

Evaluation of fungicides and biopesticides for management of powdery mildew of cantaloupe, spring 2010.

On 17 Mar 2010, plots were established at the University of Florida's Gulf Coast Research and Education Center in Balm, FL to assess the effect of fungicides and biopesticides on the control of powdery mildew of cantaloupe. Plots consisted of 14 ft-long bed sections within 308 ft-long, raised beds with 4 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 6-ft alley between plots and every third bed as a buffer. Fungicide treatments were applied on 6 May, 18 May, 24 May, and 1 Jun (corresponding with applications 1 to 4 below) with a CO₂ back pack sprayer calibrated to deliver 40 (app. 1), 60 (app. 2), and 100 gal/A (apps. 3,4) at 40 psi. The single drip treatment was applied into the irrigation lines through a manifold with pressurized CO₂ (20 psi). Treatments, including a non-treated control were arranged in a completely randomized block design with each treatment repeated 3 times. Plots were monitored regularly for powdery mildew, and rated on 21 May and 4 Jun after disease reached appreciable levels. Alternating applications of Previcur Flex 6F (1.2 pt/A) and Curzate 60DF (3.2 oz/A) were applied to minimize the impact of downy mildew, especially when conducive conditions occurred in May.

Compared with the untreated control, applying biopesticides alone did not significantly reduce the final disease severity and area under the disease progress curves (AUDPC). However, alternating these biopesticides with Procure® 480SC resulted in significantly less disease severity ($P < 0.0001$) and AUDPC ($P = 0.001$) than applying them alone. Visible symptoms of powdery mildew were not observed on plants treated with GWN-4617-Procure 480SC-Nu-Film P-Quadris, GWN-4617-Procure 480SC, or drip application of EXP LP1.

Treatment, rate/A (application) ^z	Disease severity (%) ^y		
	21 May	4 Jun	AUDPC ^x
Non-treated control.....	28.0 a ^w	54.1 a	575 a
Procure 480SC, 8 oz (2,4).....	6.75 b-g	34.8 a-d	297 b-f
Regalia, 1% (v/v) (1-4).....	10.7 b-e	39.5 abc	351 b-e
Actinovate, 3 oz (1-4).....	18.5 ab	47.3 ab	466 ab
HMO 736, 14 oz (1-4).....	13.8 bc	45.8 ab	418 abc
Companion, 32 fl oz (1-4).....	10.7 b-e	45.8 ab	395 a-d
BU EXP 1216C, 3 lb (1-4).....	13.8 bcd	47.3 ab	433 abc
BU EXP 1216S, 3 lb (1-7).....	13.8 bcd	34.8 a-d	346 b-f
Regalia, 1% (v/v) (1,3); Procure 480SC, 8 oz (2,4).....	6.50 c-g	15.3 def	153 f-i
Actinovate, 3 oz (1,3); Procure 480SC, 8 oz (2,4).....	3.50 d-g	31.1 bcd	243 c-g
HMO 736, 14 oz (1,3); Procure 480SC, 8 oz (2,4).....	5.00 c-g	21.7 cde	187 e-i
Companion, 32 fl oz (1,3); Procure 480SC, 8 oz (2,4).....	8.17 b-g	27.5 bcd	250 b-g
BU EXP 1216C, 3 lb (1,3) ; Procure 480SC, 8 oz (2,4).....	9.00 b-g	21.7 cde	215 d-h
BU EXP 1216S, 3 lb (1,3) ; Procure 480SC, 8 oz (2,4).....	11.5 b-f	11.1 def	164 e-i
GWN-4617, 3.4 oz (1,3); Procure 480SC, 8 oz (1,3); Nu-Film P, 2.05 fl oz (1,3); Quadris 15.4 fl oz (2,4).....	0 efg	0 f	0 i
GWN-4617, 3.4 oz (1,3); Procure 480SC, 8 oz (2,4).....	0 efg	0 f	0 i
Quintec, 6 fl oz/100 gal (1,3); Procure 480SC, 8 oz (2,4).....	0.50 fg	4.50 ef	35.0 hi
Luna Sensation, 5 oz (1,3).....	1.00 efg	7.50 ef	59.5 ghi
Luna Sensation, 5 oz (1-4).....	0 efg	1.00 f	7 i
EXP LP1, 6.84 oz (drip 1,3)	0 efg	0 f	0 i
Pristine 38 WG, 18.5 oz (1,3); Procure 480SC, 8 oz (2,4)	0.50 fg	6.00 ef	45.5 hi
Silwet L-77, 0.025% (V/V) (1-4)	5.00 c-g	21.7 cde	187 e-i
<i>P > F</i>	0.0004	<0.0001	<0.0001

^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: $\Sigma[(x_i+x_{i-1})/2](t_i-t_{i-1})$ 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.