

VARIETY TRIALS WITH SMALL GRAIN

Variety trials have been conducted at the Dickinson Experiment Station since 1908, and over the years have provided much useful information on varietal performance under western North Dakota conditions.

These trials are seeded on summerfallow, tilled before seeding with the duckfoot cultivator. Seeding is done with a double disk press drill in a randomized block plan. Seeding rates are 45 pounds per acre for winter wheat, 1 bushel per acre for hard spring wheat durum and rye, 1 1/4 bushel per acre for barley and 1 1/2 bushel for oats. Fertilizer application is uniform for all varieties and follows recommendations based on soil test. Uniform weed control follows the current recommendations of the North Dakota Agricultural Experiment Station.

The variety trials were seeded at Dickinson on April 12, but reseeded because of soil crusting. The reseeded was done on May 12 and is the reason for lower than average yields at Dickinson. Trials at off station sites produced excellent yields from April seeding.

Precipitation for January, February and March amounted to 1.44 inches which was slightly below the average. April precipitation of 2.99 inches was more than double the average for April and provided ample moisture for germination of spring seeded grain and for early growth of the crop. The above average April rainfall combined with cool temperatures cushioned the effect of a dry May when precipitation amounted to only .87 inch. June rainfall was 7.54 inches, which is more than double the average for June. This was followed by a dry period extending through July and August with no effective rainfall recorded for either month.

Temperatures were low throughout the growing season. Maximum, minimum and mean temperatures recorded at the Dickinson Experiment Station were:

	<u>Max.</u>	<u>Min.</u>	<u>Mean</u>
April	54.1°F	29.7°F	36.5°F
May	65.9	37.9	46.1
June	74.3	50.6	59.1
July	79.6	48.6	57.8
August	88.3	53.0	60.5

Because of the above average amounts of rainfall coming in April and June and the low temperatures throughout the growing season, production of small grain crops was excellent. Quality as indicated by test weight of small grains was very good, with some of the heaviest test weights ever recorded at the station being produced this year.

Leaf and stem rust, present in trace amounts only, did not affect the yield. Cereal leaf spotting diseases developed to some extent, but the excellent yields produced are perhaps the best indication that the effect of these diseases was not particularly severe in this area.

Table 1. HARD SPRING WHEAT VARIETY TRIAL 1971 – DICKINSON

Variety or Treatment	Yield in Bushels per Acre				Test Weight	Heading Date	Per Cent Protein
	Rep 1	Rep 2	Rep 3	Avg.			
THATCHER	18.7	29.7	34.1	27.5	56.0	7-8	14.6
SELKIRK	20.9	28.1	27.5	25.5	56.5	7-8	14.3
JUSTIN	17.6	24.2	27.5	23.1	58.0	7-10	15.4
CHRIS	24.2	27.5	33.6	28.4	60.0	7-10	15.3
MANITOU	24.2	28.6	31.4	28.1	63.5	7-10	14.9
POLK	14.3	24.2	25.3	21.3	60.5	7-10	15.3
WALDRON	25.3	29.2	20.9	25.1	56.5	7-9	15.2
NEEPAWA	23.1	28.1	23.7	25.0	58.0	7-9	15.0
WORLD SEEDS 1812	9.9	12.1	12.1	11.4	56.5	7-7	16.8
BONANZA	20.9	28.6	34.7	28.1	59.5	7-8	14.2
ERA	24.2	29.7	28.6	27.5	60.5	7-13	13.2
FLETCHER	17.6	29.7	28.6	25.3	59.0	7-14	14.5
WORLD SEEDS 1809	11.0	20.9	15.4	15.8	61.0	7-4	16.2
BOUNTY 208	19.8	32.5	35.2	29.2	60.0	7-6	14.0
AB 67-70	16.5	23.1	26.4	22.0	59.0	7-13	14.8
ND 491	22.6	25.9	26.4	25.0	58.0	7-9	14.4
ND 497	19.8	22.0	28.6	23.5	60.5	7-10	15.8
ND 499	23.1	29.7	29.7	27.5	58.5	7-12	15.4
FORTUNA	23.1	27.5	30.8	27.1	61.0	7-10	14.5
S 6662	17.6	19.8	25.3	20.9	57.5	7-12	15.9
BARTON	20.9	23.1	25.3	23.1	59.5	7-8	15.1
EMPIRE	26.4	22.0	23.1	23.8	57.5	7-12	14.9
#1651-E	24.2	29.4	26.4	26.7	59.5	7-6	13.7
ND 502	20.9	19.8	22.0	20.9	58.5	7-11	15.5
WORLD SEEDS 1877	24.2	33.0	39.6	32.3	61.0	7-5	14.5
ND 500	16.0	26.4	28.6	23.7	56.0	7-11	14.5
Standard error of a treatment mean = 1.8279							
Standard error of a difference among treatment means = 2.5850							
The CV = 12.91 per cent. The L.S.D. at 5% is 5.19 bushels per acre.							

