PROJECT TITLE: Small grain variety performance evaluation under fallow conditions off-station in Northern Montana.

PERSONNEL:

Project Leader: Gregg R. Carlson - Havre - Agronomist

Cooperators: G. A. Taylor - Bozeman - Breeder (WW)
L. E. Talbert - Bozeman - Geneticist (SW)
T. K. Blake - Bozeman - Breeder (BLY & OATS)
Extension Agents in Counties Involved
Individual Cooperating Landowners

OBJECTIVES:

Diverse crop environments exist within that five-county area most closely served by this Research Center. Wheat production in the five counties represents an average of 33% of the statewide total. Producers are keenly interested in variety performance data generated under local conditions. It is our objective, within budget limitation, to evaluate small grain variety performance, over time, under specific Northern Montana conditions varying from those of the Research Center at Havre.

SUMMARY:

Thirteen 1989 off-station variety performance trials were conducted on fallow at five locations in five Northern Montana counties.

Dryland Winter Wheat Trials:

1. Myers Farms, Inc., Chouteau County (Big Sandy)
2. M. Peterson Farm, Hill County (No. Havre)

Dryland Spring Wheat Trials:

1. M. Peterson Farm, Hill County (No. Havre)
2. Myers Farms, Inc., Chouteau County (Big Sandy)
3. Graff Farms, Inc., Liberty County (No. Joplin)(new location)
4. L. Cederberg Farm, Blaine County (Turner)
5. H. Solberg Farm, Phillips County (Wagner)

Dryland Spring Barley Trials:

1. M. Peterson Farm, Hill County (No. Havre)
2. Myers Farms, Inc., Chouteau County (Big Sandy)
3. Graff Farms, Inc., Liberty County (No. Joplin)(New location)
4. L. Cederberg Farm, Blaine County (Turner)
5. H. Solberg Farm, Phillips County (Wagner)

Dryland Spring Oat Trial:

1. M. Peterson Farm, Hill County (No. Havre)

All trials were seeded in replicated, 3-row, 20-foot plots on a 12-inch row spacing utilizing a 'Rem' self-propelled cone seeder. Winter wheat trials were planted with hoe openers fitted with 'Acra-Plant' or JD 3" shovels; and double-disk openers were used until 1987 for spring grains. After 1987, all spring trials were planted with 'Acra-Plant' hoe openers. A randomized complete block design was standard for all trials with three replications. A 'Hege 125C' plot combine, funded in part by MWRMC in 1984, was used to harvest each 3-row plot after end-trimming to 16 '. Prior to 1984, sixteen feet of the center row for each plot was harvested with a 'Suzue' single-row binder and threshed with a 'Vogel' thresher. Other variables specific to each individual trial are listed in the data tables.

The Myers location and Peterson location winter wheat trials were lost winter injury.

RESULTS:

Data details for individual trials conducted in 1982-1988 were included in respective previous reports, but summary yield and test weight data from past years are presented in abridged summary form for purposes of this report.

Cropping environments ranged from fair to good throughout most of north-central Montana. At Havre, total annual precipitation was 17.96 or 152 percent of the average of years since 1916. April 1 through July 31 precipitation was 8.53 inches or 131 percent of the 73-year average. However, periods of extreme heat stress accompanied by drying winds resulted in crop yields and quality substantially lower than the potential exhibited earlier in the growing season.

Early planting of spring grains was generally less important than normal in 1989 with some later plantings escaping the most severe effects of heat and drought at critical growth states. However, many later plantings suffered quality reductions to include sprouting as August precipitation was 370 percent of normal.

Plant height, yield, test weight and protein data for the Peterson, Myers, Graff, Cederberg and Solberg dryland spring wheat trials are summarized in Tables 1, 3, 4, 5 and 7, respectively. Multi-year yield and test weight summaries for selected entries at the Peterson, Cederberg and Solberg locations are presented in Tables 2, 6 and 8, respectively.

Plant height, yield, test weight, plump/thin and protein data for the Peterson, Myers, Graff, Cederberg and Solberg spring barley trials are summarized in Tables 9, 11, 12, 13 and 15, respectively. Multi-year yield and test weight summaries for selected entries at the Peterson, Cederberg and Solberg locations are presented in Tables 10, 14 and 16, respectively.

Plant height, yield, test weight and protein data for the Peterson dryland spring oat trial are summarized in Table 17 with multi-year yield and test weight summarization presented in Table 18.

FUTURE PLANS:

It is planned, budget allowing, to continue off-station variety investigations in the five-county area. Retention of certain locations is desired in order to complete 5-year summary data. Locations with 5-year data completed will be closely reviewed as to whether they should be retained, replaced or terminated.

Current workload dictates that the number of replicated off-station trial locations be held to five: and data processed by the Center will be limited to trials where the Center has performed all functions from planting to harvest. Seed will again be provided to County Extension Agents as per their needs for non-replicated demonstrations at any additional locations. Such demonstrations will be for display and discussion use by the County Extension Agent; and no performance data will be collected from them.

Plans are continuing for use of computer mapping to augment efforts in identifying and selecting appropriate sites for future off-station trial series. The Graff location in Liberty County was selected in this manner.

