GROWING CONDITIONS – 1983

Rainfall in September and October, 1982 was well above average, providing an excellent soil water recharge. Total fall precipitation for September through December, 1982 was 9.4 inches compared to the 90-year average of 3.16 inches. Precipitation of 4.9 inches during April through June was below average, but for the rest of the year nearly normal. Total precipitation for the period September, 1982 through August, 1983 was 19.62 inches, compared to 15.92 inches for the 90-year average. The combination of stored rainfall in September and October, 1982 and nearly normal seasonal precipitation provided ample water for good crop growth.

Mean temperatures for April, May and June were well below the 71-year average. Hot spells of several days in July and August when temperatures exceeded 90˚F affected late seeded grain, causing some kernel shrinkage and reducing test weights and yields. Early seeded crops escaped serious damage from high temperatures.

In general, disease development was minimal. However, isolated cases of rather severe stem rust on spring wheat occurred in southwestern North Dakota.

Weather Data Summary

	Inches	
Precipitation:	**1982 – 83**	**90-Yr. Avg.**
September - December	9.40	3.16
January – March	1.35	1.55
April – June	4.90	7.31
July – August	3.97	3.90
Total	19.62	15.92

Average Temperature – Degrees F:

	Maximum	Minimum	Mean	71-Year Mean
April	50	24	37	42
May	62	34	48	53
June	73	46	60	62
July	85	56	71	69
August	90	58	74	67

AGRONOMIC PROCEDURE

Seeding dates for winter grain trials conducted in 1982-83 were: September 13, 1982 for winter rye and winter wheat at Dickinson, September 15, 1982 for winter wheat at Hettinger and Scranton and September 16, 1982 at Beach.

At Dickinson, spring wheat variety trials were seeded on April 27, and durum, barley and oats were seeded on April 28. All nursery trials at Dickinson were planted on May 3. All crop rotation, tillage and production trials were planted May 4. Safflower and flax were seeded on May 11, corn varieties were planted May 24 and sunflower and grain sorghum trials were planted May 25.

Off station small grain variety trials were seeded at Hettinger April 22, Scranton April 25, Regent April 26, Manning April 29, Beach May 2, Beulah May 3, Hannover May 4 and Glen Ullin May 5.

All winter grain variety trials were seeded with a John Deere deep furrow drill equipped with 10 cm spear point shovels spaced 25.4 cm, and with pneumatic rubber tire packer wheels. All spring grain variety trials were seeded with a double disk press drill. No till trials were seeded with a Lilliston no-till drill. All small grain variety trials were seeded on summer fallow at the following seeding rates shown in Kg/ha: Rye 63, Winter Wheat 56, Durum, Hard Spring Wheat and Barley 67, Oats 54, Safflower 28, and Grain Sorghum 28. Hybrid sunflowers were overplanted and thinned to a uniform population of 18000 plants per acre. Corn was thinned to a uniform population of 15000 plants per acre.

A uniform pre-plant broadcast application of 23 kg Nitrogen per acre and a drill application at seeding of 4 kg Nitrogen and 10.5 kg Phosphoric Acid per acre was made on all small grain variety trials at all locations in 1983. Fertilizer application on corn was based on a shelled corn yield goal of 5000 kg/ha. Application on sunflower was based on a yield goal of 2240 kg/ha.

Hoelon and bromoxynil were used as a tank mix at all locations for wild oats and broadleaf weed control in small grains. Weed control in sunflower was accomplished with Treflan and a Banvel-Lasso tank mixture was used on corn at recommended rates.

Table 1. Hard Red Spring Wheat Variety Trial – Dickinson, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Waldron	46.5	60.5	7-4	36
Alex	44.3	61.5	7-4	36
Butte	41.8	61.5	7-5	35
Coteau	41.0	60.5	7-6	35
Len	35.8	58.0	7-9	29
Marshall	45.7	60.0	7-5	29
Wheaton	44.0	60.5	7-3	29
Olaf	42.4	60.0	7-3	30
Erik	48.7	55.5	7-9	30
Walera	48.7	62.0	7-7	29
Solar	46.2	59.0	7-9	29
Centa	38.0	62.0	6-27	35
Oslo	40.2	60.5	6-27	28
Era	49.0	61.0	7-5	29
Pro Brand 711	41.0	62.0	7-1	32
PR 2360	42.1	61.0	7-1	32
PR 2369	45.9	62.5	7-6	31
Columbus	39.3	58.0	7-6	37
Guard	46.8	62.5	6-29	30
Courtney	39.3	61.5	7-6	31
Lew	41.0	61.5	7-8	34
Leader	35.2	60.5	7-7	34
MT 7819	37.7	60.0	7-7	30
ND 600	35.5	62.0	6-30	32
ND 602	42.4	61.5	6-30	32
X7993	44.0	60.0	7-9	36
Stoa	45.9	61.5	7-1	34
ND 586	42.6	56.0	7-8	29
ND 589	48.4	62.5	7-2	34
ND 593	43.7	59.0	7-7	30
ND 595	47.3	61.0	7-2	31
ND 596	43.5	61.5	7-1	36
ND 597	45.4	62.5	6-29	34
ND 599	42.9	56.0	7-8	28
ND 603	49.5	62.5	6-29	32
MPV 2	41.0	61.5	7-5	34
SD 2861	40.4	60.5	6-28	30
WB 8-1	41.3	62.5	6-29	29
MN 73167	47.9	60.5	7-3	30
NK 775-4342	47.6	62.0	7-5	30
NK 775-8002	49.5	62.5	7-1	33
MT 2926	43.7	62.5	7-6	35
Lsd @ 5% = 4.2 bpa				
CV = 9.7%				

Table 2. Long Term Yield Comparison – Hard Red Spring Wheat Variety Trial, 1983

Yield in Bushels per Acre

Variety	1979	1980	1981	1982	1983	5 – Yr. Avg.
Waldron	38	23	41	47	47	39
Olaf	43	24	45	49	42	41
Lew	35	23	39	44	41	36
Butte	39	21	41	51	42	39
Coteau	43	23	44	47	41	39
Len	38	23	44	50	36	38
Alex	38	23	48	58	44	42
Solar	44	24	53	50	46	43
Oslo			49	56	40	
Pro Brand 711			51	48	41	
Stoa			53	50	46	
ND 586			52	56	43	
Walera			49	61	49	

