

Evaluation of cultivars in combination with fungicides for control of downy mildew and yield effects on cucumber, Clinton 2018.

The experiment was conducted at the Horticultural Crops Research Station in Clinton, NC. 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 with non-treated guard rows on each side. The previous year the field was planted with cucumber. Cucumber was direct seeded on 25 Jul (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. Treatments were randomized into four complete blocks. Fungicide treatments were applied using a CO₂-pressurized backpack sprayer equipped with hollow cone nozzle (TXVS-26). Applications were made on 17, 24 and 31 Aug and 7 Sep. Disease severity was assessed on 24 and 31 Aug and 7 and 11 Sep as percent leaf area with necrosis per plot. Fruit were harvested on 4 and 11 Sep. Data were analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and Fisher’s Protected LSD test to separate means.

Downy mildew was first detected on 17 Aug at approximately 2% disease severity in the field and progressed throughout the course of the trial. All treatments presented significantly less disease and better plant vigor when compared to the non-treated Expedition. Peacemaker treated with Actinovate had the lowest disease level and a high level of plant vigor. Expedition treated with Orondis Opti, Ranman and Previcur Flex and Citadel treated with Actigard, Actinovate or Aliette had the highest marketable yields. No phytotoxicity was observed. No further disease evaluations or yield assessments were conducted due to the trial being destroyed by Hurricane Florence.

Treatment and rate of product per acre	Applicatio n no. ^y	Disease severity ^z (%)		Vigor rating ^w 11 Sep	Marktable yield (lb/plot)
		31 Aug	11 Sep		
Actinovate (Peacemaker) 10SP 12 oz	1-4	4.0 d ^x	11.8 f	7.3 a	23.65 cde
Untreated Peacemaker	N/A	4.5 d	13.8 ef	7.5 a	26.75 bcd
Actigard (Peacemaker) 50WG 1 oz	1-4	4.0 d	14.3 ef	7.3 a	27.55 bcd
Aliette (Peacemaker) 80WDG 5 oz	1-4	4.3 d	14.8 ef	6.8 abc	22.38 de
Orondis Opti (Exp) 0.83OD 2 fl oz	1,4				
Ranman (Expedition) 3.33SC 2.75 fl oz	2				
Induce (Expedition) SL 0.25% v/v	2				
Previcur Flex (Exp) 6F 19.2 fl oz	3	4.3 d	18.3 def	6.5 abc	35.35 a
Actigard (Citadel) 50WG 1 oz	1-4	7.3 c	18.5 de	7.0 ab	30.95 ab
Actinovate (Citadel) 10SP 12 oz	1-4	7.3 c	21.8 cd	6.5 abc	35.95 a
Ranman (Exp) 3.33SC 2.75 fl oz	1,3				
Induce (Expedition) SL 0.25% v/v	1,3				
Previcur Flex (Exp) 6F 19.2 fl oz	2,4	7.3 c	23.0 cd	5.8 cd	35.90 a
Non-treated Citadel	N/A	7.8 c	23.8 cd	6.5 abc	28.85 bc
Aliette (Citadel) 80WDG 5 oz	1-4	7.0 c	26.8 c	6.0 bcd	35.10 a
Bravo Weather Stik (Exp) 6SC 32 fl oz	1-4	11.0 b	38.8 b	5.0 d	26.55 bcd
Non-treated Expedition	N/A	20.8 a	61.0 a	2.5 e	20.40 e

^z Disease rating scale based on percent necrotic foliage caused by *P. cubensis*.

^y Application dates: 1=17 Aug, 2=24 Aug, 3=31 Aug, 4=7 Sep.

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

^w Plant vigor rating scale (1=Poor, 10=Good)