



CIR611

Deciduous Fruits for the Home Gardner in North Florida and North Central Florida¹

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Developing and maintaining a successful home orchard requires much horticultural skill because fruit trees are perennial. Generally, homeowners who select the wrong cultivar (variety) or site will fail regardless of how much care and attention they provide. Despite the careful attention needed, the pleasure of eating truly fresh fruit picked at its peak of maturity more than compensates the enthusiast for the time and effort. A well-designed and well-managed home orchard can furnish both fine fruit and pleasant hours of gardening. This publication describes the various types of orchard fruits, their suitability to the Florida home orchard, and the process involved in raising a home orchard.

Descriptions

Stone Fruits

Peaches, nectarines, and plums are called stone, or drupe, fruits because they consist of a seed enclosed in a heavy pit or stone, surrounded by soft flesh. Certain cultivars of these fruits can be grown successfully in Florida. Other stone fruits, such as apricots, almonds, and cherries are not well-adapted to Florida and should not be planted here. The various

stone fruits are closely related, all being different species within the same genus, *Prunus*.

Fruit development

The fruit development occurs in stages. During the first stage, which starts immediately after fruit set, the stone or pit is soft and the proportion of flesh to pit is small. The second stage is a transitional stage during which the pit hardens. After pit hardening, the third stage begins; the flesh develops rapidly and the fruit diameter increases correspondingly. This is often called the final swell.

Peach, nectarine, and plum trees often set too many fruit, and some of them must be removed to obtain desired fruit size. This procedure is called fruit thinning. Fruit are usually thinned to one fruit per 4 to 6 inches of stem length. To obtain the maximum benefit from thinning, it must be done prior to pit hardening which is the second stage of fruit development. This stage can be recognized by the increased difficulty of cutting through the pit with a knife. When the knife first encounters a resistance to cutting through the seed, the pit hardening stage has begun.

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Optimum soil moisture conditions are essential during the final swell to increase fruit size. Irrigation is necessary during dry periods due to the characteristic shallow root system of stone fruits. Avoid frequent light irrigations because this tends to promote root development near the soil surface, further increasing the shallowness of the root system. A general rule is to apply 2 inches of water every 10 to 14 days, unless adequate rainfall occurs.

You can measure the amount of water by placing a can or another empty container under the tree during watering. When the water level in the can reaches 2 inches, enough water has been applied.

Peach and nectarine trees usually make extensive terminal growth each year, which requires relatively heavy annual pruning. On the other hand, plums fruit on both long twigs and on very short twigs, called spurs. Since there is less terminal growth for plums than for peaches, correspondingly less pruning is needed for plums. Fruit buds are produced during the spring and summer on current season growth.

Chilling requirements

Most deciduous fruit trees, including stone fruits, require accumulated exposure to cool temperatures during winter dormancy for the resumption of normal growth the following spring. This requirement is specific for each cultivar and is referred to as its chilling requirement (Figure 1). Common cultivars grown in more northern climates are too high in chilling requirement to be grown successfully in Florida. Only those cultivars adapted to Florida's mild winter climate should be considered.

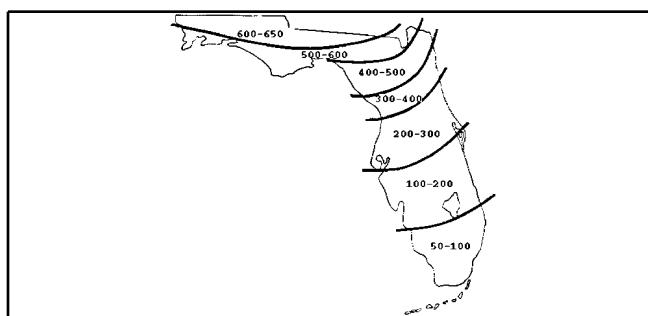


Figure 1.

In Florida, stone fruits tend to bloom soon after the chilling requirement is satisfied. This, coupled with alternating periods of warm and cold weather

during the late winter and spring in Florida, may result in early bloom which is frequently damaged by late freezes. Because of this hazard, the warmest sites within the orchard should be reserved for stone fruits.

Rootstocks

Peach and nectarine rootstocks require good soil drainage. The Marianna plum is not a good rootstock for peaches because the tree will be very short-lived. On the other hand, peach can be used as a rootstock for plums — but only when planted on well-drained soils. In Florida, however, only rootknot nematode-resistant peach rootstocks, such as Flordaguard, should be considered.

Peaches, nectarines, and plums are susceptible to a multitude of pests, including diseases, nematodes and insects. Thus, a regular pest control program must be followed to insure good fruit quality.

Pome Fruits

Apple (*Malus domestica*), pear (*Pyrus* spp.), quince (*Cydonia oblonga*), and the native haw (*Crataegus* spp.), commonly called mayhaw, are examples of pome fruits. Most apple, pear, and quince cultivars are not well-adapted to Florida because of their high chilling requirement.

Fire blight, a bacterial disease, is particularly damaging throughout the southeastern United States and prevents successful production of most soft dessert or European-type pears in Florida and other southeastern states.

