

PROJECT TITLE: Evaluation of winter wheat variety performance in off-station trials at Denton and Highwood.

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OBJECTIVES:
To evaluate the performance of winter wheat varieties in environments and cropping methods different from those at the Central Agricultural Research Center.

RESULTS:
The Moore and Winifred trials were abandoned due to hail damage.

Denton: Yields were above average at the Denton site, ranging from 66 to 48 bu/a. Neeley, Tiber, and Redwin were the top yielding varieties. Test weights were near average (61.75 lbs/bu), while proteins averaged 12.81%. Cree, Winalta, and Norstar experienced a moderate amount of lodging. Data from the Denton site is presented in Tables 1 and 3.

Highwood: Yields at the Highwood site were near their 5 year average, ranging from 60 to 39 bu/a. Some of the varieties experienced root rot, including Judith, which had lost about 10 % of its tillers as of June 24. Test weights averaged 60.78 lbs/bu, while proteins averaged 13.99 %. Many varieties experienced some lodging. Neeley has the high average yield over the 5 years at this location. Data from the Highwood site is presented in Tables 2 and 4.

SUMMARY:
Varieties with high yield performance over 6 years at Denton are Judith, Neeley, Rocky, Tiber, and Warrior. Varieties with high 5 year averages at Highwood are Neeley, Tiber, Rocky, and Judith. Quantum 542 has consistently performed well in the trials at these locations.

FUTURE PLANS:
Off-station winter wheat variety trials are to be continued at Denton, Highwood, Moore, and Winifred.

Table 1 1993 Denton Winter Wheat Variety Performance Trial
Exp.#3871 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Plant Ht.	Lodging Index	Grain Yield	Test Weight	Protein Content
		"	0-5*	bu/a	lbs/bu	%
CI 17860	NEELEY	36	0	66.1	61.1	11.3
PI517194	TIBER	39	0	64.6	60.6	12.3
CI 17844	REDWIN	39	0	63.2	61.4	12.7
ND 8002	SEWARD	39	1	60.2	62.6	11.8
S86-15	KESTREL	37	1	59.8	62.0	11.2
QT 542	HYBRITECH	38	0	59.0	62.8	12.6
ID 279	BLIZZARD	36	0	58.2	59.7	13.0
CI 17902	WINRIDGE	37	0	57.2	58.7	11.8
CI 17879	ROCKY	36	0	56.7	63.8	12.5
CI 17846	MANNING	36	0	56.5	61.2	13.4
RH78W296	BIGHORN	32	0	55.8	62.7	13.2
MT 8039	JUDITH	38	0	55.4	61.6	13.0
CI 17735	NORSTAR	42	3	55.3	60.8	11.2
CI 17727	WESTON	38	1	55.2	62.7	13.7
CI 15075	CENTURK	36	1	54.7	63.4	12.9
CI 13190	WARRIOR	38	1	54.0	62.7	13.5
RDW(sel)	AC READYMADE	38	0	53.5	59.9	14.1
PI491532	CREE	38	4	52.1	61.7	13.8
CI 17940	ARCHER	31	0	51.6	62.3	13.0
PI478771	AGASSIZ	43	2	51.0	61.1	13.3
CI 17952	HAWK	32	0	50.3	63.1	13.1
CI 13670	WINALTA	39	3	49.1	62.6	13.3
PI518591	ARAPAHO	34	0	47.7	61.6	14.2
EXPERIMENTAL MEANS				55.96	61.75	12.81
F TEST FOR VAR. df=44				12.64	17.70	30.44
C.V. 1: (S/MEAN)*100				4.14	.83	2.18
LSD (0.05)				3.82	.85	.46

Lodging Index (0-5) 0=none and 5=plants are flat on ground.

Planted: 9-24-1993 on fallow. Soil Temp.: 14°C
Harvested: 8-10-93 Some varieties required heat drying.
Fertilizer: 50 lbs N preplant and 50 lbs 18-46-0 w/seed.
Producer: Richard Barber, Denton

