

Evaluation of fungicides for postharvest management of *Rhizopus* soft rot in sweetpotato, 2020.

This experiment was conducted at the Central Crops Research Station in Clayton, NC. Sweetpotato roots used in the study were grown at the Cunningham Research Station in Kinston, N.C. and were rinsed with water prior to use. Roots were previously cured and were selected based upon similar size, shape, and disease-free appearance. The experiment was started on 25 Feb. Sweetpotatoes were wounded using a calibrated, rubber-band-propelled wooden dowel. After wounding, roots were inoculated with a spore suspension suspended in a 0.2% agar solution, applied with a micropipette. The approximate concentration of the spore suspension was 1.0×10^6 spores/ml. Following inoculation, roots were taken out of the spore suspension and allowed to air dry. Roots were then placed onto a miniature packing line and fungicide spray treatments were applied using a compressed air pressurized sprayer delivering 0.5 gal/2,000 lb of roots at 40 psi with four TG-1 full cone nozzles. After fungicide application, sweetpotatoes were placed into clear, plastic containers (40 x 50 x 17.9 cm) and stored at 27°C and 99% relative humidity for 14 days. Roots used for the non-treated control were inoculated, but with no treatments applied. Ten replications per treatment were included with 5 roots per replication. Roots were rated for disease incidence (percentage of wounds infected) at 3, 7, 10, and 14 days after inoculation on 28 Feb, 3 Mar, 6 Mar, and 10 Mar. Disease severity (percent of root infected/soft) was rated at 3, 7, 10, and 14 days after inoculation. Data were analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and Fisher's Protected LSD test ($P=0.05$) to separate means.

Rhizopus was first observed 3 days after inoculation. Disease incidence in the non-treated control was high (98%) as estimated by number of infected sweetpotatoes on 10 Mar. Stadium + Mertect 340F and Stadium provided the most reduction in both severity and incidence. Graduate A+ and Mertect 340F consistently provided significant reductions in both disease severity and incidence. Academy and Scholar also provided a consistent significant reduction in disease severity. No phytotoxicity was observed in any treatment.

Treatment and product rate/2000 lb	Disease Severity (%) ^z				Disease Incidence (%) ^y			
	28 Feb	3 Mar	6 Mar	10 Mar	28 Feb	3 Mar	6 Mar	10 Mar
Stadium								
1 fl oz								
Mertect 340F								
0.42 fl oz	0.0 d	3.1 d	4.4 e	5.1 d	0.0 d	14.5 e	14.0 d	20.0 d
Stadium								
1 fl oz	0.1 d	1.9 d	2.7 e	3.1 d	4.0 d	16.0 e	22.0 d	34.0 d
Graduate A+								
0.6 fl oz	0.0 d	2.5 d	3.3 e	6.0 cd	2.0 d	22.0 de	28.0 d	44.0 dc
Mertect 340F								
0.42 fl oz	0.4 cd	3.9 c	5.9 de	6.7 cd	18.0 d	40.0 cd	50.0 c	56.0 b
Academy								
0.16 fl oz	0.7 cd	13.8 c	19.0 cd	24.9 bc	42.0 c	57.0 bc	72.5 b	83.5 a
Scholar SC								
0.16 fl oz	1.3 bc	17.6 c	33.2 bc	39.2 b	56.0 bc	64.0 b	78.0 ab	86.0 a
Academy								
0.16 fl oz								
Mertect 340F								
0.42 fl oz	2.2 b	28.6 b	45.4 b	63.4 a	64.0 b	78.0 a	88.0 ab	88.0 a
Non-treated	5.0 a ^x	52.6 a	62.4 a	67.9 a	98.0 a	98.0 a	98.0 a	98.0 a

^z Disease Severity was calculated by the percentage of each sweetpotato in the box that soft/infected

^y Disease incidence was calculated for each treatment based on the percentage of sweetpotatoes per box infected.

^x Treatments followed by the same letter(s) within a column are not statistically different ($P=0.05$, Fisher's Protected LSD).