

Evaluation of fungicides for control of downy mildew on cucumber, Clayton, NC 2019.

The experiment was conducted at the Central Crops Research Station in Clayton, 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. In 2018, the field was planted with cucumber. Cucumber was direct seeded on 30 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 19 and 26 Aug and 4, 9, 16, 23 and 30 Sep. Disease severity was assessed on 4, 12, 19 and 26 Sep and 3 Oct as percent leaf area with necrosis per plot. Fruit were harvested on 4, 12, 19 and 26 Sep and 3 Oct. Data were analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and Fisher's protected least significant difference (LSD) test to separate the means.

Downy mildew was first detected on 28 Aug at approximately 1% disease severity in the field and progressed throughout the course of the trial. Combination treatments with Previcur Flex, Orondis Opti, Zampro and Ranman all controlled *P. cubensis* well and produced the highest yield. No other treatments provided commercially acceptable levels of disease control. No phytotoxicity was observed.

Treatment and rate of product per acre	Application no. ^y	Disease severity ^z (%)			Mkt yield (lb/plot)
		19-Sep	26-Sep	3-Oct	
Previcur Flex 6F 1.2 pt/a	1, 3, 5, 7				
Orondis Opti 3.37SC 32 fl oz/a	2, 4, 6	6.3c ^x	13.8d	18.5e	67.63a
Orondis Opti 3.37SC 32 fl oz/a	1, 4, 7				
Zampro 4.33SC 14 fl oz/a	2, 5				
Ranman 3.33SC 2.75 fl oz/a	3, 6	5.5c	13.0d	20.8e	56.90ab
Previcur Flex 6F 1.2 pt/a	1, 3, 5, 7				
Zampro 4.33SC 14 fl oz/a	2, 4, 6	10.8c	23.0c	35.5d	45.90bc
Presidio 4SC 3 fl oz/a	2, 4				
Bravo Weather Stik 6SC 32 fl oz/a	1-7				
Ranman 3.33SC 2.75 fl oz/a	5	19.0b	37.0b	61.5c	37.88cd
Bravo Weather Stik 6SC 32 fl oz/a	1-7	20.5b	42.3b	74.8b	39.98bc
Non-treated	N/A	41.5a	75.3a	94.0a	21.90d

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

^y Application dates: 1=19 Aug, 2=26 Aug, 3=4 Sep, 4=9 Sep, 5=16 Sep, 6=23 Sep and 7=30 Sep.

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