist. Leave the bag open slightly at the top to let air circulate through the bag and the drawer.

After 4 days in the refrigerator, the guava will be past ripe and should be thrown away. Over-ripe guava will dent when you press on it. Your guavas should be soft to the touch and have a strong, heady scent before you refrigerate them. If the guavas aren't ripe yet, let them sit on the counter for 2-3 days until the skin yields when you press on the fruit. Avoid placing guava near a window because the heat and light can make it ripen too quickly. If the guava is taking a long time to ripen, try placing it in a paper bag with the top slightly open.

To freeze it once it's ripe, Rinse the guava under cool water and blot the fruit dry with a paper towel. Then, use a knife or peeler to carefully remove all of the skin from each guava. You can dispose of the skin, or you can place it in a compost pile with other food scraps. Be careful when using the peeler on the guava. The small, rounded shape can cause the peeler to slip. On a cutting board, slice the guava in half through the widest part in the middle of the fruit. You can cut the halves again to make chunks, or leave them in halves to freeze. This will help the sugar in the simple syrup to permeate into the fruit and keep it tasting sweet after the freezing process. Once the guava is cut, get a freezer bag or airtight container with a lid. Make sure it's large enough to fit all of the fruit with about 0.5 to 1 inch (1.3 to 2.5 cm) of empty space at the top of the container, called headspace.

The head space will allow for quicker freezing time, which keeps the guava fresh for a longer period in the freezer. Simple syrup is a mixture of equal parts water and sweetening choice that is heated to a boil to create a sweet syrup. Pour the cooled syrup into the container or bag until the guavas are completely submerged, but remember to leave enough headspace in the container. If you've just made the simple syrup, let it cool before pouring it over the fruit. Warm syrup can cook the guava, causing a change in taste. Make sure the lid of the container is closed tightly or the bag is completely sealed. Label the container or bag with the date and let it sit in the freezer undisturbed for at least 12 hours before thawing. If you're going to freeze the guavas for a long period of time, avoid placing them in the door of the freezer. The door experiences more temperature changes than the rest of the freezer, which can cause thawing. While guava can last in the freezer for long periods of time, the taste of the fruit will deteriorate after a year. When you're ready to use it, place the guava in the refrigerator for 2-3 hours to thaw before taking it out of the container. If you're not sure how to use your frozen guava, you can try making juice, baking guava-based pastries, or even whipping up a guava barbecue sauce.

Other options are to make jellies, jams, pies, and juice.

Seed Saving: Propagation can be done through cuttings, and it is best to do this in the fall. To propagate, you will need a sharp pair of garden snips, light soil, a small pot, and rooting hormone. Then follow these instructions: a) Using the snips, cut a small softwood cutting from the bottom of the shrub. A cutting around 10-12 inches is ideal. Be sure the cutting has some healthy leaves and a few nodes on it. b) Remove any leaves on the lower section of the cutting. c)Dip the cut end into a rooting hormone. Shake away the excess powder. d)Gently plant the cutting into a light soil mix, such as those used for seed starting. A mix of peat, sand, or sawdust is also a good choice. Keep the cutting moist and in bright sunlight. e) Roots should form in about two months and can be transplanted to the garden at this point.

Haskaps (Honeyberry)

Description: They look like honeysuckle flowers because that's what they are. Honeyberries are fruiting honeysuckle bushes, so you get the benefit of beautiful flowers as well as fruit. This deciduous bush are in the genus Lonicera from the family Caprifoliaceae. Haskaps are known by many names including: Honeyberries, Edible Honeysuckles, Blue Honeysuckles, Sweet Berry or even the Canadian Honey Berry. The fruit of these delicious berries resembles a cross between a blueberry and a long grape. Originating from Siberia, these berries are said to taste like a cross between raspberries and blue berries with a kiwi-like texture. Each haskap berry contains two twin purple-blue berries inside, wrapped in an outer purple-blue skin, with deep crimson flesh. They have an amazing ability to survive hostile, freezing northern winters. Haskap berries have been enjoyed as a wild crop berry and also used in traditional medicine. Unlike other perennials, honeyberries can be productive just one year after planting. They go on to produce berries for 30 years or more with benign neglect for management.
The one place where honeyberries are particular is in pollination. To produce fruit, you need at least 2 different varieties that bloom at the same time. Your garden center can help you find the right match for the selections that they carry. You can put 5 cultivars in for each pollinator. Both the cultivar and the pollinator bear fruit. Plant them in the same area so that your wild bees can find them and cross-pollinate them. Examples of Pollenizers are Honey Bee, Indigo Gem, Indigo Treat, Berry Smart Blue, Tundra, Aurora or Blizzard.

Growing Instructions

Optimal Time/Temperature for Germination: Haskaps are extremely cold hardy as well, growing and producing fruit where winters hit 55 below zero. These cold-natured plants seldom produce well in climates where summer temperatures often rise above 85F (30C). Those low-lying frost pockets, where the ground gets damp every Spring, maybe the perfect spot to plant a few haskaps. While they do better if their roots aren't in standing water, they can produce on the ground that occasionally gets swampy in spring. While hardiness varies by variety (zones 1 to 7) they grow best in zones 2, 3 and 4. They need a cold winter dormancy each year. Some varieties will grow and produce in climates as warm as zone 8.

Optimal Soil Conditions: Haskaps are popular in permaculture gardens because of their low maintenance needs. They're cold hardy, fast-growing and tolerant of poor soil. They have been known to do well on clay soils where other crops have failed. Under ideal conditions, they'd grow in loam with a pH of about 6.5. Haskaps don't need acid soil like blueberries and are adapted to a wide variety of soil pH, from 5.4 to 7.9.

In northern climates, this berry produces best in full sunlight. If you're growing in the south, however, plant your Honeyberries in partial shade to save it from overheating that can show some distress. Sun / wind scald on some cultivars, especially the early blooming ones, and can naturally experience browning and dropping of leaves.

Seed Planting Depth, Spacing and Procedure: Haskap shrubs maximum height growth is 6-8 ft. with a maximum width of 4-5 ft. so you can plant them 7 ft. apart so overcrowding doesn't limit your harvest. At 3 ft. apart, they grow into an attractive hedge. The fruit will hold on to the bush after-ripening and continues to sweeten as it holds. In a warm summer, the fruit may dry on the bush, like raisins, intensifying its sweetness and flavor. It's vital to mix and match a couple varieties to ensure proper pollination. In addition, try to choose varieties that flower on a similar schedule for maximum berry production.

Here are easy steps for starting the Honeyberry from a cutting:

1) Choose a mature tree that's at least 5 years old and pick a healthy branch to cut. 2) Use a clean blade or pruning shears to cut about six inches of the branch. Make sure the branch doesn't have cuts. 3) Place the cutting in a jar full of water and keep it in a sunny spot. 4) Change the water every few days since the cutting could rot in stagnating water. 5) After about 4 weeks the first roots will shoot out of the cutting submerged in the water. 6) Fill a small container with a regular potting mix and water it to make it moist. 7) Dig a hole in the soil about three inches deep and plant the cutting in the hole. 8) Fill the hole with soil and pack it to push out air pockets. 9) Don't let the soil go dry. Keep it moist regularly for the next couple of months. 10) Take the plant outside for a few hours every day to harden it. 11) When leaves show at the top of the sapling, you know that the root system is well established and you're ready to move it to its permanent place outdoors. 12) Pick a spot in the garden that gets either full sun or partial sun. 13) Dig a hole deep enough to accommodate the rootball of the sapling. 14) Ease the sapling out of the container with a clump of soil around the root system. 15) Place the sapling in the hole so that the old soil mark on the stem lines with the top of the hole. 16) Fill the hole with soil and pack it to keep the sapling standing upright on its own.
17) Water the sapling to help the soil settle.

If you're interested in growing Honeyberries from seed, allow a few berries to ripen on the bush. Pull the seeds out of the berry and plant directly. Cover with a thin layer of loose potting soil. They should sprout within 3-6 weeks. Give them at least 4 months of growth before transplanting outdoors. Honeyberry plants started from seed rarely produce fruit within the first 2 years. Keep your young honeyberry potted for a few months as its roots strengthen and grow. Then transplant outside.

Best Companion Plants and Plants that Hinder:
Haskap bushes make fantastic border plants. Additionally, their hardiness and self sufficiency make them great companion plants for most other orchard crops. They don't overtake an area the way raspberry and blackberry bushes do either. Plant them amongst pear and plum trees for example. Note that Haskaps are not compatible with black walnut and other Juglandaceae trees.

Crop Maintenance The fruit is produced on 1-year-old wood, and the highest yields come from strong, vigorous 1-year-old branches. Honeyberries should be pruned when they are dormant in the winter months, removing any dead branches. Don't prune your honeyberry plants during their first five or six years. Instead, let them spread out and mature a fair bit, and just allow them to do their thing. Once fully mature, go ahead and prune older branches that don't produce anymore. This will allow new branches to grow.
Aim for a combination of mature and young branches around your honeyberry bushes. The older, thicker ones will offer support, while the younger ones will be more productive. Only prune these plants in late autumn or early winter.

They produce so early in springtime that pruning them after January can shock them badly. If this happens, they won't produce any fruit, and can even die back. When in doubt, don't cut.

By pruning the bush back, you're encouraging sunlight penetration to all the productive branches. Avoid cutting back the tips of branches, as that's where the most fruit production occurs. In a good year, they need to be propped up so support with heavy tomatoe cages, peony rings, or stakes and chicken wire.

Moisture Requirements & Solutions: Frequent watering is important for the survival of the young honeyberry. Since its roots float near the surface of the soil, it will get most of its water from irrigation or rainfall. Keep the soil moist as best you can, providing the tree with about one to two inches of water every week. In the fall, you'll need to cut back on irrigation until the next spring.

Weeding Needs & Solutions: While they don't require particularly deep or fertile soils, they do benefit from a heavy 2 inch supply of leaf mulch. They are shallow-rooted, with the majority of their roots in the top 5-7 inches of soil. Weeding and cultivating the topsoil around their base can damage their roots, and they can be stunted by over-competition with weeds.

Feeding Needs/Optimal Natural Fertilizers: Unless you have poor soil, Haskaps are fine without feedings. If you notice signs of undernourished plants, however, add a compost tea in very early spring or fall. (Compost Tea simplest recipe: soak manure overnight in 5 gallon pail with water and apply to plants.) Otherwise, go with 2 inches of well-rotted manure per year and compost. Perhaps at spring, apply some fish emulsion right at bud break for a surprising fruit yield.

Pests, Diseases & Solutions: Honeyberry plants aren't prone to any kind of disease but can suffer from powdery mildew in wetter climates. The greatest issue you'll have to deal with is birds (cedar waxwings & robins), squirrels, mice, and deer because they love these plants, and can take out half your crop. Cover them with black netting to keep the birds off, and try to plant them in an area that deer can't get to easily. Rodents are a bit more difficult to fend off, but they do help to clear any fallen fruit away from the roots.

Leaf roller caterpillars roll up in the leaves, but haven't been noticed to bother the fruit. If you find them, spray the leafrollers and damaged plants with a neem oil solution.

Harvest and Storage

When to Harvest/Number of days to maturity: If waiting for the cutting to develop roots tested your patience, you won't have to wait for long to taste the first berries from your very own honeyberry shrub. By the end of the first year, you'll have ripe berries beckoning you to pick them and eat them fresh off the tree. One of their main benefits is the fact that they fruit so early in the spring. They produce around 2 weeks earlier than the first strawberries. They'll fruit for 2 to 3 weeks a year, and after that, they're attractive bushes for the remainder of the summer.

How to Harvest: The berries are easy to pick with a gentle hand. A bit softer than blueberries, but firmer and more durable than raspberries. Pick them by hand into a basket and use them within a few days. They tend to hide under the leaves, meaning that they're overlooked by birds, but they're at a perfect angle for small children to harvest. If shaking them off the bush, spread a cloth underneath to catch the berries when they fall.

Optimal Storage temperature and conditions: You'll know that your honeyberries are ripe when they pull easily off the stems. They don't store well in the fridge for very long, so be sure to freeze or `can' whatever you don't eat immediately. The best way to freeze these berries is to spread them out on a baking sheet that's been lined with waxed or parchment paper. Put that into the freezer overnight, and then transfer the frozen berries into individual bags. This will keep them from smooshing together into a lump. Frozen haskap berries will stay good for about six months, or longer if they're in a deep chest freezer.
Other ways are dehydrator use, in smoothies, or make an ice cream. Traditionally has had use as a dye also. When dried with mechanical heat, the juice escapes and they darken and look much like raisins.

For refrig. storage a high humidity (95%+) and between 33 and 34 F (a standard fridge is 40% relative humidity) is preferred. If don't have a produce-specific cooler, there may be some promising results with Freshworks containers (but still open them periodically so they can air out) with other kinds of berries.

Seed Saving: Shrubs grown from seeds usually take up to 3 years to bear fruit, unlike honeyberries started from a cutting. Stored seed requires 2 months cold stratification. When they are large enough to handle, prick the seedlings out into individual pots and grow them on in the greenhouse for at least their first winter. Plant them out into their permanent positions in late spring or early summer, after the last expected frosts.

Remove fleshy coating on seeds before storing / allow unblemished fruit to ripen / clean and dry seeds but they do not store well so sow as soon as possible.

Notes:
Just root some new cuttings for friends and family and encourage them to plant their own in sharing the bounty.

They're a favorite of our native bumblebees, and the early blossoms provide early spring nectar when they're desperately needed by pollinators.
Plants can be purchased either from local nurseries or as bare-root plants from online nurseries.
If making honeyberry pie, combine with firmer fruit (pears or apples) so the pie doesn't become soup in a pan.
Jam can be canned just like any other, allowing for ½ in. headspace and processing in a water bath canner for 10 minutes.

Hawthorn

Description: A popular landscaping tree or shrub because of ther hardy nature and profuse fragrant flowering in spring, Hawthorn trees fall in the genus *Crataegus*, comprising hundreds of species in the Rose family. They are deciduous trees with upright spreading or bushy habits; some varieties can be kept as shrubs.

Hawthorn is a versatile deciduous tree that grows 15 to 50 feet tall and 8 to 35 feet wide, depending on variety.

The fruits, which look similar to rose hips, are red, orange, yellow, or black. Classified as pomes (as with apples and pears) the fruits are produced in fall and persist through winter. The edible pomes, which have various culinary and medicinal qualities, are also an important food source for robins, waxwings, and other songbirds.

Growing Instructions

Hawthorn can survive growing zones 3-9. As with most fruiting trees, it prefers full sun but can survive in part shade.

Optimal Time/Temperature for Germination: Planting in fall or in spring is best for hawthorn, but, as for all shrubs, the ideal period is always fall. Choosing to plant in fall makes root development possible before winter, and growth in spring will be stronger. If you plant in spring, remember to water regularly after planting to ensure it settles in well.

Optimal Soil Conditions: Hawthorn can survive in many soil conditions but it prefers rich, well drained soil. Hawthorn does not like wet feet. Hawthorns prefer well-amended soil that is fast-draining, but is tolerant of clay or sand. Soil pH should be between 6.0 to 7.5. Compacted soil or poor drainage can result in root rot.

Seed Planting Depth, Spacing and Procedure:

The best method of propagating hawthorns is from seed, saved from the haws or berries. Mix the seeds with sand to make it easier to spread them out.

Sow in fine compost mixed with leaf mould, in pots. Keep well watered and seeds will germinate in around 18 months. Then they can be transplanted out into the garden. Upon transplanting, incorporate organic compost into your garden soil. Bear in mind that your hawthorn tree will get large, so give it plenty of space. Do not plant near foundations or drainage pipes where the roots can cause trouble in the long run.

To make an impenetrable hawthorn hedge, keep a distance of around 32 to 40 inches (80 to 100 cm) between each hawthorn plant. You will need to prune it regularly to keep the shape of a hedge. Prune in spring but always after the blooming. This hedge can be an excellent natural fencing to keep larger animals such as deer out of your garden, although it is a favorite hide out for bunnies.

Best Companion Plants and Plants that Hinder: As a fruiting tree that blooms in early spring, hawthorn will benefit from plants that attract pollinators and bloom in spring, when the hawthorn is blooming. If your hawthorn in in the middle of a lawn you can naturalize early blooming crocuses, scilia, snowdrops and grape hyacinth bulbs in the grass.

Lungwort is an old world medicine plant that blooms early, attracts pollinators and is also very cold hardy.

Crop Maintenance

Hawthorn is very easy to care for, and only requires little attention when it is correctly settled in.

If it isn't pruned, your hawthorn can grow quite large and its branches can get very thick.

Moisture Requirements & Solutions:

Hawthorn is drought-tolerant once established. Water regularly during the first year and during prolonged heat or dry spells. Don't overwater, as this can cause root rot and other fungal diseases.

Weeding Needs & Solutions: Hawthorn will outgrow most weeds very quickly.

Feeding Needs/Optimal Natural Fertilizers: Hawthorns are light feeders. In spring, apply compost and, if needed, mulch with a layer of pine, straw, or bark chips (keeping away from the trunk) to conserve moisture and suppress weeds.

Pests, Diseases & Solutions: The two most destructive diseases of hawthorns are rust and fireblight. Rusts find hawthorns to be suitable hosts in which to complete their complex life cycle In some years on certain species and cultivars, the foliage and succulent shoots of entire tree canopies can become infected with the rust fungus. As a result, the foliage is dropped prematurely and the tree becomes stressed. Fireblight is a bacterial disease that affects young succulent shoots in the spring The bacteria replicate quickly once within the plant, and this leads to the death of the stems. In addition, English Hawthorn is highly susceptible to a leaf spot fungus that causes early defoliation.

Many species of wood boring insects attack the trunk and twigs of hawthorns. Sucking insects such as lacebugs,aphids and scale also attack hawthorn readily. These insects harm the trees by feeding on sap from the conductive tissues, and excrete a substance called honeydew, which is a sticky byproduct of their feeding.
Spider mites, eriophyid mites and many caterpillar species can also damage the foliage and reduce their vitality. In addition to those previously mentioned, hawthorns also host diseases such as anthracnose, fungal cankers, leaf spots and powdery mildew. All of the factors described combine to place a great deal of stress and pressure on the tree.

All of the above can be reduced and eventually be eliminated with the application of Jadam foliar sprays and neem oil and by introducing predators such as ladybugs to your garden.

Improving the health of the tree by maintaining good soil biology helps the tree to outgrow many pests by improving its overall health.

Harvest and Storage

Every part of the hawthorn has a purpose. Thus, one can harvest the flowers, leaves and berries.

When to Harvest/Number of days to maturity:

Hawthorn berries must be harvested in fall or winter.

Pick flowers during the blooming, especially at the beginning of spring when there are only very few leaves.

The right time to harvest the leaves is spring, when the leaves are still quite young. Hawthorn leaves keep best in an airtight container such as a shoebox, in the dark.

How to Harvest: berries must be picked by hand in fall, while carefully avoiding thorns. Leather arm covers similar to those worn by citrus fruit pickers are helpful.

Treat the fruit from hawthorns as you would rose hips. Remove the seeds before eating as they are toxic.

Optimal Storage temperature and conditions: Hawthorn berry paste (with all seeds strained out) can be dried and made into an organic pectin for making jams & jellies. Hawthorn is more famous for it's thickening abilities than for its flavor.

Optimal Preserving Procedures: Dry the flowers, spreading them out on the ground in a dry and ventilated place, in low light (no direct sun). Hawthorn flowers keep well in an airtight container such as a shoebox, in the dark.

Hawthorn berries are high in pectin, so they can be added to other fruits to make jelly. just ripe berries have more pectin that over-ripe berries.

Preparing hawthorn berries for pectin: Put the berries in a bowl and quickly crush them thoroughly with your hands. The resulting liquid should be about the consistency of pudding just before it sets. It should be that consistency naturally. If you've had a dry year add some water to get to that consistency. Work quickly. Squeeze the seeds out of the berries then quickly filter the thick slurry into a bowl. In about five minutes the liquid will jell. Flip it over onto a plate. It can be eaten as is or sliced or sun dried. It will be sweet and will last for many years.

Seed Saving: Seeds are removed from the fruit known as"haws" which look like rose hips. It takes a long time, but start by mashing the berries to extract the seed then run the mash through a sieve and rinse the seeds (which should be left behind in the sieve) under water. They can be planted immediately or dried on paper towel to be stored.

Caution – hawthorn seeds are toxic to humans – do not eat them.

Notes: Hawthorns are often used as the hardy root stock to graft more tender fruits on such as plums.

The old variety of hawthorn from the UK has naturalized in many areas of North America. These now wild varieties of hawthorn found in most temperate regions provide good bush foraging.

Most hawthorns look similar. Consider varieties that have distinguishing features such as colorful bark or leaves. Washington hawthorn (Crataegus phaenopyrum), although it has green summer leaves, starts out with reddish- purple new leaves in spring and has purple, red and orange fall leaves. The white-flowered tree grows to 25 to 35 feet tall in USDA zones 4 through 8a.
The silvery bark of "Winter King" Southern hawthorn (Crataegus viridis "Winter King") peels to reveal orange under-layers, making it a handsome tree even in winter when it is bare of leaves. The large, bright orange fruits and small thorns add to the tree's value. "Winter King" grows in USDA zones 4 through

Hazelnut Shrub or Tree

Description: This deciduous shrub or small tree of the family Betulaceae (Birch) is what we can thank for the delicious hazelnuts that we find ourselves enjoying. Corylus avellana (Common hazel tree) is a relatively carefree plant / Corylus americana (American hazelnut) is a great choice for northern growers, tolerant to both heat and cold, and resistant to Eastern filbert blight) / Corylus maxima (Red filbert) is referred to as the giant filbert / They are a few of the most commonly grown varieties and can range from 8 to 20 feet tall with a 5 to 15 foot width grown as shrubs or small trees making good windbreaks. They have fuzzy, heart-shaped, serrated leaves that are a few inches in length, and produce showy catkins in the early spring and are prolific pollinators.
After pollination, the female flowers mature into edible nuts, which turn from green to brown as they mature. These grow to roughly 1/2 inch in size. They are each encased in leaf-like bracts and appear in clusters of two to five. The nuts encased in papery husks are ready in the late summer or fall. Since they are fairly compact shrubs or trees and can be pruned easily, they are a great choice if you don't have a ton of space for growing trees.

American hazelnut can self-pollinate so are monoecious (produce both male and female flowers on the same tree, although they may not bloom at the same time) and are prolific pollinators. If you want a self-pollinating hazel, there are hybrid varieties available. Male and female trees are readily available online from specialty retailers specializing in fruit and nut trees. (European Common hazel don't self-pollinate so would need a female and male tree.) When selecting cultivars, it is important to plant more than one variety.

Growing Instructions

Optimal Time/Temperature for Germination: Hazels are great at existing in temperate areas. They are not particularly good at resisting deep freezes, nor are they able to deal with extreme heat and humidity. If you want your tree to thrive, keep it in Hardiness zones 4 to 9. Some varieties can even be grown in Zone 3, though springtime temperatures that dip below 15°F after the flowers bloom can lead to crop loss. Once hazelnuts get going, they can really grow quickly, averaging 13-24 inches per year.

Optimal Soil Conditions: Placing hazelnut in a location that receives full sun most of the day will give you the best yield of flowers and nuts if that is what you are trying to achieve. It will tolerate part shade as well, but you will see a decrease in flower production. As a rule of thumb, filberts need at least four hours of direct sunlight per day for good nut production. The hazel tree is very adaptable, but it is best to avoid densely packed soils, clays, or rocky soils. Its preference would be to grow in sandy loams that drain well. They don't do well in boggy, waterlogged areas. Soil that is too rich in nutrients will cause vegetation to flourish at the expense of the fruit. They are best planted in light soils with a pH of 5.5 to 7.5.

Only if your goal is as a windbreak, space the plants six feet apart within a row and 16 feet between rows for farmstead and feedlots.

Seed Planting Depth, Spacing and Procedure:

They can be propagated in a number of ways. You can start them from a) seed, b) transplant nursery stock, or c) grow them from runners :

a) If you have lots of time and you're not in a rush to bring in your first harvest, starting from seed can be a very economical option. If you can find wild seeds from another hazel tree, it may even be free. Before sowing your seeds, you can test their viability by submerging them in water. Discard any that float to the top. Next, score the seeds to aid germination. You can do this by using a file to carefully create a small slash in the outer seed coat. In the fall, plant the seeds in the garden 15 to 20 feet apart and two inches deep, with the slightly pointed side facing downward. (They are wind pollinated, so be sure to space plants no more than about 50 feet from each other.) Protect them over the winter with a cold frame or a thick layer of mulch.

You can also start seeds in pots in the fall. Plant one seed an inch or two deep in an eight-inch pot filled with potting soil. Germination takes several months, so be patient. Keep the pots outside on a covered porch, or somewhere that they won't become waterlogged.
Once the weather warms in spring, water regularly to maintain consistent moisture, and seedlings should appear after a few weeks.

Alternatively, you can cold stratify seeds indoors by putting them into a zip-top bag filled with one part sand and one part peat moss. Keep it in the refrigerator over the winter and then move the bag to a warm place in your house for a few days, or until you see signs of germination. After the seeds have sprouted, plant each seedling in an eight-inch pot filled with potting soil. Continue to grow the seedlings in the pots over the summer, keeping them in part shade, and transplant into the ground in the fall once seedlings reach eight to 10 inches in height.

b) Saplings purchased as nursery stock or started from seed the previous year can be planted in the ground in late fall or winter during dormancy, to prevent heat stress and reduce the need for watering.
Space transplants 15 to 20 feet apart and plant them in holes dug to the depth of the roots and twice as wide. To plant bare root saplings or potted shrubs purchased from a nursery, wet the roots thoroughly prior to planting, then dig a hole as deep and twice as wide as the root ball and place it in the hole. Refill the hole, mixing in equal parts compost, sand, and peat moss if working with heavy clay soil. Tamp down as you fill in the hole to remove air pockets. The soil line should be even with the surrounding soil. Water deeply after planting.

c) You can also propagate filberts from the suckers that appear around the base of an existing shrub, or from underground runners. During early dormancy in the late fall, dig up a sucker and the attached roots. Replant runners about 15 feet apart a foot below the soil line. Stooling, or mound layering, is a method that involves piling soil around the base of an established shrub, leaving it in place for a year, and then dividing the new rooted stems that have developed for replanting. This technique is common in commercial growing, though it can certainly be done in the home garden as well.

Best Companion Plants and Plants that Hinder: The best companions for the hazelnuts are plants that are Nitrogen-fixing or plants that attract pollinators and improve the soil around them. These plants include comfrey, Primrose, coriander, asparagus, wild garlic, currants , and various bulbs. Avoid plants such as fennel, leeks and beets. Hazelnut is also one of the few plants that is juglone resistant, meaning that it can be planted as a barrier plant between walnut trees and other plants.

Crop Maintenance

Moisture Requirements & Solutions: Keeping your hazel tree watered is important to ensure profuse flower and nut production. It will not tolerate drought and will need supplemental watering to remain a viable producer if you look forward to it fruiting during dry periods. Water it using the same standard rule to establish 10 gallons per inch of trunk diameter after planting. Using this method will keep your hazel green and blossoming in even the driest of weather.

While the mature trees are drought tolerant, young shrubs need constant moisture and should never be allowed to fully dry out. Water each week during the growing season until they are well established,taking special care to water deeply during dry weather. Aim for about an inch of water every 10 days or so for the first two seasons after planting.

Weeding Needs & Solutions: Weed control is necessary for good establishment and uniform growth. Control weeds the first years by tilling or the addition of mulch as a weed barrier.

Feeding Needs/ Optimal Natural Fertilizers: Hazelnuts don't need additional fertilizer in good soil. Rich soils cause the plant to leaf at the expense of fruit. Avoid overly fertile grounds.

Pests, Diseases & Solutions: Hazelnuts are delicious! If you don't want to share your nuts with forest friends, keep an eye out for critters large and small that may want in on your crop. Deer and rabbits both enjoy munching on the leaves, branches, and catkins. And squirrels, of course, love to eat the nuts. While it isn't easy to keep them off your trees, it is a good idea to be vigilant and try to pick the nuts before the squirrels do!

Wire cages can also be very useful to protect young trees from hungry herbivores. Plastic netting, irritants or similar protective devices could be used to prevent damage the first five years.

There are a number of insects that also enjoy eating hazelnuts. Keep your eye out for these common pests to reduce damage to your crop:

1) Filbert worm (aka Acorn moth) - small reddish brown moths with a thin brown band running across the wings, and the larvae are about ½ inch in length with a dark brown head and a beige to pink body. The larvae overwinter in the soil, emerging as moths in spring and laying eggs on hazelnut husks. The young larvae that emerge then enter and feed on the developing nuts, tunneling their way through and completely destroying the kernels. The nuts may also become infected by secondary bacterial or fungal pathogens. Predatory insects such as parasitic wasps will eat the larvae happily.

Try incorporating lots of flowering perennials like dill, daisies, and marigolds to encourage the presence of beneficial insects to reduce pests. (Large-scale growers often use mating disruption pheromones to reduce the population of acorn moths in their orchards.)

2) Nut weevils- this beetle is characterized by its elongated snout and ranges from about 1/4 to 1/2 inch in size and munches on buds and leaves in the spring, damaging foliage, and lay their eggs in the developing nuts in early summer. The larvae emerge in late summer to feed on the nuts, creating holes in the shells. The infected nuts do not drop, and often end up being harvested along with the healthy remainder of the crop, at best creating a nuisance for harvesting, and at worst effectively ruining the crop.
One way to remove weevils naturally is to place tarps under the trees during the late summer after a rainstorm, and shake each tree until the adult weevils fall to the ground. They will remain still for a few minutes after falling, at which point they can be collected in a bucket of soapy water and disposed of, or collected to be fed to your chickens.
You can continue to repeat this method until early fall.

The diseases that tend to plague filberts are those that thrive in wet soils. You can do a lot to mitigate disease risk by planting your trees in places that are not waterlogged, with well-draining soil.

Eastern Filbert blight- the fungus causes cankers to form on branches and blossoms, leading to rapid wilting and dieback of foliage and branches. This is a serious issue for the European species, C. avellana, in particular. Cankers appear as dark, raised lumps on infected plant tissue. Remove and dispose of branches with cankers.

Armillaria root rot (aka oak root fungus)- leaves infected with this fungus will become discolored and drop, followed by branch die-off and the eventual death of the entire plant. Yellow mushrooms may also appear at the base of the plant. Once this disease takes hold, plants need to be removed and disposed of. The best way to prevent armillaria is to plant resistant rootstock. This bacterial disease causes damage to young branches, as well as the death of buds and leaves.

Bacterial canker- is a particular problem in European hazelnuts. New growth withers, and buds and leaves die, remaining attached to the tree after healthy leaves drop in the fall. Cankers can also be seen, appearing as gray areas on the bark. Cut out and dispose of infected plant matter to prevent further spread.

Harvest and Storage

When to Harvest/Number of days to Maturity:
Remember to always harvest sustainably, leaving the majority on each shrub intact for wildlife hazelnut trees (also known as filberts) take four to five years until the first harvest comes in and they don't require as much space as other nut trees. When the plant is mature enough for the first harvest, the nuts will drop from the branches as they ripen in the autumn (September to October).

How to Harvest:
All you have to do is rake them into a pile or put a tarp under the tree to collect them.

Optimal Storage Temperature and Conditions:
After collecting, the nuts must be dried for storage. It is easiest to wait until the clusters are dry to remove the nuts from the bracts. Spread them out in a single layer on trays or screens in a warm, dry place out of the sun. Turn them every few days until the outer bracts are easy to remove. This should take about two to four weeks. They can then be shelled, or stored in the shells.

To speed the drying process to just one or two days, you can dry them in a dehydrator set to 90-105 F. In the shell, they can be stored at room temperature for several months.
Shelled, eat them within a few weeks, or store them in the refrigerator for up to a year. To increase their shelf life, wait to process them until just before use.

Seed Saving: A mature hazelnut tree can produce 10 – 15 pounds of cleaned seed.

Notes: Delicious treats are not the only reason people plant these trees.

As attractive flowering hedges, they become valuable food sources for birds (attracting seed-eating birds, such as blue jays and woodpeckers) and small mammals, making your landscape into a miniature wildlife reserve.
Prune to remove suckers, or remove lower and hanging branches to shape into a tree.

The primary upkeep task for a hazelnut tree involves cutting away the suckers that all hazels seem to develop. You may actually want this if you are using your hazel for attracting wildlife and birds. The sucker growth will create a thicket and give shelter and a habit to the critters and feathered friends when they need it. If you'd prefer it not, cut the sucker growth and create a brush pile with it as a shelter, or if you are the crafty type, it is fantastic for all kinds of crafts, from basketry to wreathe making.

When pruning, be careful not to confuse suckers with lateral branches. Don't remove any branches that shield the trunk from sun exposure, or you will end up with irreversible, prolific sprouting.

Grown commercially mostly for their nuts, the wood is also used for making baskets, tool handles, fencing, and lightweight coracle boats.

Oil from the common hazel (C. avellana) is also used in food products and cosmetics. The leaves are mainly used as cattle feed, the twigs as rabbit feed and goat feed. They also provide bee fodder.

Heartnut Tree

Description
A type of Japanese walnut deciduous tree, (family of Juglandaceae and genus Juglans), that produces an sweet edible heart-shaped nut. The twigs are often as big around as broom handles and the leaves are compound and can be two to three feet long. With adequate moisture and protection from weed competition they can put on six to eight feet of height growth per year. A large firmly entrenched taproot forms a fast-growing, very cold hardy Heartnut tree that is relatively easy to transplant and survive.

The delicious kernel has a high oily content and is very tasty and crunchy when eaten raw or when toasted. The nuts form in clusters, and each cracks neatly in half, so they are pretty easy to shell. Technically, the trees are self-fertile but they will set a larger crop if you plant 2 seedlings, 2 different grafted varieties or a seedling and a grafted tree. It has light grey bark and pinnate leaves with 11 to 17 leaflets. The male flowers are inconspicuous yellow-green catkins produced in spring at the same time as the new leaves appear. The female flowers have pink/ red pistils.

Growing Instructions

Optimal Time/Temperature for Germination: It grows quicker than either black or English walnuts, and will start producing in just a few years, even from seed. The Hardy zones are 5 to 9. They can withstand extreme temperatures of cold and hot with a report of withstanding -40 degrees Fahrenheit. The tree size can range from 10-15 m (40 ft) in height and spread.

Wind machines for frost protection adopted by vinifera grape growers would benefit heartnut growers too. It would allow them to grow heartnuts in less than ideal climatic conditions and possibly use cheaper land to buy, offsetting the cost of the machines. One machine will protect up to 5 acres of trees.
If planting by seed, a two-month stratification period is a minimum for most nut seeds. It is not necessary to remove the hulls.

Optimal Soil Conditions: The heartnut tree is best suited to well drained fertile sand and clay loam soils with a pH of 6 to 7. Do not plant in heavy clay soils and soils with a pH below 6. If the pH is too low, it should be raised with an application of agricultural lime.

Be sure to work a generous amount of well-aged compost into the hole before planting. These trees are heavy feeders and will benefit greatly from nourishing soil. In terms of sun, you won't be able to get away with planting any of these babies in the shade. They need full sun, and a lot of it: at least eight hours of it per day.

Seed Planting Depth, Spacing and Procedure: Whether you're planting a young seedling or a grafted sapling, aim to plant it in late spring, once the ground has fully thawed. Dig a hole that's about a foot wide and a foot deep, and toss some beautifully aged compost in there. Make enough room for the young tree's roots, and place it into the hole gently. Backfill with a mixture of soil and compost. Water it in well, add a bit of soil as a top-up and tamp down the soil gently to hold it into place.

If you live in a very hot, sunny locale, consider wrapping the trunk with aluminum foil. This will protect it from getting sunburnt. Then drive a couple of 6-foot stakes into the earth to flank the tree, leaving eight to 12 inches of space between the tree and the sticks. Secure the tree between the stakes with soft ties or garden tape.

Best Companion Plants and Plants that Hinder: Just like European walnut trees, heartnuts contain juglone, an allelopathic compound that inhibits plant growth around it. Basically, it creates its own herbicide to keep potential competition at bay. This way, nothing else is vying for precious nutrients anywhere near it.
Only a few plants can thrive despite the juglone in the soil nearby. If you're aiming for permaculture-type tree guilds and companion planting, choose pawpaws, currants, elderberries, and various nightshade (*Solanaceae*) plants as understories.

Crop Maintenance

Moisture Requirements & Solutions: In the first year, water around your heartnut trees on a weekly basis if you don't receive regular moisture from mother nature. Increase this to twice a week during seriously hot weather or during droughts. Never let the soil dry out completely, as these trees are heavy drinkers and need constant moisture in order to thrive.

Weeding Needs & Solutions: In dry conditions, you might want to spread mulch around the tree's base. This will retain moisture and suppress weed growth. Spread this two to three feet all around the tree, but keep it five inches from the trunk itself.

Feeding Needs/ Optimal Natural Fertilizers: There's no need to fertilize your heartnut trees in their first year. Gardens alive natural tree fertilizer is made only of plant and animal by-products, never synthetic chemicals or fillers. Shrubs Alive will help ornamental shrubs and trees grow larger, greener and stronger. It's best applied twice per season, once in the early spring and again in early August.

Pests, Diseases & Solutions: On a more positive note, although juglone is allelopathic it also has a few benefits. For example, it's a natural pesticide, which means that these trees are immune to predation by just about every insect other than luna moths and their larvae. As you can imagine, it'll also help to protect the other companion plants embraced within the heartnuts' canopy and drip line. The only significant disease Japanese walnuts are susceptible to is the Walnut Bunch Disease.

Japanese walnut is resistant to a canker disease caused by a fungus. This has led to its being planted as a replacement for butternuts in North America. The two species hybridise readily (the result 'buartnut') is also resistant to canker and is likewise planted as a replacement for butternuts.

Harvest and Storage

When to Harvest/Number of days to Maturity: Heartnut tree grown from seed will begin to bear within 3-5 years of planting while grafted trees generally begin cropping earlier. The earliest heartnuts will begin to ripen and drop in mid-September with about a two-week drop period. To maintain the best nut quality, nuts need to be collected and the husk removed within a few days of dropping.
Heartnuts start to produce approximately three years after planting, though you won't get a hearty crop for six or seven years. If you'd like yours to start producing more quickly, then try to get your hands on older saplings. The more mature the plant, the more quickly you'll be crunching. Nuts will ripen anywhere from the end of August to mid-October, depending on the locale.

How to Harvest: These are some of the easiest nuts to harvest. Seriously, the shells crack open easily and the flesh within falls out in a single, whole piece. These sweet, mild nuts stay delicious when stored at room temperature for up to a decade, but you can also vacuum seal them or freeze them for long-term storage.

Optimal Storage Temperature and Conditions: They taste like a cross between Brazil nuts and pecans, with a sweet, mild flavor. The kernel should be plump and pale gold in color but uniform pale gray and beige tones are also acceptable. (Variable tones and shrival are undesirable.) These are not only one of the best-tasting of all the walnuts, but they store for years and years and only taste better as they age. Somewhere between five to eight years in storage will give you the best flavor. These sweet, mild nuts stay delicious when stored at room temperature for up to a decade, but you can also vacuum seal them or freeze them for long-term storage.

Seed Saving: Heartnut can be propagated by grafting or by seed. Seed does not always produce seeds that are true so you never know what you are going to get. Just keep in mind that trees may revert back to their wild type if you purchase seeds or saplings of a named cultivar. Seedlings have widely variable quality including poor cracking ability.

Notes: There are several hybrids of heartnut trees crossed with other nut trees. You might see them crossed with English walnuts, Persian, black walnuts, butternut called butterhearts. Buartnuts will also pollinate heartnuts, however, pollination by other heartnuts is most recommended.

You may have some walnut wood furniture somewhere in your home. If you do, you'll know how sturdy it can be. Although heartnut wood is a bit softer than European walnut wood, it polishes up beautifully and can be used for a number of different pieces. The wood is light and takes polish well, but is of much lower quality than Perian walnut wood but is often used to make furniture. If you're a crafty sort, try turning heartnut wood into bowls or carving them into kuksa drinking cups.

You can also use the branches as broom handles.

Paint the trunk of the heartnut tree with white, water-based latex paint to protect it from sunburn. Spread the paint from the bottom of the trunk up to the base of the first scaffold branch.

Hickory Tree

Description: Roughly one dozen species belong to the deciduous hickory (genus Carya - family Juglandaceae. The hickory tree produces a dense, strong, and shock-resistant wood that is commonly used to make tool handles, furniture, and decorative architectural elements. In addition, many types of hickory are sought for use in the content and preparation of food, and can be useful in survival situations. Hickory trees have bark that forms ridges in a vertical pattern. These ridges may be shallow or deep, far apart or close together, but always vertical. Additionally, some hickory bark becomes raised at the plate edges as the tree matures, and eventually flakes off, from top to bottom. A hickory tree's leaves are always directly opposite one another and with one on the end making groups of odd numbers with the largest of the leaves at the very tip of the branch.

Growing Instructions

Optimal Time/Temperature for Germination:
Roughly one dozen species belong to the hickory (Carya spp.) family of trees, though only a handful of species are grown in landscaping for their showy autumn foliage and attractive shape. The shagbark hickory (Carya ovata), shellbark hickory (Carya laciniosa) and pignut hickory (Carya glabra) are all grown as ornamental trees. All three are cold-hardy to USDA hardiness zone 5; the pignut will grow up to zone 9 while the other two are only heat-tolerant to zone 8.
Hickory nuts provide a simple and inexpensive means of growing new trees, although the nuts require pretreatment to help break their dormancy. The process is straightforward, but transplanting the seedlings may prove challenging due to their fast-growing, well-developed root system. Hardiness zone 4 – 8.
Hickory nuts put down roots very quickly after germination, so they must be started in deep pots with plenty of room for the roots to grow. Use a 2-gallon nursery pot with several drainage holes at the base and sterile potting soil. Sow one or two seeds per pot at a depth of 3/4 to 1 1/2 inches, or at a depth equal to the length of the seed. Hickory seeds need temperatures above 70 degrees Fahrenheit to germinate, so set them in a warm location in bright, indirect sunlight or indoors on a propagation heating mat. Keep the soil moist but not sopping wet and watch for seedlings in six to eight weeks. Remove the weaker of the two seedlings, if both seeds germinate.

