

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

The 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. Roots were wounded by scraping a single side of each root with a handheld cheese grater. After wounding, seventy wounded sweetpotatoes were placed into a 121 L bin containing 45 L of water. Roots were inoculated by placing twelve black rot infected roots into the bin of water with the wounded roots, gently agitating to ensure uniformity throughout the bin, and letting them soak for sixty minutes. Following inoculation, roots were taken out of the water and allowed to air dry. Roots were then laid out with the wounded side up and fungicide treatments were applied at specific rates using a CO₂ powered backpack sprayer. After fungicide application, roots were placed into clear, plastic containers (40 by 50 by 17.9 cm) and stored at 15°C and 95% relative humidity for 21 days. Four replications per treatment were included with ten roots per replication. The experiment was conducted twice. Roots were rated for disease incidence 7, 17, and 21 days after inoculation and for disease severity 21 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 in experiment 1 and 7 days after inoculation in experiment 2. Disease severity in the untreated control was moderate (62.5 and 38.8%), as estimated by percent infection of the wounded tissue. Omega 500F, Inspire, Scholar SC, Mertect 340F, and Stadium fungicides all consistently provided significant reductions in disease severity. Stadium provided the best control at 1.3 and 0.0% severity, but did not significantly differ from Inspire, Scholar SC, or Mertect 340F. No phytotoxicity was observed in any treatments.

Experiment 1	Disease Incidence (%)*			Disease Severity (%)*
	18 Feb	25 Feb	3 Mar	3 Mar
Treatment and product rate				
Untreated Control	0.0 a	100.0 a	100.0 a	62.5 a
Botran 75W 0.01 lb/gal	0.0 a	95.0 a	100.0 a	31.3 b
Omega 500F 0.52 oz/gal	0.0 a	85.0 a	90.0 a	17.5 c
Inspire 0.44 oz/gal	0.0 a	20.0 b	30.0 b	5.0 d
Scholar SC 0.32 oz/gal	0.0 a	5.0 b	15.0 bc	3.8 d
Mertect 340F 1.08 oz/gal	0.0 a	20.0 b	30.0 b	5.0 d
Stadium 0.78 oz/gal	0.0 a	5.0 b	5.0 c	1.3 d

Experiment 2	Disease Incidence (%)*			Disease Severity (%)*
	07 Apr	14 Apr	22 Apr	22 Apr
Treatment and product rate				
Untreated Control	42.5 a	80.0 a	85.0 a	38.8 b
Botran 75W 0.01 lb/gal	55.0 a	80.0 a	90.0 a	60.0 a
Omega 500F 0.52 oz/gal	2.5 b	17.5 b	22.5 b	7.5 c
Inspire 0.44 oz/gal	2.5 b	12.5 bc	12.5 bc	5.0 c
Scholar SC 0.32 oz/gal	5.0 b	7.5 bc	15.0 bc	5.0 c
Mertect 340F 1.08 oz/gal	0.0 b	0.0 c	0.0 c	0.0 c
Stadium 0.78 oz/gal	0.0 b	0.0 c	0.0 c	0.0 c

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