THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

HOME GARDEN

PEACHES & NECTARINES

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INTRODUCTION

Peaches and nectarines are a valuable addition to a home orchard, adding beauty and interest during bloom, harvest and fall. Before you begin, consider whether you are willing to commit to the work necessary to produce quality fruit you are accustomed to buying from the market. Home-grown fruit are often tastier, if you select adapted varieties and care for the trees by fertilizing, pruning, thinning, spraying for insects and diseases, controlling weeds, and supplying adequate water. Because peaches and nectarines are not native to the southeastern U.S., they require much more pest management than natives such as muscadines, blueberries, blackberries or figs.

CHOOSE A GOOD LOCATION

The first step in developing a home orchard is to choose a site where trees will thrive. Fruit trees require adequate light; full sun is best. If you do not have an area that supplies at least a half day of direct sun, you'll be better off not planting because the trees will produce very small crops of inferior quality fruit. Leaves require adequate light to produce carbohydrates to feed developing fruits and to support overall tree health. Likewise, full sunlight allows dew to dry from fruit and leaves, reducing disease opportunity.

Essential to successful fruit tree culture is selection of a location that provides adequate cold air drainage. It is best to plant trees in sites that allow colder, heavier air to drain away from the tree's fruiting zone to lower

ground below the orchard. Frost nights during early spring when flowers or developing fruit are vulnerable to radiation heat loss from the fruiting zone result in a **radiation freeze** (Fig. 1). The average last freeze date on a farm can be delayed more than five weeks by elevation and solar orientation choice. Hilltops and southern slopes are warmer than low areas and northern slopes. Applying irrigation throughout a freeze event can protect against a radiation freeze by adding heat to the bud, flower or young fruit, but many home orchardists can't use this strategy. Therefore, proper orchard site placement on a grade that allows the drainage of cold air to lower areas reduces flower and fruit loss to frost.

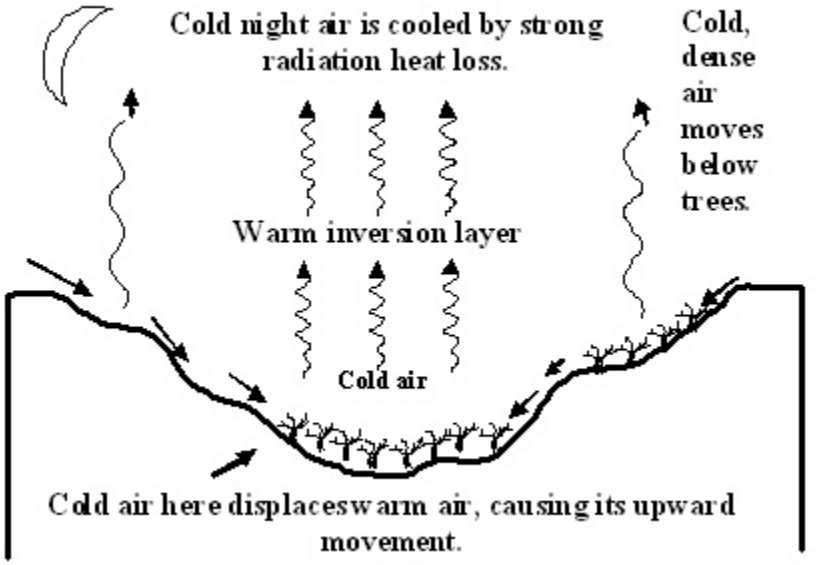

Figure 1. Radiation freezes are characterized by:

- Clear, cloudless nights with little/no wind
- Upward heat loss from ground and plants
- Cold, dense air settling in low areas
- Most spring freezes are radiation freezes

An **advective freeze** destroys shoots, branches, young flowers and fruit. These freezes are characterized by cold, dry air masses that usually arrive with high winds and are more common in winter. If this freeze occurs during spring it dessicates buds or flowers, reducing fruit set. High wind speeds (above 10 mph) prevent effective use of irrigation and the strategy of air drainage is of no value. A wind screen of taller trees or structures toward prevailing winds provides some protection.

