

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

Year: 1995

Location: Western Triangle Agricultural Research Center, Conrad.

Personnel:

Project Leader: Gregory D. Kushnak  
Cooperators: Luther Talbert & Sue Lanning (Spring Wheat)  
Tom Blake & Pat Hensleigh (Barley).

Objectives: Identify small grain varieties most 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 1994, fallow in 1993, and barley in 1992. Planting was accomplished with a double-disc no-till plot planter constructed by our Research Center Staff. The double disc openers were supplied by Acra-Plant, Inc., Garden City, KS. Row space was 12 inches. Ammonium phosphate was applied with the seed to provide 51 lbs P<sub>2</sub>O<sub>5</sub>/a and 11 lbs N/a. Urea (46-0-0) was topdressed to provide 90 lbs N/a. Herbicides included Roundup for preseeding vegetation control; Hoelon for wild oat control; and Bronate for broadleaf control. Planting date was April 18, 1995.

Results: Data for no-till continuous-crop spring wheat and barley are presented in Tables 1 & 2, respectively, for 1995.

The continuous-crop spring wheat nursery averaged 19% lower yield than the same varieties grown on the fallow system, while continuous-crop barley yielded only 4% less than the fallow system. Rainfall was far above normal, with favorable distribution throughout the growing season. Therefore, moisture was not considered a limiting factor for continuous-crop in 1995. Nitrogen rates were adjusted so that, when combined with soil-residual N, continuous-crop nurseries had a similar level of available N as the fallow-system nurseries. Therefore, it is not known why recrop spring wheat yield was 19% lower than fallow-system yield.

Vanna, Newana, Ernest and McNeal ranked high for yield on fallow, but low on recrop; indicating these varieties may be more sensitive to continuous-crop conditions. Varieties ranking high for yield under both cropping systems were Glenman, Hiline, & Fergus. Border ranked high in the recrop trial, but medium low in the fallow system.

The barley varieties followed about the same yield rank on recrop as they did on fallow.

Table 1. Dryland Recrop No-till Spring Wheat variety trial grown north of Conrad, 1995. Mont. Agr. Expt. Stat., Western Tri. Ag. Res. Cnt., Conrad, MT

Variety		Yield bu/ac	Test wt. lbs/bu.	Plant hgt. inches	Head date	% protein
GLENMAN	*	76.4	61.9	37	182	11.6
RAMBO	*	71.0	60.5	36	183	11.9
WESTBRED 936		71.0	60.5	33	180	13.0
HI-LINE		70.8	63.5	37	180	11.3
PONDERA		70.6	62.4	38	180	12.3
BORDER	*	70.6	63.5	38	178	12.6
N90-700 <i>Norlander</i>		68.3	61.4	35	178	12.9
FERGUS		65.3	62.2	36	180	11.7
NEWANA		63.7	60.8	35	183	11.2
WESTBRED EXPRESS		62.8	62.2	32	179	13.3
WESTBRED 926		62.5	60.4	36	179	12.5
MCNEAL		62.0	61.7	39	182	12.5
VANNA (s. white)		61.4	61.7	36	182	9.7
MT 9354		60.8	62.8	42	182	12.4
GRANDIN		60.7	62.1	40	182	13.1
AMIDON	*	57.9	62.4	48	182	13.1
ND 677 <i>Ernest</i>	*	56.6	63.6	46	180	12.7
MTHW9406		53.1	61.9	39	177	10.9
PIONEER 2375		52.4	63.7	42	180	11.9
LEN		51.6	62.1	36	182	12.4
FORTUNA	*	51.3	63.2	45	182	13.0
LEW	*	51.3	63.1	45	183	11.7
STOA		51.3	61.9	47	182	12.6
MT 9360		51.1	62.7	40	180	13.1
SHOOFLY	*	48.7	59.5	33	183	12.6
AC EATONIA	*	48.2	62.7	48	182	13.9
BW 688	*	41.2	62.4	48	182	13.6

Cooperator: Western Triangle Ag. Research Center.

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

Fertilizer: 100# 11-52-0 with the seed, + 90# N topdressed.

Previous crop: Barley.

Date seeded: April 18, 1995. Date harvested: Aug. 31, 1995.

Rainfall: From seeding to harvest was 13.89 inches.

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

Yield experimental mean: 59.72, Error degrees of freedom: 52

F test for var: 4.63, C.V. 2: 6.99, LSD (0.05): 11.85

Table 2. Dryland Recrop No-till Barley variety trial grown north of Conrad, 1995. Mont. Agr. Expt. Station, Western Triangle Ag. Research Center, Conrad, MT.

Variety	Yield bu/ac	Test weight lbs/bu	Plant hgt. inches	% Plump	% Thin	Head date	% Protein
Baronesse	104.3	54.0	33	91	3	180	9.5
H3860224	102.3	54.5	38	93	2	180	10.1
MT890008	101.1	50.3	37	89	4	182	9.4
Steptoe	97.0	44.6	37	81	7	175	9.9
Stark	96.8	53.6	36	94	2	178	10.6
H1851195	96.0	51.0	39	91	4	179	11.1
Colter	93.5	46.0	35	72	10	176	9.1
Gallatin	90.7	53.5	39	88	4	179	10.8
Piroline	88.8	53.9	39	89	3	180	9.9
Bowman	88.3	53.0	34	92	2	176	11.0
MT886610	87.1	51.4	41	83	7	177	10.2
Harrington	86.7	50.4	37	85	5	180	10.0
Lewis	83.3	53.0	37	87	4	180	10.6
Hector	83.0	51.6	38	84	6	180	10.9
Targhee	81.5	48.4	37	70	16	180	10.4
MT889106	81.1	52.2	35	95	2	176	11.2
Chinook	75.8	50.8	35	79	7	180	10.6
MT890070	75.0	50.9	38	90	4	176	10.8

Cooperator: Western Triangle Ag. Research Center.

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

Fertilizer: 100# 11-51-0 with the seed, + 90# N actual  
topdressed after planting.

Previous crop: Barley.

Method of seeding: Double-disc drill.

Date seeded: April 18, 1995.

Date harvested: August 21, 1995.

Rainfall: From seeding to harvest was 13.84 inches.

Yield experimental mean: 89.56

Error degrees of freedom: 34.00

F test for var. = 4.75

C.V. 2 = 4.51

LSD (0.05) = 11.60