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

PROJECT LEADER: David M. Wichman, Agronomist - Moccasin

PROJECT PERSONNEL: L.E. Talbert, Spr. Wheat Breeder, Bozeman  
S.P. Lanning, Spr. Wheat Res. Assoc., Bozeman  
J. Vavrovsky, Technician, Moccasin  
Dave Phillips, Fergus Cty. Extension Agent  
Judee Wargo, Chouteau Cty. Extension Agent

OBJECTIVES:

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

RESULTS:

The Denton trial was on fallow, while Highwood was planted recrop on tilled winter wheat ground.

Denton: Spring wheat yields were well below average at the Denton site. Wheat streak mosaic was present, but its late appearance did not seem to affect the yield as much as a dense stand of tame buckwheat. The buckwheat was not controlled until it reached 3-4 inches in height. Yields ranged from 27 to 17 bu/a. Test weights averaged 58.1 lbs/bu, while proteins averaged 14.3 %. Klasic, a hard white spring wheat, and Penawawa, a soft white spring wheat, were the top yielders. Data from the Denton site is presented in Tables 1 and 2.

Highwood: Spring wheat yields were near the 5 year average for this site, ranging from 39 to 29 bu/a. Test weights averaged 58.7 lbs/bu, while proteins averaged 15.9%. Owens and Penawawa, two soft white wheats, were the top yielders, followed by McNeal. Data from the Highwood site is presented in Tables 3 and 4.

SUMMARY:

Varieties with high yield performance over 8 years at Denton are the soft white wheats, Penawawa and Owens, Amidon, Grandin, Westbred 926, Newana, and Hi-Line. Penawawa has a 5 year average yield of 37 bu/a at Highwood, while many other varieties average 29 to 32 bu/a. McNeal, which has been in these trials for only three years, has performed very well.

FUTURE PLANS:

Off-station spring wheat variety trials are to be continued at Denton and Highwood.

Table 1 1994 Denton Spring Wheat Variety Performance Trial  
Exp. 9971 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Plant Ht.	Grain Yield	Test Weight	Protein Content	Wheat Streak
		"	bu/a	lbs/bu	%	*
PI486139	KLASIC	21	27.2	59.7	14.1	3.0
WA 6920	PENAWAWA	22	27.2	58.1	12.7	3.0
WPB 926	WESTBRED 926	24	24.6	58.5	14.2	6.0
ND 626	GRANDIN	26	24.1	58.9	13.6	4.7
CI 17904	OWENS	25	23.5	56.5	12.4	3.3
ND 606	AMIDON	25	22.7	58.4	14.3	3.3
PI549275	HI-LINE	25	22.6	57.8	15.3	3.7
PI574642	MCNEAL	25	22.0	56.1	14.9	3.0
ND 582	STOA	28	22.0	57.8	14.2	5.7
PI483235	GLENMAN	23	21.9	56.7	14.1	4.7
CI 13596	FORTUNA	26	20.5	59.9	15.3	5.7
BZ984326	BORDER	24	20.4	58.9	14.4	3.7
CI 17430	NEWANA	23	20.3	56.6	13.3	5.0
CI 17429	LEW	25	20.3	58.3	14.2	5.0
CI 17790	LEN	24	20.3	58.0	14.9	5.0
CANLANC	LANCER	27	20.1	58.1	15.2	5.0
C982-324	RAMBO	21	19.6	56.5	13.9	5.3
NDCUT	CUTLESS	22	19.5	59.3	14.6	4.0
ND 677	ND622*2/CUTLESS	27	18.9	58.9	14.9	6.0
CI 17828	PONDERA	24	17.4	58.8	15.3	3.7
EXPERIMENTAL MEANS			21.77	58.09	14.30	4.43
F TEST FOR VAR. df=38			2.21	9.48	2.31	
STANDARD ERROR			3.00	.63	.93	
STANDARD ERROR OF THE MEAN			1.73	.36	.54	
C.V. 1: (S/MEAN)*100			13.79	1.08	6.50	
C.V. 2: (S OF MEAN/MEAN)*100			7.96	.62	3.75	
LSD (0.05)			4.96	1.03	1.54	

\*Wheat Streak rating - 0=low, 6=very high.

Yields were reduced by dense stand of tame buckwheat, which was controlled June 10 with Express + 2-4-D. The buckwheat had reached 3-4" in height.

Planted: 4-21-94 on fallow ground. Harvested: 8-1-94.  
Fertilizer: 50# 28-28-0 w/seed, 60 units N as anhydrous applied preplant.

Growing Season Precipitation (April-July): 7.31 inches.  
Producer: Richard Barber, Denton.

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Table 2 Denton Off-Station Spring Wheat Multi-Year Summary  
Central Agricultural Research Center, Moccasin, MT.

