2016

NORTH AMERICAN BARLEY SCAB EVALUATION NURSERY (NABSEN) REPORT

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INTRODUCTION

The 2016 North American Barley Scab Evaluation Nursery (NABSEN) was grown at Fargo, Langdon, and Casselton, ND; St. Paul and Crookston MN, and Brandon, Manitoba. Nurseries were either misted or unmisted (dryland). Dryland nurseries provide conditions similar to those found in commercial fields. Disease in misted fields was more severe than growers would observe in most years and entries with only moderate FHB resistance may have higher disease levels. Dryland nurseries allow discrimination of entries with moderate to low levels of FHB resistance. Each nursery included a set of common checks. The checks were Chevron, Quest and ND 20493(resistant six-row checks), Robust and Stander (susceptible six-row checks), and Conlon (resistant two-row check). At all locations percent severity of FHB was determined around the middle dough stage by determining the ratio of infected kernels to total kernels on 10-20 spikes per entry, and then multiplying by 100.

RESULTS

Disease severity were not taken at Casselton, Osnabrock or Crookston dryland nurseries. FHB disease severity levels were low at St. Paul moderate at Brandon and high at Fargo and Langdon locations in 2016. DON levels were high at Fargo, Langdon, Crookston and Brandon, while DON levels were moderately high at Osnabruck and low at Casselton and St. Paul (table 4). HB552 had the lowest DON levels in the misted and non-misted trials compared to the other lines and checks.
Temperatures were above the 30-year average (table. 6), for May and June at all locations except Crookston which was slightly below the average. July temperatures were generally average except for Crookston and Brandon, MB which were below the 30-year average. Fargo, Langdon and Casselton had average temperatures in August, while St. Paul and Crookston were above and Brandon was below the 30-year average.

Precipitation was above the 30-year average in May at Crookston and below at Fargo and St. Paul while Langdon, Casselton and Brandon where slightly above average. In June Fargo, Casselton and Crookston were below the 30-year average while Langdon and Brandon were above and St. Paul was average. All locations in July were above the 30-year average except for Brandon. In August Fargo, Casselton and Brandon were below the 30-year average and Langdon, St. Paul and Crookston were above the average for precipitation in August (Table.7).

Site details are as follows:

Fargo, & Langdon ND – Robert Brueggeman and Patrick Gross

- Misted
- Inoculated by grain spawn method
- 3 Replicates
- Disease severity - percentage of infected kernels
- Disease incidence - percentage of infected heads
- DON content (ppm) measured by GC/ECD by P. Schwarz, NDSU on a composite sample of 3 replicates
- Day to heading counted from date planted to 50% of heads emerged 50%

Osnabrock, ND – Richard Horsley

- Dryland
- 3 Replicates
- Disease incidence or severity – none taken
- DON content (ppm) measured by GC/ECD by P. Schwarz, NDSU on a composite sample of 3 replicates

Casselton, ND – Jolanta Menert

- Dryland
- 3 replicates
- Disease incidence or severity – none taken
- DON content (ppm) measured by GC/ECD by P. Schwarz, NDSU on a composite sample of 3 replicates

ST. PAUL & CROOKSTON, MN– Kevin Smith and Ruth Dill-Macky

- Misted (Crookston and St. Paul) and dryland (2nd location at Crookston)
- Inoculated by grain spawn method
- Disease severity - percentage of infected kernels
- DON content (ppm) measured by GC/ECD by P. Schwarz, NDSU on a composite sample of 3 replicates
- Day to heading counted from date planted to 50% of heads emerged 50%
- No data for Crookston dryland

BRANDON, MANITOBA - Bill Legge and James Tucker

- Misted
- 4 replicates RCB design
- Disease severity - percentage of infected kernels
- Disease incidence - percentage of infected heads
- Day to heading counted from date planted to 80% of heads emerged 50%
- DON content (ppm) measured by ELISA technique at ECORC, Ottawa on a composite sample of 4 replicates

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Table 1. Mean FHB severity of entries grown in the 2016 NABSEN Nursery at four locations.

