



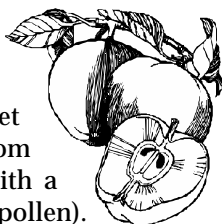
Backyard Fruit Production at Elevations 3500 to 6000 Feet



VARIETIES

APPLE

Although most apple varieties set fruit without cross-pollination from another variety, most set better with a pollinizer (a plant that is a source of pollen). Varieties that bloom about the same time as other apples can be used as a pollinizer. Crabapple varieties, such as Manchurian and Snowdrift, also can be used as a pollen source. Pollen is transferred by bees.



Apples are dwarfed by grafting the desired variety on special clonal rootstocks. M9, M26, and M7 are dwarfing rootstocks that need some type of support system such as a stake, post or fence. MM106 and MM111 are semi-dwarfing rootstocks; these are considered the best for Arizona conditions for the homeowner. Below are listed varieties by harvest season.

EARLY

Earligold: Medium to large fruit; yellowish green color. Self-pollinizing. Good annual production. Stores well. Excellent for eating and cooking.

Gravenstein: Medium to large fruit; skin red-striped over green; flesh crisp and fine-textured. Tree extremely vigorous. *Requires a pollinizer.* Bears alternate years unless thinned. Good for cooking and eating.

Lodi: Large fruit; skin yellow and thick; flesh has tart, acid flavor. Tree large, hardy. Bears alternate years. Good for cooking, sauce, and pies.

Red Astrachan: Medium to large fruit; skin whitish-green with crimson stripes; flesh white, soft, and tart. Tree medium size. *Grows well in hot areas.* Good for eating, excellent for cooking, very short storage life.

MIDSEASON

Criterion: Medium to large fruit. Yellow skin, white flesh, sweet, improved Golden Delicious.

Gala: Skin scarlet-striped over yellow; aromatic flesh with sweet flavor. Large, upright tree. Dessert apple. (Golden Delicious crossed with Pippen.)

Golden Delicious: Medium to large fruit; skin yellow; flesh juicy and aromatic. Tree moderately vigorous; bears young. Bears annually if thinned. Good for eating and cooking; does not store well — shrivels. *Excellent pollinizer for other varieties.*

Red Delicious: Most widely grown apple in the world; fruit solid red with yellowing; tree large and spreading. Aromatic and sweet tasting. Requires pollinizer for maximum yields.

LATE

Arkansas Black: Yellow flesh covered with purplish-red skin; flesh hard and crisp. *Requires a pollinizer.*

Fuji: Dull red, medium sized fruit. Slight acidity. Sweet with excellent aroma and cream-colored flesh. Stores well.

Granny Smith: Large fruit; skin bright green; tart and very juicy. Tree very vigorous. Becomes sweeter in storage. *Sets better with pollinizer.*

Idared: Medium fruit; nearly round; skin solid red; fine-grained aromatic flesh; tree moderately vigorous. *Blooms early.*

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Jonagold: Large fruit; red stripes over yellow; flesh slightly coarse in texture. Sturdy tree with wide crotches. *Requires a pollinizer. One of the best dual-purpose apples.* (Golden Delicious crossed with Jonathan.)

Rome Beauty: Large and round fruit; skin red, flesh very firm. Late bloom — *good for late spring frost areas.* Small to medium tree.

APRICOT

Of the varieties listed below, only *Perfection* requires cross-pollination. Any other variety will act as a pollinizer. Apricots bloom early, therefore, crops may be lost when blooms are killed by spring frost.



EARLY

Perfection: Large fruit; firm flesh with a large pit. Tree is a heavy cropper. *Needs pollinizer.* Good for canning.

MIDSEASON

Tilton: Very large fruit. Heavy bearer. Eat fresh - poor taste when dried.

Wenatchee: Large, flattened fruit; suffers from unequal halves; heavy annual bearer. Good for eating.

LATE

Goldcot: Medium fruit with thick, tough skin; firm flesh. Strong tree; *blooms late.* Process or eat fresh.

