

**Evaluation of fungicides for the control of foliar and fruit diseases of processing tomatoes-1, 2007.**

The experiment was conducted at the Ohio Agricultural Research and Development Center's North Central Agricultural Research Station in Fremont, OH on Colwood fine sandy loam soil. Potassium (240 lb/A K<sub>2</sub>O), phosphorous (78 lb/A P<sub>2</sub>O<sub>5</sub>), nitrogen (108.5 lb/A urea), and borate (7.5 lb/A) were incorporated into the test field on 8 May. The test field was cultivated and raised beds on 5 ft centers were prepared on 10 May. 'Peto 696' tomato seeds were hot water-treated (10 min pre-soak at 100° F, treatment for 25 min at 122° F) and sown on 19 Apr into 288-cell plug trays containing Metromix 360 seedling mix. On 21 May, seedlings were transplanted 1 ft apart into 25 ft long single rows. Starter fertilizer (N-P-K 10-34-0; 0.7 qt/50 gal water) was applied in the transplant water. Treatments were arranged in a randomized complete block design with four replications. Treatment rows were alternated with untreated guard rows. The herbicides Dual II Magnum (1 pt/A) and Sencor 75DF (0.33 lb/A) were applied on 15 May. The field was cultivated on 18 Jun and hand weeded and hoed on 18 Jun and 16 Jul. Insecticide Asana XL at 2.4, 3.0 and 6.0 fl oz/A was applied on 20 and 29 Jun, and 16 Jul, respectively. Pounce 3EC at 6.0 and 4.0 fl oz/A was applied on 24 Jul and 15 Aug, respectively. Treatments were applied using a tractor-mounted CO<sub>2</sub>-pressurized sprayer (55 psi, 38.4 gal/A, 3 mph) on a 7-10 day schedule beginning 26 Jun and ending 22 Aug for a total of seven applications. To control bacterial disease Kocide 3000 was applied at 1.33 lb/A on 20 and 29 Jun, 9 and 24 Jul, and 15 Aug. Plants were overhead irrigated with 0.75 and 0.90 in. water on 13 and 27 Jun, and 10 Jul, respectively. Severity of early blight on foliage was evaluated on 11, 19, and 25 Jul and 2, 8, 15, 22, and 27 Aug using a scale of 0-100 percent foliage affected. Fruit were harvested from three plants in the center of each treatment row on 4 Sep and weights of marketable fruit, fruit with anthracnose, bacterial disease, blossom end rot, fruit with *Phytophthora* (buckeye rot), "other" rots (minor fungal and oomycete fruit rots), and fruit damage by insects were determined. Average maximum temperatures for 21-31 May, Jun, Jul, and 1-28 Aug were 83.1, 82.8, 82.2, and 83.0°F; average minimum temperatures were 58.9, 59.0, 59.7, and 64.3°F; and rainfall amounts were 0.62, 0.81, 4.62, and 9.33 in., respectively. Data were analyzed by ANOVA using SAS statistical software. Means were separated using Fisher's protected least significant difference test.

Early blight disease pressure was low early in the season due to dry conditions through the end of July. However, two significant rain events (3.3 in. on 27 Jul and 3.9 in. on 20 Aug) flooded plots and resulted in increased disease pressure and abiotic stress later in the season, potentially masking treatment effects. Plots treated with A7402T (7 fl oz), A137036, A7402T + A8779A, Switch 62.5WG (14 oz), Evito 4FL + Activator 90 alternated with Bravo Weather Stik, Polyoxin-D 2.5WP or the standard Cabrio 20EG alternated with Bravo Weather Stik had significantly less foliar early blight than the untreated control on 27 Aug. The early blight AUDPC for plots treated with A7402T (7 fl oz rate), A137036, A7402T (6 oz) + A8779A (6 oz), or Evito 4FL + Activator 90 alternated with Bravo Weather Stik was significantly lower than that of the untreated control. There were no differences among these treatments in early blight severity. Anthracnose incidence on fruit was high, and significantly lower than the untreated control for plants treated with A137036 (14 fl oz), A7402T + A8779A, Switch 62.5WG, Evito 4FL (5.7 oz) + Activator 90 alternated with Bravo Weather Stik, or Cabrio 20EG alternated with Bravo Weather Stik. There were no significant differences in total marketable yield, although treatment with Evito 4FL (5.7 oz) + Activator 90 alternated with Bravo Weather Stik resulted in a higher proportion of marketable fruit than the untreated control. The incidence of minor fruit rots was higher in plots treated with A7402T (7 fl oz), A137036 (14 fl oz) and Switch 62.5WG (14 oz) than in the untreated control. The incidence of bacterial diseases, buckeye rot, blossom end rot and insect damage in harvested fruit was low and there were no differences among treated or untreated control plots.

