

Project Title: Agronomic Evaluation of Advanced Spring Wheat Experimental lines

Objectives: To evaluate spring wheat varieties and experimental lines for agronomic performance and disease resistance in environments and cropping systems representative of northwestern Montana.

Materials and Methods:

The previous crop was alfalfa and the field was fertilized with 27-30-120-24 lb/A of N-P-K-S, respectively. The soil type was a Creston silt loam (25-50-25) with an organic matter content of 4%, a pH of 7.5, and a CEC of 20 meq/100g. Treatments were seeded 1.5 inches deep on April 23, 2010. Individual plots consisted of seven, 6-in wide rows, 15 feet in length with each variety replicated 3 times in a randomized complete block design. Wolverine was applied at 1.7 pt/A on May 25, 2010 for weed control. Heading was recorded when 50 percent of the plants in a plot had half the head exposed. Three wheat heads were collected from each plot in the first replication to determine midge larval numbers. Height measurements were recorded near maturity. The study was harvested September 29, 2010. Grain yield, test weight, protein and grain moisture were then determined.

Results:

The average Julian heading date was 181 (June 30). Heading dates ranged from 178 (June 27) for AGRIPR13 to 186 (July 5) for Jedd (Table1). Plant height was taller than the previous year, averaging 37.5 inches in 2010 as compared to 31.5 inches in 2009. Thatcher was the tallest (49.6-in) and Jedd was the shortest (30.8-in). Lodging was not detected. Stripe rust was detected in the nursery with MTHW0867 (98.3%), AP604CL (95.6%), Hank (90%), and Jedd (90%) being the most susceptible. Septoria was also detected, with AGRIPR11 (48.3%) and BZ903461W (45%) being the most susceptible. Midge densities were low, averaging 10 larvae per spike. Midge densities were highest in MT0941 at 68 larvae per spike, while AGRIPR12, MT0747, Fortuna, and Mott had no infestation. Despite disease and insect pressures, growing conditions were favorable for spring wheat, with 16 varieties producing 99 Bu/A or more. Yields averaged 89 Bu/A and ranged from a high of 110 Bu/A for AGRIPR12, to a low of 61 Bu/A for Thatcher. Test weights averaged 58.6 lb/Bu and ranged from a low of 52.1 lb/Bu for MTHW0867 and a high of 60.7 lb/Bu for Volt. Protein levels were good and averaged 14.8% for the nursery. Protein ranged from a high of 16.5% for MT0909 to a low of 13.3% for BZ903461W.

Table 1. Agronomic data from the Spring Wheat Advanced Yield Trial. 2010, Kalispell, MT.

Variety	Test					Stripe		Green	
	Yield bu/A	Protein %	weight lb/bu	owbm no/spike	Heading Julian	Height inches	rust %	Septoria %	leaf area %
AGRIPR12	110.8	13.6	59.6	0.0	182.0	32.4	15.0	21.7	65.0
MT 0827	109.4	15.1	59.8	5.5	179.7	38.8	1.7	8.3	86.7
MT 0747	109.3	15.2	59.2	0.0	180.0	38.1	6.7	5.0	91.7
VOLT	108.9	13.5	60.7	0.3	182.3	36.2	0.0	6.7	91.7
BZ903461W	107.6	13.3	59.5	9.3	180.0	36.9	1.7	45.0	51.7
JENNA	107.1	14.1	58.3	24.3	184.0	36.2	15.0	13.3	80.0
MT 0755	105.9	16.0	58.8	2.3	179.0	39.6	0.0	15.0	78.3
MT 0855	104.9	15.4	57.9	1.3	180.7	37.8	0.0	23.3	73.3
REEDER	103.8	15.2	60.4	3.3	180.3	39.4	11.7	10.0	86.7
MT 0832	101.4	14.9	59.0	2.7	180.0	36.5	0.0	25.0	73.3
MT 0968	101.2	14.5	60.3	1.7	181.3	39.5	11.7	10.0	78.3
BRENNAN	100.8	14.7	59.3	1.0	179.7	32.3	1.7	13.3	86.7
AGRIPR11	100.0	14.3	58.5	5.3	183.0	35.2	20.0	48.3	35.0
AP604 CL	99.5	13.7	59.4	1.0	180.0	39.0	95.7	0.0	5.0
KELBY	99.3	15.1	59.4	0.7	179.3	33.2	5.0	15.0	81.7
VIDA	99.2	15.0	59.4	11.3	181.3	38.7	13.3	8.3	83.3
MT 0975	98.9	14.9	57.9	6.0	181.3	38.1	6.7	10.0	83.3
MT 0869	97.5	15.0	59.0	9.7	180.3	36.5	15.0	11.7	78.3
MT 0750	97.4	15.0	58.7	3.0	181.7	40.9	25.0	18.3	58.3
MT 0928	96.8	15.1	58.6	19.7	182.3	37.3	1.7	8.3	91.7
CORBIN	96.2	14.2	59.3	23.7	180.3	37.5	33.3	26.7	53.3
MT 0802	94.6	15.3	59.5	6.3	183.0	39.6	26.7	8.3	78.3
CHOTEAU	94.2	15.0	59.0	14.0	181.3	36.2	0.0	5.0	90.0
FREYR	94.1	14.7	59.7	6.7	180.7	39.2	3.3	10.0	88.3
KUNTZ	93.9	14.5	59.4	4.0	181.3	34.1	5.0	8.3	85.0
MT 0801	93.6	14.2	58.0	10.3	179.7	39.2	71.7	18.3	23.3
MT 0861	93.5	15.0	58.0	6.0	182.3	35.3	18.3	13.3	71.7
MT 0930	93.4	14.8	57.4	8.3	183.0	35.4	0.0	8.3	81.7
MT 0944	91.9	14.3	59.2	29.3	181.0	36.4	65.0	20.0	30.0
MT 0967	91.2	15.3	58.9	2.0	180.0	38.2	0.0	8.3	91.7
MT 0847	90.9	15.2	58.1	3.3	181.3	36.2	51.7	18.3	36.7
MT 0943	90.8	14.0	56.4	1.0	181.0	35.8	18.3	26.7	36.7
AGRIPR13	90.3	15.4	60.6	3.0	178.7	40.7	26.7	15.0	63.3
HANK	90.2	13.7	56.2	41.7	180.3	35.2	90.0	5.0	6.7
MT 0923	88.5	15.5	59.3	8.0	182.0	35.4	1.7	6.7	91.7
MT 0852	88.1	14.8	59.3	11.7	182.3	37.9	50.0	18.3	36.7

