

Evaluation of fungicides for control of downy mildew on cucumber, Kinston 2018.

The experiment was conducted at the Cunningham Research Station in Kinston, NC. Plots were single raised beds on 5-ft centers covered with white plastic mulch; 14-ft long with 5-ft fallow borders on each end with non-treated guard rows on each side. The previous year the field was planted with sweetpotato. Cucumber was direct seeded on 24 Jul (2-ft in-row spacing, 2 seed/hill) and thinned to one plant per hill after emergence (7 plants/plot). Irrigation and fertilization (4-0-8, N-P-K) were applied via drip tape. Treatments were randomized into four complete blocks. Fungicide treatments were applied using a CO₂-pressurized backpack sprayer equipped with a handheld boom with a hollow cone nozzle (TXVS-26). Applications were made on 16, 23 and 30 Aug and 6 and 12 Sep. Disease severity was assessed on 23 and 30 Aug and 6, 12 and 21 Sep as percent leaf area with necrosis per plot. Fruit were harvested on 29 Aug and 6, 12 and 24 Sep. Data were analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and Fisher's Protected LSD test to separate means.

Downy mildew was first detected on 16 Aug at approximately 2% disease severity in the field and progressed throughout the course of the trial. The combination treatment with Orondis Opti A, V-10365, Elumin and Bravo Weather Stik provided the highest level of downy mildew control. All other treatments had significantly less disease than the non-treated plots. No phytotoxicity was observed. No further disease evaluations or yield assessments were conducted due to the trial being destroyed by Hurricane Florence.

Treatment and rate of product per acre	Application no. ^y	Disease severity ^z (%)		
		30 Aug	12 Sep	21 Sep
Orondis Opti A 0.83OD 2 fl oz	1			
V-10365 0.83SC 12.1 fl oz	2, 4			
Elumin 4SC 8 fl oz	3, 5			
Bravo Weather Stik 6SC 32 fl oz	1			
Silwet 100SF 0.125 % v/v	1-5	4.3 c ^x	15.3 d	27.5 c
Orondis Opti A 0.83OD 2 fl oz	1, 4			
Zampro 4.38C 14 fl oz	2, 5			
Ranman 3.33SC 2.75 fl oz	3			
Bravo Weather Stik 6SC 32 fl oz	1, 4			
Silwet 100SF 0.125 %v/v	1-5	4.5 c	18.0 cd	30.5 bc
Ranman 3.33SC 2.75 fl oz	1, 3, 5			
Omega 500F 24 fl oz	2, 4	7.8 b	19.0 cd	32.3 bc
V-10365 0.83SC 13.6 fl oz	1, 3			
Elumin 4SC 8 fl oz	2, 4			
Ranman 3.33SC 2.75 fl oz	5			
Silwet 100SF 0.125 %v/v	1-5	8.3 b	23.0 bc	34.3 bc
Previcur Flex 6F 19.2 fl oz	1-4, 6, 8, 10			
Omega 500F 24 fl oz	5, 7	9.0 b	22.0 bc	36.0 b
V-10365 0.83SC 12.1 fl oz	1, 3			
Elumin 4SC 8 fl oz	2, 4			
Ranman 3.33SC 2.75 E	5			
Silwet 100SF 0.125% v/v	1-5	9.8 b	25.0 b	36.3 b
Non-treated control	N/A	18.8 a	47.5 a	68.8 a

^z Disease rating scale based on percent necrotic foliage caused by *P. cubensis*.

^y Application dates: 1=16 Aug, 2=23 Aug, 3=30 Aug, 4=6 Sep and 5=12 Sep.

^x Treatments followed by the same letter(s) within a column are not statistically different ($P=0.05$, Fisher's Protected LSD).