

Control of stripe rust of spring wheat with foliar fungicides, 2004.

The study was conducted in a field with Palous silt loam under natural infection of stripe rust near Pullman, WA. Urea (46 -0-0) was applied at 60 lb/A at the time of cultivation. Susceptible 'Lemhi' spring wheat was seeded at 60 lb/A in rows 12 in. apart with an experimental drill planter on 22 Apr 04. Harmony Extra 0.33 oz plus Buctril 0.75 pt/A with Agridex at 1% of spray volume was applied on 20 May. Hoelon 3EC at 2.5 pt/A was applied on 23 May when plants were at tillering stage. Ammonium sulfate (20-0-0-24) was broadcast at 30 lb/A on 18 Jun when plants were at early boot stage. Fungicides were applied in 16 gal water/A on 19 Jun at boot stage when Lemhi had 10% of stripe rust severity. Sprays were applied between 7:30 a.m. and 8:45 p.m. when wind was between 0 and 6 mph and temperatures were between 57°F and 64°F. A 601C backpack sprayer from R & D Sprayers Inc. was used with a C3470 regulator and a 2.5 lb CO₂ cylinder. The spray boom had four nozzles 19 in. apart, but three were used because of the width of the plots. The spray pressure was 18 psi. A second spray of Quilt 14 fl oz/A plus COC at 1% of spray volume was applied on 2 Jul at heading stage only for the first treatment with Quilt at 7 fl oz/A. A randomized block design was used with four replications for each treatment. Stripe rust severity (percent of diseased foliage) was assessed for each plot on 21 Jun, 3 days after fungicide application at boot stage; 19 Jul, 30 days after fungicide application at milk stage; and 26 Jul, 37 days after fungicide application at soft dough stage. Plots were individually measured at the time of harvest and plot area ranged from 103.6 to 117.0 sq ft. Plots were harvested on 8 Sep when kernels were naturally dry, and test weight of kernels was measured for each plot. Rust, test weight, and yield data were subjected to analysis of variance and means were separated by Fishers protected LSD test.

Stripe rust severity in non-treated control plots was 14, 85, and 100% on 21 Jun, 19 Jul, and 26 Jul, respectively. All treatments significantly reduced stripe rust severity at 3 and 30 days after application. On 26 Jul, 37 days after the first application, only treatments with Quilt and Tilt significantly reduced rust severity. Although there were significant differences among treatments, fungicide treated plots had test weights either significantly lower than the non-treated control in plots treated with Headline or not significantly different from the control in plots treated with other fungicides. All fungicide treatments except Stratego significantly increased grain yield compared to the non-treated control.

Treatment, rate/A, and timing of application ^z	Stripe rust (%) ^y			Test weight (lb/bu)	Yield ^x	
	21 Jun Early boot	19 Jul Milk	26 Jul Soft dough		Mean (bu/A)	Increase (%)
Tilt 4 fl oz (boot-19 Jun)	3.0	5.0	21.3	53.5	56.0	48.1
Quilt 14 fl oz (boot-19 Jun).....	2.5	13.8	35.0	52.7	55.8	47.6
Quilt 7 fl oz (boot-19 Jun) + Quilt 14 fl oz (heading-2 Jul)....	0.0	0.0	0.0	53.4	53.8	42.3
Headline 9.0 fl oz (boot-19 Jun)	2.8	35.0	97.5	51.8	49.0	29.6
Headline 6 fl oz (boot-19 Jun).....	0.5	32.5	92.5	52.0	47.8	26.5
Stratego 10 fl oz (boot-19 Jun).....	5.5	42.5	90.0	52.4	44.5	17.7
Non-Treated Control.....	13.8	85.0	100.0	53.2	37.8	
LSD ($P \leq 0.05$).....	7.5	8.9	10.2	1.1	7.2	

^zCrop Oil Concentrate (COC) was applied in all treatments, except for the non-treated control, at 1% v/v.

^yStripe rust severity was recorded as percentage of leaf area with disease.

^xYield (lb/A) calculated based on 3-5% moisture and test weight (lb/bu) measured for each plot.