CHERRY

Most sweet cherries are self-unfruitful. Two varieties have to be planted to produce fruit. Sour cherries, such as *Montmorency*, can be used to pollinate sweet cherries. Dwarfing rootstocks are available.



SOUR, TART, OR PIE CHERRY

Montmorency: Large, bright red fruit which is tart.

North Star: Red fruit, tart, genetic dwarf.

SWEET CHERRY

EARLY

Bing: Large, red, firm fruit. Spreading tree; heavy crops. *One of the best.* Use *Van* as pollinizer.

Rainier: Fruit resembles *Bing* in shape; yellow with red blush; vigorous tree tends to overbear; use *Bing* as pollinizer.

Van: Dark, shiny fruit; smaller than *Bing*; use *Bing*, *Rainier*, or *Lambert* as pollinizer.

LATE

Lambert: Large, purplish fruit; upright growth difficult to train; use *Rainier* or *Van* as pollinizer. Dwarf variety (*Compact Lambert*) available.

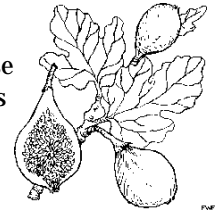
Stella: Black, heart-shaped fruit; self-fertile; good pollinizer.

FIG

No pollinizer is required for these varieties. Do not grow in locations colder than 15 degrees F.

Mission: Most dependable, all-around fig; a spring and fall crop; black skin and strawberry pulp. Use fresh, dried or jam.

Kadota: Yellow skin and amber pulp.



NECTARINE

Nectarines are less hardy than peaches and more susceptible to brown rot and damage by thrips insects.

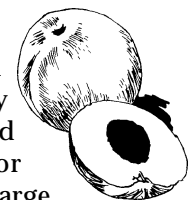
Red Glo: Mid-season; large, yellow flesh; freestone; self-fruitful.

Sun Glo: Mid-season; large deep yellow flesh; freestone.



PEACH

Nearly all peaches are self-fruitful and do not need pollinizers. The variety *Indian Free* produces sterile pollen and need another peach variety for pollination. Thinning needed for large fruit. Genetic dwarfs are available.



EARLY

Redhaven: Medium fruit; skin red over yellow; yellow flesh, semi-freestone, sweet and fine-grained. Vigorous and spreading tree. *Requires heavy thinning.* Superior for fresh use.

Sunhaven: Medium fruit; skin is red over gold; fine-grained flesh is semi-clingstone. Tree is large and productive. Good for eating.

MIDSEASON

Early Elberta: Large fruit; yellow with red blush; freestone; less subject to fruit drop. *Thin well*. Use for canning or freezing.

Rio Oso Gem: Large fruit with red skin; freestone. Tree small. One of the best peaches for freezing.

LATE

Cresthaven: Medium, round fruit; freestone; juicy, resists browning. Good for freezing and canning.

Indian Free: Large fruit; freestone; flesh is red near pit. *Requires a pollinizer*. Good in home gardens.

Madison: Medium fruit; flesh orange-yellow; freestone, very firm; non-browning flesh. Tree heavy producer. *Adapted to areas with frequent spring frosts*.

PEAR

Most varieties are self-fruitful, but the tree will produce more fruit when pollinized by another variety. Choose varieties that bloom at the same time.



EARLY

Bartlett: Medium fruit, green at picking; vigorous tree. *Susceptible to fireblight*.

MIDSEASON

Seckel: Small reddish-brown fruit; *best dessert qualities*; semi-dwarf tree is productive; not compatible with Bartlett for cross-pollination.

Surecrop: Fruit resembles Bartlett; prolonged bloom — *good for late frosts; resistant to fireblight*.

LATE

Comice: Large, yellow fruit; flesh buttery; vigorous tree, slow to bear; *best winter pear*.

ASIAN PEAR

Asian pears are self-fertile. More fruit is produced if pollinized by another variety.

