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

Year: 1989

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 1988, fallow in 1987, and barley in 1986. 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. Amon. 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 broadleaf control. Planting date was May 15, 1989. Growing season rainfall by month was: May 2.7"; June 2.45"; July 2.09"; and August 4.66".

Results: Yields averaged 48.3 and 72.4 bu/a for spring wheat and barley, respectively; reflecting the favorable moisture conditions in this area during 1989 (Tables 1 and 2). There was no relation between heading date/maturity and yield on recrop in 1989, probably because of frequent rainfall throughout the growing season. In dry years, or when moisture is not distributed evenly, one might expect early maturity to be an advantage for yield on recrop.

Although the recropped varieties were not planted in a way to allow direct paired comparisons to those on fallow (ie- same field location and planting date), varieties on recrop ranked similar to those on fallow when using 3-year averages for fallow. Exceptions include Newana and Pondera spring wheat, and Clark, Harrington, and Bearpaw barley; which ranked lower on recrop than on fallow.

All varieties had adequate plant height, and most had good test weight. Sawfly damage was moderately heavy for susceptible spring wheat varieties, and moderate for the partially resistant varieties Rambo and Amidon; with no damage on the resistant types. Similar patterns of sawfly damage in spring wheat varieties occurred on fallow.

Future Plans: Continue no-till variety testing.

60

Table 1. Dryland recrop spring wheat variety trial north of Conrad, 1989. Mont. Agr. Expt. Sta., Western Triangle Research Center, Conrad, MT.

Variety	Yield bu/a	Test wt.	Plant hgt. inches	Head date	% Protein
Penawawa (s. white)	54.5	60.3	28	196	11.0
Stoa	52.3	60.1	33	194	14.6
MT 8402	51.3	61.9	30	193	13.3
Len	50.8	60.3	28	193	13.6
Marshall	50.6	61.0	26	198	14.0
Olaf	50.4	61.1	31	196	14.2
Rambo *	49.9	62.4	30	198	13.7
Amidon *	49.2	60.9	35	195	14.2
NK 751	49.1	59.3	25	193	11.9
MT 8182	48.9	59.3	30	194	13.3
Alex	48.8	61.1	35	197	14.0
Glenman *	48.7	59.9	30	196	12.3
Fortuna *	47.1	60.8	35	195	14.7
Owens (s. white)	47.0	59.8	29	196	11.1
Lew *	45.5	62.0	36	197	13.4
Newana	45.4	61.7	27	198	13.1
Cutless *	45.4	58.3	32	194	14.7
Lancer *	44.5	61.3	37	194	16.0
Pondera	44.4	61.6	27	195	13.4
Westbred 906R	42.7	60.6	29	191	13.9

Location : Research Center, Conrad.
Planting Date : May 15, 1989.
Harvest Date : September 6, 1989.
Previous Crop : Barley
Rainfall from Seeding to Maturity : 11.9"
Fertilizer : 100# 11-51-0 with the seed and 60# N actual topdressed.
* Sawfly resistant varieties.
No-till seeded.
Yield Experimental Mean : 48.3
Error Degrees of Freedom : 38.0
F. Test : 1.11
C.V. : 5.95
LSD (0.05) : 8.23

Table 2. Dryland recrop barley variety trial north of Conrad, 1989. Mont. Agr. Expt., Western Triangle Research Center, Conrad, MT.

Variety	Yield bu/a	Test wt.	Plant hgt. inches	% Plump	% Thin	Head date	% Protein
Lewis	78.2	54.4	28	86	3	199	11.3
Hector	77.5	54.1	28	92	3	199	10.4
MT 140523	77.3	53.1	27	92	2	199	11.7
Gallatin	76.9	53.3	28	88	3	197	9.9
Steptoe	73.1	48.7	25	87	4	193	7.8
MT 81161	72.8	51.9	28	93	1	198	10.6
Bowman	72.7	53.2	26	97	1	198	11.9
Piroline	71.6	55.0	29	98	1	197	11.1
Busch Ag. 1202	69.2	49.8	27	93	2	197	11.0
Clark	68.0	49.8	30	65	10	198	11.1
Harrington	66.9	51.1	29	92	2	200	9.9
Bearpaw (MT 81616)	64.2	49.4	27	84	4	200	10.1

Cooperator and Location : Research Center, Conrad.
Planting Date : May 15, 1989. No-Till planted.
Harvest Date : September 6, 1989.
Previous Crop : Barley
Rainfall from Seeding to Maturity : 11.9"
Fertilizer : 100# 11-51-0 with the seed + 60# N actual topdressed.
Yield Experimental Mean : 72.37
Error Degrees of Freedom : 22
F. Test : 4.21
C.V. : 3.2
LSD (0.05) : 6.55