

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

The experiment was conducted at the Horticultural Crops Research Station in Clinton, NC (N35°01.423'; W078°16.489'). Plots were double row beds on 5-ft centers covered with white plastic mulch; 20-ft long with 5-ft fallow borders on each end with non-treated guard rows on the perimeter of the field. The previous year the field was planted with sweetpotato. Cucumber was direct seeded on 7 Aug (1-ft in-row spacing, 1 seed/hill) in raised beds (40 plants/plot). Irrigation and fertilization (15.5-0-0, 13.75-0-46, N-P-K) were applied via drip tape on 31 Aug, and 9, 16 and 26 Sep. Treatments were randomized into four complete blocks. Fungicide treatments were applied using a CO<sub>2</sub>-pressurized backpack sprayer equipped with a two-nozzle, handheld boom with a hollow cone nozzle (TXVS-26) delivering 40 gal/A at 45 psi. The three spray applications were made with a two-nozzle boom (19-in. spacing). Applications were made on 16, 23 and 30 Sep. Disease severity was assessed on 4 Oct as percent leaf area with necrosis per plot. Fruit were harvested on 5 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 16 Sep at approximately 5% disease severity in the field and progressed throughout the course of the trial. Orondis Opti, Ranman and Previcur Flex tank mixed with Bravo Weather Stik on Peacemaker were outstanding in controlling *P. cubensis* and produced a high level of marketable fruit. Ranman, Previcur Flex and Zampro with Bravo Weather Stik tank mixed on Peacemaker as well as Bravo Weather Stik on Peacemaker, Orondis Opti, Ranman and Previcur Flex tank mixed with Bravo Weather Stik on Citadel and non-treated Peacemaker also provided good downy mildew control. All treatments were significantly different from the non-treated cultivars Expedition and Vlaspik, which had 33-34% disease severity at the end of the trial on 4 Oct. No additional disease ratings were taken under higher disease pressure due to Hurricane Matthew. No phytotoxicity was observed. In the table, treatments are sorted by disease severity on 4 Oct.

Treatment and rate of product per acre	Application no. <sup>y</sup>	Disease severity <sup>z</sup> (%)	
		4 Oct	Mkt yield (lb/plot)
Orondis Opti 406SC 2 fl oz	1	1.3 e <sup>x</sup>	40.27 a
Bravo Weather Stik 6SC 32 fl oz	1-3		
Ranman 3.33SC 2.75 fl oz	2		
Previcur Flex 6F 19.2 fl oz	3		
Peacemaker			
Ranman 3.33SC 2.75 fl oz	1	3.0 de	37.67 ab
Bravo Weather Stik 6SC 32 fl oz	1-3		
Previcur Plex 6F 19.2 fl oz	2		
Zampro 4.33SC 14 fl oz	3		
Peacemaker			
Bravo Weather Stik 6SC 32 fl oz	1-3	3.7 de	33.27 abc
Peacemaker			
Orondis Opti 406SC 2 fl oz	1	4.7 de	42.53 a
Bravo Weather Stik 6SC 32 fl oz	1-3		
Ranman 3.33SC 2.75 fl oz	2		
Previcur Flex 6F 19.2 fl oz	3		
Citadel			
Non-treated	N/A	6.3 de	32.67 a-d
Peacemaker			
Ranman 3.33SC 2.75 fl oz	1	9.3 cd	30.00 a-d
Bravo Weather Stik 6SC 32 fl oz	1-3		
Previcur Flex 6F 19.2 fl oz	2		
Zampro 4.33SC 14 fl oz	3		
Citadel			
Bravo Weather Stik 6SC	1-3	10.0 cd	33.47 abc
Citadel			
Orondis Opti 406SC 2 fl oz	1	15.7 bc	29.87 a-d
Bravo Weather Stik 6SC 32 fl oz	1-3		
Ranman 3.33SC 2.75 fl oz	2		
Previcur Flex 6F 19.2 fl oz	3		
Vlaspik			

Non-treated	N/A		
Citadel		17.0 bc	33.97 abc
Ranman 3.33SC 2.75 fl oz	1		
Bravo Weather Stik 6SC 32 fl oz	1-3		
Previcur Plex 6F 19.2 fl oz	2		
Zampro 4.33SC 14 fl oz	3		
Vlaspik		17.0 bc	22.13 b-e
Ranman 3.33SC 2.75 fl oz	1		
Bravo Weather Stik 6SC 32 fl oz	1-3		
Previcur Plex 6F 19.2 fl oz	2		
Zampro 4.33SC 14 fl oz	3		
Expedition		18.0 bc	22.53 b-e
Bravo Weather Stik 6SC 32 fl oz	1-3		
Expedition		19.3 b	22.67 b-e
Bravo Weather Stik 6SC 32 fl oz	1-3		
Vlaspik		20.3 b	19.60 cde
Orondis Opti 406SC 2 fl oz	1		
Bravo Weather Stik 6SC 32 fl oz	1-3		
Ranman 3.33SC 2.75 fl oz	2		
Previcur Flex 6F 19.2 fl oz	3		
Expedition		21.0 b	26.07 a-e
Non-treated	N/A		
Expedition		33.0 a	15.80 de
Non-treated	N/A		
Vlaspik		34.0 a	11.20 e

<sup>z</sup> Disease rating scale based on percent necrotic foliage caused by *P. cubensis*.

<sup>y</sup> Application dates: 1=16 Sep, 2=23 Sep and 3=30 Sep

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