

Title: Small grain variety performance under no-till conditions.

Year: 1997.

Location: Western Triangle Research Center, Conrad, MT.

Personnel: Gregory D. Kushnak, Research Center, Conrad; Luther Talbert and Tom Blake, MSU Dept Plant, Soil & Environ Sci.

Objectives: Identify small grain varieties which are adapted to no-till conditions.

Methods: Spring wheat and barley varieties were no-till planted into barley stubble at right angles to the previous crop. Crop history for the site was barley in 1996, fallow in 1995, and barley in 1994. Planting was accomplished with a double-disk no-till plot planter constructed by our Research Center Staff. Row space was 12 inches. Fertilizer included 100 pounds/acre ammonium phosphate (11-52-0) and 100 pounds/acre actual nitrogen top-dressed as urea. Roundup herbicide was used for preplant weed & volunteer control. Hoelon and Bronate herbicides were used for wild oat and broadleaf control, respectively.

Results: Data for 1997, along with 5-year averages, are presented in Tables 1 and 2 for spring wheat, and Tables 3 and 4 for barley. Rainfall was timely and well distributed over the growing season, resulting in good crop performance for recrop conditions.

The ranking of varieties for yield under these no-till conditions is similar to that of our trials on fallow. The no-till conditions at Conrad have been relatively disease-free and non-stressed for moisture over the past five years.

Future Plans: Continue the no-till continuous-crop variety evaluations in efforts to include seasons of disease and environmental stress.

Table 1

Dryland Recrop No-till Spring Wheat variety trial  
grown north of Conrad, 1997. Mont. Agr. Expt.  
Station. Western Triangle Ag. Research Center,  
Conrad, Montana.

Variety		Yield bu/ac	Test wt. lbs/bu.	Plant hgt. inches	% protein
VANNA	(s. white)	58.8	60.0	29	11.1
RAMBO	*	54.6	62.7	31	12.4
STOA		53.6	61.5	33	13.3
FERGUS		53.1	62.3	31	13.4
WESTBRED EXPRESS		53.0	61.4	28	13.4
NEWANA		52.9	62.2	36	12.4
MCNEAL		52.8	61.0	35	13.3
TRENTON		52.5	62.8	28	13.9
PIONEER 2375		50.9	62.2	30	13.3
LEN		50.8	61.7	37	13.3
WESTBRED 936		50.8	60.6	27	14.1
AMIDON	*	50.6	60.7	30	13.1
GLENMAN	*	50.5	60.1	28	12.4
HI-LINE		50.4	62.6	32	13.5
MTHW9420		50.3	62.1	27	13.0
MTHW9520		49.3	60.6	28	12.7
LEW	*	49.3	61.7	31	13.2
WESTBRED 926		48.2	61.8	30	13.8
MT 9433	*	48.0	62.4	32	13.3
FORTUNA	*	47.7	62.2	37	13.1
MT 9508		47.3	62.6	32	14.5
ERNEST	*	47.0	62.6	35	14.4
GRANDIN		47.0	62.7	35	13.9

Cooperator: Western Triangle Ag. Research Center.

Location: Ten miles north of Conrad, MT. (Pondera County)

Fertilizer: 100# 11-52-0 with the seed, + 100# N topdressed.

Previous crop: Barley.

Date seeded: May 5, 1997.

Date harvested: September 2, 1997.

Rainfall: From seeding to harvest was 7.7 inches.

\* = Sawfly resistant varieties. (Amidon and Rambo have partial resistance.) (Also, most experimental lines are resistant).

Yield experimental mean: 50.84

Error degrees of freedom: 44.00

F test for var: 1.26

C.V. 2: 4.98

LSD (0.05): 7.22

Table 2 Five-year summary for No-till Recrop Spring Wheat varieties grown near Conrad, MT. 1993 - 1994 - 1995 - 1996 - 1997. Mont. Agr. Expt. Station, Western Triangle Agr. Research Center, Conrad, MT.

