CUCUMBER, SUMMER (*Cucumis sativus* 'Liszt')
Downy mildew; *Pseudoperonospora cubensis*

Y.I. Rosado-Rivera and L. M. Quesada-Ocampo,
Department of Entomology and Plant
Pathology, and NC Plant Sciences Initiative,
NC State University, Raleigh, NC 27606

Evaluation of fungicides for downy mildew management on cucumbers, Clinton 2022.

The experiment was conducted at the Horticultural Crops Research Station in Clinton, NC. Experimental plots were single raised beds on 5-ft centers covered with white plastic mulch; 14-ft long with 5-ft fallow borders on each end and non-treated guard rows on each side. The field was planted last year with soybean as a rotational crop. Cucumber was directly seeded on 21 Jun (2-ft in-row spacing, 2 seed/hill) and thinned to one plant per hill after emergence (7 plants/plot). Irrigation and fertilization (4-0-8, N-P-K) were applied via drip tape. Seven treatments and the non-treated control were tested in a randomized complete block design with four repetitions. Fungicide treatments were applied using a CO_2-pressurized backpack sprayer equipped with a single-nozzle, handheld boom with a hollow cone nozzle (TXVS-26) delivering 40 gal/A at 35 psi. Applications were made on 20 and 29 Jul and 4, 11 and 18 Aug. Disease severity per plot was assessed on 20 and 29 Jul, 3, 10, 17 and 24 Aug. Data were analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and Fisher's protected least significant differences (LSD) test to separate the means.

Downy mildew was first detected on 18 Jul at approximately 5% disease severity in the field. No phytotoxicity was observed in the experiment. At the last disease severity data obtained on 24 Aug, week 9 after planting the treatment Ranman was statistically different from the non-treated control, but not for other treatments. The disease summary for the season (AUDPC) did not indicate any statistical difference. Yields were assessed every week (4 data points) as marketable and non-marketable (summarized as total marketable and total non-marketable). For the marketable yields the treatment Previcur Flex was statistically different from the non-treated control, but not for other treatments. For the non-marketable Zampro was statistically different from the control but not for other treatments.

Treatments	Rate Fl oz /Acre	Disease Severity[z] (%) 24 Aug – Week 9	AUDPC[y]	Marketable Yields[x] (lbs./treatment)	Non-marketable Yields (lbs./treatment)
Non-treated control	–	75.0 a[w]	1429.13 a	27.7 e	11.5 c
Ranman 34.5%	2.75	51.3 c	904.00 a	51.03 abc	19.83 ab
Orondis Opti 33.7%	32.0	68.8 ab	1297.25 a	44.1 bcd	16.95 abc
Previcur Flex 66.5%	19.2	66.3 abc	1224.75 a	60.65 a	14.85 bc
Omega 500 40%	24.0	52.5 bc	1014.25 a	52.4 ab	18.98 ab
Zampro 47.1%	14.0	71.3 a	1283.75 a	48.85 abc	20.55 a
Presidio 39.5%	4.0	77.5 a	1455.38 a	33.2 de	16.35 abc
Revus 23.3%	8.0	68.8 ab	1186.63 a	38.65 cde	14.9 bc

[z] Disease rating scale based on percent necrotic foliage caused by *P. cubensis.* / Data point 24 Aug, 9 weeks after planting.

[y] Area under disease progress curve for total of all the foliar diseases present. AUDPC = $\sum_{i=1}^{n-1} \frac{y_i+y_{i+1}}{2} x(t_{i+1}-t_i)$

[x] Marketable and non-marketable total yields (lbs./treatment).

[w] Treatments followed by the same letter(s) within a column are not statistically different (P=0.05, Fisher's Protected LSD).