SOILS

Peach and nectarine trees perform best in sandy loam topsoil that is 18 to 24 inches deep and underlaid with brightly colored, well-drained clay. Shallow, poorly drained soils produce small, low-yielding trees. Soil must have adequate nutrient content and water holding capacity and must be permeable to water and air. A dull-colored soil (blue to gray) suggests poor soil drainage. Flooding for 72 hours during summer can kill peach or nectarine trees and shorter periods of flooding make trees susceptible to pathogens. Drainage problems can be corrected with tile lines placed about 40 feet apart with an open outlet for water to leave the orchard or by planting in raised beds. A small furrow between beds enhances drainage. Mulch improves soil structure, prevents crusting and encourages earthworms. Since soil moisture can be limiting, irrigate bedded trees or rocky sites that tend to be excessively dry.

Several root pathogens can be avoided through proper site selection. Knowing the history of your site may

immediately rule it out. If the site is known to have had oak root rot, it should be avoided entirely; or, if it is known to be infested with crown gall, use either No-Gall™ or Gallex™ to protect the tree from the organism infesting the soil. Root knot and ring nematodes destroy peach and nectarine trees within five years of planting them. The Guardian™ **rootstock** should be used if these nematodes are present. On the lower coastal plain, the Nemaguard rootstock may be used if rootknot nematodes are present. Contact your county agent for instructions to test your proposed site for nematodes.

Test soil to check nutrients and pH. Nearly all fruits (blueberry is an exception) require a soil pH of 6.0 to 6.5. Follow the recommendation that accompanies the test results for phosphorus, potassium and lime amendments or confer with your county agent. Postplant lime and phosphorus amendment is never as affective as preplant incorporation the fall before planting the following winter (January or February). Nitrogen is applied following planting (see Young Tree Fertilization).

PLANTING

Peach and nectarine trees need adequate space to develop properly. Spacing should allow for easy access for maintenance and fruit harvest. Planting too far apart wastes valuable space, and planting too closely causes crowding and shading of neighboring plants. For standard spacing, trees should be planted on an 18- to 20-foot center. The planting hole depth should match the tree's depth and be backfilled only with the original unamended soil. Do not add nutrients at this time. If closer tree spacings or other orchard systems are of interest, contact your county agent and refer to the bulletin titled *Simple Tree Training Technique for Peaches* (http://pubs.caes.uga.edu/caespubs/pubcd/C878.htm).

Peach and nectarine trees purchased as bare root are less expensive (choose 30-36"). Trees are usually received from the nursery during late December or January. Immediately open and examine the container for signs of disease or pests. Return substandard trees. Until the site is prepared, trees can be **heeled in** to moist compost, potting media or sand, or be kept moist, shaded and cool (but not freezing) in the box up to two weeks prior to planting during the winter. Although not essential, peaches and nectarines benefit from mound or raised bed planting (six feet wide or square and 18 inches deep). Clip off broken, twisted or girdling roots, but do not over-prune them. Do not plant trees with diseased roots or warty growths on the crown or roots. To do so may introduce pests or pathogens like crown gall or nematodes to your orchard site. Place the **bud union** about two inches above the settled soil surface, at its original nursery depth. Correct depth of planting is important in all soil types, but critical in heavier soils. Planting trees at the original nursery height may improve trunk diameter by 100 percent over deeper planting and improve canopy growth by 50 percent. Never place bare-root trees in waterlogged soil. To reduce later labor, rub off buds on the rootstock that may develop into rootsuckers. Never plant the tree in a basin where water can collect. If the planting area is too dry, it should be well watered — but not over-watered — a few days prior to planting and then watered-in just after planting. To protect the bark from sunscald and pesticide damage, paint the lower two-thirds of the unpruned tree trunk with white exterior acrylic paint.

