

# Extension Service

## Growing Tree Fruits and Nuts

### In the Home Orchard

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**Area I.** The Willamette Valley and southern Oregon are noted for mild, uniform, and relatively humid weather. During the summer, temperatures are usually moderate with low humidity. Southern Oregon has a warmer, drier climate with frequent spring frosts.



**Area III.** Mountain and high plateau. This area is noted for extremes in temperature, lack of rainfall, and a short growing season. Only the hardiest fruit trees will survive.



**Area II.** The mid-Columbia and eastern Oregon regions generally have warmer summers and colder winters than most of Area I. Spring frost is common.



**Area IV.** Coastal region. Low summer temperatures and rain limit fruit growing. Disease problems are especially severe. The southern coast is warmer. Coastal valleys 15-20 miles inland are more like Area I.

Figure 1.--Oregon growing areas for fruits and nuts; the areas are determined largely by climate. The maps show the growing areas by climate zones.

Table 1 shows which zones are suitable for various fruit and nut crops.

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Table 1.--Growing areas and management for Oregon tree fruits and nuts.

<b>Crop</b>	<b>Areas best suited</b>	<b>Space per tree (ft) (a )</b>	<b>Pollinizer tree needed?</b>	<b>Approx. years to bearing</b>	<b>Sprays usually required to control</b>
Apples	I, II, III, IV	5-40	Sometimes	2-10	Codling moth (b), scab
Apricots	II	15-25	No	6-7	Brown-rot bacterial canker
Butternut	I, II, III, IV	30-40	Yes	3-5	None
Cherries, sour	I, II, III, IV	14-20	No	3-5	Fruit fly(b)
Cherries, sweet	I, II, IV	20-35	Yes	6-7	Fruit fly (b), bacterial canker
Chestnut	I, II, IV	20-40	Yes	5-7	None
Figs	I	12-20	No	5-6	None
Filberts	I, IV	15-20	Yes	5-6	Filbert moth (b), bacterial blight
Hickory	I, II, III, IV	20-40	Yes	10-14	None
Papaw	I, II	15-20	Yes	12-14	None
Peaches, nectarines	I, II	12-15	No	4-5	Leaf curl, borers, coryneum blight, brown rot
Pears	I, II	10-20	Yes	5-7	Fire blight, scab, codling moth (b)
Persimmons	I, II	15-20	Yes	8-10	None
Plums and prunes	I, II, III (c), IV	10-20	Some varieties	3-5	Crown borers, brown rot

Walnuts, black	I, II, III, IV	30-40	No	10-12	Husk fly (b)
Walnuts, English	I, II(c)	40-50	No	10-12	Husk fly (b), blight

a The vigor of the variety and the rootstock, and the amount of pruning, also determine space requirements.

b Insect, if uncontrolled, causes wormy fruit or nuts.

c Certain hardy varieties are available.

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## Is a home orchard right for you?

With dreams of abundant supplies of their favorite fruits and nuts produced right in their own backyards, homeowners plant backyard orchards every year.

Some people are rewarded with success in their venture; but because they didn't consider some important factor, many others have results that fall far short of expectations.

Often they move before the trees have reached bearing size-some trees require 5 to 7 years (see Table 1).

Before you decide to plant fruit or nut trees, ask yourself:

- Will I have the time and interest to spray, prune, and otherwise care for these trees?
- Will I have the time and interest to harvest and use the possibly overabundant fruit?
- Will my garden have room enough?
- Is the soil suitable for the trees?

The space required for a home orchard ranges from 15 feet of wall for a couple of espaliered dwarf apple trees to 1/2 acre or more for trees of various sizes. You can plant fruit and nut trees as an integral part of your home landscape, or isolate them in a specified orchard area.

Large trees such as walnuts and chestnuts make good shade trees, but they're more difficult to prune and spray than smaller trees.

The soil must permit rooting to a depth of at least 3 feet. It should be neither too sandy nor too clayey, although certain kinds of trees will tolerate these extremes of soil texture.

In addition to the trees and space, you'll need an adequate sprayer, ladder, and pruning tools. If you grow only dwarf trees and keep them short by training and pruning, you won't need a ladder.