Oriental or hard pears and some hybrids with European types are tolerant of fire blight, and some of these cultivars are adapted to Florida's climate. Even adapted cultivars are susceptible to leaf spot, and proper control requires more spraying than the hobbyist is likely to accept. Moreover, except for canning, the quality of Oriental pears is poor. On the other hand, pears will grow and produce on virtually all soils, and the bloom has ornamental value. Some hobbyists are willing to accept the reduced yield and quality of the fruit that results from leaf spot.

The native haw makes a small, attractive dooryard tree, but the small fruits are used only for making jelly.

Persimmons

The Oriental persimmon (*Diospyros kaki*) is well-adapted to northern Florida. It is often budded on native persimmon (*D. virginia*) seedlings.

Care must be taken in fertilizing persimmons because excessive nitrogen fertilization increases plant vigor and may cause young fruit to drop prematurely. Late growth in the fall and activation of cambial growth of the trunk during warm periods, followed by freezing temperatures in the winter, may cause bark to split and cold cankers to develop.

Some persimmon cultivars are seedy and others seedless. Some must become soft before the fruit loses its astringency. Others are nonastringent and can be eaten while still firm and crisp. In the United States, the demand for persimmon is very low, even though the persimmon is a favorite fruit of commercial significance in the Orient. For local use, persimmons can be grown on a wide range of soils with little or no pest control or pruning. The tree itself has large, glossy, green leaves and highly colored fruit that make it a beautiful dooryard tree.

Figs

The edible fig (*Ficus carica*) is structurally a fleshy, hollow stem with flowers produced on the inner walls of the cavity. There is an opening or eye at the apex of the false fruit through which disease organisms and insects can enter, causing souring and splitting. However, cultivars do differ in the extent to which this eye is open, and those such as Celeste, which have eyes that are not open until near maturity, are best-adapted to Florida.

Some fig cultivars require cross-pollination by a special wasp that is not present in Florida, and should not be planted because the fruits fall before maturing.

Fig trees grow vigorously. While they do not require pruning for continued fruit production, pruning helps control tree size and prolongs the fruiting season. Although quite hardy when fully winter dormant, the fig often leafs out early in the spring and is killed back by late freezes. Throughout much of north and north central Florida, late freeze damage usually keeps the tree from attaining a large

size and results in development of a bush form with several major branches, rather than a tree with a single trunk.

The fig is best-adapted to near-desert conditions, but actually grows well throughout most of the southern United States. In Florida's humid climate, fig rust should be controlled with fungicide sprays. A fruit weevil, which cannot be controlled economically, often causes damage. Rootknot nematode can cause severe damage, especially on deep, sandy soils. On sandy soils, best results are obtained when trees are planted near a building or are heavily mulched. In both cases, a more favorable root environment is furnished. Full sun is desirable, and competition from grass and other plants should be avoided.

Pecans

The pecan is one of the most important tree crops grown in the South and makes a beautiful dooryard tree. It belongs to the *Juglandaceae* family, along with the hickories and black walnuts, but it is in a separate genus (*Carya*).

Perhaps the most vexing problem with pecans is their tendency to bear heavy crops some years and very light or no crops during others. There is also a tendency for many nuts to be poorly filled. Several factors enter into these two problems. The pecan requires large amounts of food, which is produced by the leaves, for kernel formation or "filling" in the late summer and early fall just prior to leaf drop. When crops are excessively heavy, there is not enough food to fill the nuts, the shell of which formed much earlier. Heavy crops also deplete the food reserves needed to form flower buds in the following spring, so a light crop results the following year. Thus, it is highly important that leaf surfaces remain undamaged during the growing season and into the fall to produce the maximum amount of food for the maturing nuts and the following year's flowers. There are many diseases, insects, and mites that may damage the leaves sufficiently to cause poor filling and flowering. A fall flush of new leaves also is very damaging because this requires food that would otherwise be used for nut and flower formation. New leaves do not mature soon enough to produce

sufficient food to compensate for the energy used in their formation.

Damage to the green shuck of the pecan by such pests as shuck-worm or scab may result in poor filling even though a good leaf surface is present. Cultivars susceptible to scab should not be planted. Erratic or alternate bearing can be held to a minimum through proper pest control and other cultural programs.

The pecan is somewhat unique in its production of female flowers on the tips of new shoots and male flowers or catkins on the old wood. If, as is sometimes the case, male flowers produce pollen at a time when female flowers are not mature, the failure to pollinate results in little or no crop. However, lack of pollination is seldom a problem in pecan areas because pollen from other cultivars (which mature their pollen at different times) is carried by wind to the female flowers of cultivars which do not yet have their own pollen available.

While pecan trees can be grown rather easily, a good crop requires a well-fertilized soil and a carefully planned and executed program of pest control. This sort of program and site selection is often not possible for the producer of dooryard pecans; however, the erratic bearing can be tolerated because the beauty and shade produced justify the planting of dooryard pecan trees.

Blackberries

There are several species of blackberries, all in the genus *Rubus*. Some are upright and require no support, but others are trailing and require a trellis. The trailing types are called dewberries.

Blackberries are among the easiest fruits to grow and are one of the most widely adapted fruits. Native species and commercial plantings extend from Florida to the Pacific Northwest. However, cultivars differ as to winter chilling requirement and susceptibility to diseases. Proper cultivar selection is important for successful production.

