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SELECTING PEACHES, PLUMS, AND CHERRIES FOR RESIDENTIAL PRODUCTION IN TENNESSEE

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Peaches, nectarines, plums, cherries, apricots, almonds and more are some of the fruits belonging to the genus Prunus. They are commonly referred to as stone fruits since they have a hard pit (stone with a seed inside) surrounded by fleshy tissue.

Fresh peaches in summer are often one of the first images or tastes that come to mind in terms of home fruit production, but we want to be very clear about the challenges. Stone fruits are the most challenging fruit crops to grow in Tennessee because they face both disease and pest issues as well as environmental challenges. Even commercial growers in the state often count themselves fortunate to get three or four good crops every five years. In fact, there are some stone fruits that are not possible to grow successfully in Tennessee due to climatic and variety limitations. Cooler parts of the state, such as the Cumberland Plateau and higher elevation areas of east TN, are difficult for peach and and other stone fruits because of winter injury and spring frosts. Likewise, sweet cherries are not recommended in Tennessee due to issues with winter injury, canker diseases and spring frosts. Points to consider for long-term success include choosing the right crop and cultivar, site selection, planting techniques and other essential cultural practices including timely and consistent fertilization pruning, training, and pest and disease management.

Selecting the Best Site

Good site selection is critical for survival and success of tree fruit crops, especially stone fruits. Components of a good site include:

- Full sun (at least 8 to 10 hours per day during the growing season). Morning sun helps to dry off fruit and foliage, which reduces disease issues.
- Elevation in comparison to immediate surroundings can lessen problems with frosts and diseases.
- Soils having:
    - Good internal and surface drainage
    - Rooting depth of 30 to 36 inches
    - Soil pH of 6.0 to 6.5
    - Moderate fertility

Selecting Stone Fruits for Tennessee Climates

When selecting stone fruit crops and cultivars, one of the most important elements to understand is whether the chill hours are well matched to the site. Chill The chilling requirement for a plant is defined as the number of hours, generally between 32 and 45F, needed from the onset of dormancy in fall until the plant can resume normal growth and fruiting once weather becomes favorable the next year. If the chilling requirement is too low, warm periods in late winter and early spring can stimulate early plant growth leading to bud break and often fruit bud loss. If the chilling requirement is higher than chilling usually accumulated in the area, then normal bud break, bloom, growth and fruiting patterns will be disrupted. This can lead to poor or uneven fruiting or even tree death. A minimum of 850 chilling hours is generally recommended for stone fruits in Tennessee.

After confirming that the crop and cultivar have appropriate chilling requirements, selecting cultivars with resistance to common

diseases is important to enable successful harvests. In stone fruits, bacterial leaf spot resistance may be found in several cultivars. "Resistance" does not mean "immunity" when we are talking about these cultivars. A timely spray program that uses the correct materials at the recommended rates with good application methods will be required for successful fruit production.

