

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

Year: 2001.

Location: Western Triangle Research Center, Conrad, MT.

Personnel: Gregory D. Kushnak, Research Center, Conrad; Luther Talbert and Tom Blake, MSU Plant Science Dept.

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 1999, fallow in 1998, and barley in 1997. Planting was accomplished with a double-disk no-till plot planter constructed by our Research Center Staff. Row space was 12 inches. Fertilizer included 60 pounds/acre ammonium phosphate (11-52-0) and 60 pounds/acre actual nitrogen top-dressed as urea. Roundup herbicide was used for preplant weed & volunteer control. Achieve and Bronate herbicides were used for wild oat and broadleaf control, respectively.

Results: Data for 2001, along with 5-year averages, are presented in Tables 1 and 2 for spring wheat, and Tables 3 and 4 for barley. Rainfall was 60% of normal for the growing season, and preplant soil moisture-depth was only 20 inches.

Yields averaged 17 bu/a for spring wheat, and 25 bu/a for barley. Test weights were above average for both crops, and percent plump for barley was unusually high. Tiller production was very low under the drought conditions, which evidently allowed for better kernel development.

Yields among varieties were not significantly different, with the following exceptions: Reeder spring wheat yielded significantly higher than McNeal and Fortuna; and Xena barley yielded significantly higher than Conlon and Stark.

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

Table 1 **Dryland Recrop No-till Spring Wheat** variety trial grown north of **Conrad**, 2001. Mont. Agr. Expt. Station. Western Triangle Ag. Research Center, Conrad, Montana.

Variety		Yield bu/ac.	Test wt. lbs/bu.	Plant hgt. inches	Head date	% protein
Reeder		19.7	61.9	23	174	15.0
CONAN	*	19.0	61.2	24	174	15.3
SCHOLAR	*	18.5	61.6	25	175	15.5
HI-LINE		18.4	61.7	23	174	15.5
MT 9874		18.3	60.4	23	175	15.1
ERNEST	*	18.2	62.2	26	176	14.9
LEW	*	18.0	61.1	26	176	13.4
AMIDON	*	18.0	59.4	27	176	14.6
NEWANA		17.6	61.4	22	176	13.8
WESTBRED 926		17.5	61.2	22	173	15.1
MTHW 9904	**	17.3	62.9	25	174	14.8
RAMBO	*	17.1	61.6	22	176	14.2
MTHW 9420		17.0	61.7	22	173	14.1
WESTBRED 936		16.9	62.2	20	173	15.5
WESTBRED EXPRESS		16.7	61.7	22	174	14.8
GRANDIN		16.5	61.9	23	175	14.9
EXPLORER (9710)**		16.0	61.9	21	173	15.1
MCNEAL		15.3	59.4	24	176	14.7
FORTUNA	*	14.9	60.0	26	175	15.2
MT 9929		13.9	60.7	21	174	16.0

Cooperator: Western Triangle Ag. Research Center.

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

Applied fertilizer: 56-31-0 (N-P-K)

Previous crop: Barley.

Date seeded: April 26, 2001, into no-till standing stubble.

Date harvested: August 6, 2001.

Rainfall: From planting to harvest was 2.28 inches.

Moist soil depth at planting: 6 inches.

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

\*\* = Hard white wheat.

Yield experimental mean: 17.23

Error degrees of freedom: 38

F test for var: 0.75 ---- C.V. 2: 9.56 ---- LSD (0.05): 4.72

Table 2 **Five-year summary** for **No-till Recrop Spring Wheat** varieties grown near **Conrad, MT.** 1997 - 1998 - 1999 - 2000 - 2001. Mont. Agr. Expt. Station, Western Triangle Agr. Research Center, Conrad, MT.

