

Project Title: Evaluation of Headline Fungicide in Spring Wheat

Project Leader: Bob Stougaard

Project Personnel: Qingwu Xue

Objective: Evaluate the effect of application timing of Headline for disease control in diverse spring wheat varieties.

Results:

Foliar diseases are common place in spring wheat grown in northwestern Montana. This study was conducted to evaluate the fungicide Headline for disease control among a diverse group of spring wheat varieties that varied in susceptibility to foliar diseases.

The experimental design was a split-plot, randomized complete block with four replications. Headline was applied at the labeled rate of 0.10 lb ai/A to 8 different spring wheat varieties. The spring wheat varieties consisted of Agawam, Amidon, Jefferson, Vida and 1372, Reeder, Scholar and Nick. Cultivars were seeded on April 28, to a depth of 2 inches, on 6-inch row spacings, at a rate of 16 plants ft². Individual plots consisted of seven rows, 15 feet in length. Headline was applied with a tractor mounted sprayer in 20 GPA with a non-ionic surfactant at 0.125% v/v on June 3 and June 23, when the majority of spring plants were in the fifth and flag leaf stages of development, respectively.

Plots were visually evaluated for foliar disease infection and leaf senescence (leaf area duration) every two weeks after the last application until leaf senescence was complete. Spring wheat yield and test weight were determined at crop maturity.

There was no response to Headline regardless of the variety evaluated. This lack of response is primarily due to the abnormally cool temperatures which prevented foliar diseases from developing in 2008. In addition, random, localized insect damage limited the ability to detect treatment effects. The insect in question is a member of the family Bibionidae, the larval stage of which feeds on the wheat root system and reduces water and nutrient uptake. The localized damage inflated experimental error and prevented the detection of treatment effects. This was especially true for yield, where differences among varieties were not observed.

Summary:

Diseases failed to develop which prevented an assessment of fungicide efficacy. Although diseases failed to develop, localized insect damage did occur and this limited our ability to detect yield differences among varieties.

Future plan:

Continued to evaluate fungicides for major cereal diseases in district 1.

Table 1. Effect of Headline application timing on percent foliar diseases infection.

Cultivar	Percent Foliar Disease								
	7/9/2008			7/24/2008			8/1/2008		
	Check	5-leaf	Flag	Check	5-leaf	Flag	Check	5-leaf	Flag
Agawam	0	0	0	0	0	0	0	0	0
Amidon	0	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0	0
Vida	0	0	0	0	0	0	0	0	0
1372	0	0	0	0	0	0	0	0	0
Reeder	0	0	0	0	0	0	0	0	0
Scholar	0	0	0	0	0	0	0	0	0
Nick	0	0	0	0	0	0	0	0	0
Mean	0	0	0	0	0	0	0	0	0
LSD (0.05)									
Fungicide (F)		NS			NS			NS	
Cultivar (CV)		NS			NS			NS	
F*CV		NS			NS			NS	

Table 2. Effect of Headline application timing on percent leaf area duration.

Cultivar	Percent Leaf Area Duration								
	7/9/2008			7/24/2008			8/1/2008		
	Check	5-leaf	Flag	Check	5-leaf	Flag	Check	5-leaf	Flag
Agawam	99	97	100	80	75	84	16	17	17
Amidon	97	99	100	84	84	86	39	37	37
Jefferson	97	95	97	81	76	82	31	22	22
Vida	99	99	99	91	86	87	60	59	54
1372	92	87	92	86	80	77	35	36	26
Reeder	99	97	99	85	80	82	39	46	32
Scholar	99	97	100	77	69	74	31	30	27
Nick	99	97	97	77	72	74	21	14	17
Mean	98	96	98	83	78	81	34	33	29
LSD (0.05)									
Fungicide (F)		1.5			NS			NS	
Cultivar (CV)		2.4			8.4			10.6	
F*CV		NS			NS			NS	

Table 3. Effect of Headline application timing on height, yield and test weight.

Cultivar	Height (cm)			Yield (bu/A)			Test weight (lb/bu)		
	Check	5-leaf	Flag	Check	5-leaf	Flag	Check	5-leaf	Flag
Agawam	71	64	67	81	65	76	64.4	63.0	64.7
Amidon	84	81	84	77	74	78	62.0	62.6	62.3
Jefferson	68	65	66	77	65	68	63.1	62.8	63.1
Vida	70	67	69	76	71	68	62.3	62.2	62.2
1372	73	66	76	73	59	70	61.4	61.3	61.4
Reeder	70	65	72	74	64	72	63.2	63.2	63.3
Scholar	80	76	76	72	63	67	63.2	63.1	62.8
Nick	63	60	59	83	71	75	63.2	63.3	63.1
Mean	72	68	71	77	67	72	62.8	62.7	62.8
LSD (0.05)									
Fungicide (F)		NS			NS			NS	
Cultivar (CV)		7.4			NS			0.4	
F*CV		NS			NS			0.8	