### *A special note:*

This publication doesn't recommend specific pesticides. Recommendations and regulations change frequently. See your county Extension agent or local garden store personnel. Also, read EC 631. For the serious gardener, the rewards from a well-kept home orchard are enough to justify the considerable effort involved. Tree fruits and nuts not adapted to Oregon's climate but grown elsewhere in the United States include pecans, almonds (in most locations), oranges and other citrus, avocados, pistachios, olives, loquats, and tung. These crops aren't suited to Oregon for one of these reasons: winters are too cold, the season is too short, springs are too cool and wet, or summers are too cool.

Almost all fruit and nut trees are grafted or budded in the nursery to a named variety that will bear fruit or nuts fitting a certain description.

Plan for a sequence of ripening dates if you plant several trees of one species.

The next section covers general guidelines for growing specific kinds of fruits and nuts.

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## Guidelines for growers

Table 3 compares fruit and nut varieties by areas best suited and approximate time of maturity, and gives relevant comments.

### Apples

Apple scab is a serious disease. It requires several sprays for control. The variety Delicious is especially susceptible to apple scab. Varieties resistant to scab are available. Most scab-resistant varieties are susceptible to powdery mildew, but you can partially control this disease by pruning off infected shoots regularly.

Apple maggot is a pest controlled by spraying. Larvae infest the fruit, rendering it worthless.

You can purchase apples on dwarfing, semidwarfing, or fully vigorous rootstock. Rootstocks influence trees approximately as shown in Table 2.

The lower figures in Table 2 represent tree sizes for moderately vigorous varieties such as Delicious; the higher figures represent sizes for vigorous varieties such as Gravenstein and Newtown.

The rootstock numbers refer to specific rootstocks that you can order from nurseries. Trees on M-9, M-26, and sometimes M-7 usually require support of some kind.

Moderately vigorous varieties on M-9 or M-26 roots can, with pruning, be held to a permanent spacing of 5 feet; eventually, depending on site, they won't require support.

Table 2.--*Apple rootstock influence on size, yield, and years to bearing.*

<b>Rootstock type</b>	<b>Tree spread (feet)</b>	<b>Approx. height (feet)</b>	<b>Years to first bearing</b>	<b>Approx. yield (lb)</b>	<i>Rootstock numbers</i>
Vigorous	30-40	25-60	7-10	300-400	Seedling
Semidwarf (a)	15-25	15-25	5-7	180-300	MM106, MM111, M2, M7, M4
Dwarf	5-10	6-15	3-5	50-150	M9, M26, Marc
More dwarf	4-6	5-7	3-5	25-50	M27, P2

a Requires support.

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Table 3.--*Fruit and nut varieties (areas best suited,*

*approximate time of maturity, comments).*

<b>Variety</b>	<b>Areas suited</b>	<b>Approximate time of maturity</b>	<b>Comments</b>
<b>Apples</b>			
Lodi	I, II, III, IV	July 15-30	Yellow, won't keep.
Earligold	I, II, III, IV	Aug. 1-15	Yellow, crisp.
Stark Summer Treat	I, II, III, IV	Aug. 1-15	Red, good flavor.
Summerred	I, II, III, IV	Aug. 1-15	Red, good flavor.
Gravenstein	I, IV	Aug. 15-30	Pollinized by Lodi, not hardy, best sauce apple.
Jonamac	I, II, III, IV	Sept. 1-10	Red, McIntosh-like.
Elstar	I, IV	Sept. 10-20	Tart, good flavor, cool climate.
Gala	I, II, III, IV	Sept. 15-25	Sweet, good flavor, heat-tolerant.
Jonagold	I, IV	Sept. 15-30	Big, good flavor, cool climate, needs pollinizer.
Spartan	I, II, III, IV	Sept. 20-30	Red, productive.
Delicious	I, II	Sept. 25-Oct. 5	Standard red, scabs badly.
Golden Delicious	I, II	Oct. 1-10	Yellow, flavorful, very productive.
Empire	I, II	Sept. 20-30	Small, red, flavorful.
Braeburn	I, II	Oct. 5-15	Flavorful, stores well, productive.
Fuji	I, II	Oct. 10-25	Sweet, flavorful, stores well.
Granny Smith	I, II	Oct. 15-30	Tart, stores well.
Newtown Pippin	I, II	Oct. 10-20	Green, tree vigorous, slow to produce.
<b>Apples, scab-resistant varieties</b>			
Redfree	I, II, III, IV	Aug. 5-15	Red, small, mild.

