

Evaluation of fungicides and cultivars for control of downy mildew on cucumber, Kinston 2016.

The experiment was conducted at the Cunningham Research Station in Kinston, NC (N35°18.172'; W077°34.341'). Plots were single 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 10 Aug (2-ft in-row spacing, 2 seed/hill) in raised beds 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 7, 14, 21 and 27 Sep and 5 Oct. 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 three spray applications were made with a single-nozzle boom and the last one with a 2-nozzle boom (19-in. spacing). Applications were made on 6, 14 and 23 Sep and 3 Oct. Disease severity was assessed on 20 Sep and 3 Oct as percent leaf area with necrosis per plot. Fruit were harvested on 20 and 27 Sep and 4 Oct. Data were 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 6 Sep at approximately 3% disease severity in the field and progressed throughout the course of the trial. Hurricane Matthew impacted Eastern North Carolina on 8 and 9 Oct and prematurely ended the trial due to wind/rain damage. Non-treated Peacemaker, Orondis Opti and non-treated Citadel controlled downy mildew well and produced the greatest weight of total marketable fruit. Ranman also managed *P. cubensis* when compared to the non-treated Vlaspik. No other treatments provided commercially acceptable levels of disease control. No phytotoxicity was observed. In the table, treatments are sorted by disease severity on 3 Oct.

Treatment and rate of product per acre	Application no. ^y	Disease severity ^z (%)		Mkt yield (lb/plot)
		20 Sep	3 Oct	
Non-treated Peacemaker	N/A	9.8 h ^x	20.5 h	22.53 a
Orondis Opti 406SC 2 fl oz	1-4	14.5 g	26.5 h	13.24 b
Non-treated Citadel	N/A	16.3 fg	28.5 h	10.27 bc
Ranman 3.33SC 2.75 fl oz	1-4			
Induce SL 0.25% V/V	1-4	16.5 fg	38.0 g	8.71 cd
Curzate 60DF 5 oz	1-4	12.0 gh	41.0 fg	8.08 cde
Previcur Flex 6F 19.2 fl oz	1-4	23.0 cde	43.0 efg	7.28 c-f
Gavel 75WG 32 oz	1-4	23.0 cde	45.0 d-g	6.35 c-f
Presidio 4SC 4 fl oz	1-4			
Induce SL 0.25% V/V	1-4	16.0 fg	46.5 c-f	8.19 cde
Manzate Pro-Stick 75DG 48 oz	1-4	24.3 b-e	47.5 c-f	6.15 c-f
V-10208 4SC 10 fl oz	1-4	20.3 ef	48.3 c-f	8.65 cd
Omega 500F 24 fl oz	1-4	21.3 de	49.0 c-f	5.31 def
Zampro 4.33SC 14 fl oz	1-4			
Induce SL 0.25% V/V	1-4	21.8 de	49.3 c-f	7.65 c-f
Revus 2.08SC 8 fl oz	1-4	21.8 de	49.5 b-e	5.97 def
Tanos 50WG 8 oz	1-4	22.3 de	50.8 b-e	7.31 c-f
Zing! 4.9SC 36 fl oz	1-4	23.3 cde	51.8 bcd	6.59 c-f
Merivon 42.5SC 6.7 fl oz	1-4	27.0 abc	52.0 bcd	6.02 def
Forum 43.5SC 6 fl oz	1-4	23.5 cde	52.8 bcd	5.22 def
Bravo Weather Stik 6SC 48 fl oz	1-4	23.3 cde	54.0 bc	8.73 cd
Ridomil Gold Bravo 36.4SC 40 fl oz	1-4	22.5 cde	54.8 bc	4.77 def
Cabrio 20EG 12 oz	1-4	25.8 a-d	57.8 ab	5.79 def
Non-treated Expedition	N/A	28.5 ab	64.3 a	4.15 ef
Non-treated Vlaspik	N/A	29.5 a	64.3 a	3.71 f

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

^y Application dates; 1=6 Sep, 2=14 Sep, 3=23 Sep and 4=3 Oct.

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