

PROJECT TITLE: Small Grains Production

PERSONNEL:

Leader - Vern R. Stewart, N. W. Agric. Res. Center, Kalispell
 Research Specialist I - Todd K. Keener

N. W. Agric. Res. Center, Kalispell

Cooperators - Oscar Buller - Stillwater Location

Vergeront Farm - Lake County

Ross McIntyre - Ravalli County

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 cultivars from these trials are then tested under varying growing conditions of western Montana through off station nursery evaluations. These data are used in making recommendations to the Montana producer.

An open winter with less than normal continuous snow cover contributed to high incidence of winter kill especially at the Stillwater location. TCK smut was present in all Regional nurseries yet fairly light in comparison to previous years. Fair growing season conditions resulted in minimal lodging and disease.

RESULTS:

Western Regional Hard Red Wheat

Although the average yield this year (73.0 bu/a) was just slightly less than last year the high yield for 1985 (89.5 bu.) was much less than 1984 (110 bu/a). The narrow range in variety yields could be a reflection of low moisture levels during the growing season. Two varieties yielded significantly higher than the check variety Winridge (UT132434 and WA7171) and three varieties were significantly less in yield (ORCR8320, MT 8003 and ID 284).

Test weights were slightly lower than normal this year in comparison to others and twenty-eight varieties had higher test weights significantly different from Winridge.

The less winterhardy varieties have stand reductions exceeding 50%

TCK smut was observed in nineteen varieties with the average level being around 5% of the varieties showing infection.

Lodging was not drastic yet did appear more severe in the Utah Hansel/Arbon crosses.

Western Regional Hard Red Winter Wheat Nursery - Stillwater

Yields were considerably lower than long term averages at the Stillwater location because of low rainfall. The highest yield was 50 bu/a in the nursery with the Utah Hansel/Arbon crosses producing the two top yields.

Test weights are generally lower than average at 52.7 lbs/bu average. Eighteen varieties had significantly higher test weights than Winridge.

Stand losses exceeded 90% in several varieties. WA6820 had the best stand of lines tested at 62.5%.

TCK smut was light at Stillwater although twenty-one entries had smut levels ranging from .25 to 3.75%.

Lodging in this nursery was almost nonexistent.

Western Regional Soft White Winter Wheat Nursery - Kalispell

The dry growing season in 1985 resulted in reduced yield at Kalispell. This year the average yield was 74.5 bu/a, some 20 bushels less than last years average. Seven varieties yielded significantly higher and three varieties were significantly lower than the check variety, Stephens.

Test weights were much lower this year also. The average of 53 lb/bu is seven pounds below the standard weight for wheat.

OI754022 was the only variety significantly different from the check for percent stand. Stands were generally quite uniform.

TCK smut level means were about 6%. Only two varieties, WA7129 and WA7217 were smut free. OI754989 was very susceptible (28.8%).

Western Regional Soft White Wheat Nursery - Stillwater

Yields were greatly reduced in this experiment when compared to last year and long term averages. Yields ranged from 21.2 to 40.2 bu/a with eight varieties having yields significantly less than Stephens.

Test weights were lower than previous years with the average being 47.8 lb/bu.

The stand mean was 44%. Some entries had less than 25% stand.

TCK smut was observed in all but four entries, however level of infection was very low, with a mean for the experiment of 2%.

Off Station Winter Wheat Nurseries

The 1985 off station winter wheat nurseries were grown on the Ross McIntyre farm (Ravalli County) and the Vergeront Farm (Lake County). Comparing the two location averages it was found that the top three yielding varieties were Lewjain (white), Tyee (white) and Weston (red type wheat). Yields were very low in Ravalli County due to drought throughout the growing season.

The two high test weights from the combined location data were from Hawk and Weston (53.5 and 53.9 lbs/bu respectively). Height varied according to variety and location.

Table 1. Agronomic data from the Western Regional Hard Red Winter Wheat Nursery grown on the Northwestern Agricultural Research Center at Kalispell, MT in 1985. Random block design, four replications. Field E-2.