Table 3. Hard Red Spring Wheat Variety Trials – Dickinson and Off-Station Sites – 1983

Yield in Bushels per Acre

Variety	Dickinson	Beach	Beulah	Bowman	Hannover	Hettinger	Manning	Regent	Average 8 - sites
Waldron	47	28	30	63	36	68	43	55	46
Alex	44	27	34	63	46	69	44	60	48
Butte	42	26	37	63	45	77	42	61	49
Coteau	41	27	33	62	40	72	48	56	47
Len	36	31	34	56	43	70	48	56	47
Marshall	46	34	38	70	48	84	55	62	55
Wheaton	44	34	37	76	47	76	52	65	54
Olaf	42	34	35	66	43	74	56	60	51
Erik	49	30	37	74	49	79	60	61	55
Walera	49	30	36	69	49	78	56	59	53
Solar	46	30	36	66	46	72	56	58	52
Centa	38	28	32	57	43	72	40	57	46
Oslo	40	28	37	66	47	72	53	64	51

Table 4. Hard Red Spring Wheat Variety Trials – Dickinson and Off-Station Sites – 1983

Test Weight in Bushels per Acre

Variety	Dickinson	Beach	Beulah	Bowman	Hannover	Hettinger	Manning	Regent	Average 8 – sites
Waldron	61	57	57	58	56	57	58	60	58
Alex	62	59	59	61	56	61	60	61	60
Butte	62	59	60	61	55	62	60	61	60
Coteau	61	58	59	59	56	61	59	59	59
Len	58	59	58	60	55	58	59	60	58
Marshall	60	59	58	58	56	57	60	61	59
Wheaton	61	57	56	60	52	57	61	59	58
Olaf	60	60	58	61	55	58	60	61	59
Erik	56	57	58	58	53	62	60	60	58
Walera	62	59	59	62	57	55	61	61	60
Solar	59	60	59	63	56	57	60	60	59
Centa	62	60	60	61	56	62	60	62	60
Oslo	61	56	57	59	52	59	58	61	58

Table 5. Hard Red Spring Wheat Variety Trials – Dickinson and Off-Station Sites – 1983

Protein Percent @ 14% Moisture

Variety	Dickinson	Beach	Beulah	Bowman	Hannover	Hettinger	Manning	Regent	Average 8 – sites
Waldron	14.0	15.7	15.8	15.2	16.7	16.3	14.1	14.8	15.3
Alex	13.1	15.3	14.4	15.3	16.0	15.4	12.6	14.7	14.6
Butte	13.6	14.3	14.1	14.8	15.6	15.0	12.4	11.8	14.0
Coteau	14.7	16.1	15.1	15.6	16.3	16.0	13.3	14.8	15.2
Len	14.5	15.5	15.0	15.0	16.5	14.9	12.9	13.9	14.8
Marshall	12.9	14.9	13.2	14.0	14.9	13.8	11.3	12.8	13.5
Wheaton	12.6	14.4	12.6	13.6	15.7	13.7	12.8	12.3	13.5
Olaf	14.3	14.6	14.2	14.5	16.3	14.9	13.1	12.5	14.3
Erik	12.6	15.3	13.2	14.3	15.7	13.6	11.7	12.1	13.6
Walera	12.0	14.0	11.8	13.5	14.3	13.3	10.9	11.8	12.7
Solar	12.1	14.3	12.1	13.1	14.2	13.1	11.4	12.6	12.9
Centa	13.4	14.6	13.4	14.6	15.6	14.5	13.0	12.0	13.9
Oslo	12.8	13.1	12.8	13.7	14.8	13.4	12.5	11.4	13.1

Table 6. Durum Variety Trials – Dickinson, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Rolette	42.1	62.0	6-28	35
Ward	47.3	59.5	7-6	36
Crosby	42.4	60.5	7-1	36
Rugby	49.5	61.5	7-6	36
Cando	49.8	61.5	7-5	27
Coulter	51.2	61.5	7-4	36
Vic	49.5	58.0	7-7	36
Lloyd	58.3	58.5	7-6	27
D 7733	44.8	57.5	7-7	35
D 7798	45.9	58.5	7-5	36
D 77200	42.4	58.5	7-8	28
D 793	45.4	61.0	7-1	34
D 78127	46.2	57.5	7-7	28
D 78177	50.1	62.0	7-6	29
D 804	50.9	52.0	7-10	28
D 79168	55.3	58.0	7-6	28
D 79120	44.8	61.0	7-7	35
D 79122	49.5	61.0	7-10	36
D 79103	46.5	57.0	7-10	36
D 79209	51.4	62.0	7-9	31
D 79104	49.0	60.0	7-5	31
D 7983	42.9	61.0	7-2	31
D 7925	44.0	62.0	6-30	34
D 7958	44.6	59.0	7-4	35
Lsd @ 5% = 4.2 bpa				
CV = 8.9%				

Table 7. Long Term Yield Comparison – Durum Wheat Variety Trial, 1983

Yield in Bushels per Acre

Variety	1979	1980	1981	1982	1983	5 – Yr. Avg.
Rolette	35	14	44	50	42	37
Ward	39	16	45	52	47	40
Crosby	38	15	43	54	42	38
Rugby	40	17	39	52	50	40
Cando	42	17	40	58	50	41
Coulter	40	16	41	55	51	41
Vic	36	18	41	52	50	39
Lloyd		20	45	63	58	
D 7733			45	52	45	
D 793			44	55	45	
D 7798			41	53	46	
D 77200			48	57	42	

