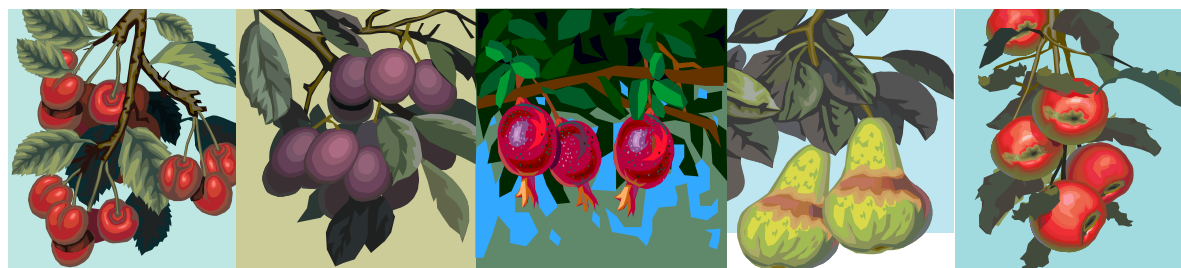


Deciduous Fruit & Nut Trees In Your Garden

University of California Cooperative Extension
Stanislaus County



Anne Schellman, Horticulture Program Representative
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Deciduous Fruit & Nut Trees in Your Garden

The term “deciduous” refers to a tree that loses its leaves during one season, most notably in fall. Deciduous fruit and nut trees lose their leaves in fall, and then have a new crop of leaves in spring. Non-deciduous trees such as a citrus are referred to as “evergreen” and will not be discussed in this guide.

California is often called the “breadbasket” of the United States. Our state has been the number one agricultural producer for over 50 years. The access we have to fresh fruit, nuts and vegetables is truly fortunate. The only way to have fresher fruit is to grow it in your home garden. The climate in Stanislaus County is perfect for growing many fruit and nut trees. Planting, harvesting and eating fresh produce can be a highly rewarding experience.

Local nurseries and garden centers have a wide selection of fruit and nut trees available in two different forms: bare-root and container stock.

In fall, nurseries carry a list of bare-root trees. This list is available early so gardeners can choose and order trees early. Most nurseries offer a discount for pre-ordering fruit trees.

Bareroot trees arrive in a dormant state, and need to be planted immediately. If this cannot be done, the trees can be

“heeled in” into soft ground and kept moist until planting. Do not keep a tree in this state for more than a week.

As spring approaches, bareroot fruit and nut trees not sold are planted into containers by nurseries. Some nurseries only sell containerized fruit trees. Reputable nurseries will not allow trees to be sold until the roots are well-developed. Ask to examine the root ball on a fruit or nut tree before purchasing it.

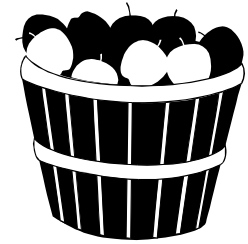
Most nurseries will offer to prune your bareroot fruit or nut tree before you take it home. This can be very helpful for gardeners just starting out. If you would rather prune it yourself, cut the tree to knee height (18-24”).

Trunks of both bareroot and containerized trees should be protected from sunburn after planting. Nurseries and garden centers often carry a tree trunk whitewash that can be purchased for this purpose. Or simply use a 1:1 mixture of white interior latex paint and water. Paint the entire tree trunk.

TREE TYPES

For purposes of this guide, fruit and nut tree information is assembled into several categories. “Stone Fruits”, “Pome Fruits”, “Nut Trees”, and “Other Fruit Trees.” While all of the trees in this publication are technically fruit or nut

trees, this type of categorization will allow trees with common characteristics to be described together.



FRUIT & NUT TREE KNOWLEDGE

Nearly every kind of tree that produces food has been manipulated by humans. Often a species in the wild has one or more desirable characteristics, but some undesirable ones too. Plant breeders work to find the perfect combination of desirable characteristics in a tree, such as a certain flavor and/or texture. Once found, the top part of this tree is grafted onto another tree whose roots have desirable characteristics, such as resistance to certain soil-borne diseases. The top part of a grafted tree is known as the scion (pronounced “sigh-en), and the bottom is known as the rootstock.

There are numerous fruit and nut cultivars from which to choose. Cultivars are varieties of fruit and nut trees that continually perform well under cultivation.

In summer, many nurseries offer a free fruit tasting where various cultivars of fruit can be tried. Some nurseries also have employees known as “Master Fruit Tasters” who can help describe various

Deciduous Fruit & Nut Trees in Your Garden

cultivars of fruit. These Master Fruit Tasters are certified by Dave Wilson Nursery in Hickman, California.

For gardeners with small yards who would like several types of fruit but only have room for a few trees, try “three in one” or “four in one” trees. Several cultivars of the same fruit are grafted onto one tree. For example, a multi-graft cherry tree might include black tartarian, bing, lapin and/or van. There are also “fruit salad” trees that combine several types of fruit such as apricot, plum, peach and/or nectarine on a single tree.

BEFORE YOU PLANT

Pruning, thinning, irrigating, fertilizing, pest management and harvesting are all essential parts of having a home orchard. This guide will simplify needed steps and help you eliminate unnecessary chores.

As you move through the guide, each section will highlight tasks that need to be done and when. Pages 6-10 highlight training, pruning, and thinning. Pests, diseases and how to treat them follows on pages 10-15. Pages 15-18 discuss how to harvest and store your crops. On pages 20-23, each season has a list of possible tasks that must be done if certain insect pests or diseases are found. Pages 24-33 lists fruit and nuts by

cultivar. All of the pages will help when choosing which types of fruit and nut crops you wish to plant.

Once you have read and understood this publication, you may decide to purchase a more detailed guide regarding fruit trees and their care. “The Home Orchard Guide: Growing Your Own Deciduous Fruit and Nut Trees” by ANR Publications from the University of California Cooperative Extension is a great choice. This publication is available for purchase at 3800 Cornucopia Way, Suite A in Modesto, or it online at <http://anrcatalog.ucdavis.edu>

TREE CHARACTERISTICS Standard, Semi-dwarf, Dwarf & Fruit Bush

Nurseries and home garden centers carry trees labeled according to height. A standard tree is one that reaches the full size that is normal for that type of tree. A semi-dwarf tree is one that has been grafted onto a rootstock that will reach a certain percentage of the size of a standard tree, depending on the rootstock. The label “semi-dwarf” is misleading, because if the tree isn’t pruned and trained properly, it can grow almost as large as a standard tree. Truly dwarf trees are usually too small to produce enough fruit for a home garden, but they are available as peach, nectarine

and apple trees.

“Fruit bush” is a term given to a fruit tree that has been trained and pruned to stay 6-8 feet tall. This style of training a tree eliminates the nuisance of too much fruit as well as ladder climbing.

Alternate Bearing

Home owners often ask why fruit and/or nut trees bear heavily one year, and then have sparse fruit the following year. This phenomenon is known as alternate bearing, and is especially prevalent in apples, apricots, and pistachios. Fruit thinning during heavy years can help correct this problem.

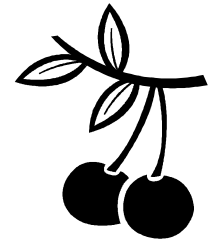
Pollination in Fruit & Nut Trees

Some fruit and nut crops need a pollinizer, another tree whose available pollen helps pollination take place. This is not to be confused with a pollinator, which refers to insects such as bees that carry out the pollination process. In many cases, purchasing just one tree variety will not be enough to ensure your tree will bear fruit.

The fruit and nut tree guide on page 24 lists which trees need pollinizers and what trees work best.

One way to eliminate the worry of proper pollination is to purchase a “three-in-one” or “four-in-one” type tree.

Deciduous Fruit & Nut Trees in Your Garden



TREE “TASKS”

Here is an overview of things that need to be done during the year.

Pruning Deciduous Trees

In Stanislaus County, deciduous fruit and nut trees are pruned most heavily during the dormant season, which is December-February. Pruning is essential to ensure the overall good health of your trees, to maintain tree size and to reduce fruit numbers. Pruning can be done during fall, winter, or just before the buds on the trees begin to form.

Summer pruning in deciduous trees is done between May and August to encourage the development of desired branches. In mature trees, prune to reduce the overall size of the tree.

Not all deciduous fruit and nut trees have the same pruning requirements. Read about the trees you have chosen before making pruning cuts, as in some cases pruning mistakes cannot be undone.

Training

Young fruit trees can be trained into several forms. These forms depend on the type of tree and the height desired. Gardeners with plenty of space can simply let a tree grow freely, but will need a ladder to pick much of the fruit.

Fruit Thinning

Tree crops that are normally thinned are apple, pear and Asian pear, apricot, nectarine, peach, plum and persimmon. Nut crops and cherries are not usually thinned. In some trees, more fruit is produced than the tree branches can hold. Not thinning a tree can result in broken branches and smaller fruit.

Fertilizing

Home fruit trees do not usually need soil amendments or fertilizer during the first growing season. However, during their lifetime, fruit trees will need additional nutrients for growth and fruit production. In the second summer after planting, apply 4 ounces of a 16-16-16 fertilizer, then apply the same amount in fall. In the third year, apply about 6-8 ounces during the summer and also the fall. Follow instructions on fertilizer packaging for additional years, and be careful not to over fertilize.

Using compost is a great way to recycle yard waste as well as add nutrients to the soil. Compost releases nutrients slowly, and is beneficial in improving water penetration.