Chojuro: Oblong fruit; skin greenish-brown; flesh mildly sweet. Tree vigorous and dense. Midseason.

20th Century: Round fruit; skin greenish-yellow; flesh sweet to slightly tart. Tree medium size. Midseason.



PERSIMMON

No pollinizer is required.

Hachiya: Astringent until soft; fruit oblong with pointed tip.

Fuyu: Non astringent, sweet and mild.



EUROPEAN PLUM (PRUNE)

Although some plums need cross-pollination, no pollinizers are required for the varieties listed below.



MIDSEASON

Green Gage: Medium, greenish fruit; flesh yellow, sweet, mild. Medium-sized tree. All purpose.

LATE

Stanley: Large, purple fruit; flesh yellow, juicy, sweet. Large productive tree. *Susceptible to brown rot*.



JAPANESE PLUM

Pollinizers may be required for adequate fruit set.

EARLY

Santa Rosa: Large, purple fruit; yellow flesh slightly tart; tree large and productive, *widely adapted - one of the best*.

MIDSEASON

Ozark Premier: Very large, bright red fruit; flesh fine-grained, juicy, and tart. Vigorous, productive tree. All uses. Self-fruitful. Satsuma can be used as a pollinizer.

Satsuma: Small-medium, dark red fruit; juicy, sweet red flesh; tree upright. Use for desserts or preserves. Ozark Premier or Santa Rosa can be used as a pollinizer.

SELECTING TREES

Proper tree selection and handling is extremely important in order for newly planted trees to survive and grow properly. Select one year old trees which are $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter, with $\frac{5}{8}$ of an inch being ideal, 6 inches above the bud union.

Choose trees without wounds and/or broken branches.



Inspect roots for damage, girdling, or other problems. If trees are bare root be sure that roots are moist and packed in a moist medium (sawdust, etc.). If a root dries out it will die!

HOW

Fruit trees are usually purchased bare root. They may also be purchased “balled and burlapped” or in containers. Do not let the roots dry out. Store plants in a cool, shady spot until planting.



PLANTING TIPS

February and March are the best months to plant bare root trees, although you can plant anytime during the dormant season (between leaf fall and the swelling of new buds). Try to plant 30 days before bud break. Containerized plants are best planted in September and October.

SELECTING A PLANTING SITE

1. Fruit trees need soil with good drainage. Dig the planting hole only as deep and as wide as the root ball. Fill the hole with 5 gallons of water; then fill with water again after one hour. If the hole has drained in 24 hours, the site has good drainage.
2. Avoid areas known to harbor Texas Root Rot.
3. Avoid low-lying areas for frost prevention. Remember that a south slope is warmest; radiation is reflected and stored in masonry walls.
4. Site should be an adequate size for the desired planting. See vital statistics above.



1. Establish trees in *native* soil. Do not use soil to which other materials, such as peat moss or manure, have been added. Keep trash, weeds, manure, and other organic debris out of hole. Do not add chemical fertilizers to planting hole; they may kill roots. Other rooting materials are not needed.
2. Dig holes when soil is dry or only slightly moist. The inside of hole can glaze or seal off if dug wet; this prevents roots from penetrating into surrounding soil.
3. Dig tree holes large enough to accommodate roots with a minimum of root pruning.
4. Loosen soil five times as wide and only as deep as the root ball to facilitate root growth.
5. Cut back roots to allow planting without crowding or twisting to get them into the hole. Prune any roots that are broken or discolored.
6. Form a mound in the bottom of hole and spread roots over mound.
7. Place tree in hole at its original planting depth. Be sure the bud union (the point where the fruiting variety is grafted to the rootstock) is above the soil level.