TREE TRAINING

Peaches are usually trained to an open-center form in the Southeast. The first step in achieving this form is taken on planting day by making a heading cut to remove the tree top at a height of 18 to 24 inches from the top of the soil surface, and by removing any lateral branches to encourage low branching and balanced shoot and root growth. When you are finished, you should have a tree that simply looks like a stick coming out of the ground. This will result in a tree that can be easily trained to the open center tree form. During the spring and summer, the remaining buds will break and push out new shoot growth. Mid-summer, the four or five shoots that will become the scaffolds of this tree form can be selected. These continue to grow during the summer. All other shoots should be removed from the trunk. The selected shoots should fill space around the trunk. Upright growing shoots should not be selected; rather, choose shoots that grow outward or laterally

from the trunk (Fig. 2).

Figure 2. Scaffold selection for the open center system

It may be necessary during the first several growing seasons to spend a bit of time removing **rootsuckers** — vigorous shoots that initiate from the rootstock trunk, at the crown or along the root. Rootsuckers compete for sugar and water resources. It is relatively easy to remove rootsuckers from the trunk or crown. Simply jerk the young, tender shoot from the trunk or crown in a downward motion to separate the shoot at its junction point. If this can be done without cutting, regrowth of the rootsucker is much less likely. To remove suckers without damage, it is necessary to remove them while tender. If done properly, the necessity for new rootsucker removal will only occur in the event of trunk or root injury.

One year after planting, in February or March, the first dormant pruning will be easy if primary scaffolds were selected during that first spring. Remove vigorous, heavy, non-fruiting wood and maintain fruiting wood (Fig. 3). The second summer after planting, pruning will require only removal of water sprouts that may shade out next year's fruiting wood. Excessively vigorous shoots or sprouts do not produce many flowers and are not considered to be good fruiting wood. Careful maintenance of fruiting wood can prevent the early loss of fruiting tissue in the lower part of the canopy that can be shaded out as the tree ages. Avoid fall pruning that may make the tree sensitive to early freeze events. At standard spacing, two-year-old trees will bear a small peach or nectarine crop. It is recommended that all fruit be removed early. At this stage, fruit competes with shoot growth, which is necessary for building a tree that will support fruit growth in future seasons. Three-year-old trees are managed for bearing.

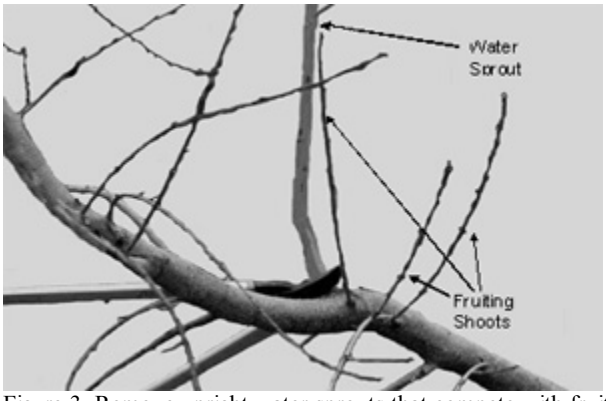

Figure 3. Remove upright water sprouts that compete with fruiting wood.

YOUNG TREE FERTILIZATION

To avoid burning barerooted trees, never mix nitrogen fertilizer in the planting hole or place it on the loose soil just after planting. Make the first application in March after planting, placing fertilizer around the **drip line** of the growing tree and taking care not to place fertilizer against the trunk. The recommendations in Table 1 are general and may be altered depending on availability of fertilizers, tree health, location, conditions and soil/foliar testing. Foliar tests can be conducted in July by collecting the fourth fully-expanded leaf from the tip of shoots at eye level around the periphery of the tree's canopy. Collect 20 leaves total. These can be dried in a paper bag prior to sending them in for analysis. Foliar tests can be handled by your county agent for a small fee. Follow recommendations for peach and nectarine fertilization, outlined in Table 1.

Table 1. Fertilizer recommendations for peach and nectarine trees.

Month	During Year 1	During Year 2	Bearing Trees
March	1 c. 10-10-10 OR 0.5 c. 20-20-20	2 c. 10-10-10 OR 1 c. 20-20-20	3 lbs 8-0-24
May	1.5 c. 10-10-10 OR 0.75 c. 20-20-20	2.5 c. 10-10-10 OR 1.25 c. 20-20-20	NO APPLICATION
July (or post-harvest for bearing trees)	1.5 c. 10-10-10 OR 0.75 c. 20-20-20	2.5 c. 10-10-10 OR 1.25 c. 20-20-20	3 lbs 10-10-10 OR 1.5 lbs 20-20-20

Recommendations may vary with site specificity, tree health, fertilizer availability and results of foliar testing.