Blackberries produce their flowers and fruits on the previous year's growth. These shoots die back at the end of the fruiting year, and new growth which

arises from below the ground in the spring forms the new fruiting surface for the next year. This growth is very extensive during Florida's long growing season, permitting the pruning of both old and new growth back to ground level immediately after harvest (see Pruning and Training, p. 11) Since blackberries produce shallow fleshy root systems, deep cultivation must be avoided. Many new plants arise from the root system several feet from the original plant and must be removed to keep an organized, easy-to-manage planting.

Blackberries thrive on virtually all soils. Complete crop loss due to late spring frosts is less likely than for many fruits because of a prolonged season of bloom.

Blueberries

Two types of blueberries can be grown in Florida; rabbiteye (*Vaccinium ashei*) and southern highbush which is a hybrid of *V. ashei*, *V. corymbosum* and *V. darrowi*. Low-chilling cultivars of rabbiteye and southern highbush developed by the University of Florida and elsewhere are well-adapted to various regions of Florida. Generally, rabbiteyes grow best in regions of Florida where winters are as cold as in Ocala, or colder. Southern highbush cultivars are best-adapted to areas of Florida south of Ocala and north of Sebring. Although, they grow well in Gainesville if their flowers are protected from late-winter and early-spring freezes.

Blueberries form a bush with numerous canes arising at or near the base of the plant. The canes and their branches survive and produce fruit for several years but eventually become weak and sometimes die back. Occasionally, the bush becomes too thick for easy harvesting. This is corrected by pruning out several of the leaders or branches.

Blueberries require acid soils (pH 4.0 to 5.2) and benefit from mulch and relatively high soil organic matter content (2 to 3%). Soil organic matter may be increased by incorporating acidic peat into the planting hole. Blueberry roots grow near the soil surface and are very susceptible to injury from over fertilization. For young blueberry plants, fertilizer should be applied frequently in very small amounts. Blueberries respond better to ammoniacal N than to

nitrate N. Acid-forming azalea or camellia fertilizers usually work well for blueberries. Because they are shallow-rooted, blueberries often are damaged when cultivation is used for weed control. Mulch is preferred to cultivation for weed control in blueberries for at least two reasons: (1) roots are not damaged; and (2) the mulch decomposes and adds organic matter to the soil. Despite the very specific demands of the blueberry, the plants are very long-lived.

Grapes

There are several species of American-type grapes native to the southeastern United States. These include the muscadine (*Vitis rotundifolia*) cultivars and several other species of slip-skinned grapes — so called because the entire ball of flesh slips from the skin when the fruit is squeezed. These grapes have tough skins and flesh and are seedy. The tender-fleshed, seedless European-type grapes (*V. vinifera*) are not adapted to the southeastern United States. Breeding programs have resulted in cultivars that are much better than the native types.

The grape produces on long branches, called canes, from previous season's growth. A great many of these canes must be removed each year and the others cut back rather severely. For commercial production, no fruit crop has such a demanding pruning requirement. However, satisfactorily producing fruit for the home or local market requires a much less exacting program. Grape arbors, often used to landscape an area, require that canes be thinned out and cut back only occasionally to prevent growth from becoming too dense.

Adapted cultivars tolerate a wide range of soils. Cultural practices, such as fertilizing, irrigating and controlling pests are not unusually demanding.

Planting the Orchard

Site Selection

Home gardeners should select orchard sites near enough to their homes for convenience, but far enough away to allow the safe application of pesticides. Where possible, avoid selecting low-lying areas where cold air tends to collect during calm

radiation freezes. Thick woods and undergrowth on the lower side of an orchard may prevent drainage of cold air away from the orchard thereby increasing the frost hazard.

Fertile sandy loam soil underlaid with a reddish-yellow to red subsoil which has moderate internal drainage is best for most fruits. Deep sands which do not hold moisture are usable if properly irrigated and fertilized. Soils with gray or mottled subsoils are poorly drained and not suitable for fruit orchards.

Site Preparation

A soil test should be conducted several months before planting an orchard. If soil test results indicate a need for phosphorous or lime, they should be applied and disked into the soil prior to planting the orchard.

Planting

Trees should be planted without delay when they arrive from the nursery. Prior to planting, keep the trees' roots moist and protected from dry air and direct sunshine. If planting cannot be done when plants arrive, they should be "heeled-in" in a shady area. This is accomplished by digging a hole in which several plants can be placed and their roots covered with moist soil, sawdust, leaf mold, or some other suitable material. For easier handling, plants are usually slanted in the holes.

Planting is a good time to inspect roots for signs of insects, diseases, nematodes, or other abnormalities. Keep the trees' roots moist during planting. Prepare the planting hole large enough so that the root system is neither crowded, bent, or broken. Remove all extra long or broken roots before planting. Place plants upright and at the same depth that they grow in the nursery. Fill the planting hole with one or two shovels of soil at a time, packing the soil lightly around the roots to remove air pockets. Repeat this procedure until the hole is full of soil and the plant is firmly in place. Fertilizer should not be placed directly in the planting hole because this can result in high salt concentrations near the roots, which can damage young trees.

It is normally desirable to add water when the hole is about two-thirds filled with soil in order to settle the soil around the roots. After the water has soaked into the soil, finish filling the hole. Give particular attention to irrigation during the first year. Adding mulch will conserve moisture, but it will not substitute for watering during dry periods.

