

Delayed fungicide application to cucumber and the effects of downy mildew severity and yield II, 2007.

The experiment was conducted on the Horticultural Crops Research Station in Clinton, NC (coordinates N35°01.35', W78°17.11'). Seed was planted on 29 Aug. Irrigation by a linear sprinkler system was used as needed. Treatments were randomized into four complete blocks. Plots were bare ground single rows on 36-in. centers, 20 ft long with 5-ft borders on each end. Treated rows were alternated with non-treated rows. Fungicide treatments were applied using a CO₂-pressurized backpack sprayer equipped with a single nozzle and a 2-nozzle (19-in. spacing) handheld boom with hollow cone nozzles (TXVS-26) calibrated to deliver 40 gal/A at 45 psi. The first three applications were made with a single-nozzle boom, and the remaining applications were made using the 2-nozzle boom. Treatments were initiated when the majority of plants had two true leaves. Treatments were applied on 7-day intervals with applications on 12, 19, 26 Sep; 3, 10, and 17 Oct. Disease severity was rated on 26 Sep; 10, 17, and 24 Oct. Fruit were harvested on 15 and 29 Oct.

Downy mildew was detected on the day of the third fungicide application (26 Sept). Disease pressure was high because downy mildew was present in an adjacent cucumber trial at time of planting. The cultivar Lafayette (Nunhems) is reported as resistant to downy mildew, but this resistance was inadequate to control the disease. Dry weather throughout the Southeast was responsible for keeping downy mildew at low levels early in the season; however the disease progressed rapidly after a cool, rainy period in mid-Sept. Downy mildew was visible throughout the trial by the fourth application. Our 2006 trial (PDMR 1:107) emphasized the importance of early detection and fungicide selection and timeliness. This study and our study in 2005 (F&N 61:V104) indicate the importance of early application of fungicides for the control of downy mildew, especially when disease pressure is high. If plants were not treated within 2 to 3 weeks of disease detection, treatments had little or no effect on disease control. It is also evident that combination treatment (locally systemic + protectant) was superior to the protectant-only treatment regardless when it was applied during that 2-to-3-week time period.

Treatment, rate of product per acre	Disease Severity ^z		Total Yield (lb/plot)	Percent (%) Unmarketable
	AUDPC	24 Oct		
Non-treated.....	1540.0 ab ^y	85.0 ab	1.3 g	96.4 abc
Tanos 50DF, 8 oz + Manzate Pro-Stick 75DG, 2 lb alt. w/ Previcur Flex 6F, 1.2 pt + Bravo Weather Stik 6SC, 2 pt (1,2,3,4,5,6) ^x	896.9 f	61.3 f	4.9 a	63.3 f
Previcur Flex 6F, 1.2 pt + Bravo Weather Stik 6SC, 2 pt alt. w/ Tanos 50DF, 8 oz + Manzate Pro-Stick 75DG, 2 lb (2,3,4,5,6).....	984.4 ef	62.5 f	5.1 a	63.0 f
Tanos 50DF, 8 oz + Manzate Pro-Stick 75DG, 2 lb alt. w/ Previcur Flex 6F, 1.2 pt + Bravo Weather Stik 6SC, 2 pt (3,4,5,6).....	1071.9 e	58.8 f	4.2 b	70.5 ef
Previcur Flex 6F, 1.2 pt + Bravo Weather Stik 6SC, 2 pt alt. w/ Tanos 50DF, 8 oz + Manzate Pro-Stick 75DG, 2 lb (4,5,6).....	1242.5 d	71.3 e	2.7 cd	87.3 cd
Tanos 50DF, 8 oz + Manzate Pro-Stick 75DG, 2 lb alt. w/ Previcur Flex 6F, 1.2 pt + Bravo Weather Stik 6SC, 2 pt (5,6).....	1522.5 ab	81.3 a-d	1.6 fg	99.4 ab
Previcur Flex 6F, 1.2 pt + Bravo Weather Stik 6SC, 2 pt alt. w/ Tanos 50DF, 8 oz + Manzate Pro-Stick 75DG, 2 lb (6).....	1645.0 a	86.3 a	1.3 g	98.1 ab
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Manzate Pro-Stick 75DG, 2lb (1,2,3,4,5,6).....	1229.4 d	71.3 e	2.9 c	84.2 d
Manzate Pro-Stick 75DG, 2lb (2,3,4,5,6).....	1325.6 cd	77.5 d	2.8 c	79.0 de
Manzate Pro-Stick 75DG, 2lb (3,4,5,6).....	1312.5 d	80.0 bcd	2.4 cde	73.0 ef
Manzate Pro-Stick 75DG, 2lb (4,5,6).....	1448.1 bc	78.8 cd	2.0 def	89.2 bcd
Manzate Pro-Stick 75DG, 2lb (5,6).....	1566.2 ab	80.0 bcd	1.7 fg	99.3 ab
Manzate Pro-Stick 75DG, 2lb (6).....	1566.2 ab	83.8 abc	1.8 efg	100.0 a
LSD (P=0.05)	142.3	6.6	0.74	11.0

^zDisease rating scale based on percentage of necrotic foliage (0-100).

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

^xNumbers in parentheses represent the weeks that fungicides were applied.