Project Title: Cooperative winter wheat evaluation nursery (4W3644)

Principal Investigator: Bob Stougaard

Objectives: To evaluate private winter wheat varieties

Results:

Treatments were seeded 1.5 inches deep on September 28, 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. A preplant treatment of 30-30-60 was applied on September 22, 2010, and a topdress treatment of 110-0-0-11 of N-P-K-S was applied on May 13, 2011. Stripe rust and height measurements were recorded near maturity. The study was harvested August 23, 2011. Grain yield, test weight, thousand kernel weight, protein, and falling numbers (FN) were then determined. Gross returns were determined using a grain price of $8.60/Bu and a protein premium of $0.10 for each quarter percent above 14% and a discount of $0.25 for each quarter percent below 14 percent.

Plant heights averaged 32 inches. Yellowstone was the tallest variety (36 inches) and Eddy was the shortest (30 inches). Lodging was not detected. Stripe rust was evident throughout the nursery with an average infection rate of 60 percent. Whetstone demonstrated the greatest resistance at 23% while Decade was the most susceptible variety with a rating of 96 percent. Stripe rust infection had a negative effect on yield, kernel weight and test weight. Yields averaged 65 Bu/A, and ranged from a high of 105 Bu/A for Yellowstone to a low of 13 Bu/A for Decade. Test weight averaged 59.5 lb/Bu, with Tucson having the highest test weight (62.4 lb/Bu) and Decade having the lowest (51.4 lb/Bu). Likewise, Decade had the lowest kernel weight (23.7 g). However, Yellowstone had the highest kernel weight (37.6 g). Protein content averaged 12.3 percent. Decade had the highest protein (14.6) while Yellowstone had the lowest protein (11.4). Although Yellowstone produced the greatest yield, Whetstone produced the greatest economic return due to greater protein content. Falling numbers tended to decrease as stripe rust infection declined. Falling numbers averaged 401 and ranged from a high of 459 for Decade to a low of 353 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. Whetstone demonstrated the greatest resistance to stripe rust and also produced the greatest economic return.

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

MWBC FY 2012 Grant Submission Plans: Resubmittal is planned.

Agronomic data from the cooperative winter wheat variety nursery grown at Kalispell, MT

Cultivar	Yield (bu/A)	Stripe rust (%)	Test weight (lb/bu)	kernel weight (g)	Protein (%)	Height (inches)	Falling number (sec)	Gross return ($/A)
Decade	13	96	51.4	23.7	14.6	31	459	111
Eddy	47	72	57.8	30.5	11.6	30	388	287
Jagalene	67	43	61.2	35.7	12.2	32	387	453
Paladin	60	63	60.7	36.3	12.3	31	399	404
Tucson	69	70	62.4	36.9	11.7	33	407	429
Whetstone	96	23	61.7	34.0	12.6	33	409	687
Yellowstone	105	50	61.4	37.6	11.4	36	353	626
MEAN	65	60	59.5	33.5	12.3	32	401	428
LSD (0.05)	10	9	1.2	2.2	0.74	2.6	41	100

Planted September 28, 2010, harvested August 23, 2011.