SECTION I

CROP PRODUCTION TRIALS

TABLE OF CONTENTS

Table of Contents (Continued):

AGRONOMIC RESEARCH

FOR

SOUTHWESTERN NORTH DAKOTA

The addition of an agronomist to the staff of the Hettinger Branch Experiment Station has made possible a complete new program in field crops research at that station.

For the past thirty years prior to this year crops research at Hettinger has been limited principally to the off-station small grain variety trials conducted in southwestern North Dakota by the Dickinson Branch Station.

The Dickinson and Hettinger stations are now working together to provide farmers and ranchers in southwestern North Dakota with the information needed to improve crop production efficiency and economic returns from farming.

In meeting this goal, a complete field crops research program was begun at the Hettinger station this year. In addition, the agronomist at Hettinger, Mr. Jim Jakicic, has assumed responsibility for off-station sites at Scranton and Regent, formerly tended by the Dickinson station, and has started two additional off-station sites at Flasher and Thunderhawk.

The Dickinson station has conducted a complete field crops research program since 1905, and an off-station program which includes sites at Glen Ullin, Hannover, Beulah, Manning and Beach since 1967.

The combined crops research program of the Dickinson and Hettinger station provides an ideal means to determine which crops and which new varieties are best suited to growing conditions in the Missouri Slope.

Please insert Branch Station Locations.pdf here.

EXPERIMENTAL PROCEDURE

TRIAL DESIGN:

All variety trials at both station and off-station locations are randomized complete block design with four replications.

SEEDING RATE:

Seed of selected varieties was cleaned and weighed to determine 1000 kernel weights. Seeding rates were calculated from 1000 kernel weights and germination percentages and were adjusted to provide a seeding rate of 1,000,000 live seeds per acre for hard red spring wheat and durum and 750,000 live seeds per acre for oats and barley. These rates are approximately equivalent to 60 pounds of wheat and durum (1 bushel), 65 pounds of barley (1.3 bushels), and 48 pounds of oats (1.5 bushels) per acre.

SEEDING METHOD:

At Hettinger all small grain trials were seeded with a plot drill designed for experimental plot trials. It is equipped with double disk openers set for a six inch row spacing. Trial plots were four feet wide and twenty feet long.

At Dickinson, small grain trials were seeded with a six foot wide Kirschmann double disk press drill. Row spacing is also set at six inches with this drill. Trial plots were five feet wide and one hundred thirty two feet long.

FERTILIZER APPLICATION:

At Hettinger as well as the Hettinger off-station locations, nitrogen and phosphorus fertilizers were broadcast and tilled under where needed to provide adequate fertility for yield goals of 45 bushels per acre of wheat and durum; 80 bushels per acre of oats and 65 bushels per acre of barley.

At Dickinson and all Dickinson off-station sites nitrogen and phosphorus fertilizers were drill applied at seeding time. Fertilizer rates used were based on the same realistic yield goals used at Hettinger.

All fertilizer applications were based on soil tests at all locations.

WEED CONTROL:

At Hettinger herbicides used included either Brominal 3+3 or 2,4 D Amine to control spring emerged broadleaf weeds. Broadleaf weed control was good to excellent with both herbicides. Wild oats was a problem at the Scranton location which contributed to low yields observed there. Low yields at Scranton were also due to an extremely heavy rainfall in August which caused severe lodging and shattering of seed.

At Dickinson and all Dickinson off-station sites herbicides used were Hoelon and Buctril for wheat, durum and barley; Buctril for oats and flax. Treflan for sunflowers and safflowers; Banvel and Lasso for corn and Paraquat, Glean, Roundup and Banvel in chemical fallow trials.

GROWING CONDITIONS

Dickinson, 1984

The fall of 1983 was drier than average with less than two and one-half inches of precipitation in the four month period September through December. Precipitation from January through March was also below average, and the dry period extended well into April, with the largest amount of precipitation during the month coming in the form of a thirty inch snowfall on the 27th. May was the driest in 93 years of record. Excellent distribution of five inches of rain in June was followed by a very dry July.

Army worms were severe enough to require control. Mostly dry weather conditions aided in keeping foliar diseases to a minimum.

WEATHER DATA SUMMARY

Dickinson, 1984

Precipitation	1983-84	93 Year Average
Sept. – Dec. 1983	2.37	3.18
Jan. – Mar. 1984	1.29	1.56
April – June	7.93	7.40
July – Aug.	3.58	3.97
Total	15.17	16.11

Average Temperature ^{0}F	1984 Average	93 Year Average
April	41	41
May	51	53
June	61	62
July	69	69
August	71	67

GROWING CONDITIONS

Hettinger, 1984

The 1984 growing conditions at Hettinger were similar to those at Dickinson. Fall and winter precipitation was below average. Most of the April precipitation came in a sixteen inch snowfall on April 27th. May was extremely dry and temperatures in May and June were cooler than average with killing frost occurring on May 26th. Precipitation in July and August was nearly two inches below average which hurt yields and test weights. There were no significant plant diseases. Grasshoppers damaged the row crops.

WEATHER DATA SUMMARY

Hettinger, 1984

Precipitation	1983-84	29 Year Average
Sept. – Dec. 1983	2.52	2.97
Jan. – Mar. 1984	0.74	1.13
April – June	8.24	8.08
July – Aug.	1.96	3.81
Total	13.46	15.99

Average Temperature ^{0}F	1984 Average	29 Year Average
April	42	42
May	52	54
June	61	64
July	70	70
August	72	69

Table 1. 1984 Hard Red Spring Wheat Variety Trial

	Hettinger		Dickinson			
Variety	Bushels per Acre	Test Weight Lbs/bu	Bushels per Acre	Test Weight Lbs/bu	Heading Date	Height Inches
Apex	48.8	54.8	52.8	61.0	6-30	30
Stoa	42.5	55.3	54.3	59.5	7-3	37
HS 78-1139	42.0	50.7	51.3	59.5	7-4	24
HY 320	41.6	51.2	52.8	61.5	7-3	28
NK 775-8002	40.7	52.3	49.5	62.5	7-4	38
Butte	40.3	54.5	28.2	59.5	6-30	28
Era	40.2	52.5				
Walera	40.0	50.5	45.5	57.0	7-6	30
Buckshot	40.0	50.6	58.7	59.0	7-5	32
Alex	38.7	57.2	30.4	58.5	7-3	33
NK 775-4342	38.3	54.9	41.8	61.5	7-6	31
Coteau	38.1	54.7	37.4	58.5	7-6	37
PR 2369	37.8	54.1	45.1	61.0	7-2	28
Guard	37.5	53.0	52.8	61.0	7-6	39
Wheaton	36.7	47.2	50.2	58.5	7-4	30
Marshall	36.6	50.1	38.5	59.0	7-5	29
Centa	35.5	54.4	41.1	61.5	6-29	32
Challenger	35.4	53.7				
Len	35.1	50.4	42.5	58.0	7-3	28
Solar	34.9	50.1	34.5	58.0	7-6	32
Success	34.8	51.1	44.4	58.5	7-9	34
X7993	34.2	54.2	48.8	54.0	7-6	41
Oslo	34.1	52.5	35.9	58.0	6-30	28
Olaf	33.8	52.3	36.7	58.0	7-2	27
PR 2360	33.4	48.9	42.5	60.0	7-3	30
Katepwa	33.2	54.6	38.9	60.0	7-4	39
Lew	32.8	56.6	45.1	62.5	7-6	39
Waldron	31.2	51.2	31.5	56.0	7-2	30
Victory 283	30.6	53.0	36.7	61.5	7-2	33
Glenman	30.5	49.3	45.5	59.5	7-5	28
Leader	30.4	55.2	46.2	61.0	7-2	33
WM 99	28.2	51.4	46.6	59.0	7-6	39
Columbus	26.0	53.9	36.3	59.5	7-6	38
Erik	25.3	49.7	40.0	58.0	7-7	30
WB 8-1			48.4	61.5	7-2	26
LSD @ 5%	12.4 bu	4.2 lbs	7.4 bu			
CV	21.4%	5.0%	14.9%			
Seeding Date	April 17		April 24			
Harvest Date	August 14		August 13			

Table 2. Long Term Hard Red Spring Wheat Yield Averages, Hettinger

	Bushels per Acre			Averages	
Variety	**1982**	**1983**	**1984**	**2-Yr.**	**3-Yr.**
Butte	41.0	77.0	40.3	58.7	52.8
Coteau	40.0	72.0	38.1	55.1	50.0
Olaf	50.0	74.0	33.8	53.9	52.6
Len	44.0	70.0	35.1	52.6	49.7
Alex	47.0	69.0	38.7	53.9	51.6
Oslo	44.0	72.0	34.1	53.1	50.0
Walera	38.0	78.0	40.0	59.0	52.0
Marshall	44.0	84.0	36.6	60.3	54.9
Wheaton		76.0	36.7	56.4	
Erik		79.0	25.3	52.2	
Centa		72.0	35.5	53.8	

