

Evaluation of products for Phytophthora crown rot control in annual strawberry, 2018-2019.

On 11 Oct 2018, bare root strawberry transplants from Canada were set into plots on plastic-mulched beds previously fumigated with Telone C-35 (300 lb/A). The beds were 32-in. wide at the base on 4-ft centers. The plots were 9.5 ft long and consisted of 20 plants in two staggered rows of 10 plants each. Plant spacing was approximately 12 in. within and between rows. Treatments were arranged in a randomized complete block design with four blocks in adjacent beds. After transplanting, the experimental area was overhead watered during the day for 10 days to facilitate plant establishment. The plants were subsequently irrigated and fertilized through a central drip tape in each bed. On 24 Oct, an EZject Soil Injector was used to deposit 0.6 fl oz of inoculum 2 in. from each plant at a 2-in. depth. The inoculum consisted of a suspension of 1×10^4 zoospores/ml produced from two mefenoxam-sensitive isolates of *P. cactorum*. Inoculated and non-inoculated controls were included in the experiment. Treatments were applied from 28 Oct to 20 Dec, i.e., 3-12 weeks after planting (WAP) and consisted of foliar sprays and/or soil applications through dedicated drip tapes. Application types and intervals were treatment specific. Drip applications were made in 0.4 gal water per foot of bed (4,350 gal/A) through drip tapes with 10 emitters at 12-in. spacing. Two tapes were installed per plot, one next to each plant row. Foliar sprays were made with a CO₂ powered back-pack sprayer at 60 PSI and 100 gal/A. The sprayer was equipped with two TeeJet® 8002 hollow-cone nozzles spaced 12 in. apart on the wand. Plots were evaluated for disease at 2-wk intervals from 15 Nov to 11 Jan (6-14 WAP). Plants that were dead, partially collapsed, or severely stunted were considered diseased. Fruit were harvested twice weekly from 10 Dec to 31 Jan (13 times) to obtain yield of marketable fruit weighing more than 10 g each. Data were analyzed by two-way ANOVA using the GLM procedure in SAS (SAS Institute, Cary, NC).

Typical weather prevailed during the critical period from 24 Oct (inoculation) to the end of November. During this 5-wk period, average weekly temperatures ranged from 63 to 75° F. Yet only a few plants showed disease symptoms by mid-Nov and new cases developed slowly through the end of the month. The volume of inoculum may have been insufficient or placed too far from the root ball of the plants. Approximately 7% of previously healthy plants developed disease symptoms during each 2-wk interval from 29 Nov to 10 Jan. On 10 Jan (14 WAP), disease incidences were 7.7% in the non-inoculated control, 24.3% in the inoculated control, and 12.5% in the most effective treatment combining TKO and Companion. Unfortunately, no treatment including TKO/Companion significantly reduced disease incidence. During the first eight harvests made 10 Dec to 10 Jan, Orondis Gold increased marketable yield at the 20 fl oz rate, but not at the 28 fl oz rate. Over all 13 harvests ending 31 Jan, both rates of Orondis Gold (oxathiapiprolin + mefenoxam) increased yield. However, related treatments with Ridomil Gold (mefenoxam) alone or Orondis Gold followed by Ridomil Gold did not significantly increase yield. No other treatment significantly increased yield during the 13-wk harvest period. No phytotoxicity was observed.

Products and amount/A ^z	Application type	Application timing (WAP) ^y	Yield (lb/A) First 8 harvests	Yield (lb/A) All 13 harvests	DI (%) 14 WAP ^x
Non-inoculated control			3959 ab	4929 ab	7.7 a ^w
TKO Phosphite 0-29-26 4 pt + Companion 2 pt	spray	3,7,11			
	drip	3,7,11	2896 c	4232 bcd	12.5 ab
Orondis Gold 20 fl oz	drip	3			
Ridomil Gold 480SL 16 fl oz	drip	7	3018 c	4309 bcd	13.8 ab
TKO Phosphite 0-29-26 2.0 pt	spray	3,5,7,9,11	2951 c	3707 cd	14.2 ab
Ridomil Gold 480SL 16 fl oz	drip	3,7	3230 bc	4611 bc	15.1 ab
Orondis Gold 28 fl oz	drip	3,7	3945 ab	6065 a	15.5 ab
Helena Prophyt 4 pt	spray	3,7,11	2871 c	4036 bcd	16.5 ab
Orondis Gold 20 fl oz	drip	3,7	4135 a	6127 a	20.1 ab
Actigard 0.375 oz	drip	3,4,5...11	3073 c	4082 bcd	21.3 abc
Helena Prophyt 2 pt	spray	3,5,7,9,11	2932 c	3944 bcd	21.6 abc
TKO Phosphite 4 pt	spray	3,7,11	3229 bc	3964 bcd	21.7 abc
Revus 2.09SC 8 fl oz	drip	3,7	3203 c	4808 bc	22.5 bc
Actigard 0.375 oz	spray	3,4,5...11	2708 c	3390 d	35.5 cd
Inoculated control			3374 bc	4277 bcd	25.4 bc

^z Drip application rates were calculated as banded applications made to beds only, which occupied approximately 67% of an acre.

^y Planting was done on 11 Oct 2018; numbers indicate weeks after planting (WAP).

^x Disease incidence (DI) of dead, partially collapsed, or severely stunted plants on 10 Jan 2019 (14 WAP).

^w Values in a column followed by the same letter are not significantly different by Fisher's Protected LSD ($\alpha = 0.05$).