Variety	1987	1988	1989	1990	1991	1992 *	1993	1994	Ave.	Newana Same Yrs
	-----bu/a-----									
OLAF		22	43	27	50	20	71		39	43
AMIDON			48	26	60	23	83	23	44	42
PENAWAWA			44	26	63	34	105	27	50	42
LEN	37	25	40	26	52	21	72	20	37	41
OWENS	49	26	46	26	62	29	97	23	45	41
STOA	39	23	40	25	57	25	80	22	39	41
GLENMAN		24	38	24	51	27	74	22	37	40
WESTBRED 926R				24	61	19	78	25	41	42
GRANDIN				23	60	25	81	24	43	42
LANCER	33	23	36	23		23	62	20	31	37
FORTUNA	37	17	38	23	62	17	66	20	35	41
RAMBO	44	24	42	22	49	25	74	20	37	41
LEW	34	22	40	22	50	27	65	20	35	41
PONDERA	40	23	40	22	58	25	79	17	38	41
KLASIC						22	71	27	40	42
NEWANA	45	26	43	21	65	25	81	20	41	--
CUTLESS	30	20	36	20	47	18	65	19	32	41
HI-LINE			41	17	59	26	76	23	40	42
MCNEAL						27	92	22	47	42
Mean	39.1	23.5	41.1	23.6	56.6	23.8	77.2	21.8		

\*Planted recrop on field pea ground. All other years on fallow.  
Variety trials were located on Richard Barber farm.  
The 1988 trial suffered some sawfly damage.

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Table 3 1994 Highwood Spring Wheat Variety Performance Trial  
Exp. 9972 Central Agricultural Research Center, Moccasin, MT.

ID#	Variety	Plant Ht.	Grain Yield	Test Weight	Protein Content
		"	bu/a	lbs/bu	%
CI 17904	OWENS	25	39.1	58.0	14.3
WA 6920	PENAWAWA	23	38.6	58.2	13.8
PI574642	MCNEAL	25	37.3	58.0	16.2
ND 582	STOA	28	36.8	58.4	15.9
C982-324	RAMBO	26	36.1	60.0	15.4
ND 606	AMIDON	28	36.0	58.6	16.0
ND 677	ND622*2/CUTLESS	26	35.3	59.8	16.4
PI483235	GLENMAN	26	34.9	57.1	14.7
CI 13596	FORTUNA	28	34.8	59.1	16.8
ND 626	GRANDIN	26	34.8	59.2	16.3
CI 17790	LEN	27	34.1	58.7	16.0
CANLANC	LANCER	28	33.8	58.5	16.6
WPB 926	WESTBRED 926	22	33.8	58.3	16.6
BZ984326	BORDER	25	33.2	59.4	16.0
PI549275	HI-LINE	26	32.5	58.0	16.7
CI 17430	NEWANA	24	32.5	59.0	15.3
PI486139	KLASIC	19	32.0	59.7	16.1
CI 17429	LEW	28	31.2	59.2	15.8
NDCUT	CUTLESS	26	30.8	59.0	16.7
CI 17828	PONDERA	26	28.9	58.6	16.8
OVERALL MEAN			34.33	58.73	15.92
F-RATIO TRTS df=38			4.74	5.87	26.36
CV (S/MEAN) % =			6.07	.88	1.80
LSD(0.05 by t)=			3.44	.85	.47

Planted: 4-21-94 recrop on winter wheat ground.

Harvested: 8-10-94

Fertilizer: 50 # 28-28-0 w/seed

Growing season precipitation (April-July): 6.22 inches.

Producer: Ron Long, Shonkin.

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

Variety	1990	1991	1992	1993	1994	AVG.	NEWANA SAME YRS.
	-----bu/a-----						
OLAF	38	30	11	37		29	30
AMIDON	45	25	15	40	36	32	30
PENAWAWA	48	27	21	51	39	37	30
LEN	37	25	12	40	34	30	30
OWENS	38	27	13	45	39	32	30
STOA	38	34	12	41	37	32	30
GLENMAN	39	30	19	38	35	32	30
WESTBRED 926R	44	31	11	41	34	32	30
GRANDIN	41	29	10	43	35	32	30
LANCER	36		17	38	34	31	31
FORTUNA	36	33	12	36	35	30	30
RAMBO	35	27	15	43	36	31	30
LEW	40	24	23	41	31	32	30
PONDERA	41	22	14	39	29	29	30
KLASIC			9	34	32	25	29
NEWANA	35*	29	14	42	32	30	--
CUTLESS	35	31	14	33	31	29	30
HI-LINE	40	22	12	44	32	30	30
MCNEAL			18	47	37	34	29
Mean	38.9	28.2	14.2	40.8	34.3		

\*Probable mixup of seed sources, interpret Newana rank with caution.  
Variety trials were located at Ron Long farm .  
The 1989 trial experienced severe hail damage.  
All trials were planted on recrop ground.

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