Table 17. Uniform Regional Hard Red Spring Wheat Nursery, 1982

Variety	Avg. yield bu/acre	Test Weight	1000 KW	Heading Date	Height Inches
CI 3651	32.1	60.0	36	7-13	36
CI 13751	38.1	60.0	30	7-12	35
CI 13958	38.9	59.5	36	7-12	33
CI 13986	50.3	60.5	34	7-14	27
CI 17681	42.0	60.0	36	7-9	31
SD 2861	43.1	59.0	40	7-9	27
SD 2854	50.8	58.0	38	7-11	30
SD 8015	55.9	60.5	38	7-10	27
SD 2903	48.4	62.0	34	7-9	32
SD 2881	47.3	60.5	42	7-10	31
MT 7836	47.6	60.0	38	7-13	32
MT 8017	35.7	59.5	35	7-14	29
MN 7529	44.0	60.5	41	7-10	27
MN 7663	40.3	60.5	37	7-14	25
MN 7357	52.1	58.0	40	7-14	25
MN 73167	42.8	58.0	38	7-14	26
ND 574	40.7	56.0	35	7-13	32
ND 582	42.7	60.0	34	7-14	30
ND 586	51.6	57.0	35	7-16	26
ND 590	46.3	57.0	38	7-16	26
ND 594	44.0	61.0	33	7-10	27
NK 775 8002	48.1	60.5	37	7-13	26
NK 775 4374	46.7	62.0	47	7-10	25
NK 775 4342	42.9	59.5	39	7-14	27
HS 79304	46.0	60.0	32	7-15	26
HS 79561	42.3	58.5	40	7-14	29
HS 79400	39.7	60.0	36	7-15	28
PR 2369	43.9	61.0	39	7-14	28
X 7993	38.9	60.5	35	7-15	33
X 9882	38.4	59.0	39	7-14	27
WA 6922	37.7	60.0	36	7-14	25
WA 6923	39.5	58.0	35	7-14	28
WRP-8-1	40.8	61.0	35	7-10	24
WRP-8-30	38.8	61.5	35	7-9	24
Lsd, bpa = 8.4					
CV = 17%					

WINTER WHEAT NURSERIES

The Elite Yield and Advanced Winter Wheat nurseries were seeded on summer fallow in early September. Germination and fall growth was satisfactory; but as was the case with the field plot trials, the nursery seedings failed to survive the winter at Dickinson.

Table 18. Uniform Regional Durum Nursery, 1982

Variety	Avg. yield bu/acre	Test Weight	1000 KW	Heading Date	Height Inches
Mindum	42.6	63.0	50	7-12	36
Rolette	48.5	62.0	44	7-7	27
Ward	47.1	63.0	46	7-9	31
Crosby	44.5	62.0	44	7-8	32
Rugby	38.4	62.0	46	7-10	28
Cando	33.0	62.5	52	7-10	29
Coulter	41.4	62.5	50	7-10	29
Vic	39.3	61.5	44	7-10	33
D 771	30.1	62.5	52	7-10	26
D7609	37.7	61.0	50	7-10	32
D785	36.4	61.0	46	7-10	30
DT433	42.1	63.0	52	7-10	31
D7733	38.8	62.0	52	7-11	30
D7751	34.6	62.0	52	7-10	32
D7798	45.0	62.0	54	7-11	32
D77200	39.4	62.5	46	7-11	29
D792	36.2	61.5	52	7-10	32
D793	44.9	61.5	52	7-7	31
DT369	40.3	61.0	48	7-9	26
DT371	34.4	61.5	50	7-9	27
D78127	42.0	63.5	50	7-9	31
D78140	39.5	62.0	48	7-10	29
D78168	39.2	61.5	48	7-11	30
D78177	41.1	62.0	50	7-10	27
D801	38.7	63.0	46	7-11	29
D802	41.4	62.5	46	7-10	26
D803	41.5	61.5	46	7-12	28
D804	42.5	63.5	46	7-11	29
Lsd = 5.9					
CV = 15%					