BEARING TREE FERTILITY AND IRRIGATION

By the third year, when peach trees move into bearing, they require a shift from exclusive attention to vegetative development for building tree structure. A new emphasis requires balance between adequate vegetative growth to promote adequate fruiting wood and return bloom for the following season's fruit crop and managing the current season's fruit crop. Too much tree vigor during summer months will cause shading of developing fruitwood, limiting the number of returning flower buds. If enough shading occurs, the fruiting wood will move up the tree axis, reducing yield and increasing the difficulty of managing a taller tree. Fertility and water management greatly impact the balance of vegetative and reproductive growth.

Fertilization. Proper fertilization is central to proper balance for bearing. Bearing trees in the orchard should be capable of producing sufficient fruit to justify a production management program. Generally, nitrogen, phosphorus and potassium are required annually. Calcium, magnesium and micronutrient application should be based on results of foliar testing.

Nitrogen (N). More than any other element, nitrogen controls growth and fruiting in plants. Nitrogen management confronts the fruit grower with a dilemma. When the nitrogen level is optimum for fruiting, vegetative growth may be inadequate and vice versa. Nitrogen interacts strongly with pruning and irrigation. For maximum fruit production, trees should be managed to produce maximum leaf area early in the season. This involves moderate pruning, establishing high nitrogen levels in the early-season, early thinning, summer removal of excessively vigorous shoot growth, maintaining adequate soil moisture, and slowing vegetative growth just prior to harvest by depletion of nitrogen. Therefore, only the March and July or post-harvest fertilizer applications are recommended (Table 1).

Phosphorus (P). Fruit trees remove relatively little phosphorous from the soil each year. The requirement can be met by the phosphorous in the 10-10-10 or 20-20-20 fertilizer formulation applied each summer.

Potassium (K). The balance of nitrogen and potassium has a strong influence on red color development in fruit. Desirable skin and flesh color have been associated with relatively low nitrogen and high potassium levels in peach and nectarine leaves. For this reason, 8-0-24 is recommended in the spring. Both trees and fruit buds are more resistant to cold injury when adequate potassium levels are maintained. Foliar potassium levels below 1.0 percent may reduce fruit size. Potassium competes with magnesium and calcium for uptake. Excessive levels of one may cause deficiencies of the others. Potassium leaches readily, accumulating in clay subsoils where it is unavailable for tree uptake.

Magnesium (Mg) and *Calcium* (Ca). Annual liming will maintain the magnesium level if dolomitic lime is used. When magnesium is adequate, calcitic lime may be used. Foliar calcium formulations that can be sprayed are available online.

Irrigation. Supplemental irrigation benefits tree growth, allowing development of larger trees with greater fruiting wood structure. Irrigation before harvest increases fruit size by one-quarter to one-half inch. Take care during this phase to manage supplemental irrigation to size fruit without causing fruit cracking. Measures taken to increase cell division help guard against fruit cracking when irrigating in the month prior to harvest. Providing supplemental irrigation during early fruit development (when fruit are 0.25 to 1.25 inches in diameter) adds to the potential to size fruit. Generally speaking, a fully mature tree (six years and older) needs about 125 gallons of rainfall or irrigation each week. An inch of rainfall meets this need. However, if you must supply the water yourself, a simple way to gauge how long to run your irrigation source, whether it's the garden hose or a soaker hose, is to allow the source to run into a bucket. Determine how long it takes to deliver a gallon and multiply by 125. This water can be supplied all at once, but is better supplied in two to three applications per week. If you receive a half-inch of rain, then supply about 60 gallons of supplemental irrigation water for that week. For younger trees, 12 gallons of rainfall or irrigation will be required per foot of canopy radius. A canopy with a six-foot tree radius will require about 72 gallons of water each week. It is best if the water is delivered throughout the circle of the root zone, which occupies all areas of soil under the tree canopy. Maintaining a weed-free zone below the tree canopy reduces competition for nutrients and water. (Never use glyphosate on trees younger than two years or after August 1 in any year). Using a mulch below the tree will help reduce moisture loss.

