

Evaluation of the efficacy of selected fungicides to control rust and powdery mildew on spearmint, 2001

The experiment was conducted in a commercial spearmint field near Beloit, WI. The field was established in Apr 2000 and rust caused extensive defoliation in the crop that summer. The field was treated according to standard commercial practices except that the grower did not apply fungicide to the area where the experimental plots were located. Plots were 16 ft by 19 ft and there were four replications. Experimental treatments were mixed in 1.75 gal water and applied with a backpack sprayer equipped with a 4-nozzle hand boom, and XR11003VS nozzles delivering approximately 33 GPA. Application and harvest dates were: June 15 (initial fungicide application), July 20 (first harvest of mint hay), August 24 (second fungicide application, after mint regrowth), October 26 (second harvest); October 29 (final fungicide application). Foliar disease severity was rated for four areas in each plot (each approximately 3 ft x 3 ft) on July 13, August 24 and October 11 using the Horsfall-Barratt system. On July 20 a 15-ft-wide swath was cut through each plot using commercial equipment and a 10-ft-long section of the resulting windrow from the center of each plot was weighed. On October 26 a 7.5-ft-wide swath was cut through each plot using a hand sickle bar mower and the hay harvested from this area (75 ft by 16 ft) was weighed.

Minimal disease pressure (rust or powdery mildew) was observed before the first cutting and it was not until mid-October that significant differences in disease severity were noted between treatment plots. Single applications of Nova, Tilt, Quadris or BAS 500 on June 15 did not control late season rust or powdery mildew developing on regrowth after the first harvest. A two-spray sequence (1st spray on June 15 and the 2nd spray on August 24 after the 1st harvest) using Nova/Tilt, Tilt/Nova or Quadris/Nova provided control of both rust and powdery mildew. The overall best control of foliar diseases was observed in those plots treated with Nova on the second spray day, August 24 while plots treated with Tilt on this date had only marginally more disease. The amount of foliar disease observed in these plots did not affect the yield of hay from either the first or second cutting. Some plots were treated on October 29, after the second cutting, with Nova, Tilt or Quadris. The plots were not plowed prior to winter. In the spring of 2002, plots will be evaluated for emergence, plant stand and foliar diseases prior to the first cutting.

Treatment and rate (formulated product)	Application schedule			Foliar disease severity (%) ¹					Yield (Ton/A)	
	Pre-harvest	After harvest & regrowth	After 2 nd harvest	Rust			Powdery Mildew Oct 11	Total Oct 11	Jul 20 ²	Oct 26 ³
				Jul 13	Aug 24	Oct 11				
Untreated				1.6	0.1	23.1	14.6	61.7	15.0	1.3
Nova, 5 oz	◆			1.0	0.1	20.1	12.0	47.7	13.3	1.3
Tilt, 4 fl oz	◆			1.5	0.4	20.8	10.8	54.7	14.4	1.6
Quadris, 6.2 fl oz	◆			1.0	0.0	24.6	10.5	60.9	13.0	1.3
BAS 500, 6.2 fl oz	◆			1.5	0.0	24.8	14.1	46.1	13.1	1.5
Nova, 5 oz	◆									
Tilt, 4 fl oz		◆		0.6	0.0	16.1	8.5	41.0	14.2	1.6
Tilt, 4 fl oz	◆									
Nova, 5 oz		◆		1.3	0.0	11.4	7.6	21.7	13.9	1.8
Quadris, 6.2 fl oz	◆									
Nova, 5 oz		◆		0.3	0.0	9.7	6.4	24.6	15.7	1.6
Nova, 5 oz	◆		◆							
Tilt, 4 fl oz		◆		1.6	0.1	10.2	15.8	36.9	14.6	1.5
Tilt, 4 fl oz	◆		◆							
Nova, 5 oz		◆		1.2	0.0	5.3	8.2	22.9	13.7	2.2
Quadris, 6.2 fl oz	◆		◆							
Nova, 5 oz		◆		0.0	0.1	10.2	10.2	33.2	15.9	1.9
Quadris, 6.2 fl oz			◆	1.0	0.0	23.7	16.1	58.6	14.7	1.5
Pr > F ⁴				0.01	0.09	0.03	0.05	< 0.01	0.97	< 0.01
LSD ⁴				0.9	0.3*	13.4	6.5	17.4	NS	0.4

- 1 Disease severity was rated on a Horsfall-Barratt scale of 0 (no infection) to 11 (all foliage and stems dead). Ratings were converted to percentages. Rust and powdery mildew severity and total defoliation were estimated separately (the separate estimates do not necessarily add up to the combined defoliation figure as they were done independently).
- 2 A 15-ft-wide swath was cut through all plots. A 10-ft-long section of the windrowed hay was weighed from each plot. Yield for this 150-ft² area was converted to Ton/A.
- 3 A 7.5-ft-wide swath was cut through all plots. A 16-ft-long section of the windrowed hay was weighed from each plot. Yield for this 120-ft² area was converted to Ton/A.
- 4 Analysis of variance was performed on data, and Fisher's protected least significant difference (LSD) was calculated. NS = not significant at P = 0.10. * = differences between pairs of treatments were significant at P = 0.10 (but not at P = 0.05).

