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

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Evaluation of cucumber cultivars for downy mildew management, Clinton 2022.

The trial was performed 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. Cucumber varieties were 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). Regular cultural practices like irrigation and fertilization (4-0-8, N-P-K) were applied via drip tape. Twelve cultivars were tested in a randomized complete block design with four repetitions. 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 means.

Downy mildew was first detected on 18 Jul at approximately 5% disease severity in the field. The disease severity data obtained on 10 Aug, 7 weeks after planting the variety Peacemaker, was statistically different from the variety Liszt (susceptible control) but not for other varieties. The disease summary for the season (AUDPC) showed that all cucumber cultivars were statistically different from Lizst except the cultivar WI7821, being Peacemaker with the lowest disease value. 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 variety Peacemaker and Chaperon were statistically better from the variety Liszt, but not for other treatments. For the non-marketable yields, Gy14Q2 was the variety with more weight per treatment compared with Jumbo G/L that got the lowest weight per treatment.

Varieties	Disease Severity[z] (%) 10 Aug – Week 7	AUDPC[y]	Marketable Yields[x] (lbs./treatment)	Non-marketable Yields (lbs./treatment)
Hyper C	43.8 bc[w]	1118.50 bcd	43.75 ab	18.33 bcd
Encounter	35 cde	944.63 cd	44 ab	17.7 cd
Jumbo G/L	32.5 cde	952.75 cd	25.7 cd	8.5 e
WI7821	56.3 ab	1602.88 ab	14.28 e	29.8 a
WI7822	40 bcd	1190.00 bcd	18.15 de	13.75 de
PI 197088	30 cde	841.63 cd	35.55 bc	16.9 cd
Gy14DH	47.5 bc	1382.38 bc	18.55 de	17.9 cd
Peacemaker	20 e	625.25 d	52.7 a	16.15 cde
Citadel	47.5 bc	1306.13 bc	42.7 ab	22.25 abc
Chaperon	21.3 de	750.63 cd	51.55 a	20.75 bcd
Liszt	73.8 a	1941.75 a	30.7 c	13.1 de
Zircon	47.5 bc	1156.13 bcd	34.1 bc	26.5 ab

[z] Disease rating scale based on percent necrotic foliage caused by *P. cubensis*. / Week 7 after planting, 10 Aug.

[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).