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

Year: 1990

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 1989, fallow in 1988, and barley in 1987. 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 April 24, 1990. Growing season rainfall by month was April 1.24"; May 1.91"; June 2.00"; July 0.26"; and August 1.37".

Results: Yields averaged 34.3 and 57.8 bu/a for spring wheat and barley, respectively (Tables 1 and 2). Spring wheat varieties ranked similar on recrop in comparison to their multi-year averages from fallow conditions, with the exception of Newana and Pondera; which ranked lower on recrop. The barley varieties Bowman and ND 9866 ranked surprisingly low on recrop, considering their good drought tolerance. Growing conditions at this site, however were somewhat above drought conditions.

All varieties had adequate plant height and excellent test weight. Sawfly damage was moderate for susceptible spring wheat varieties, with no damage on the resistant types. Similar patterns of sawfly damage in spring wheat varieties occurred on fallow.

Table 1. Dryland recrop spring wheat variety trial grown north or Conrad, 1990. 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)	38.1	62.9	28	183	9.8
MT 8402	37.4	64.1	29	184	11.4
Rambo*	37.0	62.0	29	186	11.7
Copper	37.0	63.6	28	182	10.3
Owens (s. white)	36.2	61.4	28	183	9.9
Westbred 906R	36.0	62.7	27	182	10.3
Westbred 926R	35.3	62.6	30	182	10.1
Lancer *	35.2	64.3	35	186	10.4
Glenman *	34.3	62.6	28	183	11.4
Len	34.1	62.6	29	180	10.3
Alex	33.9	64.2	31	182	11.4
Amidon*	33.7	63.6	34	181	10.9
Pondera	33.4	63.9	30	182	12.4
Gus	33.0	63.6	29	185	12.3
Lew *	32.8	63.9	33	182	11.7
Fortuna*	32.6	63.9	33	181	12.3
Olaf	32.1	62.3	29	183	11.4
Grandin	31.8	62.9	30	186	11.2
Newana	31.5	61.9	27	183	11.1
Stoa	31.3	63.4	35	181	12.5

Location : Research Center, Conrad.
Fertilizer : 100# 11-51-0 with the seed + 45# N actual topdressed.
Previous crop : Barley
Date seeded : April 24, 1990
Date harvester : August 16, 1990
Rainfall from seeding to maturity : 4.61".
Soil moisture probe depth at seeding : 3'6".
* Sawfly resistant varieties (Amidon and Rambo partial resistance).
Yield experimental mean : 34.32
Error degrees of freedom : 38
F test for var. : 2.28
C.V. 1 : 4.09
LSD (0.05) : 4.02

Table 2. Dryland recrop barley variety trial grown north of Conrad, 1990. Mont. Agr. Expt. Sta., Western Triangle Research Center, Conrad, MT.

Variety	Yield bu/a	Test wt.	Plant hgt. inches	Head date	% Plump	% Thin	% Protein
Bearpaw	64.6	53.6	26	190	84	5	9.5
MT 140523	63.1	53.3	28	186	87	4	8.7
Hector	62.5	53.1	27	184	87	5	8.8
Crystal	61.7	53.1	27	190	81	5	8.5
Gallatin	59.2	53.7	27	183	87	4	9.3
Lewis	58.1	53.1	27	190	89	4	9.4
Harrington	57.0	53.7	27	187	86	5	9.3
Piroline	56.4	55.3	28	183	91	3	8.4
Clark	54.8	51.7	28	187	77	8	9.8
Steptoe	53.1	47.3	29	178	88	6	8.9
Bowman	52.8	52.6	29	179	93	4	9.9
ND 9866	50.0	54.6	30	182	94	3	8.8

Location : Research Center, Conrad.
Fertilizer : 100# 11-51-0 with the seed + 45# N actual topdressed.
Previous crop : Barley
Date seeded : April 24, 1990
Date harvested : August 9, 1990
Rainfall from seeding to maturity : 4.61".
Soil moisture probe depth at seeding : 3'6"
Yield experimental mean : 57.77
Error degrees of freedom : 22
F test for var. : 2.69
C.V. 2 : 4.85
LSD (0.05) : 8.22