If you use animal manures for fertilizer, do so with caution, as they may contain harmful salts. Manures are organic materials, so their nutrients are not

available until they decompose. Animal manures should be worked into the soil because when left on the soil surface, some of their nutrient value may be lost.

Irrigating

The amount of time spent watering a home orchard depends on the number of trees and the type of irrigation system. For one or two trees, hand watering works well. For more trees, a drip irrigation system may be the best method. Check emitters weekly to ensure they have not become damaged or clogged.

Fruit trees do best without competition from a lawn. If a fruit tree is already established in a lawn, it will need more than just sprinkler water. Also, remember to keep lawn and groundcover at least six inches away from the trunk of the tree to minimize competition for water and nutrients. When using such products as lawn fertilizer that may contain weed killers, be aware that small amounts of these products can be harmful to nearby trees.

Water penetration depth depends on soil type. If soil is sandy, water will drain

Deciduous Fruit & Nut Trees in Your Garden

quickly and needs to be applied more often. Clay soils drain slowly, and caution must be taken so soil does not become waterlogged. Tree roots also need oxygen to survive, so allow soil to dry out between watering. In summer, ensure that soil does not dry out for too long before applying more water.

Fruit trees need deep, infrequent watering. Water should reach a depth of several feet for maximum benefit. During the dry season (May-October), water trees deeply each month.

Pest Management

Many insects and diseases are present in home gardens, but not all are damaging to fruit trees. Identifying the insects in your garden is the first step in pest management. *Pests of the Garden and Small Farm* by Mary Louise Flint has information on how to identify pests.

If the insect is identified as a pest, control measures can be determined. Common pests of fruit and nut trees are mentioned in this guide, but more information on control measures can be found online at the UC IPM Website at: <http://www.ipm.ucdavis.edu/PMG/GARDEN/fruit.html>.

Most homeowners enjoy birds as frequent visitors in their landscape. Birds reduce pests in the garden and most of

their activities can be enjoyable to observe. However, birds that devour your crop are not quite as welcome. If fruit and nuts are not protected, birds like house finches and starlings can wipe out an entire crop.

The best way to prevent bird damage is to use netting. Build a frame out of plastic pipe to place around a tree and then attach the netting. If this isn't practical, simply throw the netting over the tree and tie it to the trunk. The birds will still be able to reach some of the fruit and nuts, but not all of it.

Reflective tape and other devices used to scare away birds are only effective if changed frequently. Usually birds become accustomed to seeing these items and know they are not dangerous.

Spray Schedule

There are several handouts available from the UC Cooperative Extension called "Calendar of Operations for Home Gardeners" regarding fruit and nut trees. These handouts have management guidelines for fruit and nut trees on a seasonal basis. Information from these handouts regarding what to spray and when begin in this guide on page 20.

Please note: not all tasks are necessary, as your fruit trees might not have all of the problems listed per season. The only

task that must be performed on a yearly basis is the spraying of peach and nectarine trees for peach leaf curl. All other sprays are specific to problems that may arise in your orchard. Spraying for each problem your trees might not have will only add to your expenses and harm beneficial insects.

Harvesting

Harvesting your fruit and nut crops is the most rewarding step in the process of growing a home orchard. Some fruit can be picked and enjoyed instantly, while others should be picked and allowed to ripen off the tree. Nuts will need to be hulled and cracked.

PLANTING FRUIT & NUT TREES

Planting a tree correctly is important, as it will ensure your fruit or nut tree has a healthy start.

Preparing the site is the first step in planting any type of fruit or nut tree. If soil is healthy and drains well, soil amendments need not be added. Otherwise, add compost to the soil and work it into the ground to a depth of several inches.

Bareroot Trees

STEP 1: *examine the roots and cut any that are broken or kinked.*

Dig the hole large enough to

Deciduous Fruit & Nut Trees in Your Garden



accommodate the roots. Place the tree in the middle of the hole and fill with soil. Lightly pack the soil around the roots. Make sure the graft union is well above the soil line.

STEP 2: *build a four-inch trough around the tree in a circular pattern 2-3 feet away from the plant.*

This step is not necessary if you use drip or sprinkler irrigation. For gardeners who use a hose, this set-up will allow water to remain near the tree and penetrate down to the roots. Use this basin for the first year of the tree's life.

STEP 3: *mix a white interior latex paint at a ratio of 1:1 with water or use a store-bought mix. Paint entire tree trunk, and paint over all buds.*

Painting the trunk will help protect it from sunburn, which weakens the bark and makes it more susceptible to attack from pests and diseases.

STEP 4: *water the tree deeply.*

Water 1-2 times per week during the growing season. When the weather begins to cool, water less as the tree's demand for water decreases.

STEP 5: *add a 3-4 inch layer of mulch around the tree.*

This will slow the evaporation of water and allow tree roots protection from extreme summer temperatures in the Central Valley. Keep mulch away from the base of the tree trunk.

Container-Grown Trees

STEP 1: *dig the hole twice as wide as the size of the container in which the plant was purchased. Do not dig the hole deeper than the container.*

If garden soil is hard and compacted, dig the hole three times as wide. Adding fertilizer, soil amendments or root stimulants into the hole is **not recommended**. Container grown fruit trees are usually well-fertilized prior to purchase.

STEP 2: *gently remove the tree from the container.*

If roots are growing in a circular pattern, carefully pull them apart. Use pruning shears if excessive roots exist.

STEP 3: *place the root ball in the hole so the top of it is 1-2 inches above soil level.*

The area of roots and soil taken out of the container is known as the "root ball." Carefully place the root ball into the hole, holding it lightly by both the trunk and the root ball.

Air pockets in the soil will cause the tree to sink. Do not bury the trunk or root ball. Do not cover either with excess garden soil, ensure the graft union is well above the soil line.

STEP 4: *build a four-inch trough around the tree in a circular pattern 2-3 feet away from the plant.*

This step is not necessary if you use drip or sprinkler irrigation. For gardeners who use a hose, this set-up will allow water to remain near the tree and penetrate down to the roots.

STEP 5: *mix a white interior latex paint at a ratio of 50:50 with water or use a store-bought mix. Paint entire tree trunk.*

Painting the trunk will help protect it from sunburn, which weakens the bark and makes it more susceptible to attack from pests and diseases.

STEP 6: *water the tree deeply.*

Water 1-2 times per week during the growing season. When the weather begins to cool, water less as the tree's demand for water decreases.

Deciduous Fruit & Nut Trees in Your Garden

STEP 7: *add a 3-4 inch layer of mulch around the tree.*

This will slow the evaporation of water and allow tree roots protection from extreme summer temperatures in the Central Valley. Keep mulch away from the base of the tree trunk.

TRAINING YOUR DECIDUOUS FRUIT TREE

All fruit and nut trees need some training to develop into healthy trees. Training a fruit or nut tree entails pruning at least twice during the year.

There are several pruning methods to choose from, but for purposes of this publication, only a few methods will be explained. To learn about other pruning methods, consult publication 8057, *Fruit Trees: Training and Pruning Deciduous Trees* a free leaflet that can be downloaded from the ANR website, or purchase *The Home Orchard Guide* by ANR publications, available at the UC Cooperative Extension Office.

There are two types of cuts made when pruning: thinning and heading cuts. A thinning cut removes an entire branch or shoot from its point of attachment and helps create a better structure for the tree.

A heading cut is when a branch or shoot is shortened. The purpose of this is to

remove the natural growth regulators (hormones) contained below the bud. This cut allows other buds below the main tip to grow.

TRAINING METHODS

The training method used on almonds, apple, apricot, cherry, fig, pear, nectarine, peach, persimmon, pistachio, plum, jujube and pomegranate trees is called the open-center or vase-shaped method.

Open-Center Method

The purpose of this method is to allow light and air flow between branches. The 3-4 chosen branches that will become the primary scaffold branches (main branches of the tree) need to be attached at wide angles. If angles are less than 45° then care should be taken to enlarge the angle. A properly positioned stick or even a toothpick placed between small shoots can help to widen most angles.

Scaffold branches should be distributed radially around the trunk of the tree, with several inches between them vertically. The lowest of the scaffold branches should be 12-18 inches above the ground.

Other branches on the tree below your lowest scaffold branch should be pruned to 4-6 inches long. Do not completely remove these branches, as their leaves

will help provide food and protect the growing young tree from sunburn. Eventually you will remove these branches as the tree matures.

Although summer pruning is advised in this manual, avoid over-pruning your young tree in its first season. A vigorous tree's primary scaffold branches can be pruned to 2.5-3' long in midsummer.

When your tree has been in the ground for one year, prune the primary scaffold branches to encourage the growth of secondary scaffold branches. Secondary scaffold branches grow off the primary scaffolds, and each limb can have 2-3 of these secondary branches. Prune all other branches off the primary scaffold limbs so the ones you have chosen can grow without competition, but do not remove fruit spurs.

Your pruned tree should now have 3-4 primary scaffold branches with 2-3 secondary branches on each. All branches should have good spacing and wide angles to allow for light flow and reduce competition between branches. Tree limbs growing at narrow angles should be encouraged to grow wider with toothpicks or small sticks. If the branches you chose are not producing wide angles and cannot be bent at this point, prune them back and start over

Deciduous Fruit & Nut Trees in Your Garden



during the dormant season.

As your tree matures, remember to keep the open-vase shape system in effect.

Any growth in the center of the tree should be removed, except for fruit spurs.

Modified Central Leader Method

This method of pruning has multiple tiers of limbs. It can be used on apple, pear, persimmon, fig, pistachio, walnut, pecan, and chestnut.

