CUCUMBER (*Cucumis sativus* 'Arabian')
Downy mildew; *Pseudoperonospora cubensis*

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Evaluation of fungicides for control of downy mildew on cucumber, Clayton 2015.

The experiment was conducted at the Central Crops Research Station in Clayton, NC (N35°40.054'; W078°30.299'). Plots were single beds on 5-ft centers covered with black 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 soybeans. Cucumber was direct seeded on 7 Aug (2-ft in-row spacing, 2 seed/hill) in raised beds and thinned to one plant per hill after emergence (7 plants/plot). Irrigation and fertilization were applied via drip tape. Treatments were randomized into four complete blocks. Fungicide treatments were applied using a CO_2-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 five with a two-nozzle boom (19-in. spacing). Applications were made on 7-day intervals: 25 and 31 Aug, 8, 15, 22 and 29 Sep and 6 and 13 Oct. Disease severity was assessed on 15, 22 and 29 Sep and 6, 13 and 21 Oct as percent leaf area with necrosis per plot. Fruit were harvested on 18 and 25 Sep and 2, 9 and 16 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 15 Sep at approximately 1% disease severity in the field and progressed throughout the course of the trial. Ranman and Previcur Flex tank mixed with Bravo Weather Stik controlled *P. cubensis* when compared to the non-treated and also had the highest weight of marketable fruit. No other treatment provided a commercially acceptable level of downy mildew control. No phytotoxicity was observed. In the table, treatments are sorted by disease severity on 21 Oct.

Treatment and rate of product per acre	Application No.	Disease Severity* (%) 22 Sep	6 Oct	21 Oct	Mkt Yield (lb/plot)
Ranman 3.33SC 2.5 oz	1,3,5,7				
Previcur Flex 6F 1.2 pt	2,4,6,8				
Bravo Weather Stik 6SC 1.5 pt	1-8	4.7 c**	19.6 d	39.0 f	28.9 a
Experimental 4.5 oz	1,3,5,7				
Previcur Flex 6F 1.2 pt	2,4,6,8				
Bravo Weather Stik 6SC 1.5 pt	2,4,6,8	5.0 c	23.4 cd	50.8 ef	19.1 ab
Zampro 4.33SC 14.0 fl oz	1,3,5,7				
Ranman 3.33SC 2.75 fl oz	2,4,6,8				
Bravo Weather Stik 6SC 1.5 pt	1-8	7.7 bc	27.7 bcd	58.5 de	25.6 ab
Presidio 4SC 4 fl oz	1,3,7				
Ranman 3.33SC 2.75 fl oz	2,4,6,8				
Zampro 4.33SC 14.0 fl oz	5				
Bravo Weather Stik 6SC 1.5 pt	1-8	4.9 c	28.9 bc	60.4 de	28.6 ab
Zing! 4.9SC 36 fl oz	1,3,5,7				
Induce 90L 0.125% v/v	1,3,5,7				
Ranman 3.33SC 2.75 fl oz	2,4,6,8				
Bravo Weather Stik 6SC 1.5 pt	2,4,6,8	5.0 c	29.0 bc	66.4 cd	20.8 ab
Zing! 4.9SC 32 fl oz	1,3,5,7				
Induce 90L 0.125% v/v	1,3,5,7				
Ranman 3.33SC 2.75 fl oz	2,4,6,8				
Bravo Weather Stik 6SC 1.5 pt	2,4,6,8	8.0 bc	37.0 b	78.4 bc	24.9 ab
Ranman 3.33SC 2.5 fl oz (14-day)	1,5				
Previcur Flex 6F 1.2 pt (14-day)	3,7				
Bravo Weather Stik 6SC 1.5 pt (14-day)	1,3,5,7	4.4 c	38.0 b	83.8 b	19.5 ab
Bravo Weather Stik 6SC 1.5 pt	1-8	7.8 bc	37.7 b	85.0 b	21.8 ab
Experimental 4.5 oz	1-8	19.4 ab	77.5 a	98.9 a	19.5 ab
Non-treated	N/A	36.8 a	93.7 a	99.9 a	15.1 b

* 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).