Date seeded: September 17, 1984 Date harvested: August 6, 1985

VARIETY	YIELD BU/A	TEST WT LBS/BU	HEAD DATE	% SURV	HEIGHT INCHES	% 2/ SMUT	LODG PREV	LODG 3/ %
UT148122 Hansel/Arbon	87.84	56.50a	163.50b	95.50	39.07b	.00	5.00	67.75
CI 0281 HNL/CI 14103/DLM/1	77.25	57.90a	163.50b	97.00	44.05	.00	5.50	72.50
UT148111 Hansel/Arbon	71.41	55.43a	163.00b	95.50	40.35b	1.25	5.25	63.50
UT148120 Hansel/Arbon	72.41	56.13a	163.00b	96.00	38.58b	.00	4.50	57.75
CI 17902 WINRIDGE 1/	75.26	53.13	165.00	95.25	43.11	.00	4.00	78.50
ID 299 Snowmold tolerant Bu	72.81	57.85a	163.00b	80.50b	40.85	.00	3.25	47.50b
CI 1442 KHARKOF	62.33	56.43a	166.00	89.50	48.82	8.00a	2.50	82.25
ID 0259 Jeff/E/11-60-155/CI	79.41	59.63a	161.75b	78.00b	44.98	.00	2.25	46.25
ID 0282 H6L/ID5006/3/CI14106	83.14	58.28a	162.50b	82.75	36.71b	.00	1.75b	16.25b
ID 0280 11-60-155/2*CI14107/	71.59	57.68a	161.75b	85.75	40.94	.00	1.25b	37.50b
ID 0283 ATL50/4/R/R//2*CNN/3	80.03	55.53a	160.75b	91.50	42.22	.25	1.00b	27.50b
ID 297 A6B203W-E-1-3-3/A6B2	76.78	56.75a	165.75	79.75	37.40b	.00	.75b	23.75b
ID 302 Arbon/3/DM/CLM//Burt	66.80	55.70a	162.50b	53.75b	33.96b	.00	.50b	18.75b
ID 298 2IT65 or 2CNN or 2MC	73.29	59.05a	164.50	80.00b	40.35b	.00	.50b	2.50b
WA1 WA 5514/Itana//CercO	85.21	56.80a	165.25	80.00b	40.94	.25	.50b	6.25b
ORCRB320 Marne Desprez/Colota	42.91b	54.73a	159.75b	43.75b	27.36b	2.25	.00b	.00b
WA2 REA Sel.62/ID 92	70.93	54.98a	164.50	85.75b	37.80b	3.50	.00b	.00b
WA 6816 ID5012/WA5666	65.30	53.20	164.50	70.75b	33.96b	7.25a	.00b	.00b
MT 8003 REDWIN SEL.	56.83b	58.03a	162.75b	93.50	40.06b	2.75	.00b	.00b
ID 300 Arbon/3/DM/CLM//Burt	62.82	54.98a	161.25b	52.50b	36.02b	.00	.00b	.00b
UT132434 WRR/CI13837//PI	88.76a	55.40a	163.75	92.50	39.67b	.00	.00b	.00b
WA 6820 GWB127/GWB236-7/Stur	82.04	56.33a	158.50b	90.75	28.64b	.25	.00b	.00b
ID 0261 Burt/CI12929//DLM/4/	70.68	56.23a	165.75	79.75b	30.02b	1.50	.00b	.00b
WA 7172 CI13438/Burt//SM7437	89.50a	57.50a	161.50b	92.50	35.63b	2.25	.00b	.00b
ID 284 2IT65 or 2CNN or 2MC	59.13b	53.90	164.00	56.25b	31.69b	.00	.00b	.00b
OI730875 7C/Kavkaz//Nord	82.54	55.45a	163.50b	75.75b	35.14b	2.25	.00b	.00b
CI 13844 WANSER	71.44	58.08a	162.50b	80.50b	40.16b	6.25	.00b	.00b
MT 7877 NDRWIN	75.73	57.90a	163.00b	88.25	27.26b	19.25a	.00b	.00b
OI602137 OR-ID Sel. FG0213-76	81.21	54.20	162.00b	68.75b	26.28b	2.50	.00b	.00b
ORCRB313 Probstorfer-Extrem/T	69.29	57.48a	160.00b	70.50b	33.17b	8.75a	.00b	.00b
ORCRB107 ALBA/GNS//FN/SONORA6	76.59	58.00a	161.25b	73.75b	43.70	5.75a	.00b	.00b
ID 301 H6L/ID5006/4/11-60-1	70.88	55.45a	164.25	57.50b	31.99b	1.00	.00b	.00b
WA 7171 CI13438/Burt//SM7437/3	65.16	53.75	163.75	73.75b	33.46b	4.25	.00b	.00b

EXPERIMENTAL MEANS	73.01	56.31	162.98	79.32	37.10	2.41	1.20	19.41
F TEST FOR VAR. 4/	4.37**	11.05**	13.22**	15.82**	32.88**	5.25**	6.47**	7.03**
STANDARD ERROR OF THE MEAN	4.65	.51	.49	3.50	.97	1.74	.73	10.44
C.V. 2: (S OF MEAN/MEAN)*100	6.37	.90	.30	4.42	2.62	72.21	61.32	53.77
LSD (0.05)	13.06	1.42	1.38	9.83	2.73	4.88	2.06	29.30

- 1/ Check Variety
- 2/ Ocular rating of % TCK smut
- 3/ Lodging ratings: prevalence rated on 0-9 scale, 0 = no lodging 9 = lodged to ground
- 4/ F value for variety comparison
- ** Indicates statistical significance at the .01 level
- a/ signifies values significantly greater than the check variety at the .05 level
- b/ signifies values significantly less than the check variety at the .05 level

Table 2. Agronomic data from the Western Regional Hard Red Winter wheat Nursery grown on the Oscar Buller farm, Kalispell, MT. in 1985. Random block design, four replications.

