PROJECT TITLE: Winter Wheat Variety Evaluations

YEAR/PROJECT: 1987/756 Small Grain Production

PERSONNEL: Leader - Vern R. Stewart, Todd K. Keener, Northwestern Agricultural Research Center, Kalispell, MT.

SUMMARY:

To determine the adaptability of new and introduced winter wheat varieties to Montana the Western Regional Winter Wheat nurseries are grown at the Kalispell and Stillwater locations. The outstanding varieties from these nurseries are tested under varying growing conditions of western Montana through off-station nursery evaluations. These data are used in making recommendations to the Montana producer.

Continuous snow cover began on November 29th and continued until March 2nd (94 days) which was 11 days short of the snow cover last year. Dwarf smut infection levels were low to nonexistent at the Stillwater location whereas at the Kalispell sites there was light smut in the hard red varieties with medium to heavy smut in some of the soft white winter wheat varieties.

Yields at the Kalispell location were much higher this year but the 1987 yields from Stillwater were much lower than last year's.

RESULTS:

Western Regional Hard Red Winter Wheat - Kalispell

Very good yields were recorded from the hard red winter wheat nursery grown at Kalispell. The average yield was 23 bushel above that of last year. The yields of four Utah varieites (UT 156516, UT 156712, UT 156775, and UT 156751), all exceeded 114 bushel per acre. Excellent yields were reported for most varieties with the mean yield of 96.18 bushels per acre.

Test weights averaged 61.33 lbs/bu. Kharkof had the lowest test weight at 56.83 lbs/bu. Heading dates and heights are reported in Table 1.

Dwarf smut (TCK) levels were low in the hard red winter wheats with only four varieties showing susceptibility above .75% . (WA 7522, ORCR 8320, Wanser, and Kharkof).

Western Regional Hard Red Winter Wheat - Stillwater

Moderate to low yields were obtained from the Stillwater Hard Red Winter Wheat nursery due to low plant populations which resulted from winter injury, snow mold and flooding of the test site. The average yield of the nursery was 50.68 bu/A, which was approximately 21 bushel less per acre than last year. Two of the Utah varieties that did well at the Kalispell site also were top yielding varieties at this location (UT156752, and UT 156751). Yields were near 60 bu/A.

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Test weight, heights and winter survival data are found in Table 2. It should be noted that those data reflect the adverse growing conditions this season.

Western Regional Soft White Winter Wheat Nursery - Kalispell

Excellent yields were obtained in this nursery. The mean yield was 102.55 bu/A. Twenty-four varieties had yields in excess of 104 bu/A and 26 varieties yielded significantly less than Lewjain (the check variety). Table 3. Elgin had the lowest yield at 44.64 bu/A.

Test weights averaged about 58 lb/bu. Only eight varieties had test weights in excess of 60 lbs/bu. Heading on the average was seven days earlier than the previous season. Smut percentages were higher than in the red wheat nursery with eleven varieties having 5% or higher infection level. Table 3.

Western Regional Soft White Winter Wheat Nursery - Stillwater

Yields at the Stillwater location were about 16 bu/A lower than the previous year. Stands were reduced up to 60% during the winter. Test weights were down from any other previous year with the average test weight for the nursery being 52.35 lbs/bu. Height was also reduced in comparison to previous measurements due to the environmental conditions.

Intrastate Winter Wheat Nursery - Kalispell

Yields in 1987 were 27 bu/A below 1986 averages in the Intrastate nursery. Nugaines and Winridge had the highest yields with 108 and 101 bu/A respectively. All but 13 varieties had significantly lower yields in comparison to Winridge. Test weight, height, and heading date were all average for this location (Table 5).

Percent smut was highest (2%) in the variety Roughrider and was detected in the majority of varieties. Lodging, although not prevalent did appear in seven varieties above 20% . The severity of lodging in those varieties a was not severe.

Offstation Winter Wheat Nurseries

The 1987 Offstation winter wheat nurseries grown on the Foss McIntrye farm (Ravalli Co.), the Don Callahan farm (Lake Co.), and at Stillwater. Neely, MT 2079, Cheyenne and Winridge were they highest yielding varieties when averaged across all locations. Yields were fair for the Stillwater and Lake County location but the stands at the the Ravalli County site were very poor and resulted in very low yields. Table 6. Test weights were good at all locations and were the lowest at the Stillwater location. Table 7.

