Control of Foliar Diseases on Watermelon with Foliar Sprays

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Background: In 2010, Florida ranked first nationally in watermelon production, accounting for 18% of the total U.S. production, 23% of the U.S. crop’s total value, and 19% of the national watermelon acreage (USDA/NASS 2011a; FDACS 2012).

During the 2010 production season, watermelon was the state’s seventh ranking vegetable crop in terms of value. Watermelon production value represented 5.6% of the total production value of all Florida vegetables (FDACS 2012).

The most important pest groups in Florida watermelon production are disease pathogens, particularly viral diseases, and weeds. Disease pathogens are challenging to manage, and weeds have become more difficult to control with the loss of methyl bromide.

Guidelines have been developed by researchers throughout the state and promoted through IFAS Extension, including integrated pest management programs, so that Growers employ a variety of pest management techniques, particularly for disease management (Spreen et al. 1995).

Researchers evaluating alternatives to methyl bromide have concluded that it will not be possible to replace it with just one management tactic. A combination of tactics is needed, which varies according to the crop. A single chemical cannot replace methyl bromide; however, a combination of fumigants, non-fumigants and biologicals can be used. A study that was conducted by the University of Florida / IFSA evaluated both chemical treatments and biological products, alone or in combination with chemical pesticides for the control of Downy Mildew (caused by Pseudoperonospora cubensis), and Gummy Stem Blight (caused by Didymella bryoniae), key fungal diseases of watermelons in Florida.

This study includes several products which have a microorganism (e.g. Companion®) as their active ingredient that functions as a biocontrol agent, directly affecting the pathogen, or alternatively, produces a compound during fermentation that provides control (e.g. Sonata). Some products suppress disease by inducing the plant to activate its own defense mechanisms (e.g. Companion) giving growers many choices in which to treat and subdue invasive pathogens.
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Objective: Evaluate, under the guidelines established by the University of Florida/IFAS for land preparation, fertility, weed management, insect control, and the control of foliar diseases (Gummy Stem Blight; Didymella byssoidea), at the Immokalee, FL Research Center.

Method: Watermelon transplants were transplanted to the field on March 7 into Immokalee fine sand. Each plot consisted of 10 plants spaced 36 in apart with 10 ft between plots. All compounds were applied with a backpack CO2 sprayer at 40 psi with a single hollow-cone nozzle, at 24 gal/acre. Two isolates of the Didymella byssoidea were obtained from S. Semer, Gainesville, FL. The spore suspension was applied with a hand pump to all plants in plots on April 18. Fruits were rated as marketable or non-marketable (small, misshapen or diseased).

Results: Disease pressure for gummy stem was severe: the control plants were dead on the final reading date (May 10). Symptoms of gummy stem were significantly reduced by most application treatments except Bravo Weather Stik, and Curzate 60DF programs. Companion Biological Fungicide reduced the disease by 80%, equivalent to 5 chemical product applications.