

Evaluation of fungicides for postharvest control of black rot in sweetpotato, 2018.

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 7 Nov. A spore suspension was created by dislodging ascospores from twenty-seven cultures of *Ceratocystis fimbriata* isolate AS186 grown on 100-mm agar plates and adding them to 340 L of water. The approximate concentration of the spore suspension was 1.0×10^3 spores/ml. Sweetpotatoes were wounded with a tool equipped with three 4-mm screws to create puncture wounds. After wounding, sweetpotatoes were placed into a 568-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. Following inoculation, roots were taken out of the spore suspension and allowed to air dry. Roots were then placed onto a packing line and fungicide spray treatments were applied using a compressed air pressurized sprayer delivering 0.69 gal/2,000 lb of roots at 20 psi with a TXVS-26 hollow cone nozzle. Enough product was used to ensure complete coverage of each sweetpotato. After fungicide application, sweetpotatoes were placed into clear, plastic containers (40 x 50 x 17.9 cm) and stored at 24°C and 99% relative humidity for 21 d. Roots used for the non-treated control were inoculated, but had no treatments applied. Four replications per treatment were included with 15 roots per replication. Roots were rated for disease incidence (percentage of wounds infected) and at 7, 14, and 21 d after inoculation on 14 Nov, 21 Nov, and 28 Nov. 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.

Black rot was first observed on sweetpotato roots 7 d after inoculation. On Nov 28, disease incidence in the non-treated control was high (100%), as estimated by the percent of infected wounds. Mertect and Thiabendazole fungicides provided the best control of black rot. While Quash provided a statistically significant reduction in disease incidence on 28 Nov compared to the non-treated control, this reduction is not commercially acceptable. No other treatment provided a significant reduction on in black rot incidence on 28 Nov. No phytotoxicity was observed in any treatments. In the table, treatments are sorted by disease incidence on 28 Nov.

Treatment and product rate	Disease incidence (%) [*]		
	14 Nov	21 Nov	28 Nov
Mertect 340F			
0.42 fl oz/2,000 lb roots	1.7 d ^{**}	7.2 c	12.8 c
Thiabendazole 4ST			
0.42 fl oz/2,000 lb roots	4.4 d	11.1 c	14.4 c
Quash			
1.4 g/2,000 lb roots	17.2 c	66.7 b	74.4 b
Graduate A+			
0.6 fl oz/2,000 lb roots	14.4 c	91.1 a	93.3 a
Stadium			
1 fl oz/2,000 lb roots	47.8 b	96.1 a	97.2 a
Intuity			
3.375 fl oz/2,000 lb roots	55.0 b	96.7 a	98.3 a
Non-treated	90.0 a	100.0 a	100.0 a

^{*} Disease incidence was calculated for each treatment based on the percentage of wounds infected.

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