

Evaluation of fungicide programs for management of downy mildew of cucumbers – Trial 3, 2016.

The experiment was conducted at the University of Delaware’s Thurmond Adams Research Farm, Carvel Research and Education Center near Georgetown. The experiment was a split plot with fungicide program as the main plot (four programs and a nontreated control) and cultivar (susceptible ‘Vlaspik’ and moderately resistant ‘Citadel’) as the subplot. Plots were arranged in a randomized complete block design with four replications. Main plots consisted of 4 20-ft rows, with 2 rows of each cultivar planted side by side, 2.5 feet between rows and a 5-ft alley between treatments within the row. Seeds were planted with a Monosem planter at 60,000 plants per acre on 20 Jul. Downy mildew was present in an adjacent field on the farm when seedlings emerged. A total of 100 lb/A of nitrogen was applied. A standard herbicide program (Curbit plus Command) was used along with mechanical cultivation. Assail and Bifenthrin insecticides were used for cucumber beetle control. Trials were overhead irrigated as necessary. Percent downy mildew severity was evaluated on five leaves of similar maturity in each plot on 15 and 25 Aug, 2 and 8 Sep and measured as the percent of the leaf area with necrosis or water soaking due to downy mildew, and AUDPC was calculated based on the four assessments. Fungicide applications began on 28 Jul. Fruit in a 20 ft section of one inner row of each cultivar per plot were harvested, counted, weighed, and graded on 9 Sep.

There was no significant fungicide program x cultivar interaction for AUDPC ($P=0.8729$) or yield ($P=0.7187$). However both cultivar and fungicide program had significant main effects. Citadel had a significantly lower downy mildew AUDPC value than Vlaspik (150.3 vs. 198.6 AUDPC, $P= 0.0171$). All fungicide programs significantly reduced AUDPC values compared to the nontreated plots. Ranman plus Bravo WeatherStik (BWS) alternated with Previcur Flex plus BWS on a weekly schedule had the lowest AUDPC value, which was significantly lower than the BWS only program, and the two programs on a 14 day schedule. Citadel yielded more fruit than Vlaspik (20.3 vs. 17.4 lb/plot, $P=0.0371$). Only the Ranman plus BWS alternation with Previcur Flex plus BWS applied weekly had significantly higher marketable yield than the nontreated control plots. No phytotoxicity was observed.

Treatment and rate/A	Application dates ^z	AUDPC	Yield lb/plot
Bravo Weather Stik 2 pt	1-6	199.0 b ^y	18.9 ab
Ranman 2.75 fl oz + Bravo Weather Stik 2 pt	1,3,5		
Previcur Flex 1.2 pt + Bravo Weather Stik 2 pt	2,4,6	35.2 c	22.8 a
Ranman 2.75 fl oz + Bravo Weather Stik 2 pt	1,5		
Previcur Flex 1.2 pt + Bravo Weather Stik 2 pt	3	194.6 b	17.3 b
Orondis 34 fl oz + Bravo Weather Stik 2 pt	1		
Ranman 2.75 fl oz + Bravo Weather Stik 2 pt	3		
Previcur Flex 1.2 pt + Bravo Weather Stik 2 pt	5	136.4 b	19.7 ab
Nontreated check		306.9 a	15.7 b
<i>P</i> -value ^x		0.0010	0.0290

^zApplication dates were 1=28 Jul; 2=4 Aug; 3=11 Aug; 4=18 Aug; 5=25 Aug, 6=1 Sep.

^yMeans within a column followed by the same letter are not significantly different according to Fisher’s Protected LSD test ($\alpha=0.05$).

^x*P*-values ≤ 0.05 indicate significant differences among treatments.