Table 8. Durum Wheat Variety Trials – Dickinson and Off-Station Sites – 1983

Yield in Bushels per Acre

Variety	Dickinson	Beach	Beulah	Bowman	Hannover	Hettinger	Manning	Regent	Average 8 - sites
Rolette	42	29	31	79	39	72	47	63	50
Ward	47	35	35	104	42	71	54	66	57
Vic	50	32	36	85	42	74	52	65	55
Lloyd	58	34	37	97	41	74	61	65	58
Cando	50	36	35	77	45	71	60	64	55
Test Weight per Bushel									
Rolette	62	62	60	60	57	59	60	62	60
Ward	60	61	59	56	56	61	60	61	59
Vic	58	61	59	61	57	62	61	61	60
Lloyd	59	62	58	54	54	56	59	60	58
Cando	62	63	59	58	56	60	60	60	60

Table 9. Hard Red Winter Wheat Variety Trials, 1983

Variety	Yield BPA	Test Weight	Heading Date	Height Inches
Dickinson Trial	**Lsd 4.5 bpa**	**CV = 6%**		
Roughrider	63.5	62.5	6-18	40
Froid	55.3	61.5	6-20	42
Norstar	66.3	61.0	6-27	45
Winoka	62.2	63.0	6-19	42
Agassiz	66.6	63.0	6-22	41
Rose	68.2	63.0	6-17	36
Rita	64.9	61.5	6-18	34
Hettinger Trial	**Lsd 4.4 bpa**	**CV = 5%**		
Roughrider	57.0	61.5		
Froid	55.3	60.0		
Norstar	64.1	61.5		
Winoka	55.6	62.0		
Agassiz	60.8	61.5		
Scranton Trial	**Lsd 4.7 bpa**	**CV = 10%**		
Roughrider	33.0	62.0		
Froid	33.8	59.5		
Norstar	35.8	59.5		
Winoka	34.7	62.0		
Agassiz	35.8	61.5		
Beach Trial	**Lsd 3.3 bpa**	**CV = 4%**		
Roughrider	48.7	61.0		
Froid	48.4	62.0		
Norstar	52.5	59.0		
Winoka	48.7	64.0		
Agassiz	55.0	65.0		

Table 10. Oat Variety Trials, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Kelsey	113.5	35.0	7-6	37
Otana	107.9	35.5	7-5	34
Pierce	105.2	36.0	7-2	32
Porter	94.9	36.0	7-4	31
Ogle	92.1	34.0	7-2	30
Menominee	99.7	36.0	7-5	33
Fidler	93.5	34.5	7-5	30
Dumont	119.6	35.0	7-1	35
Centennial	86.6	36.5	7-4	33
Border	114.1	32.5	7-1	29
Steele	105.9	35.0	7-1	36
Marathon	101.8	31.5	7-1	39
Lsd @ 5% = 8.0 bpa				
CV = 9.9%				

Table 11. Long Term Yield Comparison – Oat Variety Trials, 1983

Yield in Bushels per Acre

Variety	1979	1980	1981	1982	1983	5 – Yr. Avg.
Kelsey	95	45	55	104	114	83
Otana	98	48	60	104	108	84
Menominee	43	49	48	92	100	66
Marathon			42	98	102	
Fidler			61	80	94	
Ogle			60	101	92	

Table 12. Oat Variety Trials – Dickinson and Off-Station Sites – 1983

Yield in Bushels per Acre

Variety	Dickinson	Beach	Beulah	Bowman	Hannover	Hettinger	Manning	Regent	Average 8 - sites
Otana	108	66	74	76	78	135	70	108	89
Pierce	105	59	66	94	72	116	64	104	85
Porter	95	66	71	90	91	136	81	115	93
Ogle	92	65	74	93	78	141	82	119	93
Fidler	94	63	60	90	70	104	62	105	81
Test Weight per Bushel									
Otana	36	35	39	38	40	39	38	39	38
Pierce	36	40	40	39	39	39	38	39	39
Porter	36	40	38	41	42	41	38	39	39
Ogle	34	35	35	41	37	37	33	35	36
Fidler	35	36	37	35	43	36	36	35	37

Table 13. Barley Variety Trials, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Larker	63.3	48.5	6-29	34
Glenn	57.1	47.0	7-1	32
Morex	65.7	47.0	7-1	33
Bumper	72.2	45.0	7-6	35
Azure	77.3	48.0	6-30	35
Robust	67.4	49.0	7-5	33
Hazen	71.8	47.5	7-1	31
ND 5570	70.5	48.5	7-3	33
Hector	68.1	48.5	7-4	32
Harrington	73.6	49.0	7-7	30
Clark	68.1	47.5	7-9	30
Bowman	67.7	51.0	7-6	32
ND 5976	77.3	48.0	7-2	34
Lsd @4.4 bpa				
CV = 6.3%				

Table 14. Long Term Yield Comparison – Barley Variety Trials, 1983

Yield in Bushels per Acre

Variety	1979	1980	1981	1982	1983	5 – Yr. Avg.
Larker	63	27	43	63	63	52
Glenn	56	35	45	77	57	54
Hector	72	44	53	81	68	64
Morex	64	34	52	76	66	52
Bumper			48	80	72	
Clark			54	75	68	

Table 15. Barley Variety Trials – Dickinson and Off-Station Sites – 1983

Yield in Bushels per Acre

Variety	Dickinson	Beach	Beulah	Bowman	Hannover	Hettinger	Manning	Regent	Average 8 - sites
Glenn	57	55	52	59	34	93	40	72	58
Morex	66	65	59	57	39	104	49	74	64
Azure	77	72	68	83	44	112	48	94	75
Robust	67	69	63	73	48	106	46	81	69
Hector	68	85	50	64	48	90	49	70	66
Test Weight per Bushel									
Glenn	47	45	47	47	47	47	44	48	47
Morex	47	46	48	46	48	45	46	48	47
Azure	48	44	48	51	48	49	46	49	48
Robust	49	42	49	52	50	52	46	51	49
Hector	49	48	48	49	49	48	47	52	49

Table 16. Winter Rye Variety Trials, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Chaupon	75.4	53.5	6-8	49
Cougar	56.0	55.0	6-7	54
Hancock	71.0	55.5	6-6	57
Musketeer	74.5	56.5	6-6	56
Puma	67.8	55.0	6-6	57
Gazelle 1/	46.0	55.0	6-26	47