Apple & Pear

For apple and pear trees, establish the primary scaffold branches when the tree begins growing. Choose branches that are across from each other. Each set of four lateral branches is called a “tier.”

Every branch should have a wide angle between itself and the tree. This should be done once each branch is about 2-3 feet long. To establish a wide angle, place sticks in between the main branch and the limb to create a 45-60° angle. Keep the sticks in place until the branches will hold the angle on their own.

During the second dormant season, establish the second tier of four branches. These branches should not be spaced below the previous tier, but should be offset. Lower branches should be longer in length than upper branches.

Pruning and training apple and pear trees takes about 4-6 years total.

Persimmon, Fig & Pistachio

The central leader on these trees can be kept short, with the lateral branches becoming the dominant branches. This method is often called “delayed open center” and allows the homeowner greater access to fruit. No tiers are used in this method, as the branches are spaced vertically around the trunk.

Walnut, Pecan & Chestnut

Train by allowing many branches to grow after planting. During the first growing season, place a stake next to the tree that stands at about 6 feet. Then tie the longest, healthiest shoot to the stake. Prune back all other shoots.

During the next dormant season, prune the shoot just above the stake. If you wish the tree to be shorter, prune to where you would like the lowest scaffold branches. If the main leader does not develop as desired, prune the tree again and continue training it. In the next season, select scaffold branches and keep the leader and scaffolds lightly pruned. The scaffold branches should be shorter than the leader.

In future pruning, continue to select scaffold branches. No tiers are used for

these trees, as the branches are spaced vertically around the trunk.

Fruit Bush Method

This method creates manageable fruit “bushes” in small space and allows home gardeners to have easy access to fruit. It takes about two years to get a fruit bush trained and bearing fruit.

A fruit bush is made from a standard or semi-dwarf tree. Trees on dwarfing rootstock also work well. A fruit bush stays small because it is pruned at least 2-3 times per year.

The first pruning should be done in late April or May of the first growing season. Prune about half of the new growth off the tree, so it takes on a more “bush-like” appearance. Hedge trimming shears can be used to do this. When the tree has grown out again in late June or early July, cut back the new growth in half once again. For apricots, plums and pluots, this may need to be done again during the growing season.

The pruning cuts will promote vigorous growth. Make thinning cuts to eliminate crossing branches and ensure adequate sunlight and air penetration.

In the second year, continue to prune in

Deciduous Fruit & Nut Trees in Your Garden

the same manner as the year before. When the tree reaches between 5-7 feet (or a height you prefer), prune any branches that begin growing past this height. Keep your bush at the desired height and remove any excess branching that occurs. Also, in spring, take note of branches without flowers and remove them. By the third year, your fruit bush is established enough to begin producing fruit. Fruit bushes can be placed as close as 1' apart or as far as 3' apart. Some gardeners like to use them along fences as a hedge. Wherever you plant fruit bushes, remember to allow for picking access.

FRUIT WOOD & PRUNING

Before pruning fruit trees, it's essential to understand where fruit forms. The following sections will describe basic pruning for each crop.

POME FRUITS

Apple, Pear, Pomegranate & Quince

In apples and pears, fruit occurs in two places; on shoots or short spurs and on one year old shoots that form during early summer. When pruning, do not remove fruit spurs. In summer, remove only vigorously growing shoots.

Pomegranate trees bear fruit on short spurs that grow on 2-3 year old wood. Light pruning for size and shape will not

affect the fruit wood. Pomegranate trees can become dense and full of extra branches. Thinning out some of this wood is helpful to increase aeration throughout the branches.

Quince flowers occur at the end of the current season's growing shoots. Pruning is needed to maintain the desired size and shape of the tree, but wait until after fruit is harvested.

STONE FRUITS WITH SPURS

Almonds, Apricot, Cherry & Plum

These stone fruits have some fruit that occurs on the previous year's growth, and some that occurs on short spurs. Prune wood vigorously during the summer to control size and shape, taking care not to damage spurs. Although almond trees are technically stone fruits, they will be categorized under "Nut Trees" in the guide section of this publication.

STONE FRUITS WITHOUT SPURS

Peach & Nectarine

The fruit on these trees occurs on the previous year's growth. Pruning for size and shape of the tree should be done in the summer, as these trees have vigorous growth and can become quite large.

NUT TREES

Chestnut, Pecan & Walnut

Nuts are borne on the previous year's growth. Prune for size and shape during the first 4-5 years. Chestnuts and certain walnut varieties produce nuts on the ends of long, one-year old branches. Do not prune these branches after the first few years of training.

Once mature, nut trees will need little to no pruning. However, older trees that have crowding branches should be thinned to allow more sunlight to penetrate the canopy.

Pistachio

Prune this tree using the open-center or modified central leader method. The scaffold branches should be distributed radially around the trunk, with 6-10" between them vertically. For more information on pruning and the care of pistachio trees, visit: <http://homeorchard.ucdavis.edu/pistachio.html>

OTHER TREES

Fig

Fig trees have two crops of fruit. The first crop (called breba) is ready in early summer, and the second crop develops during fall. Breba is produced on wood from the previous season, and the second crop is produced on new growth of the current season. Prune after both crops

Deciduous Fruit & Nut Trees in Your Garden

have been harvested. Over-pruning a fig tree will result in reduced breba crops.

Jujube

Jujube trees are attractive trees that are easy to grow. They are drought tolerant and mostly free of the diseases and pests that attack most fruit trees. For optimum fruit development, jujube trees need long, hot summers. Prune for shape and size.

Olive

Olive trees are evergreen and should be pruned lightly for size and shape. Over pruning can cause a serious reduction in fruit.

Persimmon

Persimmon fruit forms on the buds nearest the end of one-year old branches. Light pruning should be done so not all fruitwood is removed.

FRUIT THINNING

As mentioned on page 4, apple, pear, Asian pear, apricot, nectarine, peach, plum are fruit thinned. The best time to thin is generally April through early May for late ripening fruit. Stone fruit size should be about 3/4 to 1 inch in diameter and pome fruits should be 1/2 to 1 inch.

It can take many years to become efficient at the process of thinning. In the

beginning, you may not thin enough, and when too much fruit is left on the tree, the fruit will be small and branches may break with the weight of the fruit load. When a tree is thinned properly, fruit will be larger at harvest, and the chances of alternate bearing will be reduced.

To thin, first remove damaged fruit. For peaches and nectarines, leave 5-7" between fruit. Remove any "doubles" which are two fruits fused together. Varieties that ripen early in the season need to be thinned more heavily than late season varieties. Apricots, plums and apricot-plum hybrids should be thinned to 4-6" apart. For apples, pears and Asian pears, thin to one fruit per cluster. If the overall number of fruit on the tree is sparse, leave two fruits per cluster.

Cherry, fig, jujube, fig, olive, persimmon, pomegranate, quince and nut crops are not thinned. In the case of persimmon, pomegranate and quince, if the fruit load is heavy, thinning to reduce broken branches is beneficial.

PESTS & DISEASES

The University of California recommends using an integrated pest management (IPM) strategy to keep fruit trees and other plants healthy. This method uses cultural practices, physical barriers, biological controls and

pesticides to protect plants from pests. In this system, pesticides are used only when needed.



Many times, a tree is overwhelmed by pests because it has been stressed. Trees that receive adequate water and careful pruning are more likely to overcome pest problems on their own.

For home gardeners, identification of insects is essential, as not all are pests. Some may in fact be beneficial, such as many spiders who are predators that feed on moth larvae, of which there are several important pests. If your tree has a large number of "mystery" insects, take a sample to a qualified nursery person or bring it to the UC Cooperative Extension Office. If identified insects have been determined to be pests, use IPM methods of control.

ACCESSING INFORMATION ONLINE

Type the following address into your internet browser: <http://www.ipm.ucdavis.edu/PMG/GARDEN/fruit.html> This address has the names of several (but not all) fruit trees listed in this guide. Click on a tree name to see a list of common problems for that tree. Use this guide to help identify symptoms

Deciduous Fruit & Nut Trees in Your Garden

and possible problems on your home garden tree. The California Backyard Orchard web site at <http://homeorchard.ucdavis.edu/> also has helpful information.

PREVENTION

The best way to manage diseases is to prevent them through the use of good cultural practices. Keep the area underneath fruit trees clean, and dispose of any fruit that falls on the ground. At the end of the fruit season, remove any leftover fruit remaining on the tree, as these “mummies” contain diseases that live until the following year and will re-infect your trees.

For insect pests control, try using safer products such as Bt (*Bacillus thuringiensis*) a microbial insecticide that targets the larvae of caterpillars. It must be consumed by the pest for it to work. Insecticidal soaps provide control of aphids, whiteflies, scale, spider mites and psyllids on contact. Horticultural oils are effective against aphids, spider mites, whiteflies, scale insects, psyllids as well as the overwintering eggs of a number of pests. These oils must also come into contact with the insect in order to be effective.

Many insect infestations occur when plants are over-fertilized. Read all labels

and never apply more fertilizer than prescribed by the label.

INSECT PESTS

Aphids

Aphids suck juices from plant leaves, causing them to curl. To determine if leaves are curling due to aphids, unfurl a leaf and check for this pest. If no aphids are present and leaves are curled on nectarines and peaches, see the disease section labeled “peach leaf curl.”

When aphids feed on plants, they excrete a sticky honeydew that attracts ants. The presence of ants often discourages aphid predators and gives the population protection from natural enemies.

A harmless fungus called sooty mold often grows on the sticky honeydew.