Table 3. Long Term Hard Red Spring Wheat Yield Averages, Dickinson

	Bushels per Acre					
Variety	**1980**	**1981**	**1982**	**1983**	**1984**	**5–Yr. Avg.**
Butte	20.6	41.3	50.9	41.8	28.2	36.6
Coteau	22.8	43.7	47.3	41.0	37.4	38.4
Olaf	23.7	44.6	48.7	42.4	36.7	39.2
Len	23.4	43.5	49.8	35.8	42.5	39.0
Alex	22.6	48.1	57.5	44.3	30.4	40.6
Walera	25.0	48.7	60.8	48.7	45.5	45.7
Lew	23.1	39.1	44.3	41.0	45.1	38.5
Solar	23.9	53.1	50.1	46.2	34.5	41.6
Waldron	22.6	40.7	46.8	46.5	31.5	37.6
Stoa		53.4	49.5	45.9	54.3	
Oslo		49.2	55.6	40.2	35.9	
Marshall			53.9	45.7	38.5	
Columbus			49.0	39.3	36.3	
Centa			51.4	38.0	41.1	
Leader			41.3	35.2	46.2	

Table 4. 1984 Durum Variety Trial

	Hettinger		Dickinson			
Variety	Bushels per Acre	Test Weight Lbs/bu	Bushels per Acre	Test Weight Lbs/bu	Heading Date	Height Inches
Ward	58.3	60.3	27.0	61.0	7-4	34
Vic	55.2	60.8	34.9	61.5	7-6	33
Lloyd	53.1	60.0	37.4	58.0	7-12	24
Cando	50.5	56.8	37.1	60.5	7-6	24
D 793	49.7	57.8	29.4	61.0	7-4	32
Crosby	48.9	57.8	33.0	61.0	7-4	30
Medora	48.6	59.2				
Rugby	47.8	58.1	30.3	61.5	7-6	35
Coulter	46.8	57.7	30.3	60.0	7-6	33
Rolette	42.4	58.2	29.7	62.0	7-1	28
LSD @ 5%	13.9 bu	3.5 lbs	4.9 bu			
CV	20.5%	4.2%	15.0%			
Seeding Date	April 17		April 25			
Harvest Date	August 14		August 14			

Table 5. Long Term Durum Yield Averages, Hettinger

	Bushels per Acre			Averages	
Variety	**1982**	**1983**	**1984**	**2-Yr.**	**3-Yr.**
Vic	51.0	74.0	55.2	64.6	60.1
Cando	50.0	71.0	50.5	60.8	57.2
Rolette	53.0	72.0	42.4	57.2	55.8
Ward	53.0	71.0	58.3	64.7	60.8
Lloyd		74.0	53.1	63.6	

Table 6. Long Term Durum Yield Averages, Dickinson

	Bushels per Acre					
Variety	**1980**	**1981**	**1982**	**1983**	**1984**	**5-Yr. Avg.**
Vic	18.2	40.8	51.2	49.5	34.9	38.9
Cando	17.3	39.6	57.2	49.8	37.1	40.2
Rolette	14.3	44.2	49.5	42.1	29.7	36.0
Ward	16.5	44.6	52.3	47.3	27.0	37.5
Lloyd	20.4	45.4	63.3	58.3	37.4	45.0
Crosby	14.7	42.9	53.6	42.4	33.0	37.3
Coulter	16.0	41.1	54.5	51.2	30.3	38.6
Rugby	17.3	39.4	52.3	49.5	30.3	37.8

Table 7. 1984 Barley Variety Trial

	Hettinger		Dickinson			
Variety	Bushels per Acre	Test Weight Lbs/bu	Bushels per Acre	Test Weight Lbs/bu	Heading Date	Height Inches
Gallatin	62.8	48.8	80.8	48.5	7-4	33
Hector	62.7	49.1	66.2	46.5	7-8	35
Bowman	59.2	48.3	84.9	50.5	7-3	30
Bumper	57.4	43.0	59.8	40.5	7-6	37
Harrington	56.9	46.2	67.7	44.0	7-9	30
Abbe	54.9	46.1	71.5	45.0	7-8	32
Clark	54.0	47.5	62.9	47.0	7-8	32
Glenn	50.3	42.6	61.2	41.0	7-2	35
Summit	49.4	48.2				
TR 212	49.4	45.2	71.2	47.5	7-8	32
Piston	48.9	47.0	75.3	48.5	7-8	29
Hazen	47.5	44.3	78.4	45.0	7-4	37
Morex	45.1	45.7	62.2	43.0	7-4	35
Larker	45.0	44.9				
Azure	43.7	43.0	77.0	44.5	7-3	33
Robust	38.2	47.8	65.7	47.0	7-4	35
LSD @ 5%	10.6 bu	1.9 lbs	6.1 bu			
CV	14.6%	2.9%	8.5%			
Seeding Date	April 17		May 8			
Harvest Date	August 8		August 8			

Table 8. Long Term Barley Yield Averages, Hettinger

	Bushels per Acre			Averages	
Variety	**1982**	**1983**	**1984**	**2-Yr.**	**3-Yr.**
Hector	80.0	90.0	62.7	76.4	77.6
Glenn	81.0	93.0	50.3	71.7	74.8
Morex	78.0	104.0	45.1	74.6	75.7
Azure	94.0	112.0	43.7	77.9	83.2

Table 9. Long Term Barley Yield Averages, Dickinson

	Bushels per Acre					
Variety	**1980**	**1981**	**1982**	**1983**	**1984**	**5-Yr. Avg.**
Hector	44.4	53.0	80.8	68.1	66.2	62.5
Glenn	35.1	45.4	77.4	57.1	61.2	55.2
Morex	34.0	52.0	75.6	65.7	62.2	57.9
Bumper	34.4	48.4	80.1	72.2	59.8	59.0
Clark		53.5	74.6	68.1	62.9	
Harrington			85.3	73.6	67.7	
Azure			80.5	77.3	77.0	

Table 10. 1984 Oat Variety Trial

	Hettinger		Dickinson			
Variety	**Bushels per Acre**	**Test Weight Lbs/bu**	**Bushels per Acre**	**Test Weight Lbs/bu**	**Heading Date**	**Height Inches**
Border	77.4	29.4	71.2	30.0	7-17	28
75AB1170	73.4	29.9	64.5	32.0	7-13	33
Russell	67.2	32.7				
Otana	65.7	34.2	56.8	36.5	7-9	37
Dumont	65.3	32.2	65.6	33.0	7-13	32
Porter	63.0	31.2				
Steele	61.6	32.6	56.8	37.5	7-6	35
Moore	58.2	32.1				
Pierce	57.3	34.2				
Centennial	57.0	34.1	47.4	37.0	7-9	33
Kelsey	54.2	30.4	61.8	34.5	7-7	33
Fidler	52.4	28.4				
Menominee	46.1	30.7	56.7	33.0	7-13	33
Haylander			54.1	37.0	7-7	37
LSD @ 5%	NS	2.8 lbs	6.9 bu			
CV	19.7%	6.2%	11.1%			
Seeding Date	April 17		May 11			
Harvest Date	August 8		August 9			

Table 11. Long Term Oats Yield Averages, Hettinger

	Bushels per Acre		
Variety	**1983**	**1984**	**2-Yr. Avg.**
Otana	135.0	65.7	100.4
Porter	136.0	63.0	99.5
Pierce	116.0	57.3	86.7
Fidler	104.0	52.4	78.2

Table 12. Long Term Oats Yield Averages, Dickinson

	Bushels per Acre					
Variety	**1980**	**1981**	**1982**	**1983**	**1984**	**5-Yr. Avg.**
Otana	47.9	60.0	103.7	107.9	56.8	72.3
Kelsey	45.3	55.2	103.7	113.5	61.8	75.9
Menominee	48.9	48.4	92.0	99.7	56.7	69.1

Table 13. 1984 Hard Red Winter Wheat Variety Trial

	Hettinger		Dickinson			
Variety	Bushels per Acre	Test Weight Lbs/bu	Bushels per Acre	Test Weight Lbs/bu	Heading Date	Height Inches
Norstar	49.5	60.5	51.2	59.0	6-27	40
Rose	47.3	61.5	38.9	60.0	6-22	32
Agassiz	46.5	59.5	45.9	59.0	6-25	37
Roughrider	40.2	60.0	44.1	59.0	6-22	35
Rita	35.2	57.0	9.3	56.5	6-22	27
Winoka			45.4	61.5	6-22	37
Rose			42.8	59.5	6-22	37
LSD @ 5%	5.0 bu		7.3 bu			
CV	10.0%		17.6%			
Seeding Date	September 8			September 7		
Harvest Date	August 27			August 7		

Table 14. Long Term Small Grain Yield Averages

Hard Red Winter Wheat

Dickinson					
	Bushels per Acre				
Variety	1981	1982	1983	1984	4-Yr. Avg.
Froid	41.7	53.9	55.3	42.8	48.4
Roughrider	40.7	53.6	63.5	44.1	50.5
Norstar	45.4	65.5	66.3	51.2	57.1
Winoka	49.1	48.1	62.2	45.4	51.2

Hettinger			
	Bushels per Acre		
Variety	1983	1984	2-Yr. Avg.
Roughrider	57.0	40.2	48.6
Norstar	64.1	49.5	56.8