1/ Prolific spring rye

Lsd @ 5% = 6.3 bpa

CV = 6%

Table 17. Grain Yields – Corn Variety Comparison Trial, 1983

Variety	Grain Yield bpa 1/	Test Weight	Shelling %	Moisture % 2/
Keltgen 588	79.3	58.5	71	18.0
Keltgen 595	68.3	51.5	70	22.4
Keltgen 90	64.9	51.0	67	23.6
Keltgen 582	72.9	56.0	73	21.1
Interstate 234	81.4	56.0	71	19.9
Interstate 227	71.5	57.5	71	19.8
Interstate 232	64.1	57.5	70	19.0
Interstate 333	66.3	50.0	70	19.5
Funks 4083	66.2	60.5	74	14.5
Funks 4005	60.2	60.5	73	14.9
Stauffer 100E	63.0	58.0	70	20.6
Stauffer 2200	74.6	51.5	70	19.4
Sexauer 111	81.3	57.0	75	18.1
Lsd @ 5% = 10.2 bpa				
CV = 12.4%				

1/ Bushels per acre @ 12% moisture

2/ At harvest

Table 18. Grain Sorghum Variety Trial, 1983

Variety	Avg. Bu/acre	Test Weight
Dekalb DK 18	81.5	57.0
Northrup King NKX8101	55.5	48.0
NK X8103	58.8	54.0
NK X8102	62.5	52.5
NK X1040	84.1	58.5
Lsd @ 5% = 12.5 bpa		
CV = 13.7%		

Table 19. Silage Yields – Corn Variety Comparison Trial, 1983

Variety	Silage Yield Tons/acre 1/	% Moisture At Harvest
Keltgen 588	9.9	84.3
Keltgen 595	12.7	82.4
Keltgen 90	11.1	81.4
Keltgen 582	10.3	83.0
Interstate 234	9.7	84.3
Interstate 227	10.4	81.5
Interstate 232	9.5	82.4
Interstate 333	10.7	84.7
Stauffer 100E	11.3	82.8
Stauffer 2200	10.3	85.9
Funks 4083	8.8	82.3
Funks 4005	8.4	86.0
Sexauer III	10.5	82.9
Lsd @ 5% = .79 ton		
CV = 7.8%		

1/ at 70% moisture

Table 20. Sunflower Variety Trial, 1983

Variety	Yield/Lbs./Acre	Test Weight
Sexauer 305A	2040	23.5
Sexauer 811	1559	22.5
Sakota 5000	1734	23.5
Sakota 4000	1808	28.5
Sakota 2057	1759	23.0
Stauffer 1300A	2002	25.5
Stauffer 1888A	1922	23.0
Stauffer 1830A	1817	25.0
PAG-SF101	2213	24.5
PAG-SF102	2091	26.0
Seed Tec 316	1635	21.5
Seed Tec X11083	1519	23.5
DeKalb 3412	1509	23.0
DeKalb S37	1862	24.5
Sigco 454	2213	24.0
Sigco 470	1532	25.5
Sigco 448	1808	24.0
Interstate 7775-S	1892	22.5
Interstate 7111	2238	25.0
Interstate 7000	1662	26.0
Keltgen 066	1751	24.0
Sheyenne Dakota Gold	1997	22.5
Arrowhead 747	1424	26.0
Arrowhead 707B	1861	24.5
Arrowhead Bonus	1881	25.0
Lsd @ 5% = 235 lbs.		
CV = 11.1%		

Table 21. Safflower Variety Trial, 1983

Variety	Yield/Lbs./Acre	Test Weight
Hartman	1733	39.0
S-541	2178	41.0
S-208	1898	40.5

Table 22. Uniform Regional Hard Red Spring Wheat Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Marquis	23.4	60.0	7-10	33
Chris	24.9	60.0	7-10	32
Waldron	29.7	58.5	7-5	30
Era	31.1	59.4	7-11	25
Butte	29.0	60.0	7-4	33
SD2861	28.8	59.0	7-2	30
SD2912	25.1	59.0	7-6	30
SD8026	29.9	59.5	7-4	33
SD2925	24.9	58.5	7-6	29
MT8017	27.7	59.5	7-7	29
MT7926	23.1	60.5	7-8	31
MT8043	34.5	59.5	7-6	30
MN73167	29.9	58.0	7-6	28
MN7529	27.3	60.0	7-4	29
MN81070	25.3	58.0	7-6	27
MN81101	27.4	61.0	7-6	28
ND582	29.9	59.0	7-7	32
ND586	20.6	60.5	7-7	26
ND593	24.7	58.0	7-6	29
ND597	22.9	59.5	7-2	32
ND603	23.5	58.0	7-5	29
77 58002	26.6	60.0	7-6	28
77 54342	27.2	60.5	7-11	29
HS 79-149	24.5	60.0	7-5	28
HS 78-1139	30.2	58.0	7-7	26
HS 80-236	26.6	59.0	7-6	29
PR2369	29.1	62.0	7-7	27
X7993	26.5	59.5	7-8	35
SBT 428	26.6	60.5	7-7	32
WRP-1	29.9	60.5	7-2	29
WRP 8-30	35.7	60.0	7-2	29
WRP 80-32	30.1	59.0	7-4	30
WA6922	27.3	57.5	7-8	28
WA6923	22.7	55.5	7-6	29
Lsd @ 5% = 6.0				
CV = 13.8%				

