

Control of stripe rust of winter 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 'PS 279' and 'Hatton' winter wheat cultivars were seeded in rows spaced 14 in. apart at 60 lb/A with an experimental drill planter on 22 Oct 03. Harmony Extra 0.33 oz plus Buctril 0.75 pt/A with Agridex at 1% of spray volume was applied on 29 Apr when wheat plants were at tillering stage. Ammonium sulfate (20-0-0-24) was broadcast at 30 lb/A on 4 Jun when wheat plants were at boot stage. Fungicides were applied in 16 gal water/A on 6 Jun at boot stage when PS 279 and Hatton had 1% of stripe rust severity. Sprays were applied when wind was between 4 and 6 mph and temperature was about 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 16 Jun at heading stage only after the first treatment with Quilt at 7 fl oz/A. A randomized block design was used with four replications for each treatment. Plots were individually measured at the time of harvest, and plot area ranged from 111.8 to 115.2 sq ft. Stripe rust severity (percentage of diseased foliage) was assessed for each plot on 14 Jun or 8 days after fungicide application at boot to heading stage; 28 Jun or 22 days after fungicide application at milk stage; and 12 Jul or 36 days after fungicide application at soft dough stage. Plots were harvested on 15 Aug 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 of PS 279 was 26, 84, and 90% on 14 Jun, 28 Jun, and 12 Jul, respectively. Similarly, Hatton had 23, 100, and 93% rust severity in non-treated control plots on the three data recording dates, respectively. All fungicide treatments effectively reduced stripe rust severity and increased yield and test weight significantly compared to the non-treated control on both PS 279 and Hatton. Two applications of Quilt were significantly better than Headline at 6 or 9 fl oz/A in reducing stripe rust severity on PS 279 on 28 Jun and 12 Jul. On Hatton, only the treatment of Headline at 6 fl oz was significantly less effective than two applications of Quilt in reducing stripe rust severity on 28 Jun, but not 12 Jul.

Treatment, rate/A, and timing of application ^z	Stripe rust (%) ^y			Test weight (lb/bu)	Yield ^x	
	14 Jun Boot-head	28 Jun Milk	12 Jul Soft dough		Mean (bu/A)	Increase (%)
PS 279						
Quilt 7 fl oz (boot-6 Jun) + Quilt 14 fl oz (heading-16 Jun)...	0.0	0.3	0.3	59.3	110.5	67.4
Quilt 14 fl oz (boot-6 Jun).....	0.0	5.0	18.8	58.5	105.5	59.8
Stratego 10 fl oz (boot-6 Jun).....	0.0	4.0	26.3	58.5	101.8	53.3
Tilt 4 fl oz (boot-6 Jun).....	0.0	7.5	21.3	58.3	100.8	52.7
Headline 9.0 fl oz (boot-6 Jun).....	0.0	13.8	37.5	58.0	98.5	49.2
Headline 6 fl oz (boot-6 Jun).....	0.0	13.8	45.0	58.0	96.3	45.9
Non-treated control.....	26.3	83.8	90.0	55.5	66.0	
LSD ($P \leq 0.05$).....	17.1	12.4	27.8	2.0	15.4	
Hatton						
Tilt 4 fl oz (boot-6 Jun).....	0.0	4.0	4.0	62.5	113.0	58.0
Quilt 7 fl oz (boot-6 Jun) + Quilt 14 fl oz (heading-16 Jun)...	0.0	5.0	5.0	63.0	112.3	57.1
Headline 9.0 fl oz (boot-6 Jun).....	0.0	6.3	8.8	62.5	110.0	53.8
Stratego 10 fl oz (boot-6 Jun).....	0.0	1.8	12.8	61.8	109.0	52.4
Quilt 14 fl oz (boot-6 Jun).....	0.0	0.5	1.8	62.8	108.5	51.7
Headline 6 fl oz (boot-6 Jun).....	0.0	13.8	12.5	62.3	107.3	50.1
Non-treated control.....	22.5	100.0	92.5	60.0	71.5	
LSD ($P \leq 0.05$).....	14.8	6.6	11.5	1.8	14.6	

^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.