Fruit trees may be planted anytime during the dormant season, but the period from late December through January is best because it allows time for soil to settle and roots to become established before spring growth. Trees planted late in the spring are more likely to die during the following dry periods of that year.

Pruning or heading back at planting time is desirable. Removal of about one half of the top growth is recommended. This is back to about knee height on peach, plum, apple, pear, and chestnut. (See discussion under Pruning and Training, p. 11) It is best to buy vigorous plants of average size from a reliable nursery. Do not use stunted, spindly, or old trees. Cheap nursery stock often is of poor quality and may result in slow growing, poorly developed trees. Such trees are often incorrectly labeled.

The spacing of plants in a home orchard can vary considerably due to location and equipment to be used in cultivation. Suggested spacing is given in Table 1.

Cultivars

Table 2 lists persimmon cultivars (varieties) for North Florida. See Table 3 for characteristics of peach and nectarine cultivars grown in north Florida, and Table 4 for those grown in central and north central Florida. Table 5 gives information on plum cultivars, Table 6 on pear cultivars, Table 7 on pecan cultivars, Table 8 on blueberry cultivars, and Table 9 gives information on grape cultivars.

Apple

Anna. A medium-size fruit that ripens in late June and early July. Its shape is similar to Delicious, but with approximately 30 to 40% red blush. Flavor is good (sweet to semi-acid).

Dorsett Golden. A medium-size fruit which ripens in late June with a 10% red blush and shape similar to Golden Delicious. Flavor is sweet, and fruit are firmer than Anna.

TropicSweet (Fla. 90-3). TropicSweet is released by the Florida Agricultural Experiment Station and patent rights assigned to Florida Foundation Seed Producers, Inc. for distribution. This variety originated as [(N.J.38 x Anna) polycross]. TropicSweet blooms with Anna, but ripens 5 to 7 days earlier — during early June in Gainesville, Florida. Trees of TropicSweet are not self-fruitful, but this variety is cross-pollinated with either Anna or Dorsett Golden. Fruit are less red, firmer, and taste sweeter than Anna. Fruit sugar levels are 14 to 15 brix but acidity in fruit is low, resulting in a very sweet taste. Fruit size is similar to Anna with comparable crop loads. Fruit are round-conic. Trees are semi-spreading with semi-spur type bearing habit.

Fig

Brown Turkey. A medium-size fruit that ripens about mid-July and bears fruit for an extended period if growing conditions are good. It bears a small crop the season following severe freeze damage.

Celeste. A small, light brown to violet fruit that ripens about mid-July. It does not sour as badly as Brown Turkey because of a tight eye but does not fruit the season following severe freeze damage.

Other fig cultivars: Green Ischia, Alma, and Magnolia.

Chestnut

AU-Cropper, AU-Leader, AU-Homestead, and Black Beauty are suitable Chinese chestnuts. Dunstan, Lucky 13, and Carpenter are recommended Chinese x American hybrids.

Blackberry and Raspberry

Blackberry cultivars that can be grown for home use include early season trailing types, Flordagrand and Oklawaha; and the later fruiting semi-erect types, Brazos, Cheyenne, Comanche, and Cherokee. Semi-erect types are self fruitful. Flordagrand and Oklawaha are self unfruitful and should be planted

together for cross pollination. Two thornless cultivars can be grown in North Florida. They are Arapaho and Navaho released by the University of Arkansas. Alternate rows or alternate plants of each should be used for cross-pollination. Dorman Red is the only raspberry worth trial, and it lacks typical raspberry flavor.

Table 3. Peaches and nectarines grown in North Florida.

Table 5. Characteristics of plum cultivars.

Table 6. Characteristics of pear cultivars.

Table 7. Characteristics of pecan cultivars.

Table 8. Blueberry varieties grown in Florida.

Table 9. Characteristics of grape cultivars.

Fertilization

General

Precise fertilizer requirements of tree fruits may vary appreciably depending upon the soil — even within the same orchard. Any number of fertilizer programs will result in good production, but some will be wasteful. Growers should observe the response of plants to each fertilizer application and lower or raise future applications accordingly.

Soil tests, especially for determinations of soil pH, phosphorus, potassium, calcium and magnesium may be helpful in determining fertilizer requirements. However, it should be understood that responses to fertilizer are slower for tree crops than for annual crops.

In small orchards, application of fertilizer by hand is satisfactory. The fertilizer should be spread evenly around the tree, covering all the area under the branches.

Preplanting

Adequate preplanting preparation and fertilization is necessary in the production of fruits and nuts. Soil testing of the area to be planted may be useful in determining the need for phosphorous and lime. A general rule for virgin land, or areas where

very little fertilizer has been used, is to apply 1,000 lbs of superphosphate per acre, disked into the top 6 inches of soil — particularly in western Florida where soils are inherently low in phosphorus. Except for blueberries, which grow best in acid soils, 2 tons of dolomitic limestone per acre will often benefit young plants. Zinc deficiencies have occurred in many orchard crops of western Florida, and it is suggested that zinc be applied to the orchard at the rate of 10 lbs of zinc oxide equivalent per acre about every 5 years. This may be done at any time of year.

