University of Manitoba FHB Risk Model – Barley, Durum, Spring Wheat, Winter Wheat

Project duration: September 2018 – August 2019
Objectives: To increase understanding of resulting Fusarium Head Blight (FHB) infection for spring and winter wheat, barley and durum based on the current model.
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Background
Farmers need improved decision-making tools in order to assess the local risk of Fusarium Head Blight (FHB). Better tools would improve judgement on whether or not to use fungicide and how to time application. The project recognizes that the current model for predicting the presence of FHB is insufficient and is gathering data across the province for different treatment plans using both known fusarium resistant and fusarium susceptible varieties.

This project design centred on learning more about how spore density in the air at specific times of plant maturation affected FHB infection. The specific window of interest is during flowering and up to five days before flowering.

Entries:	3 varieties for each winter wheat, spring wheat and barley; 1 variety for durum
Seeding:	Winter Wheat seeded Sept 20 2018; Barley, Spring Wheat and Durum seeded May 17
Harvest:	Sept 6, 2019
Varieties:	Winter Wheat: Moats, AAC Gateway and Emerson Spring Wheat: AAC Elie; AAC Brandon and Muchmore Barley: CDC Copeland; AAC Connect; and AAC Synergy Durum: Strongfield

Data collected	**Date collected**
Plant Counts:	Three leaf stage (and spring emergence for winter wheat)
Plant Staging:	Weekly staging beginning at late booting through late flowering
Spore Collection:	Beginning just before winter wheat flowering spanning five weeks and covering all cereals flowering
FHB sampling & rating:	18-21 days after flowering – Enumeration of FHB afflicted kernels per head in a given sample size of fifty heads per plot
Heights:	Aug 5
Yield:	Sept 6
Moisture:	Sept 6

Grain samples sent away to analyze for grading, fusarium species assessment, and mycotoxin analysis

Agronomic info

Previous year's crop:	Cereals cover crop
Soil Type:	Erickson Loam Clay
Landscape:	Rolling with trees to the east

Seedbed preparation: Tilled once and then harrowed

Table 2: Spring 2019 Soil Test

	Available	Needed for Barley	Needed for Wheat	Needed for Durum
N	4.5 lb/ac	100 lb/ac	185 lb/ac	185 lb/ac
P	54.6 lb/ac	10 lb/ac	10 lb/ac	10 lb/ac
K	57.3 lb/ac	-	57.3 lb/ac	-
S	9.7 lb/ac	-	-	-

Table 3: Winter Wheat Added Fertilizer

Blend	Blend (lbs/ac)	Actual lbs N	Actual lbs P	Actual lbs K
46-0-0	397.6	186.9	-	-
11-52-0-0	19.2	2.11	10	-
0-0-60	95.5	-	-	57.3
Total	-	189	10	57.3

N and K side banded; P banded with seed

Table 4: Spring Wheat and Durum Added Fertilizer

Blend	Blend (actual lbs/ac)	Actual lbs N	Actual lbs P
46-0-0	397.6	186.9	-
11-52-0-0	19.2	2.11	10
Total		189.0	10

N side banded; P banded with seed

Table 5: Barley Added Fertilizer

Blend	Blend (actual lbs/ac)	Actual lbs N	Actual lbs P
46-0-0	212.8	97.89	-
11-52-0-0	19.2	2.11	10
Total	-	100.0	10

N side banded; P banded with seed

Table 6: Herbicide Application

Crop stage	Date	Product	Rate
Pre-emerge	Sept 14	RoundUp	0.67 L/ac
	May 14	Heat	28.4 g/ac
		Glyphosate	0.64 L/ac

In-crop	June 12	Prestige	0.8 L/ac
		Curtail M	0.5 L/ac
		Puma	0.413 L/ac

Results

Grain samples were sent for Fusarium specific analysis, but no report for these results has yet been generated. PCDF will post a link when this report is available. Average yields for the crops tested are shown in Table 1. The quality ratings for the crops are not included here.

Table 1: Average yields for cereals tested

Crop	Yield (bu/ac)
Winter wheat	76
Spring wheat	72
Barley	94
Durum	61