

Evaluation of fungicides to control powdery mildew on annual strawberry, 2006-07

On 25 Oct, bare root plants from Canada were transplanted into methyl bromide:chloropicrin (67:33) fumigated soil in plastic mulched raised beds in an area of the field covered by a large plastic tunnel. The beds were 28 in wide on 4-ft centers. Each bed contained two staggered rows, 11 in apart, with plants spaced 15 in apart within rows. Transplants were irrigated by overhead sprinkler for 10 days to facilitate establishment, then irrigated and fertilized through drip tape. Treatments were arranged in a randomized complete block design with four blocks, each in a separate bed. Plots were formed by removing six plants between successive plots in each bed. Plots were 8.1 ft long and contained 12 plants. Fungicides were applied with a CO₂ backpack sprayer which delivered 100 gal/A at 40 psi through two nozzles, 12 in. apart on the boom. Treatments were applied on 7- or 14-d intervals from 1 Dec to 21 Feb (7 or 13 applications). Several lesser-known products were included in this trial: Preval-Am (Oro Agri Inc., Trophy Club, TX), Oxidate (BioSafe Systems, Glastonbury, CT), Sil-Matrix (PQ Corp. Malvern, PA), and V-10118 (Valent Corp., Walnut Creek, CA). Fruit were harvested twice weekly from 1 Jan to 2 Mar (18 harvests). Marketable fruit were counted and weighed. Fruit showing visible powdery mildew on more than 25% of the achenes, and other unmarketable fruit were also enumerated. Disease incidence was calculated as a percent of all marketable and unmarketable fruit. Percent values were transformed by an arcsine square root function and subjected to two-way analyses of variance. Untransformed values are presented in the table and treatment means were separated by Fisher's protected LSD ($P \leq 0.05$).

The 2006-07 strawberry season was warm and relatively dry. These conditions, combined with the microclimatic effects of the plastic tunnel, may have promoted powdery mildew development on the fruit. However, signs and symptoms of powdery mildew on the foliage were negligible. All treatments significantly suppressed powdery mildew on the fruit except those using Captan or Oxidate exclusively. Microthiol Disperss and Quintec provided the best suppression; V-10118, Procure + Thiram, Sil-Matrix, and Preval-Am provided moderately good suppression. All treatments that suppressed fruit symptoms, with the exception of Preval-Am alone, also increased marketable yield, as fewer fruit were rejected as unmarketable in these treatments. Decreased air turbulence in the tunnel may have improved the efficacy of Microthiol Disperss by enhancing the gaseous fungicidal activity of elemental sulfur, the active ingredient. In addition, a late season infestation of spider mites that occurred in the tunnel may have been suppressed by sulfur.

Treatment and rate/A	Appl. timing (week) ^z	Marketable yield (lb/A)	PM on fruit (% fruit) ^y
Microthiol Disperss 80WP (7.5 lb).....	1,3,5...13	7420 a	16.2 a ^x
Quintec 250SC (6 fl oz) + Captan 80WDG (1.5 lb).....	1,3,5...13	6930 ab	16.5 a
Quintec 250SC (6 fl oz) + Captan 80WDG (1.5 lb) Nova 40W (5 oz) + Captan 80WDG (1.5 lb).....	1,5,9,13 3,7,11	6250 abc	22.8 ab
V-10118 (9.37 fl oz) + Captan 80WDG (1.5 lb) Captan 80WDG (1.5 lb).....	1,3,5,7,9 10,11	6180 abc	28.7 bc
V-10118 (6.25 fl oz) + Captan 80WDG (1.5 lb) Captan 80WDG (1.5 lb)	1,3,5,7,9 10,11	5940 abc	29.4 bc
Procure 480SC (8 fl oz) + Thiram Granuflo 75WDG (1.6 lb).....	1,3,5...13	5530 bc	32.1 cd
V-10118 (12.5 fl oz) + Captan 80WDG (1.5 lb) Captan 80WDG (1.5 lb).....	1,3,5,7,9 10,11	6070 abc	34.0 cd
Sil-Matrix (3 qt) + Active 80 (1.2 pt).....	1 - 13	5142 cd	34.6 cd
Prev-Am (1.6 pt = 0.2%) + Captan 80WDG (1.5 lb)	1 - 13	5020 cd	35.6 cd
Procure 480SC + Captan 80WDG (1.5 lb)	1,3,5...13	5140 cd	41.7 de
Prev-Am (1.6 pt = 0.2%)	1 - 13	4890 cde	42.2 de
Topsin M 4.5F (20 fl oz) + Captan 80WDG (1.5 lb)	1,3,5...13	5190 cd	42.5 de
Oxidate (84 fl oz).....	1 - 13	3950 ef	50.8 ef
Captan 80WDG (1.5 lb)	1,3,5...13	3240 f	56.1 f
Control (no fungicides applied)	na	3350 ef	56.4 f

^zApplications were made during a 13-wk period from 1 Dec to 21 Feb; timing is indicated by the week of application.

^yFruit with conspicuous powdery mildew (PM) growth on more than 25% of the achenes were considered diseased.

^xMeans within columns followed by the same letter are not significantly different by Fisher's protected LSD ($P \leq 0.05$).