Vital Statistics					
Crop	Years to Bearing Age	Height at Maturity (ft.)		Spread at Maturity (ft.)	Life Expectancy (yrs.)
		<i>Unpruned</i>	<i>Pruned</i>		
Apple	4-8	40	20*	30-40*	20-30
Apricot	3-4	30	15	30	30
Cherry	4-6	40	25*	30*	20-30
Fig	2-3	40	6-25	25-60	30-40
Peach/Nectarine	3	25	15	25	15-20
Pear	4-8	40	15	25	25-45
European Plum	4-5	30	15	25	20
Japanese Plum	3	30	15	25	20

* Can be reduced with dwarf or semi-dwarf rootstocks.

8. Fill hole with soil. Firm around roots.
9. Form a watering basin which extends beyond the edge of the root ball. Water thoroughly. Check planting depth as tree may sink.
10. Paint trunk with white latex paint to guard against sunburn.
11. Cover entire basin area with four inches of mulch.

COMMON PLANTING MISTAKES

1. **Improper irrigation:** Water often (every 2-3 days) but lightly.
2. **Lack of weed control:** Weeds rob a young tree of moisture, nutrients and sunlight. Keep out weeds by using surface mulches such as bark chips.
3. **Poor quality trees.**
4. **Improper handling.**

PRUNING and TRAINING

Trees should be pruned immediately after planting. Cut back top 1/3 or more. Remove all shoots from poorly branched tree. Some lower shoots can be left on well-branched tree. After tree is trained to desired shape and conformation (after two growing seasons), only minimal corrective pruning is needed. Excessive pruning can delay time of first flowering. Fruit trees are pruned during the winter dormant season every year. For further information, see Pruning Fruit Trees, Publication Number 110377.



APPLE

Train apple trees to a central leader. All side limbs are developed from a central axis like a Christmas tree. Fruiting spurs, which are the short shoots that bear flower buds, occur on wood two years and older and are productive for 5-8 years. Fruit is produced terminally (on the ends) on spurs. Prune trees with thinning cuts, i.e., remove the entire shoot where it originates. Heading means cutting off part of a shoot or limb rather than removing the entire shoot or limb at a branch point. Head the leaders (but not the secondaries) annually to stiffen them. Spread limbs using weights, wooden spreaders, etc. to form crotch angles of at least 50 degrees.

APRICOT

Train apricot trees to a vase shape. Fruit is produced laterally on short-lived spurs. Because the fruit-producing spurs are short-lived, remove side branches throughout the tree to cause new spurs to be formed.

Thin out limbs growing into the center of the tree, allowing more light penetration.

CHERRY

Sweet cherries produce fruit laterally on long-lived spurs that are productive for 10-12 years. They need less renewal wood than nearly any other deciduous fruit tree. Thin out new shoots annually. Tart cherries produce fruit on one year old wood. Thin out limbs growing into the center of the tree, allowing more light penetration.

FIG

Pruning should be less severe than for other fruit trees. Prune to form a vase shaped tree. Fruit is borne on shoots of current season's growth. Thin out wood in center of tree.

PEACH/NECTARINE

Peach and nectarine trees are pruned to an open center shape. Branching is developed toward the outside of the tree, giving it an overall vase shape. They are pruned more heavily than other deciduous fruit trees. Fruit is produced laterally on shoots of the past season's growth. Prune to thin out one-year old wood and top to maintain tree height.

PEAR AND ASIAN PEARS

Pear trees are trained to a central leader or a vase shape. Fruit is produced terminally on long-lived spurs. Use thinning cuts to remove one-year old wood. Follow same guidelines for apples.

PERSIMMON

Trees bear fruit on current season's growth. They need little pruning. Thin shoots (length of branch growth in a single season) to promote growth for next season's crop.

EUROPEAN PLUM

Fruit is produced laterally on long-lived spurs. Prune by *moderate* thinning of lateral fruiting wood.

JAPANESE PLUM

These trees bear fruit on long-lived spurs and on one-year old shoots. You can sacrifice this production by removing one-year old shoot growth each year in order to shape the trees. Leave unheaded shoots 12- to 18-inch long to develop spurs in the 2nd and 3rd years.