Chehalis	I, II, III, IV	Aug. 15-25	Yellow, big, long picking season.
Prima	I, II, III, IV	Sept. 1-10	Big, red, pits.
Nova Easygro	I, II, III, IV	Sept. 10-20	Good flavor.
Liberty	I, II, III, IV	Sept. 20-30	Best flavor, red.
Jonafree	I, II	Sept. 25-Oct. 5	Medium size, good flavor.

### **Apricots**

Puget Gold	I, II	July	Produces west of Cascades.
Rival	II	July	Mild flavor.
Royal (Blenheim)	II	July	Self-fruitful.
Moongold	II, III	July	Cold-hardy, pollinized by Sungold.
Sungold	II, III	July	Pollinized by Moongold, hardy.
Chinese	I, III	July	Resists frost.

### **Cherries, sour varieties**

Montmorency	I, II	July	Michigan strain best.
North Star	I, II	July	Dwarf variety.

### **Cherries, sweet varieties**

Royal Ann	I, II	Mid	White, pollinized by Corum.
Bing	II	Mid	Black, pollinized by Van, Corum.
Lambert	I, II, IV	Late	Black, pollinized by Van, Corum.
Van	II	Early	Black, pollinized by Bing, Lambert.
Sam	I, II	Mid	Black, pollinized by Lambert.
Bada	I, II, IV	Mid	White; pollinized by Royal Ann, Bing, Lambert; semidwarf.

Stella	I, II, IV	Mid	Mid Self-fruitful, black.
Compact Stella	I, II, IV	Mid	Smaller than Stella.
<b>Chestnuts</b>			
Revival	I, II, III, IV	September	Pollinized by Carolina.
Carolina	I, II, III, IV	September	Pollinized by Revival.
Layeroka	I, II, III, IV	September	Reliable producer.
Chinese seedling	I, II, III, IV	September	Pollinizer for Layeroka.
<b>Figs</b>			
Brown Turkey	I	August	Large, brown.
Desert King	I	August	Green, large, sweet.
Lattarula	I	August	Green, golden inside.
<b>Filberts (Regions II and III are too cold for filberts)</b>			
Barcelona	I, IV	October	Standard variety, pollinized by Davianna.
Davianna	I, IV	October	Light producer, pollinized by Barcelona.
<b>Nectarines (fuzzless peaches)</b>			
Stark Red Gold	I, II	August	Southern and northeastern Oregon only.
Harko	I, II	August	Better fruit set.
Genetic dwarfs	I, II, III, IV	August	Grown in pots, take inside for winter.
<b>Peaches</b>			
Veteran	I, II	Aug. 20-25	Regular bearer.
Red Haven	I, II	Aug. 5-10	Most popular, clingstone until fully ripe.
July Elberta	I, II	Aug. 15-20	Old favorite.

Early Elberta	I, II	Aug. 24-28	Old favorite.
Rochester	I	Aug. 24-30	Old favorite.
Reliance	I, II	Aug. 5-10	Resistant to cold.
Frost	I, II	August	Resists leaf curl.
Genetic dwarfs	I, II, III, IV	Summer	Very small trees, grow in pots, indoors in winter.

**Pears, European varieties**

Bartlett	I, II	Aug. 15-30	Pollinized by Anjou, Fall Butter.
Anjou	I, II	Sept. 5-20	Pollinized by Bartlett, needs 45- 60 days of cold storage before ripening.
Bosc	I, II	Sept. 10-30	Pollinized by Comice, best in southern Oregon.
Cascade	I, II	Sept. 10-30	Red blush, good flavor.
Comice	I, II	Sept. 20-30	Pollinized by Bosc, best in southern Oregon, needs 45- 60 days of cold storage before ripening.
Seckel	I, II	Aug. 20-Sept. 10	Pollinized by Anjou, Bosc, Comice.

**Pears, red varieties**

Red Bartlett (numerous strains)	I, II	Aug. 15-30	Pollinized by Anjou, Fall Butter.
Reimer Red	I	September	Pollinized by Bartlett.
Red Anjou	I	September	Pollinized by Bartlett.
Starkrimson	I, II	Aug. 1-15	Pollinized by Bartlett.

**Pears, Oriental varieties**



Chojuro	I, II	September	Pollinized by Nijisseiki, Shinseiki.
Nijisseiki (20th century)	I, II	September	Pollinized by Chojuro, Shinseiki.
Shinseiki	I, II	August	Pollinized by Nijisseiki, Chojuro.
Kikusui	I, II	August	Pollinized by Chojuro, Nijisseiki.