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5 - year comparable average						
Variety		Yield bu/ac	Test wt lbs/bu	Plant hgt. inches	Head date 1/	% Protein
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REEDER		33.1	60.3	28	176	14.3
CONAN	*	32.8	60.6	28	176	14.5
NEWANA		32.4	59.7	27	179	12.8
WESTBRED 936		32.2	59.4	24	175	14.3
RAMBO	*	32.0	59.3	26	179	12.8
WESTBRED 926		31.8	59.4	26	175	14.5
HI-LINE		31.6	60.0	27	176	14.1
MCNEAL		31.5	58.0	29	178	13.7
ERNEST	*	31.3	60.4	30	178	14.2
AMIDON	*	31.3	57.5	30	177	13.5
SCHOLAR	*	30.9	59.3	30	177	13.7
WESTBRED EXPRESS		30.8	58.9	24	177	13.9
LEW	*	30.5	56.8	28	179	13.4
MT HW9420	**	30.0	58.4	26	176	13.7
GRANDIN		29.4	59.4	29	177	14.0
FORTUNA	*	28.7	59.3	31	177	13.8
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Cooperator: Western Triangle Ag. Research Center.

Location: North of Conrad, MT. (Pondera County)

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

\*\* = Hard white wheat.

1/ = Head dates based on 3 years average. (1998 - 1999 - 2001)

Table 3

**Dryland Recrop No-till Barley** variety trial grown north of **Conrad**, 2001. Mont. Agr. Expt. Station, Western Triangle Ag. Research Center, Conrad, MT.

Variety	Yield bu/ac	Test wt. lb/bu	Plant hgt. inches	% Plump	% Thin	Head Date	% Protein
Xena	31.1	51.8	21	92	3	179	13.6
H3860224	29.8	51.7	21	84	6	179	15.3
MT 960099	27.3	51.9	18	57	17	178	14.5
Haxby (950186)	27.1	53.7	18	88	3	176	14.5
Valier	26.4	53.1	20	80	6	179	16.3
MT 960100	26.2	52.4	19	71	9	179	15.8
MT 970116	25.8	54.2	24	93	2	176	15.0
MTLB 5	25.7	53.0	19	79	6	179	15.5
Baronesse	25.0	52.8	20	85	4	179	14.1
Gallatin	24.1	51.4	22	75	8	180	13.4
MT 960228	23.9	52.6	19	78	6	177	14.1
Harrington	23.6	51.2	21	82	5	180	14.7
Lewis	23.3	52.6	21	82	6	180	13.9
MTLB 13	22.7	50.6	20	68	12	178	16.3
Conlon	21.7	51.8	20	71	9	178	14.6
Stark	19.7	52.6	22	87	4	176	14.9

Cooperator: Western Triangle Ag. Research Center.

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

Applied fertilizer: 56-31-0 (N-P-K)

Previous crop: Barley.

Method of seeding: Double-disc drill into standing stubble.

Date seeded: April 26, 2001.

Date harvested: Aug. 6, 2001.

Soil moisture depth at seeding: 6 inches.

Rainfall: From planting to harvest was 2.28 inches.

Yield experimental mean: 25.21

Error degrees of freedom: 30

F test for var.: 1.12  
C.V. 2: 10.81  
LSD (0.05): 7.87

Table 4 **Five-year** summary for **Recrop Dryland No-Till Barley** varieties grown north of **Conrad, MT.** 1997 - 1998 - 1999 - 2000 - 2001. Mont. Agr. Expt. Station, Western Triangle Agr. Res. Center, Conrad, MT.

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5 - year comparable average							
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Variety	Yield bu/ac	Tst wt lbs/bu	Plant hgt. inches	% Plump	% thin	Head date *	% Protein
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XENA	54.6	50.7	25	68	16	179	12.2
BARONESSE	53.4	49.9	25	63	17	180	12.8
MTLB 13	52.0	50.4	25	60	24	179	13.8
HAXBY	51.3	52.2	25	69	18	178	12.8
MTLB 5	51.2	51.7	25	66	19	180	13.3
VALIER	49.6	51.8	25	60	21	180	13.6
GALLATIN	49.3	50.2	26	66	21	179	12.2
STARK	48.7	51.6	27	74	15	176	12.6
HARRINGTON	47.7	48.6	25	67	18	180	13.1
LEWIS	46.7	51.4	26	63	19	180	13.3
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Cooperator: Western Triangle Ag. Research Center.  
 Location: Ten miles north of Conrad, MT. (Pondera County)  
 \* = Head dates based on 3 years average. (1998-1999-2001)