

**Evaluation of fungicides for control of downy mildew of cucumber, 2004.**

The experiment was conducted in a commercial cucumber field near Spivey's Corner, NC (coordinates: N35°11.847; W78°29.451). Soil type was classified as Goldsboro loamy sand. Seed was planted on 25 Aug. No irrigation was used. Treatments were randomized into four complete blocks. Plots were bare ground single rows on 42-in. centers, 20-ft long with 5-ft borders on each end. Border rows separated each treatment row. Fungicide treatments were applied using a CO<sub>2</sub> backpack sprayer equipped with a 2-nozzle (19-in spacing), handheld boom and hollow cone nozzles (TXVS-18) set to deliver 40 gal/A at 45 psi. Treatments were initiated at the two-leaf stage. Treatments were initially applied on a 7-day interval but this was shortened to a 5-day interval due to intense disease pressure. Applications were made on 9, 15, 22, 27 Sep, 1, 6, 12, 18, 22, 27 Oct, and 2 Nov. Disease severity was evaluated on 22, 29 Sep, 6, 12, 19, 26 Oct, 2, and 9 Nov. Fruit were harvested on 12, 19, 26 Oct, 2, and 9 Nov. Trial was terminated by frost on 11 Nov.

Downy mildew was first detected on 15 Sep (4 true leaf stage) and progressed rapidly. Downy mildew pressure was extremely high in the area beginning in late May. This, along with non-treated border rows between plots represented a worst-case scenario for disease control. Cultivar Jackson (Nunhems seed) is considered resistant to downy mildew, but this and other downy mildew resistant cultivars suffered great losses during this year's epidemic. Conditions were unfavorable for disease development for 7 to 10 days around 1 Oct, and plants began to recover until conditions again became favorable. Most treatments were ineffective, including several that have performed well in previous years, i.e., Ridomil Gold Bravo, Cabrio, Pristine. Vine growth was severely stunted in the ineffective treatments and few, if any, fruit were produced. Only the first rating was based on percent necrosis of foliage, because thereafter, differences in control were best represented by vine length and yield. In the table, treatments are sorted by yield of No. 1 fruit. By 27 Sep, these four treatments were easily distinguished from other treatments and remained so thereafter. Treatment combinations that included Tanos, Gavel, Ranman, and Previcur Flex performed well. By 22 Oct, downy mildew lesions were present in all treatments except Previcur Flex. Phytotoxicity was present in all plots that had been treated with Bravo Weather Stik. Phytotoxicity consisted of tan to white blotches on the upper side of leaves and may have caused some stunting of young plants. No phytotoxicity to fruit was observed.

Treatment, rate of product per acre	Downy mildew severity <sup>z</sup>	Vine length (in.) <sup>y</sup>	Vine length (AUVLC) <sup>x</sup>	Total yield (lb/plot)	
	22 Sep	26 Oct	26 Oct	No. 1	Cull
Non-treated	25.0 a <sup>w</sup>	8.0 e	522 f	0.0 d	0.0 d
Rannolipids, 8 oz + Saf-T-Side, 16 oz	26.3 a	9.0 de	610 ef	0.0 d	0.1 d
Cabrio 20EG, 14 oz alt. w/ Bravo Weather Stik 6SC, 2 pt	27.5 a	11.3 cde	689 ef	0.1 d	0.9 cd
Quadris 2.08SC, 13 oz alt. w/ Bravo Weather Stik 6SC, 2 pt	27.5 a	10.6 de	675 ef	0.1 d	0.7 cd
ProPhyt 4L, 4 pt (1) <sup>v</sup>					
Cabrio 20EG, 12 oz (2,4,6,8,10)					
ProPhyt 4L, 4 pt + Bravo Weather Stik 6SC, 2 pt (3,5,7,9,11)	23.8 a	12.6 cde	691 ef	0.3 d	1.2 cd
Ridomil Gold 4EC, 2 pt (1 surface application)					
Cabrio 20EG, 14 oz alt. w/ Bravo Weather Stik 6SC, 2 pt	25.0 a	11.8 cde	716 ef	0.5 d	1.2 cd
Cabrio 20EG, 14 oz alt. w/ Bravo Weather Stik 6SC, 2 pt (after disease appears)	22.5 a	11.1 cde	739 ef	0.5 d	1.2 cd
Pristine 38WG, 15 oz alt. w/ Bravo Weather Stik 6SC, 2 pt	26.3 a	11.8 cde	704 ef	0.7 d	1.1 cd
Ridomil Gold Bravo 76.5WP, 2 lb alt. w/ Cabrio 20EG, 14 oz	10.0 b	14.1 cd	874 de	1.1 d	2.1 abc
Prev-Am, 50 oz/100 gal + Bravo Weather Stik 6SC, 2 pt	8.8 b	12.3 cde	765 ef	1.32 d	1.8 bc
Bravo Weather Stik 6SC, 2 pt	9.3 b	16.6 bc	1022 cd	2.7 d	1.9 bc
Ranman 400SC, 2.75 oz + Silwet 100L, 2 oz alt.w/ Bravo Weather Stik 6SC, 2 pt	4.0 b	19.0 b	1174 bc	6.7 c	2.2 abc
Gavel 75DF, 2 lb alt. w/ Bravo Weather Stik 6SC, 2 pt	9.3 b	28.0 a	1554 a	12.1 b	3.5 a
Previcur Flex 6F, 1.2 pt + Bravo Weather Stik 6SC, 2 pt	5.8 b	24.5 a	1328 b	12.2 b	3.1 ab
Tanos 50WG, 8 oz + Manzate 75WG, 2 lb alt. w/ Curzate 60DF, 3.2 oz + Bravo Weather Stik 6SC, 2 pt	5.8 b	26.5 a	1639 a	19.2 a	3.1 ab
LSD ( <i>P</i> =0.05)	6.2	3.6	179	2.4	1.1

<sup>z</sup> Disease rating scale based on percent necrotic foliage (0-100%).

<sup>y</sup> Vine length in inches was measured from the soil to the tip of the vine in 4 plants per plot.

<sup>x</sup> AUVLC = Area under the vine length curve; calculated the same as area under the disease progress curve.

<sup>w</sup> Values are the means of 4 replicate plots; treatments followed by the same letter(s) within a column are not significantly different (*P*=0.05, Student-Newman-Keuls).

<sup>v</sup> numbers in parentheses represent the sequence that fungicides were applied.