

PROJECT TITLE: Winter Wheat Variety Evaluations

YEAR/PROJECT 1986/756 Small Grains Production

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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 trials 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 this year in the Kalispell area was from Nov. 16 to March 3 ( 105 days ). Although conditions appeared favorable for snow mold there was very little incidence of that disease in the winter wheat nurseries. Yields and test weights were good this year in all the nursery locations.

Western Regional Hard Red Wheat Nursery - Kalispell

Yields were equal to last year with the average for the nursery ( 73.81 bu/A ) being just slightly higher than the previous year. Eighteen varieties had yields significantly less than the check variety ,Winridge (83.09 bu/A). No varieties yielded significantly higher than Winridge.

High test weights were recorded this year with 14 varieties having test weights significantly greater than Winridge ( 61.17 lbs/Bu ).

Winter kill, although not severe, was as high as 30% in the varieties Winridge, ID 0337, OR 8315, and ID 0338. These % winter kill ratings were taken early in the spring and do not accurately reflect percent stand loss from which to calculate yield loss. The lodging index figure is calculated by multiplying lodging severity ( based on a 1-9 scale of degree of lodging ) times prevalence ( % of plot effected ), divided by nine. There was minimal lodging in this nursery. Very little TCK smut was recorded in this nursery. Table 1.

Western Regional Hard Red Wheat - Stillwater

Yields from the Stillwater location were the highest in four years which was a reflection of the good fall and spring moisture with a favorable 1986 growing season. Winter kill averaged 38% for the nursery and a high of 59% was noted for OR 8315. Test weights for ID 298 and WA 7269 exceeded 63 lbs/Bu. Table 2.

Western Regional Soft White Wheat - Kalispell

Yields ranged between 26.8 and 97.9 bu/A with the check variety ( Stephens ) yielding 79 bu/A. Eight varieties yielded significantly higher than Stephens while six varieties yielded significantly less. Test weights

for the nursery averaged 57.8 lb/bu with Stephens having a test weight of 56.7 lbs/bu. Winter kill was not severe but did occur throughout the nursery at an average of 5.2 % . WA 7163, WA 7126, and WA 7432 had no occurrence of winter kill. Smut was prevalent and was detected in all but four varieties ( WA 7431, WA 7432, WA 7434, and WA 7217 ). OI 754989 had the highest level of smut with 43.8% of the heads showing some infection. Table 3.

#### Western Regional Soft White Wheat - Stillwater

WA 7431 was the highest yielding entry in the test at 102 bu/A and was the only variety yielding significantly higher than Stephens, the check variety. OI 754022 and OI 754989 were both significantly less in yield than Stephens. Test weights averaged 59.24 lbs/bu with only six varieties varying significantly from Stephens ( 59.38 lbs/bu ). Winter kill was severe in this nursery with percentages as high as 67.5% in Kharkof. The average for the nursery was 32.6%. This reading was taken in early spring and may not have a relationship to yields obtained. Table 4.

#### Intrastate Winter Wheat - Kalispell

Yields were excellent for this nursery ranging from 79.5 to 137.7 bu/A. Winridge was used as a check variety and yielded 118.2 bu/A. Two varieties ( Neely and MT 84165 ) yielded significantly higher than Winridge. The test weights for this nursery averaged 61.37 lbs/bu. Several varieties had test weights significantly higher than Winridge. Although winter kill was not severe there was some loss in each variety tested. Lodging was moderate, being observed in 23 of 40 varieties. Leaf rust was detected in all varieties tested and exceeded 50 % severity in eight varieties. Table 5

#### Off Station Winter Wheat Nurseries

The 1986 off station winter wheat nurseries were grown on the Ross McIntyre farm ( Ravalli Co. ), the Dean Stipe farm ( Lake Co. ), and at the Stillwater location near Kalispell. Neely, Lewjain, and MT 79125 were the top three yielding varieties when averaged across the three locations. Neely and Lewjain yielded in the top four entries of each location. Yields were good at each location and representative of the weather conditions for each area. Neely also had the second highest test weight compared across the three locations for the season. Weston had the highest test weight at each location. Percent stands were good at Lake and Ravalli Co. locations but were poor at the Stillwater location. Table 6.

