SWEETPOTATO (*Ipomoea batatas* 'Covington')
Black rot; *Ceratocystis fimbriata*

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Evaluation of fungicides for postharvest control of black rot in sweetpotato, 2017.

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 and were rinsed in 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 3 Mar. A spore suspension was created by dislodging ascospores from three cultures of *Ceratocystis fimbriata* grown on 100-mm agar plates and adding them to 39 L of water. The approximate concentration of the spore suspension was 2.3 x 10^3 spores/ml. Sweetpotatoes were wounded with a tool equipped with three 4-mm screws to create puncture wounds. After wounding, batches of 80 sweetpotatoes were placed into a 121-L bin containing the spore suspension. The spore suspension, with the wounded roots, was gently agitated for 20 min to ensure a homogenous solution throughout the inoculation. For each batch, a fresh spore suspension was used. Following inoculation, roots were taken out of the spore suspension and allowed to air dry. Roots were then arranged, wounded side up, and fungicide spray treatments were applied using a CO_2-pressurized backpack sprayer delivering 40 gal/A at 35 psi with a TXVS-26 hollow cone nozzle. Enough product was used to ensure complete coverage of each sweetpotato. For the dip application, wounded roots were placed into a perforated metal basket and submerged into the fungicide mixture for 1 min. 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 24ºC and 99% relative humidity for 29 days. Roots used for the nontreated control were inoculated, but had no treatments applied. Four replications per treatment were included with 20 roots per replication. Roots were rated for disease incidence (Percentage of wounds infected) and severity (average lesion size in mm) at 14, 21, and 28 days after inoculation on 17 Mar, 24 Mar, and 31 Mar, respectively. Data were analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and Fisher's Protected LSD test to separate means.

Black rot was first observed on sweetpotato roots 14 days after inoculation. Disease incidence in the nontreated control was high (100%) on 31 Mar, as estimated by percent of infected wounds. Mertect 340F (Dip), Mertect 340F (Spray), Mentor, Orius 3.6F, Chairman, and Stadium fungicides all consistently provided significant reductions in disease incidence compared to the nontreated control. Mertect 340F (Dip), Mertect 340F (Spray), Mentor, Orius 3.6F, Chairman, Stadium, and Scholar fungicides all consistently provided significant reductions in disease severity compared to the nontreated control. No phytotoxity was observed in any treatments.

	Disease Incidence (%)[z]			Disease Severity (mm)[y]		
Treatment and product rate	17 Mar	24 Mar	31 Mar	17 Mar	24 Mar	31 Mar
Mertect 340F (Dip) 0.42 fl oz/gal	0.0 e[x]	0.5 e	0.5 f	0.0 d	0.5 f	0.8 e
Mertect 340F (Spray) 0.42 fl oz/gal	8.0 d	14.2 d	17.5 e	0.5 d	5.8 d	6.8 d
Mentor 0.5 fl oz/gal	3.0 de	19.2 d	24.2 e	1.5 c	4.0 e	6.3 d
Orius 3.6 F 0.6 fl oz/gal	7.5 d	25.5 d	45.0 d	3.5 b	4.5 e	8.0 d
Chairman 0.64 fl oz/gal	18.8 c	53.3 c	61.3 c	3.8 b	6.0 d	8.0 d
Stadium 1 fl oz/gal	43.0 b	85.0 b	84.7 b	4.0 b	9.8 c	11.3 c
Scholar 0.16 fl oz/gal	96.3 a	97.2 ab	97.5 a	4.0 b	11.8 b	13.5 b
Nontreated	99.2 a	99.7 a	100.0 a	6.8 a	13.5 a	18.5 a

[z] Disease incidence was calculated for each treatment based on the percentage of wounds infected.
[y] Disease severity was calculated for each treatment based on the average lesion diameter in mm.
[x] Treatments followed by the same letter(s) within a column are not statistically different (P=0.05, Fisher's Protected LSD).