

Evaluation of fungicides for control of downy mildew on cucumber, Clayton 2016.

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 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 tobacco. Cucumber was direct seeded on 9 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 (4-0-8, N-P-K) were applied via drip tape on 31 Aug, 7, 14, 21 and 28 Sep and 6 Oct. Treatments were randomized into four complete blocks. Fungicide treatments were applied using a CO₂-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 one with a two-nozzle boom (19-in. spacing). Applications were made on 13, 20 and 29 Sep and 5 Oct. Disease severity was assessed on 27 Sep and 5 Oct as percent leaf area with necrosis per plot. Fruit were harvested on 23 and 30 Sep and 7 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 13 Sep at approximately 2% disease severity in the field and progressed throughout the course of the trial. Ranman alternated with Previcur Flex and Bravo Weather Stik controlled *P. cubensis* when compared to the non-treated. 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 5 Oct.

Treatment and rate of product per acre	Application no. ^y	Disease severity ^z (%)	
		27-Sep	5-Oct
Ranman 3.33SC 2.75 fl oz	1, 4		
Previcur Flex 6F 19.2 fl oz	2		
Bravo Weather Stik 6SC 2 pt	3	11.5 c ^x	39.3 b
OxiPhos 14L 2 qt	1-4	34.5 a	71.3 a
CX-4380 SP 2.1 lb/100 gal	1-4	28.5 ab	71.3 a
ProPhyt 4.2SC 4 pt	1-4		
Kocide 3000 46.1DF 1 lb	1, 3		
Cabrio 20EG 10 oz	2, 4	25.3 b	72.0 a
CX-4380 SP 8.4 lb/100 gal	1-4	27.8 ab	72.3 a
CX-4380 SP 4.2 lb/100 gal	1-4	33.0 a	76.5 a
Non-treated	N/A	36.0 a	78.5 a

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

^y Application dates: 1=13 Sep, 2=20 Sep, 3=29 Sep and 4=7 Oct.

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