

PROJECT TITLE: Small Grains Production

PERSONNEL:

Leader - Vern R. Stewart, N. W. Agric. Res. Center, Kalispell
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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.

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Table 3. Agronomic data from the Western Regional White Winter Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT in 1985. Random block design. Field E4.

Date planted: September 17, 1984 Date Harvested: August 6, 1985

CI Number	Variety	Yield Bu/A	Test Wt. Lbs/Bu	Heading Date	% Surv	% 1/ Smut	Height Inches
WA 7215	76/W5052/Daws, Vh	91.0	56.53a	163.2a	88.25	4.750	33.5
OR 7996	SPN/63189-66-71/	89.7a	51.65	165.5a	84.50	2.625	32.0
WA 7168	ORCO/BAEDER, VOO	89.6a	52.17a	164.6a	79.50	1.500	30.5
WA 6912	BVR/CI15923/NGS.	87.3a	51.30	166.3a	82.75	3.000	29.8
CI 17917	TRES (WA 6698)	86.5a	56.05a	164.2a	90.50	.750	33.6
WA 7163	VPM/MOS951/2*OR	82.5a	52.32a	165.7a	85.50	1.500	32.1
WA 7166	VPM/MOS421/2*TY	82.1a	50.45	164.0a	85.75	1.500	30.8
ORCW 8314	7C/CND/CAL/3/YM	81.0	51.23	161.2	76.25	2.250	30.6
ORCW 8113	SPN/63189-66-71	79.5	50.67	162.0	83.00	4.500	30.3
WA 7129	MORO/CI13645/2*	79.5	55.83a	163.5a	84.50	.0000	29.6
DI 765784	ROMANIA FONDEA/	79.5	57.78a	161.5	77.25	9.500	28.7
WA 7216	V77254, OASIS/WA	77.8	52.60a	168.0a	79.50	1.750	29.6
CI 13740	MORO	77.0	53.60a	163.5a	89.75	.6250	38.7a
OR 836	STEPHENS/PI1734	76.9	49.80	163.5a	82.50	2.000	34.9
WA 7217	VPM/MOS951/2*BRB	76.3	55.40a	166.0	90.75	.0000	31.6
ORCW 8423	ND/P101/BB/GLL	75.9	57.25a	161.0	85.00	8.000a	31.8
CI 13968	NUGAINES	75.0	54.98a	163.5a	78.75	7.250	28.9
ORCW 8318	1523/DC DWF/RFS	72.1	50.53	165.7a	70.00	3.500	32.1
WA 7169	VH7340, CI14484/	72.0	49.30	164.5a	78.75	16.00	31.2
CI 17596	STEPHENS 2/	71.6	50.23	161.2	79.25	2.750	29.6
WA 7165	VPM/MOS421/2*RE	71.0	52.43	163.5a	80.00	.2500	27.1
OR 8270	MCD/ROMANIAN/OR	66.0	50.23	163.5a	80.25	5.750	28.6

CI Number	Variety	Yield Bu/A	Test Wt. Lbs/Bu	Heading Date	% Surv	% 1/ Smut	Height Inches
ORCW 8421	PJB841/1543/YMH	66.0	51.08	165.5a	77.75	5.000	32.5
WA 7218	VPM/MOS421/RDR	64.3	50.18	166.5a	79.25	.7500	31.5
CI 17962	PHOENIX, WW33	63.2	57.18a	156.5b	64.25b	8.750a	26.5
CI 1442	KHARKOF	62.5	54.98a	166.5a	87.75	17.50a	41.4a
OI 754989	MNIM/KAL/BB	58.3b	56.48a	162.5a	76.25	28.75a	30.1
OI 754022	RDL/SUP2/KALIA	54.7b	52.58a	161.0	60.00b	10.50a	26.7
CI 11755	ELGIN	54.2b	52.70a	166.3a	75.50	16.75a	37.6a

OVERALL MEAN		74.5	53.02	163.8	80.45	5.819	31.5
F-RATIO TRTS		9.232**	25.00**	29.35**	4.061**	16.95**	17.1**
SE TRT MEANS		3.41	.5247	.4373	3.520	1.659	2.065
CV (SE/MEAN)		4.576	.9896	.2669	4.375	28.52	2.583
LSD (0.05)		9.59	1.476	1.230	9.899	4.667	2.290

1/ % Smut based on ocular rating per four plots

2/ 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

Table 4. Agronomic data from the Western Regional White Winter Wheat Nursery grown on the Oscar Buller farm, Kalispell, MT. in 1985. Random block design.