Peach, Plum, Pear, Persimmon, Apple, and Fig

Apply about 1 lb of 10-10-10 fertilizer per tree during May of the first season after planting. Each February in succeeding years, apply about 1 1/2 lbs of 10-10-10 fertilizer for each year of age of the tree until a maximum of 10 to 15 lbs per tree is reached. Excessive nitrogen fertilizer results in vigorous growth that requires excessive pruning and drastically reduces the number of fruit buds formed. Also, overly vigorous pear trees are often attacked by the bacterial disease, fire blight.

Pecan and Chestnut

Apply 1 lb of 10-10-10 fertilizer per tree the first season. This application should be made in May. After the first season, apply 10-10-10 fertilizer each February at the rate of 2 lbs for each year of age of pecan trees with the maximum of 50 lbs per tree. Chestnuts require about 1 lb for each year of age with a maximum of 15 lbs per tree.

Blueberry, Blackberry, and Grape (bunch and muscadine)

Blueberries are very sensitive to nitrogen and can be killed easily — particularly when they are young. Exercise extreme caution when fertilizing young plants. An annual application of 2 ounces of acid fertilizer (such as for camellias and azaleas) per plant in February is ample fertilizer on 2-year-old plants.

Mature blackberry vines should receive three applications of 1/3 lb of a complete fertilizer (i.e., 10-10-10) with the first application in late February,

the second shortly after harvest, and the third in late August.

Grapes (bunch and muscadine) should be fertilized at the rate of 1 1/2 lbs of 10-10-10 for each year of age with a maximum of 5 lbs per plant applied in late February.

Cultivation and Mulching

Cultivation for weed control is necessary but should be shallow and as infrequent as possible. Completely avoid deep plowing. The most common method of cultivation is disking, but chopping and mowing also are used.

An area around young plants at least 3 feet in diameter should be kept continuously free of weeds to prevent heavy competition with the shallow roots. Older trees can be cultivated less frequently.

Mulching young plants may control weeds and conserve moisture. Many materials are available for use in small plantings or around single trees. Materials such as oak leaves, pine needles and hay are suitable. Sawdust is satisfactory but should not be incorporated into the soil since this may reduce the amount of nitrogen available for plant growth. Under warm, moist conditions, nitrogen becomes tied-up by bacteria that are decomposing the sawdust. While this can be overcome by applying extra nitrogen, this may result in undesirable vigorous growth late in the season. Young trees, kept in a state of vigorous growth, are more susceptible to cold injury. Also, termites may become a problem if sawdust is used.

For peaches and other fruits that often are damaged by frost during bloom, the orchard floor should be kept clean. Heavy weed growth, cover crops, and mulches add to the frost hazard by insulating the soil from the sun during the day and decreasing the radiation of heat from the soil at night.

Pruning and Training

Proper pruning and training of fruit trees is necessary to obtain maximum yields of high quality fruit throughout the life of the home orchard. Pruning is a general term which refers to selective removal of plant parts to obtain a desired growth response. For

fruit trees, pruning usually refers to the removal of limbs, twigs, or shoots to increase production of high quality fruit and maintain tree vigor. It should be done annually as needed to regulate tree shape, size, vigor, and crop load. On the other hand, training should begin at planting and may consist of light pruning along with other practices such as spreading, bracing, bending and trellising limbs, shoots or canes.

Training Systems

Different training systems are used for different types of fruit plants. Pear and apple trees usually are trained to a modified central leader system, which results in an upright tree with spreading lateral branches. Peach, nectarine and plum trees are best trained to an open-center system, which results in a low, wide-spreading tree. Grape vines and trailing blackberries are trained to a systematic distribution of growth on a trellis.

Begin training at planting time

Untrained fruit trees usually do not develop growth habits suitable for production of high yields of quality fruit. Begin tree training at planting to minimize the need for later corrective training. Some shoot tissue should be removed at planting time since many roots are lost or damaged during transplanting. This helps the tree become established and begins the training process. Generally, about 1/3 to 1/2 of the top should be removed at planting. The manner in which this is done depends on the training system.

The modified central leader system

Trees trained to the modified central leader system usually have five to seven well-spaced scaffold limbs. These scaffold limbs are 6 to 10 inches apart on the central leader and radiate from the tree axis in different directions. The lowest branch should be at least 2 feet above the ground. This training system is relatively simple, produces a strong framework and is well suited for dooryard pears and apples.

Apple and pear trees are normally purchased as unbranded plants (whips) about 4 feet high. At planting they should be cut back to about 32 to 36 inches above the soil surface. This will stimulate

development of lateral shoots, some of which will later become the leader and major scaffold limbs — the structural framework of the tree. Usually, two or three exceptionally vigorous lateral shoots will develop just below the heading back cut made on the young tree at planting. When these shoots are several inches long, select one to continue as the central leader and remove the other one or two competing shoots. Remove all shoots within 20 inches of the ground. Select four to six of the remaining lateral shoots which are evenly distributed radially around the trunk and vertically spaced 6 to 8 inches apart. These will form the major scaffold limbs. If branched trees are planted, it may be possible to use existing lateral branches as the major scaffold limbs. Remove all unwanted shoots at their points of origin.