**Persimmons**

Fuyu	I, II	November	Seedless Japanese.
Garrettson	I, II	November	American, small.
Early Golden	I, II	November	American, small.

**Plums, cold-resistant varieties**

Mount Royal	III	September	Self-fruitful.
Superior	III	September	Pollinized by Pipestone.
Ember	III	October	Pollinized by Superior.

**Plums, European varieties (prunes when dehydrated)**

Italian	I, II	Sept. 10-30	Tart, "purple plum."
Brooks	I, II	Sept. 20-30	Bears regularly, large.
Parsons	I	Sept. 1-15	Pollinized by Stanley, sweet.
President Plum	II	Sept. 20-30	Pollinized by Stanley.
Moyer Perfecto	I (south only)	Oct. 1	Best dried, sweet.
Stanley	I, II	Sept. 1-15	Bears but brown rots.

**Plums, Oriental varieties**

Early Golden	I, II	July	Apricot-like flavor.
Red Heart	I, II	September	Pollinized by Shiro.

Shiro	I, II	August	Pollinized by Red Heart.
Burbank	I, II	August	Pollinized by Elephant Heart.

### **Walnuts, black varieties**

Thomas	I, II	October	Seedlings inferior.
Ohio	I, II	October	
Myers	I, II	October	

### **Walnuts, English varieties**

Franquette	I	Late October	Standard variety, limited hardiness.
Spurgeon	I	Late October	Late bloomer, hardy.
Chambers #9	I	Late October	Heavy producer, moderately hardy.

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Spur-type strains of certain varieties such as Delicious, Golden Delicious, and others are available. Spur types are smaller, especially on dwarfing root stocks, and they're often more productive than nonspur types.

Sometimes, more than one apple variety is grafted on the same tree. This is reasonably satisfactory, but varieties have different growth rates and maturity dates, so it's more difficult to prune and spray such trees. You can avoid these problems by planting several dwarf trees of different varieties. Dwarf trees have the additional advantage of being easier to prune, spray, thin, and harvest.

### **Apricots**

Because they bloom early, apricot crops frequently are lost to spring frost. In areas of high spring rainfall, they don't set fruit regularly and are subject to a host of diseases.

### **Butternut**

The butternut tree closely resembles black walnut. It's the most winter-hardy of all nut species, and the most likely to succeed in poor soil. It's an attractive landscape tree because of its gray bark and interesting tree form. The nut is pointed and oblong with deep ridges. Except for selected varieties, the kernel is thin and difficult to remove from the shell.

### **Cherries, sour**

The principal variety, Montmorency, doesn't require a pollinizer. The tree is smaller, bears earlier, and has fewer disease problems than the sweet cherry. North Star on mahaleb rootstock is a smaller tree than Montmorency on mahaleb.

Almost all sour cherries are frozen or canned and later used in pies or pastries.

## Cherries, sweet

In spite of the hazards of rain cracking, bacterial canker, bird depredation, and fruit-fly infestation, sweet cherries are popular home garden fruit trees.

Sour cherry trunks often are used to dwarf sweet cherry trees for the homeowner, but the degree of dwarfing is slight and the death rate of young trees is greater than on sweet cherry (mazzard) or *Prunus mahaleb* seedling rootstocks. New dwarfing rootstocks for sweet cherry, M x M 14 and GM 61, are available from some nurseries.

Bacterial canker often girdles and kills budded-low sweet cherry trees. You can avoid this by (1) planting mazzard F-12-1 root and trunk stock or mazzard seedlings, and (2) bud-ding or grafting the varieties 12 to 18 inches out on the limbs a year or two later.

All sweet cherry varieties except Stella require pollination by some other variety. The three principal varieties (Bing, Lambert, and Royal Ann) won't pollinize each other. Corum, Sam, Van, Bada, and several others are good pollinizers.

It's practical to graft several cherry varieties onto the same tree. Sweet cherry trees don't tolerate wet or clayey soils. Birds often eat much of the fruit on isolated cherry trees. You can protect fruit by placing plastic netting over the tree or just around the lower limbs.

## Chestnuts

The chestnut grows into a large, attractive shade tree that bears an abundance of fragrant, creamy white catkins in spring. Nuts are enclosed in golden-colored prickly hulls in fall. The nuts are delicious roasted fresh, but they mold easily in storage.

Since some nursery-grafted chestnuts die from delayed graft-incompatibility, it's safer to plant either seedlings or own-rooted trees.

