

Evaluation of fungicides for control of downy mildew on cucumber, Clayton 2013.

The experiment was conducted at the Central Crops Research Station in Clayton, NC (N35°40.069'; W078°30.396'). Plots were single beds on 5-ft centers covered with black plastic mulch; 20-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 followed by wheat as a cover crop. Cucumber was direct seeded on 14 Aug (2-ft in-row spacing, 2 seed/hill) in raised beds and thinned to one plant per hill after emergence (10 plants/plot). Irrigation and fertilization were applied via drip tape. 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 two spray applications were made with a single-nozzle boom and the last four with a two-nozzle boom (19-in. spacing). Applications were made on a 7-day interval: 13, 20 and 27 Sep and 4, 11 and 18 Oct. Disease severity was assessed on 27 Sep and 4, 11, 18 and 25 Oct as percent leaf area with necrosis. Data was 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 5% disease severity in the field and progressed throughout the course of the trial. The treatment with the lowest level of disease severity on 25 Oct was A18269A alternated with Manzate Pro-Stick. Treatments combining A18269A with Manzate Pro-Stick and Zampro + Bravo Weather Stik alternated with Previcur Flex also controlled downy mildew effectively. Treatments combining Zampro, Bravo Weather Stik and Ranman and those with Ranman and Manzate Pro-Stick were moderately effective at suppressing *P. cubensis*. No other treatments provided commercially acceptable levels of disease control. In the table, treatments are sorted by disease severity on 25 Oct.

Treatment and rate of product per acre, applied at 7-day intervals	Disease Severity* [% DM]		
	27 Sep	11 Oct	25 Oct
A18269A 0.83OD 0.6 fl oz + Induce 90L 0.25% v/v alt w/ Manzate Pro-Stick 75WG 3 lb + Induce 90L 0.25% v/v	8.8 f**	13.5 h	15.5 g
A18269A 0.83OD 0.6 fl oz + Manzate Pro-Stick 75WG 3 lb + Induce 90L 0.25% v/v alt w/ Manzate Pro-Stick 75WG 3 lb + Induce 90L 0.25% v/v	12.3 c-f	21.8 g	32.8 f
Zampro 525SC 14 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt alt w/ Previcur Flex 6F 1.2 pt	15.5 bc	25.5 fg	36.5 f
Zampro 525SC 14 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt	12.3 c-f	27.5 f	45.5 e
Ranman 400SC 2.5 fl oz + Manzate Pro-Stick 75WG 3 lb + Induce 90L 0.25% v/v alt w/ Manzate Pro-Stick 75WG 3 lb + Induce 90L 0.25% v/v	10.5 ef	33.0 e	47.5 e
Zampro 525SC 14 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt alt w/ Ranman 400SC 2.75 fl oz + Induce 90L 0.25% v/v	9.3 f	33.0 e	48.3 de
Ranman 400SC 2.75 fl oz + Induce 90L 0.25% v/v alt w/ Zampro 525SC 14 fl oz + Induce 90L 0.25% v/v	11.5 def	28.8 ef	53.8 d
Zampro 525SC 14 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt alt w/ Tanos 50WG 8 oz	13.0 b-e	42.8 d	60.0 c
Zampro 525SC 14 fl oz + Induce 90L 0.25% v/v + Bravo Weather Stik 6SC 2 pt alt w/ Presido 4SC 4 fl oz + Induce 90L 0.25% v/v	13.5 b-e	39.0 d	61.5 c
MBI-10605 5SC 2 qt + Induce 90L 0.25% v/v	14.0 b-e	54.8 c	87.5 b
MBI-110 100L 4 qt + Induce 90L 0.25% v/v	16.0 b	58.0 bc	88.3 b
MBI-10605 5SC 2 qt + MBI-110 100L 2 qt + Induce 90L 0.25% v/v	15.5 bc	62.5 b	92.5 ab
MBI-110 100L 8 qt + Induce 90L 0.25% v/v	14.8 bcd	57.5 c	94.8 a
MBI-110 100L 12 qt + Induce 90L 0.25% v/v	16.0 b	62.5 b	96.5 a
Non-Treated.....	23.5 a	70.5 a	97.0 a

* 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 $k=100$).