Line	Fargo	Langdon	Brandon	St. Paul	**Mean**
ND31040	30.1	40.6	11.2	1.7	**20.9**
ND31091	30.3	35.1	10.3	1.5	**19.3**
ND31721	29.2	60.4	12.6	3.2	**26.4**
ND32889	35.6	30.5	14.0	2.8	**20.7**
ND32898	38.8	58.1	13.6	5.9	**29.1**
ND32920	37.7	46.0	14.2	3.0	**25.2**
ND33325	32.3	78.6	15.5	4.0	**32.6**
ND33413	33.2	52.1	14.3	5.2	**26.2**
2ND30837	31.5	39.9	18.7	3.5	**23.4**
2ND31914	29.9	33.3	14.5	2.0	**19.9**
2ND32184	23.9	32.1	23.3	0.6	**20.0**
2ND32322	19.5	22.6	17.0	1.7	**15.2**
2ND32529	16.8	33.1	23.1	1.8	**18.7**
2ND32657	21.0	33.5	15.0	4.3	**18.4**
2ND32658	24.0	45.1	26.2	4.2	**24.9**
2ND32829	25.8	21.8	11.2	1.5	**15.1**
M160	26.9	47.0	15.4	3.3	**23.1**
S6M164	24.2	37.4	8.1	1.2	**17.7**
S6M166	25.9	39.4	11.6	3.6	**20.1**
S6M167	25.2	42.3	11.6	3.3	**20.6**
S6M168	28.9	38.9	16.5	9.0	**23.3**
S6M169	27.9	30.4	10.0	1.9	**17.5**
S6M170	30.2	50.3	10.7	3.5	**23.7**
MS12_4145-016	28.0	45.1	10.3	1.1	**21.1**
2B10-4162	36.5	49.4	15.7	3.0	**26.2**

Table 1. cont.: Mean FHB severity of entries grown in the 2016 NABSEN Nursery at four locations.

Line	Fargo	Langdon	Brandon	St. Paul	**Mean**
2B10-4378	29.3	37.4	14.6	3.8	**21.3**
2B11-4949	32.7	38.4	16.5	4.2	**23.0**
2B11-5166	23.9	27.0	16.5	0.5	**17.0**
2B12-5582	28.5	42.9	17.8	6.8	**24.0**
2B12-5651	25.0	44.3	14.8	3.3	**21.9**
2B12-5760	27.0	33.2	16.6	2.8	**19.9**
2I07-2683	30.0	46.7	19.1	2.7	**24.6**
TR15242	30.4	19.9	11.5	1.5	**15.8**
TR16249	27.3	24.9	9.9	2.5	**16.2**
TR16250	17.5	82.1	13.2	2.2	**28.7**
TR16251	17.6	26.8	12.9	0.7	**14.5**
BM0825-085	13.2	28.6	13.4	0.7	**14.0**
SR15319	15.4	41.2	14.0	3.3	**18.5**
SM130161	20.8	29.9	16.0	1.5	**17.0**
SM132104	21.1	16.4	9.8	0.5	**11.9**
HB551	25.0	45.3	14.9	1.5	**21.7**
G06088015	14.4	22.0	18.3	3.5	**14.5**
HB552	19.0	20.2	11.1	4.8	**13.8**
TR16627	14.8	17.7	6.7	2.5	**10.4**
QUEST	21.5	31.6	13.5	0.5	**16.8**
Conlon	17.6	37.1	18.5	3.3	**19.1**
ND 20493	16.6	68.6	11.6	0.5	**24.4**
Robust	17.7	54.1	16.1	6.3	**23.6**
Chevron	20.8	20.2	18.7	0.4	**15.0**
Stander	32.3	63.6	19.6	5.7	**30.3**

Table 2. Mean disease incidence of entries grown in the 2016 NABSEN Nursery at three locations.