Table 2. LONG TERM YIELD COMPARISON OF HARD SPRING WHEAT VARIETIES – 1971

Variety	Yields in Bushels per Acre						Averages	
	1966	1967	1968	1969	1970	1971	1969-71	1967-71
SELKIRK	Hailed Out	17.0	24.8	44.0	17.6	25.5	29.0	25.8
JUSTIN		19.8	33.3	44.0	21.5	23.1	29.5	28.3
CHRIS		18.8	24.9	39.8	19.3	28.4	29.2	26.2
MANITOU		23.4	33.3	42.5	22.4	28.1	31.0	29.9
FORTUNA		21.8	32.6	32.5	19.1	27.1	26.2	26.6
POLK		22.2	34.6	41.3	19.3	21.3	27.3	27.7
WALDRON		23.1	29.2	42.6	22.2	25.1	30.0	28.4
NEEPAWA			33.4	44.0	24.7	25.0	31.2	
WORLD SEEDS 1812				34.1	21.0	11.4	22.2	
BONANZA					20.6	28.1		
FLETCHER				45.9	24.0	25.3	31.7	
ERA				54.7	26.8	27.5	36.3	
WELLS		19.9	46.7	39.1	22.1	19.1	26.8	29.4
LEEDS		20.7	42.4	33.8	22.9	17.9	24.9	27.5
HERCULES				33.0	22.6	18.3	24.6	
WASCANA						19.1		
L.S.D. @ 5%		2.8	5.3	4.1	2.9	5.19		

Table 3. OFF-STATION HARD SPRING WHEAT VARIETY TRIAL – BEACH – 1971

Variety or Treatment	Yield in Bushels per Acre				Test Weight	Per Cent Protein
	Rep 1	Rep 2	Rep 3	Avg.		
SELKIRK	37.4	49.5	53.9	46.9	62.0	14.3
JUSTIN	45.1	53.9	60.5	53.2	61.0	14.2
CHRIS	48.4	60.5	57.2	55.4	62.5	13.4
MANITOU	47.3	56.1	58.3	53.9	62.5	13.5
POLK	40.7	49.5	44.0	44.7	62.5	14.1
WALDRON	46.2	51.7	57.2	51.7	62.5	14.4
WORLD SEEDS 1812	57.2	67.1	59.4	61.2	65.5	12.5
BONANZA	58.3	67.1	58.3	61.2	64.5	12.3
WORLD SEEDS 1809	64.9	60.5	61.6	62.3	63.5	13.2
BOUNTY 208	61.6	68.2	67.1	65.6	66.0	12.0
FORTUNA	49.5	53.9	50.6	51.3	63.0	13.4
LEEDS	42.9	45.1	52.8	46.9	65.0	--
WELLS	44.0	52.8	48.5	48.4	63.0	--
WASCANA	42.9	48.5	58.3	49.9	62.5	--
Standard error of a treatment mean = 2.2751						
Standard error of a difference among treatment means = 3.2175						
The CV = 7.33 per cent. The L.S.D. at 5% is 6.62 bushels per acre.						

Table 4. OFF-STATION HARD SPRING WHEAT VARIETY TRIAL – GLEN ULLIN – 1971

Variety or Treatment	Yield in Bushels per Acre					Test Weight	Per Cent Protein
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.		
SELKIRK	25.3	31.9	39.1	41.4	34.4	61.0	12.9
JUSTIN	20.9	28.6	35.7	43.7	32.2	62.5	13.7
CHRIS	21.5	36.3	36.8	43.7	34.6	62.0	13.4
MANITOU	22.0	35.2	37.9	43.1	34.6	61.0	13.4
POLK	23.1	25.3	31.2	42.6	30.6	62.5	13.9
WALDRON	24.2	28.6	36.8	39.1	32.2	61.0	14.0
WORLD SEEDS 1812	19.8	31.9	40.7	38.5	32.7	63.5	13.6
BONANZA	20.9	41.8	40.2	49.5	38.1	61.5	13.0
WORLD SEEDS 1809	23.1	38.5	41.9	47.2	37.7	62.0	13.1
BOUNTY 208	22.0	36.3	42.4	46.0	36.7	63.5	13.0
FORTUNA	26.4	33.0	36.8	42.6	34.7	63.0	12.9
LEEDS	20.9	25.3	39.1	43.7	32.3	64.0	--
WELLS	22.6	35.2	39.1	43.7	35.2	64.5	--
WASCANA	28.6	34.1	45.8	47.2	38.9	63.0	--

Standard error of a treatment mean = 1.4473
Standard error of a difference among treatment means = 2.0467
The CV = 8.36 per cent. The L.S.D. at 5% is 4.14 bushels per acre.

Table 5. OFF-STATION HARD SPRING WHEAT VARIETY TRIAL – HETTINGER – 1971

Variety or Treatment	Yield in Bushels per Acre					Test Weight	Per Cent Protein
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.		
SELKIRK	23.1	36.3	39.1	30.8	32.3	55.5	16.2
JUSTIN	26.4	38.5	38.5	33.0	34.1	59.0	16.7
CHRIS	27.5	36.3	34.7	31.9	32.6	60.5	15.9
MANITOU	27.5	36.3	35.2	35.8	33.7	58.0	15.5
POLK	25.9	28.6	30.3	34.1	29.7	60.0	15.7
WALDRON	30.8	42.9	44.0	31.9	37.4	58.0	15.4
WORLD SEEDS 1812	34.1	40.7	49.5	37.4	40.4	60.5	14.4
BONANZA	31.9	44.0	33.6	36.3	36.5	59.0	14.1
WORLD SEEDS 1809	38.5	50.6	46.2	39.1	43.6	61.0	14.0
BOUNTY 208	35.2	47.3	36.3	36.3	38.8	61.5	14.0
FORTUNA	28.6	37.4	31.4	29.7	31.8	60.5	13.9
LEEDS	30.8	36.3	37.4	32.5	34.3	63.0	--
WELLS	30.8	36.3	29.7	26.4	30.8	61.0	--
WASCANA	33.0	37.4	33.0	30.8	33.6	59.0	--
Standard error of a treatment mean = 1.6705 Standard error of a difference among treatment means = 2.3624 The CV = 9.56 per cent. The L.S.D. at 5% is 4.78 bushels per acre.							

