

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

The experiment was conducted at the Cunningham Research Station in Kinston, NC (N35°18.160'; W077°34.980'). 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 soybean. Cucumber was direct seeded on 12 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 hollow cone nozzles (TXVS-26) delivering 40 gal/A at 45 psi. The first two spray applications were made with a single-nozzle boom and the last four with a 2-nozzle boom (19-in. spacing). Applications were made on 4, 11, 16 and 26 Sep and 3 and 10 Oct. Disease severity was assessed on 17, 23 and 30 Sep and 7 and 17 Oct as percent leaf area with necrosis. Fruit were harvested on 23 and 30 Sep and 7 and 16 Oct. 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 4 Sep at <1% disease severity in the field and progressed throughout the course of the trial. Treatment 1 was moderately effective in controlling downy mildew and also produced the greatest weight of total marketable fruit, although not statistically different from Treatment 2. No other treatments provided commercially acceptable levels of disease control. No phytotoxicity was observed. In the table, treatments are sorted by disease severity on 17 Oct.

Treatment number and product and rate per acre	Application No.	Disease Severity* (%)			Mkt Yield (lb/plot)
		17 Sep	30 Sep	17 Oct	
1 Presidio 4SC 4 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt Previcur Flex 6F 1.2 pt + Bravo Weather Stik 6SC 2 pt Zampro 4.33SC 14 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt	1, 4 2, 5 3, 6	1.4 bc**	12.8 d	49.8 e	33.8 a
2 Presidio 4SC 4 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt Gavel 75WG 2 lb Ranman 3.33SC 2.75 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt	1, 4 2, 5 3, 6	2.7 cd	19.8 c	66.8 d	28.3 ab
3 Presidio 4SC 4 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt Previcur Flex 6F 1.2 pt + Bravo Weather Stik 6SC 2 pt Ranman 3.33SC 2.75 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt	1, 4 2, 5 3, 6	1.2 bc	19.8 c	68.8 cd	23.5 bc
4 Presidio 4SC 4 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt Tanos 50WG 8 oz + Bravo Weather Stik 6SC 2 pt Gavel 75WG 2 lb	1, 4 2, 5 3, 6	0.6 c	26.5 b	71.3 cd	28.8 ab
5 Presidio 4SC 4 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt Tanos 50WG 8 oz + Bravo Weather Stik 6SC 2 pt Ranman 3.33SC 2.75 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt	1, 4 2, 5 3, 6	0.9 c	23 bc	73.8 cd	25.6 bc
6 Zampro 4.33SC 14 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt Previcur Flex 6F 1.2 pt + Bravo Weather Stik 6SC 2 pt Ranman 3.33SC 2.75 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt	1, 4 2, 5 3, 6	1.4 bc	24 bc	76 bcd	24.8 bc
7 Ranman 3.33SC 2.75 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt Tanos 50WG 8 oz Bravo Weather Stik 6SC 2 pt + Gavel 75WG 2 lb	1, 4 2, 5 3, 6	1.2 bc	28.3 b	78 bc	24.5 bc
8 Zampro 4.33SC 14 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt Gavel 75WG 2 lb Tanos 50WG 8 oz Bravo Weather Stik 6SC 2 pt	1, 4 2, 5 3, 6	1.2 bc	29.3 b	85.8 b	21.9 c
9 Non-treated	1-6	7.1 a	72.5 a	97.8 a	10.7 d

* 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 $k=100$).