Line	Fargo	Langdon	Brandon	**Mean**
ND31040	100.0	100.0	100.0	**100.0**
ND31091	100.0	100.0	100.0	**100.0**
ND31721	100.0	100.0	100.0	**100.0**
ND32889	100.0	100.0	100.0	**100.0**
ND32898	100.0	100.0	100.0	**100.0**
ND32920	100.0	100.0	100.0	**100.0**
ND33325	100.0	100.0	100.0	**100.0**
ND33413	100.0	100.0	100.0	**100.0**
2ND30837	100.0	100.0	100.0	**100.0**
2ND31914	100.0	100.0	100.0	**100.0**
2ND32184	96.7	100.0	100.0	**98.9**
2ND32322	96.7	100.0	100.0	**98.9**
2ND32529	96.7	96.7	100.0	**97.8**
2ND32657	100.0	100.0	100.0	**100.0**
2ND32658	100.0	100.0	100.0	**100.0**
2ND32829	100.0	100.0	100.0	**100.0**
M160	100.0	100.0	100.0	**100.0**
S6M164	100.0	100.0	100.0	**100.0**
S6M166	100.0	100.0	100.0	**100.0**
S6M167	100.0	100.0	100.0	**100.0**
S6M168	100.0	96.7	100.0	**98.9**
S6M169	100.0	100.0	100.0	**100.0**
S6M170	100.0	100.0	100.0	**100.0**
MS12_4145-016	100.0	100.0	100.0	**100.0**
2B10-4162	100.0	96.7	100.0	**98.9**

Table 2. cont.: Mean disease incidence of entries grown in the 2016 NABSEN Nursery at three locations.

Line	Fargo	Langdon	Brandon	**Mean**
2B10-4378	96.7	100.0	100.0	**98.9**
2B11-4949	96.7	100.0	100.0	**98.9**
2B11-5166	96.7	93.3	100.0	**96.7**
2B12-5582	100.0	100.0	100.0	**100.0**
2B12-5651	100.0	100.0	100.0	**100.0**
2B12-5760	100.0	100.0	97.5	**99.2**
2I07-2683	100.0	100.0	100.0	**100.0**
TR15242	100.0	93.3	95.0	**96.1**
TR16249	100.0	100.0	100.0	**100.0**
TR16250	93.3	100.0	97.5	**96.9**
TR16251	93.3	93.3	100.0	**95.6**
BM0825-085	93.3	100.0	100.0	**97.8**
SR15319	100.0	100.0	100.0	**100.0**
SM130161	100.0	96.7	97.5	**98.1**
SM132104	100.0	100.0	92.5	**97.5**
HB551	100.0	100.0	100.0	**100.0**
G06088015	96.7	100.0	100.0	**98.9**
HB552	96.7	100.0	96.7	**97.8**
TR16627	96.7	96.7	97.5	**96.9**
QUEST	100.0	100.0	100.0	**100.0**
Conlon	100.0	100.0	100.0	**100.0**
ND 20493	100.0	100.0	92.5	**97.5**
Robust	100.0	100.0	100.0	**100.0**
Chevron	100.0	96.7	100.0	**98.9**
Stander	100.0	100.0	100.0	**100.0**

Table 3. Mean days to heading after planting of entries grown in 2016 NABSEN Nursery at four locations.