- 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 3. Agronomic data from the soft white winter wheat nursery grown on the Northwestern Agricultural Research Center in Kalispell, MT in 1986. Seeded September 20, 1985 Harvested August 7, 1986

Variety	Entry #	YIELD BU/A	TEST WT LB/BU	HT (IN)	% WNTR KILL	HEADING DATE	% TCK SMUT 1/
WA 7431	LUKE/BR 704434	97.90a	59.38a	31.40	2.000	163.3a	.0000
LEWJAIN	CI 17909	96.70a	59.90	26.87b	18.25a	163.5a	3.750
DUSTY	PI 486429	95.94a	58.85	28.64	2.000	161.8	1.125
WA 7435	WA4303/PURDUE	95.34a	58.77	22.64b	5.750	160.3	.6250
WA 7436	WA4303/VGR/WA4	93.05a	58.38	21.85b	3.250	162.3a	1.000
OR 842	HYSLOP/CERCO	92.70a	59.53	32.09a	2.000	160.5	1.875
WA 7163	VRM/MO5951/2*O	92.10a	59.20	28.15	.0000	162.0a	.6250
WA 7126	V77254,OASIS/W	91.66a	59.17	29.04	.0000	164.5a	.1250
ORCW 8421	RJB 847/543/YM	90.67a	58.47	26.87b	.7500	162.3a	.3750
ORCW 8417	T. AESTIVUM/TO	89.65	60.43	32.19a	2.250	159.3	1.500
WA 7433	MARIS HUNTSMAN	89.04	58.93	27.17b	1.250	163.8a	2.375
OR 843	HYSLOP/CERCO	88.99	58.33	31.89a	5.750	160.3	1.000
ORCW 8419	6720-10//YAMHI	88.81	59.18	29.23	5.250	162.0a	.7500
WA 7437	PAHA/CI13645/2	88.76	57.75	27.95b	3.250	161.5	.7500
TRES	TRES (WA6698)C	87.18	58.67	28.15	1.750	161.0	.6250
ORCW 8416	NOTTENO/YAMHIL	87.00	59.13	28.05	6.250	162.3a	.2500
WA 7168	CERCO/RAEDER,V	86.99	58.50a	26.67b	9.500	161.0	.3750
WA 7432	VPM1/MOS//CERC	86.47	55.72b	23.43b	.0000	164.8a	.0000
ORCW 8318	1523/DC DWF/RB	83.76	58.65a	30.02	10.75a	161.8	3.250
ORFW 301	DAWS/SM4//MDM/	83.50	56.82	27.76	8.500	159.3	.7500
ORCW 8517	TJB801-12795/S	82.43	58.75a	33.37a	8.750	158.0b	1.000
STEPHENS	CI 17596 2/	79.04	56.72	29.43	1.500	160.3	3.750
OR 8270	MCD/ROMAIN/OR	78.95	55.70b	26.57b	4.500	158.8	3.125
ID 0330	NEELY SPN//SPN	78.86	57.15	30.02	14.50a	159.0	.1250
OR 7996	HYS/YAYLA/WA49	78.15	57.60	29.82	1.250	163.3a	1.375
OR 845	HYSLOP/YAMHILL	78.13	59.68a	29.23	6.000	159.5	.5000
WA 7166	VPM/MO5421*TYE	76.98	55.20b	27.85	3.250	160.0	.1250
WA 7434	WA4303/VKG//82	74.69	56.82	21.46b	2.250	160.3	.0000
WA 7217	VPM/MOS951/2*B	73.41	56.78	25.89b	2.750	162.5a	.0000
ID 0329	NEELY/SPN//SPN	71.99	58.03a	28.84	31.75a	158.0b	.1250
OI 765784	ROMANIA FONDEA	71.03	58.30a	24.41b	4.750	156.0b	2.625
OI 754022	RDL/SU92/KALIA	69.45	56.65	26.97b	6.250	156.0	11.25a
NUGAINES	CI 13968	66.24b	58.65a	26.48b	2.000	160.0	14.25a
ORCW 8314	7C/CND/CAL/3/3	64.85b	56.77	28.15	5.000	159.5	10.25a
KHARKOF	CI 1442	53.56b	57.95a	42.22a	5.500	162.5a	13.75a
MORO	CI 13740	46.46b	58.00a	34.45a	.7500	162.0a	.1250
OI 754989	MNIM/KAL/8B	34.06b	54.02b	25.00b	4.000	160.0	43.75a
ELGIN	CI 11755	26.83b	49.28b	33.17a	5.000	160.8	11.25a

