

Evaluation of fungicides for control of downy mildew on cucumber, Clayton 2014.

The experiment was conducted at the Central Crops Research Station in Clayton, NC (N35°40.052'; W078°30.389'). Plots were single beds on 5-ft centers covered with black plastic mulch; 14-ft long with 4-ft fallow borders on each end and non-treated guard rows on each side. The previous year the field was planted with soybeans. Cucumber was direct seeded on 18 Aug (1.5-ft in-row spacing, 2 seed/hill) in raised beds and thinned to one plant per hill after emergence (9 plants/plot). Irrigation and fertilization 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 single-nozzle, handheld boom with a hollow cone nozzle (TXVS-26) delivering 40 gal/A at 45 psi. The first three spray applications were made with a single-nozzle boom and the last four with a two-nozzle boom (19-in. spacing). Applications were made on 7-day intervals: 15, 22 and 29 Sep and 6, 13, 20 and 27 Oct. Disease severity was assessed on 6, 17, 23 and 31 Oct as percent leaf area with necrosis. Data was analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and the Waller-Duncan test to separate means.

Downy mildew was first detected on 22 Sep at approximately 1% disease severity in the field and progressed throughout the course of the trial. Most treatments in the trial controlled *P. cubensis* well when compared to the non-treated. The treatments with the lowest level of disease severity on 31 Oct were treatments containing alternations of Ranman + Manzate Pro-Stick with Zampro + Manzate Pro-Stick and alternations of Bravo Weather Stik, Ranman and an experimental product applied alone. Treatments that included tank mixes and/or alternations of Presidio, V-10208, Previcur Flex, Tanos and Gavel with Bravo Weather Stik or Manzate Pro-Stick also controlled downy mildew effectively. No phytotoxicity was observed. In the table, treatments are sorted by disease severity on 31 Oct.

Treatment and rate of product per acre, applied at 7-day intervals	Application No.	Disease Severity* (%)		
		17 Oct	23 Oct	31 Oct
Ranman 3.33SC 2.75 fl oz	1, 3, 5, 7			
Zampro 4.33SC 14 fl oz	2, 4, 6			
Manzate Pro-Stick 75DG 1.5 lb	1-7			
Induce 90L 0.25% v/v	1-7	9.8 b**	15.5 c	30.5 c
Bravo Weather Stik 6SC 2 pt	1, 3, 5, 6			
Ranman 3.33SC 2.75 fl oz	2, 7			
Experimental 40 fl oz	4	13.0 b	18.3 bc	30.8 c
Ranman 3.33SC 2.75 fl oz	2, 4, 6			
Zampro 4.33SC 14 fl oz	1, 3, 5, 7			
Manzate Pro-Stick 75DG 1.5 lb	1-7	10.3 b	17.3 c	31.0 c
Bravo Weather Stik 6SC 2 pt	1, 4, 5, 6			
Experimental 40 fl oz	2, 7			
Ranman 3.33SC 2.75 fl oz	3	16.0 b	21.0 bc	32.3 c
Presidio 4SC 4 fl oz	1, 3, 7			
Ranman 3.33SC 2.75 fl oz	2, 4, 6			
Zampro 4.33SC 14 fl oz	5			
Manzate Pro-Stick 75DG 1.5 lb	1-7	13.8 b	20.5 bc	35.5 bc
Ranman 3.33SC 2.75 fl oz	1, 3, 6, 7			
V-10208 4SC 8 fl oz	2, 4			
Zampro 4.33SC 14 fl oz	5			
Manzate Pro-Stick 75DG 1.5 lb	1-7			
Induce 90L 0.25% v/v	1-7	14.0 b	21.0 bc	35.8 bc
Previcur Flex 6F 1.2 pt	1, 3, 5, 7			
Bravo Weather Stik 6SC 2 pt	1, 3, 5, 7			
Tanos 50WG 8 oz	2, 4, 6			
Bravo Weather Stik 6SC 2 pt	2, 4, 6	15.0 b	22.0 bc	37.0 bc
Bravo Weather Stik 6SC 2 pt	1, 3, 4, 6			
Experimental 40fl oz	2, 5, 7	10.0 b	17.8 c	38.0 bc
Presidio 4SC 4 fl oz	1, 3, 7			
Ranman 3.33SC 2.75 fl oz	2, 5			
V-10208 4SC 8 fl oz	4, 6			
Manzate Pro-Stick 75DG 1.5 lb	1-7			
Induce 90L 0.25% v/v	1-7	13.8 b	21.8 bc	38.0 bc
Ranman 3.33SC 2.75 fl oz	2, 4, 6,			
Presidio 4SC 4 fl oz	1, 3, 5, 7			
Manzate Pro-Stick 75DG 1.5 lb	1-7	14.3 b	22.3 bc	38.5 bc
Tanos 50WG 8 oz	1, 3, 5, 7			
Bravo Weather Stik 6SC 2 pt	1, 3, 5, 7			
Gavel 75DF 2 lb	2, 4, 6	17.3 b	24.5 bc	39.8 bc
V-10208 4SC 8 fl oz	1-7			
Manzate Pro-Stick 75DG 1.5 lb	1-7			
Induce 90L 0.25% v/v	1-7	15.5 b	23.8 bc	40.5 bc
Bravo Weather Stik 6SC 2 pt	1-7	15.5 b	28.5 b	46.3 b
Non-treated	Not Applicable	52.5 a	70.3 a	90.3 a

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

** Treatments followed by the same letter(s) within a column are not statistically different ($P=0.05$, Waller-Duncan $k=100$).