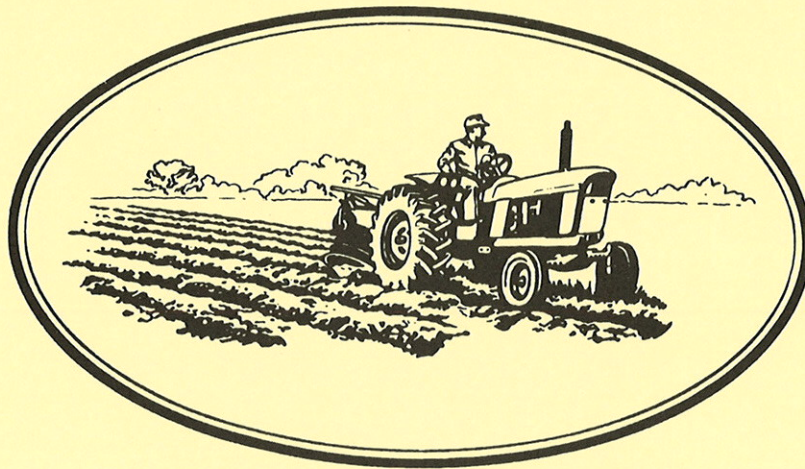




FOURTH
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WESTERN DAKOTA

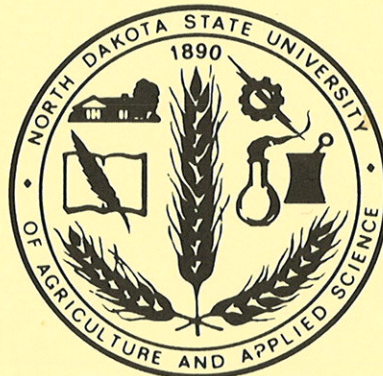
CROPS DAY RESEARCH REPORT



HETTINGER ARMORY
DEC. 10, 1987

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4TH ANNUAL WESTERN DAKOTA CROPS DAY

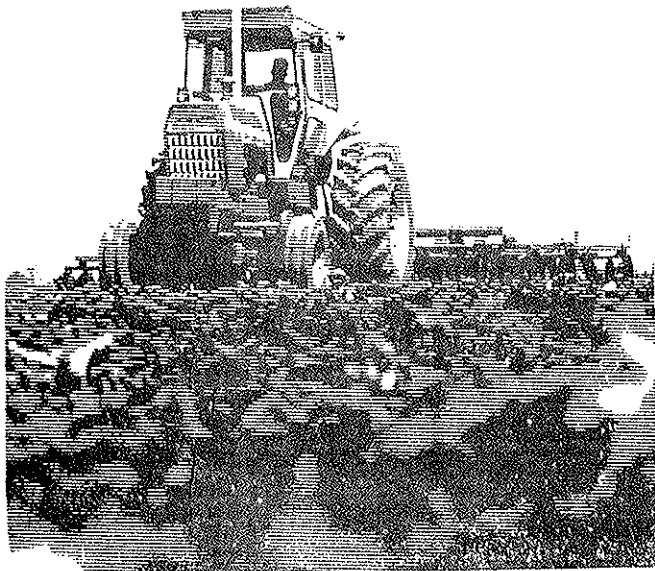
DECEMBER 10, 1987

HETTINGER ARMORY

Thursday Morning

MST

- 9:00 **Registration**
 Coffee and doughnuts. Free time to view exhibits and visit with Ag Industry Program Sponsors.
- 10:30 **Crop Variety Updates and Highlights of Ongoing Crop Production Research**
 Tom Conlon, Superintendent and Agronomist, Dickinson Experiment Station
 Jim Jakicic, Agronomist, Hettinger Research Extension Center
- 12:00 **Lunch**
 Being provided by Program Sponsors and free time to visit with sponsors.



Thursday Afternoon

- 1:15 **Welcome**
 Dr. H.R. Lund, Dean and Director, NDSU Agricultural Experiment Station
- 1:30 **Ag Industry Update**
 "Chemicals for Control of Grasshoppers, Russian Wheat Aphid, and Rust of Wheat" - Daniel Shelstad, Mobay Corp.
 "The North Dakota Barley Council and You" - Bill Drummond, North Dakota Barley Council
 "Hybrid Sunflowers for Western North Dakota" - Don Kenna, Contiseed - Division of Continental Grain
- 2:00 **Pinto Bean Production in Southwestern North Dakota**
 August Kirschmann, Producer, Regent, N.D.
- 2:30 **Grower Experience with Intensive Wheat Management and MEY**
 David James, James Farms, LTD, Winnipeg, Manitoba, Canada
- 3:15 **Approach of the Russian Wheat Aphid, Detection and Control**
 Dennis Kopp, Extension Entomologist, NDSU, Fargo, ND
- 3:45 **Conclusion**
 Drawing for door prizes, coffee and opportunity to visit with sponsors.

ACKNOWLEDGEMENTS

The Hettinger Research & Extension Center and Dickinson Experiment Station gratefully acknowledge and thank the following companies and organizations for their financial support of and participation in this year's Western Dakota Crops Day. Those listed below have provided for the noon meal and have sponsored the event in total. We thank them for their past and present commitment and support.

1987 WESTERN DAKOTA CROPS DAY SPONSORS

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EXPERIMENTAL PROCEDURE

TRIAL DESIGN:

All variety trials at both station and off-station locations are randomized complete block designs 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. The drill is equipped with double disk openers set for a seven 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 was six inches with the Kirschmann 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.

WEED CONTROL:

Herbicides used in the trials varied with the specific weed problems at each individual site. Chemicals utilized included: Brominal 3+3, 2,4-D, and Buctril for broadleaf weed control; Hoelon for control of wild oats; fall applied Treflan for Pigeongrass control; Treflan in sunflowers and dry beans; and Bladex + Atrazine or Banvel and Lasso in corn.

INTERPRETING STATISTICAL ANALYSIS

Field research involves the testing of one or more variables such as crop varieties, fertilizers, tillage methods, etc. Field testing of such variables is conducted in order to determine which variety, tillage method, or fertilizer etc. is best for the particular area of production. The main objectives of crop production research are to determine the best means of producing the crop and how to maximize yield and economic return from farming.

Agricultural researchers use statistics as a tool in helping to differentiate the production variables in question so real and meaningful conclusions can be drawn from a relatively large amount of data. One of these tools is the Coefficient of Variability (C.V.%). This statistic gives an indication of the amount of variation in an experimental trial. Trials conducted at Hettinger used four replications or repetitions of the variable in question. For example, the variety, Stoa HRSW appeared four times (four replications) in the HRSW variety trial. In this case, the C.V.% for yield of the Hettinger HRSW variety trial was 12.1%. This C.V.% is a relative measure of how much the yield of all HRSW varieties varied between replications. In other words, C.V.% is a measure of the precision or effectiveness of the trial and procedures used in conducting the trial.

More can be said about a field trial with a relatively low C.V. (10% or less) than one with a C.V. of over 10%. Attempts are made to control human error and some environmental conditions such as conducting field studies on a uniform soil so variability between replicates is minimized with a resulting low value for C.V. (10% or less). In summation, a trial with a C.V. of 8% is more precise and more can be concluded from it than a trial with a C.V. of 18%.

Another important statistical tool is the Least Significant Difference or LSD. If the yield of variety A exceeds variety B by more than the LSD 5% value you can conclude that under like environmental conditions, variety A will significantly out-yield variety B 95% of the time. The LSD value allows you to separate varieties, tillage practices, or any other variable and determine whether or not they are actually different. The LSD 1% value is always larger than the value for LSD 5% and is used in the same manner. If the yield of variety A exceeds variety B by more than the LSD 1% value you can conclude that under like environmental conditions, variety A will significantly out-yield variety B 99% of the time. Little confidence can be placed in variety or treatment differences being meaningful unless the results differ by more than the LSD value.

GROWING CONDITIONS
 HETTINGER RESEARCH AND EXTENSION CENTER
 -1987-

Soil water recharge over the fall and winter months was 255 percent above normal (30 year average) giving an excellent moisture base for spring planted small grains. Most of this recharge occurred in September of 1986 when 6.77" of precipitation fell as mostly gentle rains with little runoff. Such a wet September did however ruin much of the later maturing crops such as dry edible beans and safflower which sprouted and molded. While April thru June precipitation was 2.25" below normal, small grains still produced good yields of high test weight, good quality grain. Although protein levels of hard red spring wheat in the variety plots were average to above, much of the area's harvested spring wheat was below average in protein. Last year's abundant September precipitation may have been a contributing factor in a general lowering of protein levels by leaching nitrogen from the soil profile.

Temperatures for the period April thru August were generally higher than the 30 year average as evidenced by Hettinger's recorded growing degree days, GDD(50-86). Over 18 percent more GDD units had accumulated by mid August than was normal for the area. Unseasonably warm temperatures in April, May, and June advanced the growing stages of all crops. Harvest dates for small grains were generally 2 weeks earlier than normal.

Several plant diseases prevailed in 1987 which lead to declines in production of some fields. Most notable were wheat streak mosaic, tan spot of wheat and bacterial blight of dry edible beans. Wheat streak mosaic was moderate to severe in fields where volunteer small grains were not controlled. Varying levels of tan spot infected wheats and an unusually high incidence of bacterial blight was observed on the area's dry bean crop.

Reports of hail damage to small grains were frequent in mid July. For the first time in 4 years, 2 of Hettinger's off-station trials were damaged (one completely lost) due to hail storms.

WEATHER DATA SUMMARY
 HETTINGER, 1987

Precipitation	1986-87	30 Year Avg.
Sept.-Dec. 1986	7.87	2.97
Jan.-Mar. 1987	2.59	1.13
April-June	5.76	8.08
July-August	4.09	3.81
Total	20.31	15.99
Average Temperature F	1987 Avg.	30 Year Avg.
April	49.5	42
May	58.8	54
June	66.7	64
July	70.5	70
August	64.0	69

GROWING CONDITIONS - 1987

Total precipitation for the twelve month period, September, 1986 through August, 1987 was 21.19 inches which was slightly higher than for the preceding twelve month period. However, distribution of precipitation this year was much less favorable for crop growth than that of a year ago, resulting in considerably lower yields. Precipitation in April was only .17 inches, in May 1.87 inches and in June 2.32 inches, totaling 4.36 inches for the three month period. This was nearly 3.00 inches below normal. Coupled with below average precipitation was above average temperatures. Temperature for April was 7°F, for May 3°F and for June 5°F higher than the 94 year average.

