

Evaluation of fungicides for the management of Fusarium wilt of watermelon in Salisbury, NC, 2016

A field experiment was performed at the Piedmont Research Station in Salisbury, North Carolina, to evaluate the use of fungicides for the management of Fusarium wilt on watermelon. The experiment was set up as a randomized complete block design with eight treatments replicated four times each. The field had no history of Fusarium wilt or watermelon cultivation. Seed of watermelon 'Black Diamond' were sown on 29 Mar in potting medium Fafard 2 Mix. Plots were on raised beds that were 30 ft. long, 10 ft. centers, 9 ft. between plots, and 10 plants per plot. The field was artificially infested with a spore suspension of two previously characterized *Fusarium oxysporum* f. sp. *niveum* (FON) race 1 isolates. The first infestation was done three hours before planting on 11 May by dipping the transplant trays in a 10⁷ conidia/mL solution for 20 min with a 1:1 ratio of the two isolates of FON (race 1). The second infestation was done on 18 May by drench at the base of the plant with 100 mL of a 10⁶ conidia/mL spore suspension with the same two isolates in a 1:1 ratio. The non-inoculated control treatment was not treated with the spore suspension. The fungicide drench treatment was applied in 100 mL solution to the base of each plant on 11 May. The foliar spray treatment was applied on 27 May using a CO₂-pressurized backpack sprayer equipped with a single nozzle handheld boom with hollow cone nozzles (TXVS-26) delivering 40 gal/A with one pass per plot. Incidence was assessed as the percentage of diseased plants per plot. Data were analyzed with the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV), and the Tukey HSD test was used to separate means.

There was heavy disease pressure in the non-treated controls, but there was very slow disease development in the plots with fungicide treatments. There were no separations between any individual fungicide treatments or the non-inoculated control in terms of disease incidence in the last three ratings. There were treatment differences in yield, where the drench treatment with Proline, without a spray treatment, had significantly lower yield than the non-inoculated non-treated positive control. This trend was observed in both total fruit count and total fruit weight per plot.

Product and rate per acre	Disease Incidence (%)		Total fruit weight (kg)	Total fruit count
	5 Jul	14 Jul		
Non-treated	95.0 a ^x	95.0 a	0 c	0 c
Adepidyn (Drench) 10.3 fl oz/A ^y	12.5 b	17.5 b	35.3 a	10.5 ab
Adepidyn (Foliar) 10.3 fl oz/A ^z				
Proline (Drench) 5.7 fl oz/A ^y	10.0 b	10.0 b	17.4 abc	6.5 abc
Proline (Foliar) 5.7 fl oz/A ^z				
Adepidyn (Drench) 13.7 fl oz/A ^y	5.0 b	15.0 b	37.2 a	11.0 ab
Adepidyn (Foliar) 13.7 fl oz/A ^z				
Proline (Drench) 5.7 fl oz/A ^y	15.0 b	15.0 b	10.6 bc	5.3 bc
Adepidyn (Drench) 10.3 fl oz/A ^y	7.5 b	17.5 b	27.4 ab	9.3 ab
Adepidyn (Drench) 13.7 fl oz/A ^y	17.5 b	17.5 b	28.0 ab	9.5 ab
Non-inoculated Non-treated	0 b	0 b	36.9 a	13.0 a

^xTreatments followed by the same letter(s) within a column are not statistically different based on Tukey HSD groupings (P = 0.05).

^yDrench treatments applied on 11 May

^zFoliar spray treatments applied on 27 May