Table 23. Hard Red Winter Wheat Nursery – Elite Yield Trial – 1983

Entry	% Winter Survival	Heading Date June	Yield – Bushels Per Acre	Test Weight Lbs. / Bushel
Agassiz	100.0	23.0	51.6	58.4
CTK78	100.0	20.3	30.9	59.0
ND7534-1	100.0	20.0	31.4	54.9
ND7557-2	100.0	21.6	33.0	59.4
ND7582-4	100.0	24.0	36.7	54.9
ND7601	100.0	22.6	40.5	59.2
ND77101	100.0	21.6	43.6	59.0
ND7733	100.0	21.0	39.4	57.8
ND7752	100.0	21.3	51.4	59.4
ND78104	96.6	21.0	47.1	56.7
ND78106	100.0	23.6	40.3	59.1
ND7896	100.0	21.3	36.3	57.6
ND8001	100.0	21.0	37.3	57.2
ND8002	100.0	22.6	38.6	58.5
ND80101	100.0	20.6	44.5	56.8
ND80188	100.0	20.3	43.3	55.7
ND8039	100.0	20.3	28.9	57.4
ND8055	100.0	23.0	34.2	58.6
ND8061	100.0	23.3	37.4	60.6
ND8073	100.0	20.6	34.6	59.2
ND8084	100.0	21.6	34.1	59.0
ND8085	100.0	21.0	40.2	54.8
ND8095	100.0	21.3	36.6	58.4
ND8098	100.0	21.6	50.5	59.2
NSTR	100.0	21.0	37.5	58.4
Rita	100.0	19.3	41.6	56.9
Rose	100.0	21.6	33.3	61.4
RRR	100.0	23.6	34.9	59.9
Vona	91.6	23.0	41.0	60.6
WNK	96.6	21.3	34.1	60.7
Lsd @ 5% =	2.61	2.93	14.68	
CV =	1.61	8.28	23.16	

Table 24. Hard Red Winter Wheat Nursery – Intermediate Yield Trial – 1983

Entry	% Winter Survival	Heading Date June	Yield – Bushels Per Acre	Test Weight Lbs. / Bushel
CTK78	100.0	21.0	30.0	61.3
ND7481	100.0	21.6	32.0	58.8
ND811539	100.0	19.6	27.5	61.2
ND811549	100.0	20.6	38.5	59.9
ND811567	100.0	21.6	37.0	60.7
ND811603	100.0	20.6	26.4	57.8
ND811639	100.0	23.3	29.3	60.2
ND811642	100.0	20.3	28.7	58.7
ND811718	100.0	22.3	26.4	60.3
ND811729	100.0	20.6	26.4	60.1
ND811798	100.0	21.0	30.0	59.6
ND811825	100.0	20.3	27.7	59.2
ND811848	100.0	21.3	30.0	59.4
ND811859	100.0	20.3	24.9	60.2
ND811864	100.0	20.0	37.6	61.6
ND811937	100.0	20.6	22.1	58.7
ND812100	100.0	20.3	31.1	59.9
ND812106	100.0	20.3	35.7	59.5
ND812272	100.0	20.6	25.1	60.4
ND812310	100.0	20.0	30.2	60.5
ND812341	100.0	21.0	32.6	59.4
ND812345	100.0	21.3	27.1	58.5
ND812400	100.0	20.3	41.1	58.1
ND812433	100.0	20.6	29.6	60.7
ND812473	100.0	20.3	37.9	59.2
ND812597	100.0	20.6	28.6	58.6
ND812611	96.6	22.6	30.9	56.0
ND812660	100.0	22.6	28.1	58.6
ND812666	100.0	19.0	21.1	60.3
ND812687	100.0	20.3	35.8	59.7
ND812698	96.6	20.0	34.1	57.9
ND812787	100.0	21.3	37.1	60.1
ND812798	100.0	22.3	35.5	59.7
ND812800	100.0	21.6	28.4	58.5
ND812804	100.0	20.3	15.4	60.8
RRR	100.0	20.3	29.6	60.7
Lsd @ 5% =	2.24	2.14	15.22	
CV =	1.37	6.28	30.79	

Table 25. Uniform Regional Durum Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	1000 KW	Heading Date	Height Inches
Mindum	23.7	61.5	42	7-10	37
Rolette	24.2	61.5	40	7-3	33
Ward	22.8	60.5	42	7-5	33
Crosby	26.8	61.5	41	7-4	33
Rugby	21.7	60.5	40	7-6	32
Cando	19.9	60.0	39	7-7	27
Coulter	21.6	60.5	47	7-7	32
Vic	23.4	60.0	45	7-6	32
Lloyd	33.9	60.5	46	7-7	29
Medora	23.3	61.0	41	7-5	32
D 7733	21.4	61.0	45	7-6	31
D 7798	24.0	60.5	48	7-6	31
D 77200	22.0	61.5	41	7-8	26
D 793	21.1	59.5	48	7-3	33
DT 371	20.4	58.5	42	7-6	33
D7 8127	23.6	61.5	44	7-7	27
D 78177	23.5	61.5	40	7-7	24
D 804	23.3	61.5	44	7-7	25
D 79168	27.8	62.0	48	7-7	25
D 79120	22.8	60.0	45	7-6	31
D 79122	24.5	60.0	44	7-6	31
D 79103	22.6	61.0	47	7-6	32
D 79209	28.8	61.5	42	7-7	25
D 79104	27.5	62.0	42	7-5	30
D 7983	26.8	61.5	44	7-3	30
D 7925	26.6	60.5	50	7-2	32
D 7958	25.2	61.0	43	7-7	33
DT 375	28.2	61.0	44	7-9	34
Lsd @ 5% = 3.2					
CV = 13.4%					

Table 26. Uniform Early Oats Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Otee	53.7	37.0	7-1	29
IL75-5681	60.1	35.0	7-2	30
IL75-5860	65.4	36.5	7-1	30
IL79-1178	54.5	36.0	7-2	33
Lang	68.0	36.0	6-29	31
IA-Multiline X-2	56.6	36.0	6-29	31
IA D227-32-6	60.3	39.0	6-30	30
IA D226-30-8	54.3	31.0	6-28	31
Clintford (Ck)	48.3	37.5	6-28	31
PA 8098-13020	50.8	38.0	7-4	30
PA7967-3145	49.4	40.0	6-28	31
SD743358-06	48.5	40.5	6-28	31
MN80116	56.3	38.0	6-28	32
Andrew (Ck)	60.9	39.0	6-28	32
MO 06967	57.2	40.5	6-29	30
MO 06035	55.7	35.5	6-29	32
MO 07399	67.8	37.5	6-30	30
MO 07468	34.4	36.5	6-29	30
MO 06794	57.1	37.0	6-30	29
Bates (Ck)	53.9	37.0	6-30	30
WI X3530-47	50.0	39.0	6-28	29
Lsd @ 5% = 9.8				
CV = 13.9%				

