



First
Annual

WESTERN DAKOTA

CROPS DAY RESEARCH REPORT



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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.

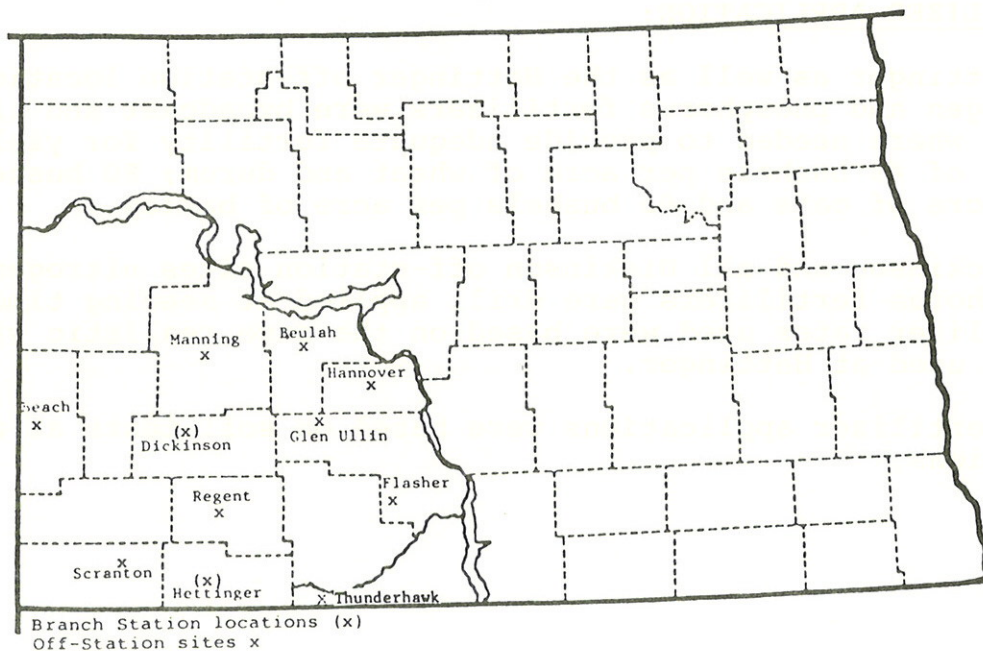
For the past thirty years prior to this year crops research at Hettinger has been limited principally to the off-station small grain variety trials conducted in southwestern North Dakota by the Dickinson Branch Station.

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.



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

<u>Precipitation</u>	<u>1983-84</u>	<u>93 year average</u>
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

<u>Average Temperature</u> ⁰ F	<u>1984 Avg.</u>	<u>93 year average</u>
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

<u>Precipitation</u>	<u>1983--84</u>	<u>29 Year Avg.</u>
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

<u>Average Temperature ⁰F</u>	<u>1984 Avg.</u>	<u>29 Year Avg.</u>
April	42	42
May	52	54
June	61	64
July	70	70
August	72	69

low high
1-4

1984 Hard Red Spring Wheat Variety Trial

Recommended (X)

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
1984 <u>Stoa</u> - 3 (X)	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
1977 <u>Butte</u> 3	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
<u>Alex</u> 3 (X)	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
<u>Wheaton</u> 2 (X)	36.7	47.2	50.2	58.5	7-4	30
1982 <u>Marshall</u> 2	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				
1979 <u>Len</u> 4	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
1973 <u>Olaf</u>	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			

Long Term Small Grain Yield Averages
Hard Red Spring Wheat

Hettinger

<u>Variety</u>	<u>Bushels per Acre</u>			<u>Averages</u>	
	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>2-Yr.</u>	<u>3-Yr.</u>
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	

Dickinson

<u>Variety</u>	<u>Bushels per Acre</u>					<u>5-Yr. Avg.</u>
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	
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	

1984 Durum Variety Trial

Variety	<u>Hettinger</u>		<u>Dickinson</u>		Heading Date	Height Inches
	Bushels per Acre	Test Weight lbs/bu	Bushels per Acre	Test Weight lbs/bu		
Ward ¹⁹⁸⁰ 18% in N.D.	58.3	60.3	27.0	61.0	7-4	34
Vic ¹⁹⁷⁴ 50% in N.D.	55.2	60.8	34.9	61.5	7-6	33
1983 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 <i>Cando</i>	48.6	59.2				
Rugby	47.8	58.1	30.3	61.5	7-6	35
Coulter <i>Cando</i>	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			