Table 1. Continued

Variety	Yield bu/A	Protein %	Test			Heading Julian	Height inches	Stripe		Green
			weight lb/bu	owbm no/spike	rust %			Septoria %	leaf area %	
IMICHT79	87.3	15.1	58.5	3.7	182.0	35.6	3.3	6.7	91.7	
OUTLOOK	87.0	15.2	58.1	12.3	184.0	39.2	1.7	8.3	90.7	
MT 0953	86.7	15.4	59.2	5.0	181.7	40.3	6.7	10.0	86.7	
MT 0959	86.4	14.7	60.6	1.3	180.0	36.0	65.0	35.0	15.0	
MT 0912	85.7	15.4	59.3	7.7	182.3	36.2	3.3	16.7	78.3	
MT 0921	85.5	14.9	58.1	0.7	182.3	36.1	3.3	13.3	84.0	
MT 0927	85.2	15.5	57.2	2.7	183.3	35.7	0.0	10.0	90.0	
MCNEAL	85.1	15.2	59.4	19.7	184.0	41.1	18.3	8.3	81.7	
FORTUNA	85.1	14.4	59.1	0.0	181.7	45.1	1.7	25.0	66.7	
MT 0914	84.8	14.3	56.7	8.0	181.0	36.4	86.7	0.0	10.0	
BZ902413R	84.5	14.2	60.2	8.3	181.0	36.5	6.7	20.0	73.3	
MT 0950	84.4	14.4	56.8	3.3	183.7	41.1	85.0	13.3	10.0	
MT 0974	84.3	15.0	59.1	4.0	182.0	38.6	35.0	6.7	56.7	
MOTT	83.8	14.5	58.8	0.0	186.3	42.7	63.3	18.3	25.0	
MT 0969	82.0	15.1	60.0	2.7	182.7	38.6	13.3	6.7	81.7	
MT 0940	81.2	14.8	59.1	3.3	183.0	37.4	80.0	16.7	13.3	
MT 0814	80.4	15.0	58.5	11.3	180.3	35.8	86.7	18.3	10.0	
MT 0972	78.3	15.6	59.4	2.7	181.3	37.7	13.3	8.3	81.7	
CONAN	74.5	14.4	59.3	16.3	181.0	36.7	48.3	11.7	50.0	
JEDD	73.2	13.7	57.2	41.3	180.3	30.8	90.0	16.7	8.3	
BZ902413W	72.9	14.6	59.7	19.3	180.3	35.7	10.0	20.0	51.7	
ONEAL	71.5	14.8	57.8	2.0	182.7	36.7	85.0	11.7	11.7	
MTHW0867	71.0	13.4	52.1	15.3	181.0	38.8	98.3	0.0	1.7	
MT 0909	69.5	16.5	59.0	12.0	185.7	38.1	5.0	10.0	81.7	
MT 0964	69.1	14.9	56.6	28.3	184.3	34.5	76.7	16.7	6.7	
MT 0965	64.2	14.8	57.4	20.7	186.0	39.0	83.3	10.0	11.7	
MT 0941	63.8	15.7	55.6	68.3	184.7	35.8	66.7	23.3	25.0	
THATCHER	61.3	14.8	58.4	41.3	186.3	49.6	50.0	16.7	40.0	
MIN	61.3	13.3	52.1	0.0	178.7	30.8	0.0	0.0	1.7	
MAX	110.8	16.5	60.7	68.3	186.3	49.6	98.3	48.3	91.7	
MEAN	89.7	14.8	58.6	10.1	181.7	37.5	29.6	14.2	58.7	
LSD (p=.05)	11.33	NA	0.68	NA	1.33	2.11	14.39	12.36	16.53	
CV	7.81	NA	0.72	NA	0.45	3.49	30.08	53.71	17.41	
TRT (Pr>F)	0.0001	NA	0.0001	NA	0.0001	0.0001	0.0001	0.0001	0.0001	