Optimal Soil Conditions: Hickory seedlings need relatively little care as they develop, except for bright light and regular watering. Although they appear to grow slowly, hickory seedlings actually grow quickly beneath the soil surface, and they must be transplanted by the end of their first growing season to avoid damaging their extensive root system.
Before transplanting, acclimate the seedlings to their transplant site for a week or two. Hickory trees can exceed 100 feet in height with a 30- to 40-foot spread, so choose a growing location with enough room to accommodate their mature size. Also, choose a spot away from walkways and other frequently trafficked areas so passersby aren't hit by falling nuts come autumn. Hickories will tolerate full sun to partial shade, and they aren't fussy about soil type, but does need to drain well. Acid pH needed.

Seed Planting Depth, Spacing and Procedure: Autumn is the best time for transplanting hickory seedlings since the weather is cooler than the summer months. Dig a planting hole that is the same depth as the nursery pot and three times as wide to encourage lateral root growth. Settle the hickory seedling in the hole and have a helper hold it upright while you back-fill the hole around it. Water the seedlings and spread a 4-inch layer of mulch in a 4- to 6-foot perimeter around the base of the tree, taking care to leave a space between the mulch layer and the trunk.

Squirrels, chipmunks and other creatures all eat hickory nuts, so germinating them outdoors can prove challenging. Sow three seeds in a triangular pattern at a depth of 3/4 to 1 1/2 inches. They need protection from foraging rodents, so cover the planting site with wire mesh and mulch during the winter months, and then remove it in spring. Provide water if no rain falls for longer than a week, and look for hickory seedlings in late spring. Another method of protecting hickory nuts is to take an aluminum coffee can and cut an X into the solid base. Push the can into the soil over the seed and pry open the perforated base as the seedlings emerge.

Best Companion Plants and Plants that Hinder: can try Chervil, Mint, Lemon balm, Dill, Tarragon, Arugula, Endive, Peas, or Spinach under the tree. (potatoes and corn most likely fail to grow.)

Crop Maintenance

Moisture Requirements & Solutions: Hickories are relatively hassle-free trees. They need nothing more than weekly watering during their first summer in the ground and weeding around the base to allow for normal root development.

Weeding Needs & Solutions: Some type of organic mulch is good for keeping weeds under control. We typically use hardwood bark, or even leaf compost. The nice thing about an organic mulch is that it breaks down and enriches the soil – As organic matter breaks down, it helps the mycorrhizal fungi and bacteria in the soil to flourish – It also releases nutrients for the seedling to utilize.

Feeding Needs/ Optimal Natural Fertilizers: Fertilizer isn't strictly necessary unless you're hoping to boost nut production. You can spread it under the tree's canopy in late spring, taking care not to get any on the trunk. It's a good idea to fertilize until it starts bearing nuts.

Pests, Diseases & Solutions: Hickory trees are extremely tough and resilient when they are healthy. Anthracnose Leaf Spot may occur. Use fungicides to prevent the spread of anthracnose to other healthy trees and shrubs on your landscape and surrounding areas.

Hickory horned devils are impressive pea green to blue green caterpillars that are 4 to 5 inches long when full grown. They have two pairs of yellow to orange curved horns just behind the head and paired rows of spines down the back. These caterpillars will lash around when disturbed but are not dangerous. HHD are present from July to September.

Harvest and Storage

When to Harvest/Number of days to Maturity: Hickory nuts ripen in late summer and early autumn. Once the husks darken in color and begin to split at the base, the seeds inside are mature and ready to germinate. Gather more hickory nuts than you think you'll need because some might not germinate. Avoid deep cracks, mildew, chew marks or other signs of damage or deterioration. Hickory trees, like a lot of trees, do not reliably produce abundant crops of seeds every year. This is most likely a result of environmental factors like late frosts.
Hickory trees will only produce nuts after 20 years of growth with optimum nut production occurring between 60 and 200 years.

How to Harvest: Hickory nuts germinate most reliably when removed from their dense, thick husks. Ripe hickory nuts shed their husks easily, so no tools are needed, although a pair of pliers might help for stubborn segments. Peel back the segments to reveal the hard nut casing inside. Once the nuts are removed from their husks, soak them in room-temperature water for two to four days. Change the water every day to limit bacterial growth. Any nuts that float are probably rotten or otherwise unusable for propagation, so throw them away.

Optimal Storage Temperature and Conditions: Stratification mimics the natural winter chill hickory seeds would experience in nature. The temperature and duration of the stratification period varies between hickory species, but most need roughly four to five months in the refrigerator at a temperature of 40 degrees Fahrenheit. Put the hickory nuts in a moistened mixture of half sand and half peat moss inside a plastic storage container with several holes punched in the top, and then put the it in the refrigerator. Remoisten the sand mixture as needed to keep it lightly moist but not dripping wet. Some of the hickory nuts may sprout during the chilling process, and that's okay; just be careful not to break the root-sprout when transplanting them.

You can eat the nuts raw, make a porridge, refrigerate and freeze them and use them in sweet treats and savory dishes. Whole hickory nuts will last you several years if they are stored in a cool, dry place. They will last you even more years if you stick them in the freezer. Even better yet, store them in a vacuum seal in the freezer. I store my inventory in five gallon buckets in my basement with screw on lids and they last many years.

Seed Saving: Hickory nuts don't need stratification if you plan on germinating them directly in the ground outdoors.

Notes: A hickory tree should never be topped. Doing so will ruin its form. Hickories should only grow where a big tree is desired.
Don't try to crack the nut open with your teeth. Use a small rock or a vise instead.

A fun fact about shagbark and shellbark hickory nuts is that they can be used in any recipe calling for pecans. Hickory and pecan nuts are regarded by many as the finest, most flavorful of tree nuts.

Use the wood to smoke meats and cheeses, and to flavor your barbecue.

Highbush Cranberry

Description: The highbush cranberry plant, also called American cranberry bush, is a shrub from the genus *Viburnum* of the Caprifoliaceae, or Honeysuckle family**.** It is not actually related to the cranberries. The bush grows up to 8 to 15 ft. in height with a 8 to10 ft. spread and forms a rounded shape. The flowers of the highbush cranberry shrub usually appear after the leaves emerge (May to June) and occur as flat clusters 2 to 5 inches across. The flowers themselves are 5-petaled and come in two different forms on the same plant. Around the edge of the cluster, large white flowers surround numerous tiny white flowers. The smaller flowers in the center are the fertile ones that will produce fruit, and it's likely the larger ones attract pollinators. The fruit is a shiny sphere called a drupe that has a fleshy outside and large stone inside (much like plums or cherries). The fruit is ¼ to ½ inch wide and it turns bright red when ripe.
The single stone is large, yellowish, flat, and contains the seed or seeds inside it.

Growing Instructions
Optimal Time/Temperature for Germination: Growing zones are 2 to 7 because it over winters well in cold and harsh winter climates. Propagate the highbush cranberry plant by collecting ripe fruit and planting them immediately in soil outdoors. Highbush cranberry plants will take up to two years to germinate as they require a warm period followed by a cold dormant period and another warm period. The second warm period will initiate seed germination.

Optimal Soil Conditions: Select a planting location that offers a well-draining soil and full to part shade light conditions. The plant will grow in most soil types as long as there is no standing water.

American highbush cranberry, the native kind, occurs mostly along the northern edge of the U.S. (from Maine to Washington) and across southern Canada where forest cover is available. Across this range, it grows in a variety of conditions and habitats. Although it is shade-tolerant, it prefers full sun and will grow and bear fruit the best in sunny conditions. Likewise, it can occur in many different soils (e.g., sand, loam, clay) but it typically grows best in consistently wet but well-drained soils (i.e., more on the loamy side). For example, riparian areas (e.g., streams, river banks, etc.), lake shores, forest-swamp transitions, forest edges, and clearings can all be prime habitat for this plant.

Seed Planting Depth, Spacing and Procedure: Plant the whole fruit, or if you like, a cleaned seed, (no need to dry) about ¼ inch deep in a protected outdoor spot. Plant the highbush cranberry in a hole that is the same height as the container it came in and slightly wider. Sprinkle bone meal into the hole and set the plant on top. Gently fill and pack the soil around the root ball.

Crop Maintenance These Shrubs grow relatively fast—up to 3 feet per year. Annual pruning will maintain the desired height and width (in spring after the flowers fade). Prune the plant to remove old and thick branch growth. Cut and remove the branches at ground level instead of leaving stumps or small branch spikes on the stem of the plant. Heavy pruning on the highbush cranberry is not required.

Moisture Requirements & Solutions: Water the highbush cranberry plant generously after planting to stimulate root growth. Continue to water the plant regularly to keep the soil moist during the first growing season. Water the plant the following growing years when the weekly rainfall amount is less than one inch.

Weeding Needs & Solutions: Highbush cranberries don't compete well with grass and weeds, so you should keep the bed weed-free until the plant is a couple of years old. After two years, the shrub will be large and dense enough to shade out all but the most stubborn weeds. Apply a 2- to 3-inch layer of mulch around the plants leaving a 3-inch gap between the stem of the plant and the start of the mulch area. This will assist with moisture retention and prevent weed growth that will compete with the plant.

Feeding Needs/ Optimal Natural Fertilizers: Fertilize the plant each year in the spring by mixing 1 inch of organic compost into the mulch application. Highbush cranberries do not require additional fertilizing through the growing season.

Pests, Diseases & Solutions: This North American deciduous shrub is generally disease and pest free. Bacterial leaf spot occasionally inflicts visual black spots on the oldest of shrub leaves. Tolerate the minimal leaf drop that occurs in late summer before the leaves turn color and drop away in autumn. / If suffering under prolonged drought conditions, the shrub may lose foliage on branches infested with Botryospaeria canker. Prune away diseased branches and water sick plants. / A light-colored downy mildew sparsely cloaks the spots on leaf undersides. Avoid wetting foliage in springtime with overhead irrigation and rake up fallen leaves each autumn and destory them--do not compost these fungus-infected leaves.

Harvest and Storage

When to Harvest/Number of days to Maturity: The fruit generally grows in August and ripens by late September.

How to Harvest: Highbush cranberry fruits are quite tart early in the season, nearly inedible, which is why people often process them. After the berries are exposed to a few freeze-thaw cycles, however, they tend to sweeten a bit and get mushier.

Optimal Storage Temperature and Conditions: Aside from baked goods, the berries make pies, preserves, jellies, jams, syrups, and add to smoothies. Much of the astringency is in the seeds, so they should be removed before boiling the fruit, which nicely gels due to its high pectin content. Highbush cranberries can be stored in the refrigerator for up to two weeks. The fruits may be frozen for up to three months.

Seed Saving: The shrub often reseeds in the garden, although small seedlings are easily pulled or transplanted. Shrubs can also be started from nursery stock. It's not a fussy young plant, except for its water needs.
Store seed in a sealed container at about 60 degrees F for 5 months, then sow in a cold frame or greenhouse.
If you choose to propagate by cuttings, the hardwood cuttings can be taken in the autumn from stems of currant growth with at least one bud near the top. Make them 4 and 1/2 inches long and in a trench place as vertical sides with at least 3/4 of length is under the the soil. The root system develops in the spring.

Notes: The highbush cranberry bush can be an important survival food with wildlife- Ruffed grouse, pheasants, wild turkeys, white-tailed deer, cottontail rabbits, raccoons, chipmunks, squirrels, robins, cedar waxwings, and other songbirds all have been known to eat these fruits. Butterflies and other pollinators love its nectar. (Birds prefer the berries after freezing has sweetened them.) Nature also plants them by birds pooping the nondigestible seeds out.
Importantly, there is a non-native copycat that can confuse people when it comes to identifying this shrub. The European introduction, called Guelder-rose is planted as an ornamental. It's pretty tricky to tell the two apart unless you use a hand lens. At the base of the leaf, there are small glands that can identify them. The glands of Guelder-rose are shorter than wide, oval-elliptic, and bowl or cup shaped (concave) with a distinct rim; those of the native plant are typically taller than wide, round to oval, flat or rounded (convex) at the tip, and lack a distinct rim. You will likely find a true native highbush cranberry if you are in a remote or rural area.

Honey Locust Tree

Description: Honey locust is a deciduous tree of the legume Fabaceae family (Gleditsia triacanthos). It has compound leaves that give the foliage a lacy effect that turn yellow in autumn. The sweet smelling flowers attract the bees in spring. The reddish-brown seed pods can grow to a foot long. They contain a sweet, sticky pulp with bean-like seeds. The sweet and fleshy pulp of the bean pods can be eaten raw or extracted and used in a variety of ways. The fruits pods of the honey locust are edible but note that the black locust pods are toxic (though it's flowers are edible). The thorns are rock hard and were once used as nails. The tree is capable of reaching 100 feet in height. Thornless and fruitless varieties have been developed by the horticultural industry and are used extensively in landscaping.

Growing Instructions

Optimal Time/Temperature for Germination: This tree is often distributed by animals which have consumed the seed and passed them through their gut. This can be imitated by scarifying the seed mechanically or by using an acid bath. Some people sand the seed coat down with a file or vigorously rub the seeds on a piece of medium or fine sandpaper. You do not need to file the entire seed, just enough to make a small hole in it for nutrients and water to get through. Seeds soaked in hot water (85 -90o C) and allowed to cool to room temperature have also germinated well. Plant seeds immediately after boiling water treatment; do not store. Seed that has been treated with these methods can be planted into a well prepared seed bed or container, approximately ½ inch deep. Place the pot on a waterproof tray or dish in a sunny spot. Keep away from radiators or heat registers that might get the germinating seeds too warm. Germination and shoot emergence should take 10 to 14 days (could take up to 21 days). Seedling should be strong enough for transplanting at one year of age. Root cuttings have also been successfully used for propagation. Suitable Zones 4 to 9.

Optimal Soil Conditions: They transplant well, so growing honey locust trees are pretty simple to begin with. Choose a sunny location, somewhere you want to add shade. Honey locust tolerates drought, flooding and heat. It can thrive in poor soils, compacted urban soils, sandy. loam, or clay. Honey Locust requires full sun, and will not tolerate shading. Let the tree grow three feet tall before you plant it in a permanent outdoor location.

Seed Planting Depth, Spacing and Procedure: Plant in the fall or the next spring (tree can over- winter with its pot buried in the garden). Near planting time if tree has been inside move outside to a protected location to "harden off". Create a large hole for your tree and moisten because honey locust has a large, coarse root ball. It will tolerate a variety of soils, but avoid salt or higher pH levels to avoid stress that will make it more vulnerable to disease and pest infestations.

Best Companion Plants: Companion Plants: Viburnum, Cotoneaster, Coral Bells, lupine and wisteria. Honey locust can be grown as a companion tree with walnut, oak, persimmon, and pawpaw.

Crop Maintenance Once established, trees are generally maintenance free. Pruning of lower limbs will encourage tall, upright growth.

Moisture Requirements & Solutions: Water requirement: very little beyond initial planting.

Feeding Needs/ Optimal Natural Fertilizers: Organic fertilizers, such as bat guano, grass clippings, alfalfa meal, fish emulsion and worm castings, nourish your soil and your grass. Sounds like the research will show that honey locust fixes nitrogen but not the same way as other legumes.

Pests, Diseases & Solutions: Good honey locust care includes management, prevention, and treatment for webworm, cankers, borers, powdery mildew, and other pests or infections though Honey locust has few of significance. Canker can sometimes be a problem, but rarely kills the tree. Repeat applications of insecticidal soaps or spray oils also can be effective.

Harvest and Storage

When to Harvest/Number of days to Maturity: Honey locust seed pods ripen in late spring.

Optimal Storage Temperature and Conditions: They can be propagated in different ways. Some people take cuttings and use rooting hormone to produce roots and a new tree. Propagation of high quality clonal stock can be achieved by grafting, budding, and cuttings from hardwood, softwood, and roots. Sometimes other species or varieties are grafted onto the rootstock of honey locust. The seeds of honey locust are readily available. When prepared properly, the seeds can easily be used to propagate with.

Seed Saving: Collect your seed pod. Be sure that the seed pod is dried. If you need to store the seeds for a period of time, store them in a cool, dry place.

Notes: Unfortunately, the truth is that honey locust has been overused in landscaping and avoiding all pests or diseases may not be possible. As a result, your tree may be short-lived as compared to its native counterpart in the wild, but it will still be enjoyable for shade and fall color while it remains healthy.

Because this tree is a dense wood and shock resistant and nonrusting, the timber from honey locust has been used as fence posts, railroad ties, furniture, warehouse or shipping pallets, tool handles… Due to rapid growth, aggressive re-sprouting, and density of the wood, this plant has excellent potential for use as a biofuel either by direct burning of the wood or cellulosic ethanol production as well. Other favorites are for gum, sweetener, flour, beans, and firewood.

Honey locust is used extensively by wildlife. The bean pods are a favorite food of the white-tailed deer, squirrels, rabbits, hogs, opossums, and raccoons. Domestic animals such as sheep, goats, and cattle will also forage on the bean pods.

The honey locust does not actually produce any honey; it got its name from the sticky residue that forms inside of its seed pods.

A few differences with the toxic black locust tree compared to the edible honey locust bean are that it has a beautiful cluster of white and fragrant flowers, about one inch in size, that blossoms in the late spring and its pods are smaller sized at two to four inches. The pods have a leathery texture and are dark red to black in color. Black locust can often grow as a weed tree. It also often spreads by underground shoots or suckers, which contributes to the weedy character of this species.

Jujube Tree

Description: The tree is deciduous in the genus Ziziphus in the buckthorn family Rhamnaceae. Jujube trees may be productive for more than 100 years. The tree can grow to a height of 30- 50 ft. The leaves are dark green and with a shiny waxlike appearance above and a layer of fuzz on the lower side. The tree loses its leaves in the winter to make an ornate specimen with upright trunks, short angled shoots, and rough bark. The leaves turn vivid yellow in autumn.
The 1 to 1 ½ long fruit is very sweet, reddish brown when ripe with a white flesh fruit that are round to oval shape. A single kernel like an olive pit has a seed inside the fruit and the dark brown appearance and this seed gives rise to the common name, Chinese Date. The texture and flavor more closely resemble that of an apple than a date. Their chewy, spongy texture makes a very satisfying snack. The fruit and its seeds are used in Chinese and Korean Traditional Medicine. The Jujube (pronounced ju-ju-ba) is the long lost relative of Seabuckthorn.

Growing Instructions

Optimal Time/Temperature for Germination: Plant hardiness zones are 6 through 11 and the plants are mostly propagated from softwood cuttings (one of the most important steps, because without a good stem, the cutting will not take root). Jujubes are more productive in zones 8a and up, but short to mid-season ripening cultivars such as Kongfucui can grow and fruit well in colder climates. Most varieties require a different variety as a pollinizer. Climate for jujubes should be hot and dry. They can survive drought and excess moisture better than any other fruit but are better adapted to the more arid areas rather than the Gulf Coast but this exceptional fruit tree will grow in salty soils and are salt water tolerant when planted in coastal areas.

Optimal Soil Conditions: Soils for jujubes can range widely, but they do require fair to good drainage. They usually bloom late enough to escape spring frosts. Jujubes also grow well in extremely alkaline soils, such as in soils with high pH to 8 alkaline and very good yield results come from Eastern and Southern U.S. plantings. The toleration range is pH 5.1 to 7.8 (minor nutritional deficiencies occur between pH 7.8 to 8.5). With this notable exception, jujubes will survive on soils where most other trees would perish. Growing jujube trees is not difficult as long as you have sandy, well-drained soil. They do need to be planted in FULL sun.

Seed Planting Depth, Spacing and Procedure: Ants and wind, rather than bees, seem to do most of the pollination. Hand pollination may be needed when pollinating insects are absent or lack interest. Trees should be planted 30' from the foundation of any structure and 50' from water pipes and sewer/septic systems. The roots of a jujube tree can extend 12-25' deep. Space each tree 15-30' apart depending on expected mature width.

From Cuttings: Choose 4-6 inches long stems with small leaves near the tip and mature leaves at the bottom. / Cut multiple stems as the cuttings do not root sometimes. / Plant the cuttings directly in the garden or container.

By route of seed**,** plant the jujube seed as deep as the seed is long or 1/4- to 1/2-inch deep. Brush soil over the seed and press it down. Water the pot and place it in a sunny location that is at least 65 to75 degrees Fahrenheit. Keep the pot evenly moist until germination. Planting seeds is a hit or miss to grow jujube. As most of the trees produce fruits without cross- pollination and seeds taken from the self-pollination tree's fruits are usually not viable. That said, you can: Collect 3-4 jujube seeds in late summer or fall after the fruit ripens to red-brown color. / Soak it in warm water for an hour, scrub and clean it properly. / Carefully break the endocarp with a handheld nutcracker, it helps in fastening the gemination. / Sow the seeds 1/2 inch deep directly into the garden soil or pot.

Best Companion Plants: Growing wheat or cotton as companion crops between jujube tree rows is a common and profitable practice.

Crop Maintenance Root sprouting is a problem under mature plantings and can lead to the formation of a thicket if control measures are not undertaken. As soon as sprouts form, they should be cut off at or under the ground. Any root injury will encourage root sprouting, so cultivation should be avoided where possible. Plants produced from these sprouts will not produce the same type of fruit as the mother plant if the tops are grafted onto a rootstock. Young plants should not be used as a source of new plants unless they are grafted.

Moisture Requirements & Solutions: Although this hardy tree will tolerate drought, regular water will help with fruit production. Begin to water weekly as the tree breaks bud and leafs out in the Spring. Increase the frequency of water to twice per week in the Spring. Water 2-3 times per week during the hot Summer months. Reduce irrigation frequency to 1-2 times per week in the Fall. Stop watering your tree in the Winter while it is dormant.

Weeding Needs & Solutions: Keep a clean environment, free of weeds and dropped fruit that host insects or attract animals. Harvest when fruit reaches size and store indoors. Use natural repellants and bird netting to protect your harvest from other animals if necessary. Apply organic mulch inside the drip line, 8" away from the trunk, to reduce moisture loss.

Feeding Needs/Optimal Natural Fertilizers: Do not fertilize the tree in the first year. Since Nitrogen is important In Texas, a rule of thumb would be to use 0.2 lb Nitrogen per inch of trunk diameter up to a maximum of 1.0 lb. A single application just prior to growth in the spring is usually adequate. Second year plants will respond to applying the material in three applications at monthly intervals usually April, May, and June. If split applications are used,

Use 1/3 of the total in each application. Another option, is to use organic manure, bone meal, blood meal, and humus based fertilizers right before spring growth.

Pests, Diseases & Solutions: Pests are rarely a problem in jujubes though cotton root rot can be a major limiting factor on those sites where it is present. If plant loss is contributed to this disease, do not replant in the same area as additional losses are a certainty. Horticultural oils such as Neem oil is an organic pesticide that controls tiny, soft bodied insects. Use organic Bordeaux and Liqui-cop to manage fungus causing diseases such as powdery mildew, rust, and leaf-curls. Be careful of the pocket gopher that may attack the roots. Though rabbits don't really bother with the bark, they love all parts of this tree so a fence protection until it is too tall for the rabbits to reach the leaves may be in the plan.

Harvest and Storage

When to Harvest/Number of days to maturity: Jujube trees are very precocious. They bear flowers the same year as planting or grafting, and some cultivars can even bear some fruit. Most cultivars will produce a few fruits in the second year. After 4 to 5 years, jujubes will have a reasonable yield. Jujube turns yellow with spots when ripening. Depending on the variety , the fruit usually ripens in July and August or even September to October. It will gradually turn from a light green (immature) to a dark brown (mature) and then become wrinkled (drying).

How to Harvest: The fruit ripen on the tree a few at a time, over many months. In cooler summers, before fall rains return, pick them half brown and half green inside to finish ripening. At maturity, skin color is mahogany and the fruit should be harvested before the skin becomes wrinkled if you're eating as fresh. You can also leave the fruit on the tree until it fully dries. Cut the stem when harvesting rather than pulling the fruit from the vine. Fruit should be firm to the touch.

Optimal Storage temperature and conditions:

Fresh or dried, eat with the thin skin as it contains many nutrients (considered a superfood). The fruit is best stored between 52 and 55 degrees F. (11-13 C.) in a green fruit bag. The leaves are sometimes picked for teas, as it counts as a variety of herbal tea. Drying jujubes should be oven dried when harvested fully red. They can then be refrigerated as long as one year. Other ways to eat are candied, made into the equivalent of apple butter, or made into syrup for sweetening teas and dishes.

Seed Saving:

Cuttings are often grafted onto seedling rootstock. Cuttings of new primary shoots taken late spring to root often develop sufficient roots in two months. Cuttings of woody stems taken late winter may have a higher rooting percentage but take about three months to produce sufficient roots. Root sucker seed is not true to its parents and seed without cross-pollination is often not viable. Some cultivars of are vigorous, with fewer thorns and suckers so should provide rootstock with fewer problems. If propagation of jujubes is a whip-graft of root sprouts to the variety desired, the fruit from these seedlings will usually be of inferior quality; however, they are readily available, inexpensive, and easy to maintain.

Notes: Sharp thorns on many cultivars.

Prune fruit trees in the Winter to maintain size and shape to prepare for Spring growth. Thin the tree in the Summer, and remove excess fruits. Remove any dry twigs and branches. Cut off any new growth below the graft or very low in the tree, this will direct the plant's energy to its main branches. Thin your trees during the Spring and Summer seasons to ensure the plant's energy is directed as desired. If the plant provides an overly large quantity of fruits for that branch, reduce the quantity of fruit so that what remains grows larger. This will also prevent broken limbs. Harvest ripe fruit to prevent undesired pests.

The timber is sometimes used for small items, such as tuning pegs for instruments. Select grade Jujube timber is often used in traditional Asian instruments for fingerboard, pegs, rests & soundposts, ribs & necks etc. It has a medium to hard density similar to luthier grade European maple and has excellent tonal qualities. Jujube Wood can be found in local folk instruments from Ceylon / India thru to China / Korea and it is also commonly used in China in violin & cello making for overseas export, though usually stained black to imitate the look of ebony. Luthier grade jujube wood planes and carves beautifully.

Both the Li and the Lang varieties should be grafted as they do not come true to seed:

Li Jujube - a popular cultivar, produces large, round fruit that can weigh up to 3 oz. Good picked at the yellow-green stage and eaten fresh. (also reported as the best flavored)

Lang Jujube- another very popular variety that produces large pear-shaped fruit. For this variety it is best to eat dried fruit. (produces a more spreading tree than other jujube trees)

Honey Jar Jujube- the fruit is round to elongated and small to medium sized. Excellent for fresh eating, this jujube is very sweet and crisp. (tree grows to 20 feet)

Shanxi Li Jujube- the most popular fresh eating variety in China. Medium to large fruit that has a sweet apple flavor. (very productive tree)

Many countries have their own names for this tree*:* Cottony Jujube, Desert Apple, Azufaifo Indian Cherry, Datte Chinoise Indian Date, Indian Jujube, Indian Plum, Jujuba, Malay Jujubeberra (Pashto), Badari, Ber, Beri, Filzblattrige Jujube, Chinese Apple, Hong Tsao, Sanebuto-natsume, Cherumali, Dadara, Elandai, Perita Haitiana, Coolie Plum, Annab, Innab.

Kiwifruit Vine

Description:

This deciduous plant that was introduced in1962 and its 3 inch fruit is classified as a berry. It has an oval shape with a furry brown skin edible skin. The green inside has tiny black seeds that can also be eaten. Leaves of this plant are leathery in texture and are dark green colored.

They are huge in size of being about 7 to 10 inches diameter and oval shape. The woody vine can grow 15–30 ft. tall and 6–10 ft. wide. From the family Actinidiaceae, its male plants have their fibers more visible and they don't grow white hairs while the females are way more sensitive, grow white hairs and their fibers are not so strong and visible, like the male ones are. Some other common names are Chinese gooseberry, woody vine, wood berry, hairy bush fruit, unusual fruit, and even wonder fruit. It has a sweetish tart taste. Its taste can be compared with that of strawberries or melons or even nectarines.

Growing Instructions

Optimal Time/Temperature for Germination: If you want to grow a kiwi plant for its fruit, purchase a grafted plant from a nursery.

3 major types of kiwifruit:

Common kiwi (*Actinidia deliciosa*)- which requires about a month of cool weather with temperatures ranging from 30 to 45 degrees Fahrenheit (-1 to 7°C). Common Kiwi can be grown in hardiness zones 7 to 9.

Golden kiwi (*Actinidia chinensis*) - is sweeter but more delicate in comparison. It is less fuzzy and more yellow. This fruit grows best in zones that experience winter lows ranging from 10 to 30 degrees Fahrenheit (-12 to -1°C) zones 6 to 9.

Kiwi berry – This name usually refers to two different kiwi species, the hardy kiwi (*Actinidia arguta*) and the super-hardy kiwi (*Actinidia kolomikta*). These kiwifruits are much smaller compared to common and golden kiwis and have a thinner, smooth skin. As their names suggest, this type of kiwi is the most cold-tolerant and can be grown in areas that experience harsh winters zones 4 to 9. These varieties are sometimes able to produce fruit after just one growing season, in contrast to most others that take years to mature.

All kiwifruit generally require a temperate environment with both cool winters and warm summers. Additionally, the vines can tolerate hot summer temperatures up to 114 degrees Fahrenheit, though they will need additional water to compensate.

Optimal Soil Conditions: You will need adequate space for your kiwifruit plants to grow. Most kiwifruit plants grow best in either full sun or light shade. Kiwifruit generally need slightly acidic soil that has a pH between 6.0 and 6.5. The soil must be moist but well-drained.
Build a sturdy trellis for your plants. Like other vines, they grow best across vertical structures that provide support and greater access to light. Kiwifruit vines can grow on most types of trellises, gazebos, and fences. Commercial kiwifruit growers use six-foot-high wire trellises with T-bars spaced 15 to 20 feet apart.

Seed Planting Depth, Spacing and Procedure:
Transplanting kiwifruit plants is largely the same as other types of plants. The major difference is that you must space your plants so that each is at the base of its own support structure. Simply dig a hole for each plant that is a little bigger than their current pots about 10 ft. apart. Carefully lift each plant out of its pot, including the roots and the dirt they cling to, and place the roots into the holes you just dug. Finish by filling in the edges of the hole with loose dirt. Try to disturb the roots as little as possible to avoid shock. If you plant to grow fruit, keep as many plants as you have room for. Once they flower, which can take up to five years, you can identify the male and female plants and cull the extras.
As your kiwifruit plant grows, it will begin to send out shoots. You will need to train these shoots to grow on the support by wiring the vines to the trellis. This will ensure that the plant will grow a strong "trunk" section. Some gardeners have used their fence lines as support.

Best Companion Plants: blueberry, currants, grapes, grapefruit, raspberry, catnip, lemon balm, lavender, marjoram, ajuga, clematis, and geranium are choices for companions.

Crop Maintenance-
You should prune your kiwifruit plants once a year. Trim excess canes (vines that have grown a bark-like skin) and any lateral shoots not supportable by its trellis. Lateral shoots are branches that go off to the sides. Your kiwifruit vines will not be able to support the weight of such shoots on their own until they've reached the top of your trellis (when using the T-support system). Once the vines reach the top of the trellis, they will be able to grow more horizontally across it. The optimal time for pruning female plants is late winter while the plant is dormant. Male plants can be pruned sooner, right after flowering.

Cull the male plants**.** Kiwi plants will usually flower within four or five years of planting. When this happens, you can identify the male plants by the bright yellow, pollen-covered anthers in the flower's center. The female plants have sticky stalks (stigma) in the center instead, and white ovaries at the base of the flower. Only the female kiwi vines produce fruit. In order to get fruits, the female kiwi plant needs to be pollinated by a male plant. In general, a ratio of at least 1 male plant for 7 female plants is recommended. Remove the excess males and space the survivors an equal distance apart among the female vines.

Moisture Requirements & Solutions: Your kiwifruit vines will need consistent watering and are not tolerant of drought. Because of this, you should never allow their soil to dry out. That being said, they also don't like wet feet, making well-draining soil especially imperative. If you notice any browning or drooping leaves on the vine, that's usually a sign that your plant could use more water. Proper watering and pruning are especially important for kiwifruit vines since the fruit is formed on year-old wood.

Weeding Needs & Solutions: Weeds may reduce vine growth and yields by competing for water, nutrients, and space. So they must be controlled in the area around the base of the vine.

Feeding Needs/Optimal Natural Fertilizers: Kiwifruit vines do best when planted in soil that is high in organic matter and nitrogen. If nitrogen isn't present in your soil upon testing, you'll want to amend your soil high in the nutrient. Regular feedings are especially important as the vine is growing and getting established. Plan to feed your plant upon planting, in early spring, and in summer after the flowers die off.

Pests, Diseases & Solutions: Protect your kiwifruit from animals**.** Even if all other conditions are perfect, your plants may be destroyed as they will be especially vulnerable until they have fully matured.

The leaves of kiwifruit plants can sometimes attract deer. Keep your young plants safe with a fence around it or chicken wire surrounding your plants. Cats respond to kiwi leaves similarly to catnip. If you've ever tried to grow catnip, you probably know that neighborhood cats can easily destroy your plants. If there are outdoor cats in your area, take measures. Example strategies include building a fence, putting chicken wire around each, and natural repelling sprays. Unlike many other commercial fruit-bearing plants, kiwifruit do not have many insect enemies, so pesticides are to avoid.

Some pests could be spider mites and thrips, both of which can be easily controlled with oil. Pests that feed on the plant's fruit, mainly leafroller caterpillars and Japanese beetles, solution is to pick the fruit frequently and encourage birds, which are natural predators of these bugs, to visit your garden.

Harvest and Storage

When to Harvest/Number of days to maturity: While each vine can produce hundreds of pounds of fruit, it typically takes anywhere from 3 to as many as 7 years for these plants to reach maturity. Because of this large time investment, be sure to start with good stock and cultivate your kiwifruit plants using optimal methods. After a few years (or even that same year for hardy and super-hardy kiwi), your plants should start producing fruit. Yields may start out small but typically increase every year as the plant matures.
Kiwifruit usually ripens in September and October. If frosts typically happen by then in your area, you will need to harvest the fruit before it's ripe and let it finish ripening under refrigeration.

How to Harvest: Snap kiwifruit off at the stalk when their skin begins to change color (to brown for common kiwifruit). Another way to check for harvest-readiness is to look for black seeds in a sample fruit. Test the kiwifruit for ripeness by pressing with your thumb. The fruit is ripe if it yields to slight pressure.

Optimal Storage temperature and conditions:
Put the kiwi fruit in the refrigerator until you're ready to ripen them. Hard kiwis will last in the refrigerator for at least 4 months.
Store kiwis alone so they don't come into contact with fruits that make ethylene, the gas that causes fruit to ripen.
You can place them in a bowl on your countertop and simply wait a few days. The fruit will ripen in 3 to 5 days if stored at room temperature. Don't put the kiwis in direct sunlight. This could cause them to become discolored or rot too quickly.

Keep ripened kiwi fruit in the refrigerator for as long as 7 days. You can extend the storage time for another week if you refrigerate them in a plastic bag. The bag lessens dehydration and prolongs freshness

You can freeze whole kiwi fruit. Simply place whole kiwis in a freezer-safe container and store them in the freezer for several months. Kiwi slices make great garnishes or additions to smoothies and other healthy treats so if you have extra kiwis on hand, you can slice them up and freeze them. Put the slices on a cookie sheet and slide the sheet into the freezer. Transfer the frozen kiwi slices from the cookie sheet into plastic freezer bags. Store them in the freezer.

Seed Saving: Keep in mind that most kiwi growers favor purchasing young plants created through propagation from nurseries rather than sprouting them from seeds. This is partly because propagated cultivars possess traits that are much more consistent over generations. Since the way to tell the difference between male and female is through their flowers, it usually takes three or more years to happen so it's difficult to accurately space seedlings for optimal pollination and fruit production.

Growing kiwifruits from seed is a fun project and will give you a nice ornamental plant. Kiwifruit do not always grow true to type, meaning that your plant may not produce edible fruit like the one it came from. If you've decided to grow common kiwifruit, getting seeds can be as simple as going to the grocery store and buying a fruit. According to some gardeners, seeds from organic fruits are more likely to germinate and grow hardy adult plants. For more exotic types of kiwi, you can order inexpensive seeds from a variety of vendors.

To remove seeds from a fresh kiwifruit, simply slice the fruit in half and scoop it out with your fingers or a spoon. Place the seeds in a small bowl or cup and rinse them to remove the fruit. To rinse, swish water around in the bowl and strain it back out a few times. Place your seeds in a resealable plastic bag along with a damp paper towel. Zip the bag up and put it in a warm spot. Check your seeds every day until you see that they have sprouted. If you notice the paper towel drying out before your seeds have germinated, be sure to moisten it again. The seeds need a humid environment to sprout. Plant your germinated seeds. Prepare and moisten a few pots of seed starter potting mix, one for every three or four seeds. Tear off a section of the moistened paper towel you used to germinate the seeds that has a three to four seedlings clinging to it. Plant this, paper towel piece and all, into one of your pots. Repeat until seedlings are planted.

Place your plants in a spot that gets plenty of light**.** Windowsills are generally the best choice unless you have a basement equipped with grow lights. Young plants are especially sensitive to winter chills, so many growers keep their kiwi plants indoors for the first two years or so. Remember to transfer your plants to new, larger pots as they begin to outgrow their smaller ones. At this stage, begin boosting their nutrition using your preferred starter fertilizer.

Notes: Some people have reported being allergic to Kiwifruit.

There are also kiwis that are self-pollinating, but cross-pollination will most often result into more fruits.

It is not a house plant so inside growing would mean a greenhouse with space. If you partially bury a cutting in soil, it will take root.

The surest sign that a kiwifruit has past its prime is when it's too soft to the touch or mushy inside. A ripe kiwi is just slightly soft and pliable to the touch, but it continues to get ever squishier once it peaks. Another indication that a kiwi is in decline is the presence of an off- smelling odor, even before cutting into it; an as-of-yet unripe or ripe kiwi has no discernible smell. Bad kiwifruit may also have wrinkling skin, decaying spots or mold growth.

Uses: It is used to make jams and jellies/ popular choice for making pies and cakes /great for fruit salads and other deserts / helps in cooking of the meat properly in any meaty stew / patients with respiratory problems are suggested to include kiwi in their diet regularly / The leaves are boiled and made into a balm to help many skin conditions / ropes are made from the branches and twines of this plant / oil extracted from the seeds used in personal care.

Lingonberry

Description: This bush is from the family Ericaceae. Lingonberries are also referred to as cowberries, mountain or lowbush cranberries, red bilberries or whortleberries. They are a close relative of the cranberry and blueberry. Leaves of the lingonberry are shiny on a low-growing evergreen shrub that reaches from 12-18 inches (30-46 cm.) high and 18 inches across. They are self-pollinating so you only need one plant to get fruit. It blooms are very dainty bell shaped flowers in white or pink. In the Americas, a dwarf variation is more common. It grows to be only 4-6″ in height, and plants spread to roughly 12″ across.

Growing Instructions

Optimal Time/Temperature for Germination: Planting locations will depend on your climate conditions often at 2 to 6 Hardiness zones. In cooler climates (zones 4- 6), full sun conditions are perfect. In zones 7-8, full sun is usually fine, but partial shade in the afternoon aids. It's possible to grow in zone 9. Partial shade is absolutely required for your plants in this hotter climate.

Over the winter, your lingonberry bush will take comfort from the cold under a blanket of snow. However, if you live in an area where it is often 10 degrees or below and your plant does not receive consistent protection by snow, provide
a mulch covering for your plant to safeguard it from freezing. Lingonberries grow best in areas where temperatures do not dip below freezing. Frost protection: Spread hay bales across your row of lingonberries and then cover with a tarp. Lingonberries can be grown outside or in pots inside during winter months when temperatures are cold enough (below 20 degrees Fahrenheit). If you live in an area where the weather is warmer, it may be possible to raise your row of berries by piling up dirt from inside the hole that they are growing in as well as dirt around them.

This will help retain moisture and keep roots cooler during hotter months when soil temperatures can reach over 100 degrees Fahrenheit.

Optimal Soil Conditions: They require at least six hours of sunlight each day and prefer sandy soil so that their roots have more room to spread out. Although lingonberries do well in partial shade, making them terrific understory options combined with acid lovers like highbush blueberries, to encourage larger crops, plant them in full sun. Optimal lingonberry growing conditions will have a soil pH of 5.0 in well-draining soil rich in organic matter. If your pH is higher, add garden sulfur according to package directions starting in the fall. Do not change the pH of your soil more than ½ of a point each year. Lingonberries may also be grown in a raised bed. Lingonberries can also be container grown, although they need to be overwintered by mulching over them or banking them with hay bales. Lingonberries are not invasive. They can be grown in gardens, and they do not spread quickly like other berries or plants.

Seed Planting Depth, Spacing and Procedure: Plan to plant in the spring after all danger of frost has passed. Dig a hole that is a few inches deeper than the rootball and wide enough to

allow for spreading roots. Set the plants at the same height they were growing in their pots and water them in well. Mulch around the new plants with 2-3 inches (5-8 cm.) of peat moss or sawdust. For multiple plants, space them 14-18 inches (36-46 cm.) apart in rows set 3-4 feet (.9-1.2 m.) apart. Once the plant is about six inches tall, it's time to cut off all of its leaves except three on the top and two at the bottom. This allows sunlight to help the berries grow. After a few years, the plants will fill in, creating a low, evergreen hedge. Lingonberries can also be container grown, although they need to be overwintered by mulching over them or banking them with hay bales.

Best Companion Plants and Plants that Hinder: Planting any of their favorite plants nearby will ensure a healthy population like azalea and rhododendron are natural companions for both bees and lingonberry plants. If controlling pests like aphids and whiteflies are an issue, consider staging a few pots of marigold.

Avoid nitrate-based nitrogen fertilizers as the plant cannot take up nitrates well. Also, your berries are sensitive to chlorides. Avoid using fertilizers which have potassium chloride in them. Also keep chloride-based ice melts away from your beds. Don't plant your berries near swimming pools or other sources of chlorinated water.

Crop Maintenance

Moisture Requirements & Solutions: The roots of lingonberries are very shallow, and although they don't need the bogginess of a cranberry, lingonberry growing conditions should allow for consistent irrigation – one inch (2.5 cm.) of water per week. It's best to water with a drip or trickle system that delivers water at low pressure at the soil level. If you water with overhead sprinklers, water early in the day so the foliage has time to dry off before evening, to minimize disease problems. Keep the soil moist but not saturated.

Weeding Needs & Solutions: Their shallow root systems also mean they don't compete well with weeds, so keep the growing lingonberry plants weed free.

