

Project Title: Cooperative winter wheat evaluation nursery (4W4147)

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Objectives: To evaluate private winter wheat varieties

Results:

The study site was a conventionally tilled field that had been fallowed the previous year. The soil was a Creston silt loam with an organic matter content of 4%, a C.E.C. of 20, and a pH of 7.5. Treatments were seeded 1.5 inches deep on September 24, 2011. 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. A preplant treatment of 10-35-90-8.5 lb/A of N-P-K-S was applied on September 15, 2011, and a topdress treatment of 100-0-0 was applied on April 17, 2012. Stripe rust and height measurements were recorded near maturity. The study was harvested August 14, 2012. Grain yield, test weight, thousand kernel weight, protein, and falling numbers (FN) were then determined.

Plant heights averaged 41 inches. Yellowstone was the tallest variety (44 inches) while Paladin and Decade were the shortest at 38 inches. Lodging was not detected. Stripe rust was evident throughout the nursery and was observed early in the season. At the July 1 rating, Yellowstone demonstrated the greatest resistance at 40% infection, while Decade was the most susceptible variety with a rating of 99 percent. Stripe rust infection had a negative effect on yield, kernel weight and test weight. Yields averaged 57 Bu/A, and ranged from a high of 90 Bu/A for Yellowstone to a low of 7 Bu/A for Decade. Test weight averaged 52.6 lb/Bu, with Tucson and Yellowstone having the highest test weight (57 lb/Bu) and Decade having the lowest (41 lb/Bu). Likewise, Decade had the lowest kernel weight (15 g), while Tucson and Yellowstone had the highest kernel weight (30 g). Protein content averaged 14.1 percent. Decade had the highest protein (17) while Yellowstone had the lowest protein (12.74). Falling numbers tended to parallel the response to protein. Falling numbers averaged 407 and ranged from a high of 479 for Decade to a low of 363 for Yellowstone.

Summary

Grain yield and quality was strongly affected by stripe rust resistance. Decade was most susceptible to stripe rust, resulting in the lowest grain yield, test weight and kernel weight, and the highest protein and falling numbers. Yellowstone had the greatest yield, highest kernel weight, lowest falling number and protein content.

Funding Summary: Budget information to be provided by OSP. No other grant support for this project.

MWBC FY 2013 Grant Submission Plans: Resubmittal is not planned.

Table 2. Agronomic data from the cooperative winter wheat variety nursery. Kalispell, 2012.

	% SR June 7	% SR July 1	% SR July 12	HD Julian	HT inch	Yield bu/a	PRO %	TWT lb/bu	TKW g	FN sec
Decade	9	99	100	166	38	7	17.01	41	15	479
Eddy	2	87	99	166	42	41	14.09	53	26	377
Jagalene	6	85	95	166	42	59	13.52	52	26	389
Paladin	3	88	92	169	38	45	13.58	53	25	402
Tucson	18	78	79	166	43	74	13.11	57	30	413
Whetstone	1	65	85	163	40	81	14.63	55	26	433
Yellowstone	2	40	68	170	44	90	12.74	57	30	363
Mean	5.8	77	88	166.5	40.9	57	14.1	52.6	25.5	407
CV	93.8	8.3	7.2	0.8	2.4	7.5	1.8	1.6	4.1	3.9
LSD (P=0.05)	9.8	11.4	11.3	2.4	1.7	7.6	0.47	1.5	1.8	29

SR: stripe rust, HD: heading, HT: height, PRO: protein, TWT: test weight, TKW: thousand kernel weight, FN: falling numbers.