Line	Fargo	Langdon	Brandon*	St. Paul	**Mean**

ND31040	59.7	51.0	51.0	47.3	**52.3**
ND31091	59.0	52.3	51.0	47.7	**52.5**
ND31721	59.7	53.7	51.3	48.3	**53.2**
ND32889	59.3	51.3	50.5	47.7	**52.2**
ND32898	59.0	52.7	52.8	50.0	**53.6**
ND32920	60.0	50.3	51.8	48.3	**52.6**
ND33325	58.7	55.0	51.0	49.7	**53.6**
ND33413	58.7	54.7	51.0	49.0	**53.3**
2ND30837	59.3	53.3	52.3	52.7	**54.4**
2ND31914	58.0	56.3	53.5	51.3	**54.8**
2ND32184	60.0	56.7	54.3	53.0	**56.0**
2ND32322	59.0	60.0	52.8	51.3	**55.8**
2ND32529	59.0	58.7	52.0	47.3	**54.3**
2ND32657	58.0	57.7	50.8	47.7	**53.5**
2ND32658	58.0	58.3	52.0	48.0	**54.1**
2ND32829	58.0	59.3	52.8	49.0	**54.8**
M160	59.0	58.7	52.8	48.0	**54.6**
S6M164	58.3	58.0	51.8	48.0	**54.0**
S6M166	57.7	57.7	52.0	48.3	**53.9**
S6M167	58.0	56.0	53.3	49.0	**54.1**
S6M168	58.3	54.3	51.8	48.3	**53.2**
S6M169	58.3	55.3	52.5	47.3	**53.4**
S6M170	59.3	57.7	51.0	48.3	**54.1**
MS12_4145-016	59.3	55.7	50.8	48.0	**53.4**
2B10-4162	60.0	59.0	53.5	52.0	**56.1**

* Day to heading counted from date planted to 80% of heads emerged 50%; at other locations 50% heads emerged 50%

Table 3. cont.: Mean days to heading after planting of entries grown in 2016 NABSEN Nursery at four locations.

Line	Fargo	Langdon	Brandon	St. Paul	**Mean**
2B10-4378	60.0	56.7	54.3	53.7	**56.1**

2B11-4949	52.0	56.0	53.5	54.3	**54.0**
2B11-5166	61.0	56.3	54.3	54.7	**56.6**
2B12-5582	59.7	54.7	53.3	51.7	**54.8**
2B12-5651	60.0	53.0	53.3	51.0	**54.3**
2B12-5760	58.7	57.0	54.3	53.3	**55.8**
2I07-2683	60.0	51.3	52.3	50.7	**53.6**
TR15242	60.3	57.0	54.5	51.3	**55.8**
TR16249	61.7	54.3	54.5	53.3	**56.0**
TR16250	62.3	52.3	56.0	54.0	**56.2**
TR16251	61.3	57.7	54.8	51.0	**56.2**
BM0825-085	60.0	53.0	54.5	54.3	**55.5**
SR15319	59.3	54.7	53.3	48.7	**54.0**
SM130161	60.0	54.0	55.5	50.3	**55.0**
SM132104	61.3	56.3	57.5	52.3	**56.9**
HB551	61.3	58.7	54.8	52.0	**56.7**
G06088015	60.7	52.7	56.0	55.0	**56.1**
HB552	61.3	56.0	56.8	56.3	**57.6**
TR16627	62.0	55.7	57.0	54.7	**57.3**
QUEST	59.3	56.0	54.5	47.7	**54.4**
Conlon	55.7	54.0	50.8	47.0	**51.9**
ND 20493	56.7	56.3	51.0	47.3	**52.8**
Robust	60.3	57.0	52.8	49.0	**54.8**
Chevron	62.7	55.3	53.5	53.7	**56.3**
Stander	60.7	54.0	55.3	50.3	**55.1**

* Day to heading counted from date planted to 80% of heads emerged 50%; other locations 50% heads emerged 50%

Table 4. Mean for DON (ppm) entries grown in 2016 NABSEN Nursery at seven locations.