Table 15. 1984 Winter Rye Variety Trial

Dickinson				
Variety	Bushels per Acre	Test Weight Lbs/bu	Heading Date	Height Inches
Hancock	49.5	56.0	6-1	44
Musketeer	48.4	57.0	6-2	42
Cougar	51.9	56.0	6-3	43
Chaupon	62.8	53.5	6-5	42
Puma	49.9	56.5	6-2	48
LSD @ 5%	10.4 bu			
CV	14.9%			

Table 16. Long Term Yield Comparison – Winter Rye Variety Trials, 1984

	Yield in Bushels per Acre					
Variety	1980	1981	1982	1983	1984	5-Yr. Avg.
Puma	13	58	31	68	50	44
Chaupon	12	74	23	75	63	49
Cougar	12	50	18	56	52	38
Hancock		60	17	71	50	
Musketeer			18	75	48	

Table 17. 1984 Dickinson and Off-Station Hard Red Spring Wheat Variety Trials

Bushels per Acre							
Variety	**Dickinson**	**Beach**	**Beulah**	**Glen Ullin**	**Hannover**	**Manning**	**Average 6 Sites**
Coteau	37.4	23.9	42.6	30.5	33.6	24.8	32.1
Butte	28.2	16.9	34.7	30.8	34.1	20.6	27.6
Olaf	36.7	26.0	44.8	34.7	37.1	25.6	34.2
Len	42.5	27.5	49.8	37.4	39.6	27.0	37.3
Walera	45.5	25.3	52.3	39.3	37.1	27.8	37.9
Alex	30.4	19.8	40.4	35.8	35.8	25.3	31.3
Stoa	54.3	19.4	40.4	29.2	34.7	23.1	33.5
Oslo	35.9	19.4	46.5	30.3	37.4	26.4	32.7
Marshall	38.5	30.4	50.1	33.8	37.7	27.5	36.3
Centa	41.1	20.5	40.2	30.0	36.3	21.2	31.6
Erik	40.0	27.9	49.2	34.4	33.6	26.1	35.2
Guard	52.8	23.1	52.3	37.1	41.0	26.4	38.8
Wheaton	50.2	26.0	56.9	38.5	42.4	28.1	40.4
X7993	48.8	30.8	44.6	30.8	29.2	25.3	34.9
Success	44.4	27.9	56.9	44.0	42.1	25.6	40.2
LSD @ 5%	7.4 bu	3.2 bu	5.9 bu	3.5 bu	3.9 bu	6.7 bu	5.4 bu
CV	14.9%	10.9%	12.5%	10.1%	10.5%	26.0%	
Seeding Date	April 24	May 18	May 15	May 17	May 16	May 9	
Harvest Date	Aug. 13	Aug. 24	Aug. 23	Aug. 22	Aug. 21	Aug. 16	

Table 18. 1984 Hettinger and Off-Station Hard Red Spring Wheat Variety Trials

Bushels per Acre							
Variety	**Hettinger**	**Regent**	**Flasher**	**Thunderhawk**	**Scranton**	**Average 5 Sites**	**Average 11 Sites**
Coteau	38.1	48.1	32.4	29.3	20.6	33.7	32.8
Butte	40.3	59.5	39.1	33.8	24.1	39.4	32.9
Olaf	33.8	60.6	35.8	28.4	26.7	37.1	35.5
Len	35.1	51.6	33.1	33.3	26.1	35.8	36.6
Walera	40.0	59.5	37.4	37.1	27.1	40.2	38.9
Alex	38.7	50.6	31.9	30.2	22.8	34.8	32.9
Stoa	42.5	54.7	34.3	30.5	20.3	36.5	34.9
Oslo	34.1	59.5	40.0	29.1	30.4	38.6	35.4
Marshall	36.6	52.9	37.1	35.1	25.7	37.5	36.9
Centa	35.5	55.2	37.6	34.7	25.1	37.6	34.3
Erik	25.3	49.8	36.4	32.6	23.3	33.5	34.4
Guard	37.5	60.0	40.4	37.1	31.5	41.3	39.9
Wheaton	36.7	61.1	40.4	37.3	31.6	41.4	40.8
X7993	34.2	55.1	32.7	33.8	20.9	35.3	35.1
LSD @ 5%	12.4 bu	8.3 bu	4.1 bu	4.5 bu	5.0 bu	7.5 bu	6.4 bu
CV	21.4%	10.4%	7.9%	9.5%	13.6%		
Seeding Date	April 17	April 18	April 19	April 19	April 18		
Harvest Date	Aug. 14	Aug. 9	Aug. 6	Aug. 9	Aug. 10		

Table 19. 1984 Dickinson and Off-Station Hard Red Spring Wheat Variety Trials

Test Weight Lbs / Bu							
Variety	**Dickinson**	**Beach**	**Beulah**	**Glen Ullin**	**Hannover**	**Manning**	**Average 6 Sites**
Coteau	58.5	58.0	60.0	55.5	56.5	60.0	58.1
Butte	59.5	59.0	62.0	60.5	60.5	62.0	60.6
Olaf	58.0	59.5	61.0	59.0	59.0	62.0	59.8
Len	58.0	60.0	60.5	60.5	58.5	61.0	59.8
Walera	57.0	59.0	61.5	61.0	56.5	59.0	59.0
Alex	58.5	59.5	61.0	62.0	57.5	61.5	60.0
Stoa	59.5	59.0	60.5	60.5	55.0	59.5	59.0
Oslo	58.0	56.0	57.0	59.5	57.5	60.0	58.0
Marshall	59.0	58.5	60.5	61.5	56.5	60.0	59.3
Centa	61.5	59.0	61.5	62.5	58.5	63.0	61.0
Erik	58.0	57.0	56.0	59.0	56.5	58.5	57.5
Guard	61.0	56.0	62.5	61.5	59.0	61.0	60.2
Wheaton	58.5	55.5	61.0	60.0	56.0	59.0	58.3
X7993	54.0	57.0	58.5	57.0	57.0	60.0	57.3
Success	58.5	58.0	59.5	60.5	58.0	59.0	58.9

Table 20. 1984 Hettinger and Off-Station Hard Red Spring Wheat Variety Trials

Test Weight Lbs / Bu							
Variety	**Hettinger**	**Regent**	**Flasher**	**Thunderhawk**	**Scranton**	**Average 5 Sites**	**Average 11 Sites**
Coteau	54.7	59.5	57.2	55.4	55.9	56.5	57.4
Butte	54.5	61.1	58.1	59.2	57.7	58.1	59.5
Olaf	52.3	59.2	55.7	52.2	56.6	55.2	57.7
Len	50.4	60.3	55.3	55.8	56.4	55.6	57.9
Walera	50.5	59.5	54.7	56.7	54.9	55.3	57.3
Alex	57.2	60.5	57.5	57.0	58.5	58.1	59.2
Stoa	55.3	59.4	56.4	55.3	55.5	56.4	57.8
Oslo	52.5	57.4	56.0	57.9	55.0	55.8	57.0
Marshall	50.1	58.8	55.3	56.0	54.7	55.0	57.4
Centa	54.4	61.6	58.0	60.6	58.8	58.7	59.9
Erik	49.7	57.3	55.9	56.8	53.1	54.6	56.2
Guard	53.0	60.6	57.3	59.1	57.5	57.5	59.0
Wheaton	47.2	59.1	54.1	58.2	54.4	54.6	56.6
X7993	54.2	58.5	57.2	53.7	55.1	55.7	56.6
LSD @ 5%	4.2 lbs	1.5 lbs	1.7 lbs	1.8 lbs	1.7 lbs	2.4 lbs	
CV	5.0%	1.8%	2.1%	2.2%	2.1%		

Table 21. 1984 Dickinson and Off-Station Hard Red Spring Wheat Variety Trials

Protein Percent @ 14% Moisture							
Variety	**Dickinson**	**Beach**	**Beulah**	**Glen Ullin**	**Hannover**	**Manning**	**Average 6 Sites**
Coteau	15.8	17.8	16.4	16.2	16.8	17.9	16.8
Butte	15.1	16.3	15.6	14.5	15.4	16.4	15.6
Olaf	15.3	16.9	15.3	14.5	16.2	16.7	15.8
Len	15.1	17.1	15.6	14.5	16.1	16.9	15.6
Walera	12.9	16.1	14.3	12.8	15.4	15.9	14.6
Alex	15.4	17.2	15.6	13.6	16.5	17.3	15.9
Stoa	14.5	15.9	15.4	13.2	15.6	15.9	15.1
Oslo	13.0	16.0	14.0	12.6	14.2	16.4	14.4
Marshall	13.5	16.8	14.6	13.3	15.4	16.8	15.1
Centa	14.3	16.3	15.2	13.3	15.2	16.5	15.1
Erik	13.1	16.8	14.8	14.2	15.9	16.9	15.3
Guard	13.8	17.2	14.6	13.7	14.9	16.9	15.2
Wheaton	13.2	16.5	14.1	13.1	14.8	16.7	14.7
X7993	14.6	17.9	15.6	15.5	16.3	17.9	16.3
Success	13.2	16.3	14.5	13.1	15.3	16.5	14.8