OVERALL MEAN	79.24	57.78	28.51	5.217	160.9	3.645
F-RATIO TRTS	18.17**	37.23**	19.93**	3.287**	13.75**	18.72**
CV (SE/MEAN)	4.856	.5624	2.991	62.51	.3447	49.30
LSD (0.05)	10.78	.9106	2.390	9.139	1.554	5.036

1/ % TCK smut by ocular rating

2/ Check variety

3/ F value for variety comparison

\*\* Indicates statistical significance at the .01 level

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 soft white winter wheat nursery grown on the Oscar Buller farm in Kalispell, MT in 1986. Seeded September 25, 1985 Harvested August 18, 1986

VARIETY	ENTRY #	YIELD Bu/A	TEST WT Lbs/bu	HT (")	% WNTR KILL
WA 7431	LUKE/BR 704434	101.9a	60.17	26.87	15.00
ORCW 8417	T. AESTIVUM/TO	92.89	62.17a	25.10	21.25
WA 7432	VPM1/MOS//CERC	90.28	57.60b	26.87	10.00
WA 7168	CERCO/RAEDER,V	88.34	58.95	25.10	25.00
OR 8270	MCD/ROMAIN/OR	85.46	58.53	24.90	20.00
MORO	CI 13740	84.39	60.90	26.77	13.75
WA 7436	WA4303/VGR/WA4	84.02	61.13	26.77	30.00
WA 7434	WA4303/VKG//82	82.60	61.03	25.30	26.25
ORCW 8416	NOTTENO/YAMHIL	80.16	60.18	25.39	16.25
WA 7216	V77254,OASIS/W	77.59	59.33	26.77	26.25
WA 7433	MARIS HUNTSMAN	77.54	59.07	24.70	21.25
ORFW 301	DAWS/SM4//MDM/	73.76	59.20	24.11	37.50
LEWJAIN	CI 17909	73.71	60.17	23.82	58.75a
OR 843	HYSLOP/CERCO	73.17	59.83	29.53	38.75
STEPHENS	CI 17596 1/	72.80	59.38	24.51	26.25
DUSTY	PI 486429	71.95	60.60	24.70	36.25
WA 7435	WA4303/PURDUE	71.18	59.80	25.79	28.75
ORCW 8421	RJB 847/543/YM	71.07	59.63	27.26	23.75
OR 7996	HYS/YAYLA/WA49	71.06	58.65	24.90	18.75
ORCW 8318	1523/DC DWF/RB	68.35	58.90	26.77	42.50
WA 7163	VRM/MO5951/2*O	67.40	59.10	25.98	30.00
TRES	TRES (WA6698)C	67.29	60.17	25.69	41.25
ORCW 8517	TJB801-12795/S	67.09	60.07	26.28	22.50
ORCW 8314	7C/CND/CAL/3/3	66.69	58.32	27.07	33.75
OR 842	HYSLOP/CERCO	66.03	60.22	25.00	65.00a
OR 845	HYSLOP/YAMHILL	65.74	60.60	23.03	47.50
OI 765784	ROMANIA FONDEA	65.28	59.58	24.21	21.25
WA 7166	VPM/MO5421*TYE	64.50	59.03	24.80	26.25
ELGIN	CI 11755	62.56	57.53b	26.77	30.00
ORCW 8419	6720-10//YAMHI	62.21	59.80	24.61	37.50
WA 7217	VPM/MOS951/2*B	61.13	58.15	23.52	41.25
ID 0329	NEELY/SPN//SPN	59.96	58.82	23.23	63.75a
NUGAINES	CI 13968	56.88	59.83	25.98	26.25

Tabel 4. (Con'd)