Treatment and rate/A (application timing <sup>z</sup> )	% early blight <sup>y</sup> (27 Aug)	AUDPC early blight <sup>yx</sup>	Fruit w/ anthracnose (ton/A)	Marketable yield (ton/A)	% marketable	% other rots (ripe fruit)
A7402T 6 fl oz (1-7) .....	23.1 ab <sup>w</sup>	300.4 abc	12.8 ab	17.2 a	35.8 bcd	10.9 bc
A7402T 7 fl oz (1-7) .....	19.4 b	253.3 bc	12.6 ab	11.0 a	22.7 d	13.5 ab
Revus Top 4.17SC 7 fl oz (1-7).....	23.8 ab	280.2 abc	11.2 abc	18.6 a	41.9 abc	7.4 c
A13703G 8 fl oz (1-7).....	19.4 b	261.9 bc	14.8 a	23.9 a	45.1 abc	7.7 c
A13703G 14 fl oz (1-7).....	17.5 b	224.6 c	7.8 cd	21.1 a	41.0 abc	16.3 a
A7402T 6 fl oz + A8779A 6 oz (1-7).....	20.6 b	259.4 bc	9.0 bcd	24.5 a	48.2 ab	10.5 bc
A7402T 7 fl oz + A8779A 7 oz (1-7).....	23.1 b	307.8 ab	7.1 cd	15.3 a	35.5 bcd	12.4 abc
Switch 62.5WG 10 oz (1-7) .....	23.8 ab	373.2 a	7.1 cd	19.6 a	41.7 abc	12.1 abc
Switch 62.5WG 14 oz (1-7).....	22.5 b	299.8 abc	6.5 d	24.0 a	48.1 ab	13.2 ab
Evito 4FL 5.7 fl oz + Activator 90 0.25% V/V (1,3,5,7) alt Bravo Weather Stik 2 pt (2,4,6).....	17.5 b	249.0 bc	10.3 bcd	28.2 a	55.4 a	9.1 bc
Evito 4FL 3.8 fl oz + Activator 90 0.25% V/V (1,3,5,7) alt Bravo Weather Stik 2 pt (2,4,6).....	16.9 b	245.7 bc	11.2 abc	25.4 a	45.0 abc	8.4 bc
Polyoxin-D 2.5WP 28 oz (1-7).....	21.3 b	304.8 ab	11.2 abc	13.7 a	30.1 cd	12.4 abc
Cabrio 20EG 10 oz (1,3,5,7) alt Bravo Weather Stik 2 pt (2,4,6).....	16.3 b	263.6 abc	9.9 bcd	20.8 a	42.8 abc	7.9 c
Untreated control.....	28.3 a	363.1 a	14.6 a	13.8 a	32.0 bcd	7.2 c
<i>P</i> value	0.0001	0.0075	0.0014	0.1535	0.0772	0.0267

<sup>z</sup>Application dates were: 1= 26 Jun; 2= 3 Jul; 3= 13 Jul; 4= 23 Jul; 5= 2 Aug; 6= 13 Aug; 7= 22 Aug.

<sup>y</sup>Disease ratings and area under the disease progress curves (AUDPC) were based on the percent foliar disease.

<sup>x</sup>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.

<sup>w</sup>Values are the means of four replicate plots; treatments followed by the same letter within a column are not significantly different at  $P \leq 0.0772$ . Means were separated using Fisher's protected least significant difference test.