

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

The experiment was conducted at the Horticultural Crops Research Station in Clinton, 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 cucumber. Cucumber was direct seeded on 25 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 17, 24 and 31 Aug and 7 and 14 Sep. Disease severity was assessed on 24 and 31 Aug and 7 and 11 Sep as percent leaf area with necrosis per plot. Fruit were harvested on 4 and 11 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 17 Aug at approximately 2% disease severity in the field and progressed throughout the course of the trial. Combination treatments with Orondis Opti A, Zampro, Ranman, V-10365, Elumin and Bravo Weather Stik provided excellent control of downy mildew. Ranman and Previcur Flex alternated with Omega also had low disease levels. All other treatments managed *P. cubensis* well when compared to the non-treated. 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 (%) | | |
|--|------------------------------|-----------------------------------|--------|---------|
| | | 31 Aug | 7 Sep | 11 Sep |
| Orondis Opti A 0.83OD 2 fl oz | 1,4 | | | |
| Zampro 4.33SC 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 | 3.0 d ^x | 5.0 c | 11.0 e |
| 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 | 2.5 d | 4.8 c | 11.5 e |
| Ranman 3.33SC 2.75 fl oz | 1,3,5 | | | |
| Omega 500F 24 fl oz/ | 2,4 | 9.5 b | 12.8 b | 18.8 d |
| Previcur Flex 4SC 19.2 fl oz | 1,3,5 | | | |
| Omega 500F 24 fl oz/ | 2,4 | 8.8 bc | 12.8 b | 20.0 cd |
| 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 | 6.8 c | 13.0 b | 23.8 bc |
| V-10365 0.83SC 12.1 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 | 7.0 c | 14.5 b | 24.8 b |
| Non-treated control | N/A | 21.8 a | 38.8 a | 54.0 a |

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

^y Application dates: 1=17 Aug, 2=24 Aug, 3=31 Aug, 4=7 Sep and 5=14 Sep.

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