FRUIT THINNING

There are several reasons to thin fruit — to reduce limb breakage, increase fruit size, improve fruit color and quality, and stimulate floral initiation for next

year's crop. Home gardeners thin fruit trees by hand. During May and June, many fruit trees will drop or abort fruit. This is a natural process that allows the tree to mature the crop load.

APPLE

The best time to thin is within 20 to 40 days of full bloom. Space each apple 6-8 inches apart on the branch. In clusters, leave the king bloom (the center bloom in the cluster of five flowers) as it will develop into the largest fruit.

APRICOT

Thin when fruit is 1-inch in diameter. Because trees are heavy producers, apricots should be severely thinned. Space fruit 6 inches apart after frost hazard has passed.

PEACH/NECTARINE

Thin fruit when 1-1¼ inch in diameter. Space fruit 6-10 inches apart on the branch.

PEAR

These trees seldom require thinning. Remove small or blemished fruit as soon as they are seen. Leave two fruits per cluster to improve size.

EUROPEAN PLUM

These fruits are not thinned.

JAPANESE PLUM

Thin when the fruit is large enough to be easily picked. Space plums 4-6 inches apart on the branch and break up clusters.

FERTILIZATION

Fruit trees should be fertilized annually in February or March. Nitrogen (N) is the most important nutrient to apply. If N is deficient then older leaves will turn yellow.

Example: An apple tree has a 2-inch trunk diameter, so it needs 0.2 lbs. of actual nitrogen. Ammonium phosphate (16-20-0) contains 16% actual nitrogen; i.e., there are 16 lbs. of actual nitrogen in 100 lbs. of fertilizer. $0.2 \text{ lbs.} \div 16\% = 1.25 \text{ lbs.}$ You need to apply 1.25 lbs. of ammonium phosphate to supply 0.2 lbs of actual nitrogen to the tree.

Minor elements most often deficient are iron and zinc. Both nutrients, when applied to deficient soils, are quickly tied up chemically in the soil so that they are not available to the tree. One way to remedy micronutrient deficiencies is to apply them to the leaves in chelated form. Foliar sprays are most readily absorbed by young expanding foliage.

Crop	Amount of N per inch of Trunk Diameter
Apple/Pear	0.1
Apricot, Cherry, Peach/Nectarine, Plum	0.05

Iron deficiency causes a yellowing of new leaves while the veins remain green. Irrigating too frequently in the spring can induce iron deficiency. Symptoms of zinc deficiency include shortening of the space between leaves or nodes so many leaves are bunched at the twig end (rosetting), small leaves, and in severe cases brown areas on leaves.

WATERING

For maximum tree and fruit growth, water needs must be satisfied from bud swelling through harvest. Watering frequency during the growing season can vary from 7 to 21 days, depending on the age of tree, climate, and soil type. Young plants have small root systems and require close attention. Be sure to use a soil probe — a metal rod, or an auger to determine dryness of soil.

Mature fruit trees respond to *deep* watering; saturate the soil to a depth of 2-3 feet. Build basins to extend past the tree's drip line (an imaginary line extending to the outer edge of the plant canopy). Mulches will help conserve moisture. Use an organic mulch, such as straw or bark chips, 6 inches thick; keep the mulch away from the tree trunk to lessen crown rot.

Normal fruit development depends on a continuous supply of water. For example, the red or yellow color of apple fruit will not develop properly if trees are stressed for water. Other problems aggravated by improper timing include split pits of peaches and cracks on prunes.

Not only does proper watering allow the fruit to develop normally on the tree, but summer irrigation helps the crop for the following year. Flower buds are initiated in the summer and develop in the fall. Dry soil this summer will cause apple and pear trees to have a heavier bloom and a reduced fruit set next spring. Peach, plum, and apricot trees react differently to summer water stress; they will have little or no bloom the following spring.