The aphid lifecycle allows for rapid reproduction. In spring, large numbers of aphids can be seen feeding on plants. Several methods are available for controlling aphids. When aphids first appear, wash them off with a stream of water (this will also wash off any sooty mold). To prevent ants from protecting the aphids, use a sticky barrier around the trunk. Insecticidal soaps and oils are also products that can be used to kill aphids while minimizing impact on beneficial insects in your garden.

The woolly apple aphid is a type of aphid that is a serious pest of apple trees. This aphid has a waxy white or gray covering. Swollen areas on the tree called burls or galls may indicate the presence of this pest. The woolly apple aphid attacks roots, trunks, limbs and shoots of trees. Insecticidal soaps and horticultural oils can provide some control. In areas with high infestations, consider using resistant rootstocks. For more information consult the UCIPM website.

Codling Moth

These insects are usually discovered inside fruit as larvae (worms). They are serious pests of apple, pear, quince and walnut. Codling moth larvae overwinter inside a protective silken cocoon in tree bark or soil and debris beneath the tree. In early spring, moths emerge and lay eggs on fruit, nuts or nearby leaves. Codling moth larvae are pinkish white and 1/2 to 3/4 of an inch long. Management can be difficult, as the larvae emerge and bore into fruit quickly. Insecticides are very toxic to bees, so the IPM method is the best way to reduce populations.

Apple and pear fruit can also be bagged, which is the practice of taking a standard paper lunch bag, slitting a 2” slit in the bottom and placing it over a 1/2 to 1” size fruit. Fold the top of the bag over

Deciduous Fruit & Nut Trees in Your Garden



and staple it shut. This should be done after thinning clusters to one fruit. Bagging does not impede maturity, although it may lessen the red color of some varieties. To ensure full red color, take the bag off and allow the fruit to remain on the tree for a few days before harvesting.

Scale Insects

This pest can be difficult to spot, as it blends in well with surroundings. Like aphids, scale insects produce a sticky honeydew accompanied by ants and sooty mold. Scale insects may be flat or bumpy, and are usually brown, black or white in color. When populations are high, this insect can be a serious pest. Use applications of correctly timed horticultural oil. Applying oil when temperatures are above 80°F can cause leaf burn. To control scale, use a 3-5% oil solution during the dormant season.

Borers

Wood boring insects attack water-stressed, sunburned or diseased trees. Good cultural practices can prevent this pest. Never leave pruned wood underneath trees, and do not store firewood near orchards.

To prevent the **flatheaded borer** from infesting a tree, apply a mixture of one part interior latex paint one part water to

the tree trunk. After pruning in summer, paint limbs that may be exposed to sunburn. Ensure trees receive adequate amounts of water, especially during the growing season. Prune out infected limbs and destroy.

Shothole borers leave small holes (about 1/16") in bark, and several borers will emerge from the same area which gives the trunk a "shothole" appearance. Young trees can be girdled when several borers feed on limbs or trunks. If only one limb is affected, prune out this limb.

A tree heavily infested with this pest has not received adequate care. Remove the whole tree if there is a heavy infestation, and burn all wood.

Peach tree borers are a type of clear wing moth that invade the crown or trunk of stone fruit trees. During summer, adult moths lay eggs on the bark of tree trunks. Larvae hatch and tunnel into the tree near ground level, leaving tell-tale sawdust near burrowing entrances. The larvae live inside the tree until spring, when they emerge to pupate on tree trunks or in the soil nearby.

Peach tree borers can girdle and kill healthy trees. During windy weather, damaged branches can break and fall.

Controlling this pest involves the use of insecticides specifically labeled for trunk treatments, and applications must be carefully timed.

For more information, consult the UCIPM Pest Note on Clearwing moths at <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7477.html>

Spider Mites

Spider mites are tiny pests that can be difficult to spot. When they reach high populations, copious amounts of webbing will be visible. Large populations of this pest can reduce tree vigor. Tree leaves may turn pale or yellow and drop, which exposes tree limbs and fruit to sunburn.

Spider mites thrive in dry, dusty conditions, so minimize dust near fruit trees. Horticultural oils are effective against spider mites, but must be used with caution. Always follow label instructions, as spraying when temperatures are near 80°F can damage tree foliage. If trees have had spider mites in the past, continuously monitor existing or new populations. When small pockets of infestation are found, use spot treatments to reduce their population and lessen the impact on natural enemies.

Deciduous Fruit & Nut Trees in Your Garden

DISEASES

Bacterial Canker and Blast

The blast form of this disease is sometimes confused with brown rot. Take a sample to a qualified nursery person or the UC Cooperative Extension Office for correct identification.

Almond, apricot, cherry plum, peach and nectarine can become infected with this disease. The symptom of a canker is most often found in stone fruits, while the blast phase of the disease is most often seen in apple and pear.

Cankers appear in late winter and early spring as watery or gummy areas that can girdle and kill entire areas of bark. In winter, infected trees have irregular, watery soaked areas of bark that may kill entire branches. Trees have a sour or vinegar-like scent, with young trees affected the most.

In the “blast” stage of the disease, blossoms and shoots wither, turn black and die. Sunken spots may appear on the fruits of pear and cherry. Frost injury as well as rainy weather increase the occurrence of blasts.

To protect trees from bacterial canker and blast, fertilize properly during the year, and prune out signs of infection as soon as they develop.

Brown Rot

This disease causes fruit rot in apricots, almonds, cherry, plums, prunes, peaches and nectarines. However, plums and early ripening varieties of peaches and nectarines are the least susceptible.

Left untreated, brown rot can ruin an entire crop. The symptoms begin in spring, when blossoms begin to wither, turn brown and stick to the tree with an amber-colored resin near the dead flower. The shoot near the flower may also become infected and die.

In summer, when fruit begins to ripen, light brown, circular rot lesions form on the fruit. Once this disease takes hold, nothing can be done to protect the fruit. During the year, remove all fruit that has dropped. Prune out infected blossoms when first signs of brown rot appear. Avoid over-fertilizing, as extra nitrogen makes flowers and fruit more susceptible to infection.

For trees that have brown rot on a yearly basis, spray an application of a copper containing fungicide during pink bud stage. This can decrease loss of fruit. If rainy weather continues, further applications may be needed when fruit begins to turn color. Excessive copper spray applications can be toxic to fruit

tree foliage. Check with your nursery for other effective fungicides.

Fruit injuries increase the risk of brown rot, so remove split fruit or fruit with holes caused by insects or birds. Harvest fruit when mature to ensure overly ripe fruit does not remain on the tree.

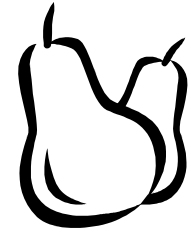
Crown Rot and Root Rot

These diseases develop when the area around the base of the tree is kept wet for long periods. A tree can decline and die as quickly as within one year. In spring, trees may leaf out normally. However, when hot summer weather arrives, the roots cannot supply enough water to the leaves and the tree dies. Cherry trees are extremely susceptible to these diseases, so ensure sprinklers or drip irrigation are placed away from the trunk. Plums are somewhat tolerant to wet soil conditions.

Eutypa Dieback

This fungus infects fresh pruning wounds during the rainy season on apricot and sweet cherry trees. The symptoms begin in summer, when leaves wilt on entire branches and remain on the tree through winter. The limbs affected by this disease will have a canker that occurs near a pruning cut. A gummy substance is usually present, and wood is discolored. These branches are easily broken because of decay.

Deciduous Fruit & Nut Trees in Your Garden



To manage eutypa dieback, prune apricot and sweet cherry trees late summer, after harvest. Prune to at least 8” below infected wood. Heavily infected trees should be removed. Grapevines are also prone to Eutypa dieback, so if they are present near orchards, follow the same pruning schedule and remove all pruned wood.

Fire Blight

This disease is easy to identify as branches and leaves take on a scorched appearance. Pears and Asian pears (except for ‘Shinko’) are extremely susceptible. The apple varieties of Fuji, Gala, Golden Delicious, Granny Smith, Gravenstein, Jonathan, Mutsu, Pink Lady and Yellow Newton are susceptible apple varieties. Quince trees are also susceptible.

Symptoms of fire blight include a watery ooze that seeps from branches and twigs. Dead spots known as cankers appear in spring. The ooze darkens, leaving streaks on the bark. Several weeks later, flowers and/or shoots wither and blacken. Both new and old wood are affected, with young wood taking on a wilted, scorched appearance, and older wood developing cankers. This disease can kill branches as well as entire trees of highly susceptible hosts.

To manage fire blight, choose less susceptible varieties. Monitor trees known to have infection and prune out any dead branches or twigs that emerge. Cut at least 8-12” below the area where infection occurs. When removing an entire branch, cut the limb off flush with the trunk. Do not leave behind a stub when pruning any kind of tree. Disinfect cutting tools with a 10% bleach in water solution after each cut.

For extremely susceptible trees, spray with a Bordeaux mixture (0.5%) or other copper fungicide as soon as blossoms start to open and temperatures stay above 60°F. Do not spray once fruit begins to form, as the mixtures can cause scarring of fruit.

Peach Leaf Curl

This is the most prevalent disease affecting peaches and nectarines. It appears in spring a few weeks after new leaves begin to grow. Leaves are reddish, puckered and curled, and later turn yellow or brown and stay on the tree or fall off. The leaves that regrow will likely develop the same symptoms, if wet weather persists. This constant defoliation is unhealthy for the tree, and causes a drop in tree growth and fruit production. Once the tree is weakened, it is more susceptible to sunburn and attacks from borers. If peach leaf curl is

allowed to persist for many years, the tree may decline and need to be removed.