Long Term Small Grain Yield Averages

Durum

Hettinger

<u>Variety</u>	<u>Bushels per Acre</u>			<u>Averages</u>	
	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>2-Yr.</u>	<u>3-Yr.</u>
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	

Dickinson

<u>Variety</u>	<u>Bushels per Acre</u>					<u>5-Yr. Avg.</u>
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	
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

1984 Barley Variety Trial

<u>Variety</u>	<u>Hettinger</u>		<u>Dickinson</u>			
	<u>Bushels per Acre</u>	<u>Test Weight lbs/bu</u>	<u>Bushels per Acre</u>	<u>Test Weight lbs/bu</u>	<u>Heading Date</u>	<u>Height Inches</u>
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			

Long Term Small Grain Yield Averages
Barley

Hettinger

<u>Variety</u>	<u>Bushels per Acre</u>			<u>Averages</u>	
	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>2-Yr.</u>	<u>3-Yr.</u>
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

Dickinson

<u>Variety</u>	<u>Bushels per Acre</u>					<u>5-Yr. Avg.</u>
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	
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	

1984 Oat Variety Trial

<u>Variety</u>	<u>Hettinger</u>		<u>Dickinson</u>			
	<u>Bushels per Acre</u>	<u>Test Weight lbs/bu</u>	<u>Bushels per Acre</u>	<u>Test Weight lbs/bu</u>	<u>Heading Date</u>	<u>Height Inches</u>
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			

Long Term Small Grain Yield Averages
Oats

Hettinger

<u>Variety</u>	<u>Bushels per Acre</u>		
	<u>1983</u>	<u>1984</u>	<u>2-Yr. Avg.</u>
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

Dickinson

<u>Variety</u>	<u>Bushels per Acre</u>					<u>5-Yr. Avg.</u>
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	
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

1984 Hard Red Winter Wheat Variety Trial

Variety	<u>Hettinger</u>		<u>Dickinson</u>			
	Bushels per Acre	Test Weight lbs/bu	Bushels per Acre	Test Weight lbs/bu	Heading Date	Height Inches
Norstar 3	49.5	60.5	51.2	59.0	6-27	40
Rose	47.3	61.5	38.9	60.0	6-22	32
Agassiz 3	46.5	59.5	45.9	59.0	6-25	37
Roughrider 78% 4	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			

Long Term Small Grain Yield Averages
Hard Red Winter Wheat

Variety	<u>Dickinson</u>				
	1981	Bushels per Acre		1984	4-Yr. Avg.
		1982	1983		
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

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

1984 Winter Rye Variety Trial

Dickinson

<u>Variety</u>	<u>Bushels per Acre</u>	<u>Test Weight lbs/bu</u>	<u>Heading Date</u>	<u>Height Inches</u>
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%			

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

Bushels per Acre

<u>Variety</u>	<u>Dickinson</u>	<u>Beach</u>	<u>Beulah</u>	<u>Glen Ullin</u>	<u>Hannover</u>	<u>Manning</u>	<u>Average 6 Sites</u>
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%	7.4bu	3.2bu	5.9bu	3.5bu	3.9bu	6.7bu	5.4bu
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	

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

Bushels per Acre

<u>Variety</u>	<u>Hettinger</u>	<u>Regent</u>	<u>Flasher</u>	<u>Thunderhawk</u>	<u>Scranton</u>	<u>Average 5 Sites</u>	<u>Average 11 Sites</u>
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%	12.4bu	8.3bu	4.1bu	4.5bu	5.0bu	7.5bu	6.4bu
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		

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

Test Weight lbs./bu.

<u>Variety</u>	<u>Dickinson</u>	<u>Beach</u>	<u>Beulah</u>	<u>Glen Ullin</u>	<u>Hannover</u>	<u>Manning</u>	<u>Average 6 Sites</u>
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

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

Test Weight lbs./bu.