Severity of leaf spotting diseases, except for tan spot, was generally low in western North Dakota. Low rainfall and high temperatures in May and June slowed leaf disease development.

WEATHER DATA SUMMARY

Dickinson 1987

<u>Precipitation</u>	<u>1986-87</u>	<u>94 Year Average</u>
Sept. - Dec. 1986	6.43	3.15
Jan. - Mar. 1987	2.73	1.53
April - June	4.36	7.30
July - Aug.	7.67	3.91
TOTAL	21.19	15.89

<u>Average Temperature °F</u>	<u>1987 Average</u>	<u>94 Year Average</u>
April	48	41
May	57	54
June	66	61
July	69	69
August	62	67

1987 HETTINGER ON-STATION
HARD RED SPRING WHEAT VARIETY TRIAL

Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Heading Date June
747	51.3	58.8	15.8	13.5
Tammy	51.3	61.2	15.7	17
ND626	50.5	61.2	15.6	13
R162	50.3	61.3	14.3	21
Butte 86	49.5	61.5	15.6	12
Rambo	49.2	61.5	15.6	17.5
Wheaton	49.2	58.8	15.0	16.5
2369	48.9	60.9	15.7	13.5
ND639	48.6	61.1	16.3	13
Stoa	47.5	60.3	16.5	18.5
Roblin	47.4	58.6	16.3	12
Challenger	47.4	60.5	14.1	13
Nordic	46.8	62.4	14.3	20
Guard	46.7	59.2	16.2	13.5
ND636	46.6	61.2	15.1	14.5
R211	46.1	60.4	14.8	21
Marshall	46.0	60.2	14.9	19
Shield	45.9	59.8	14.8	13
Alex	45.9	61.7	16.2	21
Lew	45.8	61.4	15.5	19.5
ND618	45.4	60.5	16.4	18.5
Leif	45.3	60.8	15.5	19.5
ND632	45.3	59.7	16.0	19.5
Coteau	45.3	59.7	17.0	21
Norak	45.1	60.5	15.2	15
R208	45.1	59.3	16.0	20.5
ND631	44.7	60.8	15.9	16.5
MN82354	44.7	58.5	15.9	20
MN81110	44.5	57.4	16.8	17
SD2956	44.4	60.5	16.0	15
Laura	44.3	60.6	16.6	17.5
Katepwa	43.8	59.8	16.4	14
Lancer	43.6	60.4	17.0	17
Kenyon	43.4	59.3	16.7	15.5
R229	42.9	61.4	15.1	20.5
Len	42.9	61.5	16.1	19
Telemark	42.8	59.2	15.7	18.5
WB 926	42.5	59.8	15.4	13.5

All data adjusted to 12% grain moisture

1987 HETTINGER ON-STATION
HARD RED SPRING WHEAT VARIETY TRIAL

Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Heading Date June
Success	42.5	58.9	15.6	21.5
Celtic	41.8	61.0	15.6	18
Waldron	41.5	59.7	15.4	12.5
ND640	41.4	61.3	16.6	19.5
Cutless	41.2	59.4	17.0	21.5
2385	41.1	60.6	15.2	12
Apex 83	40.0	59.5	14.4	14
ND622	39.6	62.1	16.5	17.5
Norseman	39.3	59.4	16.1	20.5
Columbus	37.1	60.7	16.4	22
ND606	20.3	57.0	16.5	21.5
Highest	51.3 bu	62.4 lbs		22
Lowest	20.3	57.0		12
Exp Mean	44.5	60.2		17.2
C.V.%	12.1	1.2		7.1
LSD 5%	7.5	1.0		2.4
LSD 1%	9.8	1.3		3.3
# of Reps	4	4	Bulk	2

Seeding Rate: 1,000,000 live seeds/acre (approx. 1 bu/ac)
 Seeding Date: April 15th
 Fertilizer Applied: 85 lbs/ac 29-28-0
 Yield Goal: 45 bu/ac (soil residual nutrients + fertilizer applied)
 Herbicide Applied: 1 1/2 pint/ac Bronate
 18 gal per acre spray volume, 5 MPH
 Harvest Date: July 31st
 Notes: ~ All data adjusted to 12% grain moisture

1987 Dickinson Hard Red Spring Wheat Variety Trial

Variety	Bu/A Avg.	Test Wt lbs.	Heading Date	Height in.
Success *	43.7	63.5	22-Jun	23
Norseman *	40.7	61.5	17-Jun	21
Tammy	38.5	61.5	21-Jun	23
Katepwa	37.7	60.5	17-Jun	28
Columbus	37.4	63.0	21-Jun	31
ND 626	36.9	64.5	15-Jun	25
ND 640	36.9	62.5	18-Jun	26
Pioneer 2369 *	35.5	62.0	18-Jun	20
Waldron	35.5	61.0	18-Jun	26
Coteau	35.2	60.5	22-Jun	28
Lew	35.2	62.5	20-Jun	28
Alex	34.7	61.5	20-Jun	26
Leo 747 *	34.7	60.5	14-Jun	22
ND 636	33.3	61.0	16-Jun	23
ND 622	33.3	63.5	26-Jun	23
ND 639	33.0	64.5	20-Jun	25
Len *	32.7	62.5	20-Jun	24
Lancer	32.7	61.0	18-Jun	27
ND 631	31.9	62.0	20-Jun	25
Guard *	31.9	63.0	15-Jun	24
Butte 86	31.1	62.5	16-Jun	24
Stoa	30.8	61.0	20-Jun	26
Marshall *	30.5	61.5	20-Jun	22
Cutless *	30.1	62.5	17-Jun	25
Nordic *	29.7	63.0	21-Jun	23
Shield	29.4	61.0	13-Jun	22
Norak *	28.9	64.0	18-Jun	21
ND 606	28.3	61.0	18-Jun	25
Celtic *	27.2	63.5	18-Jun	26
Leif *	27.0	62.0	20-Jun	23
Telemark *	27.0	61.0	20-Jun	21
ND 632	26.7	62.5	20-Jun	22
Wheaton *	25.9	61.5	21-Jun	21
ND 618	25.9	63.0	18-Jun	23
Rambo	25.0	62.5	20-Jun	24
Kenyon	22.6	60.5	18-Jun	28
SD 2956	22.0	62.5	17-Jun	23

* semidwarf

Seeding Rate: 1,000,000 live seed/acre, (approx. 1 Bu/A)

Seeding Date: April 23 Harvest Date: August 7

Fertilizer applied: 50 lbs/A 18-46-0

Herbicide Applied: Hoelon-Buctril tank mix

L.S.D. 5% = 4.0 Bu/A C.V. = 12.6 %

1987 HETTINGER OFF-STATION
HARD RED SPRING WHEAT VARIETY TRIALS

FLASHER				THUNDERHAWK			
Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %
Nordic	34.7	61.0	14.0	Trial lost due to hail			
Stoa	29.6	59.6	15.7				
Leif	28.8	60.0	15.6				
Norseman	27.3	58.4	16.2				
Butte 86	26.0	60.0	15.7				
Cutless	26.0	58.2	15.8				
Len	25.9	59.7	16.4				
Norak	25.2	59.8	15.2				
Marshall	25.2	59.4	15.2				
2369	24.0	59.6	15.8				
Success	22.9	57.9	15.8				
Leo 747	21.9	59.6	15.2				
Guard	21.1	59.9	15.3				
Coteau	20.9	58.6	16.5				
Alex	20.4	59.0	15.8				
Highest	34.7 bu	61.0 lbs		Highest			
Lowest	20.4	57.9		Lowest			
Exp Mean	25.3	59.4		Exp Mean			
C.V. %	24.4	0.8		C.V. %			
LSD 5%	NS	0.7		LSD 5%			
LSD 1%	NS	0.9		LSD 1%			
# of Reps	4	4	Bulk	# of Reps			

Seeding Rate: 1,000,000 live seeds per acre, (approx. 1 bu/ac)
 Seeding Date: April 22nd (Flasher) April 21st (Thunderhawk)
 Fertilizer Applied: 200 lbs/ac 29-28-0 (Both sites)
 Yield Goal: 45 bu/ac (soil residual nutrients + fertilizer applied)
 Herbicide Applied: 1 1/2 pint/ac Buctril + 2 pint/ac Hoelon (Both sites)
 sprayed on May 28th, 18 gal. per acre spray volume, 5 MPH
 Harvest Date: August 5th (Flasher)
 Notes: All data adjusted to 12% grain moisture

1987 Dickinson Off-station Hard Red Spring Wheat Variety Trials

Variety	Dickinson	Beach	Beulah	Glen Ullin	Hannover	Manning	Average 6 Sites
	Bushels per Acre						
Telemark	27.0	18.2	19.8	32.2	31.4	34.4	27.1
Butte 86	31.1	9.6	17.3	25.9	25.0	23.9	22.1
Celtic	27.2	17.9	16.5	26.7	24.2	34.4	24.5
Cutless *	30.1	12.7	13.8	21.2	31.6	33.3	23.8
Guard *	31.9	25.3	18.2	30.3	28.6	34.4	28.1
Leif *	27.0	10.5	16.8	27.2	22.3	32.5	22.7
Len *	32.7	18.4	23.1	33.0	28.1	40.2	29.2
Leo 747 *	34.7	19.5	17.1	26.4	39.6	34.4	28.6
Marshall *	30.5	23.9	21.7	40.2	34.1	36.0	31.1
Norak *	28.9	20.6	20.1	28.9	36.9	26.1	26.9
Nordic *	29.7	17.9	19.3	30.3	26.1	45.9	28.2
Pioneer 2369 *	35.5	20.9	20.1	29.2	30.0	40.7	29.4
Stoa	30.8	19.8	20.9	32.7	40.4	35.2	30.0
Success *	43.7	18.2	20.1	36.3	34.9	43.5	32.8
Wheaton *	25.9	25.3	20.1	31.9	33.0	33.6	28.3

* semi-dwarf

Seeding Date: Apr. 23 Apr. 27 Apr. 30 Apr. 29 Apr. 28 May 1
 Harvest Date: Aug. 7 Aug. 3 Aug. 12 Aug. 11 Aug. 10 Aug. 10
 L.S.D. 5% : 4.0 3.2 3.3 3.1 3.3 5.7
 C.V.: 12.6 17.0 17.5 10.3 10.4 16.1

Fertilizer Applied: according to soil test at each site.