Table 27. Midseason Oat Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
WIX3620-7	66.1	36.0	7-4	31
WIX3967-2	52.2	34.0	7-7	31
WIX3969-5	71.5	34.0	7-9	31
Dal (Ck)	67.5	36.0	7-7	31
IL 75-5860	73.5	35.0	7-1	35
IL 75-1065	71.0	35.0	7-2	28
IL 75-3402	68.9	39.0	7-2	30
IL 79-5394	72.8	35.5	7-2	25
IL 80-3072	72.9	39.5	7-2	29
Ogle (Ck)	76.5	32.5	7-3	31
IA-B605-1085	69.8	36.0	7-2	32
W78286 (Dumont)	79.1	34.0	7-7	32
W78296	79.0	31.0	7-7	32
OA501-1	58.2	41.0	7-5	36
OA519-1	65.5	34.0	7-5	37
PA7967-11690	51.8	36.5	7-7	28
PA7967-6689	62.9	35.5	7-7	26
PA7967-11603	54.4	39.0	7-2	24
PA7967-11654	55.8	32.5	7-2	22
SD743358-12	63.8	39.0	7-8	34
SD79039	71.8	37.0	7-6	34
SD790400	79.3	36.0	7-5	33
SD790458	67.5	39.5	7-5	33
Clintland 64 (Ck)	55.1	36.5	7-1	33
MN80227	68.9	38.0	7-5	32
MN81132	64.9	39.0	7-1	30
MN81128	68.2	39.5	7-2	31
MN81135	61.1	37.5	7-2	29
MN81229	66.1	40.5	7-2	30
ND77-61-311 (Pierce)	70.7	39.0	7-7	31
ND78376	75.3	37.0	7-4	33
ND78394	87.4	37.0	7-11	32
ND78406	75.3	39.0	7-5	34
Gopher (Ck)	74.9	36.5	7-3	33
P72288 RBI-3-4-3	60.7	37.0	7-1	31
P73109B7-132-101-4	55.7	38.5	7-2	30
Lsd @ 5% = 9.4				
CV = 12%				

Table 28. Station Oat Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Border	85.1	34.0	7-7	29
Dumont	72.4	37.0	7-7	35
Centennial	52.7	37.5	7-3	31
Otana	69.3	39.0	7-7	31
Pierce	64.5	39.0	7-7	31
Porter	51.6	37.0	7-8	29
Fidler	69.3	37.0	7-8	32
Ogle	66.1	35.0	7-2	30
Kelsey	79.6	37.0	7-2	34
78376	64.3	38.0	7-4	33
78373	66.6	39.0	7-3	35
78355	74.9	37.0	7-4	35
78384	87.2	38.0	7-11	32
78406	74.1	40.0	7-4	34
78379	75.2	37.0	7-3	35
78119	67.9	37.0	7-4	31
Lsd = 7.8				
CV = 9.5%				

Table 29. Uniform Great Plains Barley Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Firlbecks III	45.4	48.5	7-8	27
Primus II	48.4	48.0	6-29	31
Larker	47.7	47.5	7-4	32
Bedford	50.1	49.0	7-6	30
Azure	48.0	49.0	7-6	32
ND 5377	44.9	43.5	7-3	30
ND 5569	52.1	47.0	7-7	30
BR JP8-1	47.2	44.0	7-6	31
ND 5570	55.1	47.0	7-2	31
ND 4994	53.3	49.5	7-1	29
ND 5698	59.6	49.5	7-5	32
Lsd = 6.9				
CV = 11.4%				

Table 30. Western Dry Land Spring Barley Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Munsing	49.4	48.0	7-5	25
Galt	60.5	47.5	7-5	31
Steptoe	44.2	44.0	7-1	28
Hector	60.9	50.0	7-9	29
Clark	49.1	49.0	7-9	26
Zephyr/16Ad4965	52.1	50.0	7-8	28
Steptoe/Klages	44.7	48.0	7-8	29
Summit/Hector	60.3	52.0	7-7	28
60Ab 1810-53/Hector	59.4	49.0	7-7	29
60Ab 1810-53/Hector	52.7	48.0	7-8	28
Hypana/Unitan Union Betzes	40.9	47.0	7-9	29
Hypana/Unitan/Summit	38.3	48.5	7-1	26
ND2685/ND1154/Hector	52.7	51.0	7-2	29
Julia/*2 Klages	53.7	50.0	7-7	27
WA641566/Purcell	42.1	46.0	7-1	27
Advance/9923-75	51.3	46.5	7-5	28
Klages/WA 8189-69	45.3	48.5	7-10	26
Karla/ND 1265	57.9	48.0	7-2	29
Lewis	52.8	50.0	7-8	30
Lindy	42.9	50.0	7-2	28
Teton	45.8	45.0	7-2	28
Bridget 82	58.8	49.0	7-7	28
ND2679/720-10/Fairfield	60.2	53.0	7-7	28
Sunbar 550	50.6	46.0	7-7	28
Sunbar 560	57.5	48.0	7-7	27
M27/UT73BI-1009	58.1	44.0	7-6	30
M27/UT73BI/009	55.5	44.0	7-6	28
M25/UT73BI-1009	52.5	46.0	7-6	28
Lsd = 6.3				
CV = 10.5%				

