STRAWBERRY (*Fragaria* x *ananassa* 'Sweet Charlie')
Botrytis fruit rot; *Botrytis cinerea*

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Evaluation of fungicides for control of Botrytis fruit rot in annual strawberry, 2006-07.

On 4 Oct 06, bare-root runner plants from Canada were transplanted into methyl-bromide:chloropicrin (67:33) 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 (beds). The experimental area consisted of six beds, four adjacent beds containing the plots flanked by border beds that did not receive fungicide sprays. Individual plots contained 14 plants in 9.4-ft of bed, separated by a 2.5-ft open space 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 13 Dec 06 to 21 Feb 07 (11 applications) with a CO_2 back pack sprayer calibrated to deliver 100 gal/ac at 40 psi through a two nozzle boom. In most treatments, the first five applications between 13 Dec to 10 Jan were weekly maintenance sprays of Captan 80WDG at 1.5 lb/A. Most experimental products/programs were applied four times between 17 Jan and 7 Feb to protect susceptible flowers during the principal bloom period. In one treatment, V-10135 was injected through the drip line in 3 gal water/plot for the first two bloom applications followed by two foliar applications. Bloom treatments were usually followed by two additional applications of Captan 80WDG at 3.0 lb/A to end the season. Ripe and diseased fruit were harvested twice weekly from 26 Dec through 2 Mar (20 times) and graded for marketable yield and the incidence of Botrytis fruit rot (number of fruit with Botrytis expressed as a percent of all marketable and unmarketable fruit). Botrytis incidence data were transformed by an arcsine square root expression before statistical analysis. The variables were analyzed by two-way ANOVA and means were separated by Fisher's protected LSD ($P \leq 0.05$). Non-transformed means are presented.

Disease incidence was low to moderate with only one pronounced peak in Botrytis fruit rot. That peak originated from a rainy, humid period favorable for flower infection in early Jan, and produced diseased fruit harvested in late Jan and early Feb. During a typical season, epidemics usually peak in mid- to late February. This season, experimental bloom applications initiated in mid-Jan protected some, but not all, young flowers and fruit contributing to the early peak. Botrytis fruit rot incidence in the non-treated control averaged 16.3% over the entire season. Disease incidence was lower (4.1 - 8.0%) for the majority of treatments. Within this range, most treatments were not significantly different from each other. All treatments except tetraconazole significantly reduced Botrytis fruit rot. In addition, all treatments significantly increased yield. Low disease incidence appears to correlate well with higher yield of marketable fruit. However, substituting Serenade Max or Sonata for early-season applications of captan resulted in relatively low numerical yields, even though Botrytis fruit rot was adequately controlled.

Treatment and rate/A[z]	Timing[y]	Marketable yield (lb/A)	Botrytis incidence (%)[x]
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.5 lb) + V-10118 (6.25 fl oz)…..……	6-9	15,890 ab[w]	4.1 a
Captan 80WDG (1.5 lb)	1-5		
Captevate 68WDG (4.38 lb)…..……	6-9	14,730 a-g	5.2 ab
Serenade max (1 lb) + Biotune (1 pt)	1-5		
Captevate 68WDG (4.38 lb)	6-9		
Serenade max (1 lb) + Biotune (1 pt)…..……...	10,11	12,820 hi	5.6 ab
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.63 lb) + V-10118 (9.37 fl oz)…….	6-9	15,930 ab	5.6 ab
Captan 80WDG (1.5 lb)	1-5		
LEM17 20SC (7.19 fl oz) + Captan 80WDG (3.0 lb)…….…….....	6-9	15,970 ab	5.7 ab
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.5 lb)…….……....	6-9	15,860 abc	5.7 ab
Captan 80WDG (1.5 lb)	1-5		
LEM17 20SC (21.6 fl oz) + Captan 80WDG (3.0 lb)…....……	6-9	15,620 a-e	5.9 ab
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.63 lb)……	6-9	15,010 a-g	5.9 ab
Thiram Granuflo 75WDG (1.6 lb)	1-5		
Thiram Granulfo 75WDG (3.2 lb)…….……	6-11	15,260 a-f	6.0 ab
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.75 lb) + V-10118 (9.37 fl oz)…..……...	6-9	15,750 a-d	6.0 ab
Captan 80WDG (1.5 lb)	1-5		
Scala SC (9.0 fl oz) + Captan 80WDG (3.0 lb)…….……	6-9	14,310 a-h	6.2 abc
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.75 lb) + V-10118 (6.25 fl oz)…….……...	6-9	15,830 abc	6.7 abc
Captan 80WDG (1.5 lb)	1-5		
Switch 62.5WG (14 oz)	6,8		
Captevate 68WDG (4.38 lb)……..	7,9	16,120 a	6.7 abc
Captan 80WDG (1.5 lb)	1-5		
LEM17 20SC (14.4 fl oz) + Captan 80WDG (3.0 lb)…….……..	6-9	14,060 d-h	7.2 abc
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.75 lb) …….…….	6-9	14,130 c-h	7.5 bc
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.63 lb) + V-10118 (6.25 fl oz)…….……	6-9	15, 190 a-g	7.5 bc
Sonata (3 qt) + Biotune (1 pt)	1-5		
Captevate 68WDG (4.38 lb)	6-9		
Sonata (3 qt) + Biotune (1 pt)…..……...	10,11	13,460 gh	7.9 bcd
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.5 lb) + V-10118 (9.37 fl oz)……...	6-9	14, 310 b-h	8.0 bcd
Captan 80WDG (1.5 lb)	1-5		
V-10135 (0.75 lb, drip application)	6,7		
V-10135 (0.75 lb, foliar application)…….…….	8,9	13,900 fgh	9.9 cde
Captan 80WDG (1.5 lb)	1-5		
Tetraconazole 125ME (5.7 fl oz)…….....	6-9	13,790 fgh	11.9 def
Control…….……....	na	11,320 i	16.3 f

[z] Applications 10 & 11 consisted of Captan 80WDG (3 lb) if not indicated; Tank mixtures are indicated by plus (+) signs.
[y] Numbers indicate timing in a sequence of 11 weekly applications made from 13 Dec 06 to 21 Feb 07.
[x] Incidence of Botrytis fruit rot as a percent of all marketable and cull fruit harvested.
[w] Means within a column followed by the same letter are not significantly different by a Fisher's protected LSD test ($P \leq 0.05$).