	Misted		Non-misted

Name	Fargo	Langdon	Brandon	St. Paul	Crookston	Mean	Osnabrock	Casselton	Mean
ND31040	23.7	57.5	10.1	2.5	26.6	24.1	5.7	0.3	3.0
ND31091	27.2	45.1	12.6	4.5	15.1	20.9	8.3	0.2	4.2
ND31721	23.8	72.6	19.6	2.0	24.8	28.5	12.5	0.2	6.3
ND32889	39.9	82.2	10.8	5.7	19.0	31.5	8.4	0.5	4.4
ND32898	36.4	100.3	28.1	2.0	25.9	38.6	12.0	0.5	6.2
ND32920	39.0	71.9	15.5	4.4	15.1	29.2	7.7	0.6	4.2
ND33325	42.1	71.5	13.2	3.7	18.0	29.7	10.0	0.6	5.3
ND33413	33.9	73.7	16.0	3.5	20.6	29.5	9.2	0.3	4.8
2ND30837	18.1	51.2	13.8	3.1	20.4	21.3	5.2	0.2	2.7
2ND31914	25.8	40.7	11.2	2.2	9.9	18.0	8.8	0.0	4.4
2ND32184	19.0	49.2	14.7	2.5	16.3	20.4	6.4	0.4	3.4
2ND32322	15.2	41.1	10.1	1.5	17.2	17.0	7.5	0.1	3.8
2ND32529	17.0	37.7	6.5	3.9	17.3	16.5	3.0	0.4	1.7
2ND32657	20.6	49.8	8.5	6.3	14.7	20.0	11.4	0.3	5.8
2ND32658	22.0	76.5	10.8	5.3	10.7	25.1	9.6	0.2	4.9
2ND32829	10.2	28.8	5.0	2.6	10.0	11.3	2.1	0.2	1.1
M160	21.3	55.5	12.7	2.9	23.4	23.2	9.8	0.3	5.0
S6M164	21.6	43.7	6.9	2.3	12.1	17.3	4.8	0.2	2.5
S6M166	21.7	51.5	12.2	1.3	15.5	20.4	5.4	0.1	2.8
S6M167	19.2	58.6	18.1	1.7	15.0	22.5	7.6	0.1	3.9
S6M168	23.2	60.9	14.7	3.2	23.6	25.1	6.1	0.2	3.2
S6M169	17.8	64.9	14.6	2.0	13.2	22.5	6.4	0.0	3.2
S6M170	31.8	63.1	10.5	1.2	10.6	23.4	5.4	0.2	2.8
MS12_4145-016	29.5	68.2	8.7	1.8	17.3	25.1	10.9	0.1	5.5
2B10-4162	23.4	68.7	20.2	0.7	16.1	25.8	6.4	0.1	3.2

Table 4. cont.: Mean for DON (ppm) entries grown in 2016 NABSEN Nursery at seven locations.

						Misted			Non-misted
Name	Fargo	Langdon	Brandon	St. Paul	Crookston	Mean	Osnabrock	Casselton	Mean
2B10-4378	17.1	48.6	16.5	2.6	28.8	22.7	6.3	0.1	3.2
2B11-4949	14.7	42.0	17.1	2.4	22.6	19.8	11.0	0.1	5.6

2B11-5166	13.2	36.4	13.2	1.7	25.1	17.9	4.5	0.1	2.3
2B12-5582	16.6	48.8	19.1	1.6	19.7	21.2	7.1	0.0	3.6
2B12-5651	26.7	52.4	15.3	3.2	23.1	24.1	8.7	0.1	4.4
2B12-5760	21.2	50.7	26.0	3.0	14.4	23.1	5.5	0.6	3.1
2I07-2683	20.4	87.9	24.5	1.1	22.4	31.3	4.4	0.2	2.3
TR15242	17.3	24.0	15.5	1.7	17.8	15.3	8.7	0.2	4.4
TR16249	10.8	26.4	15.7	1.9	12.0	13.4	6.8	0.3	3.5
TR16250	10.0	35.3	21.4	1.9	12.4	16.2	6.2	0.4	3.3
TR16251	14.0	34.0	17.0	2.4	9.5	15.4	3.3	0.1	1.7
BM0825-085	15.2	23.1	10.3	2.0	17.5	13.6	2.5	0.1	1.3
SR15319	22.9	67.5	28.0	0.9	14.4	26.7	6.0	0.2	3.1
SM130161	19.7	37.0	14.3	1.6	17.0	17.9	9.7	0.1	4.9
SM132104	4.5	18.8	11.9	1.3	9.3	9.1	6.0	0.1	3.0
HB551	11.3	41.6	25.5	1.6	7.0	17.4	8.8	0.2	4.5
G06088015	14.8	15.3	17.0	2.9	10.2	12.0	3.6	0.0	1.8
HB552	5.3	9.4	6.0	1.8	1.8	4.9	0.8	0.3	0.5
TR16627	15.5	25.1	9.4	1.7	12.8	12.9	5.0	0.2	2.6
QUEST	12.1	75.5	20.7	2.0	21.4	26.4	5.0	0.1	2.6
Conlon	25.7	47.8	8.7	5.8	8.9	19.4	4.8	0.0	2.4
ND 20493	20.1	87.2	12.1	2.7	15.8	27.6	4.3	0.3	2.3
Robust	30.3	71.8	21.5	5.0	31.5	32.0	11.4	0.7	6.1
Chevron	11.5	25.1	52.6	1.6	13.5	20.9	7.7	0.2	3.9
Stander	35.6	79.3	27.7	2.0	39.1	36.7	7.8	0.4	4.1

