

Evaluation of fungicides for control of black rot in sweetpotato, 2016.

This experiment was conducted at the Central Crops Research Station in Clayton, NC. Sweetpotato roots used in the study were obtained from a commercial packing facility at the time of each inoculation and were rinsed in water prior to use. Roots were previously cured and were selected based upon similar size, shape, and disease-free appearance. Sweetpotatoes were wounded with a tool equipped with three 4 mm screws to create puncture wounds. After wounding, 80 sweetpotato roots were placed into a 121-L bin containing 39 L of water. Roots were inoculated by adding three 100-mm, 3-week-old agar plates of *C. fimbriata* into the bin of water with the wounded roots. The inoculum suspension of approximately 2.3×10^3 spores/mL was gently agitated to ensure homogeneity of spores throughout the bin for twenty minutes. Following inoculation, roots were taken out of the water and allowed to air dry. Roots were then arranged, wounded side up, and fungicides were applied at specific rates using a CO₂-pressurized backpack sprayer. For the dip application, wounded roots were placed into a perforated metal basket and submerged into the fungicide mixture for 1 minute. After fungicide application, roots were allowed to dry and then placed into clear, plastic containers (40 x 50 x 17.9 cm) and stored at 24°C and 99% relative humidity for 29 days. Four replications per treatment were included with 20 roots per replication. Roots were rated for disease incidence and severity at 14, 21, and 29 days after inoculation. Data were analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and the Waller-Duncan test to separate means.

Black rot was first observed 14 days after inoculation. Disease incidence in the untreated control was high (97.5%) on 8 Dec, as estimated by number of infected wounds. Mertect 340F (Dip), TBZ-500D, Mertect 340F, Penbotec 400SC, and Bio-Save 10LP, fungicides all consistently provided significant reductions in disease severity. Mertect 340F Dip provided the best control with no disease present. No phytotoxicity was observed in any treatments.

Treatment and product rate	Disease Incidence (%) [*]			Disease Severity (Avg. lesion size in mm)		
	23 Nov	30 Nov	08 Dec	23 Nov	30 Nov	08 Dec
Mertect 340F (Dip)						
0.42 fl oz/gal	0.0 d ^{**}	0.0 d	0.0 e	0.0 c	0.0 c	0.0 d
TBZ 500D						
0.42 fl oz/gal	13.3 c	20.0 c	25.0 d	5.8 b	10.0 b	11.8 c
Mertect 340F						
0.42 fl oz/gal	29.2 b	40.0 b	45.5 c	4.8 b	11.0 b	17.3 b
Penbotec 400SC						
0.16 fl oz/gal	37.2 b	53.8 b	65.5 b	4.3 b	10.3 b	11.5 c
Bio-save 10LP						
16.6 g/gal	35.3 b	52.2 b	70.1 b	4.8 b	13.5 b	15.8 b
Untreated Control						
	80.8 a	94.2 a	97.5 a	8.3 a	18.3 a	20.0 a

* Disease incidence was calculated for each treatment based on percentage of wounds infected.

** Treatments followed by the same letter(s) within a column are not statistically different (P=0.05, Waller-Duncan k=100).