VARIETY	ENTRY #	YIELD Bu/A	TEST WT Lbs/bu	HT (")	% WNTR KILL
ID 0330	NEELY SPN//SPN	54.45	58.33	24.31	67.50a
KHARKOF	CI 1442	54.28	57.13b	32.38	25.00
WA 7437	PAHA/CI13645/2	52.15	58.07	27.26	53.75a
OI 754022	RDL/SU92/KALIA	42.83b	56.78b	24.21	40.50
OI 754989	MNIM/KAL/8B	30.17b	54.40b	24.21	28.75
OVERALL MEAN		69.97	59.24	25.64	32.58
F-RATIO TRTS 2/		2.907**	5.031**	.9527	2.578**
CV (SE/MEAN)		11.60	1.062	7.064	27.63
LSD (0.05)		22.75	1.764	5.076	25.23

1/ Check variety

2/ F value for variety comparison

\*\* Indicates statistical significance at the .05 probability level

a/ Values significantly greater than the check at the .01 level

b/ Values significantly less than the check at the .01 level

Table 5. Agronomic data from the Intrastate winter wheat nursery grown on the North-western Agricultural Research Center, Kalispell, MT in 1986. Seeded September 24, 1985 Harvested August 15 1986.

VARIETY	ENTRY PEDIGREE	YIELD BU/A	TEST WT LB/BU	HT (")	HEADING DATE	%WNTR KILL	LODG 1/ INDEX	LF RUST SEVER 2/
NEELY	CI 17860	137.7a	61.97a	44.39	161.3b	4.500	24.08	60.00a
MT 84165	CST//FRD1628/OLESEN(F1	134.8a	61.65a	43.31	155.3b	5.000	8.325	32.50
MT 8039	LCO//FRD//NE69559/WNK	132.0	61.65a	39.17b	160.3b	2.000	.0000	30.00
MT 8030	TXGSA268//FRD//YTD-11	131.7	62.15a	39.47b	159.8b	3.250	.0000	32.50
NUGAINES	CI 13968	128.2	59.75	31.40b	163.5	11.25	.0000	32.50
HAWK	NA 200	127.6	62.05a	34.45b	155.8b	5.000	.0000	32.50
MT 84268	CST//FRD1650/OLESEN(F1	125.2	61.15	41.63	159.3b	1.500	1.100	42.50
BIGHORN	RH 78W296	124.9	61.18	34.35b	161.0b	6.750	.0000	10.00
QT 515	HYBRITECH	124.8	60.75	38.98b	160.3b	6.000	14.85	42.50
MT 80203	YGSS2458/6/FWN	124.6	61.95a	41.63	161.8b	3.250	13.90	42.50
MT 84496	CST//FRD1655/OLESEN(F1	123.8	60.35	44.29	159.8b	3.500	40.05a	55.00a
MT 7951	LANCOTA/WNK//NE68510	120.9	62.13a	40.85b	159.3b	3.250	2.775	40.00
MT 84458	CST//FRD1655/OLESEN(F13	120.4	61.00	37.30b	155.3b	3.250	8.325	25.00
MT 81139	CST//FRD/OLESEN/3/STR	119.3	61.88a	36.52b	159.8b	5.750	.0000	27.50
THUNDERBIRDNA	0001	118.6	62.70a	38.29b	155.5b	8.750	.0000	5.000
WINRIDGE	CI 17902 1/	118.2	60.65	44.00	164.0	5.750	9.725	17.50
MT 79123	UT755079/CST5611//TX65	117.2	60.00	32.28b	154.0b	11.50	.0000	25.00
MT 7811	FRD/WNK//MT6928	113.4	60.70	42.32	161.3b	2.000	14.57	79.00a
QT 524	HYBRITECH	113.4	59.58b	41.24	160.3b	4.500	16.50	15.00
CENTURK	CI 15075	111.5	62.58a	41.83	157.5b	4.500	32.23	17.50
ROCKY	NA 1316	111.5	62.25a	42.42	160.0b	4.500	32.22	20.00
ARCHER	NA 201	111.1	58.97b	34.25b	159.3b	3.250	.0000	37.50
MT 80122	SS63283/6*CNN	110.9	61.58	40.85b	161.0b	2.500	.0000	40.00