Herbicide Applied: Hoelon-Buctril tank mix

Seeding Rate: 1 Bu/A

1987 Dickinson Off-station Hard Red Spring Wheat Variety Trials

Variety	Dickinson	Beach	Beulah	Glen Ullin	Hannover	Manning	Average 6 Sites
	Test Wt. lbs./bu.						
Telemark	61.0	56.0	60.0	61.0	59.5	61.5	59.8
Butte 86	62.5	61.0	62.0	61.5	62.0	62.5	61.9
Celtic	63.5	59.5	62.5	59.5	61.5	63.0	61.6
Cutless *	62.5	58.0	60.5	61.0	60.0	62.0	60.7
Guard *	63.0	59.5	61.0	59.0	61.0	62.5	61.0
Leif *	62.0	59.0	60.5	60.5	60.5	62.0	60.8
Len *	62.5	58.0	62.0	62.0	62.0	63.5	61.7
Leo 747 *	60.5	57.5	61.0	60.5	60.0	62.5	60.3
Marshall *	61.5	58.5	61.0	61.0	60.5	63.0	60.9
Norak *	64.0	58.5	61.0	60.5	60.0	63.0	61.2
Nordic *	63.0	57.5	63.0	61.5	62.0	63.5	61.8
Pioneer 2369 *	62.0	59.0	61.0	61.0	60.5	63.0	61.1
Stoa	61.0	60.0	61.0	61.0	60.5	62.5	61.0
Success *	63.5	54.5	61.0	60.5	59.5	62.0	60.2
Wheaton *	61.5	57.0	59.5	60.5	59.5	62.0	60.0

1987 Dickinson Off-Station Hard Red Spring Wheat

Variety	Dickinson	Beach	Beulah	Glen Ullin	Hannover	Manning	Avg. 6 sites
Protein Percent @ 14% Moisture							
Butte 86	14.0	13.4	14.2	15.3	15.1	14.8	14.5
Celtic	14.7	14.2	14.6	15.1	14.9	14.8	14.7
Cutlass	15.7	14.6	15.2	16.8	16.3	15.9	15.8
Guard	13.9	13.5	13.2	15.6	14.0	13.9	14.0
Leif	14.5	14.3	13.7	15.6	15.5	14.8	14.7
Len	15.4	14.8	14.7	16.1	15.0	14.9	15.2
Leo 747	15.3	14.1	14.3	16.0	15.2	15.4	15.1
Marshall	14.2	13.8	13.6	14.5	14.3	13.9	14.1
Norak	14.3	14.2	13.9	15.2	14.4	14.5	14.4
Nordic	14.0	13.4	13.1	13.7	13.4	13.0	13.4
2369	15.3	14.2	14.3	15.8	15.3	14.3	14.9
Stoa	14.5	13.4	13.8	15.0	14.7	13.8	14.2
Success	14.2	14.5	13.7	15.2	14.9	13.6	14.4
Telemark	15.5	14.4	14.8	15.0	15.0	14.9	14.9
Wheaton	14.9	13.4	13.6	14.8	14.7	13.9	14.2

1987 HETTINGER ON-STATION
DURUM VARIETY TRIAL

Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Heading Date June
D8261	43.9	60.1	16.9	20
FA883-323	43.6	61.5	17.1	17.5
Lloyd	43.5	60.4	16.6	20.5
D8309	42.9	60.7	17.0	17.5
Monroe	41.9	60.1	18.2	14
D81154	41.5	60.6	18.2	20.5
Laker	41.4	60.6	17.0	20
FA884-326	41.2	59.5	13.5	16
Vic	41.1	61.1	16.5	19
D8269	40.7	60.4	16.6	20
D8263	40.5	60.6	16.4	19
D8311	39.8	61.1	17.0	16
D81151	39.7	59.9	18.1	20.5
D8291	39.7	59.1	16.8	19.5
D8191	39.6	60.3	18.0	20
Ward	39.4	61.1	18.5	18.5
D8193	39.3	60.7	18.0	20
Medora	39.1	60.9	18.8	19
D8172	38.6	60.2	17.9	20
D8302	38.0	60.4	17.1	18.5
D83103	37.4	58.9	14.6	19.5
D8304	37.3	60.4	17.5	19
D8380	37.0	60.9	14.3	21
Rugby	33.5	61.3	18.1	20
D8374	32.9	60.6	15.0	20.5
D8370	31.2	58.4	15.2	20
Highest	43.9 bu	61.5 lbs		21
Lowest	31.2	58.4		14
Exp Mean	39.4	60.4		19.1
C.V.%	13.4	1.1		4.5
LSD 5%	NS	0.9		1.8
LSD 1%	NS	1.2		2.4
# of Reps	4	4	Bulk	2

Seeding Rate: 1,000,000 live seeds/acre, (approx. 1 bu/ac)
 Seeding Date: April 15th
 Fertilizer Applied: 85 lbs/ac 29-28-0
 Yield Goal: 45 bu/ac (soil residual nutrients + fertilizer applied)
 Herbicide Applied: 1 1/2 pint/ac Bronate
 18 gal per acre spray volume, 5 MPH
 Harvest Date: July 31st
 Notes: All data adjusted to 12% grain moisture

1987 Dickinson Durum Variety Trial

Variety	Bu/A Avg.	Test Wt lbs.	Heading Date	Height in.
Stockholm *	44.8	61.5	21-Jun	27
D 8261 *	44.0	61.5	22-Jun	26
Lloyd *	43.2	61.0	22-Jun	24
Laker *	42.1	61.5	22-Jun	27
D 8291 *	42.1	60.5	22-Jun	26
FA883-323	41.8	61.5	21-Jun	32
Medora	41.0	62.0	21-Jun	32
D 8172	41.0	61.5	21-Jun	31
D 8269 *	41.0	61.0	22-Jun	27
Rugby	40.7	62.5	21-Jun	31
D 81151	40.7	59.5	23-Jun	29
D 8191	39.3	60.5	21-Jun	27
D 83103 *	38.8	61.0	20-Jun	23
D 81154	38.8	60.5	22-Jun	29
D 8370 *	38.5	59.5	23-Jun	22
Fjord	38.0	61.5	20-Jun	29
D 8304	36.6	60.5	21-Jun	24
D 8263 *	36.0	61.0	22-Jun	23
Ward	36.0	61.5	21-Jun	28
D 8193	35.8	61.0	22-Jun	29
Monroe	34.4	62.5	17-Jun	27
Vic	32.7	61.0	20-Jun	30
D 8302	31.4	59.0	21-Jun	23
D 8311	31.1	61.0	21-Jun	22
D 8380 *	30.5	61.0	24-Jun	23
FA884-326 *	30.5	60.0	18-Jun	26
D 8309	30.0	60.5	18-Jun	23
D 8374 *	29.4	57.5	24-Jun	23

* semidwarf

Seeding Rate: 1,000,000 live seed/acre, (approx. 1 Bu/A)

Seeding Date: April 23 Harvest Date: August 5

Fertilizer Applied: 50 lbs/A 18-46-0

Herbicide Applied: Hoelon-Buctril tank mix

L.S.D. 5% = 4.7 Bu/A C.V. = 12.4 %

1987 HETTINGER OFF-STATION
DURUM VARIETY TRIALS

REGENT				SCRANTON			
Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %
Lloyd	58.1	61.4	14.0	Ward	36.5	60.8	15.5
Ward	57.2	61.7	15.0	Laker	34.9	60.9	14.6
Monroe	56.5	61.2	14.8	Lloyd	33.9	60.5	15.2
Vic	53.8	61.6	15.4	Vic	33.5	60.4	15.7
Laker	53.1	61.9	14.3	Monroe	25.2	60.1	15.5
Highest	58.1 bu	61.9 lbs		Highest	36.5 bu	60.9 lbs	
Lowest	53.1	61.2		Lowest	25.2	60.1	
Exp Mean	55.8	61.5		Exp Mean	32.8	60.5	
C.V. %	5.7	0.4		C.V. %	9.8	0.5	
LSD 5%	NS	0.3		LSD 5%	4.9	0.5	
LSD 1%	NS	0.5		LSD 1%	6.9	NS	
# of Reps	4	4	Bulk	# of Reps	4	4	Bulk

FLASHER				THUNDERHAWK			
Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %
Lloyd	33.2	59.8	14.6	Trial lost due to hail			
Ward	29.9	59.7	15.7				
Laker	27.7	59.7	15.0				
Monroe	26.5	59.7	14.9				
Vic	25.1	59.1	15.6				
Highest	33.2 bu	59.8 lbs		Highest			
Lowest	25.1	59.1		Lowest			
Exp Mean	28.5	59.6		Exp Mean			
C.V. %	5.4	0.3		C.V. %			
LSD 5%	2.4	0.3		LSD 5%			
LSD 1%	3.3	0.4		LSD 1%			
# of Reps	4	4	Bulk	# of Reps			