Table 19. Uniform Early Oats Nursery – Dickinson, 1982

Variety	Avg. yield bu/acre	Test Weight	Heading Date	Height Inches
Otee	56.7	38.5	7-6	29
IL 75-5681	68.3	37.5	7-5	30
Lang	77.7	38.0	7-6	28
IA Multiline X-2	78.0	37.5	7-5	30
Clintford	70.7	38.0	7-6	30
SD 740065	72.0	37.0	7-5	30
SD 743358-06	60.3	39.5	7-6	29
MN 80116	65.7	38.0	7-5	30
Andrew	76.7	35.0	7-5	32
MO 06195	70.0	36.5	7-7	26
MO 06197	65.7	40.0	7-6	27
MO 06035	71.7	36.5	7-6	29
MO 07233	75.7	36.5	7-6	26
MO 07091	55.0	37.5	7-5	28
MO 06922	53.7	37.0	7-5	23
Bates	62.3	38.0	7-5	27
Lsd = 9.3				
CV = 11%				

Table 20. Uniform Midseason Oats Nursery – Dickinson, 1982

Variety	Avg. yield bu/acre	Test Weight	Heading Date	Height Inches
WI X3612-2	65.7	34.0	7-15	34
WI X4024-7	65.3	36.0	7-9	32
WI X3620-7	67.0	36.0	7-6	30
Dal	65.0	34.0	7-11	32
IL 75-1056	61.0	36.0	7-6	25
IL 75-5860	71.3	36.0	7-5	28
IL 75-1065	72.7	36.0	7-6	26
Igle	89.7	34.0	7-6	29
W 76121	95.3	33.0	7-14	31
W 78286	92.0	34.5	7-14	34
W 78296	110.0	34.0	7-14	33
NY A-11	89.3	34.0	7-9	27
PA 7967-11759	78.3	37.0	7-16	26
PA 7967-11690	83.7	37.0	7-6	28
SD 780304	93.7	35.5	7-10	32
SD 780393	75.3	35.0	7-7	36
SD 743358-12	63.0	32.0	7-11	36
SD 780352	74.7	36.0	7-9	31
Clintland	57.7	34.0	7-5	33
MN 78211	71.7	33.0	7-10	34
MN 79229	64.7	36.0	7-9	31
MN 80111	79.7	30.5	7-8	31
MN 80118	55.3	30.0	7-6	30
MN 80227	78.0	36.5	7-8	31
ND 77-61-311	85.0	36.5	7-11	30
ND 77-66-13	77.0	34.5	7-11	31
ND 76-530-301	74.0	30.0	7-11	31
Gopher	92.3	35.0	7-7	32
P 72266B1-2-3-2	78.3	35.0	7-5	30
P 72282RB6-5-3-56	59.3	34.0	7-6	31
P 72288RBI-3-4-3	57.0	33.0	7-6	28
P 73118A3-5-2	73.3	35.0	7-5	29
Lsd = 12.6				
CV = 14%				

Table 21. Station Oat Nursery – 1982

Variety	Avg. yield bu/acre	Test Weight	Heading Date	Height Inches
ND 78379-6B1	89.7	36.0	7-9	31
ND 78119-12B2	79.7	36.5	7-11	32
ND 78376-12B2	93.7	37.0	7-9	33
ND 76-530-301	87.7	37.0	7-14	30
Menominee	105.7	38.0	7-14	29
ND 77-66-13	73.3	38.5	7-11	31
ND 77-64-152	74.7	35.5	7-10	31
ND 77-66-364	93.0	37.0	7-11	31
ND 77-61-311	84.0	38.0	7-11	30
Fidler	90.0	35.5	7-14	30
Otana	104.7	37.0	7-14	34
Porter	98.3	37.5	7-11	29
Ogle	80.7	34.5	7-7	28
Lsd = 11.7				
CV = 11%				

Table 22. Uniform Great Plains Barley Nursery – 1982

Variety	Avg. yield bu/acre	Test Weight	Heading Date	Height Inches
Firlbecks III	58.8	50.0	7-10	27
Primus II	53.5	46.0	7-3	27
Larker	64.3	48.0	7-5	29
Bedford	55.8	47.5	7-9	27
Br DS4-1	76.1	44.0	7-5	28
ND 3529	48.5	48.0	7-11	32
ND 3715	53.3	44.5	7-9	28
ND 4208	63.8	44.0	7-9	30
SD 79-426	53.8	46.0	7-5	32
SD 79-435	61.0	48.5	7-8	31
SD 79-446	55.2	49.0	7-5	30
Azure	67.3	47.0	7-6	32
ND 5377	71.2	43.5	7-4	28
ND 5569	51.7	44.0	7-6	28
Lsd = 9.5				
CV = 13%				