Feeding Needs/Optimal Natural Fertilizers: Once the plants are in the ground, they do not need much fertilization; in fact, too much nitrogen boosts growth in the late fall, followed by plant dieback, hence a reduced crop. If the plants show several

inches of new growth every year, don't feed them. If they lack growth, feed them with compost. Lingonberry plants grow best in acidic soil, so it is important to amend the soil with peat or pine needles.

Pests, Diseases & Solutions: They are also disease free except for a tendency toward Phytophthora, root rot if grown in soil that doesn't drain well.

Just for info. here's a few solutions-

Bacterial Leaf Spot: First signs are small translucent spots with a broad yellowish edge that slowly enlarge and become angular or irregularly circular with a reddish center. It thrives in cooler temperatures. The disease may also affect and disfigure flower heads… Remove infected plants. Avoid overhead watering. Do not work around plants when they are wet.

Botrytis: This fungus causes a grey mold on flowers, leaves, stems and buds. It thrives in cool wet weather conditions… Remove affected plant parts, avoid watering at night and getting water on the plant when watering. Make sure plants have good air circulation.

Aphids: Greenish, red, black or peach colored sucking insects that can spread disease as they feed on the undersides of leaves. They leave a sticky residue on foliage that attracts ants… Introduce or attract natural predators into your garden such as lady beetles and wasps who feed on aphids. You can also wash them off with a strong spray, or use an insecticidal soap.

Armyworm: Holes in leaves can be singular or clumped together. Leaves can become skeletonized. Egg clusters may be evident on foliage with a cottony or fuzzy appearance. Young larvae are pale green and adults are darker with a light line along the side and pink underside… Introduce natural enemies to the area.

Mealybugs: 1/8 to ¼ inch long flat wingless insects that secrete a white powder that forms a waxy shell that protects them. They form cottony looking masses on stems, branches and leaves. They suck the juices from leaves and stems and cause weak growth. They also attract ants with the honeydew they excrete, and the honeydew can grow a black sooty mold on it as well…Wash affected plant parts and try to rub the bugs off. They may also be controlled by predator insects such as lacewings, ladybugs and parasitic wasps.

Whitefly: These are small white flying insects that often rise up in a cloud when plants are disturbed or brushed against… They are difficult to control without chemicals. Try hot pepper wax or insecticidal soap.

Harvest and Storage

When to Harvest/Number of days to maturity: These shrubs do not begin to produce for 2-3 years after planting. Two harvests are possible for lingonberries: one late summer and again in early fall. Lingonberry seedlings have been known to survive up to seven years if cared for correctly. The flowers bloom from April until May, then produce berries that ripen to red around September or October.

How to Harvest: Hand-pick berries that are firm and fully red. Berries tend to ripen over several weeks. Plants can be picked with a scrabbler, a wide fork-like tool that strips the berries from the bush. Each bush yields a pound and half (.7 kg.) Fruit may remain on the vines for several weeks without deteriorating. For the best taste, harvest after first frost. The berries

should ripen for two months after they are picked. If this doesn't happen naturally, then place your harvested berries on drying mats inside your home until they reach the desired level of dryness before storing them away for winter use.

Optimal Storage temperature and conditions: Fruit can be refrigerated, canned, frozen or dried. Cool fruit promptly after harvesting and store between 32 - 40 degrees F. Lingonberries can last 8 to 12 weeks in the refrigerator, and several years in the freezer. Freeze them in a single layer on a cookie sheet, and when they are frozen store them frozen in zip lock bags. Canned lingonberry in jams, jellies, and syrup is quite popular, too.

Seed Saving: It's possible to grow lingonberries from seedlings, but it might be easier for people who want them quickly than those who enjoy growing plants gradually.

Gather some fresh berries and wash them thoroughly before planting. Plant the seeds immediately after washing them. Lingonberry plants have been known to stay viable for up to two months when stored appropriately, but anything longer may lead to low germination rates. The plant will sprout within three weeks if planted correctly.

Notes:

Lingonberrries produce flowers in the spring with a second flowering in the summer. Remove flowers the first year to strengthen plants. Do not prune the first five years except to remove dead branches. Lingonberries generally do not have to be pruned, but after year 6 cut back all but 6-8 of the most vigorous canes in early spring to keep the plant vigorous. It is normal for the new growth to be covered with fine hairs.

Cover bushes with bird netting as fruit ripens. Netting should not touch the berries.

While lingonberry bushes are self-pollinating, selecting two varieties that can cross pollinate will produce a higher yield and increase the size of your berries.

Rhizomatic roots spread out beneath the soil’s surface and enable the plant to spread in size. The runner plants are easily divisible to be replanted elsewhere. It is an independent plant that prefers to be left alone to flourish. As it develops as a groundcover, it will keep weeds at bay.

Loquat Tree

Description: This is a subtropical tree of the rose family Rosaceae grown for its evergreen foliage and edible fruit. It can grow up to 30-feet but for those gardeners that keep the tree under 10-feet in height, it starts to take on the appearance of a shrub that can have a 20 to 30 year life-span. The perennial nature of this shrub has other names known as Japanese plum or medlar, the Chinese plum, and May Apple. There are many different uses in traditional medicine for the fruit. The flowers form on the tips of the branches that are younger than 6-months and produce the flowers in clusters or pannicles. A loquat is a type of fruit that tastes somewhat like papayas and guavas or mango and apricot flavors. It does better in warmer climates, particularly if you are looking to grow the tree for the fruit, but you can also use it as an ornamental tree.

Growing Instructions

Optimal Time/Temperature for Germination: Loquat seeds are fairly easy to germinate, once you remove them from the fruit. Avoid planting the tree if you live in a region of the United States where temperatures fall below 30 F only if growing for the fruits. If you're wanting to grow a loquat tree in a cooler area, the white-fleshed fruits are a better bet than the orange-fleshed fruit. The white-fleshed fruits also do better in coastal areas. Loquat trees prefer warm climates, and they do best in hardiness zones 8 to 11. If you do grow them, plant 2 loquats near each various other to make sure of pollination and for excellent fruit return.

Optimal Soil Conditions: You can try a soil-less media or peat pods work well for growing loquat seeds. Place one seed in each starter. However, the seeds are fairly hardy and will likely germinate in potting soil, as well. Loquat seeds won't need to be stratified or scored them like some other seeds do. When they reach about half a foot, you'll need to transplant the seedlings to a larger pot. You can also transplant them outside if you have mild weather. Loquats can do well in most soils, but you can make the conditions more favorable. Mix in organic material to lightly fertilize the soil. Even add in something to improve drainage, such as peat moss. Make sure the roots are somewhat exposed before replanting. You can turn a hose on the roots if you need to. Place dirt in a larger pot, and gently set the new seedling (with the original media) into the pot. Surround the root system with soil until you reach the base of the plant.

For its final site, the tree might also do well in a partially shady planting site, but it might affect the fruiting phase. Most of California provides the ideal growing environment for loquats, and they also do well in the southeastern and southern states as well. loquat also doesn't enjoy hot climates and temperatures over 95 F result in problems with flowering and fruiting. Pick a sunny spot for your tree. Dig a hole that's bigger than the root system, though only slightly. Make sure the roots are partially exposed by turning a hose on them. Set the tree in the ground, and pack the dirt around it. If you are planting in a place with mild winters, plant it outside in the fall. If you have colder winters, plant the tree outside in early spring.

The loquat tree prefers growing in soil that has a loamy texture and drains well. The tree is not sensitive to differences in pH levels and grows well in acidic or alkaline soil. If you're growing the loquat near the coastline, then make sure your soil has no salination.

Seed Planting Depth, Spacing and Procedure: If you are planting more than one tree, it should be planted 25 to 30 feet away from the next loquat tree. If it's a dwarf tree, you may get away with only 13 feet or so apart.

Best Companion Plants: found that some folks will neighbor a loquat tree with palm trees, otherwise, some with pear, plum, or apple tree companions.

Crop Maintenance

As the individual flowers start to form into fruit, it's vital that you keep the tree warm. If you get a cold snap at the beginning or end of the fall season, it will cause the fruit to drop from your tree. Therefore, when the fall arrives, it's best to cover the tree with a burlap net to keep it warm. You can also cover the ground around the base of the tree with burlap or mulch to keep the roots warm as well.

If you grow your loquat tree in the ground, then you'll need to trim during the summer and prune after the fall. Pruning helps the tree sprout more pannicles the following spring and avoid dead pannicles taking up the plant's energy. Pruning also helps light get through the canopy to the lower branches, ensuring you maximize the fruiting period.

Moisture Requirements & Solutions: Water the seeds after you plant them in their pots. Keep watering them lightly once a day until they begin sprouting. After that, water the pods when they're dry Inside, water the plant when the soil is dry. Outside, water when you put the tree in the ground. After that, water three times a week for at least three to four months, which will help the tree take root. Give enough water to soak the roots but don't leave standing water.

Weeding Needs & Solutions: The tree needs to be free from competition. Therefore, it's best to remove off any vegetation in a 3-foot diameter around the tree and then add mulch.

Feeding Needs/Optimal Natural Fertilizers: Once the tree is well established outside, it will need fertilizer from time to time. The tree will need 1 cup (240 milliliters) of fertilizer for each year of growth in the first 3 years. However, you should spread it out in three to four applications over the year. Once the tree is older, you'll need to use a pound. Jobe's Organic is perfect for Loquat trees so follow instructions.

Pests, Diseases & Solutions: The two insects that cause the majority of problems with loquat trees are black scale and fruit flies. Aphids can also be an issue during the growing season, but they're not as significant a problem as the black scale. Blast these invaders off with water, or treat with neem oil such as from Bonide. Fruit fly larvae can cause severe problems with your tree if you don't identify and remove them in time. The maggots bore into the fruit, causing it to rot and fall from your tree. If you do get a fruit fly infestation, make sure you clean up any fallen fruit each day to reduce the larva's ability to emerge as flies from the fruit. Another pest to watch out for is the codling moth. This caterpillar might also try to infest your tree. The only way to keep it away from the fruit is to use an insecticide or an exclusion bag. An exclusion bag wraps around the fruit, preventing fruit flies and caterpillars from accessing the bounty. Spraying bacillus thurigiensis onto the plants will also keep pests at bay as well. Birds and deer can also prevent problems for your loquat, as both of them enjoy feasting on the fruit.

Bees transfer the pear blight to the trees, killing the leaves while turning young shoots brown. In regions where there is plenty of rain in the early summer and high humidity levels, you might have to watch out for the onset of fire blight.
Dead leaves and pruning's should be removed from the greenhouse as these may have mealybugs or eggs on them. It can be simpler to dispose of heavily affected plants rather than try to eliminate mealybugs Plant can tolerate some levels of mealybug, although populations can quickly build if left unchecked.

Harvest and Storage

When to Harvest/Number of days to maturity: The fruit is borne on the terminal ends in clusters of 3 to 5. The time from flower to fruit is around 90 days. If your goal is to get fruit from the tree, they may arrive in 2 to 3 years after planting. However, it can take as long as a decade for the tree to bear any fruit.

How to Harvest: Loquats are not easy to pull off the tree, even when ripe.To get them off, you'll need to clip off clusters with pruning shears. Otherwise, you may bruise or damage the fruit. When it does bear fruit, wait for the fruit to ripen on the tree. These fruits don't ripen well off the tree. Look for the proper color based on the variety you're growing to determine ripeness. As you let the fruit ripen on the tree, it will develop its flavor profile and sweetness during the last few days of ripening. When it's ripe, the fruit softens, and you'll find that the entire tree ripens at once rather than in stages. Choose loquats with smooth, firm, unbroken skin free of bruises and blemishes. Some loquats may have a brown, freckled surface.

After you harvest your tree, the loquat takes the winter and early spring to recover from the stress of the growing season. After the winter subsides, the tree begins to form new shoots from the spring into the summer. Flowering and fruiting may differ from year to year, depending on environmental conditions.

Optimal Storage temperature and conditions: Loquats can either be stored at room temperature or inside the refrigerator. At room temperature, they will last for seven days and in the refrigerator, they will stay fresh for up to one month. Loquats are high in natural pectin, so they are easy to preserve: freeze as Loquat jam, pickle jar it, or make a salad dressing to enjoy loquats any time of year.

Seed Saving: Purchasing a small sapling is a better idea if you want it to grow fruit at about three years.

If you're wanting to grow a tree from fruit you already have, you need to start by pulling the seeds out of the fruit. Most loquats have three to five seeds in them. The seeds are fairly large and brown. Make sure all the fruit is off the seeds by removing it with your fingers. Next, run the seeds under cool water, removing any remaining pulp and fruit juice residue. Some growers caution against growing loquat trees from seeds if you plan on eating the fruit as you don't know exactly how the fruit will turn out. In fact, it may not produce fruit at all. However, it will make a perfectly fine ornamental plant.

Chewing and swallowing kernels or fruits of this type may result in cyanide release in the stomach. Loquat seeds include chemicals referred to as cyanogenic glycosides, which are damaged down right into hydrogen cyanide. The only means the seeds are seriously poisonous is if they are chewed out and also eaten in large quantities.

Notes:

Loquat production is relatively sustainable, there is no known significant damage to air, water, land, soil, forests, etc. as long as pesticides have not been used, be sure to buy Non-GMO/organic, as the toxic, chemical pesticides contaminate air, water, soil, etc.

Order from heirloom seed sites or specialty seed stores will likely carry them.

If getting a sapling, make sure you get your favorite flavor as some are much more delicious than others. It should be noted, though, that grafted loquat trees do not necessarily produce fruit any earlier than non-grafted loquat seedlings. The time to fruiting is 4 to 6 years with a non-grafted seedling, compared to 3 to 5 years with a grafted plant. Of course, these times are dependent on the care and climate under which the tree is grown.

Loquat trees are pollinated by bees and are usually self-fertile. In some cultivars they are self- incompatible and need cross pollination to set fruit. It is recommended to have several different varieties or seedlings for optimal fruit set.
Lastly, another reason for a loquat that didn't bear fruit, may be that it was an over achiever the year before. Many fruiting trees will not fruit or minimally fruit the successive year after a bumper crop. They have simply put so much energy into producing this huge amount of fruit that they have nothing left to give. They may need a year of rest before they will again produce normally. This is often known as biennial bearing.

If container growing, the cloth pots are super easy to move, they are cheap and large enough to support fruit trees.

Its wood is pink, tough, close-grained, and medium-heavy. It's been utilized rather than pear wood for making rulers along with other drawing equipment.

Lychee Tree

Magnolia Berry Vine

Description: This beautiful deciduous, perennial, climbing, woody vine belongs to the Schisandraceae family. that grows about 9 m (29ft 6in) tall. The plant is found growing in mixed forests, especially on the periphery, also by streams and brooks, and usually on sandy soils. It can grow around 30 ft. long (9m). Common names are Chinese magnolia vine, Five-flavor-fruit, Schisandra, Schizandra, Schizandra berry and lemon wood.

Bearing small lightly fragrant magnolia-like flowers, it will produce striking crimson berries with brown stems (1 m of new growth a year) and can either twine round the support or spread along the ground. Leaves are alternately arranged, tough, glossy, dark green leaves, 7 to 8 cm long and elliptically shaped. In autumn the leaves change color to yellow. Flowers are white or pale rose to bright pink, 1.2 cm across, and bloom in springtime. The berries are borne in dense hanging clusters around 10 cm long. Fruits are 6 mm long, ovoid berries ripening in autumn. Each berry usually contains 1–2 brownish yellow kidney-shaped seeds that have the capacity to stay dormant and to form seed banks. Distribution of seeds mainly occurs through birds. All these parts are fragrant and the dried wood especially so.

Usually referred to as dioecious (male and female flowers borne on separate plants) though some selections are monoecious (male and female flowers borne on a single plant). Female plant will only produce fruit when fertilized with pollen from a male plant. The blossoms on the female plants are followed by brownish red berries. They are initially green turning to scarlet red as they mature. Magnolia berries are said to possess all five basic flavors: salty, sweet, spicy, sour, and bitter (hence the name five-flavor-berry). They also have traditional medicine benefits (research precautions as well).

Growing Instructions

Optimal Time/Temperature for Germination: The vine is hardy to -35 degrees F, hardiness zone 3 and goes up to zone 7 (should be caution for sun scalding). As long as they go dormant in the fall, they can tolerate very low temperatures and actually need the cold in order to set fruit. As the flowers are prone to frost damage, they are best grown in areas where the chances for frost in May and June are low. Cultivation requirements are thought to be similar to those of grapes.

Optimal Soil Conditions: Magnolia vine grows well in both sun and shade (although in hotter climates, some shade is recommended). It prefers moist, acidic, sandy to clay, loam soil with with a pH range between 5.5 and 6.5. With this preference, it's a good idea to mulch with pine needles and oak leaves (very acidic and will lower the pH of the soil as they break down). Plants require moderate humidity and are not very drought-tolerant and need plenty of water in well-draining soil. (not to be submerged)

Seed Planting Depth, Spacing and Procedure: Schisandra seeds are planted in early May, sprout after 15–20 days and the plants grow until late September. The seeds are sown ¼-inch deep directly into prepared seedbeds beneath a wall, fence, arbor, or trellis in the fall. Cover with fine soil and straw, pine needles or a grass mat. Alternatively, the seeds can be cultivated in pots and then transplanted to the field.

If you're starting a Schizandra from seed indoors, soak the stored seeds in warm water for 12 hours. Sow the seeds in potting soil and keep them indoors or in a greenhouse in the spring. Separate and grow the seedlings in their own pots for the first two years before planting them outdoors in early summer.

Best Companion Plants and Plants that Hinder: Low blueberry bushes around trees, strawberries as a ground cover, and gooseberries as a pollinator are examples of companion planting. (Raspberries should be planted with caution, many plants won't like having them around due to their spreading nature.) Companion Planting is an integral part of permaculture and a holistic approach to gardening where you plant different crops in proximity for maximising the use of space, providing nutrients, shade or support, increasing crop productivity, attracting beneficial insects, pest control / repelling pests, pollination or providing a space for beneficial creatures. The concept is an ongoing process of living and learning with nature and increasing biodiversity to support a sustainable Eco system.

Since these berries are similar to currants - marigold, yarrow, nasturtiums, chamomile should be helpful. The 'nots' might more so be- peppers, tomatoes, eggplants, potatoes, and beets.

Crop Maintenance - Magnolia vine needs support to grow well. A fence, arbor or trellis will provide good support and room to train the vine. Once form is established, pruning is only necessary to remove dead or broken branches or to thin out excessively dense areas. Prune in spring, after the vine is finished blooming. For the female, wait until the last of the fruit is finished growing. Using sharp pruning shears and cut back to within three or four buds of the vine.

Moisture Requirements & Solutions: It's a good idea to put down a layer of mulch to encourage water retention. A little water is really all it takes to keep this plant thriving for decades. Note-very sensitive to salts in irrigation water.

Weeding Needs & Solutions: Beside keeping weeds hand pulled from the young plants, you can weed control with mulch, vinegar spray, cardboard, or newspaper.

Feeding Needs/Optimal Natural Fertilizers: Amend your soil with plenty of organic fertilizer, such as manure or compost, if your soil is more alkaline than acidic. Fertilize the Schizandra vine at least once each year in the early spring before it readies itself to bloom. / E.B. Stone and Dr. Earth are examples of natural fertilizers.

Pests, Diseases & Solutions: Problems could be Powdery mildew, Downy mildew, leaf blotch, leaf spot disease, leaf blight and fruit rot, root and stem rot.

For Magnolia berry vine (Schisandra chinensis) prior to having to resort to a natural fungicidal application, prevention measures should be applied: no transplantation of infected seedlings / use of fresh soil / appropriate increase of P and K fertilizers (increased plant resistance to disease) / avoid complete coverage of frame areas and a too high plant density / maintain a sufficient ventilation and light transmittance / remove dead leaves from the ground in the fall and / avoid excessive watering.

Prevention measures to control insects in Schisandra cultures could be: remove the insects by hand if they appear in small numbers / remove dead leaves and injured branches (sources of insects) / use insect traps / biological control agents (such as parasitic wasps).

Harvest and Storage

When to Harvest/Number of days to maturity: The first fruit harvest usually takes place 4 to 5 years after planting. Starting from June to July the fruits develop and ripen from August to September.

How to Harvest: Wild collectors responsibly harvest just the ripe berries from the lower two-thirds of the vine, leaving the rest to share with the forest and fauna so that is some food for thought.

Optimal Storage temperature and conditions: The fruit can be consumed raw or as cooked soups, made into jam or juice / Young leaves can be cooked and used as a vegetable. / In Russia, paste made from the fruit is mixed with Actinidia arguta (a hardy kiwi vine) in order to counteract the insufficient acidity of that species. / A cordial drink made from the berries in Korea is called 'omija tea' / Magnolia berry is very sustaining as dried fruit and used on journeys / The dried leaves, shoots and roots are used to make a refreshing tea.

Seed Saving: Plants can be propagated by seed or by layering in spring or autumn, or in the summer time by using semi-ripe cuttings. If the Magnolia vine is very happy, it will send up suckers from the rootball and you can propagate new vines from them.

When harvesting the magnolia berry seed pods for the collection of its seeds, you must pick the berries from the pod when they are bright red and fully ripe. Remove the fleshy berry from the seeds and soak the seeds in lukewarm water overnight. The next day, remove the outer coating from the seed by rubbing it against a hardware cloth or a wire screen.

These seeds must go through a process called stratification before germinating. Place the seeds in a container of moist sand and mix well. The sand should not be so wet that water drips from your hand when you squeeze it. Place the container in the refrigerator and leave it undisturbed for at least three months or until you are ready to plant the seeds. When you bring the seeds out of the refrigerator, it triggers a signal that tells the seed that winter has passed and it's time to grow a magnolia berry vine.

Notes:

A hybrid selection, 'Eastern Prince', has perfect flowers and is self-fertile. Seedlings of 'Eastern Prince' are sometimes sold under the same name, but are typically single-sex plants.

Schisandra coccinea is one rare species found growing in southern Appalachian streambeds in America.

Sugar Maple Tree

In depth Description to confirm the correct maple tree: There are many types of maple trees, but only one sugar maple (Aceraceae Maple family). All maple trees produce sap which contains sugar, and most can be used to make syrup, but the sugar maple is considered the best for syrup production.

Sugar maple leaves will have a dark green color on the outside, and a lighter green on the underside. In the fall, sugar maple leaves will lose their green color and take on a beautiful orange, yellow, or red. Sugar maple leaves are segmented into 5 lobes. There should be three large, main lobes and one smaller lobe on either side. The lobes are characterized by sharp teeth, and are connected by shallow, U-shaped notches. Some underdeveloped or stunted sugar maple leaves will have only three or four lobes. If you see a leaf with fewer than five lobes but suspect the tree is a sugar maple, look around and find other leaves, which may be better specimens. The leaves of the Silver maple can be distinguished from those of the Sugar maple. Silver maple leaves have very deep margins between the five lobes, and the underside is silver or white in color.

Look closely at the edges of the leaf. Sugar maple leaves have smooth, U-shaped margins between points. The leaves should also be round at the base. The sugar maple is the national tree of Canada so if you want an indicator of whether or not you are looking at one, compare the shape of your tree's leaves to the leaf on the Canadian flag. While many other maples also have smooth margins, the extremely common red maple has sharp points and serrated or toothed margins between the lobes. This can be a useful distinguishing feature. The sugar maple leaf stalk (also called a "petiole"), which connects the individual leaves to the branch they grow on, should be the same length as (or slightly shorter than) the blades of the leaves. Look for leaves that grow perpendicular, or at a right angle, from the twig, in pairs. This is called an opposite orientation. Leaves will grow in "sets" of two, with one leaf always across from another on every twig and branch. Only one leaf should grow from each individual stem. There will be one vein running through each main lobe, but the two smaller lobes on either side of the leaf will not have a vein running through them. These veins are detectable on the underside of the leaf, but lie smooth on top. On the underside of the leaves, the veins may appear slightly "hairy."

Mature leaves on a sugar maple average between 3 inches (7.72 cm) and 5 inches (12.7 cm) long, and are equally as wide. If you won't have a ruler with you in the woods, but are planning to examine tree leaves, measure a segment of one of your fingers. This can serve as an approximate ruler in the field. For example, from the tip of your thumb to the first joint may measure one inch.

Identify Sugar Maple by its bark. The bark changes color as it ages. The bark of younger trees will be grayish-brown in color. As the sugar maple trees mature, the bark will deepen to a dark brown. It is characterized by vertical grooves that are closely spaced.

The bark can be described as furrowed, and has deep rifts or valleys between each plate of bark. Sugar maple trees are often confused with Norway maples in Europe and western Asia.

The two are most easily distinguished by their bark: the bark of a young Norway maple is one thin layer. Over time, Norway maple bark will develop vertical fissures, but they are not as deep and pronounced as the fissures of the Sugar maple, and do not lift up as much around the edges of the bark plates. The edges of the plates of bark gradually lift as a sugar maple gets older, and the plates flake away from top to bottom once the tree has reached maturity. Mature sugar maple trees may appear "shaggy" from a distance, due to the exaggerated peeling plates of bark that the trees develop.

Inspect the tips of the twigs. They are the small, thin branches that grow out of larger branches, and off of which the individual leaves grow. Look for twigs that are narrow, sleek, and a reddish-brown color. The small buds at the ends of each twig should be covered with tiny brown-colored scales. During the winter months, you may find brown, cone-shaped buds growing along the length of the twigs, in an opposite orientation, and 1 larger bud growing straight out from the terminal end of the twigs. Twig buds are also useful in distinguishing Sugar maples from Norway maples. The buds of the Norway maple are larger than those of the Sugar maple. Norway maple buds are covered in larger purple scales, which form a rounded tip.

Look for fruit that are green, turning brown when mature in the fall. The leaves are "horseshoe" shaped, meaning that each fruit has two leaves that grow from opposite sides of the fruit. The flowers form double-leafed, wing-shaped fruits. The paired "wings" connect at the fruit and are oriented to each other at a 60 to 90 degree angle. (helicopter effect when flying in the air.) The fruit should measure about 1 inch (2.54 cm) long, including both "wings." The wings of a sugar maple grow parallel to one another. The fruit are technically referred to as "samara," and may also be referred to as a key. These fruits are sometimes referred to as "seeds." However, fruit is the correct designation, as the seeds are located inside the fleshy tissue of the sugar-maple fruit. Each sugar maple fruit, located between the two horseshoe-shaped leaves, will have a paired structure. Two distinct fruits, each the size of a small pea, will look as though they have been fused together in the center of each fruit.

Growing Instructions

Optimal Time/Temperature for Germination: Maple species can vary from shrub-size Japanese maples to sugar maples that reach 75 ft (23 m) in height and 50 ft (15 m) in canopy spread, so choose a species that suits your available space. Most maple species are best suited to USDA Zones 3-8. A few specific examples like Japanese maples prefer Zones 5-8, silver maples prefer Zones 3-9, and crimson king maples prefer Zones 3-7. One of the most widespread American maple species, the red maple, averages 50 ft (15 m) in height and 30 ft (9.1 m) in canopy spread at maturity.

Optimal Soil Conditions: Maple trees prefer soil that stays moist most of the time yet also drains quickly. Test the soil drainage by digging a 1 ft (30 cm) deep hole, filling it with water, and letting the water drain completely. Refill the hole with water and time how long it takes for the water to drain completely again. If it takes between 5 and 15 minutes to drain, the soil is ideal for maples. If it takes longer than 15 minutes to drain, the soil isn't ideal for a maple. Anything longer than 60 minutes is definitely not good for a maple. Soil that drains in less than 5 minutes is okay for a maple, but the tree may require more frequent watering as it gets established.

In many climates, late spring and early fall are the best times to plant maple trees. Aim for a time when the air temperature is comfortably cool—not freezing cold nor uncomfortably hot. Likewise, the soil should be cool but not frozen (or nearly frozen).

These conditions promote root growth. In some climates, fall is definitely the best time to plant a maple, while spring is the ideal time in other climates. Your best bet is to consult a pro at a local plant nursery or agricultural extension office.

Test the soil according to the kit's instructions to determine if soil pH is between 5.0 and 7.0 by diging a 2–4 in (5.1–10.2 cm) deep hole in the soil, clear away any rocks or twigs, and fill the hole with distilled water. Dip the test probe into the muddy water and wait about 1 minute. Check the pH readout or use the color-coded guide provided with the kit. If the soil pH is outside the 5.0 to 7.0 range, you'll have better luck planting another species of tree. Soil pH can be adjusted with amendments, but it is very difficult to maintain a consistently altered pH for the life of a tree—especially since maples can live for 100-300 years.

Seed Planting Depth, Spacing and Procedure: Planting a maple near your home can provide wonderful shading. However, the leaf canopy of any type of tree you plant, when fully grown, should not touch or overhang your home. So, if your chosen silver maple has an average mature canopy of 50 ft (15 m), then 25 ft (7.6 m) from the trunk all the way around—plant it at least 30 ft (9.1 m) from your home. Overhanging limbs can clog gutters with leaves and cause damage in storms. Also, the root system of a tree extends underground at least as far as the canopy, and roots can cause damage to your home's foundation. Make sure there are no overhead or underground utility lines in the area of both the mature leaf canopy and root system. Most varieties should be about 25 feet apart from other trees but it will vary depending on the size of the fully grown tree.

Maples do best in a place that gets both sun and shade during the day. If you choose a spot that averages less than 4 hours of direct sunlight per day, your maple will likely survive but not achieve its full potential. If a maple tree is exposed to intense, direct sunshine for too long, its leaves may shrivel and fall off. Some maple varieties do have slightly different sunlight needs. For example, Norway maples can handle some partial shade, coral bark maples can deal with some light shading, and paperbark maples need full sunlight.

If your tree comes with a root ball that's 2 ft (61 cm) wide and 2 ft (61 cm) deep, for example, dig a hole that's 6 ft (1.8 m) wide and 2 ft (61 cm) deep. Use the same formula if you're planting a bare-root tree without a root ball. This hole depth may end up being a bit too deep when it comes time to position the tree, but it's easier to dig the hole a bit deeper now and backfill it as needed. If the soil is heavy clay, scrape channels into the side walls and bottom of the hole with a hand rake or the tip of a dirt shovel. Doing so will make it easier for water and tree roots to penetrate the clay.

If the maple is in a tree nursery container, grasp the trunk and lift it straight up and out— if it's stuck, cut away the container. Put on gardening gloves and use your fingers to loosen the root tips around the exterior of the root ball. If the root ball is very tightly packed—or "root bound"—use a garden hose to blast away some of the packed- together soil around the exterior. If the root ball is instead wrapped in burlap, simply cut away the burlap with garden shears and then loosen the root tips. A bare-root tree requires minimal if any root preparation. Simply loosen up any root tips that are packed together.

Lift the tree by its trunk and place it in the middle of the hole, standing straight up. In ideal soil conditions, the top of the root ball should be either level with or just a few inches/centimeters above the surrounding ground level. If this is the case, move on. If the soil drainage is less-than-ideal, aim to have up to one-third of the root ball above ground level. In this case, lift out the tree, shovel in some of the dirt you removed, replace the tree, and keep fine-tuning as needed. If the backfill soil that you dug out to create the planting hole is sandy or very dry, replace 25%-50% of it with an even mixture of bagged topsoil and either peat moss or compost. If the backfill soil is densely-packed dirt or clay, replace 25%-50% of it with bagged topsoil and/or a bagged planting mix.

Simply remove some of the existing backfill, dump on the additions, and use your shovel to mix the new backfill together. Remove any rocks from the backfill while you're at it. Improving the soil this way will help the tree flourish early on and ease its transition into the native soil. Use your shovel and the backfill soil mixture to fill the hole halfway, then pour 1–2 US gal (3.8–7.6 L) of water evenly over the soil to remove any air pockets. After the water soaks in, fill the rest of the hole up to the surrounding ground level, then pour on another 1–2 US gal (3.8–7.6 L) of water. If you have a helper, have them hold the tree trunk to keep it completely upright. If you're working solo, try to hold the trunk with one hand while backfilling with the other. If the top of the root system is above ground level, mound up just enough soil to cover the exposed roots with a couple of inches/centimeters of dirt. Tamp down the backfill with a tamper tool or shovel to remove air pockets. You may need to add a bit more backfill to bring the soil back up to ground level—if so, tamp it down and repeat the process as needed. If the top of the root ball is above ground level, tamp the small amount of soil that's covering it very lightly.

Spread a 2 in (5.1cm) mulch layer over to cover the entire backfill area or extend 3 ft (91 cm) from the tree trunk all around—whichever is larger. Don't pile up mulch right against the trunk but leave a 2–3 in (5.1–7.6 cm) gap between the trunk and the mulch.

Staking is optional for maples. To stake a newly-planted maple, pound in 2-3 wooden stakes that are equally spaced apart around the tree trunk—put them about 2 ft (61 cm) from the trunk and angle them roughly 45 degrees away from the trunk. Tie a nylon string to each stake. Wrap a rubber covering around the tree trunk where you intend to tie the strings, then attach them securely but not too tightly around the trunk. Remove the stakes after the first year of growth after planting. Otherwise, they may restrict trunk growth.

Best Companion Plants and Plants that Hinder: A best companion plant is White Pine, known to provide a natural defense against insects attracted to maples. Sugar Maple is found with a variety of native trees in our natural forests including American Basswood, Yellow Birch, American Beech, Northern Red Oak, and Eastern Hemlock.

Crop Maintenance Pruning is particularly helpful during the first several years of growth, but don't overdo it! Use sharp pruning shears to nip off dead, damaged, intertwined, or low-hanging branches no more than 1 in (2.5 cm) from the trunk or limb—get as close as you can without damaging the bark on the trunk or limb. During the spring, prune any branches that are sprouting near the soil line. In summer, prune dead, damaged, or twisted branches, as well as branches you want to remove for aesthetic purposes. In winter, do another round of pruning similar to that done in the summer.

Moisture Requirements & Solutions: A few days after planting the tree, dig a small hole to a depth of 6 in (15 cm) near the edge of the mulch bed. If the soil is dry, add water to the entire mulch bed until the soil is damp but not soaked at the bottom of the hole.

Repeat this process every few days until you get a good handle on how much water you need to add—and how often you need to add it—to keep the soil moist.

Water the tree as needed for at least the first year after planting it. You might, for instance, have to add 3–4 US gal (11–15 L) of water twice per week. If the tree branches and leaves start to wilt on your maple tree, it is not getting enough water.

Weeding Needs & Solutions: the 2 inch spread of mulch is sufficient to hold in moisture and limit weed growth—adding more isn't necessary.

Feeding Needs/ Optimal Natural Fertilizers: Fertilizer may give the tree a boost, but digging mulch or a light layer of moss peat into the surface around the trunk each growing season is more beneficial as it adds a small amount of organic matter and helps to hold moisture in the soil.

Pests, Diseases & Solutions: Don't pile up mulch against the trunk, the wet mulch may cause rot on the tree bark and potentially kill your newly-planted maple. To ensure your tree's survival, immediately deal with damage from various diseases, insects like caterpillars and aphids, and wildlife like deer and rodents. Maples are typically fairly resilient against insect damage, but they are susceptible to bark damage from wildlife such as deer.

Consider loosely wrapping plastic or metal fencing around the trunk if you see missing bark or other signs of damage. Diseases may cause spotting on the leaves, bark damage, or other issues.

Harvest and Storage

When to Harvest/Number of days to Maturity: Start tapping when the temperatures at night are below freezing (32 degrees F), and the daytime temperatures are above freezing. A larger swing in temperature differences (say, 20 degrees at night, to 40+ during the daytime) will often be beneficial, as it causes a sort of "pumping" action as the sap travels up and down in the tree. The best time to start varies, as the temperature swings vary from year to year. Be ready when your forecast indicates the above mentioned differences. Some dates have been as early as late January to mid February, through as late as mid April; just have your taps, tubing, collection containers, and cooking equipment ready to go.

How to Harvest: The most important step in the process of tapping a tree for maple is finding just the right tree. Look for a maple tree that is at least 12 inches in diameter and has a lot of direct sunlight. Maple trees that give the most sap are of the sugar or black variety. (Red and silver maple trees will also provide sap, but not as much as the other two species.) One overlooked tree for sugary sap is the Black Walnut.

Avoid unhealthy trees that have been damaged in the past. They will not provide as much sap as a big, strong, healthy tree.

You can tap a single tree multiple times if it is large and healthy enough. For a tree 12-20 inches in diameter, a single tap is all that can be used. For a tree 21-27 inches wide, you can use up to two taps. A tree can have three taps if it is wider than 28 inches across.

Trees with a larger crown - all the branches and leaves - typically give more sap than trees with a smaller crown. The fluctuating temperatures cause the sap to flow, moving it from the tree trunk and branches to the roots below the ground. Sap flows for around 4-6 weeks, but this depends on the health of the tree and the environment. Generally, the best sap is gathered at the beginning of the flow.

To tap a maple tree, you will need a bucket with a cover (to keep things from falling in), a spile, and a drill. It may also be helpful to have a large clean trash can or similar vat to use as storage for all the sap you will tap. Thoroughly clean the spile, bucket, and cover with bleach and water. Make sure that they are completely dry before use. For your drill, you will need either a 7/16 or 5/16 drill bit.

Tap the side of the tree that gets the most sun throughout the day, ideally the south side. If you can, it is best to tap above a large root or below a large branch. If the tree you are tapping has been tapped in the past, make sure that your new spile is inserted at least 6 inches away from the old hole. Place the tap in a healthy section of wood. If you drill and the shavings are light brown or tan, the wood is healthy. If you drill and the shavings are dark brown or chocolate-y colored, find a new place to tap. Drill on a sunny day when it is a bit warmer out to minimize the chance of splitting the wood. Hold the drill as an angle going slightly upwards to make sap flow easier. Drill in about 2.5 inches. To know how far to drill, you can tape around your drill bit 2.5 inches from the end prior to drilling.

Use a sharp drill bit to avoid creating a rough hole, which can decrease the amount of sap that is released. Remove all wood shavings from the hole once you've finished drilling.

Put the spile in the tree. Tap it in using a rubber mallet or hammer to ensure it is sturdy enough that it cannot be pulled out easily by hand. Don't hit the spile into the tree too hard, or else you run the risk of splitting the wood. If you do not want to buy a spile, you can make your own using ⅜" aluminum piping. Avoid using copper, as it is toxic to the tree.

Widen one end so that it can be used as a spout to pour the sap into your bucket.

Hang your bucket. Attach it to the end of the spile, or if you made your own use a bit of wire to hook it to your spout. Make sure that the bucket is secure, so that it cannot accidentally be knocked off or blown off by the wind. Put the cover over the top of the bucket to prevent debris from entering your sap store.

Wait for your sap. Collect it daily in the afternoons when it is the warmest outside. If the weather is good, you will be able to collect sap for just over one month. A healthy tree can provide between 10–80 gallons (37.9–302.8 L) of sap, depending on environmental conditions. Sap will stop flowing if the daytime temperature does not rise above freezing, or if the nighttime temperature stays above freezing and becomes too warm. Collect all your sap into a large container, such as an empty (clean) trash can. Otherwise, you will have many full buckets taking up space. You should take the spile out of the hole, The tree seals the hole itself over time. There will always be a little "scar" however. But there is no reason to plug the hole. You can try tapping it again next year.

Optimal Storage Temperature and Conditions: If the temperature rises above 45 °F (7 °C), the sap must be refrigerated. Otherwise, it will spoil and begin to grow bacteria.

To make your maple syrup You will need to use a large pan and an outdoor gas range or wood stove. You will also need a cloth syrup filter and storage containers. Avoid boiling your sap indoors, as it creates a large amount of steam. You can use a dehumidifier to reduce the amount of steam that is produced, allowing you to boil the sap indoors. A candy or syrup thermometer is very helpful in getting the sap to the perfect temperature. Using a wood stove creates the best maple syrup, as it imbues the sap with a rich smoky flavor.

Never leave boiling syrup unattended. When boiling your syrup, keep a keen eye to make sure that it does not boil over or burn. Boil and keep the sap at least 11.5 inches deep to keep it from burning. Be prepared, as sap boils down very quickly and gives off a lot of steam. As the sap boils down, add more to keep it at the 11.5 inch level. You can add cold sap to the boiling sap, or pre-warm it. Boil the sap until it reaches 219 °F (104 °C). This will give you pure maple syrup. If you want to make maple sugar, continue boiling until it has reached 234 °F (112 °C). Use a cloth maple syrup filter, available for purchase online, to separate out any "sugar sand" that formed during the boiling process. Always filter the syrup while it is hot, between 180–200 °F (82–93 °C). Heat the syrup filter in hot water for a few minutes before use. This will help the syrup to filter better, and also kill any bacteria that might have been attached to the filter. Store syrup that is waiting to be filtered in a closed container to help it to maintain its heat. If the syrup cools too much, reheat it to be within the 180-200 degree range. Be careful of overheating it though, as you could burn the syrup. If the syrup is pouring through the filter too quickly, the filter may be bad and need to be replaced. It should "ooze" more than it should pour. Store your syrup in a covered container. To extend the life of your syrup, you can keep it refrigerated once you open its container. Keep in mind that the sap will yield 1/40 of it's amount in maple syrup.

Seed Saving: If the seeds fall in fertile soil and receive enough water, they will grow into more sugar maples.

Notes: If you tap a tree with a diameter of less than 25 cm or younger than 30 years, there is a possibility of stunting it's growth and even killing it by accident.

Maples can be hardy trees and survive even cold winters, but they generally don't like hot sun in the summer.

Although not required, it's sometimes recommended using a root starter to give your new tree an extra headstart in its new home.

The thicker the syrup, the higher concentrate of sugar. The thinner the syrup, the less concentrated amount.

If it is natural maple syrup, it isn't bad for you. However, if it is artificial, then it will cause you to gain weight and can cause cavities, as it's little more than flavored sugar syrup. Always prefer the authentic syrup.

If the tree is 40 cm in diameter and you want more syrup, you can tap the tree on opposite sides. However, be sure that the taps face east and west, as taps exposed north will produce far less sap.

Maples are also sought for its hardwood for traditional furniture while some like it for firewood.

Mulberry Tree

Description: Mulberry trees are large members of the Moraceae family that range in height from 30-50 feet. While some mulberries come in the form of small bushes, the fruit-bearing types are large trees. They are known to be hardy, self-pollinating, deciduous trees. The Morus alba (white mulberry) and Morus rubra (red mulberry) hybrids (such as the Downing and Illinois Everbearing) are known for their large, sweet, fruit and hardiness.