Table 3. Agronomic data from the Western Uniform Soft White Winter Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT in 1987.
Planting date: September 15, 1986 Harvest date: August 4, 1987

CI or State	Variety or Pedigree	YIELD BU/A	TEST WT LBS/BU	HEAD DATE	HEIGHT INCHES	HEADS/ 3 FT RW	SMUT HD /3 FT	% SMUT
WA 7529	LUKE/VH67375//VPM/MO	127.41	59.53	154.50b	32.97	30.00	.00	.00
ORCW8521	TJB259-83/3/CD/P101/	126.56	60.98	152.00b	40.35a	24.50	1.00	.25
CI 17909	LEWJAIN 1/	126.18	60.45	156.25	31.59	26.00	.00	.00
WA 7526	TRES COMPOSITE CROSS	126.11	60.40	155.00	34.15a	24.50	.00	.00
OR 843	HYSLOP/CERCO, H-308	124.03	59.80	154.25b	37.01a	25.00	5.00	15.00
WA 7216	V77254,OASIS/WA63621	123.59	59.83	156.75	33.66a	31.00	.00	.00
ORF75336	YMH/MCD/2/T.SPELTA/3	121.01	57.40b	151.50b	32.97	28.00	3.50	12.50
PV 1	KALSUP	119.48	59.28	154.25b	31.40	28.00	.50	.00
WA 7527	TRES MULTILINE 86	119.21	60.25	154.00b	33.07	21.50	.00	.00
ID 0330	NEELY SPN//SPN (A79	118.45	58.65b	149.00b	34.15a	25.00	1.50	1.50
CI 17419	DAWS	116.88	59.83	154.00b	31.40	22.50	.00	.00
CI 17917	TRES (WA 6698)	116.05	60.30	155.50	33.46a	26.00	.50	5.00
ORCW8421	PJB 847/1543/YMH/63-	114.11b	59.80	153.50b	33.56a	26.00	.50	.25
OR 845	HYSLOP/YAYLA//63-11	114.03b	60.60	152.00b	32.48	25.50	.00	.25
ID 0329	NEELY/SPN//SPN (A79	113.10b	59.05	147.25b	33.37a	28.50	1.00	5.00
ORCW8522	RMN 73-71/TORIM	112.06b	60.90	147.50b	31.99	24.50	.50	2.50
PI486429	DUSTY (WA 6912)	111.59b	59.33	155.50	31.59	32.00	1.00	.00
WA 7163	VPM/MO5951/2*OR68007	111.20b	59.75	156.00	32.68	35.50	.00	.00
WA 7432	VPM1/MOS//CERCO/3/L	110.17b	55.58b	158.00a	26.97b	31.50	.00	.00
ORFW 301	DAWS/SM4//MDM//SM11,	109.83b	58.65b	150.00b	31.00	28.50	4.00	20.00
OR 842	HYSLOP/CERCO, B-307	109.58b	60.15	154.75	36.81a	31.00	.00	.00
WA 7166	VPM/MO5421*TYEE	108.91b	59.35	154.00b	31.69	20.00	.00	.00
WA 7435	WA4303/PURDUE SEL./	105.35b	58.90b	155.00	25.30b	24.50	.00	.00
CI 17596	STEPHENS	104.19b	59.03b	151.75b	30.81	26.00	.50	2.50
WA 7528	FARO/BRB//WA6581,VDO	99.81b	58.90b	155.50	28.84b	24.00	.00	.00
WA 7217	VPM/MOS 951/2*BRB	96.99b	58.40b	157.00	33.27	23.50	.00	.00
ORCW8416	NORTENO/YAMHILL//67	93.99b	56.73b	155.50	31.30	22.00	2.00	.00
WA 7437	FAHA/CI13645/2*CH/A	92.16b	57.35b	156.25	31.50	22.00	.00	.00
ORCW8519	6720-10//YAMHILL/HY	91.56b	56.40b	156.25	32.09	19.00	.00	.25
WA 7433	MARIS HUNTSMAN/VH07	89.84b	54.27b	156.50	31.20	26.00	3.00	3.50
CI 13740	MORO	85.66b	58.08b	151.00b	38.58a	22.50	.00	.25
OR 8270	MCD/ROMANIAN/OR7141,	81.80b	54.15b	152.50b	29.63b	28.00	4.50	.00
OR 7996	HYS/YAYLA/WA4995/3/C	80.53b	55.53b	156.25	32.48	28.50	3.50	7.50
ORCW8517	TJB801-12795/STEPHE	73.53b	55.33b	149.75b	36.12a	25.00	2.50	15.00
CI 13968	NUGAINES	64.60b	54.85b	152.75b	31.40	29.00	11.50	20.00
CI 1442	KHARKOF	56.81b	55.33b	154.75	46.46a	27.00	5.00	12.50
ORCW8314	7C/CNO/CAL/3/YMH	55.90b	53.78b	150.75b	30.61	32.50	3.00	6.00
CI 11755	ELGIN	44.64b	51.78b	155.75	37.11a	36.00	10.00	30.00
$\bar{X}$		102.55	58.12	153.76	33.03	26.59	1.70	4.20
F value		2/25.52**	27.66**	23.56**	33.68**	1.03	1.26	1.00
C.V.%		4.16	.77	.36	1.90	14.59	141.43	173.15
L.S.D.		11.96	1.26	1.55	1.76	11.12	6.88	20.86

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1/ Check variety
2/ F value for variety comparison
** Indicates statistical significance at the .01 level of probability
a/ Values significantly greater than the check at the .01 level
b/ Values significantly less than the check at the .01 level.

