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

Year: 1994

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 1993, fallow in 1992, and barley in 1991. 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. MAP was applied with the seed to provide 51 lbs P_2O_5/a. Ammonium nitrate (34-0-0) was topdressed to provide 60 lbs N/a. Herbicides included Roundup for pre-seeding vegetation control; Hoelon for wild oat control; and Bronate for boadleaf control. Planting date was April 21, 1994.

Results: Data for spring wheat and barley are presented in Tables 1 and 3, respectively, for 1994. Recrop yields were considered good, given that growing season rainfall was 3.5 inches below average (61% of average). Soil moisture depth at planting time was 36 inches, and most of the rainfall was distributed during tillering and elongation stages of plant growth. Moisture depletion eventually stressed the crops, producing test weights in the low 50's for wheat and mid 40's for most barleys. Disease was not detected in spring wheat, and barley showed very slight symptoms of net blotch.

Five-year average recrop yields are presented in Tables 2 and 4. Four of the five years were exceptionally moist, as reflected in the high average yields.

Table 1. **Dryland Recrop No-till Spring Wheat** variety trial grown north of **Conrad**, 1994. 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
PENAWAWA	(s. white)	32.8	54.8	23	178	8.5
AC EATONIA	*	31.5	53.5	29	177	10.3
STOA		30.9	51.7	28	180	9.4
BW 688	*	30.8	52.7	28	179	10.8
WESTBRED 926		30.1	50.1	25	176	10.2
SHOOFLY	*	29.1	52.5	22	179	9.2
LEN		28.7	48.1	24	181	10.4
RAMBO	*	28.6	50.8	23	179	9.9
NEWANA		28.3	52.8	24	180	9.9
AMIDON	*	28.2	51.9	28	179	10.0
KLASIC	(h. white)	28.1	52.8	20	177	8.3
N90-700	*	28.0	50.3	24	177	9.4
CUTLESS	*	28.0	55.3	25	179	9.3
LEW	*	27.9	52.3	29	180	10.4
GRANDIN		27.3	51.6	26	178	10.4
ND 677	*	27.1	52.4	30	180	10.1
MCNEAL		27.0	50.3	25	178	10.6
GLENMAN	*	27.0	50.7	25	181	10.2
OWENS	(s. white)	26.7	52.1	24	178	9.5
BORDER	*	26.0	48.2	25	177	10.0
LANCER	*	26.0	52.4	31	180	11.5
FORTUNA	*	25.5	52.1	27	178	11.5
HI-LINE		25.1	51.9	24	177	11.5
PONDERA		24.3	52.5	26	178	10.4

Cooperator: Western Triangle Ag. Research Center.
Location: Ten miles north of Conrad, MT. (Pondera County)
Fertilizer: 100# 11-52-0 with the seed, + 60# N topdressed.
Previous crop: Barley.
Date seeded: April 21, 1994.
Date harvested: Aug. 10, 1994.
Rainfall: From seeding to harvest was 5.23 inches.
* = Sawfly resistant varieties. (Amidon and Rambo have partial resistance.)

Yield experimental mean: 28.05
Error degrees of freedom: 46.00
F test for var. = 2.68, C.V. 2 = 4.52, LSD (0.05) = 3.61

Table 2 · **Five-year summary** for **No-till Recrop Spring Wheat** varieties grown near **Conrad, MT.** 1989 - 1990 - 1991 - 1993 - 1994. 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
PENAWAWA	(s. white)	47.2	59.5	27.3	188	8.5
WESTBRED 926		43.0	58.5	28.5	183	10.5
OWENS	(s. white)	41.9	57.1	28.5	187	9.5
RAMBO	*	40.8	57.6	28.5	190	11.0
GLENMAN	*	40.4	58.2	29.5	188	10.5
STOA		40.0	59.2	34.3	187	11.4
AMIDON	*	39.5	59.3	33.8	188	11.1
HI-LINE		39.2	60.6	28.5	186	11.1
NEWANA		38.8	59.3	27.5	189	10.6
KLASIC	(h. white)	38.7	60.9	23.7	182	9.6
LEN		38.7	58.1	28.3	186	11.4
FORTUNA	*	38.6	60.1	34.0	186	11.7
PONDERA		38.3	60.3	29.0	186	11.5
LEW	*	38.3	60.3	34.3	189	11.0
GRANDIN		37.6	59.7	30.3	185	10.8
CUTLESS	*	36.5	49.9	31.3	188	11.5
LANCER	*	36.0	60.2	35.8	189	11.7