Table 6. OFF-STATION HARD SPRING WHEAT VARIETY TRIAL 1971 – KILLDEER

Variety or Treatment	Yield in Bushels per Acre					Test Weight	Per Cent Protein
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.		
SELKIRK	43.5	50.1	45.7	40.2	44.9	62.0	14.0
JUSTIN	50.6	56.7	49.5	46.8	50.9	61.5	14.3
CHRIS	52.8	51.2	49.5	51.2	51.2	60.5	14.2
MANITOU	51.7	57.2	46.2	58.3	53.4	63.0	13.8
POLK	46.2	50.6	46.8	41.8	46.4	62.5	14.1
WALDRON	51.2	52.3	47.3	39.1	47.5	61.0	14.8
WORLD SEEDS 1812	46.2	48.4	50.6	51.7	49.2	64.5	13.2
BONANZA	58.3	54.5	51.7	60.5	56.3	63.0	13.1
WORLD SEEDS 1809	62.7	53.9	57.2	56.1	57.5	62.5	13.4
BOUNTY 208	63.3	58.3	56.7	48.4	56.7	64.5	12.9
FORTUNA	58.3	46.8	46.2	41.8	48.3	63.5	13.8
LEEDS	47.3	46.2	44.0	42.4	45.0	63.5	--
WELLS	52.8	52.8	52.3	44.0	50.5	62.0	--
WASCANA	49.5	47.3	50.6	58.3	51.4	61.0	--
Standard error of a treatment mean = 2.1441 Standard error of a difference among treatment means = 3.0323 The CV = 8.47 per cent. The L.S.D. at 5% is 6.13 bushels per acre.							

Table 7. OFF-STATION HARD SPRING WHEAT VARIETY TRIAL 1971 – MANDAN

Variety or Treatment	Yield in Bushels per Acre					Test Weight	Per Cent Protein
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.		
SELKIRK	42.9	42.9	41.8	50.6	44.6	60.0	14.2
JUSTIN	42.9	50.6	46.2	52.8	48.1	61.5	14.6
CHRIS	45.1	46.2	41.8	53.9	46.8	60.5	14.6
MANITOU	49.5	46.2	44.0	52.8	48.1	61.5	14.6
POLK	42.9	48.4	45.1	47.3	45.9	60.0	14.7
WALDRON	47.3	50.6	45.1	48.4	47.9	62.0	14.6
WORLD SEEDS 1812	44.0	47.3	47.3	42.9	45.4	59.5	13.9
BONANZA	51.7	45.1	45.1	49.5	47.9	62.5	12.6
WORLD SEEDS 1809	55.0	47.3	45.1	49.5	49.2	63.5	13.6
BOUNTY 208	49.5	56.1	48.4	56.1	52.5	64.0	12.4
FORTUNA	49.5	52.8	45.1	50.6	49.5	63.5	13.2
LEEDS	50.6	50.6	47.3	49.5	49.5	61.0	--
WELLS	54.5	46.2	43.5	52.8	49.3	59.0	--
WASCANA	57.8	53.4	49.5	47.9	52.2	57.5	--
Standard error of a treatment mean = 1.6293 Standard error of a difference among treatment means = 2.3042 The CV = 6.74 per cent. The L.S.D. at 5% is 4.66 bushels per acre.							

Table 8. WHEAT VARIETY TRIALS – YIELDS IN BUSHELS PER ACRE – 1971

Variety	Dickinson	Beach	Bowman	Glen Ullin	Hettinger	Killdeer	Mandan	1971 Avg. 6-Station
SELKIRK	22.3	46.9	Hailed out	34.4	32.3	44.9	44.6	37.6
JUSTIN	20.1	53.2		32.2	34.1	50.9	48.1	39.8
CHRIS	24.9	55.4		34.6	32.6	51.2	46.8	40.9
MANITOU	24.6	53.9		34.6	33.7	53.4	48.1	41.4
POLK	18.7	44.7		30.6	29.7	46.4	45.9	36.0
WALDRON	22.2	51.7		32.2	37.4	47.5	47.9	39.8
WELLS	19.1	48.4		35.2	30.8	50.5	49.3	38.9
FORTUNA	24.2	51.3		34.7	31.8	48.3	49.5	40.0
WORLD SEEDS 1812	10.1	61.2		32.7	40.4	49.2	45.4	39.8
LEEDS	17.9	46.9		32.3	34.3	45.0	49.5	37.7
BONANZA	24.1	61.2		38.1	36.5	56.3	47.9	44.0
WORLD SEEDS 1809	12.9	62.3		37.7	43.6	57.5	49.2	43.9
BOUNTY 208	25.7	65.6		36.7	38.8	56.7	52.5	46.0
WASCANA	19.1	49.9		38.9	33.6	51.4	52.2	40.9

