

Project Title: Evaluation of Clearfield Winter Wheat Cultivars for Herbicide Tolerance

Objectives: To evaluate experimental lines for herbicide tolerance and agronomic performance in environments and cropping systems representative of northwestern Montana.

Materials and Methods:

A preplant application of 30-30-60 was applied on September 23, 2009. Treatments were seeded 1.5 inches deep on September 24 at a rate of 80 lb/A. Individual plots consisted of seven, 6-inch wide rows, 15 feet in length, with each variety replicated 3 times in a randomized complete block design. A topdress application of nitrogen was applied as urea at 70 lb/A on April 12, 2010. Beyond was applied at the 2X rate (12 oz/A) with MSO in 20 GPA of water on April 21 using a tractor mounted sprayer equipped with Tee Jet 11022 nozzles. Herbicide injury ratings were recorded at 3 and 4 weeks after treatment. Heading was recorded when 50 percent of the plants in a plot had half the head exposed. Height measurements and lodging were recorded near maturity. Varieties were evaluated for stripe rust on July 15. The study was harvested August 25. Grain yield, test weight, moisture, and grain protein were then determined.

Results:

All entries demonstrated excellent tolerance to Beyond when applied at the 2X rate (Table 1). Initial injury ratings ranged from 0 to 10 percent. However, these symptoms had completely dissipated by 4 weeks after treatment. The average heading date for the nursery was 161 (June 10). Varieties BZ9WM07-1527 and BZ9WM07-1555 had the earliest (157) and MTCL1002 had the latest (167) heading dates. Plant heights averaged 36.9 inches and ranged from a low of 30 inches for BZ9WMO7-1516 to a high of 40.9 inches for BZ9WM07-1546. Lodging was minor, with MTCL1076 (30%) being the most adversely affected. Stripe rust was detected in the nursery with BZ9WM07-1516 (72%), MTCL1073 (58%), MTCL1074 (58%) being highly susceptible. Yields averaged 127 Bu/A, and ranged from a high of 162 Bu/A for AP503CL2 to a low of 89 Bu/A for BZ9WM07-1516. Protein content averaged 13 % and ranged from a high of 14.4 % for BZ9WM07-1553 to a low of 11.8 % for MTCL1073. Test weights averaged 61.1 lb/Bu, and range from 59.5 lb/Bu for MTCL1074 to 63.6 lb/Bu for AP503CL2.

Table 1. Agronomic data from the clearfield winter wheat nursery grown at Kalispell, MT 2010.

Cultivar	Yield Bu/A	Protein %	TWT lb/Bu	Heading Julian	Height Inches	Lodging %	Crop Injury		Stripe
							12-May %	18-May %	Rust %
AP503CL2	162.4	13.2	63.6	162.5	36.4	3	0	0	0
MTCL1077	157.1	12.5	61.0	159.3	38.2	17	3	0	0
MTCL1076	147.9	11.9	61.2	163.3	40.7	30	3	0	0
BZ9WM07-1515	145.4	13.1	61.8	163.3	37.3	0	3	0	2
MTCL1075	141.4	12.4	61.6	165.3	39.4	0	10	0	2
BZ9WM07-1563	137.3	13.7	61.9	159.0	39.0	0	0	0	0
MTCL1071	137.0	13.0	60.1	166.3	34.6	17	3	0	20
MTCL1002	133.6	12.6	61.5	167.3	34.8	5	0	0	35
MTCL1072	131.7	11.9	60.5	163.0	39.2	0	0	0	35
BZ9WM07-1546	129.8	12.9	61.3	160.7	40.9	0	3	0	5
BZ9WM07-1527	124.8	14.0	61.5	157.3	37.4	22	0	0	18
BZ9WM07-1555	121.8	14.4	61.6	157.3	36.0	0	0	0	2
BZ9WM07-1545	120.8	13.2	61.2	161.5	38.6	0	0	0	5
MTCL1005	120.2	13.4	60.7	161.0	38.2	3	7	0	0
BZ9WM07-1526	118.2	13.8	61.9	160.7	37.9	0	0	0	23
MTCL1073	117.0	11.8	60.3	162.3	31.6	0	0	0	58
MTCL1074	113.0	11.9	59.5	160.3	34.3	0	0	0	58
BZ9WM07-1513	110.5	13.9	60.4	159.7	37.4	0	0	0	38
BZ9WM07-1538	108.3	12.6	61.1	158.3	34.4	0	5	0	40
BZ9WM07-1553	99.1	14.4	61.1	159.3	37.8	0	3	0	2
BZ9WM07-1516	89.2	12.7	59.7	158.0	30.0	0	0	0	72
MIN	89.2	11.8	59.5	157.3	30.0	0	0	0	0
MAX	162.4	14.4	63.6	167.3	40.9	30	10	0	72
MEAN	127.0	13.0	61.1	161.2	36.9	5	2	0	20
LSD (P=.05)	19.41	NA	1.06	3.39	2.32	30.20	6.78	0.00	32.01
CV	8.97	NA	1.01	1.23	3.68	371.31	190.11	NA	90.46
Trt (Pr>F)	<.0001	NA	<.0001	<.0001	<.0001	0.7653	0.1850	NA	<.0001