

PROJECT TITLE: Agronomic performance evaluation of Soft White Winter Wheat Cultivars.

PROJECT LEADERS: Bob Stougaard, Weed Scientist and Scott Halley, Research Associate NWARC.

PROJECT COOPERATORS: Phil Bruckner, Winter Wheat Breeder and Jim Berg, Research Associate Bozeman, MT.

OBJECTIVES:

To evaluate new and existing soft white winter wheat varieties for yield, test weight, harvest moisture, Julian heading date, plant height, lodging, winter survival, and protein in environments and cropping systems representative of northwestern Montana with specific evaluation to be made for disease acclimated to wheat produced in this region.

RESULTS:

Due to climatic conditions in the region during the 2000 production season, small amounts of natural disease inoculum were produced and disease infections were at very low levels. No disease evaluation was recorded from this nursery. Rainfall events were nearly absent after early July through harvest. While limiting crop disease, lack of precipitation did not seem to reduce yields. Winter wheat yields ranged from a low of 98 bu/acre for Stephens to greatest of 137.5 bu/acre for Lambert. Average yield exceeded 120 bu/acre (Table 1). The greatest test weight was 61 lbs/bu from Neeley. However, Rod, Kmor, and Cashup had test weights under 58 lbs/bu. All harvest moistures were of acceptable levels (range 8.9 to 10.9 percent). Julian heading dates ranged from 158 to 162 days with a mean heading date of 160 days. Plant height ranged from 34 to 43 inches. Most cultivars measured from 35 to 38 inches in height at harvest. Eltan, Lewjain, and Stephens had lodging ratings of 53, 40, and 85 percent, respectively. Only three entries had less than 100 percent winter survival. Protein percentages ranged from 9.9 for Lambert, MacVicar and Kmor to 11.3 and 11.4 for Mac-1 and Neeley, respectively. The nursery was planted on September 23, 1999 and harvested on August 14, 2000.

SUMMARY:

Despite limited precipitation during head filling, reserve subsoil moisture permitted excellent yields and test weights. Although most yields were excellent, several cultivars exhibited superior yield performance and agronomic traits that may make them an excellent choice for planting in northwestern Montana. Several cultivars exhibited levels of lodging that would make them unacceptable for most operations.

Table 1. Agronomic data from the Soft White Winter Wheat Nursery grown at the Northwestern Agricultural Research Center Kalispell, MT.

Cultivar	¹ Yield	² Test Wt	Moist	Heading Date	Height	Lodging	Winter Survival	² Protein
	Bu/A	Lbs/Bu	%	Julian	Inches	%	%	%
LAMBERT	137.5	59.6	10.5	159	41.2	0	100	9.9
BRUNDAGE	130.0	57.9	10.4	156	34.0	0	100	10.3
ROD	129.3	54.9	8.9	161	36.0	0	100	10.5
ELTAN	128.0	59.7	10.5	164	36.4	53	100	10.1
W301	124.9	59.1	10.3	158	36.2	0	100	10.5
³ MAC1	124.7	59.9	10.7	158	38.1	0	100	11.3
HILL 81	122.8	60.0	10.8	161	38.7	0	100	10.0
DAWS	119.5	59.3	10.5	160	35.0	0	98	10.2
LEWJAIN	118.7	58.9	10.2	162	33.9	40	100	10.3
MACVICAR	118.4	58.1	10.3	159	36.7	0	100	9.9
MALCOM	118.2	57.3	9.5	159	36.2	0	100	10.1
MADSEN	115.8	58.2	10.5	161	36.6	0	100	11.1
⁴ NEELEY	114.3	61.0	10.9	162	43.4	0	97	11.4
KMOR	113.0	55.4	9.5	161	35.6	7	100	9.9
CASHUP	110.5	57.1	9.3	160	35.0	12	97	10.0
STEPHENS	97.8	58.6	10.4	162	38.5	85	100	10.2
Mean	120.2	58.4	10.2	160	37.0	NA	NA	10.4
⁵ LSD p=0.05	10.1		0.8	1.7	1.9	22.4	3.0	
C.V.	5		5	1	3	109	2	
Replicate F	23.51		4.5	3.89	1.18	1.65	0.16	
Replicate Prob(F)	<0.0001		0.0195	0.0315	0.3197	0.2089	0.8546	
Treatment F	7.1		4.38	10.82	14.23	10.47	1.25	
Treatment Prob(F)	<0.0001		0.0003	<0.0001	<0.0001	<0.0001	0.2899	

¹Yields adjusted to 13 % moisture

²Test weight and protein (composite sample) 1 replicate only

³New for 2000

⁴Hard Red Wheat

⁵Data analyzed as RCBD with GLM of SAS