All Chinese chestnut trees are highly resistant to chestnut blight, which has almost completely killed the American chestnut. While they'll bear some nuts with their own pollen, nut production and size often is increased by pollen from a second tree.

Because of the blight, chestnut trees may not be shipped to Oregon from eastern nurseries.

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## Filberts

Unless you remove suckers from the crown of a filbert tree every year, it grows as a bush. You can propagate filbert trees from rooted suckers, but nurseries usually can supply better trees. *Every* filbert variety requires another variety for pollination.

A single mature filbert tree, occupying a space of 20 feet or more, will produce only 15 to 20 pounds of dried nuts. Especially if blue jays and squirrels get half the nuts, the filbert doesn't produce much for the space it occupies. To increase a tree's productivity, prune out the older, more pendulant wood.

Eastern filbert blight, caused by a fungus, is killing many trees in the northern Willamette Valley. For this reason, it's inadvisable to plant filberts in that region.

## Figs

Summers are really too cool in Oregon for figs, but a few varieties such as Lattarula, Brown Turkey, Desert

King, and Neveralla (Partridge Eye) often will mature a crop. Temperatures around 0 degrees F will kill parts of the trees.

Especially if you grow them in a bush form, they'll grow back to producing age in 2 or 3 years from the lower stem portions. Plant fig trees in sunny spots, preferably on a south wall.

Fig trees require no sprays and deer don't eat them. Prune them in late winter to keep the height below about 8 feet.

## **Hickory**

Selections of the shagbark hickory and of some other species are desirable for home planting as fruiting ornamental trees. Some varieties from the northeastern United States are winter-hardy.

The nuts are small to medium in size, with thick shells. The trees are very large.

## **Papaw**

Hobbyists in Michigan and New York have selected hardy, relatively large-fruited varieties from wild seedling populations. The fruit is sometimes 5 to 6 inches long and 2 or 3 inches thick; the skins are green until ripe, becoming yellow as they begin to ripen and bronze or brown when they're ripe enough to eat. The soft, ripe flesh is creamy and yellow.

The papaw is sweet and has a resinous flavor and odor that some people enjoy. There are large brown seeds in the flesh.

Isolated trees generally are unfruitful because of the lack of cross-pollination, so plant two trees for pollination. These trees are slow-growing and slow to come into bearing, but they live long.

## **Peaches, nectarines**

A nectarine is nothing more than a fuzzless kind of peach. Peaches are ill-adapted to rainy climates. They bloom early in spring when weather is too cool and wet for good pollination, and when clear weather frequently brings frosts.

Numerous serious diseases infest peach trees in wet weather: peach leaf curl, coryneum blight, and brown rot. Varieties Frost and Rosydawn are resistant to peach leaf curl.

Without frequent spraying, peach trees in cool, wet climates soon will die. Peaches also require heavy fertilization and pruning. They're one of the most difficult fruits to grow, yet many home orchardists grow them successfully.

Plant them in a sunny spot with good air movement.

Nectarines bloom earlier and are more sensitive to diseases than peaches.

## **Pears**

Trees are available on vigorous rootstocks on quince roots, which are semidwarfing. Quince isn't winter-hardy, so don't plant trees on this root in areas II or III (Figure 1).

Since pear trees are more upright and smaller than apple trees, they don't make good shade trees. Pears tolerate clayey or wet soils better than most other kinds of tree fruits.

Especially in southern and eastern Oregon, pear trees are subject to fire blight, a particularly virulent bacterial disease. Control of fire blight requires frequent spraying and pruning to remove infected twigs. Bacterial blossom blast and codling moth infestation are problems in all pear districts. A dormant lime sulfur and oil spray is required to control pear blister mite.

European pears are harvested unripe and ripened off the tree. In contrast to European pears, which have a soft, melting flesh when ripe. Oriental pears ripen on the tree and are crisp like apples.

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## **Persimmons**

Some seasons in Oregon, there aren't enough warm days for persimmons of either the American or the Japanese species to mature their fruit.

American species, which are smaller and have seeds, will mature more often in our cool climate. Two or more varieties or seedlings of American persimmon must be planted for pollination.

The Japanese varieties that will mature in western Oregon, such as Fuyu, bear seedless fruit and don't require a male tree for pollination. Until they're soft-ripe, most persimmon fruits are extremely astringent; Fuyu is much less so.

The Japanese persimmon isn't attacked by many enemies, and it's a rather beautiful and useful tree for home plantings. Usually, persimmons are eaten fresh, but they can be dried.

