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

Year: 2003.

Location: Western Triangle Research Center, Conrad, MT.

Personnel: Gregory D. Kushnak, Research Center, Conrad; Luther Talbert and Pat Hensleigh, 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 2002, fallow in 2001, and barley in 2000. 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 50 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 2003, along with 5-year averages, are presented in Tables 1 and 2 for spring wheat, and Tables 3 and 4 for barley.

Averaged over five years, Outlook, Reeder, Conan and Ernest ranked high for recrop yield performance. Choteau and Fortuna ranked slightly lower, but were among the highest performers for both yield and test weight in the very dry conditions of 2003. Choteau, Outlook, and Reeder also had good performance on fallow conditions.

Among the barley varieties, Haxby and Valier had the highest recrop performance for both yield and test weight. Similarly, Haxby and Valier had good performance in fallow conditions. Eslick (MT960228) had similar yield and test weight as Baronesse, which were lower than for Haxby and Valier. Eslick is a new feed barley release for conditions of more abundant moisture, while Haxby is more suited to lower moisture conditions.

Levels of disease were minimal for no-till in 2003, and similar to those in fallow-system plots.

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**, 2003. 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
WESTBRED 936		38.0	55.3	30	179	13.2
OUTLOOK		37.1	52.9	32	184	13.2
RAMBO	*	35.7	53.3	30	182	12.8
FORTUNA	*	35.2	56.4	38	180	14.0
LEW	*	34.7	51.6	37	183	13.4
CHOTEAU (MT 9929)	*	34.6	56.7	30	183	13.5
ERNEST	*	34.0	56.1	36	181	13.7
WESTBRED 926		33.1	52.1	28	179	14.1
Conan	*	32.7	54.1	30	182	14.2
NEWANA		32.1	50.8	29	182	13.2
MTHW 9420	**	31.7	54.1	29	181	13.4
Reeder		31.5	53.6	30	181	14.2
MT 9918		31.2	56.2	34	180	13.6
HANK		31.2	52.1	30	180	14.3
HI-LINE		31.0	56.1	30	180	14.4
EXPLORER	**	30.7	54.2	30	181	14.2
SCHOLAR	*	30.5	55.5	35	183	13.8
AMIDON	*	29.8	52.1	36	181	13.0
WESTBRED EXPRESS		29.5	54.8	28	181	13.8
MCNEAL		28.8	54.0	33	181	14.1

Cooperator: Western Triangle Ag. Research Center.
Location: Ten miles north of Conrad, MT. (Pondera County)
Applied fertilizer: 71-52-0 (N-P-K)
Previous crop: Barley.
Date seeded: April 24, 2003, into no-till standing stubble.
Date harvested: August 6, 2003.
Rainfall: From planting to harvest was 4.78 inches.
* = Sawfly resistant varieties. (Amidon, Conan, Rambo and Scholar have partial resistance.)
** = Hard white wheat.
Yield experimental mean: 32.64
Error degrees of freedom: 38
F test for var: 1.03 ---- C.V. 2: 7.76 ---- LSD (0.05): 7.25

Table 2 **Five-year summary** for **No-till Recrop Spring Wheat** varieties grown near **Conrad, MT**. 1999 - 2000 - 2001 - 2002 - 2003. 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	Head date @	% Protein
OUTLOOK		31.9	56.5	27	182	14.4
WESTBRED 936		30.8	58.7	25	181	15.0
REEDER		30.4	58.5	27	182	14.9
WESTBRED 926		30.4	57.8	26	182	15.2
CONAN	*	29.8	58.4	26	180	14.8
ERNEST		29.6	59.2	30	179	14.7
NEWANA		29.6	57.2	25	182	13.7
RAMBO	*	29.5	57.7	26	182	14.0
LEW	*	29.2	55.0	29	182	14.0
HI-LINE		29.0	58.9	26	179	15.2
CHOTEAU	*	28.7	58.4	25	181	15.0
FORTUNA	*	28.5	58.7	31	180	14.4
HANK		28.4	56.4	26	183	15.3
EXPLORER	**	28.2	58.7	26	181	15.0
MTHW9420	**	28.2	57.6	25	181	14.0
SCHOLAR	*	28.1	58.0	31	179	15.0
MCNEAL		27.9	56.8	28	180	14.4
WESTBRED EXPRESS		26.5	58.3	24	182	14.7
AMIDON	*	26.5	55.6	31	180	14.0

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.
@ = Head dates based on 4 years average. (1999-01-02-03)

Table 3 **Dryland Recrop No-till Barley** variety trial grown north of **Conrad,** 2003. Mont. Agr. Expt. Station, Westerm Triangle Ag. Research Center, Conrad, MT.

Variety	Yield bu/ac	Test wt. lb/bu	Plant hgt. inches	% Plump	% Thin	Head Date	% Protein
MT 960099	58.5	47.6	25	38	28	185	10.9
MT 970229	58.5	49.4	28	61	9	184	11.4
Haxby	58.4	51.1	26	25	32	182	11.4
Valier	55.6	49.1	28	36	25	185	12.0
MT 970116	54.7	49.1	31	44	22	182	11.9
WPB Xena	54.1	46.9	28	54	15	184	11.7
Conlon	51.3	46.0	28	67	13	180	11.3
Hays	50.7	43.5	27	19	38	186	12.6
MT 970148	48.7	44.3	26	30	30	182	11.9
EslickMT960228	48.4	46.6	28	14	44	186	13.2
Baronesse	47.8	44.9	26	13	48	184	13.1
MT 960101	47.5	46.1	27	24	31	186	12.9
MT 970155	46.5	46.6	27	36	22	185	12.9
Gallatin	45.0	44.4	28	22	37	182	12.7
Harrington	43.4	44.5	27	30	31	184	13.2
Haybet	37.3	43.5	31	4	65	180	12.8

Cooperator: Western Triangle Ag. Research Center.
Location: Ten miles north of Conrad, MT. (Pondera County)
Applied fertilizer: 61-52-0 (N-P-K)
Previous crop: Barley.
Method of seeding: Double-disc dril1 into standing stubble.
Date seeded: April 22, 2003.
Date harvested: Aug. 4, 2003.
Rainfall: From planting to harvest was 4.8 inches.
Yield experimental mean: 50.40
Error degrees of freedom: 30 F test for var.: 7.30
C.V. 2: 4.41 LSD (0.05): 6.41

Table 4 **Five-year** summary for **Recrop Dryland No-Till Barley** varieties grown north of **Conrad, MT**. 1999 - 2000 - 2001 - 2002 - 2003. Mont. Agr. Expt. Station, Western Triangle Agr. Res. Center, Conrad, MT.

	5 - year comparable average						
Variety	Yield bu/ac	Tst wt lbs/bu	Plant hgt. inches	% Plump	% thin	Head date *	% Protein
MT 960099	51.0	48.9	22	38	34	183	14.1
HAXBY	50.7	51.8	24	56	23	181	13.8
XENA	49.8	49.1	25	57	20	183	13.5
VALIER	48.9	50.8	24	53	24	184	14.6
EslickMT960228	48.5	48.9	25	46	28	183	14.2
BARONESSE	48.5	48.7	24	50	25	183	14.3
GALLATIN	46.9	47.9	25	50	29	182	14.2
HARRINGTON	45.0	47.9	24	55	24	184	14.6
CONLON	44.9	47.8	24	54	21	181	13.9

Cooperator: Western Triangle Ag. Research Center.
Location: Ten miles north of Conrad, MT. (Pondera County)
* = Head dates based on 4 years average. (1999-2001-2002-2003)