Date planted: September 18, 1984

Date harvested: August 7, 1985

VARIETY	YIELD BU/A	TEST WT LBS/BU	HEIGHT INCHES	% SURV	% 2/ SMUT	LODG PREV	LODG 3/ %
ID 299 Snowmold tolerant Bu	34.55b	52.80a	31.20b	13.75	.00	2.50a	88.75a
ID 0281 HNL///CI 14106/CLM//	39.48	50.60	36.22	37.50b	.25	.50a	12.50a
WA 6816 ID5012/WA5866	41.19	48.45	28.94b	36.25b	.50	.50a	7.50a
CI 17902 WINRIDGE 1/	41.85	50.32	35.24	50.00	.75	.00	.00
ID 297 ASB100W-E-1-3-3/ASB1	35.18	50.92	34.74	18.75b	.00	.00	.00
ID 298 2IT65 or 2CNN or 2MC	37.15	51.95	28.94b	8.75b	.00	.00	.00
MT 8003 REDWIN SEL.	38.10	56.00a	33.56	40.00	1.00	.00	.00
UT146122 Hansel/Arbon	54.32a	55.38a	32.09b	45.00	.00	.00	.00
UT132434 WRR/CI13837//PI	38.59	50.32	32.97	46.25	.25	.00	.00
ID 302 Arbon/3/DM/CLM//Burt	41.60	52.55a	29.13b	15.00b	.25	.00	.00
WA2 REA Sel.62/ID 92	41.04	52.00	34.94	40.00	.75	.00	.00
MT 7877 NORWIN	38.89	55.03a	22.54b	38.75b	3.75	.00	.00
UT146120 Hansel/Arbon	46.76	53.13a	35.14	48.75	.00	.00	.00
ORCR8320 Marne Desprez/Colota	28.34b	55.18a	24.61b	20.00b	.25	.00	.00
ID 301 HGL/ID5006/4/II-60-1	34.28b	51.10	28.84b	10.00b	.00	.00	.00
WA1 WA 5514/Itana//Cercro	36.80	54.93a	37.50	42.50	.00	.00	.00
ID 0280 II-60-155/2*CI14107//	33.08b	51.90	35.53	42.50	.00	.00	.00
UT146111 Hansel/Arbon	50.45a	52.63a	32.87	56.25	.00	.00	.00
ID 0261 Burt/CI12929//DLM/4/	42.75	50.40	26.38b	31.25b	1.00	.00	.00
ID 300 Arbon/3/DM/CLM//Burt	32.94b	53.45a	30.41b	12.50b	.00	.00	.00
ID 284 2IT65 or 2CNN or 2MC	30.43b	49.80	26.57b	15.00b	.00	.00	.00
WA 6820 GWB127/GWB236-7/Stur	48.49	52.53a	25.39b	62.50a	3.00	.00	.00
CI 13844 WANSER	45.99	55.58a	35.93	38.75b	.75	.00	.00
ID 0259 Jeff/E/II-60-155/CI	42.33	54.25a	38.29a	47.50	.25	.00	.00
DI602137 DR-ID Sel. FG0213-76	36.59	51.65	23.92	40.00	.50	.00	.00
ID 0283 ATL50/4/R/R//2*CNN/3	42.80	51.80	35.63	55.00	.25	.00	.00
ORCR8313 Probstorfer-Extrem/T	46.24	55.45a	28.05b	41.25	1.75	.00	.00
CI 1442 KHARKOF	36.44	53.18a	39.37	40.00	1.25	.00	.00
ORCR8107 ALBA/GNS//FN/SONORA6	47.83	54.23a	38.39a	37.50b	2.75	.00	.00
DI730875 7C/Kavkaz//Nord	47.76	50.53	31.00b	42.50	1.75	.00	.00
ID 0282 HGL/ID5006/3/CI14106	48.39	55.43a	31.59b	42.50	.00	.00	.00
WA 7172 CI13438/Burt//SM7437	47.01	55.03a	31.69b	45.00	2.00	.00	.00
WA 7171 CI13438/Burt//SM7437/3	39.89	51.93	29.63b	47.50	1.75	.00	.00

EXPERIMENTAL MEANS	40.83	52.74	31.73	36.63	.75	.11	3.30
F TEST FOR VAR.	6.27**	7.60**	17.64**	13.22**	1.49	11.80**	35.21
STANDARD ERROR OF THE MEAN	2.46	.73	1.06	3.94	.81	.13	2.62
C.V. %	6.03	1.39	3.35	10.75	108.11	122.53	79.49
L.S.D. (.05)	6.91	2.06	2.99	11.05	2.28	.36	7.35

1/ Check variety

2/ Ocular rating of TCK smut per plot

3/ Lodging ratings: prevalence rated on 0-9 scale, 0= no lodging 9 = lodged to ground

4/ F value for variety comparison

** Indicates statistical significance at the .01 level

a/ Values significantly greater than the check at the .05 level

b/ Values significantly less than the check at the .05 level