## **Plums and prunes**

There are three general kinds of plums and prunes: European, Japanese, and hybrid. Prunes are European-type plums that are suitable for preservation by dehydration.

Japanese varieties bloom earlier than European plums, and they frequently fail to bear because of frost or cool, wet weather.

Brown rot, which infects the blossoms and fruit, is the most common disease of plums.

The Brooks and Italian varieties of European plums are among the easier fruits to grow in the home orchard.

Japanese plums usually are eaten fresh, but most European varieties are good fresh, canned, or dried.

The Parsons European-type plum and all Japanese plums require pollinizers. All hardy hybrid plums require another variety for pollination.

## **Walnuts, black**

Black walnut trees grow rapidly into very large shade trees. The nuts are delicious but hard to crack. Like English walnuts, they're subject to infestation by the walnut husk fly. Named varieties available from nurseries usually have larger kernels and are easier to crack than seedlings. Black walnuts, in their hulls, are large and heavy--don't regard them lightly when they fall from the top of a tall tree!

## **Walnuts, English**

Trees make good nut-bearing shade trees in western Oregon, but they're subject to several serious problems. English walnuts grafted on black walnut roots often die at age 15 to 25 or older from a graft union disorder known as *blackline*.

Walnut trees in housing developments established in old walnut orchards frequently die from the combined effects of root disturbance and the blackline disorder. To avoid blackline, plant walnut trees on Manregian or Carpathian roots.

If the walnut husk fly is present, you'll need to spray to prevent infestation. Mature walnut trees are so large that they're quite difficult to spray.

Early fall and winter freezes frequently damage or kill walnut trees. Early-blooming varieties are subject to spring frost. Hardy Carpathian walnut varieties can be grown in area III (Figure 1). They resemble commercial English walnuts but are somewhat smaller.

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## Planning your home orchard

There's no need to align all the fruit trees in a row as in a commercial orchard. With a little thought, you can fit fruit trees well into your overall landscape design. You can use them in at least six different ways:

1. Single specimen trees
2. Espaliered against a wall or fence
3. A fruiting hedge
4. Shade trees
5. A row of individuals defining the limits of the landscape
6. Several rows of windbreaks

Use the showy flowers and bright-colored fruit to complement your landscape. When you grow small fruits or vegetables underneath the trees, you must consider the possible incompatibility of the spray schedules-but with groundcovers, flowers, or mulches, there's no such problem.

Dwarf apples, pears, and some plums are espaliered easily, but most other kinds of fruit trees are not.

Even in many urban areas, deer depredation to fruit trees can be severe. Depending on the severity of the problem, the following measures will protect your trees:

- Deer repellent
- Fencing individual trees
- Fencing the entire orchard

Don't plant fruit trees over the drains or on property lines. Plant them where there's ample space so that excessive pruning won't be required to contain them. Avoid the problem of dropped fruit on walks and patios. Plant far enough from property lines so branches don't extend into your neighbor's yard.

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## Planting and early care

Before you buy by mail order, try your local nursery dealers. They're likely to carry trees adapted to your region; they can give you advice based on local experience; and you can go back to them if you have problems with their trees.

If the trees arrive before you're ready to plant, cover the roots with damp sawdust, chips, or loose soil to keep them wet and protected from cold. Fruit trees usually are shipped bare-root.

## Planting and pruning

Plant as soon as possible in winter or early spring. Dig the hole 1 1/2 to 2 feet wide and about 1 1/2 feet deep. Plant so that the uppermost root is no more than 2 inches below the ground level. With dwarf trees, be sure the graft union is 2 to 3 inches above the ground level. Spread the roots out in the hole, trim off dead parts, and tamp topsoil around as you fill in the hole.

Loss of newly planted trees usually is caused by:

- Roots suffocated by too deep planting
- Water standing in the hole
- Top growing before roots (late planting)
- Drought (lack of irrigation or weed competition)
- Fertilizer placed in the hole

Mulching newly planted trees with several inches of sawdust, bark dust, gravel, or with plastic will help in establishment and early growth. Don't apply fertilizer or herbicides at planting or during the first year.

Many roots are lost from trees as they're dug from the nursery. This results in a tree that has too much top for the remaining roots to supply with water and nutrients.

Prune the top immediately after planting (Figure 2) to restore the normal ratio of roots to top—usually, you should prune away a fourth to a half of the treetop. Trees you prune this way soon will outgrow trees you didn't prune at planting time. Less pruning is required if you water the trees every few days during warm, dry weather.