Table 4. Agronomic data from the Western Regional Soft White Winter Wheat Nursery grown on the Oscar Buller Farm, Kalispell, MT in 1987
Date planted: September 17, 1986 Date harvested: August 27, 1987

CI or State #	Variety or Pedigree	Yield Bu/A	Test Wt Lbs/Bu	Height Inches	% Wntr Kill
CI 17909	LEWJAIN 1/	66.64	52.78	27.17	12.50
WA 7163	VPM/M05951/2*OR68007	64.95	53.58	28.44	15.00
WA 7435	WA4303/PURDUE SEL./	63.23	55.40a	21.56b	35.00
OR 842	HYSLOP/CERCO, B-307	62.28	53.53	32.18a	25.00
PI486429	DUSTY (WA 6912)	61.89	53.23	27.66	25.00
WA 7526	TRES COMPOSITE CROSS	61.28	52.03	27.66	17.50
WA 7527	TRES MULTILINE 86	60.83	53.48	27.85	25.00
WA 7166	VPM/M05421*TYEE	60.76	53.18	26.57	22.50
OR 843	HYSLOP/CERCO, H-308	60.51	53.80	29.72a	25.00
ORF75336	YMH/MCD/2/T.SPELTA/3	59.66	50.15b	27.66	22.50
WA 7217	VPM/MOS 951/2*BRB	59.29	50.50	26.48	7.50
WA 7529	LUKE/VH67375//VPM/MO	59.05	54.08	26.28	30.00
OR 845	HYSLOP/YAYLA//63-11	58.89	55.53a	27.26	20.00
OR 7996	HYS/YAYLA/WA4995/3/C	58.86	49.10b	30.31a	22.50
FV 1	KALSUP	58.75	54.75	26.08	45.00a
CI 13740	MORO	58.30	49.53b	29.53a	30.00
ORCW8521	TJB259-83/3/CD/P101/	57.95	54.05	31.30a	22.50
WA 7216	V77254,OASIS/WA63621	57.39	52.40	29.53a	12.50
WA 7437	FAHA/CI13645/2*CH/A	57.16	54.60	25.10	57.50a
ID 0330	NEELY SPN//SPN (A79	56.79	53.65	26.87	22.50
ORCW8421	PJB 847/1543/YMH/63-	56.60b	52.55	28.74	15.00
CI 17917	TRES (WA 6698)	56.55b	54.27	27.95	22.50
CI 17419	DAWS	56.10b	55.70a	25.98	40.00a
CI 17596	STEPHENS	54.79b	54.60	26.48	32.50
WA 7528	FARO/BRB//WA6581,VDO	53.66b	53.55	24.11b	32.50
WA 7432	VPM1/MOS//CERCO/3/L	53.46b	47.98b	22.83b	25.00
ORCW8519	6720-10//YAMHILL/HY	53.00b	52.30	27.56	20.00
ORFW 301	DAWS/SM4//MDM//SM11,	52.75b	51.23	26.28	20.00
ID 0329	NEELY/SPN//SPN (A79	50.95b	54.47	25.69	30.00
WA 7433	MARIS HUNTSMAN/VH07	50.93b	50.10	25.39	37.50a
ORCW8416	NORTENO/YAMHILL//67	50.69b	52.23	27.26	20.00
ORCW8522	RMN 73-71/TORIM	47.51b	55.03	26.38	35.00
CI 13968	NUGAINES	41.69b	51.15	25.49	27.50
OR 8270	MCD/ROMANIAN/OR7141,	41.44b	47.40b	24.41b	27.50
ORCW8517	TJB801-12795/STEPHE	41.10b	51.78	29.33a	27.50
CI 1442	KHARKOF	40.33b	52.03	39.96a	20.00
ORCW8314	7C/CNO/CAL/3/YMH	39.16b	44.90b	26.48	20.00
CI 11755	ELGIN	31.48b	48.80b	31.40a	60.00a
	$\bar{X}$	54.65	52.35	27.55	26.51
	F value 2/	5.00**	8.71**	16.39**	1.65*
	C.V.%	6.55	1.60	2.73	23.92
	L.S.D.	10.05	2.35	2.11	23.92

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1/ Check variety
2/ F value for variety comparison
* Indicates statistical significance at the .05 level of probability
** Indicates statistical significance at the .01 level of probability
a/ Values significantly greater than the check at the .01 level
b/ Values significantly less than the check at the .01 level