CUCUMBER (*Cucumis sativus* 'Diva')
Downy mildew; *Pseudoperonospora cubensis*

H.W. Lange, C.D. Smart, and A.J. Seaman
Plant Pathology and Plant-Microbe Biology Section, SIPS
NYS Integrated Pest Management Program
Cornell University, NYSAES
Geneva, NY 14456-0462

Evaluation of fungicides allowed for organic production on downy mildew of cucumber, 2015.

The trial was conducted on a field managed using practices allowed for organic production since 2008 at the New York State Experiment Station in Geneva, NY. An overwintered triticale cover crop was plowed under in Jun. 'Diva' seeds were sown into 50-cell flats in an organic mix on 12 May. Seedlings were maintained in the greenhouse and watered regularly until transplanted on 6 Jul. Granular Fertrell fertilizer 5-5-3 was applied under the plastic at 20# N/A. The transplants were set by water wheel transplanter into raised beds with 1.25 mil black polyethylene and drip irrigation with a solution of 0.5oz/gal Fertrell fish oil emulsion applied to each planting hole. Eight treatments and an untreated control were arranged in a randomized complete block design with four replications. Each plot consisted of six plants spaced 18 in apart with 7 ft between rows and 3 ft between treatments. The tomatoes were irrigated to provide approximately 1 in of water per week during the trial. Sprays were applied with a CO_2 pressurized backpack sprayer at 40 psi delivering 40 gal/A through two TeeJet 8002VS flat fan nozzles spaced 19 in apart. The three plant activator treatments were applied 16 and 23 Jul. All products were included in the final three sprays 30 Jul and 6 and 13 Aug and plants were evaluated for the percent leaf area covered with downy mildew lesions six times between 30 Jul and 17 Aug. These data were evaluated with ANOVA using the area under the disease progress curve (AUDPC) as well as LSD means at each rating date. Average maximum temperatures for Jul and Aug were 78.3 and 76.8˚F; average minimum temperatures were 59.8 and 58.6˚F. Rainfall amounts (in.) were 3.46 and 2.63 for Jul and Aug, respectively.

The downy mildew moved into the field rapidly with severity over 50% in the untreated controls within 10 days and almost 80% of leaves exhibiting downy mildew lesions within 17 days of symptom expression. While the severity of downy mildew was significantly less with all treatments than in the untreated control plots, disease was not well controlled with any of the products at the last rating. No phytotoxicity was observed with any of the treatments. This work was supported by the USDA National Institute of Food and Agriculture, Hatch project 1001267. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the National Institute of Food and Agriculture (NIFA) or the United States Department of Agriculture (USDA).

		% Severity[z]					
Treatment and Rate/A	AUDPC[y] mean[x]	30 Jul	3 Aug	6 Aug	10 Aug	13 Aug	17 Aug
Champ 30 WG 0.25 lb	319.3 b	1.3 ab	11.0 ab	19.3 ab	36.3 b	40.0 bc	50.0 bc
Cueva FL 1 gal/100 gal	232.4 b	0.9 ab	7.0 ab	14.0 ab	18.5 b	28.8 c	47.5 bc
Double Nickel LC 32 fl oz	306.0 b	3.5 a	10.5 ab	18.3 ab	31.3 b	41.3 bc	50.0 bc
Nordox 75 WG 1.25 lb	229.3 b	1.3 ab	3.8 b	10.3 ab	21.3 b	33.8 bc	45.0 c
Zonix. 38 fl oz/50 gal	257.3 b	2.3 ab	7.3 ab	16.5 ab	26.3 b	33.8 bc	43.8 c
Actinovate AG[w] 12 oz/50 gal	301.3 b	1.3 ab	5.3 ab	8.5 b	30.0 b	48.8 ab	57.5 b
Regalia EC[w] 3 pt/50 gal	257.5 b	0.5 b	5.3 ab	8.3 b	25.0 b	38.8 bc	51.3 bc
Regalia + Actinovate[w] 12 oz + 3 pt/50 gal	236.0 b	1.5 ab	7.0 ab	7.8 b	22.5 b	31.3 bc	48.8 bc
Non-treated control Not Applicable	483.8 a	3.3 a	16.0 a	28.3 b	56.3 a	60.0 a	77.5 a

[z] Mean severity of four repetitions.
[y] Area under the disease progress curve.
[x] Values followed by the same letter within a column are not significantly different (Fishers LSD, P=0.05).
[w] Plant activator product.