

Title: Fungicide Evaluation in Winter Wheat – 2015

Objective: To evaluate application timings and rates of Headline for the control of stripe rust in winter wheat.

Results:

Headline was applied to Decade winter wheat at two rates (6 and 9 fl oz/A) and two growth stages (two tiller and flag leaf), either as single or sequential applications on May 1 and May 20, respectively (Table 2). The application of Headline resulted in significant differences for percent stripe rust infection, yield, and test weight. Stripe rust infection averaged 25.2%, and ranged from 7.7% to 61.7 percent. Most treatments afforded commercially acceptable control. However, the 6 oz/A rate applied at the two tiller stage of growth produced infection levels comparable to the non-treated check. In turn, yields were statistically equivalent between these two treatments.

An analysis was performed to evaluate the economic feasibility of sequential fungicide applications. The highest adjusted gross return (\$497.20) was obtained with 9 oz/A applied as a single application at flag leaf (Table 3). Conversely, the least profitable fungicide treatment (\$413.50) was 9 oz/A applied sequentially. This occurred despite having the highest level of stripe rust control. In short, there was not a direct relationship between stripe rust control and profitability.

Further, there was not a direct relationship between yield and profitability. Although the sequential application at 6 fl oz/A afforded the highest yield at 109.9 bu/A, the adjusted gross return was \$495.60 per acre. The benefit of making two applications at the 6 fl oz/A rate compared to a single application at flag leaf was \$4.70. In comparison the financial loss of sequential applications at the 9 fl oz/A compared to the single application at flag leaf was \$83.70/A.

Summary:

Headline was effective at controlling stripe rust and the most economical application timing was at flag leaf at 9 fl oz/A.

Table 1. Materials and Methods - Effect of Fungicide on Winter Wheat, Kalispell - 2015

Seeding Date:	9/29/2014	Harvest Date:	7/28/2015
Julian Date:	272	Julian Date:	209
Seeding Rate:	80 lbs/A	Soil Type:	Creston SiL
Previous Crop:	Canola	Soil Test:	29-10-158
Tillage:	Conventional	Fertilizer:	9-40-70, 130-0-0 TD
Irrigation:	None	Herbicide:	Huskie 11 oz/A

Table 2. Effect of Headline on agronomic performance of winter wheat, Kalispell, MT - 2015

Application Timing	Rate fl oz/A	HD Julian	SR %	LOD %	YLD ¹ bu/A	PRO ² %	TWT ¹ lb/bu
Two Tillers + Flag Leaf	9	153.0	7.7	0.0	97.9	10.2	61.6
Two Tillers + Flag Leaf	6	153.3	10.7	0.0	109.9	9.8	62.1
Flag Leaf	9	153.7	10.7	0.0	107.0	10.1	61.3
Flag Leaf	6	153.0	15.0	0.0	103.6	10.1	61.7
Two Tillers	9	153.0	24.3	0.0	96.5	9.7	60.5
Two Tillers	6	153.3	46.7	0.0	88.2	9.5	60.9
Check		152.7	61.7	2.7	78.8	9.8	59.7
Mean		153.1	25.2	0.4	97.4	9.9	61.1
CV		0.5	63.4	375.6	10.2	3.5	1.3
LSD		ns	28.5	ns	17.7	ns	1.4
Pr>F		0.7783	0.0079	0.2622	0.0269	0.2849	0.0380

HD: heading date, SR: stripe rust, LOD: lodging, YLD: yield, PRO: protein, TWT: test weight, ns: nonsignificant

¹ adjusted to 13% moisture, ² adjusted to 12% moisture

Table 3. Economic analysis for the application of Headline fungicide to winter wheat for stripe rust control.

Application timing	Rate fl oz/A	YLD bu/A	Gross Return \$5.00/bu	Headline Application Cost per Acre \$3.67/oz	Adjusted Cost per Acre \$5.00	Gross Return \$/Acre
Flag leaf	9	107.0	535.20	33.00	5.00	497.20
Two tillers + Flag leaf	6	109.9	549.60	44.00	10.00	495.60
Flag leaf	6	103.6	517.90	22.00	5.00	490.90
Two tillers	9	96.5	482.30	33.00	5.00	444.30
Two tillers	6	88.2	441.00	22.00	5.00	414.00
Two tillers + Flag leaf	9	97.9	489.60	66.10	10.00	413.50
Check		78.8	393.90	0.00	0.00	393.90
Mean		97.4	487.07	.	.	449.90
CV		10.2	10.2	.	.	11.1
LSD		17.7	88.4	.	.	88.4
Pr>F		0.0269	0.0269	.	.	0.0942

YLD: yield