The open-center system

The open-center training system is the method of choice for peaches, nectarines and plums. Open-center trees usually contain from three to four major scaffold limbs with no central leader. At planting, prune the dominant leader to a height of 24 to 30 inches above the soil surface. Larger trees usually have side branches. Remove all side branches that are less than 16 inches from the soil surface. Select three or four lateral branches which are distributed evenly around the tree trunk and spaced at least 4 inches apart vertically, and reduce their lengths to 3 to 4 inches. Remove all other branches and shoots at their point of origin. The major scaffold limbs will develop from the 3- to 4-inch stubs, or from new branches which develop from the trunk. The objective is to develop three to four primary framework (scaffold) limbs which form an open-centered tree canopy. Plum trees are pruned much like peach, although plums may have more usable branches and they may be pruned more lightly than peach.

Training other fruit trees

In addition to the general rules for training (see page 11), training of other fruit trees includes removal of the upper third of a pecan or persimmon tree at planting. The young fig plant should be headed back to about half its height. Cut back nursery grape plants to two buds on the most vigorous cane, and remove all other canes. Do not permit blueberries to

fruit the first season. Prune or remove the fruiting blueberry buds at the end of the shoots at planting or before flowering.

Pruning in Early or Prebearing Years

The modified central leader system

During late winter or early spring following the first growing season, continue selecting scaffold limbs. Remove any shoots originating from the main trunk which are not needed for scaffold limb development. Cut back existing scaffold limbs slightly to encourage branching and spur development. The central leader should be cut back about 20 inches above the highest scaffold branch to encourage development of more scaffold limbs and maintain dominance of the central leader. In subsequent years, after five to seven properly positioned scaffold limbs have been developed, continue to remove shoots which compete with the central leader, and cut back scaffold limbs slightly to encourage branching and spur development. The central leader should be cut back sufficiently each year for the first 3 years to stimulate its regrowth and keep it dominant over scaffold limbs.

The open-center system

During late winter or early spring, following the first growing season, complete the selection of the three to four major scaffold limbs. Other shoots originating from the trunk should be removed. The major scaffold limbs should be cut back to 24 to 36 inches from the trunk to stimulate lateral shoot development. The following year's winter pruning should consist of cutting back the later shoots, which developed on scaffold limbs during the previous growing season, in order to stimulate additional branching.

Pruning during later years

Mature apple and pear trees should not be pruned severely. Moderate annual pruning is preferred to heavy pruning every 3 or 4 years. Heavy pruning causes less flowering and excessive vegetative growth which can promote fire blight.

Peaches, nectarines and plums should be pruned annually. Remove crossing branches and those that are growing into the center of the trees. Cut back vigorous shoots to outward growing branches or buds to check upward development. Remove root suckers and exceptionally vigorous upright shoots, known as water sprouts, which often develop in the center of the trees. Thin out some of the smaller branches to reduce crowding. It is best to prune peaches after the coldest part of the winter passes, but before flowering. During the growing season, rub off shoots which develop on the trunk and on scaffold limbs within 2 feet of the trunk.

Mature pecan and persimmon trees require little pruning. It may be necessary to lift low branches to permit cultivation and to remove damaged branches.

Pruning of the fig depends on the cultivar and condition of the plants. In the South, most figs are grown as bushes. Generally, it is only necessary to head back the branches to keep the plant within bounds, thin out weak growth and remove dead wood.

Proper pruning of bunch grapes provides an adequate amount of 1-year-old wood each year, and prevents accumulation of unproductive wood. Vary the amount of cane pruning according to the vigor of the vine and its capacity to carry a crop. More buds left on a vine will result in more berries per plant. The size and quality of fruit, and vigor of the vine will definitely decrease if more than the optimum number of buds is left. In the single-trunk four-cane Kniffin system of training, string a top wire (No. 9) 4 1/2 to 5 feet high and a lower wire 18 inches lower along the row. Retain and tie only four canes per vine, one to the right and one to the left of the trunk on each wire. Remove all other canes, except for a few which should be cut back to spurs containing two to three buds on the trunk as renewal canes for the next year.

Annual pruning of muscadine grapes involves cutting back all shoots to 4 to 6 inch spurs, leaving one to three buds per spur spaced 4 to 6 inches apart on permanent arms which have been established to the right and left of the trunk on a two-wire trellis.

Grapevines often bleed from pruning cuts. This harmless loss of sap (mostly water) usually stops completely when leaves appear.

The basic objectives of pruning blueberries are to promote the growth of strong new wood, control plant size, and to maintain good fruit production. If too little pruning is done, the plants become crowded with weak, twiggy growth and fail to develop strong new wood for future production. Severe pruning produces fewer but larger berries and more new wood. Experience is the best guide on how much to prune. The best time to prune is during the winter. However, blueberries can be pruned immediately after fruit harvest. Pruning established plants requires cutting out or cutting back old canes that have little strong new wood and eliminating the twiggy growth in the top and outer areas of the bushes.

Trailing blackberries (dewberries) are trained on a wire trellis. Distribute canes on the trellis by tying and by lifting and drooping canes over the wires. Remove all old canes soon after harvest. The semi-erect type of blackberry does not require trellising, but all old canes should be removed after harvest. Shorten branches sufficiently to prevent excessive drooping and thus avoid production of a high proportion of the crop near the ground. For more information on pruning fruit trees, see Fla. Coop. Ext. Serv. Fact Sheet HS82, Pruning and Training Deciduous Fruit Trees for the Dooryard.

