

Title: Effect of fungicide rate, combinations and application timing on stripe rust control in winter wheat. 2017.

Objective: Evaluate fungicides for crop tolerance and stripe rust control in winter wheat.

Materials and Methods:

Colter winter wheat was planted with a SeedMaster no-till air-drill on September 30, 2016 along with a fertilizer drill-blend of N-P-K at 0-30-70 lb/A, respectively. The previous crop was a forage mix of barley, oat and pea. A supplemental fertilizer application of 75-0-40 was broadcast to the winter wheat crop on May 1, 2017. Huskie Complete was applied at 13.7 oz/A on May 9, 2017 to control weeds. Fungicide treatments were applied at herbicide timing on May 10<sup>th</sup> and at the flag leaf stage on May 31 using a CO2 backpack sprayer equipped with TeeJet XR11002 nozzles in a volume of 20 GPA. Less than two percent of the crop showed signs of infection at either application timing.

Results:

All treatments afforded excellent crop tolerance (data not presented). However, stripe rust control varied among the treatments. Treatments applied at herbicide timing failed to provide season long control, regardless of the product. However, excellent stripe rust control was obtained when treatments were applied at flag leaf, or when treatments were applied at herbicide timing followed by an application at flag leaf. The exception was Alto applied a flag leaf, which had an infection level of 27 percent. Ironically, Alto applied at flag leaf produced the highest grain yield and the highest protein content.

Summary:

Application timing had the biggest effect on stripe rust control with treatments that included flag leaf applications affording the greatest level of control. There was little difference among fungicide products or tankmix combinations.

Table 1. Materials and Methods.

Seeding Date:	9/30/2016	Harvest Date:	8/1/2017
Julian Date:	274	Julian Date:	213
Seeding Rate:	125 lb/A	Soil Type:	Creston SiL
Previous Crop:	Forage mix	Soil Test:	61-46-354
Tillage:	Conventional	Fertilizer:	0-30-70, 75-0-40

Table 2. Effect of fungicide rate and application timing on stripe rust control. Kalispell, MT 2017.

Trt	Treatment	Rate	Timing <sup>1</sup>	6/2	6/12	6/26	8/1	8/1	8/1
				SR %	SR %	SR %	YLD bu/A	PRO %	TWT lb/bu
1	Check			2.0	3.7	95.0	56.8	10.40	59.0
2	Alto	4 fl oz/a	A	2.7	1.3	63.3	53.5	10.59	59.1
	Induce 90 SL	0.125 % v/v	A						
3	Trivapro	9.4 fl oz/a	A	1.0	1.5	65.0	60.7	10.13	59.6
	Induce 90 SL	0.125 % v/v	A						
4	Priaxor	1 fl oz/a	A	1.3	1.3	85.0	59.8	10.25	59.6
	Headline	3.5 fl oz/a	A						
	Tilt	1.5 fl oz/a	A						
	Induce 90 SL	0.125 % v/v	A						
5	Alto	4 fl oz/a	B	1.0	0.5	27.3	62.9	10.77	59.7
	Induce 90 SL	0.125 % v/v	B						
6	Trivapro	13.7 fl oz/a	B	1.0	0.2	2.3	59.7	10.71	60.1
	Induce 90 SL	0.125 % v/v	B						
7	Priaxor	1.5 fl oz/a	B	2.3	0.3	1.7	59.5	10.73	59.8
	Headline	5 fl oz/a	B						
	Tilt	2.5 fl oz/a	B						
	Induce 90 SL	0.125 % v/v	B						
8	Alto	4 fl oz/a	A	2.0	0.0	1.7	61.6	10.67	60.0
	Induce 90 SL	0.125 % v/v	A						
	Trivapro	13.7 fl oz/a	B						
	Induce 90 SL	0.125 % v/v	B						
9	Trivapro	9.4 fl oz/a	A	1.7	0.2	1.7	59.3	10.53	59.8
	Induce 90 SL	0.125 % v/v	A						
	Trivapro	13.7 fl oz/a	B						
	Induce 90 SL	0.125 % v/v	B						
10	Priaxor	1 fl oz/a	A	1.7	0.3	0.7	57.0	10.60	59.4
	Headline	3.5 fl oz/a	A						
	Tilt	1.5 fl oz/a	A						
	Induce 90 SL	0.125 % v/v	A						
	Priaxor	1.5 fl oz/a	B						
	Headline	5 fl oz/a	B						
	Tilt	2.5 fl oz/a	B						
	Induce 90 SL	0.125 % v/v	B						
11	Tebuconazole 3.6F	4 fl oz/a	A	1.0	1.2	43.7	55.6	10.34	59.0
	Activator 90	0.125 % v/v	A						
12	Tebuconazole 3.6F	4 fl oz/a	B	1.7	0.0	1.7	53.9	10.41	59.6
	Activator 90	0.125 % v/v	B						
13	Tebuconazole 3.6F	4 fl oz/a	A	1.3	0.2	0.7	56.6	10.25	59.7
	Activator 90	0.125 % v/v	A						
	Tebuconazole 3.6F	4 fl oz/a	B						
	Activator 90	0.125 % v/v	B						
14	Tebuconazole 3.6F	4 fl oz/a	B	2.0	0.5	0.0	57.3	10.50	59.7
	<b>Mean</b>			<b>1.6</b>	<b>0.8</b>	<b>27.8</b>	<b>58.1</b>	<b>10.49</b>	<b>59.6</b>
	LSD P=.05			1.689	0.983	21.248	5.77	0.362	0.676
	CV			62.16	73.42	45.49	5.91	2.06	0.68
	Pr>F			0.6059	0.0001	0.0001	0.0645	0.0178	0.039

SR: Stripe rust, YLD: Yield, PRO: Protein, TWT: Test weight.

A<sup>1</sup>: Herbicide timing, B: Flag leaf