Once fruit has been harvested, continue periodic irrigation until leaves fall and then let the tree harden-

off when going into winter. Remember that as long as the leaves remain green, trees will use water. Irrigation also may be needed in winter, especially with high temperatures or inadequate winter rains. Remember dry roots die!

Fruit trees are very sensitive to excess salt - either in the soil or in the irrigation water. Electrical conductivity, (EC) is a measure of salinity; the more salt ions in the water, the better it conducts electricity. If soil EC levels are greater than 2.5, salts may damage the tree. The first symptom of salt burn is brown or yellow margins on leaves. Frequent, shallow irrigations can cause salt to accumulate in the root zone. You can remove much of this salt by leaching the soil. To leach soil, apply four or five times the amount of water for a normal irrigation. Late fall is a good time to do this leaching because trees are dormant and less susceptible to waterlogging.

COMMON PROBLEMS

Fruit trees in Arizona do not suffer from many of the problems experienced in other parts of the country. Many plant problems are caused by people and their actions and not by insects, microorganisms, or nutrient deficiencies. Assistance can be obtained from your local Extension Agent or Master Gardener. The most common insect and disease problems are listed below.

FRUIT TREE INSECTS

Codling moth (*Cydia pomonella*) larvae are found in apple and pear fruit during the summer. Fully grown larvae are pinkish-white with a brown head and ½ - 1 inch long. There are usually three generations of codling moth per year. The first flight of moths occurs over a 6-week period, depending on spring temperatures, in April and May. Second and third peaks of moth activity usually occur in mid-July and mid-August, respectively.



Peach tree borers (*Synanthedon exitiosa*) attack apricot, cherry, nectarine, peach, and plum trees. The peachtree borer is a white worm about 1 inch long that works underneath the bark near the ground line, often injuring or killing the tree. The adult emerges in July, August and September. The female moth is a dark steel blue to shiny black with orange bands around the abdomen. Egg laying begins shortly after the moths appear.



Other insect pests include:

Fig Beetle or Green Fruit Beetle *Cotinus mutabilis*
 Peach twig borer *Anarsia lineatella*
 Pear blister mite *Phytoptus pyri*
 Pear slug *Caliroa cerasi*
 Plum curculio *Conotrachelus nenuphar*
 San Jose Scale *Quadraspidiotus perniciosus*
 Two spotted spider mite *Tetranychus urticae*
 Western flower thrips *Frankliniella occidentalis*
 Woolly apple aphid *Erisoma lanigerum*
 Leaf-footed plant bugs *Leptoglossus zonatus*
 Scale insects *Diaspididae* family

FRUIT TREE DISEASES

Plant diseases which can be found on fruit trees at these elevations include **fireblight** (*Erwinia amylovora*), a bacterial disease found on pear and apple trees, and **brown rot** (*Monilinia fructicola*), a fungal disease which attacks the blossoms and fruit of peach and plum trees. Shot-hole disease (*Wilsonomyces carpophilus*) occurs occasionally on peach and cherry trees. **Powdery mildew** (*Podosphaera* sp.) is a fungus disease that may be found on susceptible varieties of apple. **Phytophthora crown rot** causes a root and crown rot of various fruit trees. Texas Root Rot (*Phymatotricum omnivorum*) is a fungal disease of the roots, often causing trees to die rapidly in late summer.



RELATED PUBLICATIONS

These publications are available at County Extension offices and on-line at <http://ag.arizona.edu/pubs/>

Fire Blight, Arizona Cooperative Extension AZ1030, Mary W. Olsen and Deborah J. Young, 1998

Arizona Master Gardener Manual, Arizona Cooperative Extension, 1999

Guide to Symptoms of Plant Nutrient Deficiencies, Arizona Cooperative Extension, Shanyin Hosier and Lucy Bradley, 1999

Planting Guidelines: Container Trees and Shrubs, Arizona Cooperative Extension AZ1022, Jimmy L. Tipton, 1998

Powdery Mildew, Arizona Cooperative Extension AZ 1033, Mary W. Olsen and Deborah J. Young, 1998

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