# Evaluation of various Fungicides to Manage Fusarium Head Blight in Barley
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**Objective:** Evaluate various fungicides for their efficacy on barley to manage Fusarium head blight (FHB).

**<u>Methods:</u>**

**Location:** NDSU Langdon Research Extension Center

**Experimental design**: Randomized complete block, replicated four times.

**Previous crop**: Canola

**Cultivar of barley on which the treatments were tested**: Tradition

**Planting:** 1.25 million pure live seeds/A planted on May 8, 2019. 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) + Prowl $H_2O$ (36 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.

**Disease development**: Supplemental moisture was provided by running overhead irrigation from Feekes 9 to 11.2.5 at the rate of one hour per day to create a conducive environment for FHB development.

**Fungicide treatments**: Fungicides were applied with a $CO_2$-pressurized backpack sprayer with a three-nozzle boom (XR-8002), and the water volume used was 20 GPA. Application timings: Sprayed at Feekes 10.5.1 stage repeated in treatment of Prosaro after 4-5 days of first spray. Likewise, Proline was sprayed after 4-5 days of first spray. Refer to Table 1 for the treatments, dosages and application timings.

**Disease assessment**: Data on FHB incidence was obtained by counting the number of heads showing FHB symptoms out of 50 heads. FHB head severity was rated using 0-100% scale on arbitrary 50 heads, excluding two outer rows. FHB index (Index) was calculated using formula: Index = (SEV*INC)/100.

**Harvest**: Plots were harvested on August 19th with a small plot combine and the yield was determined at 13.5% moisture.

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

**Table 1**: Efficacy of Prosaro at various application timings to manage Fusarium head blight on barley.

| Treatment | Rate (Oz/A) | Fusarium Head Blight | | | | Yield (bu/A) |
|---|---|---|---|---|---|---|
| | | % Incidence | % Severity | Index | DON (ppm) | |
| NON-TREATED | CHK | 79.5 | 8.4 | 21.4 | 14.5 | 76.18 |
| PROSARO + NIS | 8.2 | 10.5 | 1.4 | 0.76 | 2.6 | 91.11 |
| Coded Product | 10.3 | 13.5 | 11.2 | 1.4 | 3.7 | 92.43 |
| PROSARO + NIS (TWICE) | 4.1 | 12 | 5.6 | 0.8 | 2.0 | 77.65 |
| PROSARO + NIS; PROLINE + NIS | 6.5+4.3 | 6.5 | 2.8 | 0.42 | 1.9 | 58.10 |
| PROSARO + BAYTHROID + NIS | 8.2+1.6 | 18 | 14 | 1.9 | 2.9 | 75.25 |
| Mean | | 23.33 | 9.6 | 4.4 | 4.6 | 76.00 |
| CV% | | 50.37 | 89.5 | 205 | 40.6 | 8.50 |
| LSD | | 17.71 | 12.95 | 13.8 | 2.8 | 9.80 |
| p-Value(0.05) | | 0.00001* | NS | 0.03* | 0.00001* | 0.0042* |
| * Indicates treatments are statistically significant | | | | | | |

**Note:** All treatments were applied with Non-Ionic Surfactant @ 0.125 v/v.

**Results:** Treatments of fungicides applied at different timings resulted in equal performance on managing Fusarium head blight (FHB); Prosaro applied at "Full head emergence" stage was the best treatment of the parameters tested in this research trial (Table 1).