Table 9. WHEAT VARIETY TRIALS – TEST WEIGHT IN POUNDS PER BUSHEL - 1971

Variety	Dickinson	Beach	Bowman	Hettinger	Glen Ullin	Killdeer	Mandan	1971 Avg. 6-Station
SELKIRK	56.5	62.0	Hailed out	55.5	61.0	62.0	60.0	59.5
JUSTIN	58.0	61.0		59.1	62.5	61.5	61.5	60.6
CHRIS	60.0	62.5		60.5	62.0	60.5	60.5	61.0
MANITOU	63.5	62.5		58.0	61.0	63.0	61.5	61.6
POLK	60.5	62.5		60.0	62.5	62.5	60.0	61.3
WALDRON	56.5	62.5		58.0	61.0	61.0	62.0	60.2
WORLD SEEDS 1812	56.5	65.5		60.5	63.5	64.5	59.5	61.7
BONANZA	59.5	64.5		59.0	61.5	63.0	62.5	61.7
WORLD SEEDS 1809	61.0	63.5		61.0	62.0	62.5	63.5	62.3
BOUNTY 208	60.0	66.0		61.5	63.5	64.5	64.0	63.3
FORTUNA	61.0	63.0		60.5	63.0	63.5	63.5	62.4
LEEDS	62.0	65.0		63.0	64.0	63.5	61.0	63.1
WELLS	60.5	63.0		61.0	64.5	62.0	59.0	61.7
WASCANA	60.0	62.5		59.0	63.0	61.0	57.5	60.5

Table 10. WHEAT VARIETY TRIALS – PROTEIN DATA – 1971

Variety	Wheat Protein at 14.0% Moisture Basis							
	Dickinson	Beach	Bowman	Hettinger	Glen Ullin	Killdeer	Mandan	1971 Avg. 6-Station
BONANZA	14.2	12.3	Hailed out	14.1	13.0	13.1	12.6	13.2
CHRIS	15.3	13.4		15.9	13.4	14.2	14.6	14.5
BOUNTY 208	14.0	12.0		14.0	13.0	12.9	12.4	13.0
FORTUNA	14.5	13.4		13.9	12.9	13.8	13.2	13.6
JUSTIN	15.4	14.2		16.7	13.7	14.3	14.6	14.8
MANITOU	14.9	13.5		15.5	13.4	13.8	14.6	14.3
POLK	15.3	14.1		15.7	13.9	14.1	14.7	14.6
SELKIRK	14.3	14.3		16.2	12.9	14.0	14.2	14.3
WALDRON	15.2	14.4		15.4	14.0	14.8	14.6	14.7
WORLD SEEDS 1809	16.2	13.2		14.0	13.1	13.4	13.6	13.9
WORLD SEEDS 1812	16.8	12.5		14.4	13.6	13.2	13.9	14.1

Table 11. OFF-STATION WINTER WHEAT VARIETY TRIAL 1970-1971 – BEACH

Variety or Treatment	Yield in Bushels per Acre					Test Weight	Wheat <u>1</u> / Protein
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.		
HUME	27.0	33.5	41.1	31.3	33.2	64.0	13.6%
LANCER	28.1	46.5	43.2	46.5	41.1	65.5	12.5%
TRADER	32.4	42.1	43.2	43.2	40.2	65.5	11.4%
TRAPPER	34.6	43.2	50.0	46.5	43.6	66.5	11.3%
WINOKA	40.5	47.5	40.0	50.8	44.7	66.0	11.8%
FROID	38.9	35.6	44.3	32.4	37.8	64.5	12.4%
SD56 – 758	24.8	28.1	33.5	29.2	28.9	65.0	12.5%
Standard error of a treatment mean = 2.2548							
Standard error of a difference among treatment means = 3.1888							
The CV = 11.71 per cent. The L.S.D. at 5% is 6.54 bushels per acre.							
<u>1</u> / Tested on 14% moisture basis.							

Table 12. DURUM WHEAT VARIETY TRIAL – 1971 DICKINSON

Variety or Treatment	Yield in Bushels per Acre					Test Weight	Days from Seeding	Height Centimeters	Lodging
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.				
LEEDS	18.4	21.6	16.2	15.4	17.9	62.0	56	63.5	None
WELLS	19.3	23.9	17.5	15.7	19.1	60.5	57	66.0	
HERCULES	19.0	21.5	18.3	14.3	18.3	60.5	55	66.0	
WASCANA	20.9	23.1	16.5	15.8	19.1	60.0	58	63.5	
D 6674	23.7	24.2	15.0	18.2	20.3	62.0	57	63.5	
D 6747	19.6	23.5	16.5	11.9	17.9	62.5	56	48.5	
D 6714	22.4	22.6	19.0	18.6	20.7	60.5	55	66.0	
D 6715	25.0	25.1	20.5	17.9	22.1	61.0	56	66.0	
D 6721	24.4	23.4	19.0	12.2	19.8	62.0	54	66.0	
D 6722	25.4	26.0	18.9	18.7	22.3	61.5	58	63.5	
D 6723	25.0	23.3	25.2	18.2	22.9	62.0	56	61.0	
Standard error of a treatment mean = 0.9194 Standard error of a difference among treatment means = 1.3003 The CV = 9.19 per cent. The L.S.D. at 5% is 2.66 bushels per acre.									