In Stanislaus County, spraying peaches and nectarines with a preventive fungicide that contains copper on a yearly basis is recommended. Fixed copper or copper-based fungicides such as Bordeaux mixture, tri-basic copper sulfate, or metallic copper provide good control. Lime-sulfur (calcium polysulfide) is also an acceptable material to use.

Spraying must be done during the dormant season, after leaves have dropped. Spray during December or January, making sure to cover all tree limbs. If weather is rainy, make a second application just before buds begin to break. If trees are planted in a lawn, do not allow water from sprinklers to wet foliage.

Powdery Mildew

A white, powdery substance (fungal spore growth) forms on leaves, and sometimes on flowers, fruit and shoots. This disease can cause distortion of new growth. Fruit that has been infected may develop a web-like scar pattern. Often, infected rose bushes planted nearby are the cause of recurrent infections in fruit

Deciduous Fruit & Nut Trees in Your Garden

trees.

In apples, least susceptible varieties are Red Delicious and Stayman Winesap. Moderately susceptible apples are Braeburn, Golden Delicious, Granny Smith, Jonagold and McIntosh. The most susceptible varieties are Gravenstein, Jonathan, Rome Beauty and Yellow Newton.

Cherry varieties likely to become infected with powdery mildew are Bing, Black Tartarian and Rainer.

In peaches, susceptible varieties include Elegant Lady, Fairtime, Fay Elberta and Summerset. All nectarines are susceptible to powdery mildew.

Susceptible plums include Black Beaut, Gaviota, Kelsey and Wickson.

Prune out infections when they occur, and use fungicides when necessary. To protect trees that develop powdery mildew regularly, use products such as wettable sulfur, horticultural oil, potassium bicarbonate and synthetic fungicides with these precautions: never spray sulfur on an apricot tree and do not use sulfur and oil sprays within the same two weeks. Be aware that oils and sulfurs should not be used when temperatures are above 90°F. Make applications of fungicide every two weeks, starting

when buds begin to open and until fruit begins to appear. Peaches and nectarines remain susceptible to powdery mildew until the pit begins to harden.

Shothole Disease

This disease affects almonds, apricots, peaches and nectarines. It's rarely seen in plum and cherry trees. Shothole appears in spring following a mild, wet winter. Damage emerges as tiny, reddish-purple spots which enlarge and turn brown. On leaves, these spots often fall out, leaving the leaf with multiple tiny holes. In almonds and apricots, the leaves and fruit of the tree are most affected. In nectarines and peaches, the infection is commonly found on buds and twigs.

Shothole disease over-winters on buds and twigs as lesions if not removed. Highly susceptible trees can be sprayed with a mixture of Bordeaux after leaf fall to protect dormant buds, however, this application will not protect the tree from spring infections on leaves and fruit. Keep sprinklers from wetting leaves, and remove all debris from below the tree.

Walnut Blight

Dark spots appear on husks and nutmeats shrivel. Infected nuts can later become a target for the navel orangeworm, resulting in nuts that will not detach

easily from the tree. Spring rain may spread this disease, so ensure nearby sprinklers do not add to the problem by adjusting them away from the canopy. Prune limbs inside the tree to increase airflow. Avoid irrigation during bloom time.

For more information on controlling fruit tree diseases, consult the UCIPM website at <http://www.ipm.ucdavis.edu>.

NUTRIENT DEFICIENCIES

If you suspect your tree may be lacking in a particular nutrient, take a sample of several leaves to a qualified nursery person or the UC Cooperative Extension. Most fruit trees can benefit from a fruit and nut tree fertilizer applied according to package instructions. Water-stressed trees, however, should not be fertilized until they regain vigor. The most common nutrient deficiencies in Stanislaus County include nitrogen and sometimes zinc.

FRUIT HARVEST & STORAGE

There is a difference between harvesting "mature" fruit and "ripe" fruit. A mature fruit has completed its growth process, although it will continue to ripen after it is picked. It will change in color, texture and water-content. Fruit picked ripe is ready to eat almost immediately and will not store well. Some fruits taste better

Deciduous Fruit & Nut Trees in Your Garden



picked mature and ripened off the tree, while others taste best when ripened on the tree.

According to UC Cooperative Extension Postharvest Physiologist researcher Dr. Carlos Crisosto, fruit should not be refrigerated until it reaches ripeness. His research indicates fruit is most flavorful when not refrigerated too early.

After picking mature fruit, place it on a countertop or in a paper bag until it develops a fruit scent and yields to gentle pressure, then if needed, refrigerate. The guide at the end of this publication details when each type of fruit is ready for harvest. Other indicators will be described under the headings to follow. Storage methods are also included.

Apple

To harvest, grasp the fruit and gently twist upward. If mature, the apple will come off the tree easily. Flavor is a good indicator of when an apple is ripe and ready to eat.

Store ripe apples in the refrigerator with a moist towel beneath them to increase humidity. Apples tend to pick up flavors from other items around them, so store them away from other groceries. Apples also produce ethylene gas, which aids the ripening process, but may cause other nearby fruit to ripen too quickly and

spoil.

Apricot and Aprium

Harvest when firm ripe. Some apricot varieties have fruit that does not ripen all at the same time. Watch the tree for ripe fruit and pick when ready, which may be over a period of several weeks.

Apricots are best eaten fresh, but can also be stored in the refrigerator for about 3 weeks. Using a food dehydrator is a great way to preserve a large harvest.

Cherry

Harvest cherries when fully ripe. Grasp the stems and twist upward, being careful not to damage the spurs. Keep the stem on the fruit, as this will help the cherry last longer. Cherries can be stored for several days in the refrigerator.

Fig

A ripe fig is slightly soft and bends at the neck. Harvest soft-ripe for immediate eating. If milky white sap oozes when figs are picked, fruit is not ready for harvest. To reduce spoilage, remove the fruit with the stem still attached.

To dry figs, allow them to stay on the tree to partially dry, then place on drying trays.

Jujube

Jujube fruit does not ripen all at once, and fruit can be picked for several weeks. If harvested when green, jujubes will not ripen. Store ripe fruit at room temperature for about a week. The fruit may be eaten fresh, dried or candied.

Nectarine and Peach

Allow fruit to develop full color on the tree. Harvest when firm, as when the fruit becomes soft, it doesn't store well. For longer storage, keep ripe fruit in the refrigerator for several weeks.

Pear, European and Asian

Harvest European pears hard and green when desired size is reached. Fruit is mature when it can be removed easily from the tree. Use a gentle pressure to avoid damaging fruit spurs. Pears should be stored on the counter until ripe. For longer storage, they can be kept in the refrigerator for up to several weeks

Harvest Asian pears when firm-ripe and sweet, they can be eaten right away. Pears can be stored on a counter for 2-3 weeks and longer in the refrigerator.

Persimmon

There are two types of persimmons, astringent and non-astringent. Astringent

Deciduous Fruit & Nut Trees in Your Garden

varieties like ‘Hachiya’ are best when allowed to soften on the tree. They can also be picked mature-firm and allowed to soften at room temperature. This astringency fades in most varieties as the fruit begins to ripen.

The variety ‘Fuyu’ is non-astringent, and edible when mature and firm. Harvest using hand pruners when fruit has reached full color.

Persimmons can be stored in the refrigerator for about a month, although cold storage results in flavor loss. Persimmons are often kept frozen for later use in baked goods. Persimmons can also be cut into slices and dried. They make a tasty, healthful snack.

Plum and Pluot

These fruits are ready to harvest when firm-ripe. Gently lift fruit off the spur. Early maturing varieties can be harvested 2-3 times, while late maturing varieties can be left longer on the tree and allowed to become soft-ripe. Store in the refrigerator for longer keeping.

Pomegranate

Harvest when optimum color is reached, but before cracking. To harvest, use pruners to cut fruit from the tree. Avoid pulling on fruit, as this damages the spurs.

Pomegranates shrivel and dry if stored too long at room temperature. Damaged fruit does not store well. Use the juice immediately or freeze into ice cube trays. Keep frozen cubes in freezer bags. Pomegranate juice can also be canned, and is the principal ingredient used to make grenadine syrup.

Quince

Although this fruit appears firm, it can be easily bruised through improper handling. Pick when the deep green color gradually begins to lighten to yellow gold. Quince is often used to make jelly and is a natural source of pectin.

NUT HARVEST & STORAGE

Nuts have an external hull or husk over the shell, which protects the nut inside. Often, coloring or splitting of the hull is an indicator of harvest readiness.

When hulls begin to dry and split, nuts are most susceptible to pests. To avoid crop damage, observe your nut trees carefully to determine when to harvest.

Sometimes, a nut is considered a “blank.” From the outside, the nut appears normal, but although it hasn’t developed on the inside. A certain percentage of blanks is normal in most nut trees.

When harvesting nuts, always use a

clean, plastic tarp beneath the tree to catch the harvest. Remove nuts promptly from tarps, as pests, diseases and birds will soon find them otherwise. Begin the drying process as soon as possible.

In storage, nuts can pick up odors in the refrigerator or freezer, so store them away from strong-scented foods like onion, fish or garlic.

Remember that nut trees need adequate water during harvest time.

Almond

Almonds are ready for harvest between August and September, depending on the variety. Begin harvesting when about 75% of the hulls have split open.