Table 23. Western Dryland Spring Barley Nursery – 1982

Variety	Avg. yield bu/acre	Test Weight	Heading Date	Height Inches
Munsing	63.3	50.5	7-11	24
Galt	66.2	48.0	7-9	27
Steptoe	65.0	46.5	7-6	26
Hector	70.8	51.0	7-16	29
Clark	72.0	50.0	7-16	28
Zephyr	74.5	49.0	7-13	27
MT 311031	70.5	51.5	7-11	26
MT 311576	70.8	50.0	7-11	29
WA 969175	75.0	48.0	7-11	26
MT 657399	70.8	49.5	7-11	29
MT 312620	69.2	50.5	7-9	26
MT 313104	72.3	50.0	7-10	28
ID 810264	61.0	48.0	7-14	27
ID 810099	72.8	48.5	7-16	27
MT 853287	71.8	48.5	7-8	30
MT 853320	74.0	49.0	7-8	31
MT 853345	49.5	52.0	7-3	25
ND 4994	54.6	52.5	7-8	27
ND 47581	73.7	50.0	7-13	30
OR 74352	62.8	46.0	7-11	26
UT 1427	79.2	48.0	7-3	28
UT 1513	73.7	43.5	7-9	28
WA 836678	78.0	44.5	7-9	28
WA 106987	66.7	45.5	7-16	23
Lsd = 8.6				
CV = 11%				

Table 24. Western Spring Barley Nursery – 1982

Variety	Avg. yield bu/acre	Test Weight	Heading Date	Height Inches
Trebi	65.7	47.5	7-7	26
Steptoe	72.2	44.5	7-6	25
Klages	65.2	46.5	7-15	25
Morex	60.8	47.5	7-7	28
Clark	62.2	47.5	7-15	26
ID 410167	66.3	48.0	7-14	26
MT 547354	71.7	51.0	7-11	27
MT 31972	68.0	49.0	7-14	28
OR 743521	59.5	46.5	7-16	23
WA 969175	62.8	48.5	7-16	25
CA 75790	66.0	47.5	7-18	24
MT 311031	67.0	50.0	7-11	25
MT 311576	55.1	49.5	7-14	25
OR 73341	51.0	41.5	7-17	19
OR 73343	54.7	45.5	7-17	22
SK 76333	71.0	49.0	7-14	26
UT 1427	68.8	45.0	7-5	23
ID 786871	58.5	48.5	7-14	23
ID 810264	61.2	49.0	7-14	27
ID 789009	70.8	47.5	7-5	26
MB 731540	70.2	47.0	7-5	25
MT 41279	50.7	47.5	7-15	24
MT 853183	58.2	48.0	7-15	18
UT 464	64.3	44.0	7-6	25
UT 1513	68.5	46.5	7-10	27
UT 1759	64.0	46.5	7-10	27
WA 145837	57.0	43.5	7-10	24
WA 854378	62.2	44.5	7-9	26
WA 106987	64.0	45.0	7-10	21
WA 112967	62.2	46.5	7-11	26
Lsd = 8.1				
CV = 13%				

Table 25. Advanced Two Row Barley Nursery – 1982

Variety	Avg. yield bu/acre	Test Weight	Heading Date	Height Inches
Morex	44.2	47.5	7-7	28
Glenn	55.5	48.0	7-5	26
Klages	56.7	48.5	7-14	28
Harrington	61.0	48.0	7-14	27
Hector	66.5	50.0	7-10	32
ND 5093-2	58.7	50.0	7-10	30
ND 5096-2	53.3	51.0	7-5	29
ND 5692	48.3	52.0	7-8	30
ND 4991-3	57.7	51.0	7-8	30
ND 4974-1	71.2	49.5	7-10	29
ND 6894	48.2	49.5	7-9	28
ND 6817	49.2	50.0	7-14	29
ND 5993	57.5	50.0	7-7	31
ND 6806	51.0	50.5	7-9	31
ND 5998	60.3	49.5	7-9	30
TR 521	64.3	51.5	7-9	29
TR 604	66.7	48.0	7-10	25
TR 215	62.7	49.5	7-16	27
ND 2679-4-2	55.0	50.5	7-7	28
ID 10167	58.2	49.0	7-11	29
ND 5971	55.0	48.0	7-10	27
ND 5950	55.7	49.5	7-8	30
ND 5972	61.2	43.5	7-10	28
ND 5876	56.7	50.5	7-10	28
ND 5883	69.3	50.5	7-10	26
Lsd = 5.8				
CV = 8%				

MINIMUM TILLAGE AND SEEDING AND DOUBLE DISKING AND CONVENTIONAL SEEDING ON SECOND CROPPING

In 1976 there was no significant difference in wheat production between minimum tillage and conventional tillage on second cropping. Growing conditions were excellent in 1976.

