

Evaluation of selected fungicides for management of powdery mildew of summer squash, fall 2010.

On 10 Sep 2010, plots were established at the University of Florida’s Gulf Coast Research and Education Center in Balm, FL to assess the effect of selected fungicides on the control of powdery mildew of squash. Plots consisted of 21 ft-long bed sections with 8 plants per plot within 300 ft-long, raised beds with 5 ft center-to-center bed spacing. Beds were covered with black virtually impermeable mulch and irrigated with a drip system. Seeds were sown at 30-in spacing along beds skipping a 4-ft alley between plots. Planted, non-treated beds were established between treated beds to help spread disease uniformly across the trial. Fungicide treatments were applied on 7 Oct, 26 Oct, and 3 Nov (corresponding with applications 1 to 3 below) with a CO₂ back pack sprayer calibrated to deliver 60 gal/A at 40 psi. Treatments, including a non-treated control were arranged in a completely randomized block design with each treatment repeated four times. Plots were monitored regularly for powdery mildew, and rated on 25 Oct, 1 Nov, and 8 Nov after disease reached appreciable levels. The yield was assessed from a single harvest of plots on 5 Nov. Alternating applications of Previcur Flex 6F (1.2 pt/A) and Curzate 60DF (3.2 oz/A) were applied on the three application dates to minimize the impact of downy mildew.

Based on disease severity on 25 Oct, all fungicides significantly reduced powdery mildew on squash in comparison to the non-treated control. Of these fungicides tested, applying Procure alone at 6 fl oz/A resulted in the lowest disease severity. A significant difference was also detected in disease severity between the fungicides, except EXP LP1, and the non-treated control according to results of the second rating on 1 Nov. Except two treatments with EXP LP1, the other fungicide treatments significantly reduced the final disease severity. Although the effectiveness of reducing disease development varied among the treatments, compared with the non-treated control all the fungicides significantly reduced disease epidemics by 17.1–79.6% based on area under the disease progress curves (AUDPC). According to the final disease severity and AUDPC, Luna Sensation and Procure-Quintec provided better disease control. All treatments numerically increased the yield, but this increase was not statistically significant compared with the non-treated control.

Treatment, rate/A (application) ^z	Disease severity (%) ^y			AUDPC ^x	Yield (lb/plot)
	25 Oct	1 Nov	8 Nov		
Non-treated Control.....	23.3 a ^w	62.5 a	79.1 a	796 a	38.3
EXP LP1, 6.84 oz (drip 1,3).....	9.50 b	50.0 ab	79.1 a	660 b	50.1
Luna Sensation, 5 oz (1-3).....	2.25 c	5.63 d	32.8 e	162 f	60.4
EXP LP1, 6.84 oz (drip 1,3); Procure 480SC, 6 fl oz (1,3)	2.25 c	18.5 cd	72.0 ab	389 cd	56.6
Procure 480SC, 6 fl oz (1); Torino, 1.7 fl oz (2); Quintec, 5 fl oz (3).....	2.25 c	9.00 d	37.5 d	202 ef	57.0
Procure 480SC, 6 fl oz (1); Torino, 2.2 fl oz (2); Quintec, 5 fl oz (3).....	3.00 c	9.00 d	50.0 c	249 ef	49.3
Procure 480SC, 6 fl oz (1); Torino, 2.6 fl oz (2); Quintec, 5 fl oz (3).....	2.25 c	5.63 d	43.8 cd	200 ef	66.9
Procure 480SC, 6 fl oz (1); Torino, 3.4 fl oz (2); Quintec, 5 fl oz (3).....	7.25 bc	16.1 cd	43.8 cd	291 de	53.5
Procure 480SC, 6 fl oz (1,3); Quintec, 5 fl oz (2).....	3.00 c	11.4 d	32.8 e	205 ef	63.8
BU EXP 1216S, 3 lb (1-3).....	11.4 b	43.8 b	62.5 b	565 b	57.1
Procure 480SC, 6 fl oz (1,3).....	1.50 c	28.0 c	62.5 b	420 c	55.0
<i>P > F</i>	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.1345

^z Listed treatment rates are on a per acre basis unless noted otherwise.

^y The severity of powdery mildew was assessed as the percentage of canopy affected. The Horsfall-Barratt scale was used for all ratings, but values were converted to mid-percentages prior to statistical analyses.

^x Area under the disease progress curves (AUDPC) was calculated using 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 followed by the same letter are not statistically significant ($P = 0.05$) according to Fisher’s LSD test.