Date planted: September 18, 1984 Date harvested: August 7, 1985

CI Number	Variety	Yield Bu/A	Test Lb/Bu	% Surv	% Smut	2/	Height Inches
WA 6912	BVR/CI15923/NGS,V	40.2	47.50	38.75	.1250		25.6
WA 7215	76/W5052/DAWS,VHD	39.6	49.05	53.75	.7500		29.0
OR 7996	HYS/YAYLA/WA4995/	37.4	48.08	60.00	.2500		28.7
CI 17596	STEPHENS 1/	36.9	47.23	50.00	.6250		26.2
CI 17917	TRES (WA 6698)	36.1	50.95a	42.50	.5000		27.6
WA 7163	VPM/MOS951/2* OR68	35.8	46.40	50.00	.0000		26.5
ORCW 8314	7C/CND/CAL/3/3/YMH	35.7	46.35	50.00	1.875		28.1
DI 765784	ROMANIA FONDEA 12-	34.2	54.35	35.00b	4.250		24.1
ORCW 8113	SPN/63189-66-71/BZ	33.0	45.38b	55.00	1.750		25.8
WA 7165	VPM/MOS421/2*RAEDR	32.7	48.90	42.50	.0000		22.0
ORCW 8423	ND/P101/BB/GLL	31.3	48.93	46.25	1.000		26.7
WA 7166	VPM/MOS421/2*TYEE	31.2	47.55	41.25	.6250		23.7
WA 7217	VPM/MOS921/2*BRB	30.7	47.75	52.50	.1250		25.9
WA 7816	CERCO/RAEDER, VJ08,	30.4	45.85	55.00	.2500		24.7
OR 836	STEPHENS/PI173438	30.3	45.98	37.50	5.375		25.7
CI 13968	NUGAINES	30.3	49.48a	47.50	2.250		25.2
OR 8270	MCD/ROMANIAN/OR 71	29.6	45.45b	38.75	.5000		25.3
DI 754022	RDL/SU92/KALIAN/BB	28.8	48.60	28.75b	3.000		24.9
WA 7218	VPM/MOS 421/RDR	28.6	47.80	41.25	.0000		25.5
ORCW 8318	1523/DC DWF/RBS,F1	28.5	45.03b	47.50	.5000		27.9
DI 754989	MNIM/KAL/BB	28.2b	49.45a	36.25b	3.750		25.7
ORCW 8421	PJB 841/1543/YMH/6	27.5b	46.93	40.00	.6250		25.3
WA 7219	MORO/CI13645/2*CH/	25.9b	44.05b	32.50b	.1250		25.4

CI Number	Variety	Yield Bu/A	Test Lb/Bu	% Surv	% Smut	2/ Height Inches
CI 13740	MORO	25.6b	44.98b	55.00	.2500	30.0
CI 1442	KHARKOF	25.1b	49.90a	52.50	8.000a	38.1a
WA 7216	V77254, OASIS/WA63	24.8b	48.60	47.50	.0000	25.3
CI 17962	PHOENIX, WW33	22.9b	52.50a	25.00b	1.750	24.1
WA 7169	VH74340, CI14484/66	22.5b	44.75b	38.75	6.750	23.5
CI 11755	ELGIN	21.2b	46.90	42.50	13.88	31.8
OVERALL MEAN		30.5	47.75	44.27	2.030	26.40
F-RATIO TRTS 3/		2.81**	17.94**	3.629**	1.988**	11.94 **
SE TRT MEANS		3.02	.5534	4.476	2.207	.888
CV (SE/MEAN)		9.908	1.159	10.11	108.7	3.312
LSD (0.05)		8.50	1.557	12.59	6.206	2.47

1/ Check variety

2/ % TCK smut rating by ocular observation

3/ 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