PRUNING AND THINNING BEARING TREES

With bearing age, concerns shift from building tree structure and growing trees to maintaining tree structure and growing fruit, thus requiring annual pruning. Prune during the growing season to remove upright, vigorous shoots or water sprouts (Fig. 3). These compete with developing fruit for sugar and water and they shade fruit, reducing peel color. They also compete with developing **fruitwood** (the shoots that will produce fruit during next season), reducing return bloom the following spring. Just at the end of the dormant period, during early bloom, prune the tree to maintain its form. Remove any remaining upright growth, weak or diseased wood, and any shoots two seasons old or older from the scaffolds. Older shoots will have a gray color compared to the maroon color of fruiting wood. In addition, thin out the fruiting wood to reduce fruitload for good fruit size. First remove shoots that are growing in toward the interior of the tree and those that will interfere with the growth of others. Then keep the strongest shoots; in the end, leave only 70 to 100 fruiting shoots to bear fruit during the summer (Fig. 4).

Figure 4. Most growth should be removed from a properly pruned tree, keeping only fruiting shoots for this season and directing growth outward.

Pruning near the end of the dormant season (after Valentine's Day) reduces hand thinning at least 10 percent. Pruning brings trees into balance, favoring optimum fruit production. Left to its own course, a fruit tree bears many more fruit than can grow to adequate size if they all make it through late frosts. Proper thinning or judicious pruning can lead to an optimal peach and nectarine crop load. Generally, remove fruit to a spacing of six inches along shoots on the outer portion of the canopy and eight inches along shoots in the shaded portion. Although that sounds pretty easy, timing is everything. Every week after bloom that a tree carries too many fruit costs up to 6 percent in fruit size. Earlier thinning improves crop yield for this year and the next. Earlier thinning allows more water and nutrient availability for this year's crop and next year's developing buds. Not all fruit on a shoot have the same potential to size. Fruit at the base of (subtend) a lateral shoot grow larger than fruit that are not situated below the new shoot growth. Thin to keep the fruit that subtend some axial shoots (Fig. 5).

Bloom thinning is another strategy for improving fruit size. When thinning blooms, be careful to leave extra flowers to hedge bets against a late frost! Thin to two or three flowers every four inches along a shoot. Remove only fully open flowers, saving the less mature flowers to withstand a late frost if it comes along. You can follow this practice two to three weeks later by removing small fruits to the six- to eight-inch spacing. Although making two trips to the tree is time-consuming, it effectively improves fruit size.

Figure 5. Favor retaining fruit that subtend axial shoot growth (average spacing should be every 6 to 8 inches along shoot).

VARIETY AND ROOTSTOCK SELECTION

Variety selection is extremely important. There's little you can do to make up for a poorly-adapted variety. The importance of selecting well-adapted varieties cannot be over-emphasized. Varieties discussed in this publication are adapted to at least one area of the state. Promotion of a variety by a local nursery or mail-order catalog doesn't mean it is adapted to your area. The issues most relevant to variety selection are **chill unit requirement**, harvest date, texture and flavor characteristics, disease resistance or susceptibility, and whether the fruit is **clingstone** or **freestone** (Table 2). Nematode resistance and compatibility with the

scion (the variety that is grafted to the rootstock) are the primary concerns for rootstock selection. During the fall, with shorter days and lower temperatures, deciduous trees lose their leaves and become dormant or enter rest. Dormant trees must receive a given number of hours at temperatures below 60°F in order to break dormancy properly, flower, set and develop fruit. The current method of assessing chill unit accumulation is to count the number of hours of temperatures below 45°F that are received between October 1 and February 15. This information can be found for a given area in Georgia by determining which weather station on the University of Georgia Agricultural and Environmental Meteorological Network (http://www.georgiaweather.net) is most representative of your location and by using the chilling hour calculator. Prior to making variety selections, check this resource to determine how much chilling you may expect most years, then choose varieties near that chill requirement. Varieties with requirements just below the expected chill accumulation for your area will be at less risk for loss due to late frost events than varieties with chill requirements well below the expected chill unit accumulation (e.g., a variety with a 750 chill hour requirement is preferable to one with a 650 chill hour requirement in a location with an average chill hour accumulation of 820 hours from October 1 to February 15). Once the chill requirement is met, buds on a tree begin to respond to warm temperatures, flower and become at risk for late frost loss. Pay attention to the susceptibility of the variety to bacterial spot. Varieties that are moderately resistant need little additional management for the disease with only minor bacterial spot incidence in most years.

