

**Evaluation of fungicides for the control of Fusarium wilt of watermelon, Salisbury, NC, 2015.**

The experiment was conducted at the Piedmont Research Station in Salisbury, North Carolina (35.69695,-80.620552) to evaluate the use of fungicides for the control of Fusarium wilt of watermelon. The field was cropped to watermelon in 2014. Seeds of watermelon 'Black Diamond' were sown in the greenhouse on 22 Apr in potting medium Fafard 2 Mix. Plants were inoculated and transplanted on 5 Jun by dipping the seedling trays into a conidial suspension of *Fusarium oxysporum* f. sp. *niveum* (FON) race 1, adjusted to 10<sup>7</sup> spores/mL with the aid of a hemocytometer. The trays were drenched for 20 minutes in the morning and then transplanted that afternoon in the field. Fungicide drench treatments were applied on 5 June after transplanting. Additional FON infestations were applied by drenching each plant at its base with a spore suspension of 10<sup>6</sup> spores/mL of a mixture of isolates of FON Race 1 isolates on 10 and 17 Jun. The experiment was set up in a randomized complete block design with four replications. Plots were raised beds with white plastic mulch and 30-ft long by 2-ft wide single rows with 6-ft fallow borders at each end. Each plot had 10 plants. Fungicide drench applications were applied with a 100 mL solution to the base of each seedling on the day of transplant. Fungicide spray applications were applied on 19 Jun using a CO<sub>2</sub>-pressurized backpack sprayer equipped with a single nozzle handheld boom with hollow cone nozzles (TXVS-26) delivering 40 gal/A at 45 psi with one pass per plot. Disease incidence ratings were assessed on 23, 26, and 30 Jun, 3, 7, 10, 14, 17, 21, and 24 Jul. Disease incidence was measured by the presence or absence of disease and plant death per plot. Diseased plants were given a score of 1 and dead plants were given a score of 2, while healthy plants were given a score of 0. The incidence score per plot was calculated as the sum of the plant disease ratings per plot. The data is shown as a percentage of disease as compared to the maximum amount of disease (a score of 20= all plants dead). Data were analyzed with the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and the Tukey HSD test to separate means.

Early disease pressure was high in the non-treated check plots (25% disease), and only the Adepidyn 10.3 fl. oz/A drench followed by a spray treatment was significantly different than the control group. By the end of the trial on 24 Jul, the disease pressure was very high in the non-treated check plots (79% disease). All treatment groups with a spray treatment in addition to the drench treatment at transplant outperformed the treatments with no follow-up fungicide treatment. No phytotoxicity was observed.

Product and rate per acre	Disease Incidence (%) <sup>z</sup>			
	25-Jun	7-Jul	14-Jul	24-Jul
Non-treated	25.0 a <sup>y</sup>	31.5 a	50.0 a	79.0 a
Adepidyn (Drench) 10.3 fl oz/A <sup>x</sup>	2.0 b	3.0 b	19.0 a	50.0 b
Adepidyn (Foliar) 10.3 fl oz/A <sup>w</sup>				
Proline (Drench) 5.7 fl oz/A <sup>x</sup>	4.5 ab	12.0 ab	31.5 a	49.0 b
Proline (Foliar) 5.7 fl oz/A <sup>w</sup>				
Adepidyn (Drench) 13.7 fl oz/A <sup>x</sup>	10.0 ab	12.5 ab	20.0 a	54.0 b
Adepidyn (Foliar) 13.7 fl oz/A <sup>w</sup>				
Proline (Drench) 5.7 fl oz/A <sup>x</sup>	17.0 ab	20.5 a	42.5 a	71.5 ab
Adepidyn (Drench) 10.3 fl oz/A <sup>x</sup>	6.0 ab	13.0 ab	30.0 a	62.5 ab
Adepidyn (Drench) 13.7 fl oz/A <sup>x</sup>	11.5 ab	20.5 a	26.5 a	65.0 ab

<sup>z</sup> Disease rating scale based on number of diseased or dead watermelon plants caused by *Fusarium oxysporum* f. sp. *niveum*.

<sup>y</sup> Treatments followed by the same letter(s) within a column are not statistically different based on Tukey HSD groupings (P=0.05).

<sup>x</sup> drench applications applied on 5 Jun

<sup>w</sup> foliar spray applications applied 19 Jun