Table 31. Western Spring Barley Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Trebi	38.7	47.0	7-3	29
Steptoe	56.5	47.0	7-2	29
Klages	38.7	51.5	7-9	26
Morex	48.8	51.5	7-5	31
60Ab1810/61Ab4965	44.9	52.0	7-9	27
MN 66-85/Claya	48.3	49.5	7-9	24
Harrington	47.9	50.0	7-8	28
WA 641566/Purcell	49.9	48.0	6-30	27
Columba/Klages	42.1	51.0	7-8	27
Karla/ND1265	54.2	52.0	7-3	28
Beacon/WA7136-62 WA6773-71	51.7	51.0	7-7	26
Morex/WA11302-73	55.2	51.0	7-7	28
Klages/WA8189-69	49.1	51.5	7-9	25
Klages*2/WA8537-68	33.5	52.0	7-9	25
Lewis	62.1	53.0	7-6	29
Fld/Her//Kgs	55.8	51.0	7-6	27
Klages/Summit	49.6	52.0	7-6	27
2B78-471	41.5	50.5	7-7	24
6B-78-10	51.8	50.0	6-29	25
Sunbar 550	52.0	48.0	7-5	28
Sunbar 560	54.6	51.0	7-6	26
Julia/Kgs//Kgs-9	56.3	51.0	7-5	25
Wv/CI1237//Robur	46.3	43.0	7-5	23
M27/UT 73B1-1009	55.5	46.0	7-5	27
M27/UT 73B1-1009	46.6	46.0	7-5	28
M25/UT 73B1-1009	50.8	47.0	7-5	26
Klages 2/8537-68	43.3	52.0	7-9	26
Menuet	49.0	49.0	7-8	25
Piston	44.2	51.5	7-8	25
Lsd @ 5% = 9.7				
CV = 15.7%				

Table 32. Advanced Two-Row Barley Nursery, 1983

Variety	Avg. yield Bu/acre	Test Weight	Heading Date	Height Inches
Glenn	55.0	43.5	7-3	33
Morex	52.6	44.5	7-3	34
Hector	61.1	49.5	7-7	32
Harrington	56.4	45.5	7-7	30
Abee	58.6	47.5	7-7	28
Andre	51.8	48.0	7-7	28
78AB6871	49.6	46.5	7-7	29
MT313104	68.1	49.5	7-6	32
ND5096-2	57.9	50.0	7-3	33
ND5698-3	56.6	49.0	7-6	31
ND5883	57.8	49.5	7-6	29
ND5971	57.9	48.5	7-6	29
ND6784	51.5	50.5	7-7	31
ND6787	53.0	49.0	7-6	35
ND6793	52.3	49.0	7-6	34
ND6795	61.9	48.0	7-5	34
ND6804	50.3	47.5	7-2	32
ND6825	54.3	49.5	7-1	29
ND6830	56.1	48.5	7-1	33
ND6869	47.6	48.0	7-1	32
ND6892	49.1	46.5	7-7	32
ND6901	49.0	46.5	7-3	33
ND6924	53.1	47.5	7-5	32
ND6976	46.8	50.0	7-1	32
ND6978	57.7	48.0	7-5	31
Lsd @ 5% = 8.0				
CV = 11.6%				

Table 33. Summary 1983 Barley Advanced Yield Trial of Two-Rowed Cultivars, Exp. 12

Yield in Bushels per Acre

Cultivar	Prosper	Langdon	Carrington	Minot	Dickinson	Williston	Average
Glenn	54.2	70.5	67.3	46.6	55.0	44.4	56.3
Morex	43.3	75.2	69.8	48.5	52.6	48.0	56.2
Hector	45.0	73.7	59.9	56.7	61.1	57.3	59.0
Harrington	36.0	69.0	59.5	54.5	56.4	53.0	54.7
Abee	35.7	72.5	51.9	56.4	58.6	56.1	55.2
Andre	25.2	66.9	47.8	53.3	51.8	48.1	48.9
78Ab6871	28.7	68.8	54.0	54.5	49.6	50.9	51.1
Gallatin	46.4	83.8	66.5	61.0	68.1	57.0	63.8
ND5096-2	52.6	80.0	66.9	62.9	57.9	48.8	61.5
ND5698-3	39.4	75.6	61.3	67.0	56.6	53.6	58.9
ND5883	35.7	69.9	57.0	51.7	57.8	46.4	53.1
ND5971	40.9	70.8	56.7	57.5	57.9	51.7	55.9
ND6784	44.8	74.7	65.3	55.9	51.5	44.8	56.1
ND6787	47.3	82.7	61.3	59.4	53.0	48.7	58.7
ND6793	35.8	66.0	55.4	50.2	52.3	43.0	50.5
ND6795	36.1	72.2	59.3	54.7	61.9	44.1	54.7
ND6804	29.8	72.1	62.7	46.5	50.3	47.2	51.4
ND6825	40.6	72.4	63.1	53.3	54.3	47.6	55.2
ND6830	30.1	70.6	57.8	49.6	56.1	42.0	51.0
ND6869	42.7	69.6	73.1	47.1	47.6	36.6	52.8
ND6892	35.7	75.4	53.9	53.8	49.1	46.7	52.4
ND6901	38.6	77.6	56.8	59.8	49.0	50.6	55.4
ND6924	40.9	77.6	53.8	57.9	53.1	45.7	54.8
ND6976	41.0	70.2	64.4	52.2	46.8	42.0	52.8
ND6978	34.6	73.1	58.4	52.8	57.7	47.2	54.0

Table 34. Summary 1983 Barley Variety Trial

Yield in Bushels per Acre

Cultivar	Prosper	Langdon	Carrington	Minot	Dickinson	Williston	Average
Larker	34.4	73.6	71.2	62.2	63.3	41.0	57.6
Morex	39.3	73.4	67.2	65.0	65.7	48.2	59.8
Glenn	43.1	73.7	69.4	67.1	57.1	41.6	58.7
Azure	45.8	81.8	85.2	79.7	77.3	46.2	69.3
Hazen	50.2	80.9	85.8	74.2	71.8	42.7	67.6
Klages	31.9	68.3	54.5	72.1	---	---	---
Hector	44.0	75.2	65.7	72.6	68.1	56.3	63.7
Summit	36.1	76.5	65.4	75.8	---	51.7	---
Norbert	44.0	76.7	75.4	80.5	---	42.9	---
Harrington	39.3	73.2	64.9	74.2	73.6	47.1	62.1
Clark	41.2	75.4	66.7	73.0	68.1	50.3	62.5
TR212	42.0	79.0	65.5	79.8	---	---	---
74Ab10167	36.3	73.7	64.0	70.2	---	---	---
Bowman	48.2	78.6	69.8	73.1	67.7	43.2	63.4
ND5698-2	42.1	74.5	63.1	81.8	---	50.3	---
ND5976	43.5	76.1	71.5	76.0	77.3	47.9	65.3
Mean	41.3	75.7	69.1	73.6	69.0	46.8	
CV =	8.6	5.7	8.4	7.1	6.3	6.0	
Lsd @ 5% =	4.0	4.9	6.6	6.0	4.4	3.9	

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.