Table 2. Peach and nectarine varieties with characteristic harvest period, flesh color (Y or W), flesh texture (M or N), pit attachment (C,S or F), and bacterial spot susceptibility (-/+). For more information refer to http://www.caes.uga.edu/commodities/fruits/gapeach/.

Harvest Period	Low Chill <600 Hours		Moderate Chill 600-750 Hours		High Chill 750-900 Hours		Very High Chill >900 Hours	
Late April	Flordadawn	YMC+ [z]						
Early May	**Sunsplash**[y] Gulfcrest Flordacrest	YMS+ YNS+ YMS+	**Mayfire**	YMC+				
Mid May	Flordaking Gulfking	YMC+ YNS+	Regal	YMS--				
Late May	Gulfprince **Sunfre**	YNC++ YMS-	Springprince Empress Goldprince	YNC+ YMC+ YMC+	Camden Sunbrite Rubyprince	YMC- YMC- YMC+		
Early June	White Robin	WMS+	Junegold Juneprince Southern Pearl	YMC+ YMS+ YMS+	Summerprince Garnet Beauty **Juneprincess**	YMS+ YMS+ YMF+	Harrow Diamond	YMS+
Mid June			Coronet **Karla Rose**	YMS+ WMS+	GaLa **Durbin** **Summerbeaut**	YMF- YMS+ YMF+	Surecrop	YMS+
Late June			Topaz Suwanee	YMF+ YMF-	Redtop **Sunglo** Cary Mac Harvester **Roseprincess** Fireprince Winblo	YMF- YMF+ YMF+ YMF+ WMF+ YMF+ YMF+	Sureprince	YMS+
Early July			La Feliciana **Fantasia**	YMF+ YMF-	Blazeprince Redglobe Julyprince Loring Majestic Bounty Scarletprince Flamecrest **Redgold**	YMF+ YMF+ YMF+ YMF+ YMF++ YMF+ YMF+ YMF- YMF-	Redhaven	YMS+

Mid July		Dixiland	YMF-	Cresthaven	WMF+
		White Lady	WMF+	Challenger	YMF++
		Georgia Belle	WMF+	Contender	YMF+
		Redskin	YMF+	Intrepid	YMF++
		Honey Dew Hale	WMF+		
		Sunprince	YMF+		
		Elberta	YMF+		
		Ruston Red	YMF++		
		Jefferson	YMF++		
Late July		Early Augustprince	YMF+	China Pearl	WMF+
		Fay Elberta	YMF-		
Early August		Augustprince	YMF+		
		Flameprince	YMF+		
Mid–Late August		Big Red	YMF-		
		Parade	YMF-		
		Autumnprince	YMF+		
		Fairtime	YMF--		

[z] Y = yellow flesh, W = white flesh / M = melting flesh, N = non-melting flesh / C = clingstone, S = Semi-clingstone, F = freestone / Bacterial Spot Susceptibility: -- = Highly Susceptible, - = Susceptible, + = Moderately Susceptible, + = Moderately Resistant, ++ = Resistant

[y] Varieties listed in bold are nectarines; all others are peaches.