Table 13. OAT VARIETY TRIAL 1971 – DICKINSON

Variety or Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Avg.	Test Weight	Heading Date	Height Inches
BURNETT	29.9	50.5	52.6	50.5	45.9	32.0	7-8	31
OTTER	53.6	60.8	63.9	56.7	58.8	31.0	7-6	29
KOTA	49.5	59.8	70.1	61.9	60.3	34.0	7-8	32
KELSEY	48.5	63.9	58.9	58.9	57.5	34.5	7-10	32
RUSSELL	45.4	49.5	54.7	53.6	50.8	35.0	7-8	30
SIOUX	66.0	70.1	79.4	76.3	73.0	32.0	7-9	31
CAYUSE	51.7	51.7	56.7	53.6	53.4	30.5	7-12	28
FROKER	41.3	43.3	42.3	30.9	39.5	33.0	7-12	31
LODI	43.3	50.5	55.9	47.4	49.3	35.0	7-10	34
HARMON	41.3	47.4	48.5	49.5	46.7	32.5	7-13	34

Standard error of a treatment mean = 2.1223
 Standard error of a difference among treatment means = 3.0013
 The CV = 7.93 per cent. The L.S.D. at 5% is 6.16 bushels per acre.

Table 14. LONG TERM YIELD COMPARISON OF OAT VARIETIES 1971

Variety	Yield in Bushels per Acre						Averages	
	1966	1967	1968	1969	1970	1971	1969-71	1967-71
BURNETT		38.5	69.9	106.8	42.7	45.9	65.1	60.8
OTTER				110.4	46.9	58.8	72.0	
HOLDEN		48.4	72.4	97.2	35.6			
PORTAL		33.3	57.8	97.5	40.6			
KOTA			56.8	103.9	50.5	60.3	71.6	
KELSEY		46.0	65.0	114.5	53.5	57.5	75.2	67.3
RUSSELL		35.7	57.6	98.6		50.8		
SIOUX		52.2	67.5	109.9	56.8	73.0	79.9	71.9
FROKER						39.5		
CAYUSE				113.2	55.7	53.4	74.1	
GARRY		34.4	51.8	107.3				
LODI		42.1	69.0	111.9	45.9	49.3	69.0	63.6
HARMON		37.0	56.8	101.1	47.6	46.7	65.1	57.8

Table 15. OFF-STATION OAT VARIETY TRIAL – 1971 – BEACH

Variety or Treatment	Yield in Bushels per Acre				Test Weight
	Rep 1	Rep 2	Rep 3	Avg.	
SIOUX	78.4	126.8	86.6	97.3	37.0
CAYUSE	103.1	129.9	105.2	112.7	35.0
KOTA	78.4	96.9	76.3	83.9	36.0
HARMON	70.1	86.6	51.6	69.4	40.0
FROKER	43.3	37.1	41.3	40.6	37.0
LODI	57.8	55.7	55.7	56.4	37.0
KELSEY	94.9	107.3	80.4	94.2	41.5
BURNETT	63.9	78.4	72.2	71.5	38.0
OTTER	111.4	107.3	94.9	104.5	39.5
RUSSELL	80.4	82.5	61.9	74.9	40.5

Standard error of a treatment mean = 5.7798
Standard error of a difference among treatment means = 8.1739
The CV = 12.43 per cent. The L.S.D. at 5% is 17.17 bushels per acre.

Table 16. OFF-STATION OAT VARIETY TRIAL 1971 – GLEN ULLIN

Variety or Treatment	Rep 1	Rep 2	Rep 3	Rep 4	Avg.	Test Weight
SIOUX	82.5	94.9	92.8	92.8	90.8	38.5
CAYUSE	90.8	99.0	96.9	88.7	93.9	34.5
KOTA	78.4	88.7	76.3	80.4	81.0	41.0
HARMON	84.6	88.7	86.6	86.6	86.6	38.0
FROKER	78.4	72.2	72.2	66.0	72.2	39.0
LODI	90.8	90.8	86.6	84.6	88.2	39.0
KELSEY	96.9	107.3	94.9	99.0	99.5	38.5
BURNETT	80.4	86.6	80.4	80.4	82.0	40.0
OTTER	88.7	86.6	82.5	82.5	85.1	39.0
RUSSELL	82.5	96.9	86.6	80.4	86.6	39.0

Standard error of a treatment mean = 1.8801
Standard error of a difference among treatment means = 2.6588
The CV = 4.34 per cent. The L.S.D. at 5% is 5.46 bushels per acre.