Table 5. Average means of Heading date, FHB Incidence, FHB severity and DON content.

	Day to[1]	FHB[2]	FHB[3]	Misted[4]	Non-misted[4]
Line	Heading	Incidence	Severity	DON Mean	DON Mean
ND31040	52.3	100.0	20.9	24.1	3.0
ND31091	52.5	100.0	19.3	20.9	4.2
ND31721	53.2	100.0	26.4	28.5	6.3
ND32889	52.2	100.0	20.7	31.5	4.4

ND32898	53.6	100.0	29.1	38.6	6.2
ND32920	52.6	100.0	25.2	29.2	4.2
ND33325	53.6	100.0	32.6	29.7	5.3
ND33413	53.3	100.0	26.2	29.5	4.8
2ND30837	54.4	100.0	23.4	21.3	2.7
2ND31914	54.8	100.0	19.9	18.0	4.4
2ND32184	56.0	98.9	20.0	20.4	3.4
2ND32322	55.8	98.9	15.2	17.0	3.8
2ND32529	54.3	97.8	18.7	16.5	1.7
2ND32657	53.5	100.0	18.4	20.0	5.8
2ND32658	54.1	100.0	24.9	25.1	4.9
2ND32829	54.8	100.0	15.1	11.3	1.1
M160	54.6	100.0	23.1	23.2	5.0
S6M164	54.0	100.0	17.7	17.3	2.5
S6M166	53.9	100.0	20.1	20.4	2.8
S6M167	54.1	100.0	20.6	22.5	3.9
S6M168	53.2	98.9	23.3	25.1	3.2
S6M169	53.4	100.0	17.5	22.5	3.2
S6M170	54.1	100.0	23.7	23.4	2.8
MS12_4145-016	53.4	100.0	21.1	25.1	5.5
2B10-4162	56.1	98.9	26.2	25.8	3.2

[1]Date from planting when 50% of heads 50% emerged at four locations.
[2] FHB incidence means at three locations.
[3] FHB severity means at four locations.
[4] DON content means at five locations for misted and two for dryland.

Table 5. cont.: Average means of Heading date, FHB Incidence, FHB severity and DON content.

	Day to	FHB	FHB	Misted	Non-misted
Line	Heading	Incidence	Severity	DON Mean	DON Mean
2B10-4378	56.1	98.9	21.3	22.7	3.2
2B11-4949	54.0	98.9	23.0	19.8	5.6
2B11-5166	56.6	96.7	17.0	17.9	2.3
2B12-5582	54.8	100.0	24.0	21.2	3.6
2B12-5651	54.3	100.0	21.9	24.1	4.4