DISEASES AND INSECTS THAT ATTACK PEACHES

Rigid pest control is necessary for high-quality fruit. A spray program should begin with dormant sprays and be carried through the growing season. The most damaging fruit disease is brown rot. Other peach diseases include scab, rhizopus rot, leaf curl, bacterial spot, nematodes and phony. Contact your county agent for assistance selecting pest management materials or refer to http://www.ent.uga.edu/pmh/Hm_Fruit&Nuts.pdf, the Homeowner Edition of the *Georgia Pest Management Handbook*. In the Southeast, the most reliable methods for disease and pest control employ pesticide application, but many problems may be avoided by maintaining good tree health using cultural practices, including weed management, and providing adequate soil moisture and fertility. In addition, removing and destroying diseased or infested tissue early and often discourages spread of pests.

Brown Rot, caused by *Monilinia fructicola*, attacks flowers, shoots and fruit. Blossom blight, the disease affecting flowers, causes floral wilt and browning. Shoot infection results in small, elongated (one- to three-inch long) gummy cankers. These cankers provide disease spores for fruit rot. When fruit are green the disease is called green fruit rot and when fruit are near full ripening it is called brown rot. A tan to brown spot appears on the surface of diseased fruit. In humid weather, brownish tufts of spores appear on the rotted surface. Infected fruit rot completely on the ground or dry to become a mummy on the tree. The mummies carry the disease over the winter. Sanitation is a valuable part of brown rot control in the home orchard. Collecting diseased fruit when it appears and removing infected twigs and mummies from the trees reduces brown rot inoculum. If fruit ripening occurs during a period of warm, wet weather, a very rigid spray program is required for brown rot control. It is important to spray throughout fruit development. Delaying a spray program until rotten fruit is evident results in very poor control.

Peach Scab, caused by the fungus *Cladosporium carpophilum*, appears on fruit near the stem with ⅛-inch diameter greenish-brown to black spots. With severe infection, lesions coalesce, forming a greenish-brown, velvety blotched area. Scab is controlled with sprays applied at the **shuck split** stage and every 14 days for the next four to six weeks. Shuck split is the stage after bloom when dry flower parts split and fall free of the small green fruit. Disease symptoms occur only on the outer skin, not affecting eating quality.

Rhizopus Rot, characterized by brown soft rot areas with coarse black fungal growth in nearly ripe fruit, is caused by *Rhizopus stolonifer*. Rhizopus rot is most often a problem on peaches harvested and stored at room temperature a few days before consumption. Washing and drying fruit prior to storage in cooler conditions limits the problem. Fungicide applied just before harvest provides some control.

Peach Leaf Curl, caused by *Taphrina deformans*, is most common in northern Georgia. The disease attacks leaves and occasionally green fruit. Leaf infections occur at bud break. The disease begins to show up near bloom. Infected leaves are thickened, badly puckered or twisted and can be quite red. Symptoms may involve whole leaves or small areas on a leaf. Infected leaves usually drop in early summer. The disease rarely kills trees, but heavy leaf loss weakens them. Infected fruit have raised wrinkled areas, often reddish in color. Fungicide applied before bud break gives good leaf curl control.

Bacterial Spot, caused by *Xanthomonas pruni*, develops reddish-purple spots with white centers that drop out, giving infected leaves a tattered or "shot hole" appearance. Infected leaves turn yellow and drop, weakening the tree and reducing fruit size. Fruit infections appear as small dark spots resembling open sores rather than the velvety spots characteristic of peach scab. In years of severe infection, fruit peel shows cracking. Bacterial spot sprays are not as practical for home growers, although some materials are available. Refer to http://www.ent.uga.edu/pmh/Hm_Fruit&Nuts.pdf for recommendations in the *Georgia Pest Management Handbook* (Homeowner Edition). Maintain grassy areas outside of the area below the canopy to reduce fruit and leaf wounding by blowing sand to help avoid conditions that favor disease. The best way to control bacterial spot is to select resistant varieties. Choose the more resistant varieties bred under East Coast or southeastern U.S conditions. Varieties bred on the West Coast, where pathogen and insect pressures are much lower, are much less resistant to the diseases and insect problems experienced in the Southeast. Even when bacterial spot occurs on moderately-resistant and resistant varieties, the spots seldom penetrate deeply.