~ All data adjusted to 12% grain moisture

1987 Dickinson Off-station Durum Variety Trials

Variety	Dickinson	Beach	Beulah	Glen Ullin	Hannover	Manning	Average 6 Sites
	Bushels per Acre						
Laker *	42.1	27.2	13.7	29.2	30.5	41.3	30.7
Lloyd *	43.2	26.1	14.4	29.2	33.8	45.7	32.1
Monroe	34.4	27.5	15.0	35.2	32.2	44.3	31.4
Vic	32.7	23.1	16.0	27.2	30.3	40.4	28.3
Ward	36.0	27.0	14.7	31.9	33.8	44.3	31.3
	Test Wt. lbs./bu.						
Laker *	61.5	60.0	62.0	60.0	61.0	62.0	61.1
Lloyd *	61.0	60.0	61.0	60.5	60.5	62.5	60.9
Monroe	62.5	62.0	62.0	62.0	61.0	63.5	62.2
Vic	61.0	60.0	62.0	60.0	61.0	63.0	61.2
Ward	61.5	62.0	62.5	62.0	62.0	64.0	62.3
* semi-dwarf							
Seeding Date:	Apr. 23	Apr. 27	Apr. 30	Apr. 29	Apr. 28	May 1	
Harvest Date:	Aug. 5	Aug. 3	Aug. 13	Aug. 12	Aug. 11	Aug. 10	
L.S.D. 5% :	4.7	1.8	2.0	3.5	1.9	3.3	3.1
C.V. (%) :	12.4	6.4	11.3	10.5	5.5	6.9	
Fertilizer Applied:	according to soil test at each site.						
Herbicide Applied:	Hoelon-Buctril tank mix						
Seeding Rate:	1 Bu/A						

1987 HETTINGER ON-STATION
WINTER WHEAT AND RYE
VARIETY TRIALS

WINTER WHEAT					WINTER RYE		
Variety	Bushels per Acre	Test Weight lbs/bu	% Grain Protein	Heading Date	Variety	Bushels per Acre	Test Weight lbs/bu
Seward	44.8	56.4	13.3	6-3	Chaupon II	68.4	52.9
ND8286	41.6	58.0	14.2	5-31	Chaupon I	66.9	53.3
ND8215	40.7	56.0	13.1	5-28	Prima	57.3	55.0
ND8382	38.9	57.1	13.5	5-31	Cougar	57.0	55.0
Bighorn	38.9	57.5	14.2	5-30	Fredrick	54.1	54.6
Rose	37.7	58.9	15.2	5-31	Chaupon	30.7	51.8
ND8212	36.8	56.4	13.3	6-2	Musketeer	23.6	53.4
Agassiz	36.2	57.5	14.9	5-29	Puma	15.8	53.3
ND8407	35.3	57.6	14.0	5-30			
Siouxland	32.5	57.1	13.9	5-23			
Winoka	29.9	59.0	14.2	5-26			
Colt	29.3	57.0	14.2	5-27			
Roughrider	29.2	57.6	15.5	6-2			
Thunderbird	26.7	58.5	15.0	5-24			
Norstar	25.4	57.5	15.3	6-4			
Highest	44.8 bu	59.0 lbs	15.5 %	6-4	Highest	68.4 bu	55.0 lbs
Lowest	25.4	56.0	13.1	5-23	Lowest	15.8	51.8
Exp Mean	34.9	57.5			Exp Mean	46.7	53.7
C.V. %	17.6	1.3			C.V. %	16.4	1.3
LSD 5%	8.8	1.1			LSD 5%	11.3	1.0
LSD 1%	11.8	1.4			LSD 1%	15.4	1.4
# of Reps	4	4	Bulk	1	# of Reps	4	4

Seeding Rate: 60 lb/ac Winter Wheat (Pure Live Seed)
56 lb/ac Winter Rye (Pure Live Seed)

Seeding Date: September 10, 1986

Fertilizer Applied: None at planting
Applied 50 lb/ac 28-29-0 as spring top dress.

Yield Goal: 60 bu/ac (soil residual nutrients + fertilizer applied)

Herbicide Applied: 2 pint/ac Bronate applied April 28th
18 gal per acre spray volume, 5 MPH

Harvest Date: July 24th

Notes: Lower than expected yields due in part to poor stand
establishment in fall 1986. Extreme soil crusting
prior to emergence.

All data adjusted to 12% grain moisture

1987 HETTINGER OFF-STATION
HARD RED WINTER WHEAT VARIETY TRIALS

REGENT				SCRANTON			
Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %
Agassiz	62.7	60.5	13.8	Norstar	37.4	59.9	15.1
Norstar	61.9	60.7	13.2	Agassiz	36.5	60.3	15.3
Bighorn	59.6	59.8	13.8	Winoka	36.4	60.9	15.1
Colt	55.5	60.4	13.7	Siouxland	33.2	58.5	15.1
Winoka	53.8	60.9	13.2	Bighorn	32.8	58.9	15.6
Roughrider	43.0	59.8	14.6	Roughrider	31.0	60.7	15.9
Thunderbird	41.0	61.1	14.4	Colt	29.8	59.1	16.2
Siouxland	38.3	60.2	14.1	Thunderbird	25.1	59.9	15.3
Highest	62.7 bu	61.1 lbs		Highest	37.4 bu	60.9 lbs	
Lowest	38.3	59.8		Lowest	25.1	58.5	
Exp Mean	52.0	60.4		Exp Mean	32.8	59.8	
C.V. %	7.6	0.5		C.V. %	14.3	0.8	
LSD 5%	9.3	0.7		LSD 5%	6.9	0.7	
LSD 1%	13.8	NS		LSD 1%	NS	0.9	
# of Reps	2	2	Bulk	# of Reps	4	4	Bulk

THUNDERHAWK				FLASHER			
Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %
Lost due to hail				Poor fall stand establishment			

Seeding Rate: 1,000,000 live seeds/ac (approx. 1 bu/ac)
 Seeding Date: September 11th, 1986
 Fertilizer Applied: Applied 85 lb/ac 29-28-0 as spring top dress
 Yield Goal: 60 bu/ac (soil residual nutrients + fertilizer applied)
 Herbicide Applied: 1 1/2 pint/ac Bronate on May 27th
 Harvest Date: July 27th
 Notes: All data adjusted to 12% grain moisture
 Flasher was very wet during planting and spring stands were poor. Trial abandoned.

1987 Dickinson Hard Red Winter Wheat Variety Trial

Variety	Bu/A Avg.	Test Wt lbs.	Heading Date	Height in.
Seward	24.4	58.5	03-Jun	35
Winoka	24.2	60.0	31-May	34
ND 8215	23.1	58.0	01-Jun	35
ND 8212	22.8	57.5	01-Jun	34
Roughrider	20.8	58.5	31-May	37
Agassiz	17.3	59.5	02-Jun	35
Bighorn	15.0	58.5	31-May	26
Colt	14.8	58.0	30-May	27
Siouxland	11.8	58.0	29-May	30

Seeding Rate: 50 lbs/A

Seeding Date: September 5 Harvest Date: July 16

Fertilizer applied: 50 lbs/A 18-46-0

Herbicide Applied: Hoelon-Buctril tank mix

L.S.D. 5% = 4.8 Bu/A C.V. = 24.0 %

1987 Beach Hard Red Winter Wheat Variety Trial

Variety	Bu/A Avg.	Test Wt lbs.
Siouxland	43.7	58.5
Roughrider	38.1	58.5
Bighorn	37.8	57.5
Agassiz	36.0	59.0
Winter Triticale	37.4	50.5

Seeding Rate: 50 lbs/A

Seeding Date: September 23 Harvest Date: July 20

Fertilizer applied: 50 lbs/A 18-46-0

Herbicide Applied: Hoelon-Buctril tank mix

L.S.D. 5% = 3.5 Bu/A C.V. = 8.2 %

1987 Dickinson Winter Rye Variety Trial

Variety	Bu/A Avg.	Test Wt lbs.	Heading Date	Height in.
Chaupon II	53.9	53.5	16-May	40
Chaupon I	52.7	53.5	16-May	38
Prima	44.5	54.0	17-May	45
Musketeer	37.6	54.0	17-May	46
Frederick	35.1	54.0	16-May	47
Puma	33.9	54.0	19-May	45

Seeding Rate: 60 lbs/A
 Seeding Date: September 5 Harvest Date: July 17
 Fertilizer applied: 50 lbs/A 18-46-0
 Herbicide Applied: Hoelon-Buctril tank mix
 L.S.D. 5% = 3.6 Bu/A C.V. = 7.8 %

1987 Dickinson Special Small Grains Trial

Variety	Bu/A Avg.	Test Wt lbs.	Heading Date
Bowman Barley	35.4	46.5	17-Jun
Otana Oats	34.3	39.5	23-Jun
Speltz *	23.9	38.0	29-Jun
Gazelle Spring Rye	23.9	51.5	17-Jun
Kramer Triticale *	13.8	44.5	23-Jun

Seeding Date: April 27 Harvest Date: August 14
 Fertilizer: 50 lbs/A 18-46-0
 L.S.D. 5% = 2.2 Bu/A C.V. = 7.7 %
 * yields based on 38 and 48 lbs/bu, respectively

1987 HETTINGER ON-STATION
BARLEY VARIETY TRIAL

Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Heading Date June
Bowman	89.3	52.4	14.6	15
ND8671	89.2	53.7	15.2	19.5
Hazen	88.1	48.8	15.1	17.5
Azure	87.4	49.3	15.3	17.5
ND7691	86.5	51.9	15.7	21
Morex	84.8	50.3	14.6	17.5
Lewis	84.2	52.9	16.5	21.5
Hector	83.3	52.2	15.5	20
ND8376	82.4	48.4	15.8	19.5
ND7309	79.7	49.1	13.8	20
Gallatin	79.5	52.4	17.0	19
ND8377	79.2	48.5	16.3	19
B1601	76.0	46.6	14.9	17.5
Robust	74.1	50.0	15.3	19
Ellice	68.8	51.6	17.6	21
Highest	89.3 bu	53.7 lbs		21.5
Lowest	68.8	46.6		15
Exp Mean	82.2	50.5		19.0
C.V.%	9.3	1.9		3.6
LSD 5%	10.9	1.3		1.5
LSD 1%	NS	1.8		2.1
# of Reps	4	4	Bulk	2

Seeding Rate: 750,000 live seeds/acre (approx. 1.3 bu/ac)
 Seeding Date: April 15th
 Fertilizer Applied: 85 lbs/ac 29-28-0
 Yield Goal: 65 bu/ac (soil residual nutrients + fertilizer applied)
 Herbicide Applied: 1 1/2 pint/ac Bronate
 18 gal per acre spray volume, 5 MPH
 Harvest Date: July 31st
 Notes: All data adjusted to 12% grain moisture