Table 17. OFF-STATION OAT VARIETY TRIAL 1971 – HETTINGER

Variety or Treatment	Yield in Bushels per Acre					Test Weight
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.	
SIOUX	84.6	68.1	74.3	67.0	73.5	34.5
CAYUSE	57.8	57.8	52.6	52.6	55.2	30.5
KOTA	74.3	62.9	70.1	70.1	69.4	35.0
HARMON	51.6	43.3	43.3	43.3	45.4	35.0
FROKER	47.4	45.4	45.4	47.4	46.4	35.0
LODI	44.3	48.5	47.4	44.3	46.1	33.5
KELSEY	63.9	50.5	63.9	62.9	60.0	34.5
BURNETT	59.8	65.0	59.8	54.7	59.8	34.5
OTTER	71.2	62.9	74.3	67.0	69.0	33.0
RUSSELL	58.8	58.8	59.8	55.7	58.3	34.5

Standard error of a treatment mean = 2.0458
Standard error of a difference among treatment means = 2.8932
The CV = 7.02 per cent. The L.S.D. at 5% is 5.94 bushels per acre.

Table 18. OFF-STATION OAT VARIETY TRIAL 1971 – KILLDEER

Variety or Treatment	Yield in Bushels per Acre					Test Weight
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.	
SIOUX	70.1	80.4	115.5	129.9	99.0	37.0
CAYUSE	59.8	51.6	90.8	84.6	71.7	34.5
KOTA	72.2	69.1	99.0	100.0	85.1	43.0
HARMON	72.2	82.5	106.2	101.1	90.5	40.0
FROKER	53.6	66.0	66.0	61.9	61.9	40.5
LODI	76.3	84.6	96.9	85.6	85.9	40.0
KELSEY	96.9	76.3	118.6	127.9	104.9	40.0
BURNETT	63.9	47.4	80.4	76.3	67.0	40.0
OTTER	101.1	111.4	104.2	92.8	102.4	40.3
RUSSELL	72.2	61.9	91.8	86.6	78.1	39.5

Standard error of a treatment mean = 5.5919
Standard error of a difference among treatment means = 7.9081
The CV = 13.21 per cent. The L.S.D. at 5% is 16.23 bushels per acre.

Table 19. OFF-STATION OAT VARIETY TRIAL 1971 – MANDAN

Variety or Treatment	Yield in Bushels per Acre				Test Weight
	Rep 1	Rep 2	Rep 3	Avg.	
SIOUX	104.2	107.3	104.2	105.2	45.5
CAYUSE	127.9	133.0	109.3	123.4	39.5
KOTA	92.8	86.6	78.4	85.9	44.5
HARMON	107.3	111.4	90.8	103.2	38.5
FROKER	80.4	82.5	72.2	78.4	39.0
LODI	106.3	103.1	105.2	104.9	40.0
KELSEY	128.9	145.4	105.2	126.5	38.5
BURNETT	94.9	109.3	96.9	100.4	37.5
OTTER	95.9	90.8	95.9	94.2	39.0
RUSSELL	113.4	111.4	94.9	106.6	38.5

Standard error of a treatment mean = 4.2755
Standard error of a difference among treatment means = 6.0465
The CV = 7.20 per cent. The L.S.D. at 5% is 12.70 bushels per acre.

Table 20. OFF-STATION OAT VARIETY TRIALS 1971 – YIELDS IN BUSHELS PER ACRE

Variety	Dickinson	Beach	Bowman	Glen Ullin	Hettinger	Killdeer	Mandan	1971 Avg. 6-Station
SIOUX	73.0	97.3	Hailed out	90.8	73.5	99.0	105.2	89.8
CAYUSE	53.4	112.7		93.9	55.2	71.7	123.4	85.1
KOTA	60.3	83.9		81.0	69.4	85.1	85.9	77.6
LODI	49.3	56.4		88.2	46.1	85.9	104.9	71.8
KELSEY	57.5	94.2		99.5	60.0	104.9	126.5	90.4
HARMON	46.7	69.4		86.6	45.4	90.5	103.2	73.6
BURNETT	45.9	71.5		82.0	59.8	67.0	100.4	71.1
OTTER	58.8	104.5		85.1	69.0	102.4	94.2	85.7
RUSSELL	50.8	74.9		86.6	58.3	78.1	106.6	75.9
FROKER	39.5	40.6		72.2	46.4	61.9	78.4	56.5

Table 21. OFF-STATION OAT VARIETY TRIALS 1971 – TEST WEIGHT IN POUNDS PER BUSHEL

Variety	Dickinson	Beach	Bowman	Hettinger	Glen Ullin	Killdeer	Mandan	1971 Avg. 6-Station
SIOUX	32.0	37.0	Hailed out	34.5	38.5	37.0	45.5	37.4
CAYUSE	30.5	35.0		30.5	34.5	34.5	39.5	34.1
KOTA	34.0	36.0		35.0	41.0	43.0	44.5	38.9
HARMON	32.5	40.0		35.0	38.0	40.0	38.5	37.3
FROKER	33.0	37.0		35.0	39.0	40.5	39.0	37.3
LODI	35.0	37.0		33.5	39.0	40.0	40.0	37.4
KELSEY	34.5	41.5		34.5	38.5	40.0	38.5	37.9
BURNETT	32.0	38.0		34.5	40.0	40.0	37.5	37.0
OTTER	31.0	39.5		33.0	39.0	40.3	39.0	37.0
RUSSELL	35.0	40.5		34.5	39.0	39.5	38.5	37.8

