

Florida Citrus Health Response Program Working Group:  
**Strategies for Effective Eradication of Citrus Black Spot in Collier and Hendry Counties**  
May 27, 2010

Currently, the known limited distribution of the recently detected citrus black spot suggests an opportunity may exist to achieve “effective eradication” of the disease. This type of eradication is defined as a condition where the signs and symptoms of a disease are not at detectable levels when appropriate survey and detection methods are utilized in an area previously delimited for the disease. The Florida CHRP Working Group encourages implementation of the following suppression recommendations for citrus black spot in groves known to have citrus black spot as well as groves that are contiguous to the positive groves. The suppression recommendations are based on the best known science gained from other countries that have citrus black spot infestations. Assiduous application of these suppression recommendations may lead to effective eradication which will minimize areas placed under quarantine and facilitate movement of fresh and processed fruit into appropriate markets.

**1. Monthly fungicide applications from early May to late August-early September**

Copper fungicides (any formulation at the label rate) and the strobilurins (Abound, Gem and Headline at the highest label rate) are the products that have demonstrated efficacy in other countries for black spot control and are registered for citrus in Florida. Strobilurin fungicides are effective for black spot control. In the case of fresh fruit, strobilurins should be used when there is concern for phytotoxicity from copper sprays (temperatures exceeding 94° F); otherwise, there is no particular timing recommendation for when to use strobilurins. To ensure coverage of leaves and fruit, use 250 gallons/acre and an airblast sprayer. Avoid two consecutive applications for resistance management concerns and remember that only 4 applications of any strobilurin per block are allowed for all diseases in a year. Investigations are ongoing for the possibility of a section 18 registration for at least one additional compound.

**2. Cultural practices to aid control**

- a. Minimize trash (leaf litter, small branches) movement from one location to another. The main inoculum is the ascospores that are forcibly ejected from decomposing leaf litter. The disease is normally asymptomatic on leaves so it is very easy to inadvertently move inoculum from one block or grove to another. This is the underlying rationale for the tarping regulations for fruit coming from the quarantine areas, but other equipment could also easily move trash from one area to another.
- b. Avoid cultivars with significant off-season blooms if replanting and remove trees that have a significant amount of off-season bloom due to other factors such as other diseases or stress. More than one age of fruit on a tree allows for fruit to fruit infection via conidia, amplifying the number of black spot diseased fruit.

- c. Increase air flow in the canopy where possible to reduce leaf wetness periods. Citrus black spot is reported to need 24-48 hours of leaf wetness to cause an infection. Therefore anything that will reduce the leaf wetness will reduce the severity of infection.
- d. Plant clean nursery stock to avoid introducing any disease to a grove at planting time. Currently, there is no nursery near known infected groves; however, this may change as we gain a better understanding of where the disease is located.
- e. Maintain a good nutrient management program. Stressed or 'hungry' trees will often express citrus black spot symptoms first.

### **3. Leaf litter control for inoculum suppression**

Normally leaf litter control would start in mid-March, but starting now will still be beneficial for inoculum reduction.

- a. Increased frequency of irrigation with microsprinklers from 3 to 5 times a week for a half hour per irrigation period increases the initial decomposition of leaf litter. It also reduces the number of spore forming structures of *Mycosphaerella citri* (causal agent of greasy spot) found in the leaf litter when compared to the traditional irrigation frequency. It is not known for certain if citrus black spot (*Guignardia citricarpa*) spore-forming structures will also be reduced, but it is expected that they will be.
- b. One application of urea (187 lb/treated acre) through an herbicide boom onto the leaf litter under the canopy reduces spore-forming structures of *M. citri* that are produced in the leaf litter. Similar results were found with ammonium sulfate (561 lb/acre), but not with calcium nitrate, potassium nitrate or ammonium nitrate. The nitrate fertilizers did not affect the number of *M. citri* structures produced in the leaf litter. Again, it is not certain that these treatments will have the same effects on *G. citricarpa*; however, they should help to reduce the inoculum.
- c. Dolomite lime (2226 lb/treated acre) or calcium carbonate (2226 lb/treated acre) can also be used to aid decomposition of the leaf litter. The rate of leaf decay is similar to normal grove conditions, but the number of fungal structures of *M. citri* is reduced compared to normal conditions and we expect this to occur for *G. citricarpa* as well.