1987 HETTINGER OFF-STATION
BARLEY VARIETY TRIALS

REGENT				SCRANTON			
Variety	Bushels per Acre [~]	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre [~]	Test Weight lbs/bu	Grain Protein %
Hector	83.8	54.1	13.3	Hector	69.7	54.0	13.8
Gallatin	80.2	53.9	13.4	Gallatin	64.7	53.4	14.3
Azure	78.1	50.9	12.5	Bowman	63.7	53.4	14.3
Hazen	76.9	51.1	12.7	Azure	58.5	50.4	13.2
Bowman	75.9	53.8	13.7	Hazen	57.2	50.6	14.2
Morex	72.6	51.4	12.3	Morex	54.1	51.8	14.0
Highest	83.8 bu	54.1 lbs		Highest	69.7 bu	54.0 lbs	
Lowest	72.6	50.9		Lowest	54.1	50.4	
Exp Mean	77.9	52.5		Exp Mean	61.3	52.3	
C.V. %	7.1	0.8		C.V. %	5.6	0.8	
LSD 5%	NS	0.6		LSD 5%	5.2	0.7	
LSD 1%	NS	0.9		LSD 1%	7.2	0.9	
# of Reps	4	4	Bulk	# of Reps	4	4	Bulk

FLASHER				THUNDERHAWK			
Variety	Bushels per Acre [~]	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre [~]	Test Weight lbs/bu	Grain Protein %
Hector	58.9	52.8	13.8	Trial lost due to hail			
Gallatin	56.3	52.8	14.6				
Hazen	49.4	47.9	13.6				
Bowman	45.0	51.7	13.5				
Morex	44.9	49.7	13.6				
Azure	44.5	48.4	12.8				
Highest	58.9 bu	52.8 lbs		Highest			
Lowest	44.5	48.4		Lowest			
Exp Mean	49.6	50.8		Exp Mean			
C.V. %	9.6	0.8		C.V. %			
LSD 5%	7.2	0.6		LSD 5%			
LSD 1%	9.9	0.8		LSD 1%			
# of Reps	4	4	Bulk	# of Reps			

[~] All data adjusted to 12% grain protein

1987 Dickinson Barley Variety Trial

Variety	Bu/A Avg.	Test Wt lbs.	Heading Date	Height in.
Gallatin	72.5	49.5	22-Jun	23
Hector	70.5	50.0	23-Jun	23
Ellice	64.6	47.0	22-Jun	24
Lewis	63.3	51.0	25-Jun	23
ND 8671	62.9	47.5	23-Jun	23
Azure *	61.9	44.5	19-Jun	25
Robust *	61.5	47.5	22-Jun	23
Hazen *	61.2	46.5	22-Jun	23
ND 8376 *	60.5	45.5	23-Jun	21
ND 7691	57.4	47.5	24-Jun	23
Morex *	56.4	48.0	18-Jun	22
Bowman	52.3	50.5	19-Jun	22
ND 8377 *	51.2	46.5	22-Jun	20
ND 7309 *	49.8	45.5	22-Jun	22
B 1601 *	47.8	45.5	19-Jun	24

* 6-row variety

Seeding Rate: 1.3 Bu/A

Seeding Date: April 23 Harvest Date: August 4

Fertilizer Applied: 50 lbs/A 18-46-0

Herbicide Applied: Hoelon-Buctril tank mix

L.S.D. 5% = 4.5 Bu/A C.V. = 7.4 %

1987 Dickinson Off-station Barley Variety Trials

Variety	Dickinson	Beach	Beulah	Glen Ullin	Hannover	Manning	Average 6 Sites
Bushels per Acre							
Azure *	61.9	34.7	16.8	36.1	26.1	34.0	34.9
Bowman	52.3	35.8	22.0	33.3	24.8	35.4	33.9
Gallatin	72.5	45.0	25.4	47.4	31.6	47.1	44.9
Hector	70.5	47.8	28.5	45.4	29.9	45.4	44.6
Morex *	56.4	43.7	17.2	39.2	32.0	39.5	38.0
Robust *	61.5	41.3	26.1	45.0	41.3	45.4	43.4
Test Wt. lbs./bu.							
Azure *	44.5	42.0	40.5	40.0	40.5	48.0	42.6
Bowman	50.5	49.0	49.0	48.5	48.0	51.0	49.3
Gallatin	49.5	48.5	48.5	48.5	48.5	51.5	49.2
Hector	50.0	48.5	48.0	48.0	48.5	51.5	49.1
Morex *	48.0	46.0	46.0	48.0	47.0	49.5	47.4
Robust *	47.5	47.5	47.0	48.5	47.0	50.0	47.9
* 6-row							
Seeding Date:	Apr. 23	Apr. 27	Apr. 30	Apr. 29	Apr. 28	May 1	
Harvest Date:	Aug. 4	Aug. 3	Aug. 3	Aug. 13	Aug. 11	Aug. 10	
L.S.D. 5% :	4.5	6.2	2.9	5.0	4.2	12.3	6.6
C.V. (%) :	7.4	14.1	12.1	11.5	12.6	27.9	
Fertilizer Applied: according to soil test at each site.							
Herbicide Applied: Hoelon-Buctrifl tank mix							
Seeding Rate: 1.3 Bu/A							

1987 HETTINGER ON-STATION
OAT VARIETY TRIAL

Variety	Bushels per Acre~	Test Weight lbs/bu	Grain Protein %	Heading Date June
ND810104	130.5	35.5	16.7	15
Border	119.8	34.9	15.7	20
Monida	119.3	34.7	15.1	19
ND831122	116.1	35.6	15.1	16
Proat	112.6	34.9	14.5	22
Kelsey	110.7	36.9	13.9	15.5
ND820559	107.8	36.2	16.0	18.5
ND830646	106.4	35.0	16.1	19.5
Sandy	106.2	38.0	16.0	18.5
Riel	105.3	37.2	16.5	18
ND821742	104.6	35.1	16.4	17
Fidler	102.2	34.7	15.7	21.5
ND820294	101.1	34.4	14.4	17.5
Dumont	101.0	36.3	14.7	19.5
ND830185	100.3	35.0	15.8	18
Otana	99.2	37.2	15.6	18
Porter	99.0	36.4	16.2	19
ND830645	98.7	36.3	16.4	19
ND840413	98.4	35.4	16.3	18
Steele	98.1	35.3	16.4	17
IAD623-15	97.3	34.5	15.5	15
ND841974	94.1	36.6	14.3	21.5
ND820603	91.2	37.5	15.9	18
ND820744	90.3	36.2	15.8	18
ND830775	88.4	36.2	14.4	21
Hyttest	85.5	40.2	16.6	15.5
NA082-1	84.2	32.2	14.2	24
Highest	130.5 bu	40.2 lbs		24
Lowest	84.2	32.3		15
Exp Mean	102.5	35.9		18.5
C.V.%	16.6	1.9		4.8
LSD 5%	NS	0.9		1.8
LSD 1%	NS	1.2		2.5
# of Reps	4	4	Bulk	2

Seeding Rate: 750,000 live seeds/acre, (approx. 1.5 bu/ac)
 Seeding Date: April 15th
 Fertilizer Applied: 85 lbs/ac 29-28-0
 Yield Goal: 80 bu/ac (soil residual nutrients + fertilizer applied)
 Herbicide Applied: 1.5 pint/ac Bronate
 18 gal per acre spray volume, 5 MPH
 Harvest Date: July 24th
 Notes: ~ All data adjusted to 12% grain moisture

1987 HETTINGER OFF-STATION
OAT VARIETY TRIALS

REGENT				SCRANTON			
Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %
Monida	136.5	37.3	12.8	Monida	72.9	37.3	14.6
Porter	117.3	38.0	14.0	Otana	70.7	38.1	14.3
Otana	113.7	38.9	12.1	Riel	61.1	36.9	13.4
ND810104	113.7	36.0	14.3	ND820603	60.1	36.9	15.2
Riel	106.0	38.3	13.7	Porter	37.2	59.8	14.2
ND820603	99.9	38.6	15.1	ND810104	58.8	34.6	15.6
Steele	99.1	36.4	14.2	Steele	56.4	35.2	15.8
Highest	136.5 bu	38.9 lbs		Highest	72.9	38.1	
Lowest	99.1	36.0		Lowest	56.4	34.6	
Exp Mean	112.3	37.6		Exp Mean	62.8	36.6	
C.V. %	4.4	0.8		C.V. %	10.4	1.0	
LSD 5%	7.4	0.4		LSD 5%	9.7	0.5	
LSD 1%	10.1	0.6		LSD 1%	NS	0.7	
# of Reps	4	4	Bulk	# of Reps	4	4	Bulk

FLASHER				THUNDERHAWK			
Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %	Variety	Bushels per Acre	Test Weight lbs/bu	Grain Protein %
Monida	55.1	32.2	13.0	Trial lost due to hail			
Steele	46.8	30.4	15.1				
ND810104	41.7	28.3	14.5				
Porter	40.6	26.5	14.9				
ND820603	36.7	28.8	14.2				
Otana	33.3	27.6	14.7				
Riel	31.4	30.4	14.7				
Highest	55.1 bu	32.2 lbs		Highest			
Lowest	31.4	26.5		Lowest			
Exp Mean	40.8	29.2		Exp Mean			
C.V. %	12.1	3.7		C.V. %			
LSD 5%	7.3	1.6		LSD 5%			
LSD 1%	10.0	2.2		LSD 1%			
# of Reps	4	4	Bulk	# of Reps			

All data adjusted to 12% grain moisture

1987 Dickinson Oats Variety Trial

Variety	Bu/A Avg.	Test Wt lbs.	Heading Date	Height in.
NA 0821-1	101.9	34.0	01-Jul	24
ND 830646	89.7	35.5	22-Jun	28
Monida	86.8	36.5	23-Jun	28
Dumont	84.5	36.0	22-Jun	26
ND 840413	82.8	36.0	21-Jun	29
Porter	78.7	36.5	21-Jun	28
Border	78.2	36.0	24-Jun	23
Otana	77.0	39.5	22-Jun	28
ND 821742	76.4	37.5	22-Jun	26
ND 820294	76.4	33.5	19-Jun	26
ND 830775	75.8	38.0	23-Jun	30
ND 820744	75.8	36.5	20-Jun	27
ND 830185	74.1	38.0	20-Jun	29
Steele	73.5	36.5	20-Jun	29
ND 830645	72.9	36.5	20-Jun	29
ND 841974	69.5	37.5	20-Jun	26
Riel	67.7	37.5	19-Jun	27
ND 820559	66.6	36.5	19-Jun	28
ND 831122	66.6	36.0	19-Jun	24
Sandy	66.0	39.5	20-Jun	30
ND 820603	61.4	38.0	22-Jun	25
Proat	57.9	38.0	22-Jun	26
Hyttest	55.0	41.0	19-Jun	27
ND 810104	50.4	34.0	18-Jun	24