Growing Instructions

Optimal Time/Temperature for Germination: While there is no particular season that is best for planting, the rule of thumb is that planting is fine when conditions are "favorable". You should not plant when the ground is frozen, when daytime temperatures are below 32ºF or above 90ºF, or when there's extreme weather such as blizzards or torrential rain. Hardiness zones 5-9.

Optimal Soil Conditions: will grow on many types of soil as long as a good drainage system is provided. Ensure they are not in an area where flooding is common as they do not tolerate being engulfed in water. When possible, well-drained, deep soils are preferred. Opt for slightly acidic soil with a pH of 5.5 to 6.5. Soils of moderate alkalinity are able to be tolerated. Mulberry trees are able to survive in drought and salty conditions so they are typically good for urban or coastal planting. They thrive in climates that see seasonal temperature changes including sunny summers and frosty winters. The fruit that falls from trees may cause dark stains so avoid planting near walkways or driveways as the branches can be very weak. The tree produces more fruit with more sun. They do best with at least 6-8 hours of direct sunlight per day.

Seed Planting Depth, Spacing and Procedure: Your planting hole should be about 3 times the width of the pot, as deep as the root ball. There should also be 25–30 feet (7.6–

9.1 m) between each tree, though some varieties will be fine with 15 feet (4.6 m). Mix the soil that has been set aside with aged mushroom compost, aged manure, or rotted pine bark (half and half). Remove the plant from the pot, loosen the root, and place it in the hole. Fill the hole with the soil mixture previously set aside, and water it to allow the roots to settle. Avoid burying the root too deeply by making sure the top most roots are positioned at the soil line.

Best Companion Plants and Plants that Hinder: Marigold, wormwood, nasturtium, calendula, and cosmos can benefit fruit trees (avoidance of potatoes noted to many fruit trees).

Crop Maintenance

Pruning will help keep your tree tidy and healthy and make for an easier harvest. Removal of dead, diseased or crossed branches should be done in winter when the tree is dormant. Avoid pruning in mid-summer to allow the tree to set for the upcoming year's fruit buds. Cuts should follow the shape of the tree and should never be more than 2 inches in diameter. You should need no more than 5 cuts to prune a healthy mulberry tree. Cuts over 2 inches in diameter can lead to bleeding, from which your tree is not likely to heal. They also leave your tree vulnerable to certain diseases and fungi.

Moisture Requirements & Solutions: Water your mulberry tree twice a week if it is surrounded by light soils, and water once a week if planted on clay soil. It should take you 40-50 minutes to ensure that the root system is completely soaked. Each week, your tree should receive at least 1 inch of water, especially during extremely dry periods. Make sure that your mulberry tree has plenty of water during the heat wave. Provide supplemental water with your hose or a sprinkler, and place a shade screen or other shady fixture over your mulberry if it is very young, newly planted, and small enough for a shade. You don't need to manually water your tree if you receive at least 1 inch of rain in your area.

Fruit may fall from the tree prematurely if it doesn't receive ample water. The best way to avoid dry spells is to let your garden hose slowly trickle to allow the water to penetrate the roots instead of running off.

Weeding Needs & Solutions: Organic mulches include wood chips, bark, pine needles, leaves, and compost mixes and will act as a natural weed-barrier but piled up at the base of a tree is detrimental and starves the roots of needed oxygen. Fine textured mulch gets compacted and can starve your tree's roots of oxygen. Coarse mulch is too porous to maintain adequate water. A medium-textured mulch will hold water and won't starve the tree's roots of oxygen.

Leave 1-2 inches (2.5–5.1 cm) of space between the base of the tree and the mulch can be 2-4 inches deep. Evenly spread 4-5 feet (1.2-1.5 m) by diameter and create a barrier that will prevent the mulch from washing away. (those roll-out weed barriers, landscaping fabric, will starve the tree of oxygen and compact the soil underneath so avoid using them.)

Feeding Needs/ Optimal Natural Fertilizers: Avoid adding fertilizer to the planting hole. Fertilization is based on the age of the tree but most mulberry trees thrive with little to no fertilization. Fertilizing once per year should be fine in March but no later than July.

Fertilizing after August will result in freeze damage.

Pests, Diseases & Solutions: Sooty canker is a wilt disease that affects limbs and branches of mulberry trees. Trees that are affected usually wilt in hot seasons, have cankers on limbs that eventually die back, and have brownish cracks that split open to reveal fungi. Keeping the tree fertilized and appropriately watered will help to prevent canker disease. If infection appears to be affecting branches, trim limbs at least 1 foot below the site of infection.

There’s no chemical control for sooty canker disease, so always make sure to prune dead branches as soon as you recognize them to avoid spreading the disease. Burn the diseased branches, too. Avoid over-watering and over-fertilizing as this stresses the tree and makes it more susceptible to disease. Always make sure you clean your pruning tools with rubbing alcohol after use.

Popcorn disease is caused by fungus and occurs in late spring and early summer. The

fruit becomes large and extends more prominently than healthy fruit, until it resembles popcorn. The best prevention method is to pick and discard any fruit that appears to be infected, including any fruit that has fallen.

The disease isn’t harmful to the tree itself so if you aren’t interested in the fruit, you don’t have to worry about preventing the infection. You can also try spraying the tree with a Bordeaux mixture to treat the disease.

Powdery mildew is caused by fungi and is evident when the leaf’s surface appears to be covered by a white, powdery substance. You can control the mildew by spraying your tree with an approved fungicide such as Serenade Garden.

Harvest and Storage

When to Harvest/Number of days to Maturity: The fruit from mulberry trees ripen in midsummer. Do not harvest before May or your fruit may not be fully ripened. Your berries are ripe when they are large, sweet and black. It’s fruit produces once a year. As the mulberry tree gets older, it will get taller and produce more berries.

It can take a mulberry tree 10 years to reach maturity. When grown from seed, they likely won't bear fruit for at least 8-10 years. (take note that a wind blown seed landed in my backyard and had rapid growth that produced berries beginning it’s third year.)

How to Harvest: You can harvest the fruit by handpicking them, or laying a sheet or tarp under the tree and gently shaking the branches. When placing your fruit in a container, avoid layering too many or the berries at the bottom of the container will be crushed.

Optimal Storage Temperature and Conditions: Your unwashed harvest can be stored for several days in a covered container in the refrigerator. Your harvest can also be kept for several month by washing the berries, patting them dry, and placing them in freezer bags. Don't wash the berries until you are about to use them.

Seed Saving: You might be able to find seeds online. If not, you can go to a local nursery and see if they have a young plant. You can also grow new plants from cuttings. Mullberry trees have a very high propagation rate. Cut off a small branch where it is mostly woody and established, then just plant and water. If there are already buds on the stems around late summer into early winter, you will see foliage growth in a months time.

Notes: There are also fruitless and weeping cultivars available for purchase if you are not interested in a fruit-bearing tree.

Chickens, turkeys and pigs enjoy mulberries so you can always choose to plant a mulberry tree where it will overhang and offer your animals a treat.

Nannyberry

Description: A perennial and deciduous shrub in the Genus of Viburnum from the Family Adoxaceae. It can be large shrub (more than 8 feet), upright compact tree (10-15 feet), or small tree (15-25 feet) with a form arching shape and multi-stemmed, thicket-forming appearance.
Nannyberry is known for its dark, lustrous green leaves which turn maroon-red in the fall. Then there are the ivory flowers that appear in late spring, flat-topped inflorescences as wide as your palm with its groups of numerous tiny blossoms. These flowers develop into a colorful mixture of different colored fruits, some light green, others pale yellow or red-pink, and all in the same cluster. They darken into blue-black and mature from autumn through early winter. The bark is dark gray to black in a pattern of small blocks.

Nannyberry is also called Sheepberry, Sweet Viburnum while Viburnum lentago is the botanical name and it is native to the Southeast, Northeast, and the Rocky Mountains and is typically found in woodlands and wood edges, a great plant for naturalizing. The root type is a rhizome. The plant has a tendency to sucker abundantly as it gets older. It can form a large thicket or colony. If you do not want this to happen, make removing suckers part of your care regimen.

Growing Instructions
Optimal Time/Temperature for Germination: The "perfect" flowers - having both male and female parts - are self-infertile and cross pollination is needed for reliable fruit production. Two or three shrubs are recommended for ample fruiting. The Hardiness zones are 3 to 8. Temperature of about 30˚C is perfect for growing this species of berries. The seed is best sown when the weather is mildly cold. Germination is slow and takes more than 18 months. In late winter you can prune them into shape.

Optimal Soil Conditions: Select a site that is well draining (made of sand, loam, and clay) if possible. The plant will adapt to poor compacted soils, dry, or wet soils. It also adapts well to moderate heat, drought and urban pollution. Soil pH of 5.0 to 7.5 is preferred. The light exposure works with full sun (6 hrs direct light daily) and partial shade (4-6 hrs light daily).

Seed Planting Depth, Spacing and Procedure: Seed requires 180 to 510 days of warm stratification followed by 60 to 120 days cold stratification. They can be planted out in their permanent locations in late spring or early summer the next year. Sow seed ¼ inch deep, tamp the soil, then mulch the seed bed.

Best Companion Plants and Plants that Hinder: It will attract Butterflies, Pollinators and Songbirds. Nannyberries companion well with Creeping Phlox and Mountain Laurel.

Some of these viburnum tree and shrub species are Juglone-sensitive landscape plants that should be located away from black walnut trees to avoid their getting damaged. (at least 50 to 60ft. away from the walnut's root zone). Raised beds near Juglone trees will help minimize toxicity, but care should be taken to keep leaves, twigs, branches, and nuts out of the bed. Black walnut leaves, bark, and wood chips should not be used as landscape mulch or composted on garden plants.

Crop Maintenance

Moisture Requirements & Solutions: This shrub needs evenly spread moist soil – try to avoid letting the soil dry out.

Weeding Needs & Solutions: Keep the area free of other growth by hand-pulling weeds for the first couple of years.

Feeding Needs/Optimal Natural Fertilizers: Fertilize in spring with a layer of compost and an organic plant food.

Pests, Diseases & Solutions: You won't spend much time nursing these shrubs. Nannyberry plants have no serious pest or disease. Watch for powdery mildew if air circulation is poor but a full sun location will help prevent powdery mildew and that doesn't damage the plant. Leaf spot can be an occasional problem.

Harvest and Storage

When to Harvest/Number of days to maturity: They ripen late autumn and sometimes hang on the branches all winter long. Nannyberries ripen in stages. It tastes somewhere between a prune and a banana.

How to Harvest: Early October is when you'll see the first fruits ripen, but it's best to wait until the whole clusters darken.

Optimal Storage temperature and conditions: Nannyberries are large and well worth your effort. Watch out for those gigantic flattened seeds inside though. The seeds are hard, and not for eating. The fruit is quite dry, and you need heat and water to separate it from the seeds. Start by removing the stems, leaves and other debris from the ripe berries. Next, place the berries in a saucepan and cover them with water. Bring to a boil and simmer for about 20-30 minutes, occasionally mashing to help the fruit separate from the seeds. Separate the seeds from the pulp by passing it through a food mill, or pressing it through a fine-mesh strainer. The berries can only be processed hot, so work quickly. If the pulp cools too much, just place it back in the pan, add a bit of water and re- heat before straining again. The next step is to remove some of that water, by drying the puree out a bit. You can do this by spreading the pulp on a tray in the oven and then baking at 300ish degrees for about 30-45 minutes. A crockpot set to low also works well, as does very low simmering in a pot on the stove. The goal is to get it to something that roughly approximates apple butter in texture. Thick, spreadable but stands on its own and holds its shape.

These berries can be dried and eaten later as a snacking item. It can be crushed into a smoothie or milk shake. The leaves and bark also have medicinal uses.

Seed Saving: In general, a viburnum plant will grow anywhere from 1 foot to more than 2 feet in a year. Of course, compact varieties grow at a slower rate than their taller counterparts. Storing cold and dry needs for 34-41 degrees F are noted. Shelf life of 2-6 years cold and dry. Propagating viburnums by seed is labor-intensive and not recommended.

Notes: One origin of its common name came from nanny goat lore. In late winter you can prune them into shape.

Northern Wild Raisin Shrub

Description: Perennial deciduous Wild Raisin are generally multi- stemmed bushes that can grow to 6′ tall by 6′ wide, though they're often smaller. The Honeysuckle Family known as Caprifoliaceae is the shrub's classification. Some leaves are serrated but this plant is distinguished from other unlobed viburnumsby for lacking star-shaped hairs on underside of leaf and having leaf veins, which branch and reform before reaching the margins. It produces showy white flower cluster and the fruit is a drupe with an elliptic stone and sweet pulp, blue-black, 6 to 12 mm. The Bark is grey or brown and covered with small white spots. While in the autumn, the leaves turn rosy-orange. The plants thrive in wet shady areas as an understory shrub, and it's a common food for wild birds. The berries are also edible for humans, and with plants bearing heavy annual crops, Wild Raisin is a good choice for permaculture plantings in shady areas beneath larger trees. The wood is of no commercial importance. Viburnum cassinoide, Viburnum nudum, Appalachian Tea, Raisinberry, Possumhaw, Witherod, and Raisinberry are other names.

Growing Instructions

Optimal Time/Temperature for Germination: It can be propagated from seed, hardwood, and softwood cuttings but the seed has proven to be the easiest. Hardy from zones 3 to 8. Fresh seeds which are refrigerator stored are best kept in glycine bags to prevent mold. If you do the refrigerator method, keep in mind that you have to plant them after the first cold period as the roots begin to emerge in the mid to late summer. Dormancy needed. Cold 38-42 F for 120 days--Warm - air temperature during the summer. Roots will sprout now at the end of the warm period. Then cold again of 38-42F for 120 days. Tops will then come up at this point.

Optimal Soil Conditions: It's an adaptable plant that tolerates shade and wet soils findable to woodland and ponds. It will survive in full sun provided there's enough soil moisture. It's commonly used to prevent erosion along roadside ditches. Having an organic soil, clay, or loam (silt) helps with this species as the seeds dry out easily. The pH range is acidic for <6.0 or even neutral 6.0 to 6.8 .

Seed Planting Depth, Spacing and Procedure: Seeds are planted in the fall with no cleaning or preparation. Germination the first summer is less than 50%, so plant seeds about 1/2 inch (12 mm) apart. They will continue germinating throughout the first growing season, even into November. A light mulch during summer and fall protects the soil from drying out and allows for late germination. Early seed collection may improve germination rates.

Best Companion Plants: To create a naturalized area with wet soil companion with plants like Silky Dogwood, Buttonbush, Meadowsweet, American Elderberry, Tamarack, Big Bluestem, Lady Fern, Wild Iris, Wild Bergamot, Spiderwart, Shooting Star, and Red Milkweed.

Crop Maintenance

Moisture Requirements & Solutions: If plants' foliage is wet overnight, that gives some diseases a chance to get a good start in our gardens. The easiest way to prevent this is to water as early in the day as possible so that your plants can dry off before nightfall.

Weeding Needs & Solutions: Good gardening practice means good sanitation- picking up plant debris, trimming away dying or unhealthy stems and branches, and keeping weeds to a minimum. If your plants are planted too closely together, or against a wall, they don't get enough airflow.
This stagnant environment is perfect for many fungal diseases make sure there's good air circulation.

Feeding Needs/Optimal Natural Fertilizers: The right amount of organic matter fertilizing (regular applications of compost or composted manure) will help your plants stay healthy.

Pests, Diseases & Solutions: There is no frost or disease that impedes with the yields so no serious problems. Aphids, borers, nematodes, scale, and thrips can occasionally cause issues. Wash them off, spray a nontoxic insecticidal soap, or get female lacewing whereas each lays hundreds of eggs. Each larva consumes up to 600 thrips or aphids a day for two to three weeks before pupating. / Leaf spot, anthracnose, and powdery mildew may be occasional disease problems.

Aanthracnose means "coal disease" and the best way to deal with anthracnose on edibles is control and prevention. Crop rotation is probably the number one way to prevent diseases in your vegetable. Try putting a good layer of mulch around your bushes and you'll likely have fewer issues with annoying disease. garden. Planting vegetables in the same spots year after year practically guarantees that fungal diseases and other pests that overwinter in the soil will give you headaches all season long. It's helpful to know the different vegetable families, and how to rotate them in your garden.

Harvest and Storage

When to Harvest/Number of days to maturity: The abundant fruit turns from pale green into bright rose and then darkening into blue-black. The fruiting occurs late August through early September. Best eaten when nearly dried out on the branch, if you can get to it before the birds.

How to Harvest: when left to raisin up as it dries on the shrub, the flavor improves. When the fruit has turned soft and black, the flavor is like a dried prune. Gather the clusters of fruit by gently cutting off the whole cluster and placing in a cardboard box to take home. Store seeds with pulp on at 41 degrees.

Optimal Storage temperature and conditions: Some options are jams, jellies, or paste. if they are the type of Viburnum fruit that is best collected when shriveled up a bit, soak in water to rehydrate before any of the below procedures & make sure all bits of stem are removed. Each wild raisin contains a single, large seed that is soft some folks don't bother removing it. Other folks may choose these methods: cooking the fruit, then separating the seeds and skin by putting the cooked fruit through a food mill or pushing through a sieve. You might find the odd source saying to remove the seeds first, before cooking.

I don't know if it really matters, but since the seeds are bitter, some will remove the seeds first. Yes, it is a bit more work, but not a lot. There are three ways I've tried, choose one you like:

One way is to put all you have collected in the freezer and leave for a day, then take them out and let them thaw. They go mushy after that, and just run them though a food mill, take the seeds that are left over, put them in a container with some water, rub them around with clean hands, and put that through a sieve. After that, cook.

Another way is put the fresh fruit in a pot, mash with a potato masher, then put it through a food mill, put the seeds in a container with water, rub around and sieve.

There is a third way. Boil them in just enough water to cover them for 5 minutes, run though a food mill, put the seeds left over in a container with some water, rub around, sieve, put it all together, and cook for remaining 15 minutes or so, or until it has boiled down to the thickness you want. It will thicken more when fully cooled.

Seed Saving: The seeds are cooler stored after they dry down a little. If you start by seed, they usually take two years for the seed to germinate after planting.

Notes:
The optimal identification period for this species is early July through early September.

The shrub is not self-pollinating so plant as hedge to ensure a higher fruit yield. A win-win to attract more pollinators.

Landscape use for its extreme durability, border, screen, naturalizing, parking lots, mass plantings and groupings, to attract birds, provides a nice neutral effect in the landscape, difficult sites.

Wild Raisin provides wildlife food and is valuable cover for many types of mammals and birds.

Provide native plant alternatives to your backyard's biodiversity which will improve the wildlife habitat to a city.

Oak Tree

Description: Oak is in the genus Quercus of the beech family, Fagaceae. Old World and American oaks having 6 to 8 stamens in each floret, acorns that mature in one year and leaf veins that never extend beyond the margin of the leaf. White oaks have larger, rounded lobes on the leaves, and a red oak's leaves have jagged lobes. Oak is the most common of all the hardwoods.

Growing Instructions

Optimal Time/Temperature for Germination: Look for an acorn to plant in early autumn, germinate it, and start it in a container. Then, transplant your acorn in a prepared site. Care for your growing oak tree so that future generations can enjoy it for years to come! If possible, look for suitable trees in the summer. You'll want mature trees whose acorns are easily-reached via ladder or with a long pole. Some oak varieties, like red oaks, have acorns that take two years to mature, rather than one. As you pick suitable trees in the summer, keep this in mind - the acorns on some oaks will be ready in the fall, while others won't be ready until the following year. (3 to 9 zones preferred)
Oak takes up to 15 years to mature.

Optimal Soil Conditions: Location is everything - pick a location for your oak tree where it has room to grow and won't be a hindrance when they've grown large. When choosing the site for your oak tree, some things to consider are: The availability of sunlight. Like all photosynthetic plants, oaks need sunlight to survive, so don't plant them in shaded areas.

The location of nearby sidewalks, water lines, buried pipes, etc. You don't want to have to kill your tree if work needs to be done in your yard. The shading effect of the full-grown tree. If you would like your oak tree to eventually provide shade for your home, plant it to the west or southwest of your home to maximize the shading effect it will have in the summer, while minimizing its shade in the winter.
Note - in the southern hemisphere, the tree should be to the west or *north*west side of your house to get the shading effect.
Nearby vegetation. Plants compete with each other for sun, moisture, and other resources. Don't plant your young oak right next to any substantial vegetation, or it may not reach maturity.
A live oak (a majestic tree that stays green year round) will require well-drained, loamy or sandy soil, and at least 4 to 6 hours of sunlight. When you've picked a good spot for your tree, clear any minor vegetation in a 3-foot (.9 meter) circle away. Use a shovel to turn over the dirt in the area to a depth of about 10 inches (25 centimeters), breaking up any large clods. If the soil isn't moist, you may want to moisten the soil yourself or wait until after a rain to plant your tree. White oaks, which produce large numbers of acorns, thrive in moist, well-drained, acidic soil.

Seed Planting Depth, Spacing and Procedure: Obtain fairly small 2 inch (5 cm) diameter gardening pots or milk cartons for your plants. Fill these with a good quality potting soil (some sources also recommend adding milled sphagnum moss). For watering purposes, leave about an inch (2.5 centimeters) of space at the top. Plant your acorn just below the surface with the root facing down. If using a milk carton, poke holes in the sides of the cup near the bottom so that water can escape.

If you prefer, you can also try just burying the acorn in the yard. Bury the root in a shallow hole and gently tuck the acorn to one side on top of suitable rich, soft soil. This will only work if the taproot is already well established, long, and has detached adequately from the acorn. Be warned - this leaves the seedling vulnerable to mice, squirrels, etc. It's best to wrap a cage around the seedling to protect it from animals.

Gardening sources differ about the next steps to take - some recommend planting seedlings directly into the ground after a few weeks of growth in a pot, while others recommend gradually increasing the amount of each day that the plant is exposed to the outdoor weather before finally planting it in the ground. Still others recommend transplanting the seedling to a larger pot, allowing it to grow further, and then finally planting it in the ground. Though there is no single right way to decide when to transplant a seedling into the ground, there are qualities to look for which can inform your decision to transplant your seedling. Good candidates for transplanting: Are about four to six inches tall (10 - 15 cm), with small leaves. Have white, healthy-looking roots.
Appear to be outgrowing their container. Have shown substantial taproot growth. Are a few weeks to several months old.

Putting your seedlings outside without getting them accustomed to the outdoors can kill your plant. About a week or two before planting your seeds outside, place your seedlings outdoors for a few hours. Slowly increase how long you leave the seedlings outside each day for the next week or two. Then, your seedlings will be ready to be planted outdoors. Make sure your seedlings are protected from the wind so they don't blow over.

Taproot facing down and leaves facing up, gently place your oak into the hole you've prepared. Make sure the hole is deep enough to accommodate the oak's roots. Replace the dirt around the plant, packing it in lightly. Water your seedling after planting it.
Pack soil around the oak seeding, sloping the soil away from the seedling so that water does not sit at the trunk of the tree, which can be damaging. Lay a circular ring of mulch about one foot (.3 meters) around the tree to help the soil retain moisture and discourage the growth of weeds. Make sure it does not touch the stem of the tree. To increase the chances of a successful planting, you may want to place several acorns in the same area. In this case, plant young seedling acorns directly into the ground by clearing a 2x2 foot (61 cm x 61 cm) area and placing two acorns into that space, with one or two inches (2.5 cm - 5 cm) of soil on top.

Best Companion Plants and Plants that Hinder: plants you can consider for landscaping beneath oaks are species that do not need water or fertilizer in summer- purple needlegrass, coral bells, wild lilac, xylella. peace lily, fern, croton, chenille, ginger, dwarf azalea.

Crop Maintenance Oak trees - especially young, fragile ones - are a source of food for many herbivorous animals. Acorns are a frequent snack for squirrels and mice, who can easily dig them up. Small seedlings are also vulnerable to rabbits, deer, and other animals that like to eat leaves. To ensure your young oak trees aren't devoured, take steps to protect them. Cage your young trees with chicken wire or sturdy plastic fencing around their stem to prevent animals from reaching them. If you live in an area where deer are common, you may even want to consider caging the top of the tree.

Moisture Requirements & Solutions: Water your plant until water comes out of the holes at the bottom of its container. In the coming weeks, water frequently, never allowing the soil to dry out. In this stage of their life, keep your seedlings indoors. Place them on a southern windowsill, where they can absorb the winter sun. You may not notice rapid above-ground growth right away. This is because, during the first stage of its life, the plant is developing its taproot below the surface of the dirt.

If you live in the southern hemisphere, place your seedlings on a northern windowsill instead. If your seedling isn't getting much sun, use a supplemental indoor grow light to provide more sunlight**.** An oak's long taproot allows it to draw moisture from deep soils even when surface soils have been completely dried out. During the winter and wet months, it's not usually necessary to water your oak trees. However, when oaks are young, hot and dry weather can be damaging. A drip irrigation system is a useful way to get water to young oak trees when they need it most. Irrigate your tree with about 10 gallons (38 liters) of water via drip irrigation system every week to two weeks. Irrigate during the hottest and driest months for about two years, lessening the irrigation frequency as the tree grows.
Remember not to allow water to collect around the base of the tree. Arrange your irrigation system so that water drips around the tree, not directly onto its base, where it can cause rot. As your oak grows and its roots deepen, you will need to care for it less and less. Eventually, it will be big and tall enough that animals won't be able to kill it and its roots will be deep enough for it to survive the summer without any watering. Slowly, over several years, reduce the amount of care you give your tree (which, aside from watering during dry months and protecting it from animals, should not be all that much). Eventually, your tree should be able to thrive on its own without showing any signs of distress. Enjoy the lifelong gift you've given others.

Weeding Needs & Solutions: are necessary while the tree is young but once mature, shade growing plants are workable.

Feeding Needs/ Optimal Natural Fertilizers: Oak trees need calcium, magnesium, nitrogen, phosphorus, potassium, and sulfur. Mulch helps keep the soil aerated and these absorbing roots healthier. There are many natural fertilizers you can locate but since coffee grounds are a natural source of nitrogen, they are a cheap and effective fertilizer for oak trees. Moreover, they contain no harsh chemicals and can be considered as green compost. Therefore, it’s a smart way to provide your plants with all the essential components that it needs.

Pests, Diseases & Solutions: Mistletoe, Lichen, and Spanish moss may frequent the oaks. Galls are defined as irregular growths or swellings, and they vary greatly in size, shape, and location on the plant. Gall development is a reaction by the plant tissue to feeding or egg-laying by various mites and insects.

Some tried-and-true ways to manage disease types: Oak leaf blister is rarely severe enough to require control measures (and fungicide treatments are generally ineffective). armillaria root rot**-** remove the diseased tree(s) along with as much of the root system as possible. Protect healthy trees in the area from stress. / bacterial leaf scorch**-** remove trees infected with bacterial leaf scorch and replant with several different species.

ganoderma root rot**-** any tree with fungal fruiting structures should be removed immediately.

powdery mildew- no control measures are recommended since this disease develops so late in the year that no significant damage occurs.

hypoxylon canker- control is achieved by keeping trees as healthy as possible, as this disease occurs primarily on trees that have been in stressed conditions. Avoid injury to the trunk and never apply fill soil around the trees.

Oak anthracnose- Prune and destroy dead twigs and branches during dormancy; apply a fungicide to protect new leaves and branches. (Only high-valued trees should be treated with a fungicide.)

Oak wilt prevention is best as there is no treatment. Trees infected with oak wilt should be removed and destroyed before the disease has a chance to spread.

leaf spot- fortunately, little damage results from this so no control action is ecommended.

Harvest and Storage

When to Harvest/Number of days to Maturity: Within 20 years, your oak may begin producing acorns of its own, though, depending on the species, optimal acorn growth may not occur for up to 50 years. Gulf Coast live oaks can produce acorns as early as 3 to 5 years. Many other varieties don't produce acorns until they are 20 to 25 years old.

Acorns are best harvested in the early-to-mid autumn before they have fallen from the tree. Choose acorns that are free of worms, holes, and fungus. Suitable acorns should be brownish with slight tinges of green remaining, though the appearance of acorns can vary based on the type of oak tree they come from. A good general rule is that acorns are ready for picking when they can be removed from the cap without tearing them.
Note that the cap is not part of the acorn, but a (separate) protective covering. By removing the acorn from the cap you are not damaging it unless you tear the acorn itself.

How to Harvest: Put the acorns that you've harvested, without caps, in a bucket of water. Allow the acorns to settle a minute or two. Discard any acorns that float - these acorns are bad. An acorn may float because a worm or grub has burrowed into it, creating an air hole. Similarly, a fungus can make the acorn float. If, at any point, you notice that an acorn is soft to the touch, discard it as well. Soft, mushy acorns are rotten.

Optimal Storage Temperature and Conditions: Even when stored in the refrigerator, most acorns will begin to germinate in the presence of moisture. The root end may begin to crack through the shell around early December (late fall, early winter). Whether or not the root has cracked through, the acorn is ready to be planted after about 40-45 days of storage. Handle your seedlings with care - the emerging roots are easily damaged.

Seed Saving: Take the "good" acorns out of the water and dry them off. Place them in a large zipper bag with damp sawdust, vermiculite, peat mix, or another growth medium that can hold moisture. You should be able to fit up to 250 acorns in especially large bags. Put the bag in the refrigerator for a month and a half or longer - as long as is needed to germinate the new oak.

This process is known as stratification, which is simply exposing a seed to cold temperatures, mimicking the natural conditions that a seed would experience had it fallen to the ground. This primes the seed for sprouting in the spring.

Periodically check on your acorns. The medium should be just barely moist. Too moist, and the acorns may rot. Too dry, and they may not grow.

Notes: you should never damage the leading branch. This will damage the tree's appearance and make it vulnerable to disease. It's better to plant a variety of oaks, including scrub oak or a gambel oak, which will branch low or look more like a shrub.
Even small oak trees lose their leaves in autumn, so don't be discouraged if all the leaves turn brown or fall off. Just wait for spring.

Bur oaks, also called majestic oaks, are slow-growing, 80-foot tall trees with an 80-foot spread. The trees are often used as ornamentals or as windbreaks, especially on farms.

Sawtooth oaks have moderate water needs and tolerate salty soil, but not alkaline soil. they provide good shade as the canopies spread 40 to 60 feet (12.2 to 18.3 m) and mature height of the tree is up to 60 feet (18.3 m) tall.

Gobbler sawtooth oak trees are similar to sawtooth oaks, but provide smaller acorns that are eaten by wild turkeys.

Willow oaks tolerate drought, standing water, salty soil, heat and pollution. Water needs are moderate soil.

Planting a red oak in Michigan isn't a good idea: red oak can't survive below -17°C (5°F).

Mature oaks only need pruning to remove dead or weakened branches.

Olive Tree

Description: As a species of small tree or shrub in the family Oleaceae, the olive tree is a slow- growing evergreen tree with a short trunk, vast crown, numerous branches, and oblong, silvery- green leaves up to 4 inches (10 cm) long. The height may reach 50 feet (1500cm) but most grow to about 25 feet (7.5 meters). Dwarfs go to about 10 feet tall. The buds turn into racemes where four petaled white feather-like and strong fragranced flowers appear. The olive has a small pit.

Growing Instructions While an olive tree can live longer than 1,000 years, like many plants, certain conditions must be met for the tree to thrive.

Optimal Time/Temperature for Germination: Olive crops thrive best in climates with mild winters and long, dry summers. It is difficult, if not impossible, to grow olives in tropical climates. Frost will kill many olive trees if care is not taken. Temperatures that hit 22 °F (−6 °C) can harm small branches, while large branches and even whole trees can be killed if the temperature dips below 15 °F (−9 °C).Even if branches and trees survive the cold, the flavor of the olives and the resultant oil can be compromised by cold streaks. Avoid growing olives if you live in an area prone to these temperature dips. Olive trees do need a certain amount of cold, however. Proper flower development depends on the climate dipping to 45 °F (7 °C) or below, although this number alternates with olive tree varieties. This is why cultivation is extremely difficult in the tropics or very warm areas. Make sure that bloom season is fairly dry and moderate. Bloom season (April to June) should be fairly dry and not excessively warm. Olives are wind-pollinated, so wet conditions can hamper a tree's fruit set. Growing zones from 7 to 11 are workable with zone 9 being the most ideal.

Optimal Soil Conditions: The soil should be moderately acidic or moderately basic, with a pH greater than 5 and less than 8.5. Many farmers believe 6.5 to be ideal. If the pH isn't in the right range, adjust it as necessary. Limestone is used to raise a soil's pH level, while sulfur is used to lower it. You can buy sulfur and limestone powder or pellet form, online or at a local greenhouse or hardware store. You adjust pH by spreading sulfur or limestone over your soil. The precise amount varies based on how much you need to adjust. You can read the instructions on your package. It may take a few days for limestone or sulfur to be adequately absorbed. For a more natural way of altering the soil's pH level, use sphagnum moss to raise pH and pine needles to lower it. Once your pH level is at the right level, keep monitoring it throughout the growing process, especially after using fertilizers which can affect pH.

Watch how water affects soil in the area you want to grow. Olive trees thrive in areas that have good drainage. After rain, check the soil. Do not plant in an area where the soil stands above ground during rainy periods. Also, dig a hole that's two feet deep and add water. If water steeps, opt for a different area. Planting your olive trees on a gentle slope can solve a lot of drainage problems. There tends to be better drainage on inclines.

The best indicator that an area will grow olive trees successfully is if an area has grown trees in the past. If you know olive trees have previously grown somewhere, grow your trees there. You can also grow your trees near existing olive trees. If you know other farmers or gardeners in your area, try asking them where olive trees have previously grown. Full sun, without any shade blocking your trees, is ideal. Any area you choose should at least get some direct sunlight for at least six hours a day. Very shady areas are not recommended for growing olives.

Seed Planting Depth, Spacing and Procedure: Frost can be a major danger for young olive oil trees. In general, opt to plant in spring after temperatures have been consistently warm and there has been no recent frost. Most people plant trees during April or May, but adjust for your region. The more time trees have to grow before winter, the better. Plant your trees as soon as possible after the last expected frost date of the season. Purchase potted olive trees online or at a local greenhouse. Seeds on their own are fragile and difficult to cultivate. You should plant trees that are 4 to 5 feet (1.2 to 1.5 m) high and whose branches start at three feet.

Measure the trees pot, including its circumference and height. Dig a hole about that deep and wide. You do not have to get the hole the exact number of inches and measure, but the hole should be roughly the same size so that the tree fits comfortably in the soil. Remove the tree from the container, including all the roots. Cut or untwist any circling roots as best you can, but stay away from the root ball. Cutting into this can damage your plants. Use the previously dug soil and surrounding soil to fill in the rest of the hole. Put an inch of topsoil over the root ball.

Multiple tree planting would be10-12 feet between the rows and 4-6 feet between the trees.

At this time, things like fertilizer and compost should not be added near your tree. The tree should grow out of the native soil initially.

Best Companion Plants and Plants that Hinder: Lavender, petunia, marigold, thyme, borage, daisies, yarrow, dill, fennel, lemon balm, parsley, tansy, nasturtium, oregano, peas, and alfalfa. Experiment next to your tree and you can always relocate the good companion plant later.

Crop Maintenance Do not prune young trees often. During the first four years, only remove side branches growing below three feet. As the trees mature, they will become to take on their full form and you can remove weak or unwanted branches. Early pruning, however, should be as minimal as possible to avoid stunting a tree's growth. To prevent olives from forming in a certain place on the tree, prune the desired flowering olive branches in early summer.

Make sure your pruning tools are clean when pruning olive trees during a rainy season.

Pruning tools can become infected with olive knot, a bacterial disease that is spread from the tools to the olive trees.

Moisture Requirements & Solutions: With drip irrigation, trees need watering each day during the summer. Water your trees for an hour. Keeping mini-sprinklers, which wet the ground down at least two feet, can also help trees stayed watered. Look for sprinklers that .1 to .2 inches of water per hour and install these between the trunks of your trees.

How often you water your tree may be dictated by whether you want to cultivate fruit or oil. If cultivating fruit, water your trees more often — anywhere from every week to every two or three weeks. If cultivating oil, water your trees less often. This will help concentrate the flavor of the oil.

Weeding Needs & Solutions: If not properly managed, weeds can create problems.

Feeding Needs/ Optimal Natural Fertilizers: Olive trees will thrive well enough with correct planting and watering. Try not to spray olives grown for making olive oil with chemical treatments. The processed olive oil will retain the odors of these chemicals. Some mulches to use instead of coarse straw are lucerne, soya bean, and pea hay which are excellent mulches high in nitrogen and other nutrients to feed the tree.

Pests, Diseases & Solutions: Like most plants, the olive tree is sometimes susceptible to attack, particularly from Black scales - small black scales on the surface of the bark which can get out of hand fast as they produce eggs quickly. / Verticillium wilt may also affect olive trees, causing leaves and branches to unexpectedly wilt. Although certain cultivars of olives come equipped with resistance, there is yet no treatment for this fungal disease. If afflicted branches aren't cut off, wilt can affect the whole tree. In this case, you may have to prune branches even from very young trees. If you've had a problem with wilt in your soil before, avoid planting in that area.

Harvest and Storage

When to Harvest/Number of days to Maturity: In general, harvest olives in the fall but leave on to fully ripen for oil use until winter before olive harvest. Well-watered trees will start bearing fruit two or three times faster than dry-farmed trees. While some cultivars begin bearing fruit as soon as two or three years if properly maintained, many trees won't start bearing until 10 years old. When growing olives, remember this is a long term project. Start watching for fruit after the first two years, but keep in mind it may take much longer for an olive tree to yield fruit.

How to Harvest: Ripe olives will bruise easily and must be handled carefully during harvesting. This may sound easy, but the fruit must be picked directly from the tree so the seed remains alive. Pick them in early autumn, after the fruits ripen and are green. Leave the black ones.

Don't pick any off the ground and make sure the ones you choose don't have any holes from insects. Once you have the olives, gently smash the flesh with a hammer to loosen the fruit around the pit. Cover the crushed olives with warm water and soak them overnight. Stir the water every few hours or so. Jostling them will encourage the fruit to loosen further. If a hammer isn't available, use a wide knife and smash with the flat side. If you notice a few floating to the surface, gather these and discard. They are likely rotten.

Optimal Storage Temperature and Conditions: Olives start out green and eventually all turn black as they ripen. Olives that are harvested when they are still green have a peppery, grassy, or more herbaceous flavor, while olives that are harvested when they turn taker have a milder, buttery flavor. Many oils are a mix between green and ripe olives, harvested right when they are turning color.

Decide on the type of olive you want and wait until your olives turn that color to harvest. Keep in mind, you cannot eat olives directly off a tree. Most have to be brined, meaning they are soaked in salt water, before they can be consumed.

The best way to store olives is in a sealed jar containing brine. Unopened jars should be stored in a cool place away from sunlight in the pantry where the temperature is always less than 75 degrees Fahrenheit. Opened jars should be placed into the refrigerator and stored up to twelve months or by your date on the jar.

Seed Saving: Growing from seed, you will get more of a wild variety than any of the parent trees it came from but if determined, Gather the pits and use a scour pad to rub the excess skin off. This is the same pad you probably use on pots and pans. After you've rubbed the skin, thoroughly rinse the pits in warm water for several minutes. If a scour pad is not available, try sandpaper. There is a blunt end and a pointy end on every olive pit. With a knife, nick the blunt end. Do not break through the hull completely or the seed will be useless. Instead, create a tiny hole about the size of a pen tip. Soak these for 24 hours in room temperature water. Use a 3 inch pot for every seed. Fill them with well-draining soil. It should consist of one part coarse sand and one part seed compost.

Notes: An olive tree can also be grown in a large container indoors (even moving them outside and then inside in the winter.

Olive wood is resistant to decay so if cut down, a new trunk will often arise from the roots.

You can install Dip emitters that are irrigation systems that keep your olive trees properly hydrated. For the first year, they should be placed right next to each tree trunk. The following year, they should be moved 24 inches away from the trunks. A second emitter should be added, also 24 inches away from the trunk. Installing dip emitter is complicated. While you can purchase them at a hardware store, installation is tricky unless you have extensive gardening experience. It is best to hire professionals to install your emitters. Usually, emitters are hooked up to a water source such as an outside faucet. You then run the tubing across your garden or yard until it gets to the base of your trees. You will then poke holes in the tubing and install a watering device to help irrigate your olive trees.

You cannot grow more olives from store-bought olives. Most olives are inedible in their natural state, and olives meant for human consumption are usually cured or fermented, a process that renders the seeds within un-viable, so that they will not germinate.

Pawpaw Tree

Description: a small, deciduous tree that yields the largest fruit native to North America. It's part of the Annonaceae family, which is the largest family of the magnolia order. Pawpaw trees can grow to a height of about 25 feet and feature maroon-colored blossoms with 6 petals in spring. (When grown in shady and protected areas of established forests, they only get to be 2 to 12 feet tall.) The leaves are dark green, shiny, and oval shaped with pointy ends. They can grow up to 12 inches in length. In the fall, foliage turns varying shades of yellow. For fruit production, pawpaw must pollinate each other. However, they are self-incompatible, meaning each tree must be cross-pollinated by another pawpaw that is unrelated to it. Remember to obtain two separate sets of seeds for cross- pollination. Pawpaws have an elusive taste similar to that of vanilla custard or a combination of banana and mango.

Growing Instructions

Optimal Time/Temperature for Germination: Pawpaw trees are quite hardy, so they should be able to survive almost anywhere. If you live in a colder climate, just be sure to use thick mulch around your tree. Although transplanting a wild pawpaw rarely works, many people enjoy these delicious fruits by starting with their own seeds. By sowing your seeds in your pot and transplanting your seedlings, they will ultimately produce delicious fruits. Pawpaws are trees best adapted to temperate, humid regions with hardiness zones 5 to 8, with minimum temperatures between −15 to 15 °F (−26 to −9 °C). Refrigerate the seeds for 70 to 100 days to pull them out of dormancy. Placing seeds in the refrigerator at 32 to 40 °F (0 to 4 °C) will help pull them out of their dormant state. Specific directions for the particular variety of pawpaw you have purchased will come with the seeds. Store seeds in plastic bags. Cover them with a bit of moist sphagnum moss to suppress bacterial and fungal development.

