

**Evaluation of fungicides for control of Botrytis fruit rot in annual strawberry, 2004-05.**

On 19 Oct 04, bare-root runner plants from Colorado were transplanted into methyl-bromide:chloropicrin (98:2) fumigated soil in plastic-mulched raised beds. The beds were 28 in wide on 4-ft centers. Each bed contained two staggered rows of plants spaced 15 in apart within rows and 12 in between rows. Treatments were arranged in a randomized complete block design with four blocks in separate, adjacent beds. Individual plots were 8.2 ft long and contained 14 plants, with a 2.5-ft gap between plots. Transplants were irrigated by overhead sprinklers for 10 days to facilitate establishment, then irrigated and fertilized through drip tape. Fungicides were applied at weekly intervals from 26 Nov 04 to 2 Mar 05 (15 applications) with a CO<sub>2</sub> back pack sprayer calibrated to deliver 100 gal/ac at 40 psi through a two nozzle boom. In most treatments, the first nine to 10 applications consisted of maintenance sprays of Captan 80WDG at 1.88 lb/A. Applications 11 through 14 were made during the principal bloom period (2 Feb to 26 Feb) and usually included the products or programs to be tested. Standard fungicides were applied at variable intervals determined by predictive models in two treatments. Applications timed by the Xu model for Botrytis control on strawberry were captan 80WDG (1.88 lb/A) on 7 and 23 Dec 04, and 3, 14 and 24 Jan 05; Captevate 68WDG on 3, 15, and 22 Feb 05; and Captan 80WDG (3.0 lb/A) on 8 Mar 05. Applications timed by the Broome model for Botrytis control on grape were Captan 80WDG (1.88 lb/A) on 7, 20, and 28 Dec 04, and 4, 10, and 24 Jan 05; Captevate 68WDG on 15 and 22 Feb 05; and Captan 80WDG (3.0 lb/A) on 4 Mar 05. A non-sprayed control treatment was also included. Fruit were harvested 24 times (twice weekly from 4 Jan through 25 Mar) and graded for marketable yield and the incidence of Botrytis fruit rot (number of fruit with *Botrytis* divided by the total number of marketable and unmarketable fruit harvested, expressed as a percentage). *Botrytis* incidence data were transformed (arcsine square root) before statistical analysis. The data were analyzed by two-way ANOVA and means separated using Fisher's protected LSD ( $P \leq 0.05$ ). The nontransformed means are reported.

The 2004-05 strawberry season was conducive to Botrytis fruit rot development. However, disease incidence in the experimental area peaked unusually late in the season. The use of relatively disease-free transplants from a dry, high elevation nursery in Colorado may account for this late development. Most diseased fruit were obtained from the last two harvests, although some appeared earlier in the untreated control. Late-season fruit received experimental applications as flowers or young fruit, but were largely unprotected during growth and maturation. All fungicide treatments reduced disease incidence and increased marketable yield compared to the control. Captevate was an important component of the most effective treatment programs, and was particularly effective at controlling Botrytis fruit rot when spray timing was determined by the Xu predictive model, programs that contained Serenade, or a program where Captevate was alternated with Scala + Captan at bloom. The program involving captan, Captevate, and Scala produced the highest marketable yield, and gave higher yields than a comparable program with captan and Captevate alone, although there were no significant differences among those and many other programs

Treatment and rate/A <sup>z</sup>	Timing <sup>y</sup>	Marketable Yield (lb/A)	Botrytis fruit rot (%) <sup>x</sup>
Captan 80WDG (1.88 lb)	Variable: Xu's model	15,700 bcd <sup>w</sup>	0.8 a
Captevate 68WDG (4.38 lb)			
Captan 80WDG (3.0 lb) .....			
Serenade Max (2 lb) + Biotune (2.4 pt) + Captan 80WDG (1.88 lb)	1-10	13,400 d	2.0 ab
Captevate 68WDG (4.38 lb)	11-14		
Serenade Max (2 lb) + Biotune (2.4 pt) + Captan 80WDG (3.0 lb) ...	15		
Captan 80WDG (1.88 lb)	1-10	18,700 a	2.1 ab
Scala 54.6SC (9 fl oz) + Captan 80WDG (3.0 lb)	11,12		
Captevate 68WDG (4.38 lb)	13,14		
Captan 80WDG (3.0 lb) .....	15		
Serenade Max (1 lb) + Biotune (2.4 pt) + Captan 80WDG (1.88 lb)	1-10	16,900 abc	2.1 ab
Captevate 68WDG (4.38 lb)	11-14		
Serenade Max (1 lb) + Biotune (2.4 pt) + Captan 80WDG (3.0 lb)...	15		
Captan 80WDG (1.88 lb)	1-10	15,100 bcd	2.7 b
Captevate 68WDG (4.38 lb)	11-14		
Captan 80WDG (3.0 lb).....	15		