Fruit Maturity and Harvesting

Most tree, bush, and vine fruits are soft when mature and require careful harvesting and handling. The fruits ripen over a period of time and require periodic harvesting to obtain full quality, avoid fruit drop, prevent the build-up of insects and diseases, and reduce bird damage.

Peach and nectarines. Peaches and nectarines are harvested commercially just prior to softening on the tree. Unlike pears, they do not ripen well in storage. Fruit color is not a good indicator of peach maturity since some cultivars are highly colored well before they are mature. For home use, much higher quality is obtained when fruit are harvested tree ripe (when the fruit begins to soften slightly).

Plum. Most cultivars of plums can be harvested before full tree ripening or fruit softening occurs and still ripen. The fruit may be harvested when the ground color turns from green to yellowish-green. Plums picked in this fashion may be kept under refrigeration for several weeks where they ripen slowly. However, highly-colored red or purple plums with little visible ground color also may be harvested when fully ripe, just as softening begins.

Pear. The hard pears grown in the South are harvested when they reach full size and ground color begins to yellow. If pear varieties which soften are harvested firm and stored at room temperature, the fruit ripens more quickly and evenly. When left on the tree to full maturity, soft-flesh pears break down internally and are of poor quality.

Persimmon. The Oriental or Japanese persimmon usually turns from a yellowish-orange to an orange color with a reddish tinge when soft mature. The fruit should be picked when fully mature and allowed to soften in storage. Fuyu may be used in salads while still firm because it is non-astringent, but Tanenashi and other astringent cultivars should not be eaten until soft.

Fig. For fresh use, pick figs as soon as they ripen. For preserving, pick before they have fully ripened. This reduces loss from fruit splitting and souring, and the fruit holds together better when cooked. Leave stem attached to the fruit.

Pecan. Pecans are harvested when mature, usually between October and January. Nuts are mature when the shuck splits. Pecans may be threshed with bamboo poles to remove the nuts rather than letting them fall naturally. Threshing as soon as most of the shucks have split reduces loss from squirrels and crows. Freshly harvested nuts should be placed in dry storage for several weeks before eating. Shelled nuts may be stored in polyethylene bags either in the refrigerator or freezer.

Chestnut. Chestnuts are fully mature when the bur splits. It is necessary to gather the nuts frequently and refrigerate immediately to maintain quality. They are subject to decay and also will dry out without refrigeration.

Blueberry. The harvest period for blueberries usually begins in April and continues through July, depending on the cultivar. The fruit of most cultivars begins to turn blue about 3 to 5 days before the fruit is of best eating quality.

Blackberry. Harvest extends from mid-March to early May, depending on the cultivar and year. Blackberries are dark when ripe. Berries that are reddish in color should be left for later picking unless they are to be used for jelly, in which case a portion of slightly immature fruit is desirable.

Grape. Mature muscadine grapes are bronze or black depending on the cultivar and are usually harvested in August and September. Bunch grapes are normally green, red, or reddish black when ripe, depending on the cultivars. They are harvested in July and August. Harvested fruit lose moisture, aroma, and general quality rapidly, and thus should be refrigerated and used as soon as possible.

Apple. Apples ripen satisfactorily on the tree. They should be picked when they have reached optimum size and color but before they soften. Immature fruit will not ripen with satisfactory quality in a refrigerator. Fruit will store in refrigeration satisfactorily for 6 to 8 weeks.

Table 1. Suggested plant spacings.

Crop	Spacing in Feet*
Blueberries**	6 x 12
Chestnuts	20 x 20
Figs	10 x 12
Muscadine Grapes	15 x 10
Bunch Grapes	10 x 10
Persimmons (Japanese)	10 x 15
Pears	20 x 20
Peaches and Nectarines	15 x 20
Plums	10 x 20
Pecans	60 x 60
Blackberries	5 x 12
Apples	15 x 20

*The first number refers to the space *between trees* within a row, and the second number refers to the space *between rows*. So 6 x 12 means 6 feet between the trees in a row and 12 feet between rows.

** Southern highbush blueberries can be spaced 3 to 4 feet apart in the row.

Table 2. Persimmon cultivars for North Florida.

Cultivar	Astringency*	Skin Color	Pollinator**
Fuyu	NA	red	no
Hachiya	A	red	yes
Hanafuyu	NA	reddish-orange	no
Izu	NA	orange-red	no
Matsumoto Wase Fuyu	NA	reddish-orange	no

Table 2. Persimmon cultivars for North Florida.

Cultivar	Astringency*	Skin Color	Pollinator**
O'Gosho	NA	orange-red	no
Jiro	NA	orange-red	no
Motsumoto	NA	orange-red	no
Saijo	A	reddish-orange	no
Tamopan	A	reddish-orange	no
Tanenashi	A	yellowish-orange	no
Gailey***	A	red	no

*A — Astringent, NA — Nonstringent **Most persimmons set heavier crops with cross pollination. ***Gailey is a pollinator. If it is used there will tend to be some seed in all cultivars in the planting.

Table 3. Peaches and nectarines grown in north Florida.