In 1977, hot, dry spring weather conditions were not particularly favorable to germination and early crop growth because of dry surface soil. Because of the small diameter of the rotating coulters on the John Deere 1500 Power Till Seeder, it was not possible to place seed deep enough to get it into moist soil. As a consequence, germination was spotty and delayed until later rainfall came. Excessive weed growth was also a problem on this treatment. Penetration of the surface soil and satisfactory seed placement was not as difficult with the Melroe 701 Minimum Tillage Drill. Germination and growth was satisfactory and production was double that for the Power Till Seeder. Conventional disking and seeding was the best production method in the 1977 comparison.

In 1978 and 1979 only the Melroe 701 and the conventional tillage and seeding treatments were compared. Initial growth was slower on the minimum tillage treatment. This may be partly due to lower surface temperatures caused by the reflective and insulating effects of the straw and stubble on the field surface. Weed problems were also a greater problem on the minimum tillage treatment.

In 1980 the Melroe 701 Drill and conventional seeding was compared once again. Because of severe drought, production was zero for both treatments.

In 1981 the John Deere Hoe Drill was used for seeding the minimum tillage treatment. A good stand of wheat resulted from both the minimum tillage seeding and the conventional seeding, with the minimum tillage treatment producing slightly higher yields for the first time since the trial was begun.

In 1982 the John Deere Hoe Drill was once again used for seeding the minimum tillage treatment, with the conventional treatment consisting of double disking and seeding with the double disk press drill. Excellent growing conditions produced the highest yields recorded in this trial over the past seven year period. Yields for the trial are summarized in Table 26.

Table 26. Minimum Tillage and Double Disking and Seeding for Wheat Production on Recrop

	Yield in Bushels Per Acre on:	
Year	Minimum Tillage and Seeding	Double Disking and Conventional Seeding
1976	28.0	27.0
1977	12.6	15.0
1978	10.3	28.5
1979	9.6	15.9
1980	0.0	0.0
1981	15.3	14.3
1982	20.9	31.8
7 – Yr. Average	13.8	18.9

WHEAT PRODUCTION ON FALLOW, SECOND CROPPING AND CONTINUOUS CROPPING

In 1976, an excellent year for small grain production on stubble land, in southwestern North Dakota, yields on conventional summer fallow were 43 bushels per acre, on second cropping 27 bushels per acre and on continuous cropping 22 bushels per acre. In 1977, a year when hot, dry spring weather conditions were not particularly favorable to the germination and early growth of the crop, yields were appreciably reduced, even though rainfall in late May and June provided ample soil water for satisfactory crop growth. Yields on fallow were 26.9 bushels per acre, on second cropping 11.5 and on continuous cropping 5.5 bushels per acre. Relative differences between production methods were remarkably similar for both years.

In 1978, wheat on summer fallow averaged 38.5 bushels per acre in this trial compared with 31.4 on second cropping and 30.6 on continuous cropping. High yields on stubble land were a result of the excellent soil water recharge provided by the well above average precipitation coming in the fall of 1977 plus adequate seasonal moisture and cool growing season temperatures.

In 1978, fall precipitation was only 4.58 inches compared to more than 10 inches in 1977. In addition, a late spring planting date and a very dry period extending from April 20 to June 18 was unfavorable for good, uniform germination and early crop growth. The effectiveness of stored soil water in fallow under stressed conditions is readily evident in the harvested yields.

In 1980, severe drought conditions prevailed through the third week in June. Grain production was reduced on summer fallow and was zero on recrop and continuous cropping treatments.

In 1981 early seeded small grain crops were severely frosted by a severe freeze on May 9th, but seemed to recover very well. The most severe weather affecting crop production occurred the first ten days in July when temperatures of 93˚F and above were recorded on 7 days, with a maximum reading of 110˚F. Evaporation measured 3.93 inches during this ten day period.

Precipitation during the last four months of 1981 was above average, providing a good soil water recharge. Snowfall was above average throughout the winter months, providing nearly three inches of precipitation from January thru March. Above average rainfall thru the growing season was well distributed.