Germination should occur in 2 to 3 weeks, followed by taproot formation. After about 2 months, they will send up a shoot. At this point—when your pawpaw seeds sprout—you can move them into outside soil. Pawpaws grow best in warm to hot summers and mild to cold winters. Regions with a minimum of 32 inches (81 cm) of rainfall across the year are ideal. Remember—young pawpaws may not survive in full sunlight.

These trees have a suckering habit and will grow into a stand of paw paw trees. However, If you're hoping to yield fruit from a paw paw tree, be sure to plant several genetically different trees in close proximity.

Optimal Soil Conditions: Tree pots (14 to 18 inches (36 to 46 cm)) and root trainers (10 inches (25 cm)) are great choices. They provide enough space for the pawpaw's long taproot. Avoid materials like unfired clay and terracotta. These materials are porous and have a tendency to absorb water-soluble soil chemicals. Never use containers that carry a risk of containing asbestos or lead. Avoid using containers that have lead-based paint coats, which were common prior to the 1970s.

Fill your containers or pots with seed starter potting mix. Use well-drained, loamy starter soil that is ideal for quick root development. Cover the pot with a clear plastic bag after each watering. This will create a high level of humidity, which is ideal for seedling growth. But don't forget to poke holes in the top for ventilation

Avoid heavy soils that have a tendency to water log. This small tree grows best in slightly acid soil of pH 5.5 to 7.0. Stick your soil pH meter into the soil—if the pH is outside of the recommended range, use limestone to adjust it. If your soil has low levels of magnesium, the addition of dolomitic limestone can raise pH. If it has high levels of magnesium, calcitic limestone can raise pH. The addition of ground oyster shell, crushed eggshells, and wood ashes can also be used to adjust soil pH levels.

For best results till in rich organic matter such as compost to the soil when planting. Trees are also fairly drought tolerant but again will produce better and younger when irrigated. The pawpaw can grow in heavy, clay soil but only if there is sufficient drainage. Be sure to protect young trees from too much sun exposure and wind.

Seed Planting Depth, Spacing and Procedure: Plant your seeds 1.5 inch (3.8 cm) deep into well-aerated soil. Poke small holes into your soil using a pen or pencil for proper aeration. Keep the soil consistently moist, dark, and warm. Soil temperature should be between 75 to 85 °F (24 to 29 °C). Aeration allows oxygen, water, and nutrients to flow through soil more effectively. Place your pot in a sunny window or outside spot until your seed sprout. Pawpaws are sensitive to full sunlight for the first 1 to 2 years. Place your pot indoors near a window to filter sunlight, or outside in a spot that receives partial sunlight (meaning around 4 to 6 hours of direct sun per day). The best time to transplant your potted pawpaws is right after bud break, which is when growth begins from the bud.Take care not to damage the root system, as they are typically very brittle. If you end up losing a significant amount of roots, prune the top of the plant to balance its size with the amount of remaining roots.

In its natural habitat, the pawpaw tree is found in the understory of forests. As a result, these trees flourish in partial shade. Young trees especially benefit from shady conditions, as bright, direct sunlight can scorch the leaves. Upon maturing, pawpaw trees can be grown in full sun conditions, which is often the case when planted in orchards. These trees will have a more pyramid-like shape, while pawpaws in shade have spreading branches and fewer lower limbs.

When into the ground, Pawpaw trees should be spaced around 8 feet (2.4 m) apart, while trees in rows should be around 12 feet (3.7 m) apart. Any further and nutrient sharing between plants will be unlikely. If you're cross-pollinating, using at least 3 varieties of pawpaw is recommended.

Always plant into a depth equal to their potting depth. Use your spade to fill the hole back up with the topsoil. Place the soil around the roots and firmly press it down. Create a ring of leftover soil around the hole about 2 inches (5.1 cm) in height. This will help water soak into the soil.

Best Companion Plants: If not too shady, you might get pole beans or squash to scramble up the tree and some sort of onion or garlic added in seems practical. Perhaps one whose leaves you would use, rather than the bulb, so that you would not have to disturb the tree roots too much so usual suspects for fruit trees like daffodils, mints, annual legumes, bee balm, etc.

Crop Maintenance Pollinate your pawpaws when they start to bloom. You cannot take pollen from one tree and use it on the same tree. Each individual flower will only accept pollen from a flower from a genetically distinct individual tree. If you're growing pawpaws outdoors, insects will pollinate your trees for you as long as you have 2 unrelated trees growing nearby. Be gentle when gathering pollen, so as not damage the blooms.

Details: find the male flowers, which will be wide open and a deep maroon color. The stamen will be visible and should be covered with pollen. Place a small plastic bag underneath the bloom and gently tap the back of the blossom to drop pollen into the bag. Right away, find a female blossom on another paw paw tree. Mature female blossoms will also be maroon, but may still be partly green and will always be only partially open. Gently open the blossom with your fingers enough to reach the paintbrush inside. Then, after dusting the paintbrush with harvested pollen, dab the stigma inside the flower.

Consider the pawpaw blooms' scent, which smell like rotting meat, when planting them outside. It's best not to plant them too close to the house! Carrion flies will be attracted to the smelly flowers and this will help with pollination. (Growers often put roadkill or rotting meat in their groves to attract the
pollinating flies.)

Moisture Requirements & Solutions:
Water your soil daily for a month until seeds sprout. Soil should be watered regularly and kept moist. Keep an eye out for slowed growth and leaves falling off of the plant, which can be signs of dehydration. Don't overwater, as proper pawpaw growth requires well-drained soil. Brown, wilted leaves are a sign that you're overwatering. Paw paw trees require adequate irrigation but must be in well-draining soil conditions to prevent root rot and fungus.
Cover the pot with a clear plastic bag after each watering**.** This will create a high level of humidity, which is ideal for seedling growth. But don't forget to poke holes in the top for ventilation

Weeding Needs & Solutions: Weed control weed is necessary, especially during the establishment period, which may be as long as a year or more.

Feeding Needs/Optimal Natural Fertilizers: Nutrient-rich soil is important for healthy growth and fruit production, so it’s generally recommended to fertilize paw paw trees at least twice a year, once in spring and again in early summer. Your best option may be to add organic matter to the soil using compost, fish emulsion, manure, or a combination of all three. Use water or a rake to distribute the fertilizer throughout the soil. Avoid the 2 inch (5.1 cm) area by the tree trunk. Use fertilizer high in potassium. Don't fertilize after July 1—this will promote later growth that can lead to freeze damage.

Pests, Diseases & Solutions: Relatively hardy and pest-free, the occasional fungal diseases like powdery mildew or black spot may affect paw paw trees that experience high humidity or very damp conditions. In the case of black spot, the fruit is still edible and it’s only an aesthetic issue.

The pawpaw peduncle borer occasionally invades trees and causes the blossoms to drop prematurely, affecting fruit yield significantly. In addition, the larvae of Zebra Swallowtail butterflies feed on the leaves of the paw paw tree, but it rarely causes a serious threat to the health of the tree.

Harvest and Storage

When to Harvest/Number of days to maturity: Famous for their fruit, it ripens in autumn. Fruit production typically begins after trees reach 6 feet (1.8 m), which usually occurs after 5 to 7 years.

How to Harvest: Using your thumb and forefinger, gently squeeze the fruits you believe are ripe. If it's still hard and doesn't give in to pressure, it needs more time. When the fruits turn a brownish yellow, they are usually ready to be picked. Picking pawpaws too early will cause unripe fruits to turn dark, but never soft. This prevents them from ever sweetening. The simplest way to test for ripe pawpaws is a gentle shake of the tree. Ripe fruits will fall to the ground, while fruits that need more time will stay attached to the tree. Pawpaws bruise readily, so skip this step if you're growing your fruits for market.

Optimal Storage temperature and conditions: Always smell your pawpaw fruits before you eat them. If they are ready, they will give off a strong smell akin to floral perfume. Any fruits that fail this test can be placed on your counter for ripening. Once the pawpaw aroma begins to fill the room, they're ready to eat. Pawpaws can be placed in the refrigerator for several weeks. If you're going to be freezing them, they will last for a year or more. To eat the pawpaw fruit, simply cut them in half and scoop out the pulp.
Separate the seeds and either eat the fresh pulp as puree or freeze it for later use. You can use it in cakes, desserts, fruit drinks, and even ice cream.

Seed Saving: The suckers will not develop into trees, but "suck" the nutrients out of your trees. If allowed to grow, the suckers may produce fruit but it will not be edible.

Pawpaw trees can be propagated by grafting and cuttings. Many nurseries graft scions taken from dormant trees that are at least a few years old. The scions are grafted onto pawpaw rootstock. This method yields good success but is a more advanced method of propagation.
Propagation by cuttings is also possible for paw paw trees, but has a high failure rate. It's not considered the most surefire way to propagate these trees. Generally, propagation by seed is the most successful way to start pawpaw trees.

Growing paw paw from seed is typically the easiest way to start these trees. A simple route is to plant an entire paw paw fruit in the ground in fall. It will often send up shoots during the next spring season.

But if you want to enjoy the tasty fruit rather than plant it in the ground, you can harvest the seeds from the paw paw fruit and sow them in the ground. Follow these steps to grow paw paw trees from seed: 1) Scoop out the seeds from a ripe paw paw fruit. 2) Next, scarify the seeds. This involves scratching the shell of the seed but not the seed itself. Use sandpaper or a file. 3) In fall, you can direct sow the seeds outside where they'll naturally stratify over the winter and sprout the following summer. Alternatively, you can stratify the seeds indoors by placing them in a cold location for 90 to 120 days as mentioned above. 4) Plant seeds once the soil temperature is between 75 and and 85 degrees.

Notes:
Take note that while the fruit is edible, you should never eat the skin or seeds of this fruit. Pawpaw contains annonacin, which is toxic to nerve cells.

Pawpaws produce the most fruit in full sun. Plant your seedlings on the north side of a fence. This gives the pawpaws shade during its younger months and sunlight when they are mature and taller than the fence line. Another option is sowing your pawpaw seeds near a nitrogen-fixing tree (to its south). Not only will it provide your young pawpaw shade, it will also provide it with fertility. You can cut it down 2 to 3 years after, when your pawpaw is old enough that sunlight exposure doesn't cause sunburnt shoots and leaves.

To protect flowers or fruit that's being eaten, try to use bird netting over your trees or other methods of bird deterrents like wind chimes or shiny material hanging from a string.

Pawpaw is the host tree for the zebra swallowtail butterfly, and is popular with foxes, feral pigs, opossums, and raccoons. Deer do not feed on the leaves or twigs, but they will eat the ripe fruit.

Peach Tree

Description The self-fertile deciduous tree belongs to the Rosaceae family and the Prunus genus. It can grow up to 25 feet tall. ripening May through August. As an angiosperm, their seeds are enclosed within the fruit that grows on them. The fruits flesh is yellow, with bright red touches closest to the stone. They have a soft texture.

Growing Instructions When learning how to plant a peach tree, gardeners must understand that this delicate tree will require specific conditions and will be prone to disease and insect infestation. When these factors are taken into consideration and a peach tree is planted and cared for correctly to guard against them, it will produce tasty fruit each growing season.

Optimal Time/Temperature for Germination: grow one from a seed or pit, but that is much more time consuming and a bit more difficult. A peach seed will grow into a flowering peach tree in about 3 to 6 years; if you buy a peach tree at the nursery, aim for one about a year old – and the reward will be much more imminent. If you do end up purchasing a young tree, look for a dormant one with few to no leaves. These are best purchased between fall and early spring.

If you try to plant an active tree with green leaves and full branches, it may put too much

strain on the tree, and it is likelier that the tree will fail. As for using a peach seed, make

sure it comes from a delicious, juicy peach, so your future peaches have the traits of "their mother" (although you should keep in mind that there is no guarantee that it will share these traits). When you find a tasty peach, set out the pit to dry for a few days. When it's

brittle, crack it open to reveal the seeds – they'll look like almonds.

Peaches grow well in zones 5-9, but are best in zones 6 and 7. "Frost" and "Avalon Pride" are two varieties that can withstand a bit of cold weather. If you're looking for a smaller variety that you can grow on your deck or patio in a pot, "Pix-Zee" and "Honey Babe" are good choices. They only reach about 6 feet (1.8 m) tall.

Planting time can be November to the end of February.

Optimal Soil Conditions: The best time to plant a peach tree is in spring while the tree is still dormant. Do not try transplanting an active peach tree in summer as this may harm the tree.

Peaches love sun – at least six hours of direct sunlight each day is good. They also like it hot, so the warmest place in your garden (like next to a south-facing wall where it can receive plenty of reflected heat) is great. Look for a spot that has well-drained, sandy, moderately fertile soil, is elevated to give your tree proper airflow (and to reduce the risk of frost) and, as mentioned above, will also provide direct sunlight the majority of the year. If the pH of the soil is too low (you want the pH to be around 6.0-7.0).

Seed Planting Depth, Spacing and Procedure: Standard size trees need more room, up to 18 feet apart. Dwarf and semidwarf varieties need less spacing; about 10 to 14 feet should be sufficient. Plan on spacing trees as far apart as their expected height. Plant at least 20 ft. feet from a wall because you don't want the tree's roots to damage your house's foundation.

Prepare a section of ground that is 5 feet (1.5 m) or more in diameter. Thoroughly break up the soil with a garden tiller or garden spade. This amount of space makes it easy for the roots to spread out, helping the tree grow. Go 12 inches (30.5 cm) deep into the soil for the best support for the peach tree's roots. Spread the roots away from the base of the tree, but be careful not to bend them.

Add peat moss and organic matter such as compost to the prepared soil. Mix it up well, loosening the soil. Then, water the area where you will be placing the peach tree. Just a bit more than a light sprinkle will do; you do not want to saturate the dirt.

Place the tree in your hole on a small mound of soil, and fill the hole back up. Pat the soil around the peach tree gently with a garden spade to secure it. If you have a grafted tree, position the inside of the curve of the graft union away from the sun. Check your peach tree each day and water it lightly if it appears wilted. General rainfall is all a peach tree needs, but if you live in a particularly dry area, it may need a light watering.

Best Companion Plants and Plants that Hinder: garlic, marigolds, onions, asparagus, legumes, basil, and tansy are the best and these plants help keep pests away. ...

Crop Maintenance Pruning may seem counterintuitive, but is actually incredibly beneficial in aiding new growth on peach trees. Pruning your peach trees produces new growth, which in turn produces more fruit. Therefore, pruning yields a larger crop over time. You want it to take on an open center shape. After the first year and in the summer, cut the shoots that are forming on the top of the tree by two or three buds. In a month, check the tree for progress. If you have three wide-angled branches spaced equally apart, cut back other branches to keep these as your three main branches. A year from then, again in summer, prune any shoots growing below these main branches.

From then on, remove any shoots in the center of the tree to help it keep its shape. Prune the tree in late winter or early spring to shape the tree. Cut off any branches that are rubbing against others as well as any that might be growing up into the open center of the tree. Pruning annually *encourages* production, not diminishes it. It encourages new growth, allocating more resources to the parts of the tree you want growing. You'll get 10 to 18 inches of new growth each season. (It's best to read on specifics before pruning on a peach tree.)

No need to bring a potted peach tree in for the winter because it needs a chill period to fruit correctly. It will be fine left out through the winter. Water less if in a pot, because the roots may freeze if they're too wet.

Moisture Requirements & Solutions: Apart from this, to take care of weeds and nutrition, an organic mulch will likely do the trick. Just make a circle of mulch over the root zone that's a couple of inches (5cm) deep and 3 feet (0.91 m) (1m) or so in diameter. (8) With the right amount of rainfall, you can literally just sit back and watch your tree grow.

Weeding Needs & Solutions: grass is greedy – making sure it's not around the base of your tree will prevent it from inhibiting your tree's growth.

Feeding Needs/ Optimal Natural Fertilizers: To take nutrition, an organic mulch will likely do the trick. Just make a circle of mulch over the root zone that's a couple of inches (5cm) deep and 3 feet (0.91 m) (1m) or so in diameter. With the right amount of rainfall, you can literally just sit back and watch your tree grow.

After six weeks or so, 1 pound of nitrogen fertilizer spread evenly over the area will help your tree flourish. After the initial year, you can decrease the amount to ¾ of a pound.
After the third year when the tree is mature, add 1 pound of actual nitrogen to the soil. This is best done in the spring. To make your tree hardier, don't fertilize it within 2 months of the first frost or when the fruits are maturing.

Pests, Diseases & Solutions: You may also want to consider deterring insect borers by wrapping the trunk with scraps of garden row cover. To keep rodents at bay, you can surround the tree with a cylinder of mesh hardware cloth. Use a lime-sulfur spray to raise your tree's chances against peach leaf curl, the most common disease culprit.

Harvest and Storage After the tree blooms, which will take about 4 to 6 weeks, thin the fruit by spacing them out 6 to 8 inches apart. This ensures that the fruit left over becomes large and juicy. You also want the sun to be able to reach all branches and fruit – if some fruit is flowering in the shade, thin it – that way you can allocate the nutrients to the fruits that will grow faster. You always want an "open canopy" for your fruit. Try to have every branch have access to plenty of sunlight. Remove dead, dying, and crossing branches and blooms to give your fruit the best chance.

When to Harvest/Number of days to Maturity: Peach trees are fast-growing fruit trees that produce fruit as early as 3 to 4 years when grown from a pit. However, most gardeners prefer to purchase young trees from nurseries or tree farms rather than try to grow a tiny, fragile seedling into a viable tree. Peach trees from nurseries or tree farms generally produce fruit in 1 to 2 years.

How to Harvest: Watch the fruits on the top and outsides of the tree – they'll likely be ready for harvest first. When there are no longer any bits of green on the fruits, they're ready. They should come off with a slight twist. Peaches are notorious for bruising easily, so be careful when you pick them.

Optimal Storage Temperature and Conditions: They can store in a resealable bag in the fridge for up to 5 days or, of course, you could make peach jam. If your trees produce an abundance of peaches, consider freezing some for later use.

Notes: Some folks are told they should always plant two peach trees. Is this true? No, you only need one peach tree if you only want one. His reply was that he only has one and the 5th year yielded a small bushel full of peaches throughout the summer.

If you know in advance that you will be planting peach trees, prepare the soil by adding fertilizer, organic matter and compost as early as 2 years prior to planting. This will provide rich, well-draining soil that is full of nutrients.

When learning how to plant a peach tree, keep in mind that soil that is very moist or doesn't drain well after rain will not be good for your tree's root system. Peach trees do best in sandy soil that drains quickly when thoroughly soaked.

Spring is the best time of the year to plant a peach tree to give it an entire growing season to adjust to its new environment.

Warnings: Never over-water a peach tree. The roots are delicate and too much water can cause damage.

Do not plant a peach tree in an area with lots of shade. Peach trees require a lot of direct sunlight and won't grow properly or produce fruit without it.

Do not plant a peach tree deeper than about 12 inches (30.5 cm). Planting it too deeply can cause damage to the roots and death to the tree.

Do not expect fruit the first year. Some peach trees take as long as 2 to 3 years to produce peaches.

Pear Tree

Description: tree of the genus Pyrus, in the family Rosaceae which bears the pears as fruits having a sweet gritty-textured juicy fruit. The trees usually live 50 years, although they might have shorter or longer life spans depending on how well cared for they are. It's one of the most important fruit trees in the world, the common pear is cultivated in all temperate-zone countries of both hemispheres.

Growing Instructions

Optimal Time/Temperature for Germination: Fruit seeds germinate best in the late winter or early spring. By collecting the seeds you want to plant in February, you give yourself enough time to stratify them. Stratification aids in germination and will produce more seedlings. Soak the seeds in a bowl of water overnight**.** If any seeds float to the top, get rid of them. If they sink to the bottom, they are good to grow. In the morning, remove the seeds. Mix 10 parts water to one part bleach. Soak the seeds in the bleach mixture for 10 minutes before rinsing thoroughly. Fill a resealable plastic sandwich bag with the moss and mix in water. The moss should be damp, but not waterlogged. Moist potting soil will also work here, but may need to be watered more often than the moss. Push the seeds 2 to 3 inches (5.1 to 7.6 cm) into the moss. Bury at least 4 of the pear seeds in the moss before sealing the bag. The more seeds you place in the moss, the more chance you have at a successful germination. Store the bag in the refrigerator for 60-90 days. This gives the seeds time to chill and start the germination process. The peat moss should hold the moisture through this period, but you may have to check on it every 2 weeks. If the peat moss has dried, use a spray bottle to moisten it again. After 3 months pass, you can remove the seeds from the fridge. If there is no risk of frost or the temperature does not drop below 40 °F (4 °C), you can remove the seeds from the fridge earlier.
Plant 2 pear trees at a time, unless there are nearby pear trees beside yours, so the trees can cross-pollinate and bloom. Try to pick out two different kinds of pear trees; it is beneficial if your pear is pollinated by a different cultivar that flowers at the same time. Choose a fire blight resistant variety that will thrive in your local climate. If you plant a pear tree that doesn't do well in your area, you will most likely have a sick tree on your hands, no matter how well you take care of it. Hardiness zones are 3 to 10 which means that they can survive in areas where the winter temperatures dip to -40 to -35 degrees Fahrenheit (-40 to -37.2 degrees Celsius).

Optimal Soil Conditions: Find an area with well-drained soil and 6 hours of sunlight**.** Well-drained soil and full sunlight will give your pear the best growing conditions. When it rains, check the area for standing water on the surface. If there is puddling, you may want to select a different planting location. To test the drainage of your soil, dig a hole 12 inches (0.30 m) wide and 12 inches (0.30 m) deep and fill it with water. Measure the depth of the water each hour. If it drains 1 to 3 inches (2.5 to 7.6 cm) each hour, the soil is well-draining. Roots spread over time, so keep that in mind as you select a planting location. Keep the tree away from important structures or other plants that will need a sufficient amount of water. Since pears like a pH between 6.0 and 7.0, they like a slightly acidic soil.

Seed Planting Depth, Spacing and Procedure: Fill a plastic cup with potting soil and plant the seeds 1/2 inch (13 mm) deep. Keep the seeds an even distance apart when you plant them. If you are planting 4 seeds, imagine the cup to be a clock and plant the seeds at the 3, 6, 9, and 12 positions. Stick a toothpick next to each seed to mark where each seed is growing. Water the seeds until the soil is damp to the touch. Make sure not to overwater the cup or else the seeds will become waterlogged. In 2 or 3 weeks, you should start to notice seedlings through the top of the soil. The seedlings should be kept in a bright and warm area, like a windowsill, so they can grow. Remember that the more light a plant gets, the more water the plant will need. The first "leaves" that you'll see on your seedlings are cotyledons and not true leaves. True leaves will develop over time and will resemble leaves from a fully grown pear tree. Once there are at least 4 true leaves on your seedling, they are ready to transplant. If you want to keep the humidity of your seedlings higher, you can loosely cover the cup with plastic wrap. This will help the soil retain its moisture for longer.

Use a ruler or transplanting tool to dig the seedlings out from the cup, being sure not to damage their root structure. Once you have unearthed a seedling, put it in a hole slightly larger than the root ball and fill in the topsoil. At this point, you can keep seedlings indoors or outdoors depending on the weather. If there is harsh sunlight, it may be best to keep your plants indoors until they develop further. If the seedling grows too big for its pot, you can transfer it to a larger pot so you can still move it indoors or outdoors.

Plant the seedling in May or June**.** Seedlings should be put in the ground early in the growing season so their roots have time to establish before winter. Selecting a day in late spring or early summer will give your seedling enough time. If you've had the seedlings growing in pots, there's a good chance that some of the roots have started to twist around the trunk. Lay the seedling on its side and use sharp pruning shears to cut woody roots that are wrapping around the trunk. Alternatively, you can try to straighten out the roots by hand if you're able to. Dig a hole 3 inches (7.6 cm) deeper and wider than the root spread**.** Give extra space for your seedling to grow helps the root system establish. Once you've dug the hole, you can fill it back in until the ground is level again. Plant trees at least 20 feet (6.1m) apart from one another. If they are full-size trees, both of them could reach up to 40 feet (12 m) in height and will need the space between them. Dwarf pear trees should be planted 12 to 15 feet (3.7 to 4.6 m) apart. Tying the trunk of the seedling to a wooden stake will help the tree grow straight. Use two stakes and flexible material wrapped in a figure-8 pattern around the trunk.

Best Companion Plants and Plants that Hinder: best companion plants for pear trees are members of the allium family, lavender, dandelions, most herbs (especially borage), clover, mustard, nasturtiums, aster family flowers like African marigolds and chrysanthemums, and most important of all,other pear trees. They help by attracting pollinating insects, attracting bugs that eat pear tree pests, repelling pests, and providing nutrients and live mulch.
There are no common herbs that "antagonize" your pear tree. There are a few that don't grow well together (like basil and sage) and a couple that are invasive (like oregano), but with proper spacing, they will all benefit your pear tree. However, borage tops the list as a pear tree favorite. Black walnut and pecan trees are deadly to pear trees because they emit a chemical called juglone. Peppers can spread fungal diseases to fruit trees in general.

Crop Maintenance Prune limbs with a sharp pair of shears**.** When branches break or leaves die, it's time to prune your tree. Pruning should be done in the early spring right before growing season. Trim off any branches that are diseased or entangled with other branches. Cut as close to the base of the branch as you can. Branches should be 12 inches (0.30 m) apart so fruit can grow across all branches. Don't prune pear trees heavily but do prune them regularly. Prune when the tree is dormant and before the spring growth period starts. Dwarf pear trees need a different approach to pruning than standard-sized trees.

Timing and method will vary depending on your variety. Always remove any crossing, rubbing, weak, dead, diseased, damaged or dying branches. Any growth should be burnt rather than placed in the compost bin so as to keep the disease from spreading.

Moisture Requirements & Solutions: Water the plant once a week for the first year. In the beginning, your tree's roots will not pull enough water for the tree to survive. Use a slow sprinkler to water your tree in the morning or evening when there is not direct sunlight. As the tree grows, its roots will be able to provide enough for the tree. Check the soil near your tree. If it still feels moist, you shouldn't water your tree. Overwatering can cause damage as well. During a dry season, water your tree more often.

Weeding Needs & Solutions: Mulch at a depth of 2-3 inches (5-7.5 cm.) in a three foot (91+ cm.) circle around your tree to prevent weed competition for nutrients and water.

Feeding Needs/Optimal Natural Fertilizers: There's no need to add fertilizer when you plant the seedling, but you can mix in peat moss or compost with the soil if you want. Later on, a once a year fertilizing should do. If the leaves are a pale green or yellow during summer, try more fertilizer the following year. If the tree grows more than 12 inches (0.30 m) in one season, next season use less fertilizer.

Pests, Diseases & Solutions: Small mammals like to chew the bark around the base of a tree, so wrapping a guard around it will add protection. Tree guards can be purchased at any home and garden store. After the bark starts to get rough or flaky, you can remove the guard. Tree guards also help protect the trunk from sunlight.

Fire blight is an especial problem for pear trees and can severely damage or kill your tree. Affected trees look like they have been burnt. This disease is caused by insects that bring the disease to the tree. Take steps to prevent fire blight**.** To keep fire blight at by, select a pear variety that is resistant to the problem. Help your tree resist fire blight by keeping it well watered during the spring and summer; mulching will also help conserve water. Don't prune your tree too heavily as new growth is more susceptible to fire blight than old. If your tree is affected, prune each affected bit of growth to at least three inches below where the damage is visible. Sterilize your cutting tool after making each cut. /

Brown rot is sometimes a problem in wet summers. You'll see the fruit rot into a brown color with white patches. Dispose of the affected fruit. / Pear rust causes orange leaf spots; you just need to remove and burn affected growth as you would for fire blight. / Pear leaf blister mite causes yellow or red leaf blisters that turn black. Again you just need to remove and destroy affected foliage; it's still okay to eat the fruit.

Harvest and Storage

When to Harvest/Number of days to maturity: It will take at least 3 years for your tree to start bearing fruit, although they won't produce a full crop for 5-7 years. (could take up to 10 years.) Dwarf trees usually produce fruit a bit earlier than standard-size trees, as do Asian pears.

How to Harvest: Pull fruit when it starts to change color while it's still hard. It will finish ripening as you store it indoors. Try to thin your tree's fruit, leaving around six inches of space between each cluster of fruit on a branch. When possible, thin the fruit out by picking the ripe fruit from the tree; that way, both your tree and your belly stay happy and healthy.

Optimal Storage temperature and conditions: Some pear varieties are better for cooking and some better for eating straight from the tree. Winter varieties are best suited to long-term storage. If you intend to store your pears for more than a couple of weeks, choose a winter pear such as an Anjou, Bosc, Comice, or Winter Nelis. Bartlett pears aren't a winter pear, but they can be stored for long periods, too. Store your pears at 30 F (and at 85% to 90% humidity), or as close to it as you can get. Any colder than this, and the fruit will be damaged; any warmer, and it'll ripen faster than you want. If you have a spare refrigerator (or you have extra space in your refrigerator), this is the ideal spot to stash your fruit. Bartletts will keep at this temperature for two to three months, winter pears for three to five months. Pears actually need to spend time in cold storage to ripen properly, so give your Bartlett pears at least one to two days in the fridge and your winter pears two to six weeks, before you even think about pulling any out. Try canning the pears, pear sauce, pear butter, or freezer jam.

Seed Saving: Store-bought pears will work fine. Using a paring knife, cut a pear in half. Cut the halves into quarters so you can easily access the seeds in the core. Dig out the seeds with a spoon or with your finger. You should find about 8 seeds inside. Each pear is unique due to cross-pollination. If you want to plant more trees in the future that will bear the same fruit, you can store half of the seeds in a plastic bag in your fridge for 2 years. You can use pears straight from a pear tree too. Just make sure to harvest them for seeds in the summer when they are ripe.

Notes:
The 4 seeds from the plastic bag out of the refrig. are going to be viable for a few years after opening, so save them for whenever you decide you want to grow more pear trees. No other pear seeds will match this unique cultivar, so that's why you need to save four seeds from every batch.

If you purchase bare-root plants then plant them quickly to keep them healthy. They need to be planted between the late fall and early spring. If you purchase a pear tree in a container with soil, try to plant the tree in winter if possible.
If you are growing in a container, make sure you choose a variety intended for container growing. The tree must be grafted onto a rootstock that won't grow too big for its container.

Despite all the care you put into your tree, sometimes you just have to accept the weather can work against you. Late frosts and hail storms will dislodge buds, leading to poor fruit set. It's difficult to protect against this. It's also normal to see pear trees drop
fruit in the summer. It's especially likely if the tree is young or under pressure from lack of water or pest attack.

Pear trees that receive too much water (heavy rains, flooding) can experience stunted growth, poor fruit yield and death. Over watering fills in air pockets around the roots, which the roots need to breathe and to absorb nutrients properly. Many over watering signs mirror the signs of drought, including wilting or falling leaves and an overall dull appearance.

Asian pears, also known as apple pears or sand pears, are a healthy treat that combine the best qualities of apples and pears. These fruits are a crunchy, sweet member of the pear family, but they grow to be round like an apple. The Asian pear is often given as a gift throughout East Asia, due to its long shelf-life and delicious flavor.

Pecan Tree

Description: In the hickory family, the deciduous pecan tree is the tallest (Carya illinoinensis). Easily identifiable by its rich brown kernel with a distinctive grooved surface, they have a distinct flavor from other tree nuts.

Growing Instructions

Optimal Time/Temperature for Germination: Growing a pecan tree starts with planting a bare-root or pot-grown tree in a spot well away from buildings and other obstacles. Pecans are most commonly sold as bare-root trees, which are baby trees no more than a few feet tall. Container trees are also available; trees grown this way are usually a few years older. A bare-root is cheaper but more fragile, and must be planted between December and March. A container tree is more expensive but sturdier, and can be planted between October and May.

Optimal Soil Conditions: They grow best in deep, loamy soil. This type of soil is the healthiest for pecans, which are native to river valley soils. They prefer sandy loam but can be planted in heavier soil as well, as long as it's well-draining. Rocky or light soil is a more difficult environment for pecans. Avoid planting in very dry or light soil, unless you plan to irrigate, since pecans need a lot of water. Avoid frost pockets where cold air settles, since they get damaged by frost. Plant at slightly higher elevation (but lower latitude).
Before planting, If you have a container tree ready to be planted, you can keep it above ground for a day or two longer if you make sure to water it. Revive a dry tree by soaking the roots before planting.

Seed Planting Depth, Spacing and Procedure: Pecan trees can grow over 100 feet (30.5 m) tall, and they have root systems that stretch deep and wide. They need plenty of space, whether you're planting them in your yard or in an orchard. When you're choosing a spot, take the following into consideration: Examine your pecan tree prior to planting it in the ground. Remove any dead branches and badly broken roots, since these will be impediments to healthy growth.

Make sure there are no buildings or other trees nearby. A pecan tree could damage buildings or smaller trees with falling branches as it grows bigger. In an orchard, plant the trees at least 60 feet (18.3 m) apart. Allow for approximately 65 to 80 feet (19.81 to 24.38 m) spacing between each pecan tree that you plant. If trees are crowded, the faster growing tree will over-shadow the slower tree, stunt it, and kill it eventually, hampering both trees' crops. Pecan trees take 20 to 25 years to mature. Some growers will plant trees 30 feet apart, and remove half the trees at around 15 years, when they begin to crowd each other. Pecans have a long, fragile taproot that must be allowed to stretch out into the ground. Dig a hole as deep as the taproot and just wide enough to accommodate the spread of the rest of the roots. This will be about three feet deep and a few feet wide. If the hole isn't deep enough, the taproot will not grow properly. Don't attempt to plant it in a shallow hole. However, gauge the depth to be no more than what is enough to cover the roots. If the holes are too deep, the pecan trees will settle, which could result in root rot or damage, poor growth, and the pecan trees could prematurely die.

Arrange the roots in a natural position, and keep the taproot intact as you lower it into the hole. Be very careful not to damage any of the roots, and especially the taproot, since this will cause problems as the tree starts to grow. Do not plant it too deep in the ground. The roots and taproot should be in the hole, but make sure the trunk of the tree is above ground. Look for the place where the bark changes color just above the roots (this marks depth at which it was growing at the nursery). If you plant it too deep, the tree will have trouble growing in the right shape. Make sure the taproot is straightened if it's a potted tree. They tend to curl up in the pot. Carefully straighten it out and lower it into the hole.

After the tree is set in the hole, fill it 3/4 way full with water. Begin adding soil as the water is running, and continue adding soil and water at the same time until the hole is full. Top it off with more soil. Don't pack the soil tightly; just fill up the hole until it's level with the ground. Filling it with water ensures that the tree gets the moisture it needs, while also preventing air pockets from forming.

Best Companion Plants and Plants that Hinder:
Certain marigolds can reduce nematodes in the soil and reduce above ground pests. An oft repeated claim is that stinging nettle helps to improve soil fertility of neighboring plants. Living Mulches, Dynamic Accumulators and herbaceous Nitrogen Fixers can be placed closer to the trees. Cut them and let the foliage decompose to nourish feeder roots.

If you have had problems with plant failings near a pecan tree, it may be wise to replant with juglone tolerant species such as: Arborvitae Autumn olive Red cedar Catalpa Clematis Crabapple Daphne Elm Euonymus Forsythia Hawthorn Hemlock Hickory Honeysuckle Juniper Black locust Japanese maple Maple Oak Pachysandra Pawpaw Persimmon Redbud.

Crop Maintenance

Paint the trunk. This protects it from sun damage. Use white latex paint and paint from where the trunk exits the ground up to the first set of branches. Keep it painted for the first three years. If you don't want to use paint, you can also use a sleeve or growing tube, available from gardening centers.
Remove excess branches, dead wood, low or low-hanging mature limbs during the dormant season, ideally late winter or early spring, or before new growth begins. Pruning helps the pecan trees to thrive without becoming overgrown in the late Winter or early Spring of each year. You should also manage any bushy undergrowth problems that could develop under the pecan tree. Your tree should be trained to a central leader system, which is based on the natural growth structure of the tree. The central leader is the dominant upright branch, and the surrounding branches (or scaffold) spiral up around the central leader. When choosing scaffolding branches, look for those that are at a wide angle to the trunk, around 45 degrees. Remove branches growing at more than a 60 degree angle to the trunk, as these are more likely to break later. Training your tree maximizes the tree's nut production.

Moisture Requirements & Solutions: Exposing them to heat and dry air will cause the roots to dry out. Remember that pecan trees, above all, need to be kept moist. They die quickly when they dry out.

Water your pecan tree thoroughly immediately after planting it. For the first six months, water about 10 to 15 gallons (37.9 to 56.8 L) once a week. Do not water too much or too often, though, since you don't want to create a harmful soggy condition.
Keep in mind that part or all of the water supply can come from rainfall. After the tree has matured, watering is essential during the nut filling stage at the end of summer. In a dry area, up to 350 gallons (1,324.9 L) of water per day is needed to ensure the nuts don't end up small and mealy.

Weeding Needs & Solutions: Use 6 inches of pine straw or leaves. Pack the mulch around the base of the tree and over the root system. Mulching the tree protects it from weeds and keeps it safe from frost in its early years. Weeds hinder the growth of very young trees and absorb some of the water needed to keep unestablished pecan trees healthy.

Feeding Needs/ Optimal Natural Fertilizers: Top the tree. Prune the top 1/2 to 1/3 of the young tree, a procedure called topping. This encourages the tree to grow healthy roots, rather than putting its energy into keeping the top alive. For now, a healthy root system is what you want to encourage. In the first three years, fertilize in early summer. Never fertilize directly over the roots; spread the fertilizer evenly over the surrounding area. If you want to make sure your pecan tree produces an excellent crop, you might consider spraying with zinc fertilizer to help nut meat to fill-in. Do this only after you notice that the nuts aren't filled with meat in previous years.

Pests, Diseases & Solutions: Monitor your pecan trees on a regular basis to look for possible damage from insects, disease and wildlife. Consider using sprays as recommended by the natural product manufacturers to remove and control insects and disease. It will be difficult to reach high enough to treat giant, mature trees without tall ladders or special equipment. Common pests and diseases include- Aphids, Pecan scab, Birds and squirrels.

Harvest and Storage

When to Harvest/Number of days to Maturity: Pecan trees can take 20 – 25 years to reach full maturity. They will begin producing nuts after 4 to 8 years. If the tree is grafted pecan, it can fruit within 4-6 years.

How to Harvest: One method for retrieving the pecans is to carefully shake the tree branches so that the nuts fall to the ground. Then you can immediately pick them up. Do not leave them on moist ground or in wet leaves; they'll get water-logged and split or even sprout.

Using a slender fishing pole to shake off the nuts helps to lightly flick pecans out of the open hulls within your reach without much damage to next year's crop, which occurs only on the new year's growth. Know that you have the option of waiting until the nuts fall to the ground, such as after a windy night.

Squirrels will get them while still up in the tree, so just pick them up pretty early each day to beat local squirrels to them. (Commercial orchards often use special tree vibrator-shakers to work the pecans loose from the open hulls and also use machinery to pick up fallen nuts.)

Optimal Storage Temperature and Conditions: Pecans will keep longer if they're dried to a low level of water moisture. They'll store best when their shells are solidly filled-in and their oil content is high. To dry them, spread your pecans indoors on a dry floor or on screens that have been set high off the ground under a shelter, safe from precipitation and ground moisture. It should take about two weeks for the pecans to thoroughly dry. A good indication is that a pecan nut meat will snap when it has been properly dried.

Store your pecans in the refrigerator for up to six months in airtight storage containers that prevent absorbing odors from meats, vegetables or fruits. To keep the pecans even longer, store them in your freezer.

Seed Saving: can sow pecan seeds in early spring in a sunny garden bed.

Notes: Try to choose one that's known to grow well in your region, taking winter hardiness and disease resistance into account. Here are just a few popular choices:

Cad do: Has one of the highest yield potentials of all pecan trees. Type 1 pollinator and thrives in both heat and cold hardy environments. A very versatile tree that is excellent for home yards.

Cape Fear: Starts producing its high-quality nuts relatively early in it's life cycle. Exhibits rigorous and upright growth and is extremely disease resistant. A type 1 pollinator.

Elliot: Has a high quality but small nut and bears fruit every other year. It should not be planted in northern areas since it can get damaged by spring freezes; does well in Georgia. Gloria

Grande: Produces large, thick-shelled nuts almost every year, and is resistant to scab, which commonly damages pecan trees. Susceptible to black aphids.

Amling: Scab-resistant and early to harvest. Produces small, good-quality nuts.

Sumner: Easily damaged, but produces regularly.

Gafford: Highly insect resistant and popular in Alabama; produces excellent nuts. McMillan: Very productive and relatively low maintenance; popular in Alabama. Desirable:A perfect contender for southern states due to its heat resistance and self sufficient tendencies. This type 1 pollinator does has a flaw though- most scab susceptible cultivar (fungicides are necessary). As the tree matures it exhibits higher yield.

You can diagnose water problems if the husk is still stuck to the nut. These are called "stick tights.

Do not thrash your tree limbs with long, stiff poles, or by throwing heavy sticks or such, which will damage next year's new growth and crop.

Persimmon

Description: The American persimmon is a deciduous tree that at maturity can reach 30 to 80 feet high and 20 to 35 feet wide and is from the family Ebenaceae. Common cultivated varieties are the Japanese or Asian persimmon.
These three trees have a strong taproot that can go quite deep, so this needs to be taken into consideration. This is why persimmons won't grow well in containers. These trees are rather slow-growing and it can take seven to 10 years for them to be fruit-bearing.

Growing Instructions

Optimal Time/Temperature for Germination: Usually if ordered online, bare root persimmon saplings are harvested in December or January and are shipped in the winter and early spring. Be careful when you transport the tree, as the roots will be bare. (It's easiest to grow the tree from a sapling rather than a seed, since the seeds can be difficult to cultivate.) Plant the sapling in early spring or fall, depending on your climate persimmon trees prefer climates where the temperature doesn't fall below 0 °F (−18 °C) and must be planted in early spring. For American varieties, it's safe to plant in fall as long as the winter temperatures don't fall below −20 °F (−29 °C). If you aren't sure when to plant the tree, check with a local nursery about the best times for planting persimmons in your area. Hardiness zones are 4 to 9. They're not as likely to fruit in desert climates but do best in areas where deciduous trees proliferate and like a moderate amount of humidity.

Optimal Soil Conditions: Be sure to select a spot that's at least 12 feet (3.7 m) from other plants or structures. As with most fruit trees, full sun is best for growing persimmons. Some afternoon shade is all right. Be aware of shifting light patterns through the seasons, bearing in mind that persimmons ripen in late autumn.
Make sure the area has well-draining soil, and avoid areas that have standing water during wet weather. American varieties of persimmons will withstand more shade and less ideal soil than Asian varieties. Persimmons like slightly acidic and loamy
soils but are adaptable to a wide range of conditions. They do not do well in salty soils. As with any fruit tree, choose a site with good drainage to prevent root rot and fungus problems. Soil pH preference is 6.5 to 7.5 .

