

Evaluation of fungicides for control of downy mildew on hop, Clayton 2017.

The experiment was conducted at the Central Crops Research Station in Clayton, NC (N35°40.054'; W078°30.299'). 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 previous year the field was planted with rye. Hop was transplanted on 21 Jul (2-ft in-row spacing, 7 plants/plot). Irrigation and fertilization (4-0-8, N-P-K) were applied via drip tape on 18, 23 and 30 Aug, 6, 13, 20 and 27 Sep and 4 Oct. Treatments were randomized into four complete blocks. Fungicide treatments were applied using a CO₂-pressurized backpack sprayer equipped with a single-nozzle, handheld boom with a hollow cone nozzle (TXVS-26) delivering 40 gal/A at 45 psi. Applications were made on 26 Jul, 9 and 24 Aug, 7 and 21 Sep, 5 and 19 Oct and 2 Nov. Disease severity was assessed on 22 and 29 Sep and 5, 12, 19 and 27 Oct and 2 Nov as percent leaf area with necrosis per plot. 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 22 Sep at approximately 2% disease severity in the field and progressed throughout the course of the trial. Presidio, Revus, Orondis Opti A and Ranman all managed *P. humuli* when compared to the non-treated. No phytotoxicity was observed. In the table, treatments are sorted by disease severity on 2 Nov.

Treatment and rate of product per acre	Application no. ^y	Disease severity ^z (%)		
		5-Oct	19-Oct	2-Nov
Presidio 4SC 4 fl oz	1-8			
Induce 100L 0.25% V/V	1-8	21.5 b ^x	29.0 b	41.3 b
Revus 2.08SC 8 fl oz	1-8	22.5 b	30.8 b	42.0 b
Orondis Opti A 0.83OD 0.3 fl oz	1-8	27.0 b	34.8 b	44.8 b
Ranman 3.33SC 2.75 fl oz	1-8			
Induce 100L 0.25% V/V	1-8	23.8 b	33.5 b	46.3 b
Non-treated	N/A	39.0 a	52.3 a	66.3 a

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

^y Application dates: 1=26 Jul, 2=9 Aug, 3=24 Aug, 4=7 Sep, 5=21 Sep, 6=5 Oct, 7=19 Oct and 8=2 Nov.

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