Management of Fusarium Head Blight in Barley

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This field study was planted on May 13, 2024 at the Langdon Research Extension Center. The experimental trial was designed in a randomized complete block with four replications. Plots were arranged in seven rows with six-inch row spacing and a row length of 20 feet trimmed to 15 feet for harvest. The cultivar 'ND Genesis' barley was seeded at a rate of 1.2 million pure live seeds/a. An untreated border plot was planted between treated plots to minimize interference from spray drift. The previous crop was field pea. No pre-emergent herbicide was applied before the research area was tilled. Huskie FX (18 oz/a) + Axial Bold (15 oz/a) were used to control weeds. The plots were inoculated by spreading corn spawn inoculum at boot stage (Feekes 9-10) at a rate of 300 g/plot. Supplemental moisture was provided by running overhead irrigation from Feekes 10.5 to 11.25 for one hour per day to provide a conducive environment for Fusarium Head Blight (FHB) development. Fungicides were applied with a CO_2 backpack sprayer equipped with a three-nozzle boom (XR8001) operated at 40 psi delivering a water volume of 15 GPA. Fungicide application was made at Feekes 10.51 (10% flowering) on July 6 (wind speed 5 MPH, 77^{O} F at 3:00 pm).

Percent FHB incidence (INC) was calculated by counting the number of heads showing FHB symptoms from 50 randomly selected panicles/heads, excluding the two outer rows from each plot. FHB severity (SEV) on the heads rated using a 0-100% scale from the same 50 heads. FHB index (FHBI) was calculated using the formula FHBI=(SEV*INC)/100. Plots were harvested on August 29 with a plot combine. Yield, test weight, and percent plump were determined. Statistical analysis was done using Genovix Generation II software. Fisher's least significant difference (LSD) was used to compare means at p ($\alpha = 0.05$).

Results: Our research has unveiled significant differences in the percent incidence of Fusarium Head Blight (FHB) between the non-treated control and the various fungicide treatments tested. There are also significant differences in the severity and index of FHB between the non-treated control and the fungicide treatments. The only exception to this is seen with Miravis Ace and the experimental treatments. No significant differences were found in the yield, test weight, and plump percentage traits among the fungicide groups tested (Table 1).

Table 1: Mean values of the variables tested on application of various fungicide treatments in barley.

	Rate	**FHB**			**Yield**	**Test wt.**	**Plump**
	fl. oz/a	**Incidence %**	**Severity %**	**Index**	bu/a	lbs/bu	**%**
NON-TREATED	Check	39	14	5.6	68	43	95
PROSARO 421SC	8.2	16	9	1.6	69	43	97
PROSARO PRO LOW	10.3	16	7	1.1	71	43	96
PROSARO PRO HIGH	13.6	11	7	0.9	71	44	98
MIRAVIS ACE	13.7	24	9	3.0	74	45	95
Experimental	7.3	25	17	4.6	68	44	96
Mean		22	11	3	70	44	96
CV%		38	37	79	11	3	2
LSD		12	11	3	11	2	4
P-Value (0.05)		0.0036*	0.0171*	0.0399*	NS	NS	NS

Note: All treatments of fungicide were mixed with an adjuvant NIS: 0.125% v/v

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