The **Root-Knot Nematode**, *Meloidogyne incognita*, is a round worm that attacks roots of numerous plants, including peach and nectarine. Roots of infected trees show numerous small swellings or knots. Diseased trees may grow poorly and appear nutrient deficient. In southern Georgia, below the fall-line, use trees grown on the root-knot resistant Nemaguard or Guardian™ rootstocks. Nemaguard is subject to cold damage north of the fall-line but Guardian™ provides some protection against root-knot nematode. Never plant a peach tree in an old vegetable garden site. Root-knot nematode populations can increase on many vegetables. The safest planting sites are portions of the yard where bermuda or other lawns have been established for years. Refer to your county Extension office for information on nematode sampling. Root-knot nematode cannot be treated or corrected after planting.

Phony Peach, a bacterial disease caused by *Xylella fastidiosa*, reduces tree growth and fruit size. Twigs on diseased trees are shorter, with more lateral branching. Trees generally have a dwarfed, compact growth pattern with dark green foliage. Eventually the wood becomes brittle and dies back. Infected trees leaf out early in the spring and hold their foliage later in the fall. Fruit ripen earlier on diseased trees, but are small and malformed. Phony is transmitted to healthy trees by leafhoppers. This is true of plum-to-peach transmission, especially in the southern half of the state. The orchardist in South Georgia would do well not to plant peach and plum together. Remove any symptomatic trees and all wild plum — common sources of phony — before planting peaches or nectarines. Good weed control helps limit transmission from weeds to trees.

Several **insects** damage peach flowers, fruit, limbs, twigs and trunks. Among the most destructive are borers, plum curculio, scale, oriental fruit moth, Japanese beetles, green June beetle and catfacing insects (stink bugs and plant bugs). Refer to http://www.ent.uga.edu/pmh/Hm_Fruit&Nuts.pdf for the Pest Management Handbook with best management practices. Be certain to read and understand the section on precautions first. Pesticides are dangerous when they are misused or mishandled.

GLOSSARY

Advective Freeze — A freeze event associated with the invasion of a large, cold air mass and usually accompanied by high winds (> 10 mph) and therefore no temperature inversion.

Bud Union — The junction on a stem where a bud from the scion has joined the rootstock following the process of budding. Usually indicated by a small knoblike growth on the young tree. Usually found at or near soil level.

Chill Unit Requirement — A cold period required by some plants or plant parts in order to break physiological dormancy or rest. The chilling requirement is expressed in terms of the required number of hours at or below 45°F.

Clingstone — A condition in which the flesh of a ripe peach or nectarine is attached to the pit or stone.

Drip-Line — A "circle" defined by the outermost edge of the canopy from which water would drip and fall to the ground during a light rainfall. Generally, the plant's root zone is contained within that circle.

Freestone — A condition in which the flesh of a ripe peach or nectarine is detached from the pit or stone.

Fruit Wood — The one-year-old shoots that produce the current season's peaches or nectarines. During spring these shoots are dark maroon in color as opposed to the lighter-brown, vigorous upright growing water sprouts that should be pruned out of the tree.

Heel In — The temporary placement of bareroot trees into moist sawdust or mulch for protection against inclement weather.

Lateral shoot — Shoot growth situated at or extending to the side of a branch.

Radiation Freeze — Freeze event associated with calm conditions (no wind), with radiational cooling of tissues and temperature inversion (with warm air above cold air). If this cold air is at a temperature below the dewpoint and below freezing, ice may form, killing tissues.

Rootstock — The lower part of a graft. In fruit production, the rootstock is produced from seed and supports the bud that is grafted from a true-to-type variety.

Rootsuckers — Vigorous new growth initiating from below the graft or bud union, usually at the crown or from the root. The leaf-type is often different from the leaves of shoots above the graft or bud union.

Scion — The upper part of a graft union. In fruit production, the variety is maintained true-to-type by placing a bud from a mother plant onto the rootstock through a process called budding.

Shuck-Split — The "shuck" is the circle of sepals that surround the developing fruit. Shuck split is the point at which fruit growth tears the shuck prior to it falling away (shuck-off).

Water Sprout — Vigorous new upright growth that initiates from scaffolds or branches of the tree. The bark of these shoots are lighter brown than the reproducing "fruiting" shoots that primarily carry the new crop of peaches.

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