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## Irrigation

Young trees with their limited root systems need irrigation, even on sites where mature trees do well on rainfall alone. About 3 to 5 gallons of water per tree every week should be enough.

Irrigate one or more times a week during hot weather. However, excessive irrigation can bring on root and trunk rots.

On windy sites when the soil is wet, trees will lean unless staked.

## Protection against weather and pests

Paint trunks of young trees with white latex paint (especially near the ground) to prevent sunburn and reduce the risk of freeze injury.

Cats may use the trunks as scratching posts. Mice sometimes burrow under the mulch and eat the bark at the ground level. Gophers eat the roots of fruit trees, often killing the trees.

Severe infestations of such insects as cherry slugs, pear slugs, aphids, leafrollers, or skeletonizers reduce the growth rate of young trees—you need to control them. See your local garden store for current control measures.

## Fertilizers

After the first season, your trees may need a little nitrogen to



Figure 2.--Prune trees immediately after planting. Bend an unbranched or poorly branched tree (left) at about 30 inches above ground; remove

hasten growth. About 1/8 lb of active nitrogen per year of age is a good rule of thumb. This would mean about 1/4 lb of urea, 1/2 lb of ammonium sulfate, 1/3 lb of ammonium nitrate, 3/4 lb of 16-16-16, or 1 lb of 10-10-10.

Scatter it under the branches, away from the trunk, after leaf fall and before bloom. Peach and filbert trees require more fertilizer than other fruits and nuts. Trees in grass sod will require much more nitrogen than where ground is mulched or clean cultivated. Generous application of lawn clippings or compost often will supply all the fertilizer required for the best growth.

### Stimulating blossoming and fruit set

You can induce apple and pear trees to bloom the following year by scoring them carefully through the bark, but not into the wood. Use a sharp knife, and score within 2 to 3 weeks (for apple) or 6 to 7 weeks (for pear) after the normal bloom period. Don't score cherry or walnut trees.

To increase fruit set in Anjou and Comice pear trees that are blooming but not bearing, prune 2-year shoots back to a flower bud at bloom time. Fruit set also is stimulated by removing the tips of rapidly growing shoots in May or June.

Limbs bent and tied out or spread 50 degrees to 90 degrees from vertical will bloom more than upright limbs. Pears set most when spread is nearly horizontal. See Figure 3.

Although usually there are enough wild bees, introducing a hive of bees for pollination may improve fruit set. Hand transfer of pollen (using a camel hair brush or rubber eraser) is effective but tedious. During bloom, avoid using insecticides that kill bees.

*the 1 or 2 branches present. If you plan to water a well-branched nursery tree regularly (right), you can leave a central leader and 5 or 6 side branches. Remove branches that compete with the leader or that are over or under another branch.*

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## Care of bearing trees

### Fertilizers

In western Oregon, full-sized bearing trees often benefit from applying 1/2 lb of borax every 3 years, in addition to nitrogen, mulch, or compost. Occasionally potassium also is required.

If leaves are small and pale, and the problem isn't corrected with nitrogen, the tree may be deficient in potassium. Symptoms of potassium deficiency include brown, dead areas on margins of oldest leaves, smaller than normal fruit, and early leaf fall. Usually at least 10 lb muriate or 12 lb sulfate of potash per tree, banded around the drip line of the branches in a strip less than a foot wide, is required to correct a deficiency. Potassium deficiency can be brought on by poor soil drainage;



in that case, fertilizer won't correct it.

Fruit trees in the home orchard usually don't need much, if any, fertilizer. Annual pruning will both maintain tree vigor and control size. Fruit and nut trees don't need phosphorus from fertilizers, but it won't hurt them if your fertilizer mix has some phosphorus in it.

Yearly dormant-season pruning is essential for peach trees, and helpful with apples, pears, and plums. Filberts, sweet cherries, sour cherries, figs, and apricots benefit from pruning every 2 to 4 years. See [PNW 400](#) for further details.

## Thinning

Fruit thinning often is required to obtain satisfactory fruit size and return bloom of apples, pears, peaches, and some plums. Many varieties of apple will produce a crop only every other year unless they're thinned within 3 to 4 weeks after full bloom.

Thin apples and pears to one fruit per cluster and space clusters 6 to 8 inches apart, 3 to 5 weeks after full bloom.