<u>Variety</u>	<u>Hettinger</u>	<u>Regent</u>	<u>Flasher</u>	<u>Thunderhawk</u>	<u>Scranton</u>	<u>Average 5 Sites</u>	<u>Average 11 Sites</u>
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%	4.21bs	1.51bs	1.71bs	1.81bs	1.71bs	2.41bs	
CV	5.0%	1.8%	2.1%	2.2%	2.1%		

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

Protein Percent @ 14% Moisture

<u>Variety</u>	<u>Dickinson</u>	<u>Beach</u>	<u>Beulah</u>	<u>Glen Ullin</u>	<u>Hannover</u>	<u>Manning</u>	<u>Average 6 Sites</u>
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	15.5
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

1984 Dickinson and Off-Station Durum Variety Trials

BusheIs per Acre

<u>Variety</u>	<u>Dickinson</u>	<u>Beach</u>	<u>Beulah</u>	<u>Glen Ullin</u>	<u>Hannover</u>	<u>Manning</u>	<u>Average 6 Sites</u>
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%	4.9bu	4.3bu	6.0bu	3.8bu	4.0bu	9.7bu	5.8bu
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	

1984 Hettinger and Off-Station Durum Variety Trials

Bushels per Acre

<u>Variety</u>	<u>Hettinger</u>	<u>Regent</u>	<u>Flasher</u>	<u>Thunderhawk</u>	<u>Scranton</u>	<u>Average 5 Sites</u>	<u>Average 11 Sites</u>
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%	13.9bu	NS	2.9bu	3.9bu	4.2bu	6.8bu	6.3bu
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		

1984 Dickinson and Off-Station Oat Variety Trials

Bushels per Acre

<u>Variety</u>	<u>Dickinson</u>	<u>Beach</u>	<u>Beulah</u>	<u>Glen Ullin</u>	<u>Hannover</u>	<u>Manning</u>	<u>Average 6 Sites</u>
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%	6.9bu	10.7bu	14.8bu	11.6bu	8.3bu	10.3bu	10.7bu
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	

1984 Hettinger and Off-Station Oat Variety Trials

Busbels per Acre

<u>Variety</u>	<u>Hettinger</u>	<u>Regent</u>	<u>Flasher</u>	<u>Thunderhawk</u>	<u>Scranton</u>	<u>Average 5 Sites</u>	<u>Average 11 Sites</u>
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	11.1bu	9.5bu	2.7bu	6.6bu	9.1bu
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		

1984 Dickinson and Off-Station Barley Variety Trials

Bushels per Acre

<u>Variety</u>	<u>Dickinson</u>	<u>Beach</u>	<u>Beulah</u>	<u>Glen Ullin</u>	<u>Hannover</u>	<u>Manning</u>	<u>Average 6 Sites</u>
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%	6.1bu	9.1bu	17.8bu	12.0bu	5.1bu	10.6bu	10.9bu
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	

1984 Hettinger and Off-Station Barley Variety Trials

Bushels per Acre

<u>Variety</u>	<u>Hettinger</u>	<u>Regent</u>	<u>Flasher</u>	<u>Thunderhawk</u>	<u>Scranton</u>	<u>Average 5 Sites</u>	<u>Average 11 Sites</u>
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%	10.6bu	9.0bu	7.1bu	6.9bu	5.4bu	8.0bu	9.7bu
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		

1984 Safflower Variety Trial

Hettinger

<u>Variety</u>	<u>Type</u>	<u>Pounds per Acre</u>	<u>Test Weight lbs/bu</u>	<u>Oil %</u>
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		

1984 Dickinson Sunflower Hybrid Trial

<u>Hybrid</u>	<u>Pounds per Acre</u>	<u>Test Weight 1/</u>	<u>Oil %</u>
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 D0 855	1914	31.0	44.4
Dahlgren D0 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 <i>earlier maturity</i>	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			

1984 Dickinson Corn Hybrid Trial Grain Yields

<u>Hybrid</u>	<u>Bushels per Acre 1/</u>	<u>Test Weight 2/ lbs/bu</u>	<u>Shelling % 2/</u>
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			

1984 Dickinson Corn Hybrid Trial Silage Yields

<u>Hybrid</u>	<u>Tons per Acre 1/</u>	<u>Harvest Moisture %</u>
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
Agasco 2XAA1	7.1	68.3
Agasco 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		

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
Agasco 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
Agasco 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.

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

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