Table 22. BARLEY VARIETY TRIALS 1971 – DICKINSON

Variety or Treatment	Yield in Bushels per Acre					Test Weight	Heading Date	Height Inches
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.			
LARKER	26.4	28.9	33.7	35.8	31.2	46.0	7-5	26
DICKSON	26.1	35.1	33.0	30.3	31.1	47.0	7-6	23
NORDIC	26.1	39.9	33.0	31.6	32.7	44.0	7-6	26
CONQUEST	28.9	32.3	37.1	39.9	34.6	45.0	7-6	28
PARAGON	28.9	41.3	34.4	38.5	35.8	48.5	7-10	21
BONANZA	34.4	39.9	39.9	41.3	38.9	45.0	7-6	25
PRIMUS II	28.9	41.3	34.4	34.4	34.8	47.0	7-1	22
B – 140	30.3	31.6	33.0	35.1	32.5	45.5	7-4	25
B – 142	33.3	33.3	33.3	34.4	33.4	44.0	7-7	24
MINN. M – 11	37.8	33.7	36.4	34.4	35.6	44.5	7-6	26
BURK	41.3	40.6	38.5	40.6	40.3	50.5	7-5	24
SD 67640	39.9	37.1	33.7	37.1	37.0	49.5	7-4	23
SHABET	41.3	38.5	35.8	35.8	37.9	46.5	7-13	19
VANGUARD	41.3	41.3	38.5	41.9	40.8	50.0	7-10	22
PIROLINE	42.6	41.3	41.3	41.3	41.6	49.5	7-9	22
Standard error of a treatment mean = 1.6204 Standard error of a difference among treatment means = 2.2916 The CV = 9.04 per cent. The L.S.D. at 5% is 4.62 bushels per acre.								

Table 23. BARLEY VARIETY TRIALS 1971 – LONG TERM YIELD COMPARISON

Variety	Yields in Bushels per Acre						Averages	
	1966	1967	1968	1969	1970	1971	1969-71	1967-71
DICKSON	Hailed Out	29.5	63.7	71.5	43.0	31.1	48.5	46.7
LARKER		29.1	66.0	65.7	38.4	31.2	45.1	46.1
CONQUEST		37.2	62.3	65.2	35.5	34.6	45.1	47.0
PRIMUS II		34.1	60.5	56.8	33.5	34.8	41.7	44.0
PARAGON			62.9	70.7	39.3	35.8	48.6	52.2
BONANZA				61.9	34.5	38.9	45.1	
NORDIC				63.3		32.7		
KEYSTONE		35.0	63.7	66.5	42.8			
JUBILEE		29.8		68.8	37.0			
YUKON		33.7	61.6	59.2				
GALT		35.6	67.5	57.4	34.6			
BETZES		35.2	63.6	70.8				

Table 24. OFF-STATION BARLEY VARIETY TRIAL – BEACH – 1971

Variety or Treatment	Yield in Bushels per Acre				Test Weight
	Rep 1	Rep 2	Rep 3	Avg.	
PRIMUS II	57.1	54.3	55.0	55.5	51.0
DICKSON	55.0	63.3	59.1	59.1	51.0
LARKER	49.5	52.3	50.9	50.9	49.5
CONQUEST	48.8	57.8	49.5	52.0	49.0
PARAGON	60.5	67.4	59.1	62.3	50.0
NORDIC	53.6	46.8	52.3	50.9	51.5
BONANZA	50.9	66.0	61.9	59.6	51.5
BURK	49.5	57.1	44.0	50.2	53.5
SHABET	61.9	55.0	68.8	61.9	50.0
VANGUARD	68.1	72.2	56.4	65.6	54.0

Standard error of a treatment mean = 3.0687
Standard error of a difference among treatment means = 4.3397
The CV = 9.36 per cent. The L.S.D. at 5% is 9.12 bushels per acre.

Table 25. OFF-STATION BARLEY VARIETY TRIALS 1971 – GLEN ULLIN

Variety or Treatment	Yield in Bushels per Acre					Test Weight
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.	
PRIMUS II	50.9	61.9	55.0	67.4	58.8	51.0
DICKSON	49.5	60.5	55.0	63.3	57.1	50.5
LARKER	57.8	57.8	60.5	68.8	61.2	53.0
CONQUEST	57.8	57.8	55.0	64.6	58.8	51.0
PARAGON	59.1	60.5	56.4	64.6	60.2	52.5
NORDIC	53.6	50.9	56.4	63.3	56.1	52.0
BONANZA	59.1	60.5	57.8	66.0	60.9	52.0
BURK	57.8	57.8	59.1	67.4	60.5	54.0
SHABET	64.6	61.9	63.3	79.8	67.4	49.0
VANGUARD	68.8	68.8	70.1	74.3	70.5	53.0
Standard error of a treatment mean = 1.4224 Standard error of a difference among treatment means = 2.0115 The CV = 4.65 per cent. The L.S.D. at 5% is 4.13 bushels per acre.						