Table 22. 1984 Dickinson and Off-Station Durum Variety Trials

Bushels per Acre							
Variety	**Dickinson**	**Beach**	**Beulah**	**Glen Ullin**	**Hannover**	**Manning**	**Average 6 Sites**
Rolette	29.7	20.9	35.6	23.8	34.5	24.2	28.1
Ward	27.0	23.5	31.9	31.5	39.2	30.1	30.5
Cando	37.1	20.9	40.3	32.6	37.0	30.4	33.1
Vic	34.9	26.8	41.4	33.7	39.6	31.2	34.6
Lloyd	37.4	27.9	38.5	34.1	41.1	30.4	34.9
LSD @ 5%	4.9 bu	4.3 bu	6.0 bu	3.8 bu	4.0 bu	9.7 bu	5.8 bu
CV	15.0%	11.9%	12.0%	9.0%	7.8%	25.0%	
Test Weight Lbs / Bu							
Rolette	62.0	60.5	61.0	63.0	61.0	64.0	61.9
Ward	61.0	60.5	60.5	62.0	59.5	63.0	61.1
Cando	60.5	60.5	60.0	62.5	59.0	62.0	60.8
Vic	61.5	61.0	61.5	62.0	60.5	63.5	61.7
Lloyd	58.0	60.5	60.5	61.5	59.5	61.5	60.3
Seeding Date	April 25	May 18	May 15	May 17	May 16	May 9	
Harvest Date	Aug. 14	Aug. 24	Aug. 23	Aug. 22	Aug. 21	Aug. 16	

Table 23. 1984 Hettinger and Off-Station Durum Variety Trials

Bushels per Acre							
Variety	**Hettinger**	**Regent**	**Flasher**	**Thunderhawk**	**Scranton**	**Average 5 Sites**	**Average 11 Sites**
Rolette	42.4	54.4	36.8	36.1	27.9	39.5	33.3
Ward	58.3	52.8	28.9	34.9	26.6	40.3	35.0
Cando	50.5	55.8	31.6	41.8	36.3	43.2	37.7
Vic	55.2	51.5	28.1	33.3	28.0	39.2	36.7
Lloyd	53.1	59.5	34.1	43.3	35.6	45.1	39.5
Coulter	46.8	56.4	30.9	34.1	26.1	38.9	
LSD @ 5%	13.9 bu	NS	2.9 bu	3.9 bu	4.2 bu	6.8 bu	6.3 bu
CV	20.5%	8.7%	6.2%	6.9%	9.2%		
Test Weight Lbs / Bu							
Rolette	58.2	63.0	59.8	61.6	60.6	60.6	61.3
Ward	60.3	61.4	58.2	59.9	59.5	59.9	60.5
Cando	56.8	61.4	56.6	59.3	58.5	58.5	59.7
Vic	60.8	61.8	59.7	59.1	60.7	60.4	61.1
Lloyd	60.0	61.4	60.0	59.3	60.5	60.2	60.2
Coulter	57.7	61.0	57.5	59.7	59.1	59.0	
LSD @ 5%	3.5 lbs	1.1 lbs	1.5 lbs	1.0 lbs	0.8 lbs	1.9 lbs	
CV	4.2%	1.2%	1.7%	1.1%	0.9%		
Seeding Date	April 17	April 18	April 19	April 19	April 18		
Harvest Date	Aug. 14	Aug. 9	Aug. 6	Aug. 9	Aug. 10		

Table 24. 1984 Dickinson and Off-Station Oat Variety Trials

Bushels per Acre							
Variety	**Dickinson**	**Beach**	**Beulah**	**Glen Ullin**	**Hannover**	**Manning**	**Average 6 Sites**
Steele	56.8	31.6	52.2	50.2	44.7	41.2	46.1
Otana	56.8	50.0	69.4	59.3	56.4	61.2	58.9
Border	71.2	51.6	57.8	55.7	66.7	62.6	60.9
Dumont	64.5	45.0	56.4	45.4	44.0	51.6	51.2
Porter	55.0	38.8	57.8	53.7	50.9	48.5	50.8
Pierce	53.0	28.2	53.0	53.6	47.5	39.9	45.9
LSD @ 5%	6.9 bu	10.7 bu	14.8 bu	11.6 bu	8.3 bu	10.3 bu	10.7 bu
CV	11.1%	20.5%	19.9%	17.0%	12.9%	15.7%	
Test Weight Lbs / Bu							
Steele	37.5	37.0	37.0	38.0	39.0	44.0	38.8
Otana	36.5	37.0	37.0	35.5	36.5	36.5	36.5
Border	30.0	34.5	32.5	32.0	31.0	30.0	31.7
Dumont	33.0	37.5	38.0	38.0	38.0	37.0	36.9
Porter	37.0	39.0	36.5	36.5	36.5	38.0	37.3
Pierce	37.0	37.5	36.5	35.5	35.5	35.0	36.2
Seeding Date	May 11	May 18	May 15	May 17	May 16	May 9	
Harvest Date	Aug. 9	Aug. 24	Aug. 22	Aug. 22	Aug. 21	Aug. 16	

Table 25. 1984 Hettinger and Off-Station Oat Variety Trials

Variety	Hettinger	Regent	Flasher	Thunderhawk	Scranton	Average 5 Sites	Average 11 Sites
Bushels per Acre							
Steele	61.6	68.5	66.7	48.7	15.6	52.2	48.9
Otana	65.7	85.0	74.8	67.2	25.2	63.6	61.0
Border	77.4	98.5	75.6	74.2	36.3	72.4	66.1
Dumont	65.3	84.3	61.3	51.9	22.2	57.0	53.8
Porter	63.0	97.5	84.5	77.8	28.3	70.2	59.6
Pierce	57.3	85.3	68.7	44.8	14.2	54.1	49.6
Fidler	52.4	83.8	56.4	39.9	30.8	52.7	
LSD @ 5%	NS	NS	11.1 bu	9.5 bu	2.7 bu	6.6 bu	9.1 bu
CV	19.7%	1.9%	1.1%	1.5%	1.3%		
Test Weight Lbs / Bu							
Steele	32.6	33.4	31.6	35.3	33.9	33.4	36.3
Otana	34.2	35.6	31.9	36.4	38.7	35.4	36.0
Border	29.4	33.5	27.6	32.5	36.6	31.9	31.8
Dumont	32.2	34.0	32.5	35.6	34.2	33.7	35.5
Porter	31.2	36.5	32.7	36.7	38.4	35.1	36.3
Pierce	34.2	35.8	33.2	37.0	35.7	35.2	35.7
Fidler	30.7	32.4	28.3	34.8	34.4	32.1	
LSD @ 5%	2.8 lbs	1.9 lbs	1.1 lbs	1.5 lbs	1.3 lbs	1.8 lbs	
CV	6.2%	3.7%	2.3%	2.8%	2.5%		
Seeding Date	April 17	April 18	April 19	April 19	April 18		
Harvest Date	Aug. 8	Aug. 9	Aug. 6	Aug. 9	Aug. 10		

Table 26. 1984 Dickinson and Off-Station Barley Variety Trials

Variety	Dickinson	Beach	Beulah	Glen Ullin	Hannover	Manning	Average 6 Sites
Bushels per Acre							
Azure	77.0	23.0	78.4	46.7	30.7	41.3	49.5
Morex	62.2	36.7	63.3	53.2	48.6	43.1	51.2
Robust	65.7	38.1	66.0	48.6	43.5	40.3	50.4
Hazen	78.4	30.7	89.8	55.0	40.1	43.1	56.2
Hector	66.2	40.3	68.3	57.7	52.3	50.4	55.9
Bowman	84.9	42.6	103.6	57.8	57.8	47.7	65.7
Piston	75.3	28.9	75.2	59.6	44.0	48.1	55.2
LSD @ 5%	6.1 bu	9.1 bu	17.8 bu	12.0 bu	5.1 bu	10.6 bu	10.9 bu
CV	8.5%	20.9%	18.1%	17.7%	9.0%	18.8%	
Test Weight Lbs / Bu							
Azure	44.5	48.5	49.5	49.0	49.0	48.5	48.2
Morex	43.0	42.5	49.0	49.5	46.0	47.0	46.2
Robust	47.0	45.0	50.0	48.5	46.5	48.0	47.5
Hazen	45.0	43.5	48.0	48.0	47.5	47.0	46.5
Hector	46.5	49.5	48.0	49.0	48.5	49.0	48.4
Bowman	50.5	47.0	52.0	51.0	49.5	50.0	50.0
Piston	48.5	47.5	50.5	50.0	48.0	49.0	48.9
Seeding Date	May 8	May 18	May 15	May 17	May 16	May 9	
Harvest Date	Aug. 8	Aug. 24	Aug. 23	Aug. 22	Aug. 21	Aug. 16	

