

Title: The Effect of Fungicide Application Timing on Stripe Rust Control in Winter Wheat - 2016

Objective: To evaluate the impact of application timing on the efficacy of new and standard fungicide products.

Materials and Methods:

Five fungicide products were applied to coincide with spring herbicide timing or at flag leaf stage to evaluate the effect of application timing on the control of stripe rust. The experimental design was a randomized complete block with three replications. Decade winter wheat was planted on a 7.5 inch row spacing to a depth of two inches on October 1, 2015. Fungicide treatments were applied the following spring using a CO₂ backpack sprayer with Teejet XR11002 nozzles in 20 GPA of water. The herbicide timing treatments were applied on April 15 when the wheat was at the two-tiller stage and seven inches tall. The flag leaf treatments were applied on May 13 when the crop was 22 inches in height.

Results:

Stripe rust infection was observed early in the spring, with symptoms becoming more severe as the season progressed. Initially at the May 18 rating stripe rust infection was less where fungicide treatments had been applied at herbicide timing. However, the flag leaf treatments proved to be more beneficial in suppressing stripe rust as the season progressed. On average, herbicide timing treatments had an infection level of 69% and yielded 57 bu/A compared to an infection level of 40% and 84 bu/A for the flag leaf treatments.

Summary:

Of the early application treatments, Quilt Xcel was the only product to produce yields significantly greater than the check. Nevertheless, the greatest efficacy and highest yields were associated with the flag leaf application timing. Trivapro afforded the greatest control of stripe rust. However, tebuconazole produced yields equivalent to the newer fungicides.

Table 1. Materials and Methods.

Julian Date:	275	Julian Date:	228
Seeding Rate:	100 lb/A	Soil Type:	Creston SiL
Previous Crop:	Spring wheat	Soil Test:	209-32-244-34
Tillage:	Conventional	Fertilizer:	BC: 9-40-40, TD: 75-0-40
Herbicide:	Huskie 11 oz/A + Axial 16.4 oz/A + NIS 1 qt/100gal + UAN 28% 1 qt/A		

Table 2. Effect of fungicide application timing on agronomic performance of winter wheat, Kalispell, MT - 2016.

Treatment	Rate	Percent Stripe Rust					HT in	LOD %	YLD ¹ bu/A	PRO ² %	TWT ¹ lb/bu	TKW ¹ g	FN sec
		5/2	5/18	5/28	6/3	7/1							
Check		2.0	21.7	50.0	78.3	60	45.5	0	45.2	12.20	48.6	23.4	417.0
Herbicide timing													
Alto	4 fl oz/A	0.3	7.7	10.7	34.3	62.7	47.1	33.3	59.3	12.87	50.1	27.7	410.0
Quilt Xcel	7 fl oz/A	0.3	4.3	11.0	48.3	71.7	48.3	15.0	65.6	12.71	49.9	27.4	417.8
Trivapro	9.4 fl oz/A	0.3	5.0	11.3	56.0	62.7	47.5	2.7	50.5	12.80	48.3	24.8	417.8
Priaxor	2 fl oz/A	0.0	6.3	28.3	62.3	67.3	47.9	10.0	56.0	12.51	47.7	24.2	420.0
Tebuconazole	2 fl oz/A	0.0	5.0	15.7	55.7	78.7	48.8	18.0	54.2	12.37	48.6	25.2	416.2
Mean		0.2	5.7	15.4	51.3	68.6	47.9	15.8	57.1	12.65	48.9	25.9	416.4
Flagleaf													
Alto	4 fl oz/A	1.3	14.3	8.7	7.0	46.3	49.2	28.3	81.1	12.20	53.6	33.0	404.0
Quilt Xcel	10.5 fl oz/A	1.0	28.7	13.3	10.0	42.7	50.3	32.7	84.9	12.93	54.1	35.0	408.3
Trivapro	13.7 fl oz/A	2.0	26.3	20.0	9.3	23.7	50.0	40.0	89.7	11.71	55.0	36.5	393.6
Priaxor	4 fl oz/A	1.0	38.3	27.0	18.7	39.3	48.9	22.0	77.4	12.53	53.0	32.4	399.6
Tebuconazole	4 fl oz/A	1.0	36.7	33.3	17.3	48.7	47.0	6.0	86.1	12.56	55.5	35.6	398.0
Mean		1.3	28.9	20.5	12.5	40.1	49.1	25.8	83.8	12.39	54.2	34.5	400.7
Grand Mean		0.9	17.7	20.9	36.1	54.9	48.2	18.9	68.2	12.49	51.3	29.6	409.3
CV		126.8	70.0	49.7	38.1	24.1	3.3	139.2	14.7	6.53	3.4	8.6	4.4
LSD		ns	21.1	17.6	23.4	22.6	2.7	ns	17.0	ns	3.0	4.3	ns
Pr>F		0.2736	0.0094	0.0020	0.0001	0.0021	0.0467	0.6394	0.0001	0.8111	0.0001	0.0001	0.6277

HT: height, LOD: lodging, YLD: yield, PRO: protein, TWT: test weight, TKW: thousand kernel weight, FN: falling number, ns:nonsignificant.

¹adjusted to 13% moisture.

²adjusted to 12% moisture.