Spread a tarp beneath the tree. Use a pole with a rubber mallet to strike major branches, and a small pole to strike smaller branches. Remove hulls by hand.

Almonds may need additional drying time, but avoid overly hot locations. To dry, spread nuts thinly on a tray or screen. Stir often to encourage good air circulation. Almonds can be cracked when the kernel rattles in the shell, and has a nutty taste.

If kept in a cool, dry place, almonds can stay in their shells for 6-8 months and for a year or more at 32°-45°F. Shelled

Deciduous Fruit & Nut Trees in Your Garden

almonds can be kept for 1 year at 32°F and a year or more at 0°F.

Chestnut

Chestnuts develop inside spiny hulls called burs. Chestnuts fall naturally from the tree during August and September. Do not shake or knock nuts from the tree, as nuts will fall before fully developed. It may take a total of 5 weeks before all nuts fall from the tree. Gather them as they drop, choosing only nuts with split burs. Burs that are fully intact are usually blanks.

To harvest nuts, step on burs with split hulls, or use leather gloves to pull nut from bur. Another method is to pour chestnuts into a container of water, and let the nuts sink and the burs float.

Chestnuts that do not separate can be set aside for a few days to separate on their own (at 55-65°F).

Chestnuts are highly perishable, and should be handled and stored with care. Store them at 32°F and at 90% relative humidity soon after harvest.

Keep in-shell nuts in a plastic bag or plastic container in the refrigerator. In-shell nuts will keep for 1 month at 32-45°F, or for a year or more at 0°F. At room temperature, chestnuts will dry out. They can easily mold after 2 weeks.

Pecan

During the year, prune pecan trees to keep them short, as tall trees make harvest time difficult.

Use a long pole with a hook at one end to help grasp and gently shake the branches. If a large number of nuts remain on the tree after shaking, the nuts aren't mature. If a majority of the nuts fall, the pecans are ready for harvest. Remove hulls immediately after nuts fall (wear gloves to avoid staining hands).

Harvested pecans contain moisture, and should be dried before storing. In-shell pecans can be spread on a plastic sheet in partial shade (75-85°F) to dry. This process takes between 2-10 days. Pecans can be stored in-shell for several months, up to 1 year at 32-45°F, and 2 or more years at 0°F. Shelled pecans can be stored for up to 1 year at 32°F and 2 or more years at 0°F.

Pistachio

Harvest pistachios around late August and early September, when hull color changes from green to red. The glossiness of the hull will begin to dull, the stem end of the shells will begin to yellow, and shells will split. Hulls that do not turn red are usually blanks.

To harvest pistachios, use a pole to knock nuts from the branches onto a

plastic tarp. Remove hulls as soon as possible, using a 1/2" mesh screen. Place the nuts on the screen and lightly rub them until the hull falls through the mesh.



To separate blank nuts from your harvest, pour the nuts into a bucket of water. The blanks should float. Dry pistachios on a clean, plastic tarp no more than 2 pistachios deep. During normal fall temperatures, this can take up to 3-4 days. Or, use an oven set at 140-160°F for 10-14 hours. Spread the nuts in a pan or tray in a thin layer and stir occasionally. They are done when crisp.

To store pistachios in the shell, pack the nuts into containers with tightly fitting lids. They can be kept at 32-45°F for 1 year, and at 0°F for up to 3 years. Pistachios can also be stored pre-salted in their shells by placing them in salted water and boiling them for a few minutes. Dry them in an area with good air circulation and refrigerate them for up to 6 weeks or freeze them for about 1 year.

Walnuts

Walnuts are harvested between September and November, depending upon variety. Walnuts are ready for

Deciduous Fruit & Nut Trees in Your Garden



harvest when the green hulls start splitting and the inside membrane between the kernel halves turn brown. Gather a few nuts from the top of the tree and crack them open to check for readiness.

To harvest, knock the nuts from short trees using a pole. For tall trees, use a pole that has a large hook attached and use it to shake the branches. Once nuts have fallen, gather them and begin the hulling process.

To hull nuts, use rubber gloves to avoid chemicals that will stain and may irritate skin. For small quantities of walnuts, a knife can be used to remove the hulls. For larger quantities, use a screen of expanded metal. Gently rub the nuts over the screen, the hulls should fall through. If nuts do not easily separate from their hulls, lightly moisten and cover with a tarp or burlap sheet for several days.

Nuts in their shells should be dried in a shady, ventilated place. Stir daily to promote good air circulation. During normal seasons, it can take 3-4 days to dry nuts. Crack a few nuts open and check for readiness. Nuts are ready if they separate easily from their shells. Otherwise, wait a few more days and check them again.

Unshelled walnuts can be stored for up

to 1 year at 32-45°F, and for 2 years or more at 0°F. Shelled walnuts can be stored for a year or more at 32°F and for 2 years or more at 0°F.

SEASONAL CARE SCHEDULE

As mentioned previously, not every task will need to be done. Spray only for correctly identified pests when needed.

FRUIT AND NUT TREE GUIDE

Fruit and Nut Tree Guide source for taste test information: “Bareroot Fruit, Nut and Shade Trees” Dave Wilson Nursery, Hickman, CA.

Winter Seasonal Care Schedule

Problem	Crops Treated	Product Used	Instructions
Aphids, scale insects and mites	Almond, Apple, Apricot, Pear, Cherry, Peach, Pistachio and Nectarine	Narrow range oil	Use before bud break, if pests were a problem last year.
Canker	Fig	Hand labor	Cankers appear near pruning wounds. Branches girdle, leaves wither. Prune correctly; remove and destroy infected branches.
<u>Peach Leaf Curl</u> <i>May occur yearly if not treated</i>	Peach and Nectarine	Bordeaux, lime sulfur, or fixed copper	Make the first application around Feb 1, when buds begin to swell but before they show color. A second application may be needed in fall (see page 23).
Peach Twig Borer	Apricot, Peach, Plum and Nectarine	Narrow range oil, use with Spinosad	Use to kill caterpillars overwintering in the tree branches.
Sunburn, and in cherries may also prevent borer infestations	Apple, Pear and Cherry	Use a 1:1 mixture of white interior latex paint and water	Paint cherry, apple and pear tree trunks.
Recurring pest problems	All trees	Hand labor	Reduce the incidence of disease by removing all “mummies” as soon as fruit harvest period is over, as they are storehouses for many pests and diseases.

Spring Seasonal Care Schedule

Problem	Crops Treated	Product Used	Instructions
Codling Moth (worms in ripening fruit)	Apple, Pear and Walnut	Hand labor and some chemicals	Control codling moth with non-chemical and chemical treatments that are accurately timed. For complete instructions, go to http://www.ipm.ucdavis.edu/PMG/GARDEN/FRUIT/apples.html and select "codling moth."
Brown Rot, especially when rainy season coincides with bloom	Almond, Apricot, Cherry, Nectarine, Peach and Plum	Bordeaux, fixed copper or chlorothalonil	Farm Advisor Roger Duncan advises spraying when 50-80% of flowers are blooming.
Fireblight	Apples and Pears	Fixed copper	Spray every 5 days during bloom. Use only if fireblight was a problem last year.
Plum Aphid	Plum	Insecticidal soap or Narrow range oil	Use when 50% of leaves are curled and live aphids are present.
Peach Twig Borer	Apricot, Peach and Nectarine	Narrow range oil with Spinosad (a follow up to winter treatment)	Spray just as trees blossom and repeat one week later.
Powdery Mildew	Apple, Peach, Pear, Nectarine	Liquid lime-sulfur or wettable sulfur	Apply when pale green color appears as buds swell, and again when buds are pink (but before they open). Repeat at 10 day intervals until rain stops.
Scale	Walnut	Narrow-range oil	Apply when crawler stage is active, do not use when temperatures are over 90°F. Irrigate trees well prior to use.
Sunburn	Apple, Apricot, Peach, Plum, Nectarine and Walnut	Use a 1:1 mixture of white interior paint and water	Paint tree trunks; for walnuts also paint lower branches.
Walnut Blight	Walnut	Bordeaux or other fixed copper material	Spray when female flowers appear (tiny green nuts with feathery pistils) and at 10-14 day intervals until rainy weather stops.

Summer Seasonal Care Schedule

Problem	Crops Treated	Product Used	Instructions
Codling Moth	Apple, Pear and Walnut	Hand labor	Remove any mummies that persist on the trees to reduce the incidence of this pest the following year.
Walnut husk fly	Walnut	Malathion + molasses. Add molasses at ratio of 1 to 1 1/2 times the amount of malathion.	If trees have high incidence of this pest, spray at 21 day intervals beginning on August 1. It's generally sufficient if just the 1/3 to 1/2 lower part of the tree is sprayed.
Wilting	All trees	Water, deep irrigation	Remember that fruit trees need an adequate supply of water throughout the entire year, and especially during the hot Central Valley summer months.