Seed Planting Depth, Spacing and Procedure: Dig a hole 3 in (7.6 cm) wide and 2 in (5.1 cm) deep and insert the roots**.** Position the sapling in the hole so the base of the
tree sits just above soil level. Then, fill the hole with soil mixed with compost, making a small pyramid around the base of the tree. It's important that the base of the tree sits above the surrounding soil since the tree will settle further into the soil when watered.

Best Companion Plants and Plants that Hinder: Good companions **are** borage, chives, comfrey, strawberries, marigold, calendula. Don't over think it, plant the plants you want around it. Paw paw, oak, black locust, ash, pine, blueberries, elderberry, Jerusalem artichoke, clover, millet, crabapple, stag horn sumac, and devils walking stick are all things that play well with persimmon. Walnut trees are particularly bad companions for persimmons though.

Crop Maintenance During the 1st year, use a pair of sharp, handheld pruning shears to remove a few center branches. Leave well-spaced branches that are pointing outwards with 1 central branch pointing upward to establish the trunk of the tree. After the 1st year, avoid pruning the branches unless they are already broken.

Moisture Requirements & Solutions: The roots of persimmon trees tend to grow slowly, so it's important to keep the soil watered. Since the soil will drain quickly, plan to water the sapling every day for 30 seconds - 1 minute. Depending on your climate, the soil may dry out quickly, especially on hot days. If the soil doesn't dry out after 1 day, consider watering every other day. After the first year, only water the tree during dry spells that last longer than a week and during a drought, water once weekly, deeply at the roots.

Weeding Needs & Solutions: Scatter mulch around the base of the tree in a circle to cover the displaced soil. Make sure the mulch is about 1 inch (2.5 cm) thick or more to prevent water evaporation, as well. Opt for a thicker, organic mulch, such as shredded wood or bark nuggets. It's best to use an organic mulch, since it will break down as the tree grows, adding nutrients to the soil. Reapply mulch if needed.

Feeding Needs/ Optimal Natural Fertilizers: If your soil is not very rich, add some good soil amendments when planting your persimmon tree to give it a healthy start. Avoid over-fertilizing since your tree needs to adapt to the soil it's planted in. Too much fertilizer could cause weak new growth and fruit to drop. You can also top dress the soil with compost once a year to help add nutrients that fertilizer would give.

Pests, Diseases & Solutions: The trees have very few natural pests but mealybugs or other pests associated with ants may become a problem. Treat with organic methods to protect the fruit.

Harvest and Storage

When to Harvest/Number of days to Maturity: The Persimmon may bear fruit about 3 years after they're planted. Harvest the fruit between September and December**.** The fruits may remain on the tree into winter, providing a sweet treat for lucky birds and other wildlife. While the fruit looks large for a berry, that is, in fact, its morphological form (similar to a tomato).

How to Harvest: Depending on the variety, the fruit will begin to turn reddish-orange. Some varieties will remain hard, while others will become soft when they're ripe. If you have an Asian persimmon tree, use a pair of handheld pruning shears to cut the fruit off of the tree. If wildlife begins to eat your fruit, harvest them early and place them in a bag with a banana for 7 to 10 days to ripen (a warm room will speed it up).

Optimal Storage Temperature and Conditions:
When ripe, the fruit has what can be described as a custard-like texture and the sweet flavor is often said to remind people of honey. There are a variety of persimmon cultivars categorized as "astringent" which affects when they can be eaten. An astringent cultivar must be soft before it can be eaten. A non-astringent cultivar may be eaten crisp like an apple such as the Asian persimmon.

Overripe persimmon is practically not amenable to storage. You must refuse to buy it or eat it right away. Persimmons can be stored fresh, frozen, chilled or dried. If the fruits have been frozen, then they must not be re-frozen. The defrosting process should be accompanied by immersing the fruit in cold water. If you wait for the ice to dissolve at room temperature, then the fruit may change its taste, and the aroma and characteristic taste will become less pronounced.

Rules of persimmon storage:
persimmons will better retain their freshness if the fruits are regularly ventilated (lack of oxygen can shorten the shelf life of fruits) / if there are a lot of persimmons, then you can store it on the balcony in a wooden box with holes, so that there must be sufficient ventilation inside it (persimmons can be sprinkled with a small amount of sawdust, and the fruits of the lower row should be placed "cup" down, and the top one – "cup" up) / if persimmon is stored in the refrigerator in close contact with other fruits, then it must be eaten as soon as possible (the process of ripening and further decay will be carried out at a rapid pace) / if the persimmon does not provide a sufficient level of air humidity, then the fruits will quickly begin to dry out, and their surface will be covered with fine wrinkles / when storing persimmons in the freezer, the astringent astringency leaves the fruits, and they become sweeter

(persimmons frozen in sugar syrup are well stored / after freezing, the persimmon pulp may disrupt its consistency (the taste will not change or deteriorate) / one of the ways of storing persimmons is drying (the peel is first removed from the fruit, and then they are dried in the oven for 40 minutes at a temperature of 45 degrees) / tomatoes and apples will help to make the persimmon sweeter (persimmon is placed with them in one paper bag for several days) / under the influence of heat, the astringent astringency of persimmons increases (that is why persimmon jam has a rather specific taste)
/ it is not worth removing the stalks from the persimmon (their absence will shorten the shelf life) / you can store persimmons in the refrigerator in open containers or paper bags (the lack of oxygen can accelerate decay, therefore, it is not recommended to use plastic bags in which condensation accumulates) / hard persimmons, which do not contain seeds, are stored longer than soft fruits.

Seed Saving: Persimmon can be propagated from seeds, root cuttings, suckers and by grafting. Plants can be easily produced from seed after a three-month period of seed stratification. Seedlings that are 1 to 2 years old may be transplanted to the orchard. To ensure high quality plants and fruit, however, it is best to graft or bud the seedlings or plant grafted trees.

Notes: It's best to do some research on the specific variety of your persimmon tree since the different varieties can have different needs and flavor profiles.
Some of the more readily available cultivars known for large, tasty fruit include Claypool, Dollywood, and Early Golden.

Pinyon Pine Tree

Description: Pinyon is known as a white pine, which means that the wood from it is whiter in color instead of reddish tan colored. Needles on most white pines normally grow in clusters of five so the Pinyon is unusual in that its needles grow only in pairs. Foresters classify pines in two groups. Although you can harvest many different pinyon pine trees, some provide better harvests than others. The best for harvesting are the Colorado pinyon, Mexican pinyon, and single-leaf pinyon because they produce large pine nuts. Pinyon pine trees are the only pine trees that produce nuts large enough to harvest. The Pine tree is an evergreen.

It's important to know which type of pine nut species you're dealing with. Pine nuts can have soft or hard shells, and hard-shelled nuts shouldn't be cracked with your teeth, or you could hurt yourself. Here are the main types of pine nut you need to know:
The New Mexico pinon pine nut. This is a buttery nut that is wild and hand harvested. These are the most valuable pine nut in the world and they have a hard shell that is too hard to crack with your fingers or teeth. *The Italian Stone pine.* This nut is popular in Europe and throughout the Mediterranean. It is a longer, rounder nut. *The Chilgoza pine nut.* These nuts are typically found in Afghanistan or Pakistan and they are long and boat-shaped with a sharp end. They are typically shelled by roasting over an open fire; they are more rare.
The gray pine nut. Typically found in Northern California, these nuts have a bit of a softer shell.
The Nevada pine nut. These are sweeter, fruitier, larger, and easier to shell.

Growing Instructions Decide between using bare-root seedlings or seedlings grown in a container. Bare-root pine seedlings must be planted during the late fall and winter, when pine trees are dormant. Container-grown seedlings can be planted at any time, although the hottest summer months will require additional shade and water to prevent dehydration and sun damage. Most seedlings can be kept for several weeks between 35° and 38° F (1.7 – 3.3°C), but you should check with the seller in case the species you bought has different requirements.

Optimal Time/Temperature for Germination: Do not plant trees when conditions are windy, dry, or above 85°F (30°C). The soil should not have standing water or ice on the day you plant, but should not be parched either. Hardiness zones 4 to 8.

Fresh pine seeds acquired in fall can usually be planted immediately. However, even fresh seeds may benefit from a special environment which increases the speed of germination (sprouting) and reduces the chance of your seeds staying dormant after planting. Storing seeds in this way to mimic ideal seasonal conditions is called stratification. Different species of pine tree do best in different conditions. Identify your species in a regional tree identification book or website if possible, and look up how long "stratification" takes. If you can't, the below methods should work as long as you check the seeds' progress regularly.

In general, pines that grow in relatively warm climates further south (but not at high elevations) require little to no stratification before planting and can simply be stored dry at room temperature, while pines from damper, colder climates cannot grow without a cold, moist period.

If you have a handful or two of seeds or fewer, this method may be easiest. Stack paper towels until the stack is 1/8 to 1/4 inch thick (3 to 6 mm). Add just enough water to moisten every part of the towels, then hold vertical by one corner until the excess water drains off. Place the seeds on one half of the paper towels in one layer, then fold the other half over the seeds. Seal in a plastic bag and store in the refrigerator at about 41°F (5°C). You may wish to include a thick straw or other thin tube to allow a small amount of air exchange with the outside, to ensure the environment has sufficient oxygen.

Immediately after completing the soaking step, put half a pound (0.23 kg) of seeds or less onto a square of cheesecloth or other soft mesh material and tie it into a bag. Hang or hold up the bag and let the excess water drain for about a minute. Tie the neck of a larger, plastic bag to the neck of the cheesecloth so the water can continue to drain without soaking the seeds. Hang this in your refrigerator at about 41°F (5°C).

Note: If you can identify your species, search for information on "stratification" for that species online. You may wish to store the bag in a warm location before transferring to the fridge.

A seed beginning to germinate will crack open and start to extend a growing root. Depending on the species and the individual seed, this could take anywhere from 3 weeks to multiple years, although you never need to store a seed for that long before planting. For seeds that refuse to sprout after several weeks, you can encourage them by letting them dry out, then repeating the treatment. If the growing season is over or you wish to save seeds for next year, dry the surface but leave them slightly damp, then store in the refrigerator. Keep checking regularly to be sure they don't sprout.

Pine seeds are vulnerable to infection and rodents when planted in outdoor soil. Try to find plastic tubes intended for growing pine trees, as these are best for encouraging long root structures that will support the tree. Otherwise, an ordinary small plant pot will work. Instead of using soil, use a potting mix intended for pine trees, or create your own mix of 80% pine bark and 20% peat moss. Push the seeds just under the soil with the pointed root facing downward. If keeping the plants indoors, keep the pots on a raised table to make it more difficult for mice to reach them.

Optimal Soil Conditions: Choose a location where the tree will receive direct sunlight during the cooler parts of the day. If you cannot plant a pine tree somewhere with shade on its west side, instructions are included below for creating a sun shade. A mix of sand and loam is best for pine trees, but you should only need to mix in suitable organic mulch such as sphagnum if the soil is a hard clay consistency. Choose an area with well-draining soil. A 1 foot (30 cm) deep hole filled with water should drain easily within 12 hours. If it does not, you may need to install drainage.

Seed Planting Depth, Spacing and Procedure: The top layer of soil is the highest quality, so fill the bottom few inches (about 10 cm) with topsoil after you dig your hole. Be sure to dig the hole large enough that the roots still fit after you've added the topsoil. Warning: Contact your utility company to discover the location of underground lines before digging any large holes.

Try to plant the tree to the same level it was planted in the nursery. If you're unsure, it is better to plant the tree too high than too low. If you’re planting more than one pine tree, be sure to leave at least 10 to 12 feet (3 to 4 m) of spacing so they can grow to mature width without any obstruction. Some varieties of pine may need even more space, like the huge Austrian pine. . Although burlap and other biodegradable material can be left on the plant, carefully removing it gives the seedling a better opportunity for growth. Fill the hole again after planting, periodically patting down loose soil with your shovel handle, not with your feet.

Fill the hole until it is level with the surrounding soil, or slightly lower if the climate is especially dry, so water can run into the roots.
Staking pine tree seedlings is only necessary in areas of unusually high wind. If you think the pine tree is in danger of blowing over, use one or two stakes attached by ties or straps, and leave enough room for the tree to sway. Do not loop wire directly over the tree. You may need to provide a sunscreen for your small pine tree by using a tarp or sheet of painted plywood.
Planting where there is shade from another tree or a building is also a practical choice. The shade should be on the west side of the tree, which is where the sun is located during the hottest parts of the day.

Best Companion Plants and Plants that Hinder: Rocky Mountain juniper is a good companion plant and also blueberries, blackberries, and huckleberries do well also.

Crop Maintenance Young pines need special attention, and need to be guarded rigorously against animals and sun damage during their first few years. With good care while young, your pine trees will grow for decades.

Pruning to direct growth is not necessary for pine trees and may stunt their growth. Cut dead or diseased branches a short distance from the trunk, leaving the "branch collar" ring between the branch and the trunk.

Moisture Requirements & Solutions: Instead of following one watering guide without variation, you should pay attention to how moist the soil is around your tree. Here are some tips: Soil that feels moist and holds together when picked up should not be watered, as over watering can suffocate the roots. Only water when the soil is mostly dry and crumbles apart, until it feels moist again. Water more in fall so the tree is prepared for winter. Water additionally during dry winter spells to protect young trees from drought, which is especially dangerous when the tree expects a wet season.

Weeding Needs & Solutions: Each pine tree should have plenty of open space, with no small plants around its base and no root systems of other trees nearby.

Feeding Needs/ Optimal Natural Fertilizers: Wood chips are cheap and work well for pine trees. Apply them to several inches (centimeters) depth around the tree, leaving space around the trunk. While mulch should help control weeds in addition to providing good growing conditions, you should pull out any grasses or other small plants near the base of the tree if you do see any grow there. Do not use a plastic barrier underneath the mulch.
The tree needs water and air to be able to pass through the mulch.

Fertilizer is not generally necessary for pine trees, and if used improperly can burn the plant. Only use fertilizer if advised by an experienced pine tree grower.

Pests, Diseases & Solutions: A plywood sunscreen can also do double duty as an animal repellent. However, if you live in an area with deer or other persistent, large wildlife, you may need a plastic tube or chicken wire fence encircling the seedling.

Pines can attract a number of insect pests, including weevils, boring insects like bark beetles, and sawyer beetles that spread the pine wood nematode. While these pests may or may not kill the tree, they can all do significant damage. Be proactive and try to protect your trees.

You can also ward off pests by good management. Keep your trees healthy, for instance, as pests are less likely to attack healthy young saplings. Plant trees on medium soil to promote vigorous root growth and check your plantings often to prune dead or dying limbs.

Planting some pine varieties (i.e. white) with hardwood trees or under a hardwood canopy seems to protect them from Dendroctonus bark beetles. It's often best to remove damaged trees that will be vulnerable to pests. Always remove and destroy trees killed by boring insects, too.

Harvest and Storage

When to Harvest/Number of days to Maturity: Pine trees grow slowly and mostly take around 9 years. Give it good soil and enough water and fertilize it every other week or so.
After the pine cones open, wild animals may take the nuts before you can harvest them. Plan on harvesting the tree when the pine cones have a greenish color with distinct scales that have not yet opened up. If some of the pine cones on the tree are open and some are closed, it's ready to harvest. Plan on harvesting at least twice as many pine cones as you expect that you'll need, as around half of the nuts in each pine cone will be empty.

How to Harvest: Grab a pine cone in your hand and, with a twisting motion, pull it until it separates from the tree branch. Place the pine cone in a container and continue picking until you have enough for your needs. Each pine cone provides about 2 nuts per scale, with the total amount varying based on the pine cone's size. Wear gardening gloves while picking up the pine cones to protect your hands from sap and scratches.

Pine cones need about 3 weeks to dry before you can harvest the nuts inside. Place the cones in a burlap bag or similar container in the sun, lying the burlap sack sideways to help the sunlight dry them evenly. Do not stack the pine cones any higher than 2 cones deep while the bag is sideways. Any deeper and the pine cones may start molding. Tie the bag shut to prevent animals from eating your pine cone harvest.

Optimal Storage Temperature and Conditions: Although drying the pine cones is traditional, you can also roast the pine cones in an oven. Spread the pine cones out on a pan and, setting the oven to 375 °F (191 °C), let them bake until their scales open (which should take between 30-45 minutes). After heating the pine cones, remove them from the oven and let them cool before you shell the nuts.

Pine cones emit a sap that, while harmless, is sticky and hard to wash off bare skin. A sturdy pair of gardening gloves will protect your hands while you work and keep them clean. Choose a pair of gloves that you don't mind staining, as pine cone sap can permanently color cloth. If you get any sap on your hands, use an oil-based soap to wash it off. Pull off all of the pine cone scales to expose the nuts underneath. Pick each nut, which should look black and oval-shaped, with your fingers, then repeat the process with each additional pine cone.

Place the pine nuts in a bowl and fill it to the top with water. Keep the nuts that sink to the bottom and throw away the nuts that float, as the floating nuts are most likely empty. You should expect about half of the nuts to float per pine cone.

Holding a pine nut in your hand, place your nail inside the pine nut opening and make a divot. Then, pinch the sides with your fingers and roll it until the shell and outer skin rubs off. If you have short fingernails or can't seem to open the pine nuts, you can also try pliers using a similar technique.

After shelling the pine nuts, store them immediately to prevent them from spoiling. Because of their high oil content, pine nuts spoil when they're left out for more than several hours. Unless you're eating or cooking with your pine nuts right away, refrigerate or freeze them immediately after shelling them. Place your pine nuts in an airtight container and store them in the fridge if you plan to eat them within a few weeks. Pine nuts keep for about a month in the fridge before expiring, so plan to eat them within 30 days after shelling.

Mark the container with the date you shelled the pine nuts so you know how long you have before they expire.

If you want to keep pine nuts for long-term use, seal them in an airtight container and leave them in the fridge until you're ready to use them. Write the date that you shelled the pine nuts on the container so you can use them before they expire. Pine nuts stay preserved for 3 to 6 months longer while they're frozen.

Planting from Seed: Growing pine trees from seeds can be a long, challenging process. You will have to acquire seeds when the pine cones are ripe, most likely in autumn. Depending on species and climate, you may need to prepare the seeds for 30–60 days as describe below before planting in pots. They will grow slowly, and may take over a year before they can be transplanted into outdoor soil without significant risk of death.

While most pine cones ripen between August and October, some species such as the Scotch pine remain usable until March. Your local climate will also be a factor. Read the description of ripe pine cones so you know what to look for. See Growing Pine Trees from Seedlings above for an easier, faster method.

Pine cones come in two varieties: small male cones and large female cones. Only the female cones produce seeds. Choose large pine cones with scales that are not fully open, or spread apart. If the scales are spread apart, they may have already released their seeds. You may take fallen cones or pick them from the tree by twisting them off the branch. Female pine cones are usually higher on the tree, so you may need a stepladder or a hooked pole. Choose brown or purplish pine cones, as fully green cones are not mature and have not produced useful seeds. Pine trees that have produced many cones are more likely to produce useful seeds. Place them in direct sunlight if possible, and let them dry out so the scales open and give you access to the seeds. You may warm the room to speed this along, but do not heat the cones above 113°F (45°C).

Each scale of the pine cone should have one or two seeds underneath it, sometimes attached to a thin "wing" for catching the wind. Shake the cones on a tray with 1/2 inch (1.25 cm) mesh or hardware cloth; the seeds should fall out of the cones and through the mesh. Shake over a tarpaulin to easily collect the seeds afterward. Use tweezers to pull out stubborn seeds, or if you only collected a few cones.

Put the seeds in a clear, water filled container for 24 to 48 hours. Use room temperature water. Besides providing the seeds with water they need to begin growing, this provides a test of which seeds are usable. The full, viable seeds should slowly sink to the bottom of the container. The empty, unusable seeds will float to the top. Cut open one or two of the largest floating seeds to check whether they are actually empty. If they are full, wait longer for the remaining seeds to sink. Discard the floating seeds at the end of this process. They are not usable. Large operations sometimes place a bag of seeds in running water, which is better at removing fungal spores that could cause infection. This is difficult to achieve at home, but you could consider changing the water every 12 or 24 hours.

Decide whether to store seeds before planting.

Notes: For the gray pine, you should collect the cones in September or October and keep them in an airy, but dry place, such as a garage. The cones should still be tightly closed at this point. Wait for the cones to slowly open, revealing their nuts. Then, bang the cones around in a gunnysack until all of the nuts fall out. Alternately, you pick them out by hand, if you don't mind getting resinous pitch stuck to them. Toss out the winged part of the shell that connects the shell to the cone. Remove any nuts with holes in them; this means bugs have gotten to them.

Do not microwave the pine cones, as microwaving will insufficiently dry the pine cones and ruin your microwave.

a) If you don't care about maintaining the integrity of the nut and are working with a tougher nut to crack, then you may just want to place the nuts on a solid surface and hit them with a hammer. Aim to do it a bit more softly so you crack the shells without pulverizing the nuts. Now, this is likely to make a big mess or put a dent in your floor, so try placing them on a piece of cardboard or in a thick plastic bag outside, so you don't have any property damage as you try to break those stubborn nuts out of their shells. This method is not for the faint of heart and does require some power. Once you're done, you can remove the nuts from the bag and peel off the extra shell.

b) If you place the pine nut in the notched section of the can opener, right where the handles meet up, you can use the can opener as a kind of improvised nutcracker. This may do some damage to your can opener and it may take quite a while, as you'll be shelling the nuts one nut at a time, but it will give you the results you're looking for. Once you've cracked all of the shells of the nuts using a can opener, you can peel the remaining shells away with your hands.

c) For softer pine nuts, you can simply place these nuts in a big plastic bag, push all the air out of it, place it on a flat surface, and then use a wooden roller to roll back and forth over the nuts. Continue doing this until you hear and see the shells of the nuts cracking, revealing the meat of the nut. This can take a little while, and you can roll the roller over smaller batches of nuts for best results. Once you've cracked all of the shells, simply remove the nuts from the plastic bags and peel off the remaining shells with your fingers.

d) Though using your mouth to crack pine nuts isn't the most recommended method, it will work in a pinch if you're using soft-shelled seeds such as the gray pine nut. Simply do what you would do to crack a sunflower seed's shell: place the nut in the back of your mouth and bite down on it a bit gently, until you hear the shell cracking. Then, remove the nut from your mouth and peel away the rest of the shell. Be careful not to bite down too hard if you want to keep your teeth healthy. This method is one of the best for preserving the original shape of the pine nut, if that's important to you. Be careful, you might chip a tooth if you bite down too hard.

Many people like to put pine nuts in the freezer to give them an extra crunchy taste and to make them last longer, while others maintain that this takes away some of their rich, nutty flavor.
Once you see the hard work that goes into shelling pine nuts, you might be better able to appreciate the price tag that often comes with them.
Some nuts just don't crack right, just move to the next nut It takes practice to get good, be patient. Shelled pine nuts are available, but they have a much shorter shelf life than unshelled pine nuts. The taste of an unshelled pine nut is much richer than one which has been shelled. It is very cost effective to shell your own pine nuts and there are many ways to do it.

Plum Tree

Description: Any of various trees or shrubs in the genus Prunus of the family Rosaceae and their edible fruits. Plums are closely related to peaches and cherries. Plums are drupes, fleshy fruits that encase a single seed within a tough shell. Known for deep purple hues, plums come in a range of colors, including white, yellow, green and red. However, a tree may take three to six years to produce fruit. Plum trees blossom in late winter or early spring, depending on climate.

Growing Instructions

Optimal Time/Temperature for Germination: European plum trees will grow in most climates. Japanese plum trees need warmer climates. American hybrid plums are the hardiest and can survive even in cold, harsh conditions. Hardiness zones are 3 to 8. Pick a European type if you have space for just one tree. Japanese plum trees and American hybrids need to cross-pollinate, which means you'd need a second tree to produce fruit. If you have space for only one tree, go with a European plum tree. It will also grow well in most climates. In general, Japanese plums are sweet and juicy, with red skin. European plums are very sweet and purple. American hybrids vary in appearance and taste, but many are similar to Japanese plums. A grafted plum tree is a young tree that has been attached to a rootstock of a different variety to improve its growth. Grafted plum trees produce delicious fruit. You can grow a plum tree from a seed but the fruit may not taste the same. Dome plum varieties are only ornamental while others with bear fruit. Choose the type of plum tree that fits with the rest of your yard or garden. A local nursery will have plum trees that grow well in your climate.

Optimal Soil Conditions: Plum trees grow best in rich soil that isn't constantly wet. If the soil retains water, it might cause your tree's roots to rot. Your plum tree will need 6 to 8 hours of direct sunlight each day to grow. Avoid spots where frost might settle and spots that experience high winds. Preferred soil pH is 5.5 to 6.5. If you live in a region with cold winters and hot summers, wait until the spring to plant your plum tree. It will be easiest to dig the hole for your tree, and your young tree's roots will adapt to the soil well. By planting in the spring you'll also avoid frost, which can damage your tree.

Seed Planting Depth, Spacing and Procedure: Give your tree at least 15 feet (4.6 m) of space all around to grow. If you're planting multiple plum trees, space them at least 18 inches (46 cm) apart. Dig a hole slightly deeper and wider than the tallest, longest roots. Try not to bend the roots so they can spread and grow. Your tree's roots will grow outward. Make sure its longest roots have room to grow and form a stable base for your tree. If the soil in the hole is too compact, your roots will have trouble breaking through and growing outwards. You can loosen the soil with the tip of your shovel or a handheld tool like a trowel. The graft line is a clear line or "scar" near the base, where the root and tree join. The graft line should remain at least 1 inch (2.5 cm) above the soil when your tree is in the hole so it can grow properly. If your hole is too deep, fill it little by little with soil you removed until the graft line is at the right position. Refill the hole slowly, making sure to cover each root with soil. Adjust the angle of your tree when needed so that it stays completely upright.

Best Companion Plants and Plants that Hinder:
List of plants to help with pollination and the attraction of beneficial insects to your plum trees: Foxgloves - boost the health of all surrounding plants plum trees included. They also attract bees to the area necessary for pollination. / Marigolds - roots exude a chemical that dispells nematode eel worms and the strong, pungent smell keeps white fly away. / Nasturtiums - excellent at keeping aphids away from your plants, grow as many as you can around plum trees to help keep aphid free. / Dill - allow to flower to attract many beneficial insects including Bees, Hoverflies and many more. / Comfrey - accumulates calcium, phosphorus, and potassium all of which are of great benefit to all plants and trees including plum trees. It is also a great trap plant for slugs and snails good for all gardens. / Chives - a strong aroma to keep aphids away from plum trees. The bright blue flowers also attract good pollinators to your orchard or garden. / Coriander - is a repellent to many bad insects. The flowers are very attractive to bees and hoverflies. / Lavender- to keep moths away from homes.
Growing Lavender in close proximity to plum trees may help to keep the plum moth away. Lavender also attracts many beneficial pollinators to your garden.

Crop Maintenance

Trim the branches above buds with a lopper to encourage growth. Pruning your young tree for the first time in late winter will set its shape and encourage growth the following spring. Cut branches above outward-facing buds so that the branch will grow up and out. Use a pruning tool that will make clean cuts, like a lopper, to discourage pests and disease. Cut any shoots that form on the bottom of the trunk, as they take away energy from the rest of the tree. Keep your tree healthy by clearing damaged or fallen branches**.**
Prune branches that have broken from high winds or storms. Cut these damaged sections where they naturally meet undamaged parts of the branch to avoid leaving stubs. Rake and remove fallen debris in the fall.

Moisture Requirements & Solutions: Newly planted trees need plenty of water for the first few weeks after planting. Water your tree deeply so the water soaks about 8 inches (20 cm) into your soil. Letting a tree get too dry can affect its growth and production of fruit. On the other hand, overwatering can damage the roots.

After your tree has been planted for a year, it doesn't need as much water. If you live in a dry climate without much rain, soak the soil around the base of your tree with a hose for 15 to 20 minutes. If it rains once every 7 to 10 days, don't water your tree. Give your tree more water if its leaves are curling up and turning brown. Try watering it every 5 or 6 days at first, or soak it for 25 to 30 minutes when watering it. Give your tree less water if its leaves are turning yellow and falling from the branches. Wait to water it every 10 or 13 days, or soak the soil for 10 minutes instead. If you live in a humid or wet climate, your tree is probably getting plenty of moisture. Let the weather water your tree naturally when it rains.

Weeding Needs & Solutions: Cypress mulch can cut down the evaporation of water near the soil's surface, helping your tree conserve water. Mulch made from cedar will block weeds from sunlight so they don't grow and affect your plum tree. In spring apply mulch around the base of your tree so that it's 2 inches (5.1 cm) thick. When organic mulch like cypress and cedar decomposes, it also provides nutrients to your tree so it can be used as an alternative to fertilizer. You can make y our own mulch from tree branches, bark, and leaves.

Feeding Needs/ Optimal Natural Fertilizers: Fertilizer isn't needed when you plant a young grafted tree. Fertilizer can damage or kill the tree's roots. Fruit trees younger than 3 or 4 years old don't require any unless they are not growing about 10 inches (25 cm) per year. Maybe spread a mild fertilizer about 1 foot (0.30 m) away from your tree's trunk. with equal parts nitrogen, phosphorus and potassium.

Pests, Diseases & Solutions: Brown rot is a common disease that affects plum trees. Withered brown twigs and flowers covered in sticky brown drops are signs of brown rot. Prune and destroy any affected fruits, twigs, leaves, and flowers. Plum tree pests include mites, Japanese beetles, and aphids.

Harvest and Storage

When to Harvest/Number of days to Maturity: A tree may take three to six years to produce fruit**.** Look for plum trees to bear ripe fruit from May to September.

How to Harvest: If you pick plums early, put them in a clean paper bag with the top folded over and let them sit at room temperature for a day or two. Your plum
is ripe when your fingertip makes a small dent, but doesn't puncture the skin. European plums can be picked when they're fully ripened. You can pick Japanese and American Hybrid plums slightly early and ripen them.

Optimal Storage Temperature and Conditions: Keep unripe plums at room temperature to soften. To extend shelf life, store ripe plums in the refrigerator for three to five days. Over-soft, almost mushy or cracked plums are past their prime. If you have an abundance of ripe plums, consider removing pits and slicing or chopping, then freeze for up to 12 months. Wash plums before eating to remove the "bloom," a waxy-white residue on the surface, like that on grapes. This natural coating is safe and a sign of freshness, Use your plums to make dishes like grilled plums or jam. Plum varieties that can be dried without resulting in fermentation are called prunes and are done in dehydrators or in the sun.

Seed Saving: is as simple as cleaning up the pit, cracking it and popping it into some soil if you live where they grow but as in nature, not every seed is viable or willing to sprout, and plums are no different. Drying pit methods are the same as the slicings of fruit, by sun and air , a lowest oven setting, or a dehydrator. Drying the pits will help you easily break the shell and retrieve the seed inside. Break the shell When the pits are dry enough and you notice a bit of cracking, you can now use a nutcracker to break the shell. Be careful not to press too hard as you may damage the seed inside.

Pomegranate

Description: If you love pomegranate, try growing your own plant. While the plant is more shrub-like than tree-shaped, you can train your pom to take on the shape of a tree. It is a deciduous tree of the family Lythraceae.and it will lose it leaves in late fall. Full-grown pomegranate trees that have been planted outdoors may reach heights of 20-to-30 feet (6- to-10 m). They are most at home in drier climates like that of California or Arizona. (they're native to the middle-east so they like arid regions. They have bright orange-red flowers and shiny foliage. Unlike eating other fruits, you eat the seeds, or arlis of the pomegranate, which are filled with delicious juice.

Growing Instructions

Optimal Time/Temperature for Germination: Be sure to consider your climate when choosing a pomegranate. Most varieties cannot tolerate temperatures below 15 °F (–9.4 °C). You can start pomegranate trees by germinating seeds directly from the fruit, though these trees may not produce fruit as consistently as those made from cuttings of existing trees. Seeds can be planted in the ground in areas with mild winters or, if you are in an area with a colder climate, start them in pots before moving outdoors. Pomegranate seeds will germinate best in soil that is 24 °C (75 °F) to 26 °C (79 °F). If the air temperature isn't mostly at or above these temperatures, use a soil thermometer to check the ground temperature. If your soil temperature is not up to this level, wait for warmer weather. You can get a head start by germinating your seeds indoors, however. In a temperate zone, you can plan on sowing pomegranate seeds in spring after the last frost. In subtropical zones, late spring to early summer will be the optimum time. Pomegranates actually won't do well in tropical zones, since the weather there will be too humid. Growing zones are 8 to 13.

Another option for starting your seeds (beside the mentioning at seed saving section) is to place them inside of a damp coffee filter and then place the filter inside of a plastic bag. Place the bag somewhere warm and check the seeds every few days. When the seeds start to sprout, transfer them to pots. If you are germinating the seeds in pots, you can plant several per pot, using regular potting soil. In a temperate zone with a warm spring, the seeds will germinate in about six weeks. After they sprout, you can remove some to keep only the strongest seedlings. If you are using pots indoors, remember to keep them wherever they can get the most sun. Loosely place a plastic bag over the pots just until the seeds sprout. This can help retain heat and moisture, speeding up the germination process. This can be especially helpful if you live in a cooler climate. If you started your seeds indoors, once the weather warms up a little, you can start moving the pots outside during the day while the sun is out. Then, bring them back in before the temperature drops at nightfall. If you germinated your seeds in pots, wait until they are 4 inches (10 cm) to 6 inches (15 cm) high. Simply choose a sunny spot and transplant them into the ground. Take the seedling and its entire root ball out of the pot. Gently remove some of the dirt that clings to the edges of the root ball. Dig a hole at the planting side that is larger than the root ball. Place the seedling's root ball in the hole, and carefully replace the dirt in the hole until it is completely filled and there is a small mound around the base of the seedling. Water the planting site and continue to monitor it.

Optimal Soil Conditions: Pomegranates don't have many soil requirements. Almost any type will do, but it needs to drain well. If you have clay-based soil or another type with poor drainage, replace it with a looser topsoil. A visual test is an easy way to check your soil's drainage is to dig a 1 foot (0.30 m) x 1 foot (0.30 m) hole in the ground, and wait until the soil in it is dry to the touch (this might take a day or more). Pour enough water into the hole to fill it up. If it takes more than a few hours for the water to drain out of the hole, then your soil has poor drainage. Pomegranates do well in moderately alkaline soil, with a pH a little above 7.0. However, they will also tolerate slightly acidic to neutral soils (pH 5.5-7.0).

Plant the pomegranate in a warm, dry spot that is at least partly protected from heavy winds. Avoid planting it in an area of your garden that is moist, dark, or dank. Run a stiff rake or a tiller over the area where you want to plant pomegranate trees. The goal is to remove any weeds, large rocks, or other debris, and to loosen up the soil so that it will be easier for the plants to grow. After debris is removed and clumps of dirt are broken, go over the soil again with a rake to even it out again.

Seed Planting Depth, Spacing and Procedure: There are several ways you can grow a pomegranate: from a seedling, a cutting, or from seed. Growing pomegranates from seeds means you will have to wait three or four years before your plant produces any fruit.

Plant them at a depth of 5 mm (0.20 in). All you have to do is scatter the seeds over the soil in the ground outdoors, and slightly push them down or cover them with a thin layer of more soil. Don't worry about spacing at first. Later, you can remove seedlings so that only the strongest stay in the ground. Mist or lightly water the soil, but not so much that it’s soaking wet. The goal is to keep the seeds moist to help speed along the germination process. If you germinated your seeds in the ground, thin the seedlings out by the time they are 4 inches (10 cm) to 6 inches (15 cm) high. Pull any wilted or weak seedlings out of the ground, so that only healthy, vibrant ones remain. Leave only enough seedlings so that they will be 2-3 m (6-9 ft.) apart if you want the trees to form a hedge, or 5-6 m (15-18 ft.) apart if you want them to grow orchard-style.

If growing a new tree from cuttings. This is best done in late winter, and each cutting should be around 10 inches long. Cut a branch that is at least 10 inches (25cm) long. Cover the cut end of the branch with rooting hormone to help it grow. Take the cutting in February or March, when the plant is still dormant. If you are growing the plant from a cutting, loosen the soil and plant the pomegranate branch vertically so that the cut end is about five to six inches (12.5 to 15cm) down in the soil, with the dormant buds pointing up towards the sky. Also, make sure that you dust the plant with a rooting hormone to aid root development.

Best Companion Plants and Plants that Hinder: The pomegranate requires bees for pollination; without proper pollination, your tree will not produce fruit. A variety of herbs can attract bees, including dill, cilantro, parsley and mint. Basil, thyme and summer savory also attract bees. It can be especially helpful to allow herbs to flower, because introducing a spectrum of color keeps bees returning to the area. Planting a bed of lavender flowers near a pomegranate tree attracts bees, as will beds with cosmos, coreopsis, zinnias and sunflowers. Choose flowers that repel aphids, such as nasturtiums. You may also opt for flowers that attract beneficial insects that eat aphids, such as ladybugs and lacewings. These insects are especially attracted to daisies and Queen Anne's lace. There are several vegetables you can plant near a pomegranate tree that make good companions. Fennel and leaf celery draw ladybugs and lacewings, both of which will eat the aphids that might damage your pomegranate tree.

Planting a fruit near your tree helps ensure proper pollination like a variegated Calamondin orange as a companion plant to the pomegranate for orange blossoms also help to attract bees.

Under moist conditions, sooty molds can develop on the honeydew melon, reducing photosynthesis and hindering the respiration of Pomegranate plants so avoid that one.

Crop Maintenance Using gardening shears or clippers, cut the suckers (the smaller branches that help the plant take on its shrub form) growing at the base of the plant so that it takes on more of a tree shape. Do this shortly after the plant has become established.
If you don't care whether your plant is tree-like or not, let it grow naturally. It is a good idea to cut away dead or dying branches in the spring to help the tree grow well. You can also thin the plant as you see necessary. If you are growing the pom in a container, you will need to prune and train a bit more heavily, in order to keep the pom the size and shape you want it to be.

Moisture Requirements & Solutions: At first, you may need to water your seeds every day to keep them moist. After the seeds germinate and sprout, you can gradually start watering less frequently. Eventually, water the pomegranate every 7-to-10 days once it is established. (less often if it rains).

Weeding Needs & Solutions: For best results, remove all competing growth from the pomegranate's permanent planting site for one to two feet (0.3 to 0.6 m) on all sides of the trunk.

Feeding Needs/ Optimal Natural Fertilizers: Sprinkle about 1/3 cup of fertilizer three times throughout the first year of growth (February, May, and September are ideal times to do this).

Pests, Diseases & Solutions: Avoid mold growth by making sure you do not over water the pom. Many flowers help repel insects harmful to pomegranates as well. Aphids can inflict damage this fruit tree, resulting in rotten spots on fruit, blossom drop and ideal conditions for sooty mold infestation. You may include attracting ladybugs, spraying trees with water to knock aphids down, or even purchasing predatory insects to consume the aphids. The pomegranate butterfly is not very common and should not be a problem. If it is, make a spray to rid your trees of the larvae. (note flowers in companion section)

Harvest and Storage

When to Harvest/Number of days to Maturity: Pomegranates do not produce many fruits until approximately 5-to-6 years after the initial planting if by seed. If you purchase a healthy and strong tree from the nursery, you may get fruit the same year it is planted,
depending on its age at time of planting. Earlier fruit (in the first 3 to 4 years) may not be as large as fruit that grows when the tree is older and it may not ripen sufficiently to be consumed. Once the tree is established, the good news is that it can live up to 200 years.

How to Harvest: Unripe pomegranates are round, like apples. However, their shape changes slightly as the fruit ripens and the juice-filled seeds begin to expand outward and press against the insides of the pomegranates. A ripe pomegranate will have more of a square shape because the sides will be flattened (instead of rounded). The rind should be soft enough to scratch. If so, you know you have a ripe pomegranate. Unripe pomegranates have very hard rinds that cannot be scratched. Should the fruit begin to split open, it's ripe and ready to be consumed. It usually happens at the beginning to mid Fall. Some will wait until the fruit just begins to split before pulling it off the tree, finding that recently split fruit proves to have the sweetest and juiciest content. Don't wait too long, though. Once opened, bugs and birds will love it, too.

Optimal Storage Temperature and Conditions: Pomegranates can be used in many ways, including syrups, juice, fruit salad, vinegar, coffee, cocktails, salad dressings, and more. While choosing the right pomegranate and removing the seeds takes a little more work than doing so for other fruits, it's worth the effort. The rinds vary in shades of red, from bright to more brownish or even pink. The rind should also be glossy. While the shade of the rind doesn't signify anything about ripeness or flavor, the deeper the color, the better. To be sure your pomegranates aren't bruised, hold each pomegranate and gently squeeze it. The pomegranates should be hard, with no mushy spots.

Before de-seeding your pomegranate, you may want to grab an apron or change into an old shirt that you don't mind getting stained. The juice from pomegranates will stain your clothes. The rind of pomegranates are hard, and you can't really peel a pomegranate because the seeds are nested into and attached to the internal membrane. To get to the edible part of the pomegranate, you'll need to cut into and through the rind. Cutting the pomegranate into quarters rather than halves will give you better access to the seeds.

Place your quartered pomegranate in the water-filled bowl. Removing the seeds of the pomegranate in water is the easiest way to de-seed your fruit because the seeds are heavier than the membrane that surrounds the seeds. Thus, the seeds will sink to the bottom of the bowl, and the membrane will rise to the surface.

Alternately, you can remove the seeds over the bowl and let the flesh and seeds drop into the bowl (rather than submerging the pomegranate in the water). This way, you can immediately dispose of the rind when you have removed all the seeds. Removing the seeds underwater, however, lessens the risk that you may drop part of the pomegranate onto your counter top and stain it. While submerged in the water, hold the pomegranate quarter with one hand, and run the thumb of your other hand around the clumps of seeds. Once you have removed all the seeds, you can skim off the membrane from the top of the water with your hands or a small strainer. Remove the seeds from the bottom of the bowl in the same manner. Enjoy eating the plump seeds or prepare for storage.

