Project Title: Preliminary B (stripe rust) winter wheat test - 2018

Objective: To evaluate stripe rust resistance and agronomic performance of winter wheat varieties/breeding lines

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Summary:

The nursery was planted under rainfed conditions on silt loam soil with management information available in Table 1. Wheat stripe rust was not observed in many cultivars until late June. The initial screening was conducted on June 10th and only recorded rust appearance at a low percentage on a susceptible variety (Decade). A late rust screening in July was not used due to the interference of senescence. Breeding lines used had stripe rust resistance, so low stripe rust occurrence was anticipated in most varieties, though the June weather of 2018 did not favor the disease development, as indicated by the low infection rate that month.

All traits were significant except for protein and lodging. The average yield was 106 bu/A and ranged from 54.1 (Decade) to 126 (MT18103) bu/A. The average grain protein content was 12%. Test weight ranged from 50.8 (Decade) to 62.2 (MT1895) lb/bu. Thousand kernel weight ranged from 25.2 (Decade) to 41.9 (MT1897) grams. Plant height averaged 39.2 inches with the MT18102 being the tallest whereas MT1896 was the shortest. Heading date averaged 157 days. Falling numbers ranged from 332 (SY Wolf) to 441 (MT18102) seconds. Complete agronomic performance is shown in Table 2.

Table 1. Management information

Seeding date:	9/26/2017	Harvest date:	8/1/2018
Julian date:	269	Julian date:	213
Seeding rate:	25 plants/ft^2	Soil type:	Creston silt loam
Previous crop:	pea	Soil nutrient residual (lb/A):	172-8-178 (Fall, 2017)
Tillage:	conventional	Nutrient fertilizer applied (lb/A):	9-42-60 (Fall) 5-45-0 (Spring)
Herbicide:	Husky Complete		

Table 2. Agronomic performance

Variety/line	HD Julian	Rust %	HT in	LOD %	YLD[1] bu/A	PRO[2] %	TWT[1] lb/bu	TKW g	FN seconds
MT18103	159	0.0	42.2	0.0	126.0	11.9	57.1	41.4	433
MT18112	158	0.0	39.8	0.0	122.0	11.1	61.5	38.6	363
MT18105	157	0.0	40.7	0.0	119.9	11.2	56.2	40.2	364
MT1894	156	0.0	39.0	0.0	118.9	12.1	59.6	44.5	384
MT1895	156	0.0	36.5	0.0	118.6	12.0	62.2	40.9	424
MT18108	159	0.0	40.0	0.0	114.9	11.3	56.6	40.3	402
MT18114	156	0.0	38.3	0.0	113.8	13.2	60.7	40.1	360
MT18106	158	0.0	40.9	0.0	113.7	11.5	58.5	41.3	407
MT18109	159	0.0	39.8	0.0	113.5	12.2	61.7	38.1	379
MT1898	158	0.0	39.4	0.0	113.5	11.5	60.5	41.5	413
MT18110	156	0.0	37.7	0.0	110.6	12.5	61.8	38.6	403
MT1896	158	0.0	36.2	0.0	110.3	12.6	60.0	45.5	400
MT1899	156	0.0	36.7	0.0	109.6	11.7	62.6	40.5	414
MT18111	158	0.0	40.0	0.0	108.6	12.6	59.5	37.5	375
MT18107	159	0.0	36.5	0.0	108.4	11.4	60.5	43.3	378
MT18100	158	0.0	37.8	0.0	105.7	11.7	61.0	41.6	399
MT18101	156	0.0	38.7	0.0	105.2	11.6	61.4	43.0	398
MT18104	158	0.0	41.3	0.0	104.8	11.3	57.4	39.3	423
MT1897	156	0.0	36.8	0.0	103.5	11.7	62.2	41.9	400
MT18102	160	0.0	42.6	0.0	101.8	11.3	57.4	36.8	441
MT18113	156	0.0	37.1	0.0	100.8	13.4	61.4	40.9	371
Judee	158	2.5	41.4	0.0	88.1	12.3	57.7	34.9	344
Yellowstone	159	0.0	41.2	0.0	84.1	11.5	57.4	36.3	420
SY Wolf	156	0.0	37.4	0.0	80.9	12.7	57.5	35.1	332
Decade	158	2.5	41.2	0.0	54.1	13.3	50.8	25.2	339
Mean	157	0.2	39.2	0.0	106.0	12.0	59.3	39.5	391
CV	0.8	339	4.9	0.0	14.3	5.6	4.4	9.9	7
LSD	2.3	ns	3.4	ns	27.1	ns	4.5	4.5	32
Pr>F	0.0174	0.0759	0.0068	ns	0.0079	ns	0.0039	<.0001	<.0001

YLD: yield, PRO: protein, TWT: test weight, TKW: thousand kernel weight, HT: height, LOD: lodging, HD: heading, FN: falling number, and Rust: rust rating

ns: non-significant at alpha = 0.05

[1] Adjusted to 13% moisture

[2] Adjusted to 12% moisture