Freeze Protection Considerations

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When growing citrus for commercial production in North Florida or South Georgia, freeze protection and the water requirement you need should be one of the very first things in your grove planning process that you think about because it will determine your well size, power unit requirements, tree spacing, and gallons of water per hour, per tree you plan for. In general, 9 to 25 gallons/hour is a common range. In case of temperatures below 30 F, 13 or 15 gallons/hour is good particularly for young plantings, while irrigation rate 10 gallons/hour or above is adequate as freeze protection for mature trees

So, once you've taken into consideration the slope of the land your grove is to be planted on, the natural wind breaks available, (north and west sides in particular), soil type and drainage, you can better decide on trees per acre, rootstock selection, and emitter type and tip pattern.

Young trees planted late in the growing season (August or later) are more susceptible to being killed by freezes. The older the trees are, (with proper management), the more resistant they are to major freeze damage or being killed by a freeze. Windy freezes along with trees not cold acclimated (actively growing) always makes freeze damage worse.

Tips. 1. In Florida, during most freeze events, the wind comes from the north or northwest. Therefore, place emitters upwind of the tree to the northwest focus spray to graft (above the scion/rootstock union). In this position, the wind will spray the water into the tree instead of blowing it away from the tree. Remove any leaves or branches that block water from reaching the graft. The microsprinkler emitter must be close enough to the truck of young tree, so that water sprays directly on the graft and lower part of the tree. Place the microjet as close to the trunk as possible and make sure the water flow is facing the tree.

2. Start the water before freezing temps so the spaghetti lines don't freeze. It is best to turn on microsprinklers when the air temperature reaches 36 F on freeze event night.

3. Inspect and flush irrigation system before use and replace clogged emitters.

4. Cold protection with microsprinkler irrigation is most effective when high volumes of water are used. Application rates can be increased by changing the emitter spray pattern size. For example, the quarter circle (90°) and half circle (180°) emitters are better for freeze protection as compared to the full circle (360°) emitter.

5. Plan for backup power for electric pump power outage.

6. As the freeze event subsides, don't turn off irrigation until air temps reach 39 F or higher.

Additional protection can be achieved by using tree wraps, tree defenders, tree teepees, or individual freeze protection sacks made of spun polyester (row cover material) as well as banking soil up on the trunks of young trees to cover the graft union (see photo below).

Forecast freeze information sources include – local TV weather, Weather Channel, Accuweather, Florida Automated Weather network (FAWN).