PEPPER (*Capsicum annuum* 'Red Knight')
   Phytophthora blight; *Phytophthora capsici*

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Evaluation of biopesticides and fungicides for control of Phytophthora blight of peppers, 2007.

   The experiment was conducted at the Ohio Agricultural Research and Development Center's Muck Crops Agricultural Research Station in Celeryville, OH on Linwood muck soil, pH 5.2. Fertilizer (18-17-17, 500 lb/A) was incorporated into the test field on 2 May. Plots were disked, leveled and raised beds on 6 ft centers were prepared on 11 Jun. 'Red Knight' pepper seeds were treated by agitating them in a 25% Clorox (1.2% sodium hypochlorite) solution for 1 min followed by a 5 min rinse under running tap water and air-drying. Seeds were sown on 19 Apr into 128-cell plug trays containing Metromix 360 seedling mix. Sevin XLR Plus (1 qt/A) and Warrior T (3.8 fl oz/A) were applied on 28 Jun and 5 Jul; and 13 Jul and 1 Aug, respectively to control insect pests. On 8 Jun, seedlings were transplanted 1 ft apart into single rows 20 ft long on the beds. Plots were arranged in a randomized complete block design with four replications. Plots consisted of three rows alternated with an untreated border row. Treatments were applied using a tractor-mounted CO_2-pressurized sprayer (100 psi, 53 gal/A, 2.3 mph). The sprayer was fitted with three nozzles with the center nozzle positioned over the center of the row, and two angular drop down, mini side booms connected to the main boom on each side to insure spray penetration to the lower portion as well as the base of the plants. Six applications were made on a 7-14 day schedule beginning 11 Jul and ending 29 Aug. QRD 300 (*Muscodor albus*) treatments were broadcast and incorporated with a rotovator to a depth of 4 in. on 30 May at the rate of 0.55, 1.90, and 3.75 oz/ft³ soil. On 11 Jun, Ridomil Gold EC, Ranman 400SC, Omega 500F, and V10161 400SC treatments were applied by drenching 0.5 fl oz (50 ml) of fungicide solution within a 6 in.-diam circle around the base of each plant using a backpack CO_2-pressurized sprayer. The number of plants killed by Phytophthora blight and those with stem and foliar symptoms were determined separately on 2, 9, 16, 23, and 30 Aug and 6 Sep. Fruits were harvested from all plants in the three rows (60 ft) of each treatment on 11 Sep. Number and weight of marketable fruit and fruit infected with Phytophthora were recorded. Average maximum temperatures for 8-30 Jun, Jul, Aug, and 1-11 Sep were 82.1, 80.9, 82.4, and 81.8°F; average minimum temperatures were 57.2, 57.6, 62.9, and 59.3°F; and rainfall amounts were 1.28, 4.50, 6.33 and 1.76 in., respectively. Data were analyzed by ANOVA using SAS statistical software. Means were separated using Fisher's protected least significant difference test.

   Phytophthora blight pressure was very high in this field. None of the treatments suppressed Phytophthora blight on stems, foliage (data not shown) or fruit compared to the untreated control. Marketable yield was very low and did not differ between treatments and the untreated control.

Treatment and rate (application timing[z])	Phytophthora blight			Marketable yield (ton/A)
	% disease[y] (6 Sep)	AUDPC[yx]	Symptomatic fruit (ton/A)	
QRD 300 3.75 oz/ft³ soil (8 days pre-transplant)	90.9 a[w]	1095.8 a	0.3 a	0.6 a
QRD 300 1.90 oz/ft³ (8 days pre-transplant)	100.0 a	1587.4 a	0.2 a	0.0 a
QRD 300 0.55 oz/ft³ soil (8 days pre-transplant)	99.6 a	1334.8 a	0.4 a	0.1 a
Ridomil Gold EC 1 pt/A (1-6)..	92.4 a	1071.4 a	0.4 a	1.4 a
Ranman 400SC 2.75 fl oz/A + Silwet L-77 2 fl oz/A + Kocide 2000 0.81 lb/A (1-6)	100.0 a	1430.9 a	0.2 a	0.0 a
Omega 500F 1 pt/A (1-3) followed by Ranman 400SC 2.75 fl oz/A + Silwet L-77 2 fl oz/A + Kocide 2000 0.81 lb/A (4-6)	98.1 a	1389.1 a	0.3 a	0.4 a
V10161 400SC 4 fl oz/A (1-6)	96.8 a	1223.9 a	0.2 a	0.9 a
Untreated control...	97.3 a	1267.6 a	0.3 a	0.5 a
P value	0.4113	0.5930	0.6819	0.8634

[z]Application dates were: 1= 11 Jul; 2= 18 Jul; 3= 25 Jul; 4= 1 Aug; 5= 15 Aug; 6= 29 Aug.
[y]Percent disease and area under the disease progress curve (AUDPC) were calculated based on the combined number of plants killed by Phytophthora blight plus plants with crown rot and foliar blight symptoms at each evaluation period.
[x]Area under the disease progress curve calculated according to the formula: $\sum([(x_i+x_{i-1})/2](t_i-t_{i-1}))$ where x_i is the rating at each evaluation time and (t_i-t_{i-1}) is the time between evaluations.
[w]Values are the means of four replicate plots; treatments followed by the same letter within a column are not significantly different at $P \leq 0.05$. Means were separated using Fisher's protected least significant difference test.