Table 27. 1984 Hettinger and Off-Station Barley Variety Trials

Variety	Hettinger	Regent	Flasher	Thunderhawk	Scranton	Average 5 Sites	Average 11 Sites
Bushels per Acre							
Azure	43.7	79.0	43.8	36.9	42.5	49.2	49.4
Morex	45.1	76.9	35.8	32.0	40.1	46.0	48.8
Robust	38.2	66.4	37.9	34.7	38.4	43.1	47.1
Hazen	47.5	79.4	42.7	38.9	45.7	50.8	53.8
Hector	62.7	81.8	45.8	48.2	50.1	57.7	56.7
Bowman	59.2	83.0	46.3	48.1	43.0	55.9	61.3
LSD @ 5%	10.6 bu	9.0 bu	7.1 bu	6.9 bu	5.4 bu	8.0 bu	9.7 bu
CV	14.6%	7.7%	11.2%	11.5%	8.2%		
Test Weight Lbs / Bu							
Azure	43.0	47.8	40.1	45.2	47.7	44.8	46.6
Morex	45.7	48.5	41.6	45.1	49.3	46.0	46.1
Robust	47.8	48.7	41.9	44.9	48.8	46.4	47.0
Hazen	44.3	47.1	40.3	44.3	48.2	44.8	45.7
Hector	49.1	50.5	43.3	46.0	51.4	48.1	48.3
Bowman	48.3	50.8	45.8	49.7	52.1	49.3	54.2
LSD @ 5%	1.9 lbs	0.6 lbs	1.4 lbs	1.2 lbs	1.1 lbs	1.3 lbs	
CV	2.9%	0.8%	2.3%	1.8%	1.5%		
Seeding Date	April 17	April 18	April 19	April 19	April 18		
Harvest Date	Aug. 8	Aug. 9	Aug. 6	Aug. 9	Aug. 10		

Table 28. 1984 Safflower Variety Trial

Variety	Type	Pounds per Acre	Test Weight Lbs/bu	Oil %
Hettinger				
S-208	Linoleic	1344	40.4	44.3
C/W 24	Linoleic	1241	40.1	43.2
80 B 1341	Linoleic	1198	40.7	41.6
S-317	Oleic	1143	39.7	45.5
81B3565	Linoleic	1142	43.5	40.4
81B6078	Linoleic	1110	39.5	42.8
S-541	Linoleic	894	40.7	48.0
Okre	Linoleic	842	38.3	44.1
796-1-3	Oleic	837	42.0	45.0
81B3697	Oleic	789	41.5	42.5
Hartman	Linoleic	772	39.4	33.8
Rehbein	Linoleic	767	40.6	40.6
LSD @ 5%		135.1 lbs	1.3 lbs	
CV		9.3 %	2.2%	
Seeding Date	May 11			
Harvest Date	October 2			
Dickinson				
S-208		975	39.0	44.6
S-541		971	40.5	46.8
Hartman		414	41.0	37.7
LSD @ 5%		137.1 lbs		
CV		14.2%		
Seeding Date	May 25			
Harvest Date	October 2			

Table 29. 1984 Dickinson Sunflower Hybrid Trial

Hybrid	Pounds per Acre	Test Weight 1/	Oil %
Stauffer S 1888	1574	29.0	44.4
Stauffer S 1300	1744	32.0	44.9
Arrowhead 747	1205	31.0	49.1
Arrowhead 707B	1390	28.5	41.9
Sigco 455	1560	28.5	41.5
Sigco 465	1503	31.0	51.9
Dekalb DKS-42	1489	29.0	43.5
Dekalb DPG 3362	1361	29.5	46.6
Dahlgren DO 855	1914	31.0	44.4
Dahlgren DO 730	1815	31.0	49.2
Cargill 206	1659	30.0	45.2
Cargill 207	1645	31.0	41.5
Northrup King Sunbred 265	1773	28.5	45.8
Cenex 7101	1702	28.5	45.2
Cenex 8101	1617	29.0	49.0
Interstate 7111	1957	30.5	48.1
Interstate 7780	1149	31.5	45.5
Seedtec ST 316	1744	27.5	43.4
Seedtec ST 317	1801	30.5	46.4
TNT Sunflo 634	2042	29.0	44.8
LSD @ 5%	440.1 lbs		
CV	26.9%		
Planting Date	May 30		
Harvest Date	September 26		
1/ oven dry			

Table 30. 1984 Dickinson Corn Hybrid Trial Grain Yields

Hybrid	Bushels per Acre 1/	Test Weight 2/ Lbs/bu	Shelling % 2/
Cargill 822	39	50.0	73
Cargill 829	40	45.0	71
Northrup King PX9055	50	51.5	82
Northrup King PX9151	38	46.5	77
Northrup King PX9242	40	41.5	74
Interstate 234	33	48.0	79
Interstate 244	43	50.0	76
Agsco 2XAA1	42	50.0	82
Agsco 4XA	48	52.0	79
Jacques JX 21	44	48.5	77
TNT Sunflo 850	44	49.5	77
TNT Sunflo 801	44	50.0	78
Dahlgren DC 408	53	47.0	80
Dahlgren DC 422	49	43.0	80
Dahlgren DC 418	50	49.5	78
Keltgen KS 92	42	46.5	72
Cenex 2084	62	49.5	79
Cenex 3083	41	48.5	79
Cenex 3088	55	49.5	79
LSD @ 5%	7.9 bu		
CV	17.6%		
Planting Date	May 29		
Harvest Date	September 26		
1/ 12% Moisture			
2/ 0% Moisture			

Table 31. 1984 Dickinson Corn Hybrid Trial Silage Yields

Hybrid	Tons per Acre 1/	Harvest Moisture %
Cargill 822	7.7	71.7
Cargill 829	10.9	72.4
Northrup King PX9055	7.8	68.0
Northrup King PX9151	8.5	73.9
Northrup King PX9242	9.2	71.1
Interstate 234	7.1	71.6
Interstate 244	7.9	70.8
Agsco 2XAA1	7.1	68.3
Agsco 4XA	7.1	71.2
Jacques JX21	8.9	72.1
TNT Sunflo 850	8.2	66.9
TNT Sunflo 801	9.2	70.9
Dahlgren DC 408	7.9	70.6
Dahlgren DC 422	10.6	72.7
Dahlgren DC 418	10.2	70.9
Keltgen KS 92	8.9	70.9
Cenex 2084	8.5	72.0
Cenex 3083	8.1	72.1
Cenex 3088	10.0	71.2
LSD @ 5%	1.9 tons	
CV	2.6%	
Planting Date	May 29	
Harvest Date	September 6	
1/ 70% Moisture		

Table 32. Hettinger Corn Grain and Silage Trial

Variety	Bushels per Acre at 15.5% Moisture	Test Weight Lbs/bu	Grain % Moisture at Harvest	Silage Tons per Acre at 70% Moisture
Dahlgren DC418	32.2	51.3	16.7	9.5
NK PX9242	30.2	48.0	15.6	8.3
Funks G-5048	27.7	51.3	15.3	11.8
Interstate 244	27.3	51.6	15.0	8.4
Interstate 234	26.5	47.0	16.0	7.7
Jacques JX15	26.4	49.1	17.4	8.2
Funks 0010X	24.5	51.5	14.7	9.0
Agsco 4XA	24.0	49.1	15.2	9.2
Dahlgren DC422	23.8	44.7	15.5	7.7
Jacques JX21	23.5	50.8	17.9	9.0
TNT / Sun-Flo 850	23.2	44.5	17.8	9.8
Cargill 822	20.3	51.2	15.6	10.1
NK PX9151	20.2	48.6	15.9	8.7
Cenex 2084	20.1	48.8	15.8	9.8
Cargill 829	18.7	42.0	22.5	9.4
Agsco 3XB-7	13.8	45.8	18.0	8.1
Highest	32.2 bu	51.6 lbs	22.5%	11.8 tons
Lowest	13.8	42.0	14.7	7.7
C.V. %	12.76	2.50	9.92	11.70
LSD 5%	4.34	1.73	2.34	1.51
LSD 1%	5.79	2.31	3.12	2.01

Plant Population:	18,000 plants per acre
Seeding Date:	May 17th
Fertilizer Applied:	95 lbs. / ac. 18-46-0 45 lbs. / ac. 36% zinc sulfate
Yield Goal:	80 bu. / ac. grain 13 tons / ac. silage
Herbicide Applied:	2.50 quart / ac. Bladex 4L + 1.1 quart / ac. Atrazine 4L preplant incorporated
Harvest Date:	October 23rd
Notes:	Yields were severely reduced due to drought and bird damage.