Fall Seasonal Care Schedule

Problem	Crops Treated	Product Used	Instructions
Eutypa dieback	Apricot, Cherry	Hand labor/Pruning	Prune in late summer after harvest, removing 20% of last years new growth. Remove dead, diseased and damaged branches.
Peach Leaf Curl	Peach and Nectarine	Bordeaux, lime sulfur, or fixed copper	Apply after leaves have fallen, around November 15th.
Shot hole fungus	Apricot, Nectarine, Peach and Walnut	Bordeaux or fixed copper (never use sulfur on apricot trees)	If this disease was a problem during the previous year's growing season, spray before the first winter rain.
Zinc and Boron deficiencies (preventative)	Pistachio	Multi-nutrient foliar spray containing zinc, boron and copper	Apply every 3 weeks on newly planted trees, water immediately after fertilization. For mature trees, apply zinc as a foliar spray in late October, mid-March, and mid-April. Add boron to mid-March or mid-April treatment.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Fruit Flavor, Compatible Pollinators & Harvest Season
Apple		<i>Apples store best at 40°F in perforated plastic bags in the refrigerator.</i>
	<i>Braeburn</i>	Green with a reddish blush, these apples are crisp and tangy. Self-fruitful. October-November harvest.
	<i>Fuji</i>	Sweet, crisp and flavorful. Excellent keeper. Self-fruitful. September harvest.
	<i>Gala</i>	Reddish orange apples have a crispy blend of tartness and sweetness. Self-fruitful, great pollinator for other species. September harvest.
	<i>Golden Delicious</i>	Sweet and flavorful. Self-fruitful, pollinator for Red Delicious. September harvest.
	<i>Granny Smith</i>	Large, crisp, tart green apples make great pies. Self-fruitful. October-November harvest.
	<i>Gravenstein</i>	Crisp, juicy and tart apples used for sauces and baking. Pollinate with Fuji, Gala or Red Delicious. July-August harvest.
	<i>Jonagold</i>	Yellow with reddish orange blush, these apples are not overly tart. Pollinate with Fuji, Gala, Red Delicious and Granny Smith. September harvest.
	<i>Jonathan</i>	Heavy bearing tree produces medium to dark red crisp, moderately tart apples. Self-fruitful. August harvest.
	<i>McIntosh</i>	Crisp and aromatic bright red over dark green apples make great desert apples. Partly self-fruitful. Pollinate with Red Delicious or Gala for best crop. August-September harvest.
	<i>Pink Lady</i>	Sweet-tart apples have a reddish-pink over green skin when ripe. Makes great applesauce. Self-fruitful. October-November harvest.
	<i>Red Delicious</i>	Sweet and crisp, the tree is highly productive. Pollinate with Fuji, Golden Delicious or Granny Smith. August harvest.
	<i>Yellow Newton Pippin</i>	Yellow-green apples are firm, crisp and slightly tart. Self-fruitful. October-November harvest.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Fruit Flavor, Compatible Pollinators & Harvest Season
Apricot	<i>All</i>	<i>Apricot varieties are self-fruitful unless noted.</i>
	<i>Blenheim (Royal)</i>	Sweet, aromatic and flavorful. June-July harvest.
	<i>Canadian White Blenheim</i>	Won taste test award. Sweet and syrupy white flesh with firm texture. Pollinate with Blenheim or another late blooming apricot. June-July harvest.
	<i>Moorpark</i>	Aromatic and flavorful apricot that is great fresh and for canning. July harvest.
	<i>Tilton</i>	Medium to large sized and firm, rich flavor. Best apricot for canning. Great dried or fresh. July harvest.
	<i>Tomcot</i>	Consistent producer that has large, orange fruit with a firm, sweet yet slightly tart flesh. Has a larger harvest with a pollinator. May-June harvest.
Aprium		<i>Apriums are hybrids between apricot (75%) and plum (25%).</i>
	<i>Cot-n-Candy</i>	Sweet and juicy. Self-fruitful, no pollinator needed. June harvest.
	<i>Flavor Delight</i>	Extremely flavorful. Self-fruitful, will have bigger crop if pollinated by any apricot variety. June harvest.
Cherry		<i>Some cherries need specific pollinators-take note when choosing varieties. All of these cherries are "sweet" except for Montmorency, a "sour" cherry.</i>
	<i>Bing</i>	Large, firm and juicy, nearly black when ripe. Pollinate with Black Tartarian, Rainer or Van. May-June harvest.
	<i>Black Tartarian</i>	Medium, juicy nearly black cherry. Highly productive tree. Any sweet cherry tree will pollinate. June harvest.
	<i>Craig's Crimson</i>	Medium to large size. Sweet, spicy flavor, red-black color is a taste-test winner. Self-fruitful. Mature size tree is only 2/3 the size of a standard cherry tree. May harvest.
	<i>Lapins</i>	Large, firm, dark red sweet cherry. Self-fruitful. Sometimes sold as "fertile bing." June harvest.
	<i>Montmorency</i>	Sour cherry great for making pies. Large, light red skin, yellow flesh. Heavy bearer. Self-fruitful. June harvest.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Fruit Flavor, Compatible Pollinators & Harvest Season
Cherry		<i>(continued)</i>
	<i>Royal Rainer</i>	Large, yellow with red blush. Excellent flavor. Pollinated by Bing and Black Tartarian. May-June harvest.
	<i>Stella</i>	Large, nearly black, richly flavored cherry. Self-fruitful. June harvest.
	<i>Van</i>	Similar to Bing in flavor, but a smaller cherry. Heavy bearing tree. Pollinate with sweet cherry. May-June harvest.
Fig		<i>Most fig varieties produce two crops per year, one in late summer and one in early fall. All figs listed are self-fruitful.</i>
	<i>Black Jack</i>	Large, purplish brown fruit with sweet, juicy red flesh. Naturally small tree.
	<i>Black Mission</i>	Purplish black skin with strawberry colored flesh. Great fresh, dried or canned. Heavy bearing, large, long-lived tree.
	<i>Kadota</i>	Large, light greenish yellow fruit with sweet, tan colored flesh. Long-lived, vigorous tree.
	<i>Panache (Tiger)</i>	Small to medium sized fruit with green and yellow stripes. Pulp is strawberry colored and has a rich flavor.
Jujube		<i>Jujube is also known as the "Chinese Date." Very easy to grow.</i>
	<i>Lang</i>	Pear shaped fruits are reddish brown, wrinkled and sweet. Texture is dry but chewy. Pollinate with 'Li.' Fall harvest.
	<i>Li</i>	Round shaped fruits are reddish-brown, and wrinkled. Texture is dry but chewy. Partially self-fruitful but has more fruit when pollinated by 'Lang.' Fall harvest.
Nectarine		<i>Nectarines are self-fruitful, no pollinator needed.</i>
	<i>Arctic Jay</i>	Taste test winner. Sweet, firm, white flesh is attractive and flavorful. Freestone. July harvest.
	<i>Arctic Queen</i>	White flesh fruit is similar to 'Arctic Rose' but ripens later. Crunchy when firm ripe, extremely sweet when soft-ripe. Freestone. August harvest.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Fruit Flavor, Compatible Pollinators & Harvest Season
Nectarine		<i>(continued)</i>
	<i>Arctic Star</i>	This white nectarine got rave reviews. Attractive fruit has dark, red skin. Semi-freestone. June harvest.
	<i>Double Delight</i>	Extremely tasty yellow-flesh fruit has dark red skin. Consistently scores as the best tasting yellow nectarine. Also has attractive, double pink flowers. Freestone. July harvest.
	<i>Fantasia</i>	Large yellow fruit is tangy during early harvest and sweet during late harvest. Scored high on taste tests. Freestone. July-August harvest.
	<i>Goldmine</i>	Small to medium white flesh fruit is aromatic, sweet and juicy. Freestone. August harvest.
	<i>Heavenly White</i>	Taste test winner. Large, white, juicy, firm fruit. Freestone. July harvest.
	<i>Independence</i>	High scorer on taste tests. Firm, yellow flesh with bright red skin has a tangy, sweet flavor. Freestone. July harvest.
	<i>Necta Zee</i>	Genetic dwarf tree grows to 6 feet. Sweet and flavorful yellow flesh with attractive red skin. Freestone. June-July harvest.
Peach		<i>Peaches are self-fruitful, no pollinator needed.</i>
	<i>Arctic Supreme</i>	Taste test winner. White flesh has cream colored skin with red blush. Flavor is sweet and tangy. This cling peach becomes freestone-like when fully ripe. July-August harvest.
	<i>Babcock</i>	White fleshed freestone peach is a consistent high scorer in taste tests. Flesh is sweet and juicy with a low acid content. Freestone. Mid-July harvest.
	<i>Donut (Stark Saturn)</i>	This white fleshed peach is also called ‘Saucer’ or ‘Peento’ and has the appearance of a flat donut. Sweet and mild flavored. Freestone. June-July harvest.
	<i>Fay Elberta</i>	Yellow peach that is juicy and lightly sweet. Excellent fresh, frozen, canned or dried. Freestone. August harvest.
	<i>Frost</i>	Peach leaf curl resistant. Delicious yellow fruit with slight red blush over greenish yellow skin. Freestone. Excellent canned or fresh. Showy pink blossoms in spring. July harvest.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Fruit Flavor, Compatible Pollinators & Harvest Season
Peach		<i>(continued)</i>
	<i>Gold Dust</i>	Semi-freestone scored high on taste tests. Considered best early season yellow peach. June harvest.
	<i>Halford</i>	Extremely productive and fruit is of good quality. Cling. September harvest.
	<i>Loring</i>	Large yellow peach is a consistent taste test winner. Flavor and texture are superb and sweet. Freestone. July harvest.
