

**Efficacy of fungicides for *Phytophthora capsici* in summer squash, 2005.**

The objective of this study was to evaluate several fungicide programs identified by the IR-4 program for the control of Phytophthora blight in cucurbit crops. An experiment was conducted at the Long Island Horticultural Research and Extension Center in a field of Haven loam soil where Phytophthora blight had developed in at least part of the field in 1991 to 1993, 1995 to 1999, 2003, and 2004. The field was plowed and fertilizer (N-P-K 10-10-10) at 1000 lb/A was broadcast and incorporated on 18 Apr. On 31 Jul the field was tilled. ‘Sunray’ summer squash seed were planted on 30 Jun in the greenhouse and were transplanted by hand on 14 Jul. Nitrogen (34-0-0) was side-dressed on 17 Aug. Each plot consisted of one 20-ft row of summer squash spaced 24 in. apart. Rows were spaced 68 in. apart, and the buffer zone from one plot to the next was 10 ft planted with three squash transplants each to serve as spreader plants. A randomized complete block design with four replications was used. Two treatments included seedling drenches with 6.75 fl oz ProPhyt 34.3 EC (0.5%) two days before transplanting. All but one treatment received the protectant fungicide Cuprofix Disperss DF (2.5 lb/A) mixed with each application. Foliar fungicide applications were made on 8, 16, 22, and 29 Aug, and 9, 12, and 21-23 Sep with a tractor-mounted boom sprayer equipped with four D5-25 hollow cone nozzles per row spaced 17 in. apart that delivered 85 gal/A at 120 psi. The last application was spaced over three days because of time for shipment of additional Tanos and V-10161. Applications of Quintec 2.08 SC (4 fl oz/A) were made for powdery mildew on 21 Aug and 19 Sep. The insecticide Asana XL EC (9.6 fl oz/A) was applied for cucumber beetles on 21 Aug and 6 Sep. During the season weeds were controlled by cultivation and hand weeding along with one application of Strategy 2.1 E (3 pt/A) on 18 Jul. The field was overhead irrigated (approx. 1.0 in.) on 20 Jul, 2 and 10 Aug, and 4 and 11 Sep when soil was dry due to inadequate rainfall. Mature squash fruit were harvested to keep the plants from declining on 8, 18, 25, and 31 Aug as well as on 21 Sep. Average monthly high and low temperatures (°F) were 81/61 in Jun, 84/67 in Jul, 85/69 in Aug, 79/62 in Sep, and 63/51 in Oct. Rainfall (in.) was 1.20, 1.36, 1.48, 3.46, and 20.32 for these months, respectively. Since Phytophthora blight had not developed naturally, likely due to low rainfall, on 25 Aug fruit of border squash plants were inoculated with a single mycelial plug of *P. capsici* cut with a number nine cork borer from the edge of a 10-day-old actively expanding culture. The field was overhead irrigated immediately afterwards. On 31 Aug all border plants were examined for symptoms of Phytophthora blight and any plants that had not developed symptoms were re-inoculated by placing a single infected squash fruit near the base of the plant. Disease incidence (percentage of infected plants per plot) was assessed on 7 Sep. Phytophthora crown rot and fruit rot percentages were both assessed on 19 Sep and 26 Sep. A square root transformation was used when needed prior to analysis to achieve homogeneity of variance.

Symptoms of Phytophthora fruit rot were first seen on inoculated border plants on 29 Aug and on plants in treatment rows on 7 Sep. Although nontreated control plots usually had numerically highest values for fruit rot and crown rot on 19 and 26 Sep, significant differences were only detected for crown rot on 26 Sep. Treatments with Cuprofix 36.9 DF tank-mixed with Ranman 400 SC, NOA 446510, V-10161 + Previcur Flex, and Tanos 50 DF were providing effective control on 26 Sep. Previcur Flex was ineffective when tank-mixed with Reason 500 SC plus Cuprofix 36.9 DF. Treatments with fungicides labeled for this use, Forum 4.16 SC and Gavel 75 DF, were ineffective. Phytophthora blight started to develop eight weeks after the soil-drench application of ProPhyt to seedlings before transplanting, which is probably too long a time for it to contribute to control in this experiment. No symptoms of phytotoxicity were observed.

Treatment and rate/A <sup>2</sup>	Phytophthora blight (%)					
	Incidence	Fruit rot	Crown rot	Fruit rot	Crown rot	
	7-Sep	19-Sep	19-Sep	26-Sep	26-Sep	
Nontreated .....	0.0	66.3	48.8	100.0	95.0	a <sup>y</sup>
ProPhyt 3.36 EC (Pre-transplant <sup>x</sup> ) + Forum 4.16 SC 6.2 fl oz + Cuprofix Disperss 36.9 DF 2.5 lb.....	0.0	27.5	27.5	80.0	85.0	ab
Reason 500 SC 5.5 fl oz + Previcur Flex 66 F 1.2 pt + Cuprofix Disperss 36.9 DF 2.5 lb .....	3.8	37.5	33.8	78.8	80.0	abc
ProPhyt 3.36 EC (Pre-transplant) + Forum 4.16 SC 6.2 fl oz + ProPhyt 3.36 EC 4 pt.....	0.0	53.8	48.8	75.0	68.8	abcd
Forum 4.16 SC 6.2 fl oz + Cuprofix Disperss 36.9 DF 2.5 lb .....	1.3	36.3	36.3	80.0	61.3	abcd
ProPhyt 3.36 EC 6 pt + Cuprofix Disperss 36.9 DF 2.5 lb .....	1.3	33.8	35.0	70.0	67.5	abcd
Gavel 75 DF 2 lb + Cuprofix Disperss 36.9 DF 2.5 lb .....	2.5	30.0	51.3	76.3	67.5	abcd
Tanos 50 DF 10 oz + Cuprofix Disperss 36.9 DF 2.5 lb .....	6.3	18.8	18.8	75.0	56.3	bcd
V-10161 3.5 fl oz + Previcur Flex 66 F 1.2 pt + Cuprofix Disperss 36.9 DF 2.5 lb.....	5.0	10.0	10.0	57.5	43.8	cd
NOA 446510 0.33 lb + Cuprofix Disperss 36.9 DF 2.5 lb .....	1.3	27.5	11.3	68.8	41.3	d
Ranman 400 SC 2.75 fl oz + Cuprofix Disperss 36.9 DF 2.5 lb .....	5.0	10.0	12.5	66.3	35.0	d
Treatment <i>P</i> -value	0.1428	0.3902	0.4121	0.2228	0.0431	

<sup>2</sup> Fungicide applications were made on 8, 16, 22, and 29 Aug, and 9, 12, and 21-23 Sep.

<sup>y</sup> Means followed by the same letter are not statistically different from each other according to Fisher’s Protected LSD at *P*=0.05.

<sup>x</sup> ProPhyt (0.5%) applied as a seedling drench on 13 Jul before transplanting. Each seedling received 6.75 fl oz of the solution.