Table 33. Regent Corn Grain and Silage Trial

Variety	Bushels per Acre at 15.5% Moisture	Test Weight Lbs / bu	Grain % Moisture at Harvest	Silage Tons per Acre at 70% Moisture
Stauffer B35	77.0	50.9	20.2	9.2
Agsco 4XA	75.7	50.2	20.1	10.8
NK PX9242	72.1	48.2	20.0	9.5
Dahlgren DC408	71.9	51.4	14.7	10.6
Jacques JX21	71.9	49.6	18.6	8.9
Stauffer 101	71.7	50.3	17.2	10.4
Sigco 077	71.0	50.1	15.2	11.4
Interstate 244	70.9	51.9	18.6	10.7
Sigco 0852	70.8	50.1	17.8	11.2
NK PX9151	70.5	49.1	17.8	9.4
Cargill 822	70.3	52.7	20.7	10.0
Dahlgren DC418	70.0	53.0	20.5	11.7
Cenex 3083	68.1	49.4	18.4	10.5
Jacques JX15	67.8	53.8	17.4	10.8
Cargill 829	67.7	47.1	26.2	9.9
TNT / Sun-Flo 850	67.1	49.7	18.2	9.8
Interstate 234	63.7	47.4	22.4	11.0
Highest	77.0 bu	53.8 lbs	26.2%	11.7 tons
Lowest	63.7	47.1	14.7	8.9
C.V. %	7.17	1.94	6.02	12.42
LSD 5%	NS	1.39	1.63	NS
LSD 1%	NS	1.85	2.18	NS

Plant Population: 18,000 plants per acre
Seeding Date: May 18th
Fertilizer Applied: 150 lbs. / ac. 18-46-0
45 lbs. / ac. 36% zinc sulfate
Yield Goal: 80 bu. / ac. grain
13 tons / ac. silage
Herbicide Applied: 2.25 quart / ac. Bladex 4L + 1 quart / ac. Atrazine 4L preplant incorporated
Harvest Date: October 24th

Table 34. 1984 Hettinger On-Station Dry Bean Variety Trial

Variety	Type	Pounds per Acre	Test Weight Lbs / bu
Nodak	Pinto	1299	59.7
Olathe	Pinto	1224	56.2
Fiesta	Pinto	1061	56.2
Ouray	Pinto	1049	59.4
Pindak	Pinto	1043	58.3
UI 114	Pinto	1014	55.8
Holberg	Pinto	931	60.1
Fleetwood	Navy	1080	62.5
Upland	Navy	938	60.3
Opal	Navy	889	61.1
C-20	Navy	710	59.4
Zircon	Navy	559	61.7
Midnight	Black Turtle	1207	60.1
T39	Black Turtle	1030	59.3
Highest		1299 lbs	62.5 lbs
Lowest		559	55.8
C.V. %		7.80	5.76
LSD 5%		112.3	NS
LSD 1%		150.7	NS

Seeding Rate:	Navy Beans (45 lbs. / ac. pure live seed) Pinto Beans (65 lbs. / ac. pure live seed) Black Turtle Beans (55 lbs. / ac. pure live seed)
Seeding Date	May 11th
Fertilizer Applied:	60 lbs. / ac. 18-46-0
Yield Goal:	2,200 lb. / ac.
Herbicide Applied:	1 qt. / ac. Treflan 4E
Harvest Date:	September 19th

MINIMUM TILLAGE AND SEEDING, AND DOUBLE DISKING AND CONVENTIONAL SEEDING ON RECROP

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 method in this trial this year. Two additional trials in 1983 comparing no-till, conventional disking and seeding and the plow-packer-press drill on recrop land produced the following results: Barley 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.

Equipment and seeding method for the 1984 trial was the same as described for 1983. The fall of 1983 was drier than average with less than two and one-half inches of precipitation in the four month period, September through December. Precipitation continued below average from January until April 27 when a thirty inch snowfall provided enough soil water to carry the crop through the driest May in 93 years of record. Excellent distribution of five inches of rainfall in June was followed by a very dry July.

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
1984	20.4	27.2
9-Yr. Average	17.3	22.0

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 summerfallow 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 summerfallow 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 summerfallow 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 through March. Above average rainfall through 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 in 1983 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.

The fall of 1983 was drier than average with less than two and one-half inches of precipitation in the four month period September through December. Precipitation from January through March 1984 was also below average, and the dry period extended well into April, with the largest amount of precipitation during the month coming in the form of a thirty inch snowfall on the 27th. May was the driest in 93 years of record. Excellent distribution of five inches of rain in June was followed by a very dry July.

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

	Yield in Bushels per Acre									9-Yr.
Treatment	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**	**1982**	**1983**	**1984**	**Avg.**
Fallow	43.0	26.9	38.5	32.4	22.3	21.3	33.9	46.1	34.5	33.2
Recrop	27.0	11.5	31.4	15.9	0.0	14.5	25.7	39.0	20.4	20.6
Continuous Cropping	22.0	5.0	30.6	12.8	0.0	14.0	24.9	38.5	27.2	19.4

CROPPING SYSTEMS RESEARCH

This trial is 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.

In 1984 fertilizer was applied on all corn, sunflower and small grain recrop at the rate of 60 lbs. N, 30 lbs. P and no K_2O. All wheat on fallow received 30 lbs N, 30 lbs. P and no K_2O. Land to be fallowed was not fertilized.

In both 1983 and 1984 weed control was accomplished with: Alachlor at 2 lbs. / acre and Dicamba at .25 lbs. / acre in a tank mix on corn; Trifluralin at .5 lbs. / acre preplant incorporated on sunflower; and, Diclofop at .75 lbs. / acre and Bromoxynil at .25 lbs. / acre in a tank mix on small grain.

Varieties used in the 1983 cropping systems trial were: Alex wheat, Morex barley, Keltgen 582 corn and Interstate 777S sunflower. In 1984 Alex wheat and Morex barley were used, along with Jacques JX21 corn and Interstate 7111 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 in 1983. Because of considerably drier growing conditions in 1984 yields were reduced, with small grains showing the most reduction on all treatments.

Table 37. Cropping Systems Trial – 1983-84

Crop & Rotation	Yield 1983	Yield 1984	Yield Avg.	% of Fallow
Wheat Yields on:				
Fallow	47.1	34.5	40.8	100
Continuous cropping	38.5	27.2	33.0	80
No till recrop	39.0	20.4	29.7	73
Sunflower stubble	46.1	21.4	33.8	83
Corn stubble	47.2	32.2	39.7	97
Barley Yields on:				
Sunflower stubble	64.8	36.3	50.6	
Corn Yields on:				
Wheat Stubble				
Grain bushels per acre	72.6	72.4	72.5	
Silage tons per acre	10.3	8.9	9.6	
Sunflower on:				
Wheat Stubble Lbs. / Acre	1784	1664	1724	

Table 38. Hard Red Winter Wheat Seeding Trial
No Till and Hoe Drill, 1984

	Avg. Yield Bu. / Acre	Test Weight
No Till	32.3	54.5
Hoe Drill	34.8	54.0

LSD @ 5% - 11.0 bpa

CV = 13.1%

RESPONSE OF HARD RED SPRING WHEAT, BARLEY, AND OATS TO CAROLINA DAKOTA SEED COATING

Jim Jakicic, Tom Conlon, and Dave Claypool

Summary:

Carolina Dakota seed coating is a starch based water absorbent material which is suggested to promote germination, improve stands, and increase yield of small grains. This seed coating was tested at Hettinger and Dickinson using Marshall wheat, Azure barley, and Steele oat under both unfertilized and fertilized with nitrogen conditions to determine if it had any effect on yield, test weight, or stand establishment of the small grains. Results at Hettinger showed Carolina Dakota seed coating had no significant effect on yield, test weight or stand establishment of Marshall wheat or Steele oat and had no effect on test weight or stand of Azure barley but significantly decreased yield of Azure barley under both fertilized and unfertilized conditions. Results at Dickinson showed no significant effect on yield or test weight of any small grain due to the seed coating or soil fertility.

Introduction:

Carolina Dakota seed coating is composed of a starch based water absorbent material and graphite which promotes adhesion to the seed. The coating has a high affinity for water and draws water from the surrounding soil for concentration around the seed. It is claimed to promote germination and stand establishment in small grains, especially under relatively dry soil conditions. This theory was tested using Marshall wheat, Steele oat, and Azure barley. A nitrogen fertility variable was included to determine if crop response was different under a higher nitrogen fertility regime.

Experiment Procedure:

A split plot design with four replications was used to test for differences between treated and untreated seed of Marshall wheat, Steele oats, and Azure barley. Seed was treated at a rate of 1 pound seed coating per 100 pounds of seed. Seeding rates were 1,000,000 live seeds per acre for wheat (approx. 1 bu. / ac.), and 750,000 live seeds per acre for oats and barley (approx. 1.5 bu. / ac. oat and 1.3 bu. / ac. barley). Sixty pounds of 18-46-0 was broadcast applied to all main plots which served as the fertilizer variable.

The Hettinger trial was planted on April 16th and stand counts were taken prior to tillering. Plots at Hettinger were harvested August 8th. Dickinson's trial was planted May 21st and harvested August 16th.

Results and Discussion:

A heavy snowfall occurred 10 days after planting at Hettinger which provided very moist germinating conditions upon melting. Since moisture for germination was readily available, the effects of the seed coating may have been minimized. The site at Dickinson was moderately dry at planting. Table 39 shows yield, test weight, and plant population results for the study at Hettinger. Results at Dickinson appear in Table 40. Use of the seed coating did not significantly increase yield, test weight, or plant population of Marshall wheat or Steele oats at Hettinger. Soil fertility had no effect on this response. A significant decrease in yield was observed with Azure barley at Hettinger when treated with the seed coating under both fertility treatments. The Dickinson trial showed no significant effect on yield or test weight of Marshall wheat, Steele oats, or Azure barley due to the seed coating.

Results of this study are 1st year results only. An additional 2 years testing will be conducted at both sites to compile more data before firm conclusions are drawn relative to Carolina Dakota seed coating.