Space peaches 6 to 10 inches apart, depending on the number set.

Peaches and plums can be knocked off with a piece of garden hose on a broom handle, or with a length of PVC pipe. Many fruits will drop naturally, and this should be taken into account when thinning.

## Irrigation

Mature fruit trees in eastern and southern Oregon need periodic irrigation—even in western Oregon, an occasional irrigation may be helpful. Water long enough, usually 12 to 24 hours, to wet the top 2 to 3 feet of soil.

It's not necessary to irrigate more than half of the tree's root system if you supply water often enough. Usually, every 2 or 3 weeks is enough.

## Controlling insects and diseases

Timely and thorough spraying is required to control the diseases and insects mentioned in Table 1. Occasionally, other insects such as aphids, tent caterpillars, mites, slugs, fall webworm, and leafrollers become numerous enough to warrant spraying.

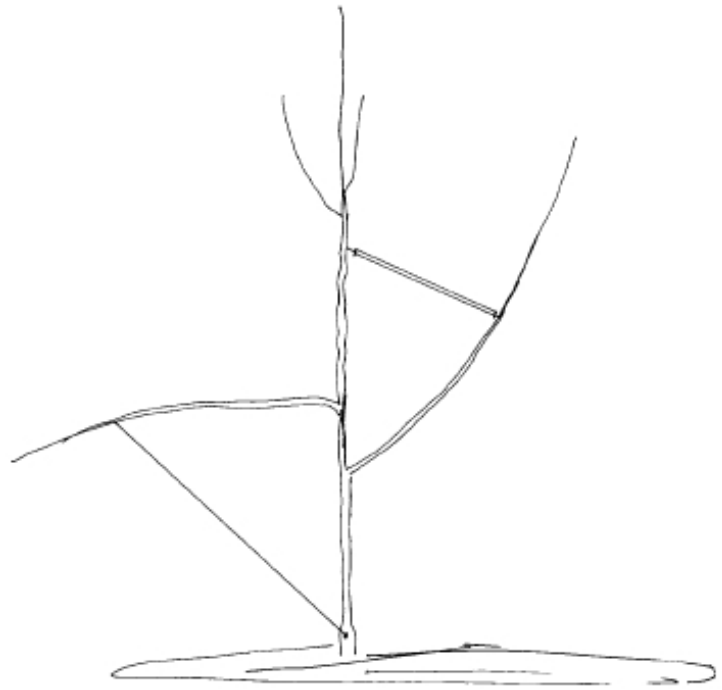


Figure 3.--To stimulate earlier blossoming and fruiting, spread, weight, or bend limbs downward. Tie your spreaders, weights, or string to a nail in the trunk.

### Use pesticides safely!

- **Wear** protective clothing and safety devices as recommended on the label. **Bathe or shower** after each use.
- **Read** the pesticide label—even if you've used the pesticide before. **Follow closely** the instructions on the label (and any other directions you have).
- **Be cautious** when you apply pesticides. **Know** your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

It's best to watch for such pests but not to spray unless excessive damage appears imminent. Insect predators will aid in keeping populations under control.

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## Harvesting and storage

Apples are mature when they easily separate from the tree when twisted upward, and when they taste good. Pick them before the core gets areas with a glassy appearance known as *water core*.

Sweet cherries, apricots, figs, plums, prunes, and peaches taste ripe when ready for picking. Ripening will continue after harvest. For canning or drying, leave them on the tree until completely ripe. Sour cherries are ready when they come off the tree easily without stems.

European pears should be picked when still green, but when they separate easily from the tree. Most varieties other than Bartlett require a month or more of cold storage before they will ripen properly. Pick Oriental pears when they're sweet and juicy.

Figs are ripe when they're very soft and droop on their stems.

Persimmons ripen late in fall when they become soft and lose astringency.

Nuts fall to the ground when mature. For best quality, gather walnuts and dry them as they fall. Store fruit where it's cool but won't be frozen. A good fruit storage room is insulated against daytime heat and freezing night temperatures, and can be opened at night to let in cold air.

Green pears will start to ripen if stored with ripe fruit. Keep the humidity high to prevent shrivel. Watch for and remove rotted fruits.

Golden Delicious apples will remain in better condition if they are stored in plastic bags with a few small holes punched in them, rather than if stored in paper bags or boxes. Late-maturing apples such as Braeburn, Fuji, and Granny Smith are best if left on the tree and harvested just before they are consumed.

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