

# Site Selection<sup>1</sup>

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Many factors determine suitability of a site for citrus production. A good, well-drained, relatively fertile soil is most desirable, but the one overriding consideration will always be the susceptibility to freeze damage. In fact, since freeze survival is paramount to profitable citrus production in Florida, it will be discussed first.

## Freeze Consideration

Several factors which may be present alone or in various combinations will determine how cold a given site will be during a freeze. Generally speaking, latitude is a factor that, in most cases, will help a grove be warmer on cold nights. Simply put, the further south a grove is located, the warmer it will likely be during a freeze. There are exceptions to this simple rule of thumb, and some southerly sites may be colder than some to the north, but they are few and far between. Of course, other considerations may disqualify more southerly sites such as very poor, infertile soils or water drainage problems. Since most southerly sites are relatively warm and many of the other problems can be overcome with the use of irrigation and drainage, the majority of the citrus in Florida is now planted in areas in the southern half of the peninsula.

Another factor that determines how cold a grove site will be on a freeze night is the proximity of the location to a heat source. Usually the source of heat is a nearby body of water. Sites situated south of large lakes or near the Atlantic Ocean

or Gulf of Mexico will almost always be warmer than similar sites that are not near the water. Since cold weather comes into Florida from the north, the air is warmed somewhat as it passes over the water. Groves in the Indian River area of the state are historically warmer than many others due to their proximity to the river and the nearby ocean. Latitude may come into play, as well, especially for the more southerly groves.

Yet another factor may be important during a freeze, and this is topography or elevation. Since cold air is heavier than warm air, it tends to drain from the hilltops and collect in cold pockets. Many groves have been planted on the central Florida ridge because the elevation of the hills helped provide protection on cold nights. Obviously since the pockets and lowlands are colder than hills, they should be avoided. However, the above consideration is greatly complicated by the presence of wind during a freeze event. While many freezes occur under calm conditions where hilltops are warm and low areas are cold, other freezes may be advective and are characterized by high winds and low temperatures. Such freezes were common in the 1980s, and when winds are high, the hilltops are more exposed and often colder than the lower areas nearby. In many cases, only the south sides of hills received enough protection to survive. Clearly, topographic considerations are complicated by the type of freeze event, and this has hastened the

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exodus of many growers from the ridge to more southerly areas.

## Soil Considerations

Most Florida soils are sandy and infertile compared to soils found elsewhere. However, even within the relatively low quality soils, there can be considerable variation. Some soils are so deep and completely void of clay and organic matter that they resemble beach sand. Such sites are scattered throughout the state and should be avoided. Soils with some clay and organic matter are definitely preferable. Generally speaking, the more clay and organic matter there is, the better the soil, unless drainage is a problem. Often, soils with considerable clay or organic matter are low and poorly drained.

The areas that predominate in south Florida are basically characterized as poorly-drained flatwoods soils. These are usually light sands underlain by an organic layer or hardpan that inhibits internal drainage. The water table in such soils is normally at or near the soil surface and must be lowered artificially to facilitate citrus growth.

Citrus groves in the flatwoods are usually planted on raised beds of soil that will accommodate 1 to 4 rows of trees. Water furrows separate the beds and facilitate water removal from the soil surface. The furrows carry excess water out of the grove into ditches, and the water is then drained into canals, rivers, or other bodies of water. High beds and deep ditches ensure best drainage and are most desirable for the growth of citrus, since this allows maximum rooting depth.

Soil types, drainage, texture, and the amount of organic matter in flatwoods soils can vary markedly even within a given area. The importance of a careful soil survey prior to planting cannot be overemphasized as this may help to prevent mistakes that the grower will have to contend with for the life of the grove.

The soils that predominate on the ridge are generally favorable to growing citrus. Very little alteration of the soil environment is required. The freezes of the 80s have dramatically affected grove site selection along the ridge. Areas which once grew many acres of excellent citrus have now been abandoned due to repeated freezes. Only long-term climate changes will cause these areas to be replanted again. The south end of the ridge from central Polk County southward remains a viable area of good groves, but planting areas north of this should be made with caution and careful review of temperature records.

## Water Management

Water has always been a problem and will probably be the cause of even more problems in the future. Excess water in poorly drained areas must be dealt with. Removal of water from the grove is only part of the problem. What to do with the water next is often a problem of even greater significance and cannot be ignored. Availability of water for irrigation is quite important. The demand for water is also increasing as the population of Florida grows. Citrus trees will no doubt have a lower priority than people if water shortages develop. Permitting for water consumption and discharge (if necessary) should be a key part of the site selection process.

Water quality can also be an issue in some areas. Be sure to investigate any existing wells or consult with experts in the area that have knowledge of water quality in the selected area. Local water management district may also be an excellent source for water quality information.

## Economic Considerations

Land value and taxes go together. Some land is simply too valuable to grow citrus on and should not be considered. Unfortunately, much good grove land is also desirable for real estate, especially if the area is near a population center. Land purchased at a high price is also likely to carry high property taxes. Property tax may vary from area to area and should be thoroughly evaluated. Special exemptions for agriculture may not always be in effect.

## Other Considerations

Access to any property is quite important, especially in selecting a grove site. Heavy equipment will need to be moved in and out of the grove periodically and roads will need to be in good condition to accommodate this traffic. Distance from a processing or packing facility should also be considered as hauling costs may increase with distance.