Table 39. Yield, Test Weight, and Plant Population of Marshall Wheat, Steele Oat, and Azure Barley as Affected by Carolina Dakota Seed Coating and Nitrogen Fertility, Hettinger 1984

NO = Unfertilized
N1 = Fertilized
TO = Untreated
T1 = Treated
NS = No significant difference (P = .05)

Variety	Treatment		Yield Bu / Ac	Test Weight Lbs / bu	Plants / Acre X 1000
Marshall	NO	TO	36.7	59.1	573
Marshall	NO	T1	37.2	59.3	660
Marshall	N1	TO	43.1	59.1	759
Marshall	N1	T1	46.0	59.1	629
F TRT			NS**	NS	NS
Steele	NO	TO	66.5	34.5	511
Steele	NO	T1	67.5	34.7	554
Steele	N1	TO	75.0	34.7	585
Steele	N1	T1	66.1	34.5	542
F TRT			NS	NS	NS
Azure	NO	TO	46.1	46.5	616
Azure	NO	T1	40.5	46.0	579
Azure	N1	TO	57.5	46.3	641
Azure	N1	T1	46.4	46.1	660
F TRT			7.04*	NS	NS

* Significant difference (95% confidence level) in yield due to seed treatment.

** No significant difference due to seed treatment or addition of nitrogen to the soil.

Summary of Results at Hettinger:

1. Use of the seed coating did not significantly increase yield, test weight, or plant population of Marshall wheat or Steele oats. Soil fertility had no effect on this response.

2. A significant decrease in yield was observed with Azure barley when treated with the seed coating under both fertility treatments.

Table 40. Yield and Test Weight of Marshall Wheat, Steele Oat, and Azure Barley as Affected by Carolina Dakota Seed Coating and Nitrogen Fertility, Dickinson, 1984

NO = Unfertilized
N1 = Fertilized
TO = Untreated
T1 = Treated
NS = No significant difference (P = .05)

Variety	Treatment		Yield Bu / Ac	Test Weight Lbs / bu
Marshall	NO	TO	34.2	59.3
Marshall	NO	T1	33.1	59.0
Marshall	N1	TO	34.5	58.8
Marshall	N1	T1	33.3	59.3
F TRT			NS*	NS
Steele	NO	TO	64.7	36.0
Steele	NO	T1	65.9	35.3
Steele	N1	TO	62.1	36.0
Steele	N1	T1	59.2	39.3
F TRT			NS	NS
Azure	NO	TO	52.5	48.0
Azure	NO	T1	53.8	49.0
Azure	N1	TO	51.2	47.5
Azure	N1	T1	48.7	46.5
F TRT			NS	NS

* No significant difference due to seed treatment or addition of nitrogen to the soil.

Summary of Results at Dickinson:

1. The Dickinson trial showed no significant effect on yield or test weight of Marshall wheat, Steele oats, or Azure barley due to the seed coating or soil fertility.

COOPERATIVE SMALL GRAIN NURSERY TRIALS

Plantings in 1984 included: Uniform Regional Hard Red Spring Wheat, Project leader Dr. Robert Busch, University of Minnesota; Uniform Hard Red Winter Wheat, Dr. Darryl Cox, Agronomy Dept., North Dakota State University; Uniform Regional Durum, Project leader Dr. R.G. Cantrell, North Dakota State University; Uniform Early and Uniform Midseason Oats, Project leader Dr. Howard Rines, University of Minnesota; Western Spring Barley and Western Dryland Spring Barley, Project leader Dr. E.A. Hockett, Montana State University; and Advanced Two-row Barley Nursery, cooperator Dr. Jerry Franckowiak, North Dakota State University. Field performance reports are furnished to respective project leaders for evaluation and compilation into composite regional reports. Required samples for quality analysis are furnished to appropriate state or USDA cereal chemistry laboratories upon request of respective project leaders. Trials included 32 varieties and experimental lines in the Uniform Regional hard spring wheat trial; 66 entries in two hard red winter wheat trials; 30 lines in the Uniform Regional durum nursery; 59 varieties and experimentals in three separate oats nurseries and 82 two-row and six-row lines in three barley nurseries. Yields were less than those of field plots. Hard red spring wheat yields ranged from a low of 1865 kg / ha to 2888 kg / ha. High field plot yield was 3952 kg / ha. D 79168, and NDSU experimental was high producer in the Regional durum trials and Otana, a Montana release was the highest yielding oats entry in the 1984 trials. A wide range of yields were produced by 82 barley lines, with a high yield of 3571 kg / ha recorded for Lindy. Barley yields ranged from a low of 1578 kg / ha to 3571 kg / ha and averaged 2760 kg / ha. Yields in the two winter wheat nurseries ranged from 693 kg / ha to 4369 kg / ha, reflecting poor production by varieties lacking winter hardiness and high yield for cultivars having satisfactory winter survival characteristics for the Northern Great Plains.

Table 41. Uniform Regional Hard Red Spring Wheat Nursery, 1984

Variety	Avg. Yield Bu / Acre	Test Weight	Heading Date	Height Inches
Marquis	32.5	59.0	7-16	36
Chris	30.2	58.0	7-12	34
Waldron	31.2	58.0	7-10	33
Era	33.4	56.5	7-13	25
Butte	35.4	61.5	7-7	33
SD 8026	40.8	60.0	7-6	35
SD 2956	42.0	60.0	7-9	34
SD 2968	35.0	57.5	7-10	28
SD 8036	34.0	61.0	7-8	30
MT 8043	42.9	57.0	7-10	32
MT 808	31.0	55.5	7-12	24
MT 8177	36.6	58.5	7-9	29
MN 7529	38.3	59.0	7-8	32
MN 81270	40.1	58.0	7-10	28
MN 80056	35.8	61.0	7-10	30
MN 82128	36.6	59.0	7-8	30
ND 597	30.4	59.0	7-7	30
ND 603	37.3	60.0	7-7	30
ND 602	30.7	60.5	7-6	30
ND 604	37.5	59.0	7-9	30
ND 611	33.0	58.5	7-9	24
RH 833498	36.1	59.0	7-8	32
HS 781139	27.7	55.5	7-10	25
HS 81-55	35.6	59.0	7-8	28
HS 81-12	32.5	57.5	7-10	21
2369	31.0	60.0	7-10	25
X7993	33.4	56.5	7-10	33
WRC-80-3	29.4	55.5	7-10	26
WRC-80-32	32.5	59.0	7-6	29
WA 7075	32.7	54.0	7-8	26
WA 7182	31.4	57.5	7-7	28
WA 7185	34.6	58.5	7-6	27

LSD @ 5% = 5.2 bpa

CV = 13%

Table 42. Uniform Regional Durum Nursery, 1984

Variety	Avg. Yield Bu / Acre	Test Weight	1000 KW	Heading Date	Height Inches
Mindum	30.8	62.0	33	7-16	36
Rolette	36.2	61.5	36	7-10	32
Ward	34.7	60.0	31	7-10	33
Crosby	37.3	61.5	34	7-10	33
Rugby	38.2	61.0	37	7-10	32
Cando	37.7	60.0	27	7-12	23
Coulter	36.6	60.0	34	7-12	31
Vic	40.9	61.5	39	7-10	34
Lloyd	40.9	58.5	34	7-13	24
Medora	37.0	61.5	32	7-10	33
D 793	41.1	61.5	38	7-6	32
DT 371	38.3	59.0	34	7-10	33
D 78177	43.5	60.5	29	7-12	23
D 804	38.9	60.5	30	7-12	23
D 79168	43.6	61.0	33	7-12	24
D 79103	40.0	61.5	40	7-10	33
D 79209	43.1	61.0	31	7-12	24
D 79104	39.2	61.0	31	7-9	29
D 7925	39.4	61.0	37	7-6	30
DT 375	38.8	61.0	30	7-16	36
D 8012	40.0	62.0	36	7-11	29
D 8016	41.5	60.0	38	7-11	30
D 8019	36.5	60.5	36	7-11	33
D 8034	36.4	60.0	32	7-11	31
D 8082	38.7	60.0	32	7-11	27
D 80152	40.3	60.0	30	7-12	23
D 80162	40.4	61.0	40	7-7	23
HD 81-466	37.7	59.0	33	7-10	25
HD 81-485	36.9	62.5	33	7-8	32
C 881-4	37.2	60.5	35	7-10	26

LSD @ 5% = 3.5 bpa

CV = 8.9%

Table 43. Uniform Early Oats Nursery, 1984

Variety	Avg. Yield Bu / Acre	Test Weight	Heading Date	Height Inches
Otee	60.1	38.5	7-3	30
IL 75-5860	71.7	38.5	7-4	29
IL 79-1178	57.1	37.0	7-4	30
IL 80-2294	58.2	39.0	7-2	28
Lang	69.3	35.0	7-3	27
IA Multiline X-2	61.6	36.0	7-3	29
Clintford	57.9	38.0	7-3	32
PA 8196-1556	64.3	38.0	7-2	25
MN 80116	57.8	40.0	7-3	28
Andrew	57.8	37.5	7-1	34
MO 07399	79.8	37.0	7-3	30
MO 06637	62.4	37.0	7-4	26
MO 07444	51.9	37.0	7-6	20
MO 07461	57.2	38.0	7-6	27
MO 06767	53.7	40.5	7-4	28
Bates	60.9	36.5	7-4	30