The growing season of 1982 is best characterized as cool, wet and late.

A summary of wheat production in this trial is shown in Table 27.

Table 27. Wheat Production on Fallow, Recrop and Continuous Cropping

	Yield in Bushels Per Acre							
Treatment	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**7 – Yr. Avg.**
Fallow	43.0	26.9	38.5	32.4	22.3	21.3	33.9	31.2
Recrop	27.0	11.5	31.4	15.9	0.0	14.5	25.7	18.0
Continuous cropping	22.0	5.0	30.6	12.8	0.0	14.0	24.9	15.7

CROPPING SYSTEMS STUDY

The cropping systems trial which attempted to evaluate alternate methods of crop production in southwestern North Dakota was phased out because of certain faulty design aspects. The trial was re-designed as follows, to include a comparison of several cropping sequences:

Treatment 1: Compares a two year rotation of wheat and corn with a two year fallow-wheat rotation. Early corn varieties for grain production will be used in this comparison.

Treatment 2: Compares a two year rotation of wheat and sunflowers with a two year fallow-wheat rotation.

Treatment 3: Records production in a four year cropping sequence of sunflower on wheat stubble, barley on sunflower stubble, fallow on barley stubble and wheat on fallow.

Treatment 4: Compares wheat on fallow, wheat on continuous cropping and wheat on no-till recrop.

Initially, an attempt will be made to incorporate chemical fallow into the system in random arrangement in all treatments. Some difficulty has been experienced with being able to make the chemical application at the proper time without damage to adjacent plots. If chemical fallow can be used, seeding will be done with the no-till drill on these plots.

Plans are to remove soil fertility and weed growth as limiting factors.

Weed control in treatment #3 is designed to provide Treflan residual on barley and Glean residual from barley to carry-over on fallow.

Fertilizer rates for recrop will be 60 lbs. actual Nitrogen and 30 lbs. P_2O_5 per acre. On fallow the rates will be 30 lbs. N and 30 lbs. P_2O_5.

The field plot diagram attached shows the planting plan for the 1983 season, as each crop is planted on the appropriate previous crop or fallow, as provided for in 1982, the year of establishment of the cropping sequence.

DICKINSON EXPERIMENT STATION DICKINSON, NORTH DAKOTA MAIN FIELD				107 Fallow	76 Wheat No till Re crop	75 Wheat Cont. crop	44	43	12	N
167	138	137	108	106 Wheat No till Re crop	77 Wheat Cont. crop	74 Wheat on fallow	45	42	13	
166	139	136	109	105 Wheat Cont. crop	78 Wheat on fallow	73 Fallow	46	41	14	
165	140	135	110	104 Wheat on fallow	79 Fallow	72 Wheat No till Re crop	47	40	15	
164	141	134	111	103 Sun Flrs. on Wheat stub	80 Fallow Bly stub	71 Barley on S. Flr.	48	39	16	
163	142	133	112	102 Barley on S. Flr.	81 Wheat on fallow	70 Fallow Bly stub	49	38	17	11
162	143	132	113	101 Fallow Bly stub	82 Sun Flrs. on Wheat Stub	69 Sun Flrs. on Wheat Stub	50	37	18	10
161	144	131	114	100 Wheat on fallow	83 Barley on S. Flr.	68 Wheat on fallow	51	36	19	9
160	145	130	115	99 Sun Flrs. on Wheat Stub	84 Fallow	67 Wheat on S. Flrs.	52	35	20	8
159	146	129	116	98 Wheat on S. Flrs.	85 Wheat on fallow	66 Sun Flrs. on Wheat Stub	53	34	21	7
158	147	128	117	97 Fallow	86 Sun Flrs. on Wheat Stub	65 Fallow	54	33	22	6
157	148	127	118	96 Wheat on fallow	87 Wheat on S. Flrs.	64 Wheat on fallow	55	32	23	5
156	149	126	119	95 Corn on Wheat Stub	88 Fallow	63 Wheat on Corn Stub	56	31	24	4
155	150	125	120	94 Wheat on Corn Stub	89 Wheat on fallow	62 Corn	57	30	25	3
154	151	124	121	93 Fallow	90 Corn on Wheat Stub	61 Fallow	58	29	26	2
153	152	123	122	92 Wheat on fallow	91 Wheat on Corn Stub	60 Wheat on fallow	59	28	27	1