Variety	5 - year comparable average				
	Yield bu/ac	Test wt lbs/bu	Plant hgt. @ inches	% Protein	
GLENMAN *	48.5	58.0	29.3	11.1	
WESTBRED 936	48.2	58.2	26.6	12.2	
RAMBO *	47.8	57.5	29.3	11.2	
WESTBRED EXPRESS	47.0	59.0	26.3	12.1	
AMIDON *	46.2	58.8	34.8	12.2	
WESTBRED 926	45.8	58.2	29.3	11.9	
NEWANA	44.7	59.1	30.5	11.2	
HI-LINE	44.6	60.3	29.5	11.9	
MCNEAL	43.9	58.2	31.5	12.2	
STOA	43.6	58.8	34.8	11.7	
ERNEST *	43.4	60.0	36.0	12.3	
LEN	43.2	58.1	31.3	12.4	
TRENTON	42.0	59.5	30.9	12.3	
GRANDIN	41.5	59.4	32.8	12.4	
FORTUNA *	41.2	60.1	36.0	12.3	
LEW *	40.8	59.7	35.3	11.6	

Cooperator: Western Triangle Agricultural Research Center.

Location: Ten miles north of Conrad, MT. (Pondera County)

\* = Sawfly resistant varieties. (Amidon and Rambo have partial resistance)

@ = Plant heights based on four years average. ( 1994 - 1995 - 1996 - 1997 )

92  
164)

Table 3      Dryland Recrop No-till Barley variety trial grown north of Conrad, 1997. Mont. Agr. Expt. Station, Western Triangle Ag. Research Center, Conrad, MT.

Variety	Yield bu/ac	Test weight lbs/bu	Plant hgt. inches	% Plump	% Thin	% Protein
Steptoe (6-row)	84.5	48.3	30	92	3	9.2
Stander (6-row)	83.6	51.0	32	84	5	11.3
Foster (6-row)	83.2	49.2	32	91	3	10.7
Baronesse	82.9	51.3	27	90	4	11.3
Logan	79.0	52.8	31	92	3	11.6
Stark	78.2	53.0	29	97	1	11.2
H1851195	77.0	50.4	31	92	3	12.0
H3860224	75.7	51.9	33	89	3	12.3
Harrington	75.0	49.8	28	85	6	11.5
Bowman	74.4	52.6	29	95	1	11.9
Gallatin	74.2	52.1	28	81	6	11.1
MT886610	72.7	50.9	30	83	7	11.6
Hector	72.2	51.4	30	83	7	11.8
Lewis	71.5	51.6	28	85	5	12.3
Targhee	70.5	50.2	30	84	7	11.7
Chinook	67.7	49.4	29	67	14	12.5

Cooperator: Western Triangle Ag. Research Center.

Location: Ten miles north of Conrad, MT. (Pondera County)

Fertilizer: 100# 11-52-0 with the seed, + 100# N actual  
topdressed after planting.

Previous crop: Barley.

Method of seeding: Double-disc drill.

Date seeded: May 5, 1997.

Date harvested: August 20, 1997.

Rainfall: From seeding to harvest was 7.14 inches.

Yield experimental mean: 76.38

Error degrees of freedom: 30.00

F test for var.: 3.92 ----- C.V. 2: 3.39 ----- LSD (0.05): 7.47

Table 4 Five-year summary for Recrop Dryland No-Till Barley varieties grown north of Conrad, MT. 1993 - 1994 - 1995 - 1996 - 1997. Mont. Agr. Expt. Station, Western Triangle Agr. Res. Center, Conrad, MT.

-----						
5 - year comparable average						
Variety	Yield bu/ac	Test weight lbs/bu	Plant hgt.* inches	% Plump	% thin	% Protein
-----						
BARONESSE	78.2	51.1	26.5	84	5	9.9
H1851195	70.4	49.1	30.9	88	3	10.6
STANDER	69.7	49.5	30.0	80	6	9.9
STEPTOE	69.6	45.8	28.5	81	7	9.5
H3860224	69.2	50.9	31.2	86	3	10.4
GALLATIN	66.6	50.5	28.3	83	5	10.0
MT 886610	64.3	49.7	30.5	75	9	10.1
HARRINGTON	63.4	48.7	27.8	81	6	9.9
STARK	63.2	51.9	28.8	91	3	10.4
HECTOR	62.6	49.8	30.2	76	8	10.5
BOWMAN	62.5	51.1	28.5	92	2	10.8
TARGHEE	62.2	47.9	29.3	74	12	10.3
LEWIS	60.9	50.7	28.0	81	6	10.5
CHINOOK	58.7	49.2	28.5	71	10	10.7
-----						

Cooperator: Western Triangle Ag. Research Center.

Location: Ten miles north of Conrad, MT. (Pondera County)

\* = Plant hgt. averages based on four years only. (94-95-96-97)