	Peach (*Prunus persica*)	**Plum- European (*P. domestica*) or Japanese (*P. salicina*)**	**Sour cherry (*P. cerasus*)**
Fruit characteristics:	**Yellow-flesh** peaches tend to have higher acidity than most **white-flesh** peaches, making the white peaches taste sweeter, along with having a more delicate, smoother texture. **Melting flesh** peaches have flesh that becomes soft and fibrous at maturity, so they are best for fresh use. **Non-melting flesh** types remain firm during ripening, which results in a rubbery texture that is most often used for canning. **Clingstone** types have flesh woven into and adhering to the pit, which is common for most varieties ripening before early July. All non-melting flesh peaches are clingstone. **Semi-clingstone** types have flesh attached to the pit but not embedded. It is even possible for some peaches to be semi-clingstone in some years and not others. **Freestone** types have flesh that readily separate from the pit when ripe.	Plums can be found in a range of sizes with varying skin and flesh color. They can be used for fresh eating as well as a range of canning and some cultivars can be used for drying. **Japanese plums** tend to bloom earlier than European plums. They also tend to be more fleshy, softer, and juicier than European plums. **European plums** bloom and ripen later than Japanese plums. They are also usually sweeter with some varieties having enough natural sugar to be dried well.	**Sweet cherries** are one of the earliest fruit crops to initiate growth in the spring, so they are quite vulnerable to winter freezes and spring frosts. In addition to bloom loss, wounds created by frosts or freezes can be an entry point for canker diseases. For these reasons, sweet cherries are not recommended for Tennessee. **Tart cherries** (sour cherries) are more likely to be successful partially because of their longer chilling requirements and later bloom. They are typically used as pie cherries rather than for fresh eating.
Chill hour:	At least 850 chill hours are recommended for peaches in Tennessee with more potentially an asset to protect from bloom loss in the spring.	European plums typically require 700 to more than 1,000 chill hours while Japanese plums commonly require only 500-900, hours, which makes them more vulnerable to spring frosts in Tennessee.	Recommended varieties for Tennessee generally fall in this range of 700 or more.
Pollination requirement:	Self-fertile blooms, so no cross pollination is needed	Most Japanese plums need a pollenizer. Most European plans may not need a pollenizer but it may improve fruiting. European and Japanese plums will not cross-pollinate.	Cross pollination is not needed for tart cherries but may still provide benefit.
Grafting and rootstock use: One thing to keep in mind is that most nurseries who sell to home gardeners often do not say the rootstock used.	Rootstocks are needed to provide root knot nematode resistance and potentially provide peach tree short life (PTSL) and armillaria root rot resistance.	Peach, plum or peach-plum hybrid rootstocks	Mazzard and Mahaleb are older rootstock used for cherries. Gisela and Krymsk are newer rootstocks used by some nurseries.

Table 1.
Comparison of key traits for different types of stone fruits that can be grown as home fruits in Tennessee.

Peach Cultivars for Tennessee (*P. persica*)

Green shading represents disease resistant cultivars, which may reduce disease issues and lead to a higher opportunity for success. Yellow shading represents cultivars with more disease susceptibility or those requiring higher investments of time in spraying or management. These colors should be interpreted as general guidelines as all cultivars have not been trialed in Tennessee.

An additional important note is that there are several suppliers of home garden tree fruits that sell their own named cultivars. These cultivars aren't available for trialing, so there is not enough data on their performance for inclusion in these tables.

Name	Cultivar Description	Chill Hours	Fruit Description	Harvest Season
Surecrop	Early season producer with good cold hardiness and high enough chilling to avoid some spring frosts. Resistant to bacterial spot.	950	Yellow flesh, melting, clingstone	June
Sureprince	A cold hardy and late blooming peach. The fruit is large with red skin and good texture. Released by the USDA in the late 1990s with a range of the higher chilling areas of the southeast. Firm flesh that has good flavor with red blushed skin and little fuzz. Resistant to bacterial spot.	900-950	Yellow flesh, melting, semi-freestone	Late June/ Early July
Sweet Joe	This is a very recent introduction by an amateur peach breeder in Tennessee. It is known to have a Contender parent and seems to show some of the bacterial spot resistance and consistency benefits of this parent. It was selected due to the very high sugar content shown in trials. It may be difficult to find on the market, but Tennessee nurseries are starting to produce it, so if available, it could be an interesting selection for residential production.	950	Yellow flesh, freestone	Late June/ Early July
Redhaven	The cultivar others are compared to that changed the industry in the 1940s when it replaced Elberta as the main cultivar. Hardy against cold and reliable with a long harvest window, which is appealing for home production. Medium sized fruit with good flavor that is firm enough to withstand some handling. Resistant to bacterial spot but susceptible to peach leaf curl. May be a semi-clingstone fruit in some years.	950	Yellow flesh, semi-clingstone	Early/Mid July
Cresthaven	This nicely rounded fruit will be yellow in color with a red blush. It was bred and released from Michigan State in the early 1960s and still retains a following due to reported cold hardiness, reliability and a flavor that mixes sweet with a touch of tangy.	950	Yellow flesh, freestone	Mid/Late July
Challenger	Cold hardy selection from North Carolina State University that has Reliance and Redhaven in the parental lines. Released in the late 1990s. Medium sized red fruit with firm flesh and low fuzz on the skin. Very resistant to bacterial spot.	950	Yellow flesh, freestone	Late July/ Early August
Contender	The most commonly recommended peach for Tennessee because of its high chilling that produces later bloom that can potentially miss late frosts. Thus, it becomes one of the most reliable for cropping but needs attention to thinning. The fruit is large with a red blush and good aroma. Released by North Carolina State University in the late 1980s. Resistant to bacterial spot but susceptible to peach leaf curl.	1050	Yellow flesh, melting, freestone	Late July

