BARLEY (*Hordeum vulgare* 'Russell')
Stripe rust; *Puccinia striiformis* f. sp. *hordei*

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Control of stripe rust of spring barley 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 'Russell' spring barley was seeded in rows 12 in. apart at 60 lb/A 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 wheat plants were at joint stage. Ammonium sulfate (20-0-0-24) was broadcast at 30 lb/A on 18 Jun when plants were at booting stage. Fungicides were applied in 16 gal water/A on 19 Jun at boot stage when Russell had no stripe rust. 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 CO_2 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 of each treatment. Stripe rust severity (percentage 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 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 severity, 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 1, 75, and 100% on 21 Jun, 19 Jul, and 26 Jul, respectively. All treatments significantly reduced stripe rust severity on the three data-recording dates except for Stratego on 26 Jul. Treatments did not have a significant effect on test weight. All fungicide treatments increased yield compared with the non-treated control, but only the treatments with two applications of Quilt or one application of Tilt increased yield significantly. The late development of barley stripe rust may explain the relatively small effect of the disease on barley yield.

Treatment, rate/A, and timing of application[z]	Stripe rust (%)[y]			Test	Yield[x]	
	21 Jun Boot	19 Jul Milk	26 Jul Dough	weight (lb/bu)	Mean (lb/A)	Increase (%)
Quilt 7 fl oz (boot-19 Jun) + Quilt 14 fl oz (heading-2 Jul)	0.0	0.0	0.0	47.2	5479.8	39.2
Tilt 4 fl oz (boot-19 Jun)	0.0	1.3	17.5	46.9	4813.8	22.3
Quilt 14 fl oz (boot-19 Jun)	0.0	0.3	0.8	47.0	4648.3	18.1
Stratego 10 fl oz (boot-19 Jun)	0.0	22.5	92.5	46.9	4507.0	14.5
Headline 6 fl oz (boot-19 Jun)	0.0	1.8	35.0	46.8	4436.3	12.7
Headline 9.0 fl oz (boot-19 Jun)	0.3	2.0	13.8	47.1	4325.8	10.0
Non-Treated Control	1.0	75.0	100.0	45.9	3936.8	
LSD ($P \leq 0.05$)	0.4	9.8	10.0	1.3	819.48	

[z]Crop Oil Concentrate (COC) was applied in all treatments, except for the non-treated control at 1% v/v.
[y]Stripe rust severity was recorded as percentage of leaf area with disease.
[x]Yield (lb/A) calculated based on 3-5% moisture and test weight (lb/bu) measured for each plot.