

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

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Evaluation of cultivars for control of downy mildew on cucumber, Kinston 2018.

The experiment was conducted at the Cunningham Research Station in Kinston, NC (N35°18.331’; W077°34.884’). Plots were single beds, 14 ft in length on 5-ft centers, covered with white plastic mulch with 5-ft fallow borders on each end and non-treated guard rows on each side. The previous year the field was planted with sweetpotato. Cucumber was direct seeded on 17 Jul (2-ft in row spacing, 2 seed/hill) in raised beds and was thinned to one plant per hill after emergence (7 plants/plot). Eight non-treated cucumber varieties with varying resistance to downy mildew were included in the trial. Irrigation and fertilization (4-0-8, N-P-K) were applied weekly via drip tape. Varieties were randomized into four complete blocks. Disease severity was assessed on 22 Aug, 29 Aug, 5 Sep, and 11 Sep as percent leaf area with necrosis per plot. Fruit were harvested from entire plots on 21 Aug, 27 Aug, 5 Sep, 11 Sep, and 27 Sep, and marketable yield was determined based on cucumber shape. Data were analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and Fisher’s protected least significant difference (LSD) test to separate means ($P=0.05$).

Downy mildew was first detected on 20 Aug at approximately 2% disease severity in the field and advanced throughout the course of the trial. PI 330628 had significantly less downy mildew than other cultivars on 5 Sep. Peacemaker had the highest yield when compared to other cultivars but was not significantly different from PI 330628 or PI 197088. Due to most varieties having greater than 85% disease severity by the 11 Sep rating, in the table below, varieties are sorted by disease severity on 5 Sep.

Variety	Disease severity (%) [*]		Total marketable yield (lb)
	29 Aug	5 Sep	
PI 330628	6.3 f ^{**}	12.5 e	62.78 ab
PI 197088	8.8 f	23.8 d	55.33 ab
PI 605996	16.3 e	26.3 d	38.73 c
Peacemaker	25.0 d	41.3 c	66.50 a
Poinsett 76	31.3 c	46.3 bc	20.40 d
Citadel	30.0 c	48.8 b	50.43 bc
Arabian	46.3 a	75.0 a	19.0 d
Vlaspik	41.3 b	75.0 a	14.20 d

^{*}Disease severity was based on the percent necrotic foliage per plot caused by *P. cubensis*.

^{**} Means followed by the same letter(s) within a column are not statistically different ($P=0.05$, Fisher’s Protected LSD).