Table 2 1993 Highwood Winter Wheat Variety Performance Trial
Exp. 3875 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Plant Ht.	Grain Yield	Test Wt.	Lodging Index	Protein Content
		"	bu/a	lbs/bu	% degree	%
ID 279	BLIZZARD	32	60.2	62.3	5 2	14.0
S86-15	KESTREL	36	58.0	62.4	5 3	12.9
CI 17860	NEELEY	34	57.8	61.0	1 2	12.9
PI517194	TIBER	34	56.3	62.5	0 0	14.0
RH78W296	BIGHORN	29	55.4	59.7	5 1	14.3
CI 17727	WESTON	34	54.1	62.1	5 3	14.0
QT 542	HYBRITECH	35	54.0	60.8	5 1	14.0
CI 17952	HAWK	30	53.5	60.2	0 0	14.2
CI 17940	ARCHER	28	53.1	59.4	0 0	13.7
CI 17846	MANNING	29	52.8	59.6	4 2	13.6
ND 8002	SEWARD	33	51.4	59.8	5 3	12.9
RDW(sel)	AC READYMADE	36	51.0	61.5	0 0	15.4
CI 17879	ROCKY	32	50.8	59.6	5 2	13.4
CI 17844	REDWIN	34	50.0	61.3	0 0	15.0
CI 15075	CENTURK	39	49.6	59.6	2 1	14.2
CI 17735	NORSTAR	40	48.9	63.2	5 4	12.3
PI491532	CREE	36	48.2	61.1	5 4	14.5
CI 13190	WARRIOR	34	48.1	59.9	5 2	14.8
PI478771	AGASSIZ	36	47.8	60.9	5 3	14.2
CI 17902	WINRIDGE	32	47.5	60.4	1 1	13.0
PI518591	ARAPAHO	31	46.4	59.0	0 0	15.3
CI 13670	WINALTA	34	45.3	62.1	5 3	14.5
MT 8039	JUDITH	32	39.2	59.7	3 2	14.6
EXPERIMENTAL MEANS			51.28	60.78		13.99
F TEST FOR VAR. df=44			5.80	53.87		9.06
C.V. 1: (S/MEAN)*100			6.68	.47		3.37
LSD (0.05)			5.64	.47		.77

Lodging Index-degree (0-5) 0=none, 5=flat on ground.

Planted: 9-29-92 no-till on spring wheat stubble.

Soil Temp.: 20 degrees C.

Fertilizer: 100 lbs N as ammon. nitrate and 50 lbs 18-46-0 w/seed.

Harvested: 8-10-93

Producer: Ron Long, Shonkin

In general it was a good to excellent nursery. However, some varieties experienced root rot. * Judith exhibited the greatest damage. As of June 24th, Judith had lost about 10 percent of its tillers to root rot.

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 Table 3 Denton Off-Station Winter Wheat Multi-Year Summary
 Central Agricultural Research Center, Moccasin MT.

Variety	1988	1989	1990	1991	1992	1993	Ave.
	-----bu/ac-----						
WARRIOR	24	64	45	56	31	54	46
WINALTA	15	55	40	43	24	49	38
CENTURK	24	53	48	59	25	55	44
NORSTAR	11	59	44	39	24	55	39
REDWIN	21	62	50	50	23	63	45
NEELEY	20	52	55	64	24	66	47
ROCKY	26	67	50	60	22	57	47
WINRIDGE	15	59	46	60	21	57	43
TIBER	20	59	52	55	28	65	46
JUDITH	27	64	59	61	26	55	49
CREE	23	56	47	49	21	52	41
HYBRITECH 542		71	57		40	59	
BIGHORN			48	60#	23	56	
HAWK				62	17	50	
BLIZZARD				51	27	58	
SEWARD				49	12	60	
AGASSIZ				46	15	51	
Mean	20.5	55.3	49.0	53.2	22.2	56.0	

Table 4 Highwood Off-Station Winter Wheat Multi-Year Summary
 Central Agricultural Research Center, Moccasin, MT.

Variety	1988	1989	1990	1991	1993	Ave.
	-----bu/ac-----					
WARRIOR	23	72	54	58	48	51
WINALTA	21	65	50	59	45	48
CENTURK	20	68	55	66	50	52
NORSTAR	21	74	53	55	49	50
REDWIN	20	73	55	58	50	51
NEELEY	26	83	64	74	58	61
ROCKY	21	75	56	68	51	54
WINRIDGE	19	74	59	58	47	51
TIBER	24	76	59	66	56	56
JUDITH	24	70	67	63	39	53
CREE	19	72	58	61	48	52
HYBRITECH542		81	70		54	
BIGHORN			59	66#	55	
HAWK				66	53	
BLIZZARD				68	60	
SEWARD				64	51	
AGASSIZ				57	48	
Mean	21.3	70.9	58.1	62.1	51.3	

#Bighorn was planted on one end (not randomized).

1992 Highwood Trial was abandoned due to volunteer barley infestation.