Captan 80WDG (1.88 lb)	1-10		
Scala 54.6SC (9 fl oz) + Captan 80WDG (3.0 lb)	11-14		
Captan 80WDG (3.0 lb) .....	15	16,900 abc	3.2 b
Captan 80WDG (1.88 lb)	1-10		
VT4 (1.5 lb)	11-14		
Captan 80WDG (3.0 lb) .....	15	17,900 ab	3.3 b
Captan 80WDG (1.88 lb)	Variable:		
Captevate 68WDG (4.38 lb)	Broome's		
Captan 80WDG (3.0 lb) .....	model	16,500 abc	3.3 b
Captan 80WDG (1.88 lb)	1-10		
VT1 (0.6 lb)	11-14		
Captan 80WDG (3.0 lb) .....	15	16,900 abc	3.9 bcd
Captan 80WDG (1.88 lb)	1-10		
VT3 (0.6 lb)	11-14		
Captan 80WDG (3.0 lb) .....	15	14,800 cd	3.9 bcd
Captan 80WDG (1.88 lb)	1-10		
Pristine 38WG (23 oz)	11,12,14		
Captan 80WDG (3.0 lb) .....	13,15	16,600 abc	4.1 bcd
Captan 80WDG (1.88 lb)	1-10		
VT2 (0.6 lb)	11-14		
Captan 80WDG (3.0 lb) .....	15	15,400 bcd	4.1 bcd
Captan 80WDG (1.88 lb)	1-9		
Serenade Max (1 lb) + Biotune (1.2 pt) + Captan 80WDG (1.88 lb)	10		
Serenade Max (1 lb) + Biotune (1.2 pt) + Captan 80WDG (3.0 lb)	11-14		
Captan 80WDG (3.0 lb) .....	15	16,500 abc	6.0 cde
Captan 80WDG (1.88 lb)	1-10		
Captan 80WDG (3.0 lb) .....	11-15	15,500 bcd	6.1 de
Captan 80WDG (1.88 lb)	1-10		
Switch 62.5WG (14 oz)	11,12		
About 2.08F (15.4 fl oz)	13,14		
Captan 80WDG (3.0 lb) .....	15	16,800 abc	6.7 de
Captan 80WDG (1.88 lb)	1-9		
A-1664 (0.83 lb) + Captan 80WDG (1.88 lb)	10		
A-1664 (0.83 lb) + Captan 80WDG (3.0 lb)	11-14		
Captan 80WDG (3.0 lb) .....	15	16,200 a-d	7.8 e
Captan 80WDG (1.88 lb)	1-9		
A-1664 (1.67 lb) + Captan 80WDG (1.88 lb)	10		
A-1664 (1.67 lb) + Captan 80WDG (3.0 lb)	11-14		
Captan 80WDG (3.0 lb) .....	15	16,000 a-d	8.1 e
Untreated control.....	--	8,600 e	33.7 f

<sup>z</sup>Plus signs "+" indicate tank mixtures.

<sup>y</sup>Numbers indicate timing in a sequence of 15 weekly applications made from 26 Nov 04 to 2 Mar 05.

<sup>x</sup>Disease incidence is given as a percentage of all marketable and unmarketable fruit harvested.

<sup>w</sup>Values in a column followed by the same letter are not significantly different by a Fisher's protected LSD test ( $P \leq 0.05$ ).