Seeding Rate: 1.5 Bu/A

Seeding Date: April 23 Harvest Date: August 6

Fertilizer Applied: 50 lbs/A 18-46-0

Herbicide Applied: Buctril

L.S.D. 5% = 6.9 Bu/A C.V. = 9.3 %

1987 Dickinson Off-station Oats Variety Trials

Variety	Dickinson	Beach	Beulah	Glen Ullin	Hannover	Manning	Average 6 Sites
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Bushels per Acre

Border	78.2	46.5	39.5	53.8	72.5	71.2	60.3
Dumont	84.5	49.5	36.9	63.8	72.5	79.9	64.5
Monida	86.8	53.4	40.4	59.9	69.9	80.8	65.2
Otana	77.0	52.1	37.3	56.4	60.4	66.0	58.2
Porter	78.7	43.4	37.3	58.6	67.7	66.4	58.7

Test Wt. lbs./bu.

Border	36.0	36.0	36.0	35.5	32.5	35.5	35.3
Dumont	36.0	38.5	38.5	36.0	35.5	36.5	36.8
Monida	36.5	37.0	37.0	35.0	35.0	38.0	36.4
Otana	39.5	38.0	38.0	36.5	35.5	39.0	37.8
Porter	36.5	37.5	37.5	36.5	36.0	36.5	36.8

Seeding Date:	Apr. 23	Apr. 27	Apr. 30	Apr. 29	Apr. 28	May 1
Harvest Date:	Aug. 6	Aug. 3	Aug. 13	Aug. 12	Aug. 11	Aug. 10
L.S.D. 5% :	6.9	6.3	4.6	8.2	2.8	2.6
C.V. (%) :	9.3	11.8	11.0	12.9	4.0	3.2

Fertilizer Applied: according to soil test at each site.

Herbicide Applied: Hoelon-Buctril tank mix

Seeding Rate: 1 Bu/A

HETTINGER GRAIN CORN HYBRID TRIAL
-1987-

Variety	Relative Maturity Days	Bushels Per Acre at 13.5% Moisture	Test Weight lbs/bu	Percent Moisture @ Harvest
Interstate 353	85	91.2	58.9	18.2
AgriPro 270	85	82.2	59.6	20.2
Dahlgren DC-418	85	76.4	59.3	21.6
Dahlgren DC-408	80	75.6	58.4	17.3
Pioneer 3902	90	74.1	57.5	19.4
Dahlgren DC-405	80	64.7	59.1	18.7
Pioneer 3929	85	62.7	60.5	17.4
Top Farm sx78	77	62.0	57.6	17.8
Cargill 3537	95	60.8	55.0	24.8
Cargill 3477	95	56.4	53.2	28.0
Dahlgren DC-440	90	54.2	57.7	22.7
North. King PX9151	88-92	53.7	55.5	22.4
Top Farm sx1181	78	53.3	60.4	20.7
Highest		91.2 bu	60.5 lbs	28.0 %
Lowest		53.3	53.2	17.3
Exp Mean		66.7	57.9	20.7
C.V. %		23.3	2.4	6.9
LSD 5%		22.3	2.0	3.1
LSD 1%		NS	2.7	4.4
# of Reps		4	4	2

~ Test weight at 12% moisture

Plant Population: 18,000 plants per acre
 Seeding Date: May 15th
 Row Spacing: 30"
 Planting Site: Wheat stubble (recrop)
 Fertilizer Applied: 200 lbs/ac 29-28-0
 Yield Goal: 80 bu/ac grain, 13 tons/ac silage
 Herbicide Applied: 2 1/2 quarts/ac Bladex + 1 quart/ac Atrazine, Preplant
 Harvest Date: October 13th

HETTINGER CORN HYBRID SILAGE TRIAL
-1987-

Variety	Relative Maturity Days	Percent Moisture @ Harvest	Silage Tons/ac @ 70% Moisture
Interstate 353	85	59	13.3
Cargill 3537	95	67	12.1
Dahlgren DC-405	80	64	12.1
Cargill 3477	95	63	11.5
Dahlgren DC-418	85	63	11.5
Dahlgren DC-440	90	65	10.5
North. King PX9151	88-92	71	8.8
AgriPro 270	85	61	8.6
Dahlgren DC-408	80	66	8.5
Top Farm sx1181	78	65	7.9
Top Farm sx78	77	71	6.7
Highest		71 %	13.3 tons
Lowest		59	6.7
Exp Mean		65	10.1
C.V. %			15.8
LSD 5%			2.3
LSD 1%			3.1
# of Reps		Bulk	4

Plant Population: 18,000 plants per acre
 Seeding Date: May 15th
 Row Spacing: 30"
 Planting Site: Wheat stubble (recrop)
 Fertilizer Applied: 200 lbs/ac 29-28-0
 Yield Goal: 80 bu/ac grain, 13 tons/ac silage
 Herbicide Applied: 2 1/2 quarts/ac Bladex + 1 quart/ac Atrazine, Preplant
 Harvest Date: September 7th

REGENT GRAIN CORN HYBRID TRIAL
-1987-

Variety	Relative Maturity Days	Bushels Per Acre at 13.5% Moisture	Test Weight lbs/bu	Percent Moisture @ Harvest
Dahlgren DC-440	90	117.8	56.1	19.1
Top Farm sx1181	78	114.8	57.2	16.8
Top Farm sx78	77	112.7	56.7	15.1
Pioneer 3978	85	112.4	57.1	21.2
Interstate 373	89	107.5	54.9	20.7
Cargill 2787	90	106.7	53.0	21.2
Dahlgren DC-408	80	106.5	56.9	15.5
Dahlgren DC-418	85	104.8	58.8	18.1
Pioneer 3963	80	103.0	57.9	15.6
Cargill SX123	85	102.4	57.4	17.2
Interstate 353	85	98.2	58.3	17.6
King Grain K1124	80	97.6	56.6	15.7
King Grain K1132	85	92.0	61.8	17.6
Dahlgren DC-405	80	91.9	57.8	15.7
Highest		117.8 bu	61.8 lbs	21.2 %
Lowest		91.9	53.0	15.1
Exp Mean		104.9	57.2	17.6
C.V. %		8.96	1.44	6.94
LSD 5%		13.5	1.2	2.6
LSD 1%		18.1	1.6	3.7
# of Reps		4	4	2

~ Test weight at 12% moisture

Plant Population: 18,000 plants per acre
 Seeding Date: May 12th
 Row Spacing: 30"
 Planting Site: Fallow
 Fertilizer Applied: 85 lbs/ac 29-28-0
 Yield Goal: 80 bu/ac grain, 13 tons/ac silage
 Herbicide Applied: 2 1/2 quarts/ac Bladex + 1 quart/ac Atrazine, Preplant
 Harvest Date: October 14th

REGENT CORN HYBRID SILAGE TRIAL
-1987-

Variety	Relative Maturity Days	Percent Moisture @ Harvest	Silage Tons/ac @ 70% Moisture
Top Farm sx78	77	55	17.5
Dahlgren DC-418	85	56	16.1
Interstate 373	89	59	15.6
Dahlgren DC-405	80	49	15.5
Top Farm sx1181	78	59	15.3
King Grain K1132	85	57	15.1
Cargill 2787	90	62	15.0
Dahlgren DC-440	90	62	14.9
Pioneer 3978	85	60	13.7
Pioneer 3963	80	60	13.7
Cargill SX123	85	59	13.6
King Grain K1124	80	65	13.5
Dahlgren DC-408	80	63	11.9
Interstate 353	85	57	11.9
Highest		65 %	17.5 tons
Lowest		49	11.9
Exp Mean		63	14.5
C.V. %			15.1
LSD 5%			3.2
LSD 1%			NS
# of Reps		Bulk	4

Plant Population: 18,000 plants per acre
 Seeding Date: May 12th
 Row Spacing: 30"
 Planting Site: Fallow
 Fertilizer Applied: 85 lbs/ac 29-28-0
 Yield Goal: 80 bu/ac grain, 13 tons/ac silage
 Herbicide Applied: 2 1/2 quarts/ac Bladex + 1 quart/ac Atrazine, Preplant
 Harvest Date: September 8th

1987 Dickinson Corn Hybrid Trial: Grain

Hybrid	Bu/A Avg.	Test Wt. lbs.	Percent moisture at harvest
Interstate IS-323	107.4	53.0	24.5
Keltgen 2380	97.3	45.0	27.8
Dahlgren DC-440	95.4	47.0	23.8
Interstate IS-373	93.0	49.5	17.9
Top Fram TF SX-1181	92.0	51.0	17.8
Dahlgren DC-408	91.6	54.5	22.2
Nor-King PX-9151	89.2	51.0	25.8
King Agro K-1124	87.0	52.0	21.5
Interstate IS-353	85.2	55.0	21.8
Dahlgren DC-405	84.8	52.5	21.5
King Agro K-1132	84.3	56.0	17.1
Dahlgren DC-418	81.0	51.0	18.9
Keltgen KS-88	80.9	56.0	24.5
Top Farm TFSX-87	79.7	54.5	18.1
Agripro 270	76.2	54.0	22.5
Cenex X-809	69.1	56.0	22.5
Cenex SX-123	66.2	54.0	22.8
Keltgen KF-115	32.5	48.0	16.0

Yield based on 12% moisture

Seeding Rate: 18,000 Seeds/ac.

Seeding Date: May 11 Harvest Date: Sept. 21

Row Width: 36 inches

Harvest Population: 15,600 seeds/ac.