Cultivar	Chill Units ^z	Normal Ripening Date	Fruit Size	Stone Freeness	Flavor ^y
Peach					
Flordadawn	300	late April, early May	small	semi-cling	9
Flordaking	350	early May	med-large	semi-cling	7
Gulfking	350	mid-May	med-large	semi-cling	9
Flordacrest	375	mid-May	medium	semi-cling	8
Gulfprince	400	early June	med-large	semi-cling	9
Gulfcrimson	400	late-May	med-large	semi-cling	8
Gulfcrest	525	mid-May	medium	semi-cling	9
Nectarine					
Sundollar	350	early May	medium	semi-cling	8
Suncoast	375	early to mid-May	medium	semi-cling	9

^z Chill units refer to the number of hours of exposure to temperatures below 45°F to break dormancy and initiate spring growth.
^y 10 = most desirable; 1 = least desirable

Table 4. Peaches and nectarines grown in Central and Northcentral Florida.

Cultivar	Chill Units(z)	Normal Ripening Date	Fruit Size	Stone Freeness	Flavor(y)
Peach					
Flordaprince	150	mid-April	small	semi-cling	8
UFBeauty	200	late-April	medium	semi-cling	9
UF Gold	200	late April	medium	semi-cling	9
UFSharp	325	late-May	large	semi-cling	9
Flordaglo	150	late April	medium	semi-cling	8
TropicBeauty	150	early May	med-large	semi-cling	9
TropicSnow	200	early May	med-large	semi-free	10
UF 2000	300	late May	med-large	semi-cling	9
UFO ^x	250	mid-May	med-small	semifree	9
Nectarine					
Sunraycer	250	mid-May	large	semi-cling	9
Sunbest	250	mid-May	large	semi-cling	9
Sunmist	275	mid-May	medium	semi-cling	10
UF Queen	250	mid-May	med-large	semi-cling	9
<p>z Chill units refer to the number of hours of exposure to temperatures below 45°F to break dormancy and initiate spring growth. y 10 = most desirable; 1 = least desirable ^x Peento, or saucer-shaped peach</p>					

Table 5. Plums grown in Central and North Florida.

Cultivar	Period of Ripening	Fruit Size	Peel Color	Flesh Color	Requires Pollinator
Gulfruby	early	medium	red	yellow	yes
Gulfbeauty	early	small	red	yellow	yes
Gulfblaze	early	medium	red	yellow	yes
Gulfrose	early	medium	red	purple	yes

Table 6. Characteristics of pear cultivars.

Cultivar	Fruit Size	Peel Color	Flesh Texture	Softens in Storage
Pineapple	medium	yellowish-green	coarse	no
Baldwin	medium	yellowish-green	fine	yes
Tenn	small	red blush	semi-fine	yes
Flordahome	medium	yellowish-green	fine	yes
Ayers	large	red blush	semi-fine	yes
Hood	large	yellowish-green	fine	yes
Orient	very large	yellowish-green	coarse	no
Carnes	medium	green	semi-coarse	no

Table 7. Characteristics of pecan cultivar.

Cultivar ^z	Nuts Per Lb.	Quality	Cracking ^y
Elliott	65 – 70	excellent	5
Stuart	45 – 50	good	4
Curtis	65 – 70	good	1
Moreland	45 – 50	excellent	1

^zAll cultivars listed are relatively resistant to scab. Do not plant varieties that scab severely.^yRefers to the ease of cracking the shell, with 1 being the easiest and 5 being hardest to crack.**Table 8.** Blueberry cultivars grown in Florida.

Cultivar	Pollination ^z	Mean date of first harvest ^y	Chilling units ^x
Southern highbush ^w			
Emerald	1	April 20	200
Jewel	1	April 20	200
Windsor	1	May 1	225
Springhigh	1	May 1	225

Table 8. Blueberry cultivars grown in Florida.

Cultivar	Pollination ^z	Mean date of first harvest ^y	Chilling units ^x
Sharblue	1	May 1	150
Gulf Coast	1	May 1	200
Rabbiteye ^v			
Chaucer	2	May 20	400
Climax	2	May 25	450
Woodard	2	June 3	400
Brightwell	3	June 3	400
Tifblue	3	June 15	550
Powderblue	3	June 15	550

^z Plant two or more cultivars together with same number.
^y First 20% of crop ripe in Gainesville, FL.
^x Refer to page 2.
^w Suggested for south of Marion county. Flowers early and may require cold protection.
^v Suggested for Marion county and north.

Table 9. Characteristics of grape cultivars.

Type	Cultivar	Color	Self-fruitful*	Requires Rootstock
Bunch	Lake Emerald	green	yes	no
	Blue Lake	blue	yes	no
	Stover	golden	yes	yes
	Conquistador	blue	yes	yes
	Daytona	red	yes	no
	Suwannee	golden	yes	no
Muscadine	Fry	bronze	no*	no
	Carlos	bronze	yes	no
	Welder	bronze	yes	no

Table 9. Characteristics of grape cultivars.

Type	Cultivar	Color	Self-fruitful*	Requires Rootstock
	Tara	bronze	yes	no
	Summit	bronze	no	no
	Sweet Jenny	bronze	no	no
	Pam	bronze	no	no
	Granny Val	bronze	yes	no
	Doreen	bronze	yes	no
	Noble	black	yes	no
	Southern Home	black	yes	no
	Nesbitt	black	yes	no
	Black Beauty	black	no	no
	Black Fry	black	no	no
	Polyanna	black	yes	no
	Supreme	black	no	no

* When self-unfruitful are being planted, it is necessary to include at least one self-fruitful cultivar for pollination.