Intrepid	A cold hardy and late blooming peach. The fruit is large with red skin and good texture. Released by North Carolina State University in the late 1990s. Resistant to bacterial spot.	1050	Yellow flesh, melting, freestone	August
Carolina Gold	A cold hardy and late blooming peach that is vigorous and productive. The fruit is large with red skin and good texture. Released by North Carolina State University in the early 2000s. Very resistant to bacterial spot.	1050	Yellow flesh, melting, freestone	Late July/ August
Nectar	Vigorous tree that produces delicate fruit with a pink to red skin and white flesh. Thought to be an heirloom type from the 1930s. Aromatic fruit with very good flavor. Resistant to bacterial spot.	1050	White flesh, freestone	July
China Pearl	This is a cold hardy, late blooming cultivar with appealing blooms. Fruit is large with reddish skin and low acid white flesh. Developed and released from North Carolina State University and has Contender parentage. Good resistance to bacterial spot.	1100	White flesh, freestone	August

Rootstock selection for peaches in Tennessee
Lovell- Produces full-sized trees with high fruiting efficiency. Susceptible to root knot nematode, peach tree short life and Armillaria root rot.
Halford- Produces full-sized trees with high fruiting efficiency. Susceptible to root knot nematode, peach tree short life and Armillaria root rot. Produced from seed.
Guardian- Produces vigorous trees with high fruiting efficiency. Resistant to root knot nematode and to peach tree short life, Susceptible to Armillaria root rot. Produced from seed.
Seedling- Not recommended due to a lack of disease resistance and size control.

Plum Cultivars for Tennessee (*P. domestica and P. salincina*)

Name	Cultivar Description	Pollination Needs	Chill Hours	Harvest Season
Bruce	Hybrid cultivar with both European and Japanese plum parentage. The fruit is large with red skin and yellow flesh. Blooms and fruits later than many other plums.	Requires pollenizer	500-600	June
Methley	Fruit that is red to purple skinned with red flesh. Self-fruitful cultivar that is often used as a universal pollenizer. Susceptible to black knot, and this cultivar does have low chill hours, so early blooms are a concern.	Self-fertile	250	June
Stanley	Fruit has a dark purple skin with light yellow/greenish flesh. It is a later blooming and fruiting than many other plums. Freestone. Good for canning, freezing and fresh use.	Self-fertile	700-800	August
Ozark Premier	Red skinned fruit with yellow flesh that may cling to pit, often referred to as semi-freestone. This is a self-fruitful cultivar with large fruit. It is reported to be heat tolerant. Methley is one of the parents.	Self-fertile	700-800	June-July

Tart Cherry Cultivars for Tennessee (*P. cerasus*)

Name	Cultivar Description	Pollination Needs	Chill Hours	Harvest Season
Early Richmond	This tart cherry is quite cold hardy, mid-sized tree that can be an edible ornamental in the landscape. Early Richmond is actually a very old cultivar that can be traced back to England and the 1500s. Typically used as a pie cherry or for drying.		700	June
North Star Dwarf	This dwarf tree typically reaches a height of 7-9 feet with a similar width. Quite cold hardy and bred by the University of Minnesota and released around 1950. Morello type fruit with dark red skin and flesh.	Self-fertile	800-900	June
Montmorency	Most widely grown tart cherry that was developed in France. Mature height and spread will be about 20 feet. Fruit has bright red skin and yellow flesh.	Self-fertile	600-700	June

References and Further Reading

Cultivar information from recent Extension publications in the southeast were used to develop these tables.

https://secure.caes.uga.edu/extension/publications/files/pdf/B%201171_18.PDF

https://extension.uga.edu/publications/detail.html?number=B1518&title=home-garden-plums

https://extension.uga.edu/publications/detail.html?number=C1063&title=home-garden-peaches

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