LSD @ 5% = 5.0 bpa

CV = 8.4%

Table 44. Midseason Oat Nursery, 1984

Variety	Avg. Yield Bu / Acre	Test Weight	Heading Date	Height Inches
WI X3910-15	41.7	39.5	7-8	34
Dal	55.1	35.0	7-9	28
IL 75-5860	60.3	38.0	7-4	28
IL 75-3402	48.6	40.0	7-5	24
IL 79-5394	48.7	39.0	7-5	20
IL 80-3072	56.9	37.5	7-6	25
IL 79-1776	58.8	37.0	7-6	28
IL 79-4924	43.3	38.0	7-6	27
Ogle	64.3	32.5	7-6	28
IA B605-1085	56.1	38.5	7-4	28
W 78286 (Dumont)	69.1	34.0	7-10	29
W 80474	72.1	37.0	7-8	31
PA 8098-13900	47.6	38.5	7-6	27
PA 8196-1338	58.4	37.5	7-3	26
PA 8196-15	50.7	41.5	7-2	28
SD 790400	67.6	36.0	7-8	30
SD 810095	66.1	41.0	7-5	33
SD 790188	65.4	37.5	7-8	34
SD 800312	73.5	36.0	7-6	32
Clintland 64	52.5	37.5	7-3	33
MN 81132	60.0	40.0	7-3	29
MN 81135	53.1	38.5	7-3	28
MN 81128	58.0	39.5	7-2	29
MN 81229	56.9	41.0	7-2	30
MN 81227	61.9	40.5	7-5	32
ND 78376 (Steele)	59.2	34.5	7-7	32
ND 78394	67.0	33.0	7-16	28
ND 78406	64.7	35.5	7-8	31
ND 78385	72.4	34.5	7-10	28
ND 810917	66.9	35.0	7-8	27
Gopher	63.7	37.0	7-5	33
P 72288RBI-3-4-3	53.8	37.0	7-4	30
P72288RBI-3-4-3-1	60.1	37.5	7-2	29
P72288RBI-3-4-3-13-1	61.6	37.0	7-2	30
P786901-5-3-4	60.3	39.5	7-2	29

LSD @ 5% = 4.9 bpa

CV = 7.2%

Table 45. Station Oat Nursery, 1984

Variety	Avg. Yield Bu / Acre	Test Weight	Heading Date	Height Inches
Centennial	56.1	37.0	7-8	32
Steele	68.1	35.5	7-6	33
Kelsey	68.8	34.5	7-8	34
Menominee	73.7	34.0	7-14	33
Otana	81.2	38.0	7-10	34
Border	75.3	30.5	7-18	27
Dumont	64.6	33.5	7-14	31
Haylander	56.5	37.0	7-8	37

LSD @ 5% = 5.1 bpa

CV = 6.0%

Table 46. Western Dryland Spring Barley Nursery, 1984

Variety	Avg. Yield Bu / Acre	Test Weight	Heading Date	Height Inches
Munsing	62.2	50.5	7-8	22
Steptoe	56.8	46.0	7-4	26
Hector	62.5	51.5	7-8	29
Clark	58.9	49.0	7-10	26
ID 810264	63.5	48.5	7-10	26
ID 810099	61.9	48.0	7-16	26
EC – 5	54.2	45.5	7-3	22
Early 28	54.3	42.0	7-2	24
Karla/ND1265	62.1	52.0	7-3	25
Lewis	60.9	50.5	7-9	28
Lindy	66.3	48.5	7-2	27
Teton	62.8	49.0	7-3	26
Bridger 82	46.9	47.0	7-16	24
Sunbar 560	57.1	47.0	7-15	23
UT 1422	61.0	47.0	7-8	28
UT 1423	61.1	47.5	7-7	28
6B78-10	63.4	45.5	7-1	25
Apex	61.0	49.0	7-8	24
Bellona	56.6	47.5	7-8	24
MT 311885	61.4	48.5	7-8	27
MT 312613	63.8	52.0	7-5	26
Bowman	65.6	52.5	7-4	24
UT 1731	60.7	48.0	7-4	29
UT 1733	57.5	48.0	7-5	33
UT 1734	62.4	47.0	7-4	32
Beacon/WA7136-62/ WA 6773-71	56.1	45.5	7-8	26
Klages 2/8537-68	47.3	46.0	7-16	24

LSD @ 5% = 5.2 bpa

CV = 7.6%

Table 47. Western Spring Barley Nursery, 1984

Variety	Avg. Yield Bu / Acre	Test Weight	Heading Date	Height Inches
Trebi	37.2	45.0	7-9	30
Steptoe	49.2	48.0	7-7	28
Klages	31.8	47.5	7-17	24
Morex	47.0	50.5	7-8	29
Columba/Klages	39.4	49.0	7-17	27
Karla/ND1265	52.6	52.5	7-5	26
Beacon/WA7136-62/WA6773-71	37.4	46.5	7-10	28
Lewis	54.1	53.0	7-11	29
Fld//Her/Kgs	51.9	51.0	7-11	26
Premier	38.9	48.5	7-16	24
Sunbar 560	43.5	49.0	7-16	27
Wv/CI1237//Robur	39.9	44.5	7-10	25
M21/Harlon//Wv	29.3	46.5	7-11	25
UT 1422	47.4	49.0	7-8	28
UT 1423	48.4	48.5	7-7	28
Klages*2/8537-68	35.3	49.5	7-17	27
Menuet	45.1	52.0	7-12	24
Piston	36.6	49.5	7-17	25
2B79-37	40.9	47.5	7-17	28
6B79-486	45.5	50.0	7-4	28
73Ab2199/Karla	50.0	49.5	7-4	28
Kimberly//Hector/Klages	51.2	52.5	7-11	26
Summit/Hector	52.5	53.0	7-8	32
Hazen	51.3	51.5	7-6	30
Wv/CI127//Robur	42.0	48.5	7-10	28
Short Wocus/Boyer	46.4	45.0	7-12	24
6 rowed bulk Population	38.9	52.0	7-6	32
Steptoe/M27	50.7	50.5	7-4	33
Kgs/2*8537-68	42.6	51.0	7-10	27
Kgs/8537-68	40.8	51.0	7-11	27

LSD @ 5% = 8.1 bpa

CV = 15.9%

Table 48. Advanced Two-Row Barley Nursery, 1984

Variety	Avg. Yield Bu / Acre	Test Weight	Heading Date	Height Inches
Morex	44.3	42.5	7-5	31
Hector	51.1	46.5	7-16	28
Harrington	41.0	44.0	7-17	26
Hazen	48.1	46.0	7-6	30
CI 15856	46.9	49.0	7-11	28
ND 5883	52.0	46.5	7-9	27
ND 5971	49.0	47.5	7-11	29
ND 6784	52.2	49.5	7-11	30
ND 6787	46.8	50.0	7-8	31
ND 6869	48.0	49.5	7-4	32
ND 6989	50.4	48.0	7-9	29
ND 6999	49.2	49.0	7-9	28
ND 7014	46.8	47.0	7-9	32
ND 7015	53.1	48.0	7-9	32
ND 7017	46.7	47.5	7-9	30
ND 7045	44.7	46.5	7-8	29
ND 7055	58.4	49.0	7-9	25
ND 7085	62.7	53.5	7-3	30
ND 7159	53.9	46.0	7-17	27
ND 7160	53.8	48.0	7-16	28
ND 7194	51.0	48.0	7-9	29
ND 7553	50.7	50.0	7-17	28
ND 7641	58.9	51.5	7-4	30
ND 7714	59.1	50.0	7-9	28
ND 7802	56.4	50.5	7-17	28

LSD @ 5% = 7.1 bpa

CV = 12.1%

Table 49. Summary 1984 Barley Advanced Yield Trial of Two-Rowed Cultivars, Exp. 12

	Yield in Bushels per Acre				
Cultivar	**Prosper**	**Carrington**	**Dickinson**	**Williston**	**Average**
Morex	91.1	87.7	44.3	38.5	65.4
Hector	91.6	79.9	51.1	40.9	65.9
Harrington	91.0	80.1	41.0	35.6	61.9
Hazen	99.5	101.8	48.1	38.6	72.0
ND 5883	94.5	80.7	52.0	38.3	66.4
ND 5971	82.2	79.0	49.0	34.6	61.2
ND 6784	90.7	79.1	52.2	34.0	64.0
ND 6787	93.7	84.5	46.8	40.2	66.3
ND 6869	80.7	77.5	48.0	36.2	60.6
ND 6989	101.9	94.5	50.4	44.5	72.8
ND 6999	105.8	83.8	49.2	36.2	68.8
ND 7014	103.5	89.0	46.8	38.8	69.5
ND 7015	99.0	92.0	53.1	37.9	70.5
ND 7017	99.5	96.4	46.7	40.0	70.7
ND 7045	101.4	90.7	44.7	36.0	68.2
ND 7055	94.7	95.3	58.4	35.5	71.0
ND 7085	92.0	80.1	62.7	40.1	68.7
ND 7159	93.9	77.8	53.9	29.6	63.8
ND 7160	98.3	76.5	53.8	31.6	65.1
ND 7194	99.2	86.1	51.0	45.2	70.4
ND 7553	84.8	89.4	50.7	35.6	65.1
ND 7641	97.3	81.2	58.9	37.8	68.8
ND 7714	98.4	84.2	59.1	40.4	70.5
ND 7802	97.7	93.3	56.4	40.2	71.9