Refrigerating your whole pomegranate rather than leaving it on your counter or in your fruit basket will help keep it fresher longer. Put it in a plastic bag and close it so it's airtight (the ones in grocery stores for fruit and veggies work well), then put it in the refrigerator and it will last for up to 3 months. If you store your pomegranate in a dry, cool place**,** it will last for about a month this way and for a week at room temperature.

As pomegranate seeds, place in the refrigerator for five days but seal them tightly in a container or plastic bag. Avoid any overripe seeds, brown or squishy, as they could cause the just-right seeds to spoil.

You can prolong the seeds freshness by storing them in the freezer. Be sure the seeds are completely dry before freezing them (or they will clump together). You can also flash freeze the seeds before freezing them in a storage bag. After drying any remaining water off the seeds, place them in a single layer on a wax- paper lined baking sheet. Freeze them on the baking sheet for two hours before storing them in a freezer bag. Pomegranate seeds can be stored in the freezer for a year.

Seed Saving: You can germinate fresh pomegranate seeds, but it will take much longer of you don't separate them from the juice and rinse them well. Just lay the pomegranate pieces between two paper towels, and go over them with a rolling pin. Then, place the seeds in a colander and rinse them well. The juice will be absorbed by the paper towels, leaving the actual seeds separated. Remove them from the paper towel and spread them on a tray in a single layer. Let the seeds sit until they are dry to the touch. Let the seeds dry out for a few days.

Place the seeds, loosely covered, in the refrigerator. Let them stay there for a few weeks. This helps speed up germination by simulating the time the seeds would have spent in cooler ground during the winter before sprouting the next spring. If you are starting your seeds during the winter, then you can skip this part of the process.

When you're ready to germinate the pomegranate seeds, take them out and cover them with warm water in a dish. Leave them there overnight. You do not need to dry the seeds. They can be planted while they are still damp. If the plant is kept at room temperature, it should germinate in 30-40 days.

Notes: As long as it is a dwarf variety, you can grow indoors in a large pot.

Warning: seedling variation may take place when propagating pomegranate by seed. Reproduction by cuttings is a more reliable means of ensuring you get the expected result.

The best time for trimming or pruning a pomegranate tree is after the tree has gone dormant to cope with winter. It is also important to only trim it a little at a time, as it is not able to cope with major pruning. To create the tree shape rather than a bush shape, it is okay to remove the base branches while leaving intact the middle upright growing branch. All scraggly, dead and weak branches are fine to remove. If you cut too far back, the plant won't fruit, so keep pruning to a minimum.

The weight of a pomegranate signifies how juicy it is. Lighter pomegranates do not contain as much juice as the heavier ones in comparison.

Be conscious of where you are eating the pomegranate seeds, as they will immediately stain light colored clothing, table cloths, and carpets if dropped.

Prickly Pear Cactus

Description: All prickly pears (cacti in the genus opuntia) are edible, though you may find that many varieties are not as tasty, have more spines or seeds than the prickly pears and cactus pads you might find in a store. The prickly pear, which is also referred to as the Indian fig, also has pretty flowers that range from orange to yellow to white. The pads are the flat, green, fleshy parts that make up the majority of the plant. Sizes vary as about 18 in. wide from low-growing cactus to 10- to 15 ft. tall trees. Every part has a lot of potassium, calcium and most importantly protein and many medicinal uses. The flavor of prickly pears has been compared to kiwi, but not as acidic. The cooked pads have a flavor comparable to green beans and a texture reminiscent of okra.

Growing Instructions

Optimal Soil Conditions: Although they prefer desert climates, prickly pears will actually grow in a wide variety of soils, moisture levels, and temperatures. Begin by taking a small garden pot that has a hole in the bottom. Cover the bottom of the pot with a layer of small rocks, which will allow water to drain better. Fill the pot with soil that contains about half soil and half sand, rough pumice, or loam. These soils drain better than ones with a high clay content, and are more similar to the natural desert soils a cactus prefers. (You can also purchase a pre-mixed cactus or succulent potting mix.) To grow multiple prickly pears, prepare several garden pots in this way.

Seed Planting Depth, Spacing and Procedure: Lay one or two seeds on top of the soil. Gently press the seeds into the soil and cover them with a light dusting of soil. Add a small amount of water. You want the soil to be moist, but not wet.

Optimal Time / Temperature & Germination: Cactus seeds don't need direct sunlight the way established plants do. Keep the pots in a shaded area that's surrounded by sunlight to allow for a warm climate. As the seeds grow, keep the soil moist until they germinate. Prickly pears grown from seeds tend to take longer to grow than propagated plants, and the resulting cacti could take three to four years to produce flowers and fruit. However, growing plants from seeds is important for ensuring genetic diversity.

per cutting instruction: Another way to grow prickly pear is to use a cutting from an established plant. Ask friends and neighbors if you can take a pad cutting from one of their plants if you don't have any established prickly pears of your own. Select a healthy pad that's medium or large in size, and between one and three years old. Ideally, look for a pad that's free of damage, specks, or any deformities. To take a cutting, hold the top of the pad with a gloved hand and slice the pad above the joint where it attaches to the rest of the plant. Don't cut the pad below the joint, because this can cause infection and the plant will rot. To prevent infection and rotting, you must let the cactus pad cutting form a callous where it was cut before you can plant it. Lay the pad on a bed of soil or sandy soil for one to two weeks, until the cut has healed. Leave the pad in a shaded area while you're waiting for the callous to form.

Transfer to a medium planting pot with stones to allow for drainage. Fill the rest of the pot with sandy or loamy soil, which will also allow for good drainage. The ideal soil will be a half-and-half mixture of soil and sand or pumice. Make a one- to two-inch hole in the soil with your finger. Place the pad upright in the garden pot, with the cut end in the soil. Bury the end. Do not bury the end more than one or two inches deep, otherwise it could rot. If the pad is having trouble standing, surround it with a few rocks to prop it up. Water the plant only when the soil looks dry, about once or twice per week.

Place the pad in the sun**.** Unlike prickly pear seeds, pads need plenty of direct sunlight. However, the pads can sunburn in hot sun, so it's important to protect the pad from direct sunlight between the hours of 11 a.m. and 1 p.m., when the sun is strongest.

To avoid having to move the prickly pear constantly, you can position the plant so the broad sides of the pad are facing east and west, so the thinner sides of the pad are facing the sun when it's at its hottest. This will protect it from sunburn so that you don't have to move it out of the sun every afternoon. Once the cutting has established roots it will be ready for full sun exposure.

per permanent ground placement: To transplant the cactus, choose an outdoor location that gets lots of full sun exposure. Even if you keep the prickly pear in a pot, it still needs to be positioned somewhere that gets full sun. If you live in a climate with colder winters where temperatures dip below 14 degrees F (-10 degrees C), keep the prickly pear in a pot so you can move it indoors when the weather gets cold. Hardiness zones are 9 to 11.

Eastern prickly pear cactus (Opuntia humifusa) is a cold- hardy cactus native to the Eastern United States. It's hardy to zone 4 (-30 F), which means almost anyone can grow prickly pear fruits at home (even outside the desert).

The best time to transplant a prickly pear is in the late spring, when the risk of frost and excessive rain are done. Dig a hole that's about the same size as the pot the cactus is in. Get the pot as near to the hole as possible. Gently tip the pot upside down and cup the plant with a gloved hand. Place the roots in the hole and cover it with soil. Pack the soil down with your hands and saturate it with water. During the first week, water the plant every three to four days. After that, water the cactus every three to four weeks. After the first year of establishment, it will not need any extra watering aside from the rain it gets.

Cover the soil with mulch in winter**.** To prevent damage from the cold, even if you live in a warm climate, cover the soil surrounding the prickly pear with mulch in the fall. If you live in a cold climate and have your cactus in a pot, bring the prickly pear inside in the fall to prevent it from freezing. They wrinkle a bit from the cold, but they bounce right back in the spring. Prickly pear cactus is hardy and can be successfully grown as far north as Canada.

Indoors, a south-facing window is the bare minimum, and will likely result in poor growth.

The soil pH for thriving is 6.0 to 7.5. Can also plant on sandy slopes or dry prairie areas.

Best Companion Plants and Plants that Hinder: Pick companion plants that will enjoy the same growing conditions - ceanothus, kniphofia, rockrose, leptospermum, yucca, agave, or other succulents, lantana, kangaroo paws, gazania, lavender, and ornamental grasses work well also.

Crop Maintenance

Moisture Requirements & Solutions: Water the soil when it starts to become dry to the touch while in development.

Weeding Needs & Solutions: Depending on the cacti and on how big the patch is, you can sometimes weed from down below, very close to the ground, with relative freedom from getting stuck. Weeds pull up easier after a rain. Weed sprays will harm the cactus. Using a handled weed scuffle hoe is helpful to remove.

Feeding Needs/Optimal Natural Fertilizers: Prickly Pear Cactus grows very slowly and doesn't require added fertilizer. Replacing your plant's potting soil once a year should provide them with more than enough nutrition. Remember, plants get their energy from sunlight, not fertilizer.

Pests, Diseases & Solutions: Because of their spiny nature, prickly pear cactus are deer resistant. Prickly pears don't normally suffer from any serious disease or insect problems, although they can be affected by rot if grown with poor drainage.

Harvest and Storage

When to Harvest/Number of days to maturity: Let the prickly pear cactus establish itself for several months before harvesting pads or fruit. Wait for the plant to grow a second or third pad before harvesting pads and wait until there are at least eight blooms on a pad before harvesting the fruit it produces.

Regarding the prickly pear fruit, the pears with the reddish-orange or purple skin and deep purple interiors are considered to be the sweetest, but the white-skinned varieties are more popular in Mexico. If you're foraging for prickly pears, remember that while all pears are edible, only a few will actually be ripe and taste good. Get them when they are bright purple and look like rat food, just before starting to wrinkle.

How to Harvest:

Cut pads with a sharp knife in the late morning or early afternoon. This is when the acid content is lowest. Remove the pads just above the joint. Harvest fruit by twisting the fruit and gently pulling it away from the pad. You know the fruit is ripe when the glochids, or thorns, fall off the light or dark colored bumps on the fruit. Find pads that are bright green and firm. Small, young pads harvested in early spring are thought to be the most succulent, delicate in flavor, and have the fewest spines. The thicker a pad, the older it is. Older pads tend to be stringy and their sap will be thicker, which some people find unpleasant. Leave those for other species who use them as survival food during lean foraging seasons.

The tender pads are sometimes sold as "baby nopales". If you're harvesting them yourself, wear extremely heavy gloves or use tongs. Snap the pads off the plant or cut at the stem. Cutting at the stem reduces stress on the pad, and allows the cactus to recover more quickly than snapping or tearing the pad away. This helps keep your cactus plant healthy for future harvests.

Optimal Storage temperature and conditions:

The prickly pear plant has three different edible sections: the pad of the cactus (*nopal*), which can be treated like a vegetable, the petals of the flowers, which can be added to salads, and the pear (*tuna*), which can be treated like a fruit.

Remove the spines from the pad by using a vegetable peeler or a paring knife. Don't take off the gloves until the pads are completely rinsed and the peeled remnants are cleared. The pads not only have large spines, but there are also tiny, invisible and far more irritating spines called *glochids* that are extremely difficult to remove from the skin. The spines and glochids can also be removed from the prickly pear pads by burning them off with a small torch or by placing the pad on a gas burner and turning it with tongs. Run the pad under cool water**.** Peel or cut off any discolorations or bruises. Slice or cut the pads (wipe the knife blade after each slice, as there can be small spines sticking to it), or leave them whole, depending on what you will be using the nopales for**.** To store nopales in the refrigerator, make sure they are fresh and unwrinkled. Wrap them tightly in plastic wrap. Nopales can be stored for up to two weeks.

To cook nopales**,** they can be either boiled or grilled, as well as mixed with other ingredients. If you boil the nopales, you may sometimes have to drain and re-boil them once or twice, depending on how thick the sap is. The thicker the pad, the thicker the sap. Boiling them with a copper coin (an old Mexican "veinte") is a common remedy to thin the sap and make it more palatable to unaccustomed diners. The boiled nopales are then drained, washed off with cold water and served as a salad with finely diced tomatoes, onion, cilantro and jalapeños and seasoned with vinegar, salt and lime juice.

If you grill the nopales, you might want to coat generously with pepper, salt, and other spices. They're ready when they're tender and slightly browned. Grilled nopalitos strips can be seasoned with fresh lime juice and a little olive oil. You can also add grilled portobello mushrooms to the mix.

Try stirring the cooked nopales into soup, mixing them into a salad or omelet, pickling them, or eating them alone.

For the pear fruit, remove the spines and place the pears in a plastic colander five or six at a time under cold water. Swirl the pears around for about three or four minutes not bruising them. Doing this washes all the fine blond hairs away, now you can handle them prickly free. Skin the pears. All the hairs gone slice off the thicker skin at both ends of the prickly pear (the bottom and the top). It takes a little practice to know how much to slice off.

Generally, you want to take off the skin without getting at the seed-filled center. Cut lengthwise along the pear's top-bottom center line just through the skin. Using that slit, use the knife to lever the skin and peel it off of the rest of the pear. Cut the pear into slices, or stick onto a fork or skewer and serve. The flesh of the prickly pear can be used to make jam, jelly, sorbet, and cactus candy.

The seeds can be consumed with the fruit (but be careful not to bite into them, as they're quite hard) or spit out. Some people eat the seeds in soup or dry them to be ground into flour.

Seed Saving:

To obtain the seeds, gather the Prickly pear fruit that grows off the top of the prickly pear plant (red egg shaped fruit): Put on gloves to protect your hands from the thorns. Slice the ends off the fruit. Stand the fruit up on one end. Make a thin, vertical slice down one side of the skin, and carefully stick a finger underneath. Peel away the skin by unwrapping the fruit like an orange. Use your fingers to break apart the flesh to find the seeds, which are studded throughout the fruit.

Notes:

To grow a prickly pear, you can buy an established plant, germinate seeds from the fruit, or propagate a new plant from an existing one.

While cacti are extremely drought tolerant, they still require water. If it is not growing, it likely needs additional water. Cacti also are intolerant of shade.

Prickly pear is considered a weed or invasive species in some areas where the plant is not native. Where considered invasive (regions of Australia) you aren't permitted to plant prickly pear.

All prickly pear varieties are edible, saguaro cactus fruit is edible (though not easy to come by), organ pipe cactus and barrel cactus fruit is edible, as is dragon fruit, which grows on a cactus. There are several other types of cacti which are eaten throughout the world, but these are some of the most common.

If grilling on an open fire the spines will burn off. This can also be used to feed livestock on a short term basis.

To get the fine spines out of your hands, first soak your hands in hot water, then use a credit card to flick them off. Another method if stuck in skin is don't bother with tweezers. Instead put a thin layer of Elmer's glue over the spines. Let the glue dry until there is a solid new skin on your hand, then peel it off. The spines will peel off painlessly with the glue. The glochids actually are barbed and will work into your skin if you are not careful. If you don't have Elmer's glue handy, duct tape or strong tack masking tape can remove the glochids.

Use spineless varieties where people or animals might come in contact with them, or simply to get the look and not the poke!

Raspberries

Description: Raspberries are perennials with woody stems and usually prickly plants of the genus Rubus of the rose family that bear edible drupelets. They come in red, yellow, and black varieties that ripen at different times of the year, usually between late summer and fall. The aggregate fruit of any of these plants, consist of many small, fleshy, receptacle and that are usually rounder and smaller than the closely related blackberries. With care, the raspberry bush can produce fruit for up to 20 years.

Growing Instructions

Optimal Time/Temperature for Germination: For the best results in your plants, only choose plants rated for your zone. In northern areas, you should use hardier, more cold- tolerant varieties of raspberry, like Boyne, Nova, and Nordic. In southern climates, choose raspberries that can withstand high heat and potential dryness, like Dorman Red, Bababerry, and Southland varieties. Most raspberries are hardy to zones 4-8 some are hardy to 3-7, in North America.

For purchasing grown raspberry plants, you'll want these to be at least one year old. Cultivated plants come in two basic types: those with bare roots covered in plastic peat containers and tissue-cultured plants. Check with the nursery or home center where you purchase seedlings to make sure they are certified disease-free and have been propagated from virus-indexed stock. Plant the raspberries in early spring**.** This is the best time to plant both seedlings and grown plants. This will allow the ideal amount of time for maturation. Grown plants should bear fruit by the end of summer. For ever-bearers, expect to find fruit into fall as well. Feel free to add raspberry plants to your patch throughout the summer months. Check the weather report before planting. If there's a fear of frost or a temperature drop, you may want to keep already dormant plants in stasis by keeping them in a refrigerator. Plant these berries as soon as possible. Lay down a layer of straw over your plants to protect them from frost. Use ground cover, like a tarp or sheet, to prevent frost damage. Remove tarps or sheets in the early morning. Newly planted or freshly germinated plants will require about a year before they begin to fill out and can bear fruit.

Optimal Soil Conditions: Full sunlight, in gardening terms, means at least 6 hours of sun, but in some cases plants requiring full sunlight might need 8 or even 10 hours of light to thrive. For raspberries, aim to expose them to as much light as possible. Warm sunshine has a tendency to improve the quality of raspberry fruit, making it juicier and more flavorful. Fruit with poor light might turn out stunted and shriveled. You may have to move garden or yard items that block the sun to your raspberries. Prune back trees or bushes that could block the sun.

Although environmentally hardy, raspberry plants are susceptible to wind damage. Plant your raspberry plants near a fence or on the side of a structure to block the wind. Set up a wind block for plants by stringing a sheet or tarp between posts. Provide additional support for your berries by stringing two guidelines between two row-end T-trellises or V-trellises. Each line should be separated by 3½ ft (1.1 m) to create a space for the berries to grow, and should be about 3½ ft high.

Seed Planting Depth, Spacing and Procedure: You'll be planting your raspberries in rows. Plan for, within a row, red and yellow varieties being separated by a distance of about 2 ft (.61 m). Black and purple varieties should be kept 3 ft (.91 m) from other same-row plants. Distance between rows should be between 6 and 24 in (15.2 and 61 cm). Spacing your plants adequately will help them receive the most sunlight possible, which will encourage the best possible harvest. This should be just deep enough to cover the roots without touching the lowest leaves. Place the plant in the hole and cover it with soil. Cover any exposed roots but avoid burying its foliage. The depth for raspberry plant holes is usually about 3 to 4 in (7.6 cm to 10.2 cm). Use a simple hand shovel to dig the holes.

Ensure that the soil is well drained and disease free**.** Rich, well-draining, sandy loam soil will provide the best growing conditions for your raspberries. Improve your soil quality by using plant formulated soil and mixing in compost with it. Avoid planting in low-lying areas where water may collect after a heavy rain. Standing water can contribute to mildew, mold, root rot, and other kinds of plant disease. Although raspberries fare poorly in standing water or when overwatered, make sure water is easily available. Water supply is especially important during dry times of the season.

Most berries do best in slightly acidic soil, and raspberries flourish with a pH rating between 5.6 and 6.2. In most cases, you can easily lower the pH level of your soil by mixing granular sulfur with it. This is available at most nurseries and home centers.

Grow plants from seeds**.** They should be sown according to their package instructions in a plastic peat pot with sterile soil that is low in nutrients at about mid-winter. Space seeds one inch apart and then use your finger to push them about an inch (2.5 cm) into the ground. Cover seeds with a thin layer of loose soil/sand and store them in a dim, cool place indoors. Keep the seeds lightly moist with a spray bottle. Place the seeds outside in partial sunlight when temperatures reach at least 60°F (15.6°C). Seeds should be transplanted into your garden after growing at least one inch in height and developing leaves.

Plants simply in a root ball should be easy to free from their packaging. Tap plants in containers with the heel of your wrist. This will loosen the roots. Slide the plant out and catch the soil gently. Be careful not to handle your plants too roughly. Pulling at the stem or the roots can damage your plants. Alternatively, soak the roots of raspberries in water for an hour or two before planting. Add a ½ tsp (2.5 ml) of a vitamin B1 growth stimulant per quart water the roots are soaking in for even better results from your planting.

Heavily watering after planting can help plants to recover from the shock of transplanting.

Best Companion Plants and Plants that Hinder: Sometimes problems with raspberries can easily be resolved with beneficial companion plants. Before planting raspberries, you may need to amend the soil to add organic material and valuable nutrients. One way to do this is to plant and grow a cover crop for one season. Good cover crops to till in before raspberries are: buckwheat, legumes, field brome, Japanese millet, spring oats, sudan grass, annual ryegrass, winter rye, clover hairy vetch, alfalfa, canola, and marigolds. The more bees that visit raspberry bushes, the more yield.

Raspberry plant companions that attract pollinators, while repelling harmful pests, include: Chervil and tansy (repels ants, Japanese beetles, cucumber beetles, squash bugs), Yarrow (repels harlequin beetles),Artemisia (repels insects, rabbits, and deer), and Turnips are also used as companion plants for raspberry bushes because they repel the harlequin beetle.

Raspberry bushes should not be planted in an area where potatoes, tomatoes, eggplant, bramble berries, peppers, roses. or strawberries have grown in the last five years. They also should not be planted near these growing plants because of blights and other fungal diseases, like verticillium wilt, which can spread from these plants to raspberries.

Avoid planting near any wild growing raspberries or blackberries within about 600 ft (183 m) of those you plant. Wild berries can also transmit diseases to your healthy berries.

Crop Maintenance Prune your raspberries at least once per year**.** Training your plants by pruning them will encourage a rich and productive crop. Remove canes (stems) outside the 12 to 18 in (30.5 to 45.7 cm) total row width. Cut away any canes that are damaged, infested with insects, or appear diseased. For summer-harvest crops of red raspberries, cut down discolored, grayish canes after they have finished producing fruit. Leave new, healthy plants. For fall-harvest crops, cut off all the canes at ground level after they have finished producing fruit. For black raspberries, cut off the side fruit-producing branches after harvesting. Remove weak and untrained branches. When not producing, cut off small canes. Remove the smallest, ineffective canes from *all* plants in late winter. Ideally, three to six strong, healthy canes will remain after this process.

Moisture Requirements & Solutions: Generally, you want the soil around your plants to be damp in summer and dry in winter. A soaker hose, where water seeps out of a hose line to water plants, should provide enough moisture for your berries if used for an hour or two every week. In some cases, like during heat or dry spells, you may need to water your berries more than usual.

Weeding Needs & Solutions: Add mulch to keep the soil moist and prevent weeds. Use your best judgment when mulching. You can add up to 4 inches (10.2 cm), but don't add so much that the berries struggle to grow among the mulch. Common inexpensive substitutes for store bought mulch includes hay, leaves, or bark.

Feeding Needs/Optimal Natural Fertilizers: You can apply a few inches of mature compost and/or an organic fertilizer, such as fish emulsion, to promote healthy, productive plants. A homemade, organic raspberry fertilizer might look like: 4 parts fish meal, 1 part dolomitic lime, 1 part rock phosphate (or ½ part bone meal), 1 part kelp meal.

Pests, Diseases & Solutions: Pruning is very important for raspberry bushes. To avoid disease and pests, make sure to prune regularly. If you see an orange, rust-like affliction on your raspberry plants, remove and destroy the plant. Mildew may occur on the plants. It can be recognized by its white powdery appearance. Treat mildew with lime-sulfur according to the products usage directions. Gray, mold-like fuzz on fruit means that it is rotten. Pluck rotten fruit off of the plant and throw it away, compost it, or feed it to your chickens.

With canes that can grow 8 feet (2.5 m.) long, raspberries can be grown upright on trellises or as espaliers. Growing the canes vertically can help prevent fungal diseases and leave adequate space for beneficial companion plants. When used as companion plants for raspberry bushes, the following plants can help prevent fungal diseases, like cane spot. They can also repel certain insects, rabbits and deer: garlic, chives, nasturtiums, leeks, onions, chamomile.

Harvest and Storage

When to Harvest/Number of days to maturity: Generally, it takes two years of dormancy for raspberry plants to bear fruit. Harvest your raspberries in late summer or early fall. The berries should be rich in color and come free easily from the plant. Some varieties, however, offer a bit of resistance when being picked. Taste a few berries to determine if they are sweet enough to harvest. As the color darkens, the sugar level increases.

How to Harvest: Harvest berries early in the morning when it is still cold outside. This prevents them from smashing as you pick them.

Optimal Storage temperature and conditions: Rinse your berries and eat them immediately after harvesting. Though raspberries will keep in the refrigerator for several days, they are best eaten fresh. Freeze extra raspberries for later use in baking. (even freeze the seeds in small glass containers to use them for smoothies .) Try putting them in jams, preserves, or pies. The seeds are also nutritious so try to make crackers. Raspberry liquid is really sticky so clean it up right away.

Seed Saving: It's recommended to start raspberries from seeds. To remove the seeds from raspberries, place the raspberries into a bowl and mash them with a fork if you choose not to use a food processor. Hold a sieve over a second bowl and pour the mashed or pureed raspberries into the sieve. Mash the raspberries with a spoon to force the raspberry pulp and juices through into the bowl while the seeds remain in the sieve. The seeds need to undergo a cold stratification period before they will germinate.

Mimicking the natural process of cold stratification using a refrigerator helps the seeds come out of dormancy to initiate germination and sprout new plants.

a) Place raspberry seeds in a shallow tray and cover them with room temperature water. Let them soak for 24 hours to hydrate and plump the seed. Drain the water by pouring the raspberry seeds into a colander lined with a coffee filter to prevent the small raspberry seeds from spilling out.

b) Pour seed-starting soil into a bowl. Add water and mix it with your hands until the soil has the consistency of a moist sponge. The soil must be moist, but not wet.

c) Fill 3-inch-diameter seed-starting pots with the moist soil to about 1/2 inch below the rim. Press the soil lightly to reduce air pockets in the container.

d) Sprinkle three or four raspberry seeds on top of the moist soil. Sprinkle a 1/8- to 1/4-inch layer of moist seed-starting soil on top of the seeds to cover them. The seeds are small and you may plant more than three or four accidentally, which is fine.

e) Set the pots on a tray and slide it inside a plastic bag so

the pots remain upright.

f) Set a thermometer inside the refrigerator to make sure the temperature is 34 to 41 degrees F. Adjust the thermostat if needed to reach this temperature. Set the covered pots in an area of a refrigerator where they will not be disturbed or moved during the stratification process.

g) Monitor the pots for raspberry plant sprouts that appear above the soil, which takes three to four months. Remove each pot as sprouts appear and continue growing uncovered in a sunny area. Monitor the moisture and water as needed to keep it moist, but not wet.

Notes:

In most cases, you'll find that red and yellow raspberries are the sweetest colors, especially compared to black ones, which have a deeper, richer flavor. Red raspberries may want to be prioritized for beginning growers. Generally, these can be counted on to be the most hearty of the three colors. Black raspberries are the most difficult of the three colors to maintain. These are more susceptible to disease and environmental changes.

Raspberries are either summer-bearers or ever-bearers. Summer-bearers only bear one crop per season during summertime. Ever-bearers, on the other hand, produce one harvest in summer and another in the fall.

Popular summer-bearers**:** Latham (round, dark red fruit) / Meeker (deep red, extremely sweet, high sugar content) / Willamette (firm and slightly tart) / Brandywine (large, purplish-black fruit) / Black Hawk (deep black, juicy berry)

Popular ever-bearers**:** Amity (medium-sized, dark red, firm, and fragrant) / Fall Gold (golden yellow color, very sweet) / September (tart, juicy, with medium sized fruit) / Heritage (rich in flavor, firm, large fruit size)

Select plants that bear fruit throughout the summer months and well into the fall. By doing so, you can create an ongoing harvest so you can have fresh raspberries throughout the growing season. One possible combination could be mixing Algonquin (ever-bearing) with Autumn Bliss (midsummer-bearing). Another summer-bearing only combo might include: Boyne (early summer), Citadel (midsummer), Encore (late summer) Double Delight (early fall), Durham (fall).

Rose Hips

Description: Rose hips are the fruit, or seed pods, of rose plants. They are usually red or orange but can be purple or black, and they typically ripen in the late summer or fall. Hips and petals are edible and come from the Rosacea family. These deciduous perennial shrubs vary 4 to 8 ft. tall and 4 to 6 ft. wide. For the best hips, plant a Rugosa variety of rose (native shrub rose species) which are said to have the best-tasting hips. These hips are also generally the largest and most abundant. Rugosa roses are known to spread, and are frequently grown as a decorative hedge. Though Rugosa produces the best hips, other varieties of roses do as well. A basic guideline is that hips won't form on roses that produce blooms with tightly packed petals, like tea roses. Rugosas come in white, red and many shades of pink. Rose hips have a bit of the tartness of crab apples. You can enjoy the beautiful flowers all summer long before you have to harvest your hips later. They're a perfect crop for the flower garden and surprise their recipients with good medicinal uses.

Growing Instructions

Optimal Time/Temperature for Germination: Home gardeners don't start roses from seed, you buy cuttings or seedlings. They do not need humidity to thrive and the hardiness zones are 2 to 7. Plant your rose plant in fall before the frost or in spring after the fear of frost has passed.

Optimal Soil Conditions: Choose a location that will be a spot in full sun to partial shade but for the warmer climates, try to protect the plant from those hot afternoons. Rugosa roses will grow into a very dense and thorny shrub, so don't plan on using it too close to any walkways or paths. Brushing up against the rose bush can be unpleasant and prickly.

Use regular soil without added compost, and even add a little sand to assist in becoming well-draining. Preferred soil pH is 5.6 to 6.5. Their extraordinary tolerance for salt, wind, and neglect also makes these shrubs a superb choice for seaside gardens. Their perfume is exquisite and pleasing to many.

Though they can grow into large shrubs, you can certainly grow roses in containers. You will need a large pot, 5 to 10 gallons in size for each rose bush. Water a potted rose a little more often than a garden-planted one, but don't let it get water-logged. Your container should have very good drainage.

Some varieties will send out suckers that run and spread. Removing the suckers early will keep the shrub from becoming a nuisance.

Seed Planting Depth, Spacing and Procedure: Dig a hole large enough for the roots of your rose seedling, and plant it to the same depth as it was in its original pot. You don't need to add any compost or fertilizer, but give it a generous watering.

Best Companion Plants: anise hyssop, bellflower, catmint, baptisia, phlox, echinops, geranium, germander, Lady's mantle, lavender, lilies, salvias, allium, Russian sage, sea holly, euphorbia, wormwood, yarrow, Four O'Clocks, heliotrope, lantana, larkspur, million bells, pansies (violas), Persian shield, angelonia, nicotiana, caryopteris, boxwood, daphne and spirea are reported complements to roses.

Crop Maintenance To get the hips to form, you have to leave your dead rose blossoms on the bush. It may not look that attractive but it's necessary to let the plant produce its fruit. You really need to keep this in mind when your roses are in full bloom. If you're growing them for the hips, you cannot cut the flowers to bring inside. Just enjoy them on the plant. Prune out any dead branches in the shrub and try to remove any that are rubbing against each other.

Moisture Requirements & Solutions: Rugosa roses are extremely hardy, and are known to grow in the wild in the most inhospitable places. Water it regularly until it starts to produce new growth and get established. Once growing well, you should only need to water it during a drought. If you do water your roses, do so at the soil not over the leaves. The water can spread the fungus spores.

Weeding Needs & Solutions: Good companions also act as living mulches to suppress weeds and lightly shading the soil, keeping rose roots nice and cool.

Feeding Needs/Optimal Natural Fertilizers: There are several natural fertilizer products on the market designed particularly for roses. A feeding with these each season will keep your plants strong, though it not strictly necessary.

Pests, Diseases & Solutions: Most roses are purchased in a container or as a dormant root plant. Be sure to choose a disease-resistant variety as roses are very disease-prone. Once the flowers die back, the birds are going to be as interested in the hips as you are. The prickly plants are naturally protected from such pests, but you can still lose a lot of your harvest to determined birds. Perhaps cover your roses with netting, or mount a fake owl nearby. The leaves of your rose plants can be attacked by June beetles or Japanese beetles. You can handpick them off whenever you see them. To treat the roses, rinse the plant with the garden hose and then apply insecticidal soap or Neem Oil. Japanese beetles can cause damage and should be removed when spotted to prevent them from laying their eggs.
Roses can also suffer from stem canker, a fungus that usually attacks the stems but can also effect the flowers. You will first notice brown or reddish patches on the stems of your roses, that eventually dry out and leave a shrunken lesion on the branch. If it goes all the way around the stem, the branch will die off above that point. A natural fungicide or insecticide for vegetables or fruits will work.

Harvest and Storage

When to Harvest/Number of days to maturity: Your plants will likely produce some small hips even after the first season, but they won't be a full crop of them until the second year. The best time to harvest your rose hips is after the first light frost has nipped the leaves, but before you experience a hard frost that freezes the hips. Light frost helps sweeten the flavor. The hips should still be firm and have good color.

How to Harvest: Roses will bloom (and therefore produce hips) on the outside of the shrub, so you shouldn't have to reach in between the prickly branches to snip off the hips. Even so, it's a good idea to wear gloves at harvest time. Leave the shriveled or dried rose hips on the plants for the birds to enjoy; they won't be as tasty and may be too mushy to pick.

Waiting until after a frost is also good for the plant, since cutting the hips before frost could encourage the rose to send out new growth that will be killed back at the next frost. Fully ripe hips can often simply be plucked off the rose canes. Or you can clip them off with a knife or scissors.
Orange hips are not quite ripe, but deep red ones are over-ripe. You have to judge the right color in between to get the highest levels of vitamin C. They should be just slightly soft, not mushy. Spread them out in the sun and let them dry until you notice their skins starting to wrinkle up slightly. You need to slice each hip in half, and scrape out the little seeds. Once the seeds are out, leave the hips to dry out completely. Another way to dry is to spread the hips out over baking trays rays and dry them in an oven or dehydrator set to 110 F until the hips are dry and brittle. When completely dry, store them in airtight jars.

Optimal Storage temperature and conditions: After they are dried, you can store them in the refrigerator for several months. If you freeze them, they will keep for a year or longer. They also contain a large amount of vitamin C (20 times more C in them than oranges).

Rose hips make great jelly, sauce, syrup, soup, marmalade, ketchup, seasoning, and even fruit leather. To get a sense of the taste of rose hips, start out by brewing yourself a cup of rose hip tea. If you're making jelly, you don't need to remove the seeds. Don't use aluminum pans or utensils that could discolor the hips; aluminum also destroys the vitamin C in rose hips. Stainless steel is okay. When making jelly, rose hips are often mixed with other fruits, such as apples or cranberries. To extract the juice to make jelly, remove the blossom remnants and stems from the rose hips. Wash the hips in cool water. Add the rose hips to a pan, cover with water, and simmer for 15 minutes. Cool, then strain through a cheesecloth into a container. One pound of rose hips equals about 2 cups of juice.

Seed Saving: Remove the seeds from the ripe (they turn color) rose hip. Use a knife to slice through the rose hip, remove the seeds and rinse off the pulp surrounding the seed. This pulp prevents sprouting. Store the seeds in a cool moist environment. Some rosarians place the seeds on moist paper towels inside a sealed plastic bag. Others plant them in small containers or flats filled with moist potting mix. Place these in the refrigerator for at least 6 preferably 12 weeks. Remove them from storage and grow them like your other seedlings indoors. Transplants can be moved outside after the danger of frost has passed.

Notes:
For the healthful impact, use rose hips when they are fresh because drying will cause them to lose most of the vitamin C.

The intensity of flavor will depend on the type, color, and soil conditions. The darker the petals, the more pronounced the flavor. All roses petals are edible, but before consuming, remove the bitter white portion of the petals.

Don’t use rose hips from plants that have been treated with a pesticide that is not labeled for use on edibles. If you're not sure, it's best to avoid using any pesticides if you plan to consume the hips.

Saskatoon Berry

Description: This deciduous shrub/tree is from the Rosaceae family. It has many common names: Serviceberry, Western Serviceberry, Indian Pear, Prairie Berries, Juneberries, Shadbush, alder-leaved serviceberry, and downy serviceberry. It grows anywhere from a height of 8 to 30 ft. and reaches 6 to 15 ft. in width. Its fragrant, pendulous white blossoms in April and May attracting butterflies with its five long pedalled flowers appearing in clusters on thin stalks at the ends of branches as the leaves are growing. In summer, juicy purple berries abound and in autumn the colors switch when the oval leaves turn from bluish green to brilliant shades of red, orange and yellow. The bark is smooth and grey with vertical lines on larger trunks, which curve to one side and the shrub/tree does not have thorns.

The edible berries which are technically a pome. (Apples and Rose Hips are pomes in the Rosaceae family.) None of the berries are poisonous. Some are sweet and juicy and some (Downy Serviceberry) are dry and tasteless. When red, the fruit looks like Crabapples, and usually has the remnants of the flower dried up on the bottom of the fruit like Rose hips.

Growing Instructions

Optimal Time/Temperature for Germination: Hardiness zones are zones 4 to 9. Very cold winters or very hot summers are not suitable for this shrub's growing habit. Since it is somewhat prone to mildew, humidity can also be an issue. The best time to plant seed is in spring and fall. The seeds do not take long to germinate. Germination in pots can require as little as five days. But you had better `pretreat them for 90-120 days' to increase the germination rates. Then, when the time comes, it is better to check the weather forecast and make sure warm weather is ahead. Keep the extra seeds in an air-tight glass vial and freeze them to provoke dormancy. Add some cotton to ensure low moisture, and your seeds will last for decades.

Saskatoon (Serviceberry) seeds should undergo cold-moist stratification. Luckily, you can cold stratify seeds in a couple of different ways using the fridge if you do not winter sow them outside. All you need is: a spray bottle with water, one paper towel sheet or some sand (either of them will act as the medium), two plastic ziplock bags, and a marker pen to label them.

Open the first baggie. First, wet the medium- spray the sand or paper towel sheet with water. You might want to mist the sand, mix it up, and repeat a couple of times until moist but not dripping water when you squeeze it in your hand. Put enough sand in the bag to cover the seeds. But not so much you will struggle to retrieve them later. Sand works best with big seeds, but since different varieties make seeds of different sizes and shapes, it is better to know both methods. Close the bag, flatten it before sealing it to squeeze the air out, and label it. Now you can toss it in the fridge at a temperature of 37F (3C). Keep it there for `at least two months'.

With a paper towel, the procedure is the same. But it is better to fold it twice before moistening it. In this way, you can squeeze it to check it is not dripping water, and you will still maintain the fold. Put the seed inside the paper towel sheet, fold it over once more, and put it in the second ziplock bag for refrigeration.

Optimal Soil Conditions: Most varieties adapt to different soils and are cold- hardy. But the seeds prefer neutral and well-drained soils and temperatures above 40F (although the optimal temperature is not known). Full sun to partial shade works but it should get a minimum of four hours of direct light per day to ensure proper fruiting of its berries in summer. The best temperature range for sowing is between 70 and 77F (21 and 25C). If growing from seeds, the potting mix is lighter and has better moisture retention than natural garden soil. Plus, it has better drainage and air holding capacity, which allows the plant to grow faster. And it also helps serviceberry seedlings avoid weed and plant pathogens that may already be in natural soil. 30% coarse sand, 60% universal potting soil (preferably, with the pH level just slightly on the acidic side), and10% perlite.

If you do not want to grow your tree in a pot, you might have to amend the soil. Garden soil can have a high clay content. So, the first step is to amend it with sand. A combination of sand and peat will allow for the best results. In the end, you should strive to achieve a mix with: 30% clay, 10% peat, 20% sand and 50% slightly acid soil. Most will like neutral to slightly acidic soils (pH between 5.5 and 7.0). The Amelanchier arborea (downy serviceberry) prefers low pH acidic soils and can grow out of granite rocks in nature. In order to make your soil more acidic, add some peat moss, pine needles or coffee grounds. This will also improve texture and drainage of clay soil.

Seed Planting Depth, Spacing and Procedure: Plant non scarified seeds in late fall in full sun or part shade at a depth of 1/4 inch. Scarified seeds should be planted in the spring. Germination may take as long as eighteen months. Growth rate depends on species, variety and growing conditions. Cover it with mulch and leave. Only a quarter to half will sprout, but plant enough to take that into consideration. They should start showing up the next spring. They are slow to grow at first, then take off in the second and third years.

Space plants 12 to 15 ft. apart or if a hedge is desired, plant them 5 ft. apart. Make sure that water and air get on the root, otherwise, the seedling will suffocate. So, plant more in different places for the best results. Also, growing seedlings in partial shade may amp up the success rate. Adult plants prefer full sun. But if you sow the seeds too late, the heat coupled with the summer sun might be too extreme for the seedling to survive. Also keep an eye out for root suckers and trim them to keep growth under control.

To eliminate the time-consuming efforts involved in seed separation, stratification and planting, you can also collect small, self-sown seedlings from areas near established serviceberry trees. Obtain permission from the trees' owner first. Use a trowel to dig up the seedlings, making sure the root ball is at least a few inches in diameter for very small seedlings and larger for more established ones. Plant seedlings so that the top of the root ball is level with the surrounding soil. Spring planting is best for seedlings.
Water seedlings regularly during dry spells

These berry shrubs can be susceptible to wind damage, so be sure to protect your Saskatoons from any high winds.

Best Companion Plants and Plants that Hinder: Grow serviceberry trees in naturalized groups with other spring flowering trees and shrubs, such as Cornelian cherry and forsythia, or with other berry producing plants to attract birds, such as viburnum and dogwoods. Serviceberry can also be planted at the corner of the home as a foundation shrub and in wet areas where other trees and shrubs can't grow. (grow these where you can see the white flowers and attractive fall foliage from the house.)

Crop Maintenance

Moisture Requirements & Solutions: This shrub doesn't have any special water needs beyond normal rainfall and can be somewhat drought tolerant. In extended periods of drought, however, lasting more than two weeks, or more than a week with daily temperatures over 85F, a deep watering at the base of the tree will help keep it healthy.
Prolonged drought may affect the production of berries,

Weeding Needs & Solutions: Saskatoons do not compete well with invasive weeds, so ensure that your planting area is free and clear of weeds before planting this shrub. Beyond yearly pruning, the Saskatoon Serviceberry requires no special care. If the root system becomes exposed, add some topsoil around the base. A light dressing of manure every other autumn will keep the root system healthy.

Feeding Needs/Optimal Natural Fertilizers: Fertilize young plants in spring with compost or a tree plant food. Older trees don't generally need fertilization. During the first three years after planting your Saskatoon bushes, you'll prune only to remove diseased, broken, or dead stems. Don't forget to remove stems that are healthy but drooping too low to the ground. You'll use sharp clean tools to cut damaged or droopy stems. Later, Serviceberry can be pruned into a small tree on a single trunk, or allowed to grow multiple-trunks and more as a large shrub. Prune in early winter, to reduce sap loss, to shape the tree into the form you like.