Herbicide Applied: Prowl

L.S.D 5% = 11.3 C.V. = 13.6%

1987 Dickinson Corn Hybrid Trial: Silage

Hybrid	Tons/A Avg.	Moisture Avg.
Agripro 270	11.2	71.4
Cenex 809	11.5	70.1
Cenex SX-123	11.9	72.7
Dahlgren DC-405	12.2	73.2
Dahlgren DC-408	12.0	72.8
Dahlgren DC-418	11.8	74.2
Dahlgren DC-440	17.2	70.6
Interstate IS-323	16.4	72.8
Interstate IS-353	12.3	72.0
Interstate IS-373	14.0	71.4
Keltgen 2380	17.0	74.2
Keltgen KF-115	17.4	79.7
Keltgen KS-88	15.4	72.0
King Agro K-1124	13.6	76.4
King Agro K-1132	13.5	74.6
Nor King PX-9151	13.5	74.8
Top Farm TFX-87	12.4	73.4
Top Farm TFSX-1181	12.8	70.7

Yields based on 70% moisture

Seeding Rate: 18,000 seeds/ac.

Seeding Date: May 11 Harvest Date: August 31

Row Width: 36 inches

Harvest Population: 15,600 plants/ac.

Herbicide Applied: Prowl

L.S.D. 5% = 1.6 C.V. = 11.7

HETTINGER OIL SUNFLOWER VARIETY TRIAL
-1987-

Variety	Lbs/Acre at 10.0% Moisture	Test Weight lbs/bu	% Oil	Oil Lbs/Ac	Harvest % Moisture
Cargill X409687	1713	28.7			8.7
Cargill 208	1667	30.0			10.1
Cargill 207	1488	29.3			8.6
Cenex 7101	1463	29.0			8.9
Cenex 8101	1437	27.8			9.2
Cargill SF-100	1376	30.4			8.9
Jacques Columbia II	1349	28.9			8.9
Conti Hysun 354	1347	30.1			9.1
Stauffer S-1300	1328	30.8			9.0
Seedtec 317	1272	27.7			8.9
Conti Hysun 33	1208	28.9			12.6
Interstate 7111	1195	27.5			8.6
Cargill SF-103	1137	29.4			9.1
Dahlgren DO-855	1125	28.7			8.5
Agripro 2057	1077	27.4			8.2
Seedtec 330	1060	28.3			8.9
Pioneer 6440	1055	28.0			8.8
Conti Hysun Sunbird II	1040	29.6	-non oil-		10.5
Cargill SF-102	1035	29.1			9.6
Dahlgren DO-705	976	29.6			8.4
Agripro 5600	967	30.1			8.6
Stauffer EX8413	951	28.6			8.4
Cenex 6101	866	25.9			8.6
Stauffer S-1296	776	29.3			8.6
Jacques Challenger	734	29.0			8.6
Interstate 3001	704	28.1			8.9
Seedtec 318	676	27.3			10.1
Highest	1713 lbs	30.8 lbs			12.6
Lowest	676	25.9			8.2
Exp Mean	1149	28.8			9.1
C.V. %	21.2	5.0			5.6
LSD 5%	342	2.0			1.1
LSD 1%	454	2.7			1.4
# of Reps	4	4	Bulk	Bulk	2

Plant Population: 18,000 plants per acre
 Row Spacing: 30"
 Herbicide Applied: 1.25 pint/ac Treflan +
 2.50 pint/ac Eptam
 Insecticide Applied: Furdan 15G 1 lb/ac in-
 row equivalent

Seeding Date: May 15th
 Planting Site: Wheat stubble
 Fertilizer Applied: 200 lb/ac
 29-28-0
 Harvest Date: October 7th

~ Test weight and % oil at 10% moisture

1987 Dickinson Sunflower Hybrid Trial

Hybrid	% Oil at 10.0% Moisture	Lbs/A Avg.	Test Wt. lbs.
Cargill 207	41.3	1806.7	32.0
Conti-Seeds Hysun 33	41.0	1744.0	30.5
Seedtec 317	45.9	1597.1	28.5
Cargill X409687	41.5	1546.7	28.5
Conti-Seeds Hysun 354	42.4	1536.0	27.5
Interstate IS-3007	45.8	1523.2	28.5
PAG SF-103	40.3	1501.9	30.5
PAG SF-100	40.2	1470.1	30.0
Cargill 208	41.2	1414.7	30.5
Jacques Capri	46.3	1400.3	27.0
Cenex 6101	41.8	1378.2	28.5
Dahlgren DO-705	44.0	1373.4	28.5
Conti-Seeds Sunbird	34.0	1372.5	30.0
PAG SF-102	42.0	1371.7	31.5
Stauffer EX-8413	45.3	1357.3	30.0
Agripro Sokota 2057	43.2	1288.0	27.0
Cenex 8101	44.1	1261.1	28.5
Jacques Columbia II	44.8	1232.2	29.0
Stauffer S-1296	43.4	1210.9	29.5
Interstate IS-7111	44.1	1196.0	28.0
Dahlgren DO-855	43.6	1153.9	29.0
Cenex 7101	40.3	1137.6	29.0
Seedtec 330	43.5	1082.7	32.0
Sunwheat	39.6	1076.6	26.5

L.S.D 5% = 278.8

C.V. = 20.2%

Yields based on 12% moisture

Harvest Population: 12,300 seeds /ac

Seeding Date: May 23 Harvest Date: September 21

L.S.D. at 5% = 278.8 C.V. = 20.2%

Oil adjusted @ 10% moisture.

HETTINGER-DICKINSON BUCKWHEAT TRIALS

Variety	Hettinger		Dickinson	
	Pounds/Acre	Test Wt.	Pounds/Acre	Test Wt.
Manor	1106	41.7	1700	43.5
Mancan	788	41.9	1785	44.0
Windsor Royal	855	42.0	1870	43.8
Common	-	-	2975	42.7

HETTINGER-DICKINSON SAFFLOWER TRIALS

Variety	Hettinger			Dickinson	
	Pounds/Acre	Test Wt.	% Oil	Pounds/Acre	Test Wt.
S541	1546	38.7	43.2	1220	36.5
S208	1474	37.6	44.0	1002	37.0
Finch	1615	39.6	41.4	958	42.0
Hartman	1186	36.0	39.5	1045	41.5
S317	1448	36.5	40.6	-	-
Girard	1676	38.8	42.1	-	-
Oker	1223	36.7	39.8	-	-
A24	1812	38.3	40.7	-	-

DICKINSON FLAX VARIETY TRIAL

Variety	Bu/Acre Avg.	Test Wt. lbs.
Clark	23.0	49.0
Culbert 79	22.0	49.5
Flor	18.0	49.5

Seeding Rate: 40 lbs/ac.

Seeding Date: April 29 Harvest Date: October 6

L.s.d. 5% = 3.3

C.v. = 18.7%

1987 HETTINGER ON-STATION
 DRY BEAN VARIETY TRIAL

Variety	Type	Pounds per Acre	Test Weight lbs/bu	3 Year Average lbs/ac
Olathe	Pinto	1593	55.4	1353
Bill Z	Pinto	1378	54.0	
Pindak	Pinto	1342	56.5	1203
UI-114	Pinto	1294	56.9	1231
Fiesta	Pinto	1270	57.0	1205
Nodak	Pinto	1270	56.7	1246
Othello	Pinto	1186	56.2	
Topaz	Pinto	1030	52.4	
NX-041	Navy	1402	58.4	
C-20	Navy	1258	58.5	794
Fleetwood	Navy	1246	61.6	1051
Upland	Navy	1174	58.8	1045
Hyden	Navy	1090	57.5	
Seafarer	Navy	1018	59.0	
Highest		1593 lbs	61.6 lbs	
Lowest		1018	52.4	
Exp Mean		1253	57.1	
C.V. %		13.8	1.3	
LSD 5%		249	1.1	
LSD 1%		334	1.4	
# of Reps		4	4	

Seeding Rate: Navy beans (45 lbs/ac pure live seed)
 Pinto beans (61 lbs/ac pure live seed)

Seeding Date: May 12th

Row Spacing: 30"

Planting Site: Fallow

Fertilizer Applied: 60 lbs/ac 29-28-0

Yield Goal: 1,800 lbs/ac

Herbicide Applied: 1 1/4 pint/ac Treflan

Harvest Date: September 7th

DICKINSON MISCELLANEOUS DRY BEAN & PEA TRIAL

Species & Variety	Pounds/Acre	Test Wt.
Hyden Navy Bean	1997	58.0
Nodak Pinto Bean	2178	57.0
Lentil	2042	57.0
White Lupin	1997	56.5
Garbanzo Bean	2858	56.0
Paloma Pea	2723	58.5

DICKINSON MILLET TRIAL

Variety	Tons/Acre @ 12% Moisture	Grain Yield Lbs/Acre	Test Wt.
White Proso	2.0	2465	56.5
Red Proso	1.7	2592	59.0
Siberian	1.6	2608	55.0
German Foxtail	1.9	795	49.5
Otana Oats	1.3	2560	36.0

SPECIAL REPORT

GROWER EXPERIENCE WITH
INTENSIVE WHEAT MANAGEMENT

David G. James

James Farms Ltd., Winnipeg, Manitoba

GROWER EXPERIENCE WITH INTENSIVE WHEAT MANAGEMENT

David G. James

James Farms Ltd., Winnipeg, Manitoba

INTRODUCTION

It is a distinct pleasure for me to prepare and present this paper on our farm's experience with intensive wheat management.

JAMES FARMS LTD.

James Farms Ltd. is located on the eastern outskirts of the city in Winnipeg in Manitoba, Canada. Settled in 1886, the farm has now evolved through the fourth generation. There are four members actively involved in the farming operation—myself, David James; father, Wilfred; mother, Dorothy; and partner Gordon Trenholm. The farm operation consists of a 5300 acre cropping enterprise and a 2000 bird laying operation. The area in which we are located has an average of 110 frost free days and an average growing-season precipitation of slightly more than 33 cm. The soil is a lacustrine fine clay (Red River Association) which has a very level topography and imperfect to poor internal drainage. Our continuous cropping program consists of a streamlined crop plan where at present only wheat, flax and canola are grown. These are treated as special crops and we strive to insure successful economic production of them through the use of sound crop management practices.