	<i>O'Henry</i>	Large yellow fruit is firm with excellent flavor. Great for freezing. Tree is a heavy bearer. Freestone. August harvest.
	<i>Pix Zee</i>	Genetic dwarf tree grows to 6 feet. Delicious, firm yellow peach has an attractive appearance. Freestone. June harvest.
	<i>Sweet Bagel</i>	Flat, donut shaped fruit has sweet, yellow flesh. Tree produces large amount of fruit. Freestone. July harvest.
Pear		<i>Pears keep well if stored properly.</i>
	<i>Bartlett</i>	World's most popular pear has juicy white flesh. Pollinate with Bosc, D'Anjou or Winter Nelis. August harvest.
	<i>Bosc</i>	Brown skinned fruit is long and narrow with aromatic, sweet, white flesh. Excellent fresh, canned or baked. Pollinate with any pear. September harvest.
	<i>Comice</i>	Greenish yellow fruit has a fine texture and superb flavor. 'Comice' is the variety often used in gift packs by fruit companies. Self-fruitful. September-October harvest.
	<i>D'Anjou</i>	Yellow pear has mild, fine textured flavor. Keeps well. Pollinate with Bartlett. September harvest.
	<i>Winter Nelis</i>	Small and round fruit is juicy, aromatic and sweet. Keeps well. Pollinate with Bartlett. September-October harvest.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Fruit Flavor, Compatible Pollinators & Harvest Season
Pear, Asian		
	<i>20th Century</i>	Juicy, sweet, mild and crisp. Self-fruitful. August harvest.
	<i>Hosui</i>	Best tasting pear according to taste tests. Large, juicy, sweet and flavorful, crisp like an apple. Skin is brownish orange. Pollinate with Shinko, Bartlett or 20th Century. August harvest.
	<i>Shinko</i>	Juicy and flavorful like an apple. Golden brown skin. Pollinate with Hosui or Bartlett. September harvest.
Persimmon		<i>Persimmons trees are hardy, attractive and have few pests.</i>
	<i>Fuyu</i>	“Apple persimmon” is medium sized, and crunchy when ripe. Sweet, flavorful and non-astringent. Self-fruitful. Fall harvest.
	<i>Giant Fuyu</i>	Large persimmon is crunchy when ripe. Sweet, flavorful and non-astringent. Self-fruitful. Fall harvest.
	<i>Hachiya</i>	Attractive fruit is deep orange color and acorn-shaped. Sweet, flavorful, astringent until soft-ripe. Mature fruit can be frozen, thawed and allowed to ripen. Self-fruitful. Fall harvest.
Plum, Japanese		<i>“Japanese” plums are the traditional plums found at farmer’s markets and supermarkets.</i>
	<i>Beauty</i>	Reddish yellow skin with streaked flesh. Sweet and flavorful. Self-fruitful. June harvest.
	<i>Burgundy</i>	Maroon skin. Sweet with little or no tartness. Self-fruitful. July-August harvest.
	<i>Catalina</i>	High scores on taste tests. Large, black, sweet and juicy. Firm when ripe, skin is not too tart. Self-fruitful. Late July harvest.
	<i>Elephant Heart</i>	A home orchard favorite. Large, heart shaped fruit with sweet and juicy red flesh. Pollinate with Beauty or Santa Rosa. September harvest.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Fruit Flavor, Compatible Pollinators & Harvest Season
Plum		<i>(continued)</i>
	<i>Emerald Beaut</i>	Highly rated in taste tests. Light green skin, greenish-yellow to orange flesh. Pollinate with Beauty, Burgundy, Late Santa Rosa or Flavor King Pluot. Late August harvest, fruit can stay on tree for up to 2 months.
	<i>Laroda</i>	High scores in taste tests. Dark purple-skin with juicy red flesh. Pollinate with Burgundy, Late Santa Rosa or Santa Rosa. July-August harvest.
	<i>Late Santa Rosa</i>	Medium to large plum with reddish purple skin and streaked flesh. Tart-sweet flavor. Self-fruitful. August harvest.
	<i>Santa Rosa</i>	Very popular plum in CA. Reddish purple skin with amber flesh. Juicy, tangy flavor. Self-fruitful. June harvest.
	<i>Satsuma</i>	Long-time favorite in CA. Mottled maroon over green skin with dark red flesh. Sweet fruit, not tart. Excellent for jam. Pollinate with Beauty or Santa Rosa. July harvest.
	<i>Shiro</i>	Medium greenish yellow fruit with mild flavor. Self-fruitful. June- July harvest.
	<i>Weeping Santa Rosa</i>	Considered one of the most flavorful and aromatic plums when fully ripe. Self-fruitful tree has weeping growth and beautiful flowers. July harvest.
	<i>Wickson</i>	Large heart-shaped fruit is greenish yellow and sweet. Partly self-fruitful, pollinate with Santa Rosa. Late July harvest.
Plum, European		<i>European plums are used in many canning and baking recipes. Some are prunes.</i>
	<i>Blue Damson Plum</i>	Dependable variety that produces small, bluish black tart plums used for jam and jelly. Self-fruitful. August-September harvest.
	<i>Early Italian Prune</i>	Productive prune tree with very sweet fruit. Self-fruitful. August harvest.
	<i>French Improved Prune</i>	This is the prune found in California products. Great for canning, and drying. Self-fruitful. August harvest.
	<i>Green Gage Plum</i>	Long-time favorite for dessert, cooking and canning. Juicy flesh with a sweet flavor. Self-fruitful. August harvest.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Fruit Flavor, Compatible Pollinators & Harvest Season
Pluot		<i>Pluots are hybrids between plum (75%) and apricot (25%).</i>
	<i>Dapple Dandy</i>	Taste test winner. Greenish-yellow skin with red spots that eventually turns yellowish-maroon. Pollinate with Flavor Supreme pluot; Burgundy or Santa Rosa plum. August harvest.
	<i>Flavor Grenade</i>	Taste test winner. Green fruit with red blush has crisp texture and sweet flavor. Pollinate with a Japanese plum. August harvest. Fruit stays on tree 4-6 weeks.
	<i>Flavor King</i>	Taste test winner. Reddish purple skin with dark red flesh is sweet and spicy flavored. Pollinate with Flavor Supreme pluot; Santa Rosa or Late Santa Rosa plum. August harvest.
	<i>Flavor Queen</i>	Greenish-yellow skin, with orange colored flesh. Candy-like sweet flavor. Pollinate with any pluot or Japanese plum. July-August harvest.
Pomegranate		<i>Pomegranates are harvested late summer through fall. They are self-fruitful.</i>
	<i>Ambrosia</i>	Huge fruit with pale, pink skin. Inside is purplish and sweet-tart. Long-lived tree.
	<i>Sweet</i>	Attractive as an ornamental, can be grown in containers or as an espalier. Produces very sweet fruit.
	<i>Wonderful</i>	Large, purple-red fruit with a tangy flavor. Attractive flowers and foliage. Most common commercial variety.
Quince		<i>Quince are harvested late summer through fall. They are self-fruitful.</i>
	<i>Orange</i>	Large, bright yellow aromatic fruit can weigh up to 1 pound. Excellent for cooking.
	<i>Pineapple</i>	Heavy producer of large, tart fruit used in baking, jams and jellies. Beautiful ornamental blooms.
	<i>Smyrna</i>	Extremely large fruit. Light yellow flesh and bright yellow skin. Very showy bloomer.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Nut Description, Compatible Pollinators & Harvest Season
Almond		<i>Almond trees pruned correctly are excellent for small yards.</i>
	<i>All-In-One</i>	Heavy bearing tree with flavorful, soft-shell nuts. Self-fruitful. September-October harvest.
	<i>Butte</i>	Most productive almond variety, has semi-hard shell. Pollinate with Mission, All-In-One or Nonpareil. September-October harvest.
	<i>Carmel</i>	Well-sealed nuts keep well. Pollinate with Mission or Nonpareil. September harvest.
	<i>Mission</i>	Hard-shell nut. Pollinate with All-In-One, Nonpareil or Carmel. September-October harvest.
	<i>Nonpareil</i>	Standard for commercial almonds. Pollinate with Mission, All-In-One or Carmel. September harvest.
Chestnut		<i>Roast your own chestnuts during the holiday season!</i>
	<i>Colossal</i>	Medium to large size nuts are easily separated from the hull and easy to peel. Pollinate with Nevada. September harvest.
	<i>Nevada</i>	Good producer. Pollinate with 'Colossal'. One 'Nevada' can pollinate up to 10 'Colossal' trees. September harvest.
Pecan		<i>Pecan trees make excellent shade trees.</i>
	<i>Mohawk</i>	Large, thin-shelled nut. Self-fruitful. October-November harvest.
	<i>Pawnee</i>	Medium to large, thin-shelled nut. Partially self-fruitful, or plant with Mohawk. October harvest.
Pistachio		
	<i>Kerman (Female)</i>	Above average size nut, shells easily open by hand. Crops tend to be produced biennially, with a large set of nuts one year, followed by little to no set the following year. Tree begins bearing at 5-8 years of age, but does not attain full nut production until its 15th year. October harvest.
	<i>Peters (Male)</i>	Does not bear fruit, used for pollination purposes only. One male tree can fertilize up to 11 female trees.

Deciduous Fruit & Nut Tree Guide

Tree Type	Variety	Nut Flavor, Compatible Pollinators & Harvest Season
Walnut		<i>Walnut trees produce excellent shade and have attractive white bark.</i>
	<i>Chandler</i>	Heavy bearer, nuts are produced on lateral and terminal buds. High quality, light colored nuts. Good choice for a backyard tree. September-October harvest.

Deciduous Fruit & Nut Trees in Your Garden

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ILLUSTRATIONS

Texas Agricultural Extension Service:
<http://aggie-horticulture.tamu.edu/extension/homelandscape/tree/planting.html>

Author: Anne Schellman, UCCE Stanislaus County. 3800 Cornucopia Way, Suite A, Modesto, CA 95358

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