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. (1989 - 1990 - 1991 - 1994)

Table 3. **Dryland Recrop No-till Barley** variety trial grown north of **Conrad**, 1994. Mont. Agr. Expt. Station, Westerm Triangle Ag. Research Center, Conrad, MT.

Variety	Yield bu/ac	Test weight lbs/bu	Plant hgt. inches	% Plump	% Thin	Head date	% Protein
Gallatin	54.0	44.7	23	75	6	177	9.1
MT890008	52.0	44.5	21	61	9	179	9.2
Stark	51.5	49.0	23	76	6	177	10.0
Baronesse	50.8	47.1	22	57	12	177	10.0
Piroline	49.0	49.0	25	51	14	174	9.4
MT140523	47.6	46.7	25	50	15	177	10.5
Bowman	47.5	48.0	24	88	3	178	10.0
MT860756	47.5	46.2	21	75	10	179	10.1
MT851195	47.3	45.4	24	68	7	179	9.8
MT886610	46.1	46.0	24	45	21	176	9.9
MT889106	45.4	48.3	24	80	5	175	9.8
Steptoe	45.2	44.2	23	66	11	174	9.9
Colter	44.9	43.0	22	68	19	177	9.1
Hector	44.8	44.9	25	60	12	180	9.4
Lewis	44.7	46.8	23	61	12	178	10.1
MT861596	44.2	46.7	24	41	22	177	9.9
Harrington	41.3	45.1	22	61	11	178	9.4
Medallion	40.1	44.4	22	39	27	177	10.7

Cooperator: Western Triangle Ag. Research Center.
Location: Ten miles north of Conrad, MT. (Pondera County)
Fertilizer: 100# 11-51-0 with the seed, + 60# N actual topdressed before planting.
Previous crop: Barley.
Method of seeding: Double-disc drill.
Date seeded: April 21, 1994.
Date harvested: August 4, 1994.
Soil probe depth at seeding: 36 + inches.
Rainfall: From seeding to harvest was 5.23 inches.
Yield experimental mean: 46.88
Error degrees of freedom: 34.00
F test for var. = 2.39, C.V. 2 = 4.99, LSD (0.05) = 6.72

Table 4. **Five-year** summary for **Recrop Dryland No-Till Barley** varieties grown north of **Conrad,** MT. 1989 - 1990 - 1991 - 1993 - 1994. 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	71.9	51.7	25.9	79.5	5.1	189	8.5
MT 860756	65.6	51.3	25.1	91.5	4.8	189	9.1
GALLATIN	64.3	51.5	28.4	83.8	4.6	187	8.9
HECTOR	62.3	50.9	28.8	76.8	7.0	189	9.0
MT 140523	62.2	51.1	28.6	79.2	6.0	188	9.3
PIROLINE	61.3	53.4	29.9	83.8	4.8	186	8.9
LEWIS	61.1	52.1	27.8	81.0	5.8	189	9.3
STEPTOE	60.9	46.2	27.3	81.8	6.8	182	8.6
HARRINGTON	58.1	50.0	27.9	83.0	4.8	190	8.8
BOWMAN	57.6	51.8	28.3	94.0	2.2	185	10.1
STARK	56.1	53.0	28.7	91.9	2.9	185	9.4
COLTER	52.5	46.5	26.3	76.7	10.6	185	8.9

Cooperator: Western Triangle Ag. Research Center.
Location: Ten miles north of Conrad, MT. (Pondera County)
* = Plant hgt. averages based on four years only. (89-90-91-94)