

SITE SELECTION AND PREPARATION

David W. Lockwood

Department of Plant Science & Landscape Systems
University of Tennessee
Knoxville, TN 37996

Keith Striegler

Department of Horticulture
University of Arkansas
Fayetteville, AR 72701

“Because I already own the land” may be the poorest reason for planting an orchard on a given piece of property. Site selection is one of the most important decisions a grower will make over the life of an orchard. Virtually every aspect of production and marketing is, to a degree, affected by site. It affects cropping consistency, fruit quality, pest pressures, and marketing success.

Spring frosts and freezes are the major factors limiting cropping consistency. Sites that are elevated relative to the immediate surroundings offer some protection from radiation frosts as well as a certain measure of disease protection. If planting on a slope, how close to the base of the slope to plant depends on the width of the valley at the base of the slope, the drainage area (from how large an area will cold air be draining into the valley), and whether there are any obstructions to air flow out of the valley.

Direction of slope can affect orchard performance. Trees on a south-to-west-facing slope may be more prone to cold injury (southwest trunk damage) than those on other slopes. Trees on a north-facing slope will bloom a bit later than those on other slopes, especially a south-to-southwest slope, and are, therefore, less prone to spring frost damage. Slopes with an eastern exposure receive morning sun earlier than others. Fruits and foliage on this slope may dry off earlier in the mornings, thus reducing pressure from certain diseases.

Peach trees grow best on deep, well-drained, medium-textured soils having moderate fertility. Heavy, shallow soils should be avoided, as root growth will be restricted and trees will be more seriously impacted by drought, excess water, and low temperatures. Soils should provide a minimum of 30 to 36 inches of rooting depth, with greater rooting depths being desirable.

Avoid soils having poor internal and surface water drainage characteristics. Peach trees will not tolerate waterlogged soils for extended periods of time during the growing season. Tile drainage and planting on raised beds may improve tree survival, growth, and fruiting on marginal sites. However, such practices are expensive. Frequently, such sites have other limitations, such as poor air drainage. Excessively droughty soils may not be desirable either, because the higher frequency of irrigation required will add to the cost of maintaining such orchards.

Highly fertile soils do not necessarily make good peach sites. Excessive tree growth can cause shading in the lower and interior portions of trees. Undue vigor will contribute to increased disease pressure, poor fruit quality, and a failure to develop flower buds for the following year in the lower and interior portions of the tree. Fertilizer can be added to soils of low to moderate fertility in sufficient amounts and at the correct time to obtain the desired results.

Water availability and water quality should be assessed in searching for orchard sites. If overhead irrigation will be used for frost protection and drought relief, a fairly substantial water source will be needed. If a stream is to be used as the water source, flow rate and reliability must be assessed to be sure that adequate amounts of water are available during peak demand periods. If a pond is to be used, its size and recharge rate must be adequate to satisfy the demands. With trickle irrigation, water quality is important because lines and emitters can easily be plugged by contaminants. Adequate filtration must be used to assure a clean water supply.

Location of the water source in relation to the orchard is important because pumping water excessive distances is expensive. Also, having to travel very far to fill sprayers adds a lot of time and expense to orchard care.

Water quality can have a tremendous impact on food safety considerations. Livestock should not have access to ponds or streams that may serve as water sources for orchards, as fecal contamination is a serious food safety risk. Concerns over marginal water quality are magnified by overhead irrigation because leaves and fruits will be wetted. Water quality will be of increasing significance as the technology to further enhance food safety continues to grow.

Market considerations should play a large part in site selection. If fruit is to be transported to a central packing facility, distance and the quality of the roads need to be considered. Retail, on-farm markets need to be readily accessible to customers. Locations that are easy to find and are close to population centers along paved roads that are wide enough to allow safe passage are positive factors. This is not to say that consumers will not visit markets lacking these features. However, visits to a market are likely to be reduced if the market is not easy to get to, or if roads are dusty, muddy, and filled with potholes or ruts. Adequate room to load trucks or park cars is essential in the orchard or at packing houses and markets.

Previous cropping history should be assessed when evaluating a site. If the field has been in row crops, were persistent herbicides used that may injure or kill new trees? It may be necessary to delay planting such sites until these herbicides have degraded to the point that tree health would not be adversely affected.

Sites that were in hardwood timber can present root rot problems for the peach trees, especially if oak trees were present. Oak root rot can be a problem for peach trees even after the oak trees have been gone for a number of years. Sites known to have peach tree short life are obviously less attractive as replant sites.

Site selection and site development go hand-in-hand. Some factors in site development, such as water availability, passive frost protection, and ensuring adequate water drainage, are best addressed through selection of good sites.

Site preparation should establish a favorable soil environment for the trees and address factors that may have a negative impact on fruiting and orchard management. Orchard site preparation should begin at least six to 12 months in advance of planting. Factors to be addressed well in advance of planting include soil testing for pH, nutrients, and nematodes. Soil drainage, noxious weed control, orchard floor cover crop establishment, and other considerations should also be attended to before trees are planted.

Collect pre-plant soil samples well in advance of planting to allow adequate time to apply needed soil amendments. Samples should be collected in the upper 8 inches (discard the upper inch) and the 8- to 16-inch depth. The deeper sample may well be the most important at this time. Needed modifications in pH or nutrient status can be made at this time; after planting, deep incorporation of soil amendments is no longer an option.

A single soil sample should not represent an area exceeding ten acres. Within this area, additional samples should be collected where there is a change in soil type or where differences in growth of vegetation might indicate a difference in soil fertility.

Soil pH should be adjusted to 6.5 prior to planting. If the 8- to 16-inch depth sample indicates a need for lime or nutrients, they should be applied and incorporated into the subsoil. If soil tests call for the application of four tons or more of lime per acre, apply two tons per acre and incorporate it deeply. Apply the remainder to the soil surface and incorporate by disking.

The basic soil test consisting of pH, phosphorus, and potassium should be adequate unless experience in your area would suggest the need for testing for additional nutrients. Additional information on soil testing and supplies are available at your county extension office.

Soil testing for nematodes is warranted for most sites. This topic is addressed in detail elsewhere in this reference.

Noxious weeds should be controlled in advance of planting because the selection of effective herbicides is greater and the dangers accompanying misapplication are less at this time. Be sure to select a non-persistent herbicide that will not affect survival or growth of new peach trees.

Address any problems with poor internal or surface water drainage before planting. Tiling, terracing, and establishment of surface waterways should be addressed pre-plant.

Obstacles such as hedgerows and woodlands that might impede good air drainage out of the site should be removed.

If the field is smooth and already has a good sod cover, herbicides may be applied in the summer or fall before planting to a 4- to 6-foot wide strip where the rows will be located. If the field is rough or has no sod cover, it should be worked and seeded in late summer or fall preceding planting. Lime and nutrients should be applied based on soil test results prior to tillage. If a permanent cover is not established in fall, a cover crop should be planted to help control erosion.

If the orchard site is wooded, allow enough time before planting to remove the trees and stumps, adjust pH and nutrient levels, and establish a ground cover. Pine timberland can be a good orchard site if the soil and water drainage characteristics are favorable. Sites that had hardwoods on it may need to be avoided for many years because of root rots, particularly oak root rot, which can be lethal to peach trees.