

Evaluation of fungicides and cultivars for control of downy mildew on cucumber, Kinston 2017.

The experiment was conducted at the Cunningham Research Station in Kinston, NC (N35°18.331’; W077°34.884’). 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 and non-treated guard rows on each side. The previous year the field was planted with sweetpotato. Cucumber was direct seeded on 21 Jul (2-ft in-row spacing, 2 seed/hill) and thinned to one plant per hill after emergence (7 plants/plot). Three non-treated commercial cucumber varieties were included in the trial in addition to non-treated Vlaspik and Vlaspik treated with different fungicide applications. Irrigation and fertilization (4-0-8, N-P-K) were applied via drip tape on 9 Aug. 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. Applications were made on 22 and 29 Aug and 5 and 14 Sep. Disease severity was assessed on 5, 13 and 19 Sep as percent leaf area with necrosis per plot. Fruit were harvested on 7, 13, 21 and 27 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 22 Aug at approximately 2% disease severity in the field and progressed throughout the course of the trial. Non-treated Peacemaker had the lowest level of disease and produced the greatest weight of total marketable fruit. Non-treated Citadel, Previcur Flex, Omega, Ranman and Orondis had lower disease levels than other treatments and statistically similar yields. No other treatments provided commercially acceptable levels of disease control. No phytotoxicity was observed. In the table, treatments are sorted by disease severity on 19 Sep.

Treatment and rate of product per acre	Application no. ^y	Disease severity ^z (%)		Mkt yield (lb/plot)
		5-Sep	19-Sep	
Non-treated Peacemaker	N/A	7.3 j ^x	40.1 j	31.48 a
Non-treated Citadel	N/A	10.3 ij	46.2 ij	27.23 ab
Previcur Flex 6 F 19.2 fl oz	1-4	15.0 f-i	51.9 hij	26.23 ab
Omega 500 F 24 fl oz	1-4	16.7 d-g	56.9 ghi	24.35 bc
Ranman 3.33 SC 2.75 fl oz	1-4			26.83 ab
Induce SL 0.25% V/V	1-4	10.0 ij	57.0 ghi	
Orondis Opti A 0.83OD 0.6 fl oz	1-4	12.0 g-j	58.8 f-i	24.00 bc
Zampro 4.33 SC 14 fl oz	1-4			22.00 bcd
Induce SL 0.25% V/V	1-4	16.3 e-h	59.5 e-i	
Elumin 4 SC 10 fl oz	1-4	18.0 c-f	66.4 d-h	21.68 b-e
Ridomil Gold Bravo36.4 SC 40 fl oz	1-4	20.0 b-f	67.0 d-g	18.78 c-g
Gavel 75 WG 32 oz	1-4	19.7 b-f	70.3 c-g	21.83 b-e
Manzate Pro Stick75 DG 48 oz	1-4	21.7 a-e	72.2 c-f	17.83 d-h
Presidio 4 SC 4 fl oz	1-4			16.18 d-i
Induce SL 0.25% V/V	1-4	19.0 b-f	73.6 cde	
Curzate 60 DF 5 oz	1-4	10.7 hij	74.0 cd	18.80 c-g
Zing! 4.9 SC 36 fl oz	1-4	21.7 a-e	74.3 cd	19.75 c-f
Bravo Weather Stik 6 SC 48 fl oz	1-4	22.3 a-d	75.1 bcd	21.48 b-e
Tanos 50 WG 8 oz	1-4	18.3 b-f	76.2 bcd	16.85 d-e
Revus 2.08 SC 8 fl oz	1-4	20.0 b-f	80.7 abc	14.00 f-i
Forum 43.5 SC 6 fl oz	1-4	19.3 b-f	80.7 abc	16.10 e-i
Merivon 42.5 SC 6.7 fl oz	1-4	23.7 abc	81.5 abc	13.08 ghi
Non-treated Vlaspik	N/A	27.3 a	86.4 ab	12.18 hi
Cabrio 20 EG 12 oz	1-4	24.0 ab	88.9 a	14.98 f-i
Non-treated Expedition	N/A	22.0 a-e	90.0 a	11.58 i

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

^y Application dates; 1=22 Aug, 2=29 Aug, 5 Sep and 4=14 Sep.

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