

Efficacy of Stratego and Prosaro for the Control of Leaf and Head Disease in Spring Barley

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Objective: To evaluate the efficacy of fungicides to manage leaf and head disease (FHB) in spring barley.

Methods:

Location: NDSU Langdon Research Extension Center.

Experimental Design: Randomized complete block with four replications.

Previous crop: Soybean

Cultivar of barley tested: Pinnacle (2-row barley)

Planting: 1.2 million pure live seeds/A was planted on May 2, 2016. A border plot was planted between treated plots to minimize interference from spray drift.

Plot size: Seven rows at six inch spacing. 5 ft. x 20 ft., mowed back to 5 ft. x 16 ft.

Herbicides Applied: Axial XL (16.4 Fl. oz/A) + Huskie (15 Fl. oz/A)

Inoculation: Plots were inoculated by spreading corn spawn inoculum at around boot stage (Feekes 9-10) at the rate of 300 g/plot.

Fungicide treatments: Fungicides were applied, with CO₂-pressurized backpack sprayer with three nozzle booms (XR-8002). Fungicide application was made at herbicide application timing (June 5 with water volume of 10 GPA) and at Feekes 10.51 or full head emergence stage (July 3, with water volume of 20 GPA).

Disease Assessment: FHB incidence was calculated by counting the number of heads showing FHB symptoms out of 50 heads that were rated for severity. FHB head severity was rated using 0-100% scale on arbitrary 50 heads, excluding two outer rows. FHB index was calculated using formula: $\text{Index} = (\text{SEV} * \text{INC}) / 100$.

Harvest: Plots were harvested on August 24 with a small plot combine and the yield was determined.

Data Analysis: Statistical analysis was done using SAS. Fisher's least significant difference (LSD) was used to compare means at p ($\alpha = 0.05$). Actual means are presented in the table for simplicity of understanding.

Results:

The lowest FHB incidence, severity, index, DON and yield were observed in a fungicide combination treatment of Stratego + Prosaro applied at herbicide timing and at Feekes 10.51, respectively. Likewise, Prosaro applied at Feekes 10.51 (Table 1).

Table 1: Fungicides tested alone and in combinations on barley at two application timings to manage foliar diseases and Fusarium head blight and evaluation of their influence on yield and other grain characteristics: toxin (DON) content, test weight, and plump.

Treatment	Dosage	Foliar Disease		Fusarium Head Blight			DON	Test Weight	Plump	Yield
	Fl. oz/A	% Incidence	% Severity	% Incidence	% Severity	Index	ppm	lbs/A	(%)	bu/A
Stratego (A)	4	37	7	31	13	3.6	8.8	45	91	75
Prosaro+NIS (B)	6.5	14	4	12	10	1.2	4.2	46	95	93
Stratego (A)and Prosaro+NIS (B)	4 + 6.5	10	3	13	8	1.0	4.7	46	95	93
Non-Treated	Check	58	12	48	14	7.2	9.2	45	93	85
	Mean	30	6	26	11	3.3	6.7	46	93	86
	CV %	42	50	47	34	68	33	2	2	12
	LSD (5%)	19	5	19	ns	3	3	ns	ns	16
A in Parenthesis indicate Application timing at herbicide timing										
B in Parenthesis indicate Application timing at full head emergence										
Foliar Disease data consists of net blotch and spot blotch together.										
DON: Deoxynivalenol										
NIS: Non-Ionic Surfactant at 0.125 v/v										

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