

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

Year: 1996.

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 1995, fallow in 1994, and barley in 1993. 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 topdressed 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 1996, along with 5-year averages, are presented in Tables 1 and 2 for spring wheat, and Tables 3 and 4 for barley. Rainfall was below normal in 1996, but was timely early in the season, and stored soil moisture was abundant. Consequently yields were surprisingly high for the continuous-crop conditions. Plant diseases have not been at problem levels at this location during the 5-year test period.

From the 5-year spring wheat averages, Glenman, WB 926 and Rambo were the top yielders for no-till. For barley, the top producers over the 5-year period were Baronesse, Steptoe and Gallatin. Steptoe, however, had poor test weight. In most cases, varieties that perform well on fallow systems appear to be adapted to no-till conditions in the Triangle Area. However, disease outbreaks that may occur in stubble conditions would most likely influence the varieties differently than under the conditions encountered at Conrad during the last five years.

Future Plans: Continue the no-till variety evaluations in efforts to include conditions of disease outbreak.

Table 1

Dryland Recrop No-till Spring Wheat variety trial
grown north of Conrad, 1996. Mont. Agr. Expt.
Station. Western Triangle Ag. Research Center,
Conrad, Montana.

Variety		Yield bu/ac	Test wt. lbs/bu.	Plant hgt. inches	% protein
MT 9433		51.6	62.2	33	14.2
AMIDON	*	51.0	61.6	33	14.1
LEN		48.8	61.5	28	13.1
ERNEST	*	48.2	62.9	33	13.8
GLENMAN	*	48.1	61.3	27	12.4
WESTBRED EXPRESS		48.0	62.6	24	12.9
MT 9311		47.6	61.1	31	12.9
PIONEER 2375		46.5	62.9	28	13.3
WESTBRED 936		46.4	62.3	25	13.0
MT 9565		45.8	63.8	30	12.5
FORTUNA	*	43.7	62.6	35	14.0
STOA		43.7	60.8	31	13.1
MTHW9420		43.4	62.3	27	12.9
MT 9410		43.4	63.1	32	12.9
RAMBO	*	43.0	62.8	27	12.5
NEWANA		42.6	61.9	27	12.7
FERGUS		41.5	62.9	26	13.5
WESTBRED 926		41.3	61.8	26	13.6
LEW	*	39.7	61.9	36	13.5
VANNA	(s. white)	39.5	61.7	25	10.8
MCNEAL		39.1	61.2	27	14.1
HI-LINE		39.1	62.7	25	13.6
GRANDIN		36.4	62.2	30	14.1
TRENTON		36.4	62.2	32	13.7
MTHW9503		34.9	61.2	27	14.0

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 2, 1996. Date harvested: August 26, 1996.

Rainfall: From seeding to harvest was 4.89 inches.

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

Yield experimental mean: 43.57

Error degrees of freedom: 48.00

F test for var: 2.91,

C.V. 2: 6.18,

LSD (0.05): 7.66

Table 2. Five-year summary for No-till Recrop Spring Wheat varieties grown near Conrad, MT. 1991 - 1993 - 1994 - 1995 - 1996. Mont. Agr. Expt. Station, Western Triangle Agr. Research Center, Conrad, MT.

5 - year comparable average						

Variety		Yield bu/ac	Test wt lbs/bu	Plant hgt. @ inches	Head date \$	% Protein

GLENMAN	*	48.7	58.3	31	186	10.5
WESTBRED 926		46.2	58.3	29	181	10.8
RAMBO	*	46.2	57.3	30	187	10.8
AMIDON	*	44.7	59.2	37	185	11.6
NEWANA		44.7	59.2	30	186	10.6
ERNEST	*	43.7	60.3	37	184	11.5
HI-LINE		43.5	60.6	29	184	11.1
MCNEAL		42.5	58.5	31	184	11.7
STOA		42.3	59.0	37	185	11.1
LEN		41.8	58.3	30	184	11.7
FORTUNA	*	41.6	60.3	37	184	11.7
GRANDIN		41.4	59.4	33	185	11.8
LEW	*	40.9	60.1	37	187	11.0

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 height averages based on four years only. (1991 - 1994 - 1995 - 1996)
 \$ = Head date averages based on years (1990 - 1991 - 1993 - 1994 - 1995).

Table 3 Dryland Recrop No-till Barley variety trial grown
north of Conrad, 1996. 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
Baronesse	80.4	51.5	24	91	3	10.7
H1851195	70.8	48.8	28	92	2	11.2
Steptoe (6-row)	68.7	47.6	24	88	3	9.9
Logan	65.6	50.6	29	91	3	11.2
Piroline	63.5	51.9	26	80	5	11.2
MT886610	63.0	49.5	27	85	6	10.7
Targhee	62.6	47.8	26	77	9	11.3
Stander	61.1	49.2	25	82	5	10.8
H3860224	60.9	49.1	28	89	4	11.3
Harrington	60.0	48.6	24	82	5	10.8
Gallatin	57.4	49.8	23	80	7	11.0
Hector	56.9	49.5	28	78	8	11.3
Chinook	53.7	48.8	25	77	8	11.9
Stark	53.6	51.4	27	92	2	11.7
Bowman	53.1	50.2	27	92	2	12.2
Lewis	51.7	49.9	24	84	6	12.0

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 2, 1996.
Date harvested: August 19, 1996.
Rainfall: From seeding to harvest was 4.7 inches.
Yield experimental mean: 61.39
Error degrees of freedom: 30.00
F test for var.: 6.85
C.V. 2: 4.66
LSD (0.05): 8.26

Table 4 Five-year summary for Recrop Dryland No-Till Barley varieties grown north of Conrad, MT. 1991 - 1993 - 1994 - 1995 - 1996. 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	Head date	% Protein

BARONESSE	77.7	51.3	28	81	5	185	8.9
STEPTOE	68.8	45.4	29	81	7	179	9.2
GALLATIN	66.7	50.8	30	82	5	184	9.4
PIROLINE	66.1	52.5	32	80	6	183	9.2
MT 886610	64.3	49.8	32	73	10	182	9.4
HARRINGTON	62.6	48.9	29	81	5	186	9.1
STARK	62.5	52.1	30	90	3	183	9.9
HECTOR	62.2	49.7	32	73	8	186	9.6
BOWMAN	60.8	51.2	30	93	2	181	10.4
LEWIS	60.8	51.1	29	80	6	185	9.7
CHINOOK	60.1	49.7	30	75	8	184	9.7

Cooperator: Western Triangle Ag. Research Center.

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

* = Plant hgt. averages based on four years only. (91-94-95-96)