2B12-5760	55.8	99.2	19.9	23.1	3.1
2I07-2683	53.6	100.0	24.6	31.3	2.3
TR15242	55.8	96.1	15.8	15.3	4.4
TR16249	56.0	100.0	16.2	13.4	3.5
TR16250	56.2	96.9	28.7	16.2	3.3
TR16251	56.2	95.6	14.5	15.4	1.7
BM0825-085	55.5	97.8	14.0	13.6	1.3
SR15319	54.0	100.0	18.5	26.7	3.1
SM130161	55.0	98.1	17.0	17.9	4.9
SM132104	56.9	97.5	11.9	9.1	3.0
HB551	56.7	100.0	21.7	17.4	4.5
G06088015	56.1	98.9	14.5	12.0	1.8
HB552	57.6	97.8	13.8	4.9	0.5
TR16627	57.3	96.9	10.4	12.9	2.6
QUEST	54.4	100.0	16.8	26.4	2.6
Conlon	51.9	100.0	19.1	19.4	2.4
ND 20493	52.8	97.5	24.4	27.6	2.3
Robust	54.8	100.0	23.6	32.0	6.1
Chevron	56.3	98.9	15.0	20.9	3.9
Stander	55.1	100.0	30.3	36.7	4.1

[1] Date from planting when 50% of heads 50% emerged at four locations.
[2] FHB incidence means at three locations.
[3] FHB severity means at four locations.
[4] DON content means at five locations for misted and two for dryland.

Table 6. Temperature (°F) compared to the 30-year average.

Location	May	June	July	August
Fargo, ND	3.0	2	1.0	0
Langdon, ND	4	2	0	0
Casselton, ND	3	2	-0.2	0

St. Paul, MN	1	2	1.3	1.2
Crookston, MN	3.8	-.3	-2.0	0.6
Brandon, MB	5.0	2.7	-2.1	-0.8

Table 7. Rainfall (in.) compared to the 30-year average.

Location	May	June	July	August
Fargo, ND	-1.5	-1.2	2.4	-0.67
Langdon, ND	0.67	0.67	4.23	0.81
Casselton, ND	0.5	-2.4	0.72	-1.16
St. Paul, MN	-1.2	-0.09	0.7	3.9
Crookston, MN	3.7	-2.0	0.4	0.5
Brandon, MB	0.48	1.31	-0.94	-1.7

Table 8. Correlation among locations for DON content.

	Misted					Dryland	
Location	Fargo	Langdon	Brandon	St. Paul	Crookston	Osnabrock	Casselton
Fargo	1.0	-0.21	**0.79	**0.71	*-0.29	**0.42	**0.96
Langdon	-0.21	1.0	-0.05	-0.01	**0.56	*0.34	-0.10
Brandon	**0.79	-0.05	1.0	**0.44	-0.09	**0.46	**0.78
St. Paul	**0.71	-0.01	**0.44	1.0	-0.17	**0.46	**0.76
Crookston	*-0.29	**0.56	-0.09	-0.17	1.0	0.21	-0.20
Osnabrock	**0.42	*0.34	**0.46	0.23	0.21	1.0	**0.47

Casselton	**0.96	-0.10	**0.78	**0.76	0.20	**0.47	1.0
*,** r-values significantly different from 0.0 at P<0.05 and P<0.01, respectively							

Table 9. Pedigree and source of breeding lines tested for FHB resistance in 2016

Entry	Line	Pedigree	Row type	Source
1	ND31040	ND20448/ND26085	6	North Dakota State University
2	ND31091	ND25160/ND26036	6	North Dakota State University
3	ND31721	CELEBRATION/ND26181	6	North Dakota State University
4	ND32889	ND28479/ND25652	6	North Dakota State University
5	ND32898	ND28479/ND25652	6	North Dakota State University
6	ND32920	ND28479/INNOVATION	6	North Dakota State University
7	ND33325	ND25160/ND28544	6	North Dakota State University
8	ND33413	ND26891/ND28885	6	North Dakota State University
9	2ND30837	2ND25265/GRACE	2	North Dakota State University