Pests, Diseases & Solutions: There are a few pests to be aware of with this shrub, including fire blight, rust, fungal leaf spots, cankers, and mildew. Rabbits and mice may also enjoy chewing on the bark. One natural cure for this is spraying with a solution of water with shaved Irish Spring soap (dissolve one shaved bar into one quart hot water, then dilute with two gallons on water; shake before using). Its seeds are spread by birds. Protect the tree with netting if you intend on harvesting the berries in the summer.

Insects problems can include sawfly, borers, leaf miner and scale. Natural solutions are Soap sprays, Pepper spray, Neem oil, row covers, hand removals, and beneficial insects that will eat destructive insects. One sawfly killer is mixing dish soap and water and spray it directly onto the larvae. This is definitely a fast, cheap, and easy technique to quickly get rid of them. The only problem is that you need to do it daily to make sure you bring their numbers down. Also as simple as it sounds, you can use a strong garden hose with a pressurized nozzle to blast them off. You can manually pick off the larvae with a pair of tweezers and drop them into a bucket of soap water. This works to get rid of sawfly caterpillars (larvae) or worms.

Harvest and Storage

When to Harvest/Number of days to maturity: Young plants will begin to produce berries in their third year. They ripen between late June to early August.

How to Harvest: Ripe fruits are dark and have a dark peduncle, too. The berries form on the previous year's wood and any older wood. New shoots won't be bearing fruit until its next year. The fruit is small reddish or purplish, has several hard seeds, and on most, the flesh is sweet and juicy. Harvesting is easy and they also ripen evenly so you can just harvest the whole bunch. This means that you can easily harvest them by hand. Just make sure not to wait until they're too ripe.

Optimal Storage temperature and conditions: They have a blueberry like flavor and can be used in much the same way for making pies, jams, cobblers, preserves, smoothies, juices, frozen for future use, or eat fresh or dried (in a dehydrator for three hours at 165F). The taste can be somewhat bland owing to being more sweet than tart, and fresh lemon juice is often used to boost their flavor in recipes. Saskatoon sauce to name a few clever ways for including Saskatoon berries in your favorite recipes. Combine Saskatoons with raspberries or strawberries to make a Bumbleberry crisp. By the way, you can eat the seeds, and when cooked, the seeds soften and don't take away from the texture. The branches, twigs, and bark can be boiled into a medicinal tea.

Seed Saving: Collect fruits when they are ripe in early summer, when fully colored. Seeds must be separated from the fruit, which can be done by spinning fruits briefly in a blender, preferably one with a dull blade, and removing the seeds from the resultant pulp. Clean the seeds immediately to prevent any fermentation. Dry for several days on a sheet of newspaper. If necessary, store in airtight containers. Seeds can be sown in fall or, using a cold-stratification method, in spring.

Notes:
There are two Saskatoon Serviceberry cultivars that can accommodate different size and shape preferences: the "Regent" is a compact version that grows only four to six feet tall and wide, and the "Standing Ovation" grows from twelve to fifteen feet high but only two to three feet wide.

Collect seeds from cultivated, domestic serviceberry trees, as those collected from wild specimens will be less viable overall. Seedlings from named serviceberry varieties may or may not come true from seed. Many named varieties, such as "Autumn Brilliance" and "Ballerina," are actually hybrids. Offspring of these varieties will have some but probably not all characteristics of the parent plant. To produce offspring identical to the parents, propagate by rooted cuttings instead of seeds. (Propagation by cuttings can be done, but the results can be disappointing. Not suggested except for a person with a lot of experience doing this.)

The Best way to get this done for free is to transplant root suckers. These plants spread by the roots, so find where a small one is coming up from the roots of a larger one, cut off some of the root with it, and plant in a pot and put where it gets good light, but not direct sunlight. You must keep the soil damp. You can also plant one of these directly in the ground, but again make sure it does not dry out and does not get full, direct sun until it has fully established and is starting to grow again.

Saskatoon will sprout suckers around it, but if you plant in a lawn area where you mow around it regularly, that is a non-issue, though it is good to remember the trunk is very sensitive to damage, so don't hit it or use a weed whacker right against the tender bark or you will girdle the tree and kill it.

The neat thing about Saskatoon bushes is that they don't require a second bush to grow berries, so if you only have room for one, that's not a problem.

Strawberries

Description: Strawberries are a heart-shaped, brightly red, sweet, juicy edible fruit with hardened seed-like achenes dotting the outer skin of the fruit. Each berry has about 200 achenes. It is an herbaceous perennial of the genus Fragaria in the family Rosaceae. They are not actually a true berry, but rather a greatly enlarged stem end of the plant's flower.

Growing Instructions

Optimal Time/Temperature for Germination: strawberries provide an abundance of beautiful red berries for around 5 years. Strawberries are rarely grown from seed. Instead, purchase a strawberry plant or runner from a nursery or mail-order. Pot-grown plants are young strawberry plants that are already established and grown a little. You can sometimes get berries the same year as you plant it, although you may need to wait a year for a full harvest.

Runners are generally a cheaper option. These are seedlings with long roots that are taken from other strawberry plants. These may take a little longer to grow in your garden and to produce a harvest. A June-bearing plant will give you the most strawberries, but it only produces berries once a year in June.

Purchase this variety if you're looking to preserve or freeze your harvest. There are several varieties of June- bearing strawberries. These include Earliglow, Seneca, and Allstar. Ask the nursery or your local extension office which type is recommended for your region. These plants may produce strawberries throughout the year as long as the temperature is between 35–85 °F (2–29 °C), but the harvests are very small. Varieties of day-neutral include Tristar and Tribute. Plant strawberries a minimum temperature of 15° Celsius (60° Fahrenheit) and a maximum of 25° Celsius (78° Fahrenheit). Hardiness zones are 4 to 9. As soon as the ground is no longer frozen, and you do not expect another frost, you can plant strawberries. This is usually in March or April, although you should look up the frost dates for your area.

Optimal Soil Conditions: Look for a spot that will give your strawberry bush 6-10 hours of direct sunlight a day. The soil should absorb water easily as well. Avoid any areas where there is standing water. (To test the drainage of the soil, dig a 12 by 12 inches (30 cm × 30 cm) hole and fill it with water. The next day, fill it again with water and test how long it takes to drain. Ideally, it should drain about 1–3 inches (2.5–7.6 cm) an hour.) Look for soil with a pH between 5.5 and 6.5. (slightly acidic). If the pH of your soil is wrong, you will need to amend it. If the pH is too low, mix lime or small amounts of dolomitic limestone into the soil. If the pH is too high, add sulfur or peat moss into the soil.
You should be able to easy dig through the soil with a trowel. If the ground is still hard, wait a few weeks. The local climate needs to be cool and wet, and the soil is best if loamy. However, for planting day, the soil should be dry beforehand. If it rains, wait a few days before trying to plant the strawberries.

Seed Planting Depth, Spacing and Procedure: Generally, the hole will be between 4–8 inches (10–20 cm) deep, depending on how long the roots are. Remove the strawberry from its original pot, being careful to keep the roots intact. Place the roots in the soil. Push soil over the roots so that the tops are just covered. Water the plant immediately. Only cover the roots with soil. The crown (or thick green stem) should remain above the soil.
Place each strawberry plant 20 inches (51 cm) away from each other**.** If you have more than 1 row of strawberry plants, keep the rows 4 feet (1.2 m) apart. This gives the plants plenty of room to sprawl and grow.

If the plant is in a pot, use the pot as a guideline for how deep the hole should be. Choose a large potting container with drainage holes. The container should have a diameter of 16–18 inches (41–46 cm) to let the plant grow. The holes on the bottom will ensure that the soil drains properly. Fill the bottom of the pot with bottles, small rocks, or broken pottery. Fill about 1/3 of the pot. Drape landscape fabric over the items. This will help the soil drain properly.

The strawberry plant has rather shallow roots, so it does not need the whole pot filled with soil. This will also make the container less heavy, which will help if you need to move the container. Use a multipurpose potting soil with a pH between 5.5 and 6.5. Leave enough space in the container for you to plant the strawberries. If desired, you can add compost to enrich the soil.

Remove the strawberry from its original pot. Gently loosen the soil around the roots with your fingers, but try not to touch or disturb the roots. Set the plant into the hole in the pot. Push or add more soil to cover the tops of the roots. The crown of the plant should remain above the soil. Only the roots should be under the soil. If you have a large pot or growing container for multiple plants, keep the strawberries about 10–12 inches (25–30 cm) apart.

Strawberries need 6-10 hours of direct sunlight a day. Put your pots out on a porch, in a garden, or on a balcony where they can get enough sunshine. You can bring the pots in during the winter, as long as you leave them by a sunny window. If you can't get enough sunlight indoors for your strawberry plant, try putting the plant under a grow light.

If you plant your strawberries in a hanging basket or strawberry pot, remember to rotate the container often so that the plants on the back side get enough sunlight.

Best Companion Plants and Plants that Hinder: First and foremost, borage is a good companion**.** Others are dill, fennel, coriander, sage, caraway, lupin, and the common bush bean. A warning if tomatoes, potatoes, eggplant, and pepper (or melons, okra, mint, bush or bramble fruits, stone fruits, chrysanthemums, and roses) have been grown in the same spot recently (within 5 years), it is best to grow your strawberry plants elsewhere. Otherwise, the strawberry plants may be infected and die themselves. More big no's are gladioli, broccoli, cabbages, cauliflowers, Brussels sprouts, garlic, and rosemary.

Crop Maintenance - Pluck off the first flowers so you will give the strawberry plant a chance to grow more vigorously. You can pull the flowers off or cut them off using gardening shears. For June-bearing plants, remove all flowers in the first year to get a harvest the following year. The next year, do not remove the flowers. For day-neutral and everbearing varieties, remove the flowers until the end of June. Allow flowers to grow afterwards for a fall harvest.

Most strawberry plants will stop producing fruit after 4 to 6 years. The time it peters out will depend on the variety. Remove them when they stop producing heavy harvests.

Moisture Requirements & Solutions: Give about 1 inch (2.5 cm) of water each week. Water the base of the plant. Avoid watering fruit and leaves, as this could cause the plant to develop fungus or rot. For a rough estimate of how much water you need, use about 5 gallons (19 L) of water for every 8 feet (2.4 m) of strawberry plants.

Weeding Needs & Solutions: Spread the mulch around the base like straw or pine needles. Remove the mulch in spring and spread it between the rows to keep the area free of weeds. Weeds can easily overwhelm strawberry plants, especially newly planted ones. Check for weeds once a week. Pull out any weeds by hand, making sure to remove their roots. You can also use a hoe to remove weeds between rows.

Feeding Needs/Optimal Natural Fertilizers: organic options for fertilizing strawberries include blood meal, which contains 13% nitrogen; fish meal, soy meal, or alfalfa meal. Feather meal can also increase the nitrogen level, but it releases very slowly. Manure must not be fresh. There's also old coffee grounds or seaweed fertilizer to use.

Pests, Diseases & Solutions: A wide range of insects enjoy strawberries, including caterpillars, beetles, aphids, and thrips. To keep these at bay, use insecticidal soaps or spray-on neem products on the plants. Drape nets over the strawberries to keep birds from eating them. If you like a natural method use ladybugs as they eat aphids.

Strawberries are susceptible to many types of fungus, such as powdery mildew or grey mold. You can fix environmental conditions by improving the soil with organic matter, making sure the soil is well drained, and following proper watering and fertilization practices. If you notice any discolored or spotted leaves, pull or cut them off the plant to prevent the spread of disease. Pathogens harbored in the soil from previous crops can be the disease culprit, so the best means of control are proper crop rotation methods.

Stress can be caused by planting strawberries in clay or soil with high salt content, too much or too little water, incorrect planting depth, and too much shade. Prevent the spread of disease by sanitizing all gardening tools and gloves after contact with infected plants. If you do buy a fungicide, there are natural copper compounds to work with.

Harvest and Storage

When to Harvest/Number of days to maturity: When 3/4 of the strawberry is red, it's ready to pick. Harvest your fruit as soon as it is ripe; strawberries that sit on top of the soil too long will rot. Some plants can produce twice per year when taken care of properly. The first crop could be ready by summer and second might be ready in early fall. The average amount is one quart of strawberries per plant per year, but growing conditions can alter how much fruit your plant produces.

How to Harvest: Take a bowl or basket to your plant or strawberry patch. Twist the stem to pick it from the bush. Remove strawberries that have started to rot from the plant. It is better to throw them out than to leave them on the plant.

Optimal Storage temperature and conditions: Wash the strawberries in cool water just before eating fresh. Do not wash the strawberries if you're storing them in the fridge**.** Strawberries are like sponges that soak up every bit of moisture, and the more water they soak up, the more quickly they'll spoil. If you wash the strawberries and then put them in the fridge, then they'll spoil much more quickly no matter what methods you use. You can wash them if you plan to store them in the freezer, but take care to get rid of excess moisture or they'll get too icy.

If you're planning to use the strawberries for a recipe in a few hours, or if you know you'll be eating them as a snack by the evening, you can store them at room temperature to retain their fresh taste. Don't store the strawberries in the plastic containers they came in. Though most store-bought strawberries are packaged in these containers, they aren't ideal for storage.

Tupperware is far more durable. (the plastic containers won't let in any air and will make the strawberries spoil faster.) Line the container with paper towels to absorb any excess moisture from the strawberries. Don't crowd the container; leave room so the strawberries comfortably fit. You may need to use several containers for all of the strawberries (or even a colander)

Don't seal the container -- let the strawberries air out instead of being trapped under a lid. Place the open container in your refrigerator until you're ready to eat the strawberries.

To store covered in the refrigerator, hull the strawberries, removing their stems, and then place them face-down on a baking tray, so that the cut part of the strawberries is facing down. Don't let the strawberries touch to make them last even longer. Then, place the baking tray into the fridge to store the strawberries for several days.

To freeze, place the fresh strawberries on a single layer on a cookie sheet after removing their stems caps. Then, place the sheet into the freezer for a few hours until the strawberries are completely frozen. After that, just place the strawberries in a Tupperware container and seal it. You can store these strawberries in the freezer for up to six months. You can store them in any airtight container, like a jar. Wash the strawberries thoroughly when you thaw them and only immediately prior to use. A frozen strawberry will retain most of its flavor and nutritional value. However, it might not look very fresh after thawing out. The strawberries will most likely have darkened in color and may be softer than you remember when you purchased them. This is normal.
Another choice is to store the strawberries as ice cubes**.** To do this, simply wash and hull your strawberries and put them in a blender along with a teaspoon of lemon juice. Blend them until the mixture is smooth and then pour the blended strawberries into ice cube trays. Place the trays into the freezer and enjoy these strawberries at a future date.

Seed Saving: The amount of seeds to sprout a plant that bears fruit will depend on their germination rate. Generally, with every ten seeds, only 4-5 sprouts will reach fruiting stage.

Spot lots of tiny, yellow seeds along the outside of each fruit**.** Place your whole strawberries in a food dehydrator set to 135 to 140 °F (57 to 60 °C), so you can easily collect the seeds. Space the fruit trays by 1 to 2 in (2.5 to 5.1 cm) and let the fruit dry for around 24 to 36 hours. Then, remove the seeds from the dried fruit. If you'd like to save some time, slice the berries in half before dehydrating them. Halved berries only take 7 to 15 hours to dry out. You can also dehydrate berries in the oven, but this takes twice as long as a traditional dehydrator. Simply space your berries on a cooking tray and place them in a 140 °F (60 °C), leaving the door 2 to 3 in (5.1 to 7.6 cm) open.

Strawberry seeds need to be cold-treated before they're planted**.** Pour your seeds into a glass jar and tightly seal the lid on top. Then, slip the jar into the freezer for about 1 month. If you're in a rush, freeze the seeds for at least 2 weeks. If you don't chill the seeds ahead of time, they may not germinate properly. Strawberries are best planted in the early spring months. To plan ahead, collect your seeds in the winter.

Germinate your seeds in a tray before planting them outside. Pick up a bag of seed-raising soil mix from your local garden supply store and pour the soil into a standard-sized seed tray. Then, bury the seeds about 6 mm (0.24 in) beneath the soil. As a general rule of thumb, bury about 2-3 strawberry seeds in each tray. Sprinkle the surface of the soil with water, so the dirt is moist to the touch. Then, secure a plastic dome on top of the seed tray, so the soil stays damp. Set your seed in a bright spot, like a windowsill, that gets plenty of sunlight in the morning. Your strawberry seeds will start sprouting in about 2-3 weeks. (You can also buy strawberry seeds online or from a gardening supply store, if you'd like.)

Notes:

There are 3 main types of strawberries:
June-bearing strawberries, also known as Chandler, Earliglow, Jewel, and Cabot, are harvested annually in the early summer. Day-neutral strawberries, or Seascape, Evie, and Albion, are ready to harvest throughout the summer and autumn months.

Everbearing strawberries, otherwise known as Tribute and Tristar, can be harvested 2-3 times during the spring, summer, and autumn months.

There are also woodland strawberries, which are a type of day- neutral berry. This type of strawberry typically grows on bushes, and produces a pretty small fruit crop overall. June-bearing strawberries won't be ready to harvest until the second growing season.

Ultimately, pick a strawberry type that matches your gardening style. If you'd like to harvest fruit for several weeks and months, everbearing and day-neutral are the best options for you. If you'd rather harvest all your fruit in a really short amount of time, June-bearing might be the best choice. If you plan on growing your strawberries in containers, day-neutral or everbearing are the best options.

If a strawberry stops growing to form a hard spot at the tip, it's because it's packed with water and juices. Basically, it's swelling, and it can't grow anymore. (Picture a balloon. The main part puffs up, but toward the end above the knot, it's stiff. It's the same concept.)

You can't always rely on color to choose your strawberries. Although strawberries will continue to deepen in color once they are picked, they do not continue to sweeten.

Hydroponic : Growing hydroponically means growing in a nutrient solution rather than in soil. Growing strawberries hydroponically ensures that weather is not a factor, and allows you to harvest them all year long. You need only a large bucket or tub for the reservoir, growing containers, wicks, nutrient solution, and strawberry rootstock for delicious strawberries all year long. Though there are several ways to grow plants hydroponically, using the wicking system is the easiest method and requires the least amount of materials. It is also well-suited for small plants, such as strawberries.

You'll want to select a temperate, well-lit location for your hydroponic system. Hydroponic strawberries need a temperature range of 57° F to 70° F (13.8° C to 21.1° C). If you don't have an area with lots of natural light, you'll need to install artificial growing lights. It is recommended that beginners purchase a nutrient solution rather than making their own. This will ensure the ratios of the nutrients are fit for the specific plant you intend to grow.

Strawberries require nitrogen, phosphorous, potassium, calcium, and magnesium to grow properly. You can find nutrient solutions at hydroponic and garden shops.

Pick a large tub or bucket to act as your reservoir. Ensure it is deep enough to hold a lot of the nutrient solution, otherwise you will spend lots of time refilling it. You should also make sure your growing containers will fit on top of the reservoir. Mix your hydroponic nutrients with water according to the package directions. Be sure to use the amount of water directed; too much or too little and your strawberries will not grow correctly. You can use one large trough in which all your plants will sit, or individual pots for each plant. The growing container should rest sturdily on top of the reservoir; be sure to hang or anchor it if it does not.

Prepare your wicks. This is the most important part of the system, as the wicks deliver the nutrients to the plant. Choose something that is absorbent yet resistant to rotting. You may want to experiment and see which type of wick works best for your set-up.
Fibrous rope, rayon rope, nylon rope, cotton rope, tiki torch wicks, polyurethane yarn, wool felt strips, or polyurethane felt strips are all commonly used for wicks. Be sure to clean and rinse all wicks before using to remove any chemicals that could damage your plants. Place your wicks between the reservoir and the growing container. The wicks need to deliver water from the reservoir to growing containers. If you use separate pots, you will also need to use a wick for each one. If you use a trough, add three or more wicks to ensure enough liquid will be able to reach your strawberry plants. Place each wick with one end in the reservoir and one end in the growing container.

Choose a growing medium. This medium will replace the soil that is typically used for growing plants. You'll want to choose a growing medium like perlite or vermiculite for strawberries. Avoid using mediums that are too absorbent, like coconut coir or peat moss, as they may soak up too much of your nutrient solution and suffocate the plant. Saturate your growing medium before filling the container. It is important to soak your growing medium in pH-balanced water prior to adding it to the growing container. Soak your medium for at least 30 minutes before filling the container to ensure the medium doesn't act like a sponge and suck all the nutrients from the root of your plant. Fill the container only ⅔ full, as you need to leave room for your rootstock.

Rootstock will produce fruit within a month or two, depending on the variety. Ever- bearing or day-neutral varieties are recommended for indoor growers. Carefully remove a strawberry plant from its container. Clean the soil from the roots by gently shaking. You can also lightly tap the dirt clinging to the roots with your fingers. Remove any dry, brittle, or dead leaves at this point as well. Carefully rinse the roots under cool, running water. Be extremely careful when you are rinsing the soil from the roots; if you break too many of the root hairs, your plant won't produce as much fruit. Immerse the entire root system in water. Fill a bucket with cold water and soak the root system of your strawberry plant for at least 10 minutes. This will ensure all dirt has been removed as well as prevent the strawberries' runner roots from dehydrating when they are transplanted. Carefully hold the crown of the plant and arrange the roots so that they are splayed over the growing medium. Add enough of your growing medium to fully cover the roots of your strawberry plant. Be sure you don't cover the crown of the strawberry plant; it must have light and air.

Check the reservoir level daily. You'll want to keep a close eye on the reservoir level to ensure your strawberries are getting enough of the nutrient solution. Keeping the reservoir full will ensure the solution has a shorter path to travel through the wick to reach the strawberries. If your level is low, be sure to pre-mix the nutrient solution according to the directions before adding it to the reservoir. Once per week you should flush your growing medium with water. This will remove excess nutrients, such as mineral salts, from the medium that your plant has not absorbed. Hand-pollinate your strawberries. Because there are no bees and birds indoors, you must hand-pollinate your strawberries once the petals are fully opened. Use a small, soft makeup brush or paintbrush to brush pollen from the stamen (male part, brownish in color) to the pistil (female part, yellow-greenish). Be sure to pollinate the entire pistil, or your strawberry plant may not produce fruit.

Harvest your strawberries**.** Strawberries, unlike some other fruits, will not continue to ripen after they are picked. Don't harvest your strawberries until they are completely ripe. When ripe, they will be red and somewhat firm to the touch. Once the berries have grown to a desirable size and turned red, carefully pluck them off the vine. Rinse them thoroughly before eating, and enjoy!

You don't need to use a bubbler to put oxygen in the water but doing so will have a big effect on rate of growth. Roots need oxygen as much as they do water. When using wicks, the air stone is useful. The air in the reservoir is to prevent anaerobic bacteria from taking hold. In practice, if you are replacing the solution and rinsing the reservoir regularly, it can be omitted. If you are like most people and remember to do that maybe monthly, the air stone is a good investment.

(Purchasing a nutrient solution at a hydroponics shop is the best way to ensure you will have all the right nutrients for your plant. According to Garden Culture Magazine, for a fruiting nutrient you will need: 8.00 gr Calcium Nitrate – $Ca(NO3)2$ 2.80 gr Potassium Nitrate – $KNO3$ 1.70 gr Sulfate of Potash – $K2SO4$ 1.39 gr Monopotassium Phophate – $KH2PO4$ 2.40 gr Magnesium Sulfate – $MgSO4 * 7H2O$ 0.40 gr 7% Fe Chelated Trace Elements.)

Thimbleberry

Description: Thimbleberry is a perennial deciduous plant from the Rosaceae family and is in the same genus (Rubus) as raspberry, blackberry, loganberry, boysenberry, tayberry, and dewberry. It is an aggregate fruit composed of small, individual drupes, each individual is termed a drupelet.
Between May and early July is when the clusters of 2 to 7 showy 4cm (1.5 in.) flowers develop and are pollinated by insects (after which berries develop). The berries turn from pink to scarlet when fully ripe and are soft, cup-shaped and full of tiny seed. Thimbleberry is an upright shrub with multiple, thornless stems, or canes no more than 1.5 cm (0.59 in) in diameter that can reach heights from 1-2.5m (3-7 ft). They grow in large clumps which spread through the plant's underground rhizome. The bark is distinct in that it peels in tiny fragments. The sizeable palmate leaves measure between 10-20 cm (4-in.) across with five lobes that are somewhat reminiscent of a maple leaf.
Fine hairs are on both of the leaf, making it soft to the touch. No other member of the Rubus family has this characteristic. Its broad soft leaves can be used to make a quick pouch for holding gathered berries and can even provide use for a bathroom duty. Thimbleberry fruits are smaller, flatter, and softer than raspberries and the young shoots, roots and leaves have been used to treat many ailments. Both the leaves and the bark of these plants have astringent properties.

They're also called purple flowering raspberry for their showy blooms. This species of thimbleberry is native to the Eastern third of the US. In the pacific northwest, there's another version of white flowering thimbleberries. They're native to the western US, as well as Canada.

Growing Instructions

Optimal Time/Temperature for Germination: Being a hedge plant, it can grow in temperate climate. The hardiness zones are 3 to 8 and with the right care in hardiness zone 9. Winter, spring, and summer can be a planting season. Chilling hours requirement is 2-3 months and germination time will be 2-4 months. Plan the plant spacing for 3-4cm (1.2-1.8 in.) so to sow them in different pots it's easier to follow in control and care for the seedling transplanting.

Optimal Soil Conditions: Thimbleberries can tolerate partial to almost full shade, although the shrubs will grow more lush with more light. They can be found at high and low elevations at moist areas like a forest's edge and in forest clearings. Thimbleberries like its soil moist and the high humidity. Try vermiculite and peat moss to blend in. Soil pH maximum tolerance is 7.2 alkalinity and a minimum acidity of 4.8. (can also utilize them for erosion control on steep hills and stream banks.)

Seed Planting Depth, Spacing and Procedure: Dig hole bigger than the root ball at least 50-100% bigger, add dead leaves rich soil, organic matter, humus and mix all together and plant it, also recommend to put stick or something to support the plant for trellising.
Growing is also possible in a pot / planter /flowerpot / containers but it is not possible to grow it indoor as houseplant.

Yes, start with pot that will be 40-60% more than the root ball, every time that the plant arrive to full capacity need to switch to bigger until arrives to desirable size, switch the soil in mid of the winter, better to use this method because the soil lose the viability over time and it's efficient care for the soil, need average amount of water with good drainage better water with less minerals, in order to keep the soil moist better to put mulch of pines, peat soil or other acid soil with humus and a lot of organic matter. (Plastic wrap over it will assist for humidity.)

Allow ample space between plants. If you're planting them in rows, leave 8 feet between rows and 3 feet between plants.

Best Companion Plants: Garlic, Chives, Onions, Chamomile, Yarrow, and Chervil may work as companions and even these trees- Fir, Pine, and Redwood. Surround prized bushes or herbaceous plants with a thick planting of garlic and wormwood to offend rabbits' discriminating sense of smell.

Crop Maintenance

Moisture Requirements & Solutions: Moist is its best condition so anywhere from average to big amounts for water care (but not soggy soils).

Weeding Needs & Solutions: Weed removal for young plants is needed and also protect from winds and heavy snow.

Feeding Needs/Optimal Natural Fertilizers: As a wild plant, they don't really require fertilizer. (Commercial fertilizers can actually damage the thimbleberry canes.) If you do add compost, be sure that it's well decomposed. Compost that is too fresh and still decomposing can damage their roots and actually cause their roots to compost right along with the other materials.

Pests, Diseases & Solutions: Birds and small mammals like the berries so Thimbleberry will host them and pollinators. Beside the below listing, root rot, redberry mite or aphids, and virus complexes may complicate the plant's life.

Black spot, powdery mildew, and rust are a terrible trio of fungi, which can attack and destroy your plants. Scientists have found that two uncoated aspirin tablets (325 milligrams each) dissolved in 1 quart of water and used as a foliar spray can thwart these diseases. / It's a little-known fact that chamomile tea has antibacterial and fungicidal properties that will aid plants suffering from fungus and mildew.

Make a simple brew for sickly plants.
Place 16 chamomile tea bags (or 2 cups of dried chamomile flowers) in 2 quarts of water, and simmer for 20 minutes. Turn off the heat, and allow the tea bags to steep for several hours. Strain, if using dried flowers. Use the tea to irrigate tender seedlings (from the bottom) to prevent damping off, or use as a foliar spray to battle diseases on plants. Never let anything go to waste so add to your watering can as well.

If plagued with black spot or powdery mildew, mix as atonic spray: 2 teaspoons of baking soda and 1/2 teaspoon of liquid soap or Murphy's oil soap in 2 quarts of water. The tonic protects for months.

For plants with a fungal, viral, or bacterial disease, cook up a garlic soup batch: puree two cloves of garlic in a blender for a minute. Slowly add 1 quart of water, and continue blending for about six minutes. Strain the mixture, and add 1/8 teaspoon of liquid soap. Pour the liquid into a storage container and cover tightly. When you're ready to take action, mix 1 part garlic soup with 10 parts water into a spray bottle and apply the mixture to the top and undersides of your sick plant's leaves. (take caution not to spray beneficial insects and larvae.)
Scientists have discovered that garlic leaves are potent in their own right, so you can also puree two handfuls of leaves instead of using cloves.

Make your own deer repellent. Rotten eggs and beef bouillon are ingredients in many commercial deer repellents. Break 1 dozen eggs into a bucket, add 4 cubes of beef bouillon, and fill the bucket with water. Cover it with a lid, and let the mixture sit until it stinks. Add 2 tablespoons of liquid soap per gallon of liquid, and pour the mixture into a spray bottle. Hold your nose and do not spray it directly on plants that you will consume; instead, spray it around them to create an invisible barrier. For edibles, use the garlic soup.

To discourage moles, sink a line of glass bottles into the soil with about 1 inch of neck exposed. The whistling sound of wind blowing across the bottle tops disrupts moles' sensitive hearing and hinders their ability to find prey. Poking several noisy toy windmills into the soil will also disturb moles, as the vibrations will drive them away.

Slugs, snails, and Japanese beetles will not like you throwing a handful of larkspur or delphinium leaves into a blender adding 1 gallon of water to spray onto plants. The deadly alkaloids (deliosine and delsoline) in the leaves will zap beetles.

Mix 2 T. of red-pepper powder and 6 drops of liquid soap in 1 gallon of water. Let the mixture sit overnight, and stir thoroughly. Pour the mixture into a spray bottle, shake well, and spray weekly on the tops and bottoms of the leaves. This will protect plants, especially members of the cabbage family (including broccoli, cauliflower, kale, and brussels sprouts), from destructive insects.

Harvest and Storage

When to Harvest/Number of days to maturity: It will take 2-3 years to bear fruit and harvesting begins in springtime. Thimbleberries ripen just a few berries at a time over the whole season. It makes it nearly impossible to pick enough for a thimbleberry jam, but also means that you get months of snacking on just a handful of fresh fruit every day.

How to Harvest:
The berries themselves are soft and fragile. They begin to spoil literally hours after harvest, so you won't ever see them in the grocery store. That's all the more reason to grow them yourselves.

Optimal Storage temperature and conditions: Eat raw, bake cakes, cook, jam, or into juice are options.

Seed Saving: Seeds are not recommended for planting but instead use vegetative reproduction. That means not grafting either but by doing a cutting method where you simply bend a branch over and cover it with earth to reproduce vegetation in the springtime. It could take 2-3 weeks to grow roots for vegetative reproduction. (should the branch break, it's a cutting.)

If you do save seeds until sowing, go with a dry and dark place like a refrigerator. To start by seed, you need to mimic their natural environment and scarify and cold stratify the seed. It's more common to start thimbleberries from cuttings or dormant rhizome divisions (can be divided every few years to establish new plantings).

Notes:

You can prune in the end of autumn by pruning inside branches and then design your shape. Prune in a way that it's will be easy to pick the fruits. Some gardeners like trellising for support and then others will prefer not to trellis or even prune so they grow wild and free for the best productions. It's considered an invasive species by the way.

It should be noted that the Thimbleberry's large leaves are toxic, unless boiled in a tea. Pregnant women shouldn't use any part of the Thimbleberry, and excessive use can come with adverse effects for anyone.

Walnut Tree

Description: The walnut tree belongs to the family of the Juglandaceae. A walnut is the edible seed of a drupe, and thus not a true botanical nut but is commonly consumed as a nut. It is a good idea to plant at least two trees to assure good fruit production. Black Walnut is self-fertile, but often the pollen is not shed when stigma is receptive. Use at least two varieties or seedlings to assure good crops. Walnut trees are tall and are often some of the tallest trees in the area. Their average height is 70–80 ft (21–24 m), but they can even reach up to 150 ft (46 m) on rarer occasions. On average, grown walnut trees are 2–4 ft (0.61–1.22 m) in diameter. The bark has deep ridges that, from a distance, resemble a diamond pattern.

Growing Instructions While there are several species of walnut, most notably the black walnut and English walnut, basic planting and care instructions are all similar. Still, due to the existence of hundreds of varieties adapted to different climates and disease resistance, planting nuts from relatively nearby is recommended. Walnut trees can produce flavorful nuts and durable, attractive timber, but home gardeners should be aware that they often kill nearby plants! Also, keep in mind that walnut trees don't start producing nuts until about 10 years after they have been planted and the nut production will peak at about 30 years after planting. You can plant walnut trees from nuts, which are often free to collect but tedious to prepare, or seedlings, which usually need to be purchased but typically have a higher success rate. Walnuts from a grocery store are unlikely to have the moisture necessary to germinate. Even if they do, the nuts were likely produced by a hybrid tree or a tree variety suited for a different climate, making success in your area unlikely.

Optimal Time/Temperature for Germination: If you plan to start a walnut orchard to produce nuts or timber, ask a local forester or look online for a species and variety specialized for your climate and your intended purpose. Ideally, purchase walnut seed from trees within 100 miles (160 km) of your planting location, as these may be better adapted. Walnuts typically grow in USDA hardiness zones 4—9, or areas with a -30 to +30°F (-34 to -1°C) minimum temperature, but some varieties are better suited to cold than others.
Walnut seeds can be planted in any pots in the green house. Just keep the dirt moist.

Optimal Soil Conditions: All walnut species require high quality soil, and this step is especially important if you are starting a walnut orchard. Choose a location with well- draining, loamy soil at least three feet (0.9 m) deep. Avoid steep slopes, ridge tops, rocky soil, and soil with large amounts of clay. The lower areas of north-facing slopes are acceptable in rolling or mountainous terrain (or south-facing, if located in the Southern Hemisphere). Walnut is fairly versatile when it comes to soil pH. Soils between
6.0 and 6.5 pH may be best, but anything from 5 to 8 should be acceptable.
For the first 2 - 3 years, no full sun is needed and the shade makes the tree grow taller. After that, they need plenty of sun.

Seed Planting Depth, Spacing and Procedure: After the ground has thawed, and at least 90 days have passed (note stratification section), remove the seeds from their cold environment. Viable seeds should have a small sprout emerging. Keep the seeds moist for a full week before planting. Remove existing vegetation from the planting site before planting, as they will compete for the same nutrients the walnut tree or trees need. For an orchard-sized planting, cultivating the field to aerate the soil is also recommended.
Dig small holes, about 2–3 inches (5–7.5 cm) deep, and place the walnuts sideways at the bottom of these, then refill with dirt. When planting multiple trees, place the holes 12–17 feet (3.7—5.2m) apart, in a grid position.
Optionally, you may plant two or more nuts in each spot, 8 inches (20 cm) from each other. Once the seedlings have grown for a year or two, remove all but the healthiest from each spot. See the tips section for an alternate planting method to protect against squirrels and other small animals.

Should you go with seedlings instead, measure the seedling's diameter 1 inch (2.5 cm) above the root collar, where the roots meet the trunk. Select seedlings with a minimum diameter here of 1/4 inch (0.64 cm), and preferably larger. This is the most important measurement for predicting quality. Bare-root seedlings, sold without any soil, should be planted in early spring, before bud growth, and should be planted immediately after acquiring. Containerized seedlings can handle later planting dates and drier soils, but are typically much more expensive.
Place the seedlings in holes that are twice as wide in diameter as the seedling roots, and just deep enough to bury the roots. For best results, backfill with one part compost for every three parts normal soil. Tamp down the soil and water thoroughly. Plant the seedlings 12–17 feet (3.7—5.2m) to get the most nuts from your trees. Keeping seedlings 10–12 ft (3.0–3.7 m) apart is best for timber production.

Best Companion Plants and Plants that Hinder: You can see a comprehensive listing of food, flowers, shrubs, vines, and trees of what can (200 items) and cannot (42 items) grow near its juglone toxin over at growitbuildit site.

Crop Maintenance

Moisture Requirements & Solutions: For at least the first two years after planting, whether grown from nut or seed, the walnut tree needs supplemental watering, especially during dry or warm weather. Weekly waterings are best for newly planted trees, but you can water less as the tree grows. Give the plant a thorough watering, but do not water again until the soil has mostly dried. Frequent watering can harm the plant. After two or three years, the trees only need to be watered during the hottest time of year or during a drought, about one to three times a month.

Weeding Needs & Solutions: Care for seedlings by keeping the area around them free of sod and weeds, which will compete with the growth of small seedlings. Remove sod and weeds by hand or by laying fabric weed barrier. Larger seedlings can be treated
with mulch to keep weeds at bay, using about 2 or 3 inches over the root zones. Do not use mulch on plants that have not yet emerged from the soil, as it can block the sprout from growing. Wait until the seedling is woody and has developed roots.

Feeding Needs/ Optimal Natural Fertilizers: Fertilization is somewhat controversial, at least for black walnuts, because it can assist competing weeds more than the tree if the soil is already rich in nutrients. Wait until the trunk is "pole" size, or at least 4 inches (10 cm) in diameter measured 4.5 feet (1.4 m) above the ground. Do not use potassium fertilizer or composite one that includes chlorine since walnut trees do not like salinity. For the increase of fat, protein and aroma in the kernel of the walnut, choose potassium sulphate base fertilizers.

Pests, Diseases & Solutions: Squirrels are a common sight in walnut groves, and can take an entire crop of nuts if not controlled. Cover the trunks with plastic tree guard to keep them from climbing them, and prune away branches less than 6 ft. (1.8 m) from the ground if you are able to do so without causing knots that diminish timber value.
Other pests such as caterpillars, aphids, and flies vary by region, and may not harm your tree if they are active late in the growing season. Consult a nearby forester, an experienced walnut grower, or videos for information specific to careful pruning of the walnut tree. Keep livestock away from walnut trees of any size, as the damage they cause may even make the timber value of adult trees worthless.

Harvest and Storage
Keep the nuts moist over the winter for 90- 120 days. Walnuts, like many plant seeds, need to experience a moist, cold environment before the plant awakens from its dormancy and emerges from the shell. This takes 3–4 months for walnuts, depending on the variety, during which they should be kept moist. Keeping seeds in an environment for this purpose is called stratification, and for walnuts can be done in one of the following ways: Keep small amounts of walnuts in moist peat moss or moist sand, inside plastic bags kept in a refrigerator, or in another location between 34 and 41°F (2– 5°C). For a large quantity of nuts, dig a pit in fast-draining soil, 1 to 2 feet (.3 to .6 meters) deep. Fill this pit by alternating single layers of nuts with 2 inch (5 cm) layers of sand, leaves, or mulch. Cover the pit with screening to keep out rodents.

When to Harvest/Number of days to Maturity: harvesting may start from early September to early November. Any nut that fell spontaneously from the tree at harvesting season is a safe bet to replant. The outer husk is a good indicator as well, if it started deteriorating, that means it's ripe. If the harvested nuts are allowed to dry out, or removed before stratification is complete, they may take a full extra year to start growing, or fail to grow entirely.

How to Harvest: In the autumn, gather nuts that have fallen from walnut trees, or gently hit walnut branches with a lightweight pole to cause ripe nuts to fall. Even when ripe and fallen, most nuts will still be encased in a thick green or brown husk around the nutshell. Warning: walnut husks can stain and irritate skin and clothing. Waterproof gloves are recommended.

Optimal Storage Temperature and Conditions: Walnuts can grow without the husks being removed, but many people remove the husks to check the walnuts inside are undamaged, and to make them easier to handle. To remove the husk, soak the walnuts in a bucket of water until the outer husk is soft to the touch, waiting up to three days for the hardest nuts. Crack and peel off the softened husk by hand. If the husks have dried out, they can be almost impossible to remove. Try driving over them in a car. For a larger quantity of walnuts, run them through a corn sheller, or even rotate them in a cement mixer with gravel and water for 30 minutes.

Seed Saving: Preparing walnut seeds can take months of waiting, and success rate can be low. You may choose to purchase a seedling and skip to that section instead. Before using either method, be aware that walnut trees, especially of the black walnut species, release chemicals into the soil that kill many nearby plants, including pine trees, apple trees, tomatoes, and others. This, along with their massive size and sometimes aggressive spreading of new walnut plants, can make them unpopular in cities and suburbs.

Notes:
Black walnut is highly expensive and in-demand for its timber, while English walnut (also called Persian walnut) is commonly grown for either nuts or timber.
If you are raising the walnut for timber, it is important to prune early to ensure a straight trunk, leaving one "leader" branch at the top of the tree and guiding it straight and upright over the next one or two growing seasons.

Saplings grown for nuts can be left alone until after thinning, but subsequent pruning is wise for black walnut trees, as these are usually sold for timber eventually, even nut varieties.
If you have not pruned trees before, especially saplings, finding an experienced pruner to help you identify leaders and important branches is recommended. If the top of the tree is forked, bend the best leader upright and tape it to other branches as support, then cut off the tip of the supporting branches to prevent growth.

Most orchards begin with more plants than the area can support. Once the trees are large enough that the branches are beginning to run into each other, select the healthiest trees that display the characteristics you value, typically a straight trunk and rapid growth. Remove the rest, but avoid clearing too much space that can cause weeds or even competing trees to grow.

(If the leaves are dead on a tree, peel off a tiny, thin layer of bark. If the trunk is still green, your tree still has a chance to make it.)
Walnut leaves can spread chemicals that kill other plants. Collect them and compost until they degrade completely to make them safe for use as mulch. Roots from the black walnut tree are toxic to some animals, especially horses. If you have a walnut tree on your property, keep your pets or livestock away from it.