In 1983 the Lilliston No-till Drill was used for seeding the minimum tillage treatment. The conventional treatment once again consisted of double disking the land in preparation for seeding, then seeding with the double disk press drill. Ample stored soil water from heavy fall precipitation, and otherwise excellent growing conditions produced the highest yields recorded in the trial over the past 8-year period, with no advantage shown for either cropping methods this year. Over the 8-year period, no-till cropping has produced 79 percent of the yield produced on conventional seeding.

Table 35. 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
1983	39.0	38.5
8-yr. average	17.0	21.4

Barley was seeded in a comparison of the no-till, the double disk and drill and the moldboard plow-packer-press drill on recrop. Yields were 49.6 bushels per acre for the plow-packer-press drill treatment, 28.1 for the no-till treatment and 27.9 for conventional disking and seeding.

Wheat seeded in a similar comparison trial produced 22.3 bushels per acre on plowing, 19.2 bushels per acre on conventional disking and 17.7 bushels per acre on the no-till treatment.

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 9, 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.

Rainfall in September and October, 1982 was well above average, providing an excellent soil water recharge. Total fall precipitation for September through December, 1982 was 9.4 inches compared to the 90-year average of 3.16 inches. Precipitation of 4.9 inches during April through June was below average, but for the rest of the year, nearly normal. The combination of stored rainfall in September and October, 1982 and nearly normal seasonal precipitation provided ample water for good crop growth.

Mean temperatures for April, May and June were well below the 71-year average. Hot spells of several days in July and August when temperatures exceeded 90˚F affected late seeded grain, but early seeded crops escaped serious damage from high temperatures.

Yields in 1983 were the highest recorded in the 8-year trial period, with yields this year on recrop amounting to 85 percent of the yield on fallow. However, average production on recrop over the 8-year period amounts to only 62 percent of the yield on fallow. Trial data are summarized in Table 35.

A summary of wheat production in this trial is shown in Table 36.

Table 36. Wheat Production on Fallow, Recrop and Continuous Cropping

	Yield In Bushels Per Acre								
Treatment	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**8-Yr. Avg.**
Fallow	43.0	26.9	38.5	32.4	22.3	21.3	33.9	46.1	33.1
Recrop	27.0	11.5	31.4	15.9	0.0	14.5	25.7	39.0	20.6
Continuous Cropping	22.0	5.0	30.6	12.8	0.0	14.0	24.9	38.5	18.5

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 on Wheat Stubble	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

CROPPING SYSTEMS RESEARCH

This trial was designed to include a comparison of several crop rotation sequences as follows:

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.

In 1983 fertilizer was applied on all recrop, corn and sunflowers at the rate of 80 lbs. N, 30 lbs. P_2O_5 and no K_2O. All wheat on fallow received 40 lbs. N, 30 lbs. P_2O_5 and no K_2O. All land to be fallowed was not fertilized.

Weed control in 1983 was as follows: Alachlor at 2 lbs. /acre and Dicamba at .25 lb/acre were used in a tank mix on corn. Trifluralin at .5 lb/acre preplant, incorporated was used on sunflower and Diclofap at .75 lbs. /acre and Bromoxynil at .25 lb/acre.

Varieties used in the 1983 cropping systems trial were: Alex Wheat, Morex Barley, Keltgen 582 Corn and Interstate 7775-S Sunflower.

Tillage on fallow to prepare a seedbed was with a spring tine cultivator and harrow. Continuous crop stubble, sunflower stubble and corn stubble land were double disked in preparation for seeding, as was all wheat stubble planted to corn or sunflowers. Excellent yields recorded for all crops in all rotation systems were the result of a combination of high fertility, ample reserve soil water, adequate seasonal precipitation, reasonably good growing conditions and satisfactory cropping management.

Yields recorded for the 1983 trial are summarized in Table 37.

Table 37. Yields – Cropping Systems Trial, 1983

	Yield - Bushels Per Acre				
Crop and Rotation	**R1**	**R2**	**R3**	**Average**	**Average Test Weight**
Wheat on:					
Fallow	49.5	43.2	45.6	46.1	62.0
Continuous Crop	39.3	40.1	36.2	38.5	63.5
No-till Recrop	37.7	42.4	36.9	39.0	63.5
Sunflower Stubble	44.8	47.9	45.6	46.1	63.0
Fallow	50.3	51.1	45.6	49.0	62.0
Corn Stubble	51.1	43.2	47.2	47.2	63.0
Fallow	45.6	48.7	44.8	46.4	62.0
Barley on:					
Sunflower Stubble	60.9	74.6	58.9	64.8	46.5
Corn on:					
Wheat Stubble					
Grain yield/bpa	75.3	69.5	73.0	72.6	56.0
Silage yield tons/acre	9.2	11.8	9.9	10.3	----
Sunflower on:	**Pounds Per Acre**				
Wheat Stubble	1545	2040	1839	1808	24.0
	1769	1674	1835	1759	24.0

Winter Wheat on Stubble vs. Winter Wheat on Fallow

The same seven varieties of winter wheat that were seeded on summer fallow at Dickinson were also planted on stubble recrop. Both trials were seeded with the John Deere Hoe Drill on September 13, 1982, and harvested on August 1, 1983. Fertilizer application was 40 lbs. Nitrogen Broadcast on the recrop and 50 lbs. 18-46-0 applied with the drill at seeding on both treatments.

Table 38. Yield Comparison – Winter Wheat on Stubble Recrop and Fallow

	Yield – Bushels/Acre	
Variety	**Fallow**	**Recrop**
Roughrider	63.5	23.6
Froid	55.3	24.8
Norstar	66.3	21.8
Winoka	62.2	18.4
Agassiz	66.6	25.4
Rose	68.2	24.2
Rita	64.9	23.3
Trial Average	63.9	23.1