

Evaluation of fungicides for control of downy mildew of cucumber II, 2007.

The experiment was conducted at the Horticultural Crops Research Station in Clinton, NC (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 and hand-held boom equipped 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 a 2-nozzle boom (19-in. spacing). 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 Sept; 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 Sep). 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. Downy mildew had a dramatic impact on cucumber yield, and the proportion of culls (by weight) generally increased with the level of disease. Treatments that resulted in the lowest percentage of disease and highest yield included Presidio, Previcur Flex, Tanos, Curzate, Gavel and Ranman. Previcur Flex when applied alone did not perform as well as the combination treatments. These products also performed well in our 2004 (F&N 60:V059), 2005 (F&N 61:V103) and 2006 (PDMR 1:V122) trials. In addition, four years of data indicate that traditional downy mildew fungicides, including Cabrio, Quadris and Ridomil Gold no longer effectively control this disease. Presidio (fluopicolide) performed very well in this test, resulting in the lowest area under disease progress curve (AUDPC) and in the highest range for total yield and lowest range for percentage unmarketable fruit.

Treatment, rate of product per acre	AUDPC	Disease severity ^z 24 Oct	Total yield (lb/plot)	Percent (%) unmarketable
Presidio 4SC, 3 fl oz (1-6) ^y	708.7 h ^x	56.3 j	7.9 a	54.3 k
Curzate 60DF, 3.2 oz + Manzate Pro-Stick 75DG, 3lb (1,3,5) alt. w/ Previcur Flex 6F, 1.2 pt + Manzate Pro-Stick 75DG, 3 lb (2,4,6)	883.7 g	65.0 i	7.0 ab	57.3 ijk
Ranman 400SC, 2.75 fl oz + Silwet L-77, 2 fl oz (1,3,5) alt. w/ Previcur Flex 6F, 1.2 pt + Manzate Pro-Stick 75DG, 3 lb (2,4,6)	927.5 fg	66.3 hi	6.5 bc	62.8 h-k
Tanos 50DF, 8 oz + Manzate Pro-Stick 75DG, 3 lb (1,3,5) alt. w/ Previcur Flex 6F, 1.2 pt + Manzate Pro-Stick 75DG, 3 lb (2,4,6).....	988.7 fg	70.0 ghi	6.1 bc	68.3 g-j
Gavel 75DF, 2 lb (1,3,5) alt. w/ Previcur Flex 6F, 1.2 pt + Manzate Pro-Stick 75DG, 3 lb (2,4,6)	1006.2 fg	71.3 fgh	5.5 c	62.2 h-k
Manzate Pro-Stick 75DG, 3 lb (1,2); Tanos 50DF, 8 oz + Manzate Pro-Stick 75DG, 3 lb (3,5) alt. w/ Previcur Flex 6F, 1.2 pt + Manzate Pro-Stick 75DG, 3 lb (4,6)	1071.9 ef	71.3 fgh	5.9 bc	56.3 jk
Bravo Weather Stik 6SC, 2 pt (1-6).....	1168.1 de	76.3 ef	3.4 de	75.8 efg
Manzate Pro-Stik 75DG, 3 lb (1-6)	1181.2 cde	77.5 de	3.8 de	71.6 fgh
Cabrio 20EG, 8 oz (1,3,5) alt. w/ Bravo Weather Stik 6SC, 2 pt (2,4,6).....	1181.2 cde	78.8 cde	2.8 ef	97.4 a
Previcur Flex 6F, 1.2 pt (1-6)	1190.1 cde	75.0 efg	3.4 de	81.2 c-f
Endura 70W, 2 pt (1,3,5) alt. w/ Bravo Weather Stik 6SC, 2 pt (2,4,6)	1198.7 cde	80.0 b-e	2.6 ef	83.9 cde
Pristine 38WG 2 pt (1,3,5) alt w/ Bravo Weather Stik 6SC, 2 pt (2,4,6)	1225.0 cde	77.5 de	3.1 de	81.8 c-f
Ridomil Gold Bravo 78WP, 2lb (1,3,5) alt. w/ Bravo Weather Stik, 6SC, 2 pt (2,4,6).....	1242.5 cd	78.8 cde	4.2 d	68.8 ghi
Kocide 3000 46DF, 1lb + Bravo Weather Stik 6SC, 2 pt (1-6).....	1268.7 cd	77.5 de	3.2 de	78.6 d-g
Quadris 2.08SC, 11 fl oz (1,3,5) alt. w/ Bravo Weather Stik 6SC, 2 pt (2,4,6).....	1308.1 bcd	82.5 a-d	2.9 def	89.8 a-d
Kocide 3000 46DF, 1lb (1-6)	1330.0 bc	80.0 b-e	2.6 ef	84.5 b-e
Revus 250SC, 8 oz + Activator 90, .125% v/v (1-6).....	1426.2 ab	82.5 a-d	1.8 fg	92.9 abc
Cabrio 20EG, 14 oz (1.6)	1531.25 a	83.8 abc	1.6 fg	97.4 a
Ridomil Gold 4EC, .25 pt (1-6).....	1548.7 a	83.8 abc	1.2 g	96.2 ab
Non-treated.....	1548.7 a	86.3 a	1.3 g	96.6 a
LSD (P=0.05)	169.13	6.0	1.4	12.78

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

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

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