PROJECT TITLE: Dryland Hard Red Winter Wheat Variety Performance Trial near Broadview, Montana

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OBJECTIVES: Provide an unbiased agronomic evaluation of improved winter wheat varieties in an environment and cropping system representative of south central Montana.

RESULTS: Winter wheat yields were very good with excellent grain quality produced at the Broadview site in 1998 (Table 1). Compared to surrounding areas, the Broadview location experienced above average precipitation during the growing season, particularly during the crop grain fill period from late spring through early summer. Unlike the previous cropping season, no sawfly damage was evident at the Broadview location during harvest. The 22 entries averaged 41 bushels per acre, approximately 15 more bushels per acre than the trial averaged at Broadview the previous cropping season. Yields varied from 48.3 bushels per acre for the hybrid 'Quantum 542', to 28.6 bushels per acre for 'Norstar'. Nine other entries produced yields equal to those of Quantum 542, including the older varieties 'Manning' and 'Tiber' which frequently succumb to one of several foliar disease and insect problems. All entries possessed test weights heavier than 60 pounds per bushel. Average grain protein content was 14.8 percent, with 3 varieties possessing greater than 16 percent grain protein content.

SUMMARY: Disease and insect problems were minimal at Broadview during 1998, with winter wheat yields mostly limited by the amount of available moisture. Halt (a new Russian wheat aphid resistant line from Colorado State University) and Rampart (a recently released sawfly resistant line from MSU) both exhibited good yield, test weight and grain protein content potential in the absence of these two insect pests.

FUTURE PLANS: The Broadview study has been re-established for the 1998-99 cropping season. Similar winter wheat performance studies also have been established by the Southern Ag. Research Center near Forsyth, Huntley and Lodgegrass for the 1998-99 cropping season.

Table 1. Performance of 22 hard red winter wheats under summer fallow conditions near Broadview, Montana during 1998. Exp. No. 983881, Southern Agriculture Research Center, Huntley, Montana. Varieties listed in declining order of grain yield. Study planted September 30, 1997; harvested July 29, 1998. 60-0-0 pre-plant applied and incorporated using anhydrous ammonia. 18-46-0 applied in-furrow at planting.

Variety	1/ Grain Yield	Test Weight	Grain Moisture	2/ Grain Protein	Plant Height
	-bu/ac-	-lb/bu-	-%-	-%-	-inches-
Quantum 542 (hybrid)	**48.3****	62.8	10.5	14.3	28.8
MT9432	**47.7***	62.4	11.0	15.1	32.1
Halt	**46.9***	62.8	10.4	14.4	27.2
MT9524	**45.5***	62.4	11.4	14.9	31.7
Rocky	**45.0***	63.6	11.3	14.4	29.9
Manning	**44.1***	62.4	10.8	14.5	27.8
Rampart	**43.9***	60.3	10.2	15.3	28.5
Tiber	**43.5***	60.6	11.8	14.7	31.8
Bighorn	**43.4***	62.3	10.8	14.7	24.6
Judith	**42.8***	61.2	11.0	15.3	28.1
MT9514	42.3	62.1	11.3	12.9	33.3
Kestrel	41.4	61.3	11.0	13.8	32.3
Neeley	40.9	61.2	11.4	13.4	31.5
Pronghorn	40.5	62.3	9.9	15.4	21.1
Promontory	40.4	63.1	10.8	14.4	27.5
Erhardt	39.3	62.0	10.9	16.1	26.6
NuWest	38.7	61.3	10.9	15.4	29.2
MTW9441	37.7	61.2	11.4	15.2	30.5
McGuire	37.6	61.2	10.5	16.7	28.6
Vanguard	37.5	61.8	10.6	16.0	27.0
Elkhorn	35.4	61.1	11.3	15.0	35.8
Norstar	28.6	61.0	11.7	14.3	36.6
Average	41.4	61.7	10.9	14.8	29.6
LSD (p=0.05)	5.6	2.7	0.7		2.4
CV%	8.3	2.7	3.7		4.9

1/ Yields are based on a 60 pound standard bushel weight and adjusted to 12 percent grain moisture content.

2/ Determined from a single sample per entry derived by bulking three replications. Grain protein values adjusted to 12 percent grain moisture content.

** Indicates highest yielding variety.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).