10	2ND31914	2ND24388/LILLY	2	North Dakota State University
11	2ND32184	2ND25275/GRACE	2	North Dakota State University
12	2ND32322	2ND27705/2ND25276	2	North Dakota State University
13	2ND32529	2ND27705/2ND27560	2	North Dakota State University
14	2ND32657	2ND28086/2ND27705	2	North Dakota State University
15	2ND32658	2ND28086/2ND27705	2	North Dakota State University
16	2ND32829	2ND27480/2ND28065	2	North Dakota State University
17	M160 (FEG250-16)	M139 / FEG160-03	6	University of Minnesota
18	S6M164 (MS11S3038-016)	MS10S4021-013 / MS10S4058-024	6	University of Minnesota
19	S6M166 (MS11S3058-021)	MS10S4034-018 / MS10S4029-013	6	University of Minnesota
20	S6M167 (MS11S3091-010)	MS10S4063-013 / MS10S4036-002	6	University of Minnesota
21	S6M168 (MS12_4151-004)	MS11S3058-014 / MS11S3080-019	6	University of Minnesota
22	S6M169 (MS12_4162-002)	MS11S3076-002 / MS11S3025-021	6	University of Minnesota
23	S6M170 (MS12_4181-003)	MS11S3082-014 / MS11S3007-008	6	University of Minnesota
24	MS12_4145-016	MS11S3052-024 / MS11S3079-018	6	University of Minnesota
25	2B10-4162	MERIT 57/2B05-0712	2	BAR - LLC

Table 9. cont.: Pedigree and source of breeding lines tested for FHB resistance in 2016

Entry	Line	Pedigree	Row type	Source
26	2B10-4378	2B99-2763-10/2B03-3669//2B05-0822/2B99-2763-10	2	BAR - LLC
27	2B11-4949	MERIT 57/MT050118	2	BAR - LLC
28	2B11-5166	2B03-3604/2B06-1161	2	BAR - LLC
29	2B12-5582	2B05-0728/2B06-0929	2	BAR - LLC
30	2B12-5651	2B05-0829//2B06-0929/2B06-1144	2	BAR - LLC
31	2B12-5760	2B05-0829/2B06-0929//2B05-0829/2B06-1144	2	BAR - LLC
32	2I07-2683	Z118O121O/Z03-510	2	BAR - LLC
33	TR15242	Major//TR05288/Norman	2	Agriculture and Agri-Food Canada (Legge)
34	TR16249	TR06295/Major//TR07298/AC Metcalfe	2	Agriculture and Agri-Food Canada (Legge)
35	TR16250	TR06292/Cerveza	2	Agriculture and Agri-Food Canada (Legge)

36	TR16251	TR06390/Cerveza	2	Agriculture and Agri-Food Canada (Legge)
37	BM0825-085	BM0264D-238//Major/Norman	2	Agriculture and Agri-Food Canada (Legge)
38	SR15319	M129/Stellar_ND	6	Agriculture and Agri-Food Canada (Badea)
39	SM130161	Marine/SM060314//TR08203	2	Crop Development Centre - University of Saskatchewan
40	SM132104	TR10124/SB080716	2	Crop Development Centre - University of Saskatchewan
41	HB551	H93040202/TYTO	6	Field Crop Development Centre - Alberta Agriculture and Forestry
42	G06088015	HB386/CDC MCGWIRE	2	Field Crop Development Centre - Alberta Agriculture and Forestry
43	HB552	CDC MCGWIRE/I99053127	2	Field Crop Development Centre - Alberta Agriculture and Forestry
44	TR16627	Bentley/H94050009	2	Field Crop Development Centre - Alberta Agriculture and Forestry
45	QUEST	FEG18-20 / M110	6	
46	Conlon	BOWMAN*2/DWS1008/ND10232	2	
47	ND 20493	ND16918*2/CIho 6611	6	
48	Robust	MOREX/MANKER	6	
49	Chevron	UNKNOWN	6	
50	Stander	ROBUST*2/3/CREE/BONANZA// MANKER/4/ROBUST/BUMBER	6	