



IFAS EXTENSION

Considerations for Choosing the Right Rootstocks¹

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The key to making the best rootstock decision today is to focus on the characteristics of your specific planting site and the known performance of trees on a particular rootstock under those conditions.

Choosing a rootstock is an important decision. It should be carefully considered because the decision is a relatively permanent one and, therefore, has long-term significance. The steps in choosing a rootstock may not always be obvious, but there are several factors that traditionally have been important.

One of the more important factors is your personal experience as well as that of friends, neighbors, and nursery managers. The information you gather from different sources may be conflicting and sometimes confusing, but analyzing and sifting through this material can lead to better rootstock decisions. Some of the other steps and factors involved are described in this publication in a generalized approach to selecting the best rootstocks for your conditions.

Use this fact sheet as a handy check-off form when preparing to select rootstocks.

Gather the Facts About the Site and Its History

There is no substitute for having as much factual information as possible. A prominent grower once said that his first step in choosing rootstocks was to read everything he could find. Reading publications like *The Proceedings of the Florida State Horticultural Society* is an excellent supplementary activity to all the steps mentioned below.

Know Your Planting Site Characteristics

Soil Characteristics

- Soil series (from the County Soil Survey)
- Texture
- Depth to hardpan or clay layer
- Percent organic matter
- Soil pH
- Irrigation water quality (measure electrical conductivity to test for salinity)
- Soil water holding-capacity

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- Water drainage
- Soil nutrient status (determined by soil samples)
- **Site information from your County Soil Survey.** The Soil Survey has some limitations, but you can use it to develop guidelines for bedding procedures for flatwoods groves, to select the best rootstock for your soil conditions and for other related factors.
- **Aerial photographs.** If you don't have old aerial photos of the site, see if you can obtain them from the Florida Agricultural Statistics Service, your local Natural Resources Conservation Service, or a private vendor. They are quite valuable in showing old ponds and other site variations especially those that existed before planting. The "poor" spots tend to persist in their effects in a grove.

Topography

Changes in elevation are important for both air (on freeze nights) and water drainage. Images showing elevation changes and other features are available on the internet.

- Visit the Florida Geographic Data Library (FGDL) at the University of Florida (www.fgdl.org) for a wealth of free information including aerial images and the digitized County Soil Surveys.
- Another site is the Florida Department of Environmental Protection Land Boundary Information Systems (LABINS) at www.labins.org. This site has excellent, reasonably current aerial images.

Know Your Objective

Many decisions are made within the framework of a well-defined goal. Therefore, consider:

- **Scion cultivar.** Like choosing a rootstock, the cultivar selected represents a choice not often or easily changed after planting. An example of a scion-dependent rootstock choice is the use of Cleopatra mandarin. Evidence from field research suggests that Cleo is an acceptable

choice for early-season oranges because of good yield and juice quality; however, the use of Cleo for Valencia budlines is less certain.

- **Market.** Juice quality may be less important than yield if the fruit is for processing, and this would affect the choice of rootstock. If the fruit is for the fresh market, the influence of the rootstock on external quality may become more important.
- **Solid-set or replant sites.** Sometimes for replanting, a rootstock different than the one selected for a solid planting is appropriate because of concerns about diseases like Phytophthora foot rot and root rot, and because of tree spacing. When the replant space is small, choosing a rootstock for its vigor rather than for other characteristics becomes more important. Rootstocks of only medium vigor do not compete or grow as well as replants in close spacings.

Know the Rootstocks

There are two readily available sources of information about rootstocks. Each provides a different perspective. They are:

- **Experience.** Growers usually feel comfortable planting trees on rootstocks with which they have had positive experiences. The performance boundaries of trees on a particular rootstock are established from years of commercial use. Confidence (and less risk) is derived from that practical experience; however, more risk might be encountered if the decision is made to plant outside those boundaries. For example, it is known that trees on Carrizo do not perform well in calcareous soils. So, while planting trees on Carrizo in soil of pH 7.2 might be an acceptable risk, it would not be an acceptable risk to plant those same trees in a site with plenty of calcareous material present and a soil pH of 8. The latter decision exceeds the performance boundary for Carrizo.
- **Field Experiments and Research Data.** Rootstock research functions mainly to develop new rootstocks, determine their commercial potential, and to ensure that the capabilities of currently used rootstocks are completely and

Your Best Decision?

Plant your own rootstock trial. It is easy to do, it is easy to manage and it will be your best decision-making tool!