Table 26. OFF-STATION BARLEY VARIETY TRIALS 1971 – HETTINGER

Variety	Yield in Bushels per Acre					Test Weight
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.	
PRIMUS II	57.1	48.1	72.9	64.6	60.7	46.5
DICKSON	55.1	57.1	61.9	48.1	55.6	47.5
LARKER	57.8	52.9	62.6	70.1	60.9	50.5
CONQUEST	53.6	63.3	61.2	59.1	59.3	47.0
PARAGON	63.9	70.8	64.6	54.3	63.4	48.0
NORDIC	55.7	46.8	60.5	48.8	53.0	48.5
BONANZA	57.2	63.9	55.0	52.9	57.3	48.5
BURK	68.1	59.8	59.8	48.8	59.1	51.5
SHABET	62.6	65.3	58.4	57.8	61.0	47.5
VANGUARD	68.1	67.4	70.1	66.7	68.1	52.0
Standard error of a treatment mean = 3.1180 Standard error of a difference among treatment means = 4.4095 The CV = 10.42 per cent. The L.S.D. at 5% is 9.05 bushels per acre.						

Table 27. OFF-STATION BARLEY VARIETY TRIAL 1971 – KILLDEER

Variety or Treatment	Yield in Bushels per Acre					Test Weight
	Rep 1	Rep 2	Rep 3	Rep 4	Avg.	
PRIMUS II	63.3	56.4	57.8	50.9	57.1	53.0
DICKSON	57.1	50.2	61.9	42.6	53.0	55.0
LARKER	60.5	46.8	55.0	52.3	53.7	54.0
CONQUEST	60.5	55.0	57.8	62.3	58.9	52.5
PARAGON	52.3	50.9	55.7	44.0	50.7	53.5
NORDIC	44.0	41.3	46.8	41.3	43.4	53.5
BONANZA	56.4	52.9	57.8	48.8	54.0	51.0
BURK	48.8	45.4	50.9	44.0	47.3	54.5
SHABET	55.0	59.1	58.4	52.3	56.2	54.5
VANGUARD	57.8	57.1	70.1	55.0	60.0	56.0

Standard error of a treatment mean = 1.8418
Standard error of a difference among treatment means = 2.6047
The CV = 6.90 per cent. The L.S.D. at 5% is 5.34 bushels per acre.

Table 28. OFF-STATION BARLEY VARIETY TRIAL 1971 - MANDAN

Variety or Treatment	Yield in Bushels per Acre				Test Weight
	Rep 1	Rep 2	Rep 3	Avg.	
PRIMUS II	47.4	51.6	56.4	51.8	49.5
DICKSON	46.8	54.3	60.5	53.9	52.0
LARKER	42.6	44.0	50.9	45.8	52.5
CONQUEST	41.3	49.5	52.9	47.9	52.0
PARAGON	44.0	52.9	55.0	50.6	52.5
NORDIC	48.1	50.9	57.8	52.3	54.5
BONANZA	48.1	68.1	61.9	59.4	52.0
BURK	37.8	46.8	50.9	45.2	53.5
SHABET	56.4	62.6	65.3	61.4	52.0
VANGUARD	58.4	59.8	68.8	62.3	55.5

Standard error of a treatment mean = 1.6877
Standard error of a difference among treatment means = 2.3868
The CV = 5.51 per cent. The L.S.D. at 5% is 5.01 bushels per acre.

Table 29. OFF-STATION BARLEY VARIETY TRIALS 1971 – YIELD IN BUSHELS PER ACRE

Variety	Dickinson	Beach	Bowman	Glen Ullin	Hettinger	Killdeer	Mandan	1971 Avg. 6-Station
PRIMUS II	34.8	55.5	Hailed out	58.8	60.7	57.1	51.8	53.1
PARAGON	35.8	62.3		60.2	63.4	50.7	50.6	53.8
DICKSON	31.1	59.1		57.1	55.6	53.0	53.9	51.6
LARKER	31.2	50.9		61.2	60.9	53.7	45.8	50.6
CONQUEST	34.6	52.0		58.8	59.3	58.9	47.9	51.9
BONANZA	38.9	59.6		60.9	57.3	54.0	59.4	55.0
NORDIC	32.7	50.9		56.1	53.0	43.4	52.3	48.1
BURK	40.3	50.2		60.5	59.1	47.3	45.2	50.4
SHABET	37.9	61.9		67.4	61.0	56.2	61.4	57.6
VANGUARD	40.8	65.6		70.5	68.1	60.0	62.3	61.2

Table 30. OFF-STATION BARLEY VARIETY TRIALS 1971 – TEST WEIGHT IN POUNDS PER BUSHEL

Variety	Dickinson	Beach	Bowman	Hettinger	Glen Ullin	Killdeer	Mandan	1971 Avg. 6-Station
PRIMUS II	47.0	51.0	Hailed out	46.5	51.0	53.0	49.5	49.7
DICKSON	47.0	51.0		47.5	50.5	55.0	52.0	50.5
LARKER	46.0	49.5		50.5	53.0	54.0	52.5	50.9
CONQUEST	45.0	49.0		47.0	51.0	52.5	52.0	49.4
PARAGON	48.5	50.0		48.0	52.5	53.5	52.5	50.8
NORDIC	44.0	51.5		48.5	52.0	53.5	54.5	50.7
BONANZA	45.0	51.5		48.5	52.0	51.0	52.0	50.0
BURK	50.5	53.5		51.5	54.0	54.5	53.5	52.9
SHABET	46.5	50.0		47.5	49.0	54.5	52.0	49.9
VANGUARD	50.0	54.0		52.0	53.0	56.0	55.5	53.4