INTENSIVE WHEAT MANAGEMENT INFORMATION

No matter what the format in the communication (as outlined below) the information basically originates at the industry, government, and educational levels. We have found industry, and in particular our fertilizer dealer, of considerable assistance.

Whatever the source and whatever the impact in this new information, it is important to scrutinize it: first—to evaluate the validity of the information offered, and second—to decide whether the implementation of such information is possible, given our specific area and growing conditions. Although the following list is not all inclusive it does provide a sampling that is indicative of sources we have drawn upon:

Publications
Producer Meetings
Short Courses
Resource People
Crop Clubs

It should be noted that one key aspect of the entire information transfer takes place through the interaction of family members and their common drive that spans the years and the generations

HIGH YIELD WHEAT CLUB

I want to expand on one of the sources of information that has been important to our farm in the transfer and implementation in intensive wheat management practices. The Landmark Agro Ltd. High Yield Wheat Club was founded on March 9, 1982. It was formed by one of the leading fertilizer dealers in our area, Landmark Agro Ltd. located in Landmark, Manitoba, in conjunction with 10 of its farmer clients. The reasons behind forming the club were two fold: 1. to evaluate wheat yield potential at the commercial level under more intensive management and, 2. to look at the economic viability in producing wheat at these higher yield levels. If it were proven that higher yield were more profitable, not only would farmers benefit, but so would Landmark Agro Ltd. through increased sales of its products to its farmer clients.

The High Yield Wheat Club has been successful in providing the members with a forum for the exchange of information from varied sources and also a framework to measure accurately the yield and economic results from the use of this information. It is this latter area of measurement that is, in so many cases, lacking. The feedback of these results is needed to know whether the extra effort and expense were warranted.

The initial membership was 10 and now stands at 13. A key success factor has been the club's small membership size. This allows indepth study of each member's activities and detailed reporting that would not be possible with a larger membership.

We invite producers ideas and innovativeness with respect to crop management practices. This gives us the opportunity to evaluate all presented possibilities.

The normal business of running the club is carried out at 3 or 4 breakfast meetings during the season. A field (minimum size of 40 acres) is chosen by each member of the club in the fall and it is then soil tested. Any pertinent information, with respect to that field, is recorded by the member in a grower report booklet. During the growing season leaf tissue analysis is carried out on each member's field at two different growth stages. This analysis may reveal areas of potential improvement within the fertility program carried out by the members.

The members spend a summer day touring the club fields where there is an opportunity to question the grower and examine first hand his particular field. A finale of the tour is a barbecue at one of the member's farms.

At harvest time, final yields are determined by processing square meter samples. With the yields then determined and the grower report booklets completed and handed in, a grower summary report is prepared and distributed to all members. This summary contains all pertinent input data and resulting yield and economic information on each grower's field. In November we conclude the season with a banquet. This banquet is highlighted by the presentation of club achievement awards and an after-dinner speaker. The club awards presented are: Highest Yield; Most Profitable Yield; Highest Protein; Heaviest Bushel Weight.

The following tables reveal some of the club's achievements over the past five years.

TABLE 1

1985 INDIVIDUAL MEMBER RESULTS

VARIETY	YIELD (BUS/ACRE)	PROTEIN %
Marshall	96.8	12.5
Marshall	80.5	13.2
Marshall	80.5	13.1
Neepawa	77.1	14.5
Marshall	71.3	10.8
Marshall	70.5	13.2
Marshall	69.4	14.0
Marshall	69.4	14.6
Marshall	67.5	13.3
HY320	67.5	12.9
Marshall	67.1	14.7
Oslo	62.0	14.1
Katepwa	59.9	14.0
Marshall	58.9	14.7

TABLE 2

1986 INDIVIDUAL MEMBER RESULTS

VARIETY	YIELD (BUS/ACRE)	PROTEIN %
Marshall	68.7	11.9
Marshall	64.3	12.7
Marshall	63.6	12.7
Marshall	63.7	13.5
Marshall	62.3	13.3
Marshall	61.7	12.3
Wheaton	59.3	13.0
Marshall	58.6	14.0
HY320	58.0	12.5
Wheaton	56.4	13.2
Wheaton	56.2	13.2
Neepawa	46.3	13.9
Katepwa	40.5	14.3
Katepwa	39.1	13.6
Neepawa	37.6	14.9

TABLE 3

COMPARATIVE AVERAGE YIELDS
Local Crop District vs. Wheat Club
in Bushels per Acre

YEAR	CROP DISTRICT NO. 9 (AVERAGE)	WHEAT CLUB (AVERAGE)
1982	35.9	55.1
1983	27.5	40.2
1984	33.8	53.8
1985	41.8	71.2
1986	35.0*	54.6

* Estimate

TABLE 4

ECONOMIC RETURNS

	HIGHEST YIELDS (Bushel/Acre)	PRODUCTION COSTS \$/Bushel	NET PROFIT \$/Acre
1982	67.4*	2.73	65.64
1983	48.2	3.83	20.14
1984	75.5*	2.22	146.05
1985	96.8*	2.00	145.37
1986	68.7	3.10	(34.70)

*Also most profitable yield

APPLICATION OF INTENSIVE WHEAT MANAGEMENT INFORMATION

I would now like to turn to the practical application in intensive wheat management information on our farm.

We pay close attention to all our crop production factors and put together a well-balanced, integrated crop program. We are cognizant of the interaction among the different among the different crop production factors and also of how these interactions change as crop yield goals are increased.

CROP PRODUCTION FACTORS

Moisture Management

We are fortunate to be located in an area where adequate moisture is usually received. This allows us to target for and achieve excellent wheat yields and, in fact, more often than not, excess moisture can be one of our major problems.

Seedbed Preparation

We are carrying out a minimum tillage program on our farm. The fields are deep tilled once in the fall, after harvest. Our crops are then directly discer seeded into these fields in the spring.

Varietal Choice

We are now targeting for wheat yields in 75 to 80 bushels per acre. The selection, then, of a variety which has excellent yield potential as well as disease resistance and maturity characteristics forms the foundation for our high yield program. This past growing season we planted 2 varieties of American semi-dwarf spring wheat. As well as having the characteristics mentioned above they were also chosen because of their excellent resistance to lodging.

Seed Quality

We are cleaning and selecting our seed more rigorously with respect to plumpness and uniformity of kernel size.

Seeding Considerations

We are paying closer attention to the importance of early seeding when striving to produce higher yields. In the past, our highest yielding wheat crops have been those that have been sown in April. Also more attention is going to be focused on our seeding rates in 1987 (not in bushels/acre but in seeds/sq. metre) and we would like to determine what seeding rates will be required to more consistently obtain our yield goals.

Through shallower fall tillage and careful seeding equipment setting we have improved the uniformity of seed placement resulting in improved crop emergence.

Fertility Program

Our fertility program is an important part of our crop production plan. When deciding on the type of fertility program we are going to implement, we look at our yield goals; take into account our past experiences; and, most importantly, make use of our extensive soil testing program. This soil testing forms the foundation in our fertility program. We have been soil testing on our farm since 1967 and in the last 8 years virtually every field on our farm is soil sampled every year. These samples are then sent to a private lab for analysis. Our starter nitrogen and all of our phosphate requirements are applied through the discers when

seeding. The remainder of the required nitrogen (and possibly other nutrients) is then floater applied the following day and harrowed in. This system in fertilizer application has, to date, worked very effectively for us. Other practices under evaluation this season are the addition of broadcast applied potassium chloride fertilizer to our regular fertility program and, on a limited wheat acreage, split applications of nitrogen. Leaf tissue analysis is also being conducted on a number of our fields.

We are attempting to understand the interaction of plant nutrients in a high yield crop production program.

Weed Control

We carry out a pre-emergence grassy weed control program on our wheat crop. Avadex and Treflan are mixed in with the liquid nitrogen that is being floater applied. Early elimination of grassy weed competition is essential and I believe this preventative approach has worked very effectively for us. An effective broadleaf weed control program then becomes possible.

Insect Control

Insect presence is always a consideration. In the past several seasons we have used a dual purpose seed treatment on some of our wheat seed to combat a wireworm problem. During the growing season fields are monitored for any potential insect problem and if one develops we take the required action to protect our potential yield.

Disease Control

There are two areas of concern. All of our seed is treated. One of our objectives is to protect the growing plant from potentially damaging seed or soilborn diseases. Secondly, in changing the way we work our land, rotate our crops and increase our yields, crop diseases may become more of a concern. We are just beginning to learn more about disease identification, levels of disease infections (and resulting yield losses) and the role that foliar applied fungicides may play in the control of them. 1985 was the first year we applied a foliar fungicide to a percentage of our wheat crop and I am positive it will not be the last.

Harvesting

By this time of the season we have invested a great deal of money and effort and it is imperative that we harvest the crop as quickly as possible so that it is under our control.

In 1984 and 1985 we had some wheat fields yielding 75 bushels per acre. Six or seven years ago, in our area, I would not have thought this possible. When formulating our crop production plan for 1987 our goal was to strive for overall average wheat yields of 75 bushels per acre. I feel we have an excellent chance in achieving that goal. We will also be setting a yield target of 100 bushels per acre of wheat for one field and I feel confident that this type of yield is now coming within our grasp.

FUTURE

There is at present high yield wheat systems research underway and even more of this integrated type of research work will have to be carried out in the future. Industry may have to take a stronger leadership role in this area because, at least in Canada, at this point in time, government research funding for agriculture appears to be very tight. Also closer ties may have to be developed between researchers and farmers with input from the farm community with respect to the type of research required for that area. Funding by the grower is one option to consider in support of this research.

Growers will be bombarded with ever increasing amounts of high yield information and will have to be more careful than ever in the selection and interpretation of this information as to how it may apply to their particular farm. However, all the supportive information that modern technology can provide will be of little value in the grower's attitude is not optimistic, progressive, and somewhat adventurous. The grower who is prepared to accept the risk; Who is successful in the assimilation and implementation of this information into his cropping program; will be rewarded with HIGHER and more PROFITABLE yields.

