

Evaluation of fungicides for the control of anthracnose on immature pepper fruit, 2004.

The experiment was conducted at the Ohio Agricultural Research and Development Center, Snyder Farm in Wooster, OH on Wooster silt loam. On 26 May 400 lb/A of 19-19-19 (N-P-K) fertilizer was broadcast and incorporated into the field. The herbicides Dual II Magnum (1 pt/A) and Treflan EC 2 (1.5 pt/A) were tank mixed with the wetting agent George II (25 fl oz/A) and applied on 26 May. Prior to seeding ‘Socrates X3R’ pepper seeds were treated with sodium hypochlorite (1:4 v:v) for 1 minute and dusted with thiram 75WP (1 tsp/lb seed). Pepper seeds were sown on 8 Apr into 200-cell plug trays containing Fafard seedling mix. Seedlings were transplanted on 27 May; transplant water contained starter fertilizer (N-P-K; 9-45-15) at 1.7 lb/55 gal water. Ridomil Gold EC (1 pt/treated A) was applied immediately after transplanting to the base of each plant in all plots except those to be treated with Amistar 80WG alternated with Manex 37F and the untreated control. Treatments were arranged in a randomized complete block design with four replications. Each plot was a row of 20 plants spaced 1 ft apart. Rows were on 5 ft centers and treatment rows were alternated with untreated border rows. The field was cultivated on 3, 8 and 24 Jun for weed control. Plants were inoculated at the late flowering/early fruit set stage with spores (10^5 spores/ml) of *Colletotrichum acutatum* isolates AN1 and AN2 on the evening of 20 Jul, using a hand-held Herbi Sprayer (red nozzle) at a rate of 8.2 gal/A and an approximate walking speed of 0.6 mph. To control insects Provado 1.6F (3.8 oz/A) was applied on 2 Jul. Plants were overhead irrigated with 1 in. water on 21 Jul. Treatments were applied at 39.6 gal/A on a 7-10 day schedule beginning 19 Jul and ending 9 Aug using a tractor mounted CO₂-pressurized sprayer at 40 psi for a total of four applications. Fruit were hand-harvested from the center 15 plants of each row on 11 Aug, and mean disease incidence and mean fruit disease intensity were determined for each treatment. Data were analyzed by ANOVA using SAS statistical software. Means were separated using Fisher’s protected least significant difference test. Average maximum temperatures for 27-31 May, Jun, Jul, 1-11 Aug were 74.0, 77.4, 81.4 and 79.4 °F; minimum averages were 49.4, 55.7, 60.8 and 56.7 °F and total rainfall was 1.1, 6.4, 3.6 and 0.1 in., respectively.

Disease pressure was severe. Symptoms first appeared on green fruit 6 days after inoculation. Amistar 80WG alternated with Manex 37F or Bravo Weather Stik, Manex 37F plus Kocide 2000, the high (12 oz) and medium (10 oz) rates of Tanos 50DF tank mixed and alternated with Manex 37F, and Cabrio EG alternated with Manex 37F significantly reduced anthracnose incidence and intensity compared to the untreated control. TD2470-01 70DF, Topsin-M 70WP or Tilt EC alternated with Amistar 80WG, and the low rate of Tanos 50DF (8 oz) tank mixed and alternated with Manex 37F and Kocide 2000 did not reduce anthracnose incidence, although all reduced anthracnose intensity relative to the untreated control. Tilt EC applied alone did not reduce disease incidence or intensity. Plants treated with Amistar 80WG alternated with Manex 37F produced the highest marketable yield, although all treatments except Tilt EC and TD2470-01 70DF or Topsin-M 70WP alternated with Amistar 80WG resulted in higher marketable yield than the control. All treatments except Tilt EC resulted in larger fruit than the control.

Treatment and rate/A ^z	Anthracnose			
	Fruit disease incidence (%) ^y	Mean fruit disease	Marketable yield	Marketable fruit weight

		intensity ^x	(ton/A)	(oz/fruit)
Tilt EC 4 fl oz (1-4)	94.8 a ^w	6.7 a	0.1 de	0.9 c
TD2470-01 70DF 1 lb (1,3)				
<i>alt.</i> ^v Amistar 80 WE 2 oz (2,4).....	81.0 ab	4.7 b	0.5 cde	3.3 b
Control.....	75.8 abc	7.0 a	0.04 e	0.3 c
Topsin-M 70WP 1 lb (1,3)				
<i>alt.</i> Amistar 2 lb (2,4)	67.0 bcd	3.8 bc	1.5 b-e	4.1 ab
Tanos 50DF 8 oz + ^u Kocide 2000 2 lb + Manex 37F 1.6 qt (1,3) <i>alt.</i> Manex 37F 1.6 qt + Kocide 2000 2 lb (2,4)	62.5 bcd	3.5 bc	1.7 bc	4.1 ab
Amistar 80WG 2 oz (1,3)				
<i>alt.</i> Tilt EC 4 fl oz (2,4).....	52.2 cde	2.4 cd	1.5 bcd	4.7 ab
Tanos 50DF 12 oz + Kocide 2000 2 lb + Manex 37F 1.6 qt (1,3)				
<i>alt.</i> Manex 37F 1.6 qt + Kocide 2000 2 lb (2,4).	50.2 def	2.8 cd	2.1 b	4.1 ab
Cabrio EG 0.75 lb (1,3)				
<i>alt.</i> Manex 37F 1.6 qt (2,4).....	48.5 def	2.1 cd	2.0 b	3.9 ab
Tanos 50DF 10 oz + Kocide 2000 2 lb + Manex 37F 1.6 qt (1,3)				
<i>alt.</i> Manex 37F 1.6 qt + Kocide 2000 2 lb (2,4).	48.2 def	2.4 cd	2.0 b	4.7 ab
Manex 37F 1.6 qt + Kocide 2000 2 lb (1-4)	46.5 def	2.6 cd	1.9 bc	4.5 ab
Amistar 80WG 2 oz (1,3)				
<i>alt.</i> Manex 37F 1.6 qt (2,4).....	31.5 ef	0.9 d	3.8 a	5.6 a
Amistar 80WG 2 oz (1,3)				
<i>alt.</i> Bravo Weather Stik 1.7 pt/A (2,4).....	26.2 f	0.9 d	2.9 ab	4.8 ab

^zNumbers in parentheses indicate the applications in sequence of the preceding product. Application timings were: 1= 19-25 Jul; 2= 26 Jul-1 Aug; 3= 2-8 Aug; 4= 9-16 Aug.

^yMean disease incidence = percent fruit with anthracnose.

^xFruit disease intensity calculated using the number of fruit in each of four categories and the midpoint value from the categories: 0 lesions, 1 lesion, 2-3 lesions, 4-10 lesions. Intensity = ($\sum(\text{category midpoint} * \text{number of fruit in category})$)/n where n = number of fruit sampled per replication.

^wValues are the means of four replicate plots; means followed by the same letter within a column are not significantly different at p \leq 0.05.

^vTreatments alternated with one another.

^uTreatments tank mixed together.