ALABAMA COOPERATIVE Extension SYSTEM

ANR-53-H

ALABAMA A&M AND AUBURN UNIVERSITIES

Fruit Culture in Alabama

Soil and Site Selection and Freeze Protection

Most fruit trees live and produce for 10 to 40 years. Berry and grape plants usually produce from 1 to 20 years. An orchard, therefore, requires long-range planning, and selecting the most desirable site and soil available is important.

The orchard site itself can be the most limiting factor in production. People in urban areas may have little choice and may not be able to produce some fruits satisfactorily. Producers in rural areas may have a little more flexibility in choosing a superior site.

A hobby or home orchard is usually located near the house. Plantings may even be integrated into the landscaping plan. Many fruit plants have beautiful foliage, blossoms, fruits, and fall colors that will enhance the home grounds. Trees are especially effective as backgrounds. Blueberries may be used in foundation plantings. Blackberries and grapes make good screen plantings, and strawberries make a good ground cover.

If your planting will be sufficiently large to be considered a hobby or commercial operation, consider the following points when selecting a site:

• Select soil of at least medium fertility with good drainage. Avoid deep sands or soils with a hardpan. Also avoid heavy, mottled clay soils with poor drainage. Deep, fertile, well-drained sandy loam soils with high water-holding capacity produce the best results. Soils with 12 to 24 inches of sandy loam resting on a red, permeable (friable) clay loam or clay subsoil are ideal.

• Test the soil before planting, and apply lime if needed to correct soil acidity. Most fruit does best in soil with a pH of 6.0 to 7.0. Strawberries produce satisfactorily with a pH of 5.5 to 6.5; blueberries require an acid soil of 4.0 to 5.5.

Use dolomitic limestone for liming. Dolomitic limestone provides magnesium to the plants. Thoroughly incorporate lime into the soil in early fall before establishing the planting during late fall and winter.

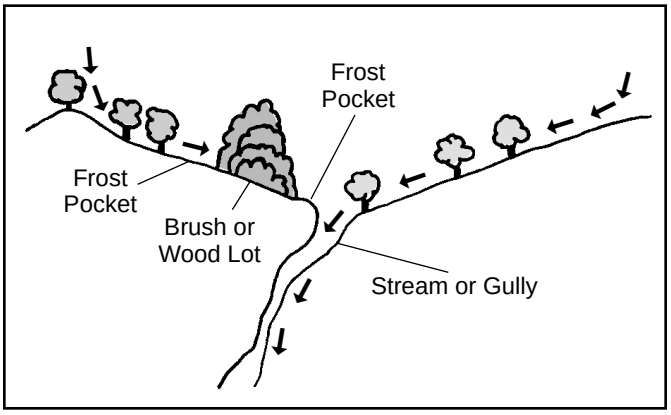

Figure 1. Set trees on the upper part of a slope to avoid frost pockets.

SOIL

- 12 to 24 inches of sandy loam resting on clay subsoil
- Soil pH of 6.0 to 7.0

SITE

- Gently rolling to moderate slope; higher elevation than surrounding terrain
- Dense woods should be removed from lower sections of slopes, or openings should be created to allow cold air to flow away.
- Tall pines on north and northwest sides can reduce freezing wind on orchard. Orchard should slope away from native timber.

• Where possible, select a site that is at a high elevation compared to the surrounding terrain. A gently rolling to moderate slope with good air drainage is ideal (Figure 1).

The direction of slope is not critical. A southern slope is often described in textbooks as less desirable because of slightly earlier flowering of some fruit types. In practice, however, tree fruits (especially stone fruits like peaches) growing on northern slopes are often lost to freezes, particularly in northern counties.

Avoid low areas or those next to woodlands, hedges, or

Figure 2. Peach fruits damaged by marginally freezing temperatures, which caused "cat claw" type damage. More severe temperatures result in total fruit loss and droppage.

buildings that could block airflow, causing a frost pocket and possible loss of blooms or fruit during late winter and early spring freezes. If dense woods block airflow, you can improve cold air movement by cutting swaths 75 feet wide every 100 yards through the woods. However, the wooded area must slope away from the orchard to allow cold air to move out of the orchard.

Ironically, tall trees, such as pines, also have a beneficial effect when positioned on the north and northwest sides of an orchard because they reduce the desiccating effect of freezing wind on flowers the first 1 or 2 nights of a freeze. For maximum benefit, the orchard needs to slope away from the native timber.

Freeze Protection

The major cause of crop loss to fruit plants in the state is from freezing temperatures during late winter/early spring when plants are in flowering to early fruiting stages. Damage during this developmental period may cause rapid loss of flowers and fruits or result in partial damage to fruits, which can be equally devastating (Figure 2).

Growers, whether commercial or home producers, can use a number of cultural and variety options to minimize the problem: (1) Effective protection should begin at the time of establishment with site selection and preparation as well as variety selection. Selecting warmer, more protected sites greatly reduces the risk of crop loss. Using more cold-hardy varieties also reduces crop loss. (2) Using specific practices such as pruning peaches and plums less severely and delaying time of pruning until late winter/spring can greatly reduce freeze damage. (3) Preparing a fruit planting by maintaining weed-free strips along the sides of tree rows and wetting the orchard floor just before a freeze can also reduce freeze losses. (4) Providing some form of protection during a freeze event may also effectively minimize losses from freezes. Historically, growers have used many methods to afford some level of protection to their crops. One of the most common forms of protection has been the use of heat. Heaters, such as the return stack and jumbo cone which usually burn diesel or other petroleum products, can be quite effective but are very costly to operate and are no longer extensively used. Other products including wood and coal can be burned but may also be costly and must be approved before use in many areas.

The use of water for flooding the orchard floor (as practiced in California), overhead irrigation (as practiced on some tree fruits and small fruits such as strawberries and blueberries), and under-canopy trunk/scaffold-type irrigation (as practiced on citrus in Florida and Louisiana) also afford effective protection when used properly and where freeze conditions are not extreme. However, the cost of installation can be expensive, and an adequate supply of water must be available for several nights.

The use of wind displacement by helicopters or wind machines can provide effective freeze protection on calm nights when an inversion occurs (presence of warmer air aloft). Either helicopters or wind machines can provide several degrees of warmth by mixing warmer air aloft with the colder air at the surface.

The latest form of freeze protection that is proving very effective for low-growing crops, such as strawberries, is the use of freeze covers, mostly made of polypropylene and similar fabrics. These covers are also being used for nursery stock and vegetable crops. Covers are manufactured in different weights which afford varying levels of protection.

Although larger fruit plants such as blueberries and satsuma mandarin trees are more difficult to cover with these special fabrics, enough work has been done to demonstrate that the covers are very effective in reducing freeze damage. However, covering large acreages of bush and tree fruits is not considered practical at this time, but home gardeners may easily use these covers on a limited number of bush and tree fruits as well as strawberries with very good success. The use of frames (such as PVC) over the plants during the winter helps in supporting and covering and uncovering plants as needed.

For more information about the principles of freeze protection as well as the methods described above, refer to Extension publications ANR-1057A, "Principles of Freeze Protection for Fruit Crops," and ANR-1057B, "Methods of Freeze Protection for Fruit Crops."

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For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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UPS, 8.5M16, **New March 1999,** ANR-53-H