It is our current opinion that effort made to generate quality multi-year data at a few sites, carefully chosen to represent principal differences in average growing season conditions, is superior to an approach involving less concentrated work at greater numbers of locations. The concept of concentrating efforts at a single site representative of a vast area that yet differs from the Research Center is under on-going observation at the Peterson location in Northern Hill County.

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TABLE 1. DRYLAND FALLOW SPRING WHEAT VARIETY NURSERY GROWN OFF-STATION AT THE MARK & NANCY PETERSON FARM, HAVRE. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
ND 606 AMIDON	26.21	30.00	59.40	17.90
PI483235 GLENMAN	22.98	29.33	57.90	16.80
WA 6920 PENAWAWA (soft white)	20.91	27.45	59.80	16.70
CI 17430 NEWANA	21.38	26.36	60.27	17.30
CI 17904 OWENS (soft white)	21.72	26.25	58.00	16.10
CANLANC LANCER	22.35	25.17	58.73	17.40
CI 13596 FORTUNA	23.60	24.92	58.17	17.50
MT 8402 MT7336/SHORTANA	23.25	24.82	56.93	18.70
CI 17790 LEN	23.43	24.18	57.30	18.10
C982-324 RAMBO	20.05	23.59	61.10	18.50
CI 17429 LEW	22.11	22.81	58.23	19.30
MT 8182 YDING "S"/PCI "S"-28 (hrd white)	21.56	22.76	56.27	19.60
CI 17910 ALEX	24.25	22.65	60.10	18.80
CI 17920 MARSHALL	19.44	22.10	55.83	18.80
ND 582 STOA	22.60	22.09	57.87	18.20
CI 17828 PONDERA	22.19	21.80	58.20	19.70
WPB 906R WESTBRED 906R	23.43	21.18	56.83	19.60
NDCUT CUTLESS	21.40	20.78	58.40	19.10
CI 15930 OLAF	21.17	20.60	57.93	19.10
NK 751 NK 751	20.17	18.35	53.40	18.50

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
EXPERIMENTAL MEANS	22.21	23.86	58.03	18.30
C.V. 2: (S OF MEAN/MEAN)*100	4.53	8.55	.54	-
LSD (0.05)	2.88	5.84	.89	-

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 05/01/89
Harvest Date: 08/10/89
Seeding Depth: 1.75 in.
Soil Series: Telstad
Previous Crop: Fallow
Soil Temp @ Sdg: 65F @ 2in., 61F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.00 in.
Probed Moist.Depth @ Sdg: 24.0 in.
Herbicide: MCP Ester @ 1 pt/ac + surf.
Initial Stored Soil Water at Seeding: 7.14 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 4.01 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 5.49 in.
Total - all events >.1 inches: 4.91 in.
Adj'd Residual Soil Water @ (HM-14d): 4.01 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 120 , P(ppm olsen)= 9 , K(ppm)= 240 , pH= 7.8, O.M.(%) = 0.9
Fertilizer: 70#N via 46-0-0 broadcast & disked in prior to planting

TABLE 2. EIGHT-YEAR YIELD AND TEST WEIGHT SUMMARY ON SELECTED ENTRIES FROM A FALLOW SPRING WHEAT VARIETY NURSERY GROWN OFF-STATION AT THE MARK & NANCY PETERSON FARM, NORTH HAVRE. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1982-1989.

2/ VARIETY OR SELECTION	NO. OF YEARS TESTED 3/	1/ YIELD (BUSHELS PER ACRE) 1985	1986	1987	1988	1989	AVERAGE FOR YEARS TESTED	8-YR. COMPAR. AVERAGE YIELD 4/	PERCENT OF FORTUNA YIELD 5/	TEST WEIGHT (POUNDS PER BUSHEL) 1985	1986	1987	1988	1989	AVERAGE FOR YEARS TESTED	8-YR. COMPAR. AVERAGE TEST WT 4/	PERCENT OF FORTUNA TEST WT. 5/
CI 17911 WAVERLY(sft wh	3	12.8	42.3	-	-	-	24.0	37.2	132.4	50.9	57.9	-	-	-	54.3	55.8	95.5
CI 17903 McKAY	5	12.5	43.2	-	-	-	39.1	35.5	126.2	49.2	59.5	-	-	-	57.9	57.5	98.4
CI 17904 OWENS(sft white	7	12.4	47.9	54.3	10.3	26.3	31.9	35.4	125.9	49.0	60.4	56.4	57.5	58.0	56.9	57.5	98.5
PI483235 GLENMAN	8	12.9	45.0	52.8	10.6	29.3	35.2	35.2	125.3	48.2	59.9	55.2	55.7	57.9	56.9	56.9	97.5
MT 7926 ND 681/MT 6830	3	14.3	-	43.3	12.9	-	23.5	34.5	122.8	51.6	-	58.6	58.4	-	56.2	59.3	101.4
CI 17790 LEN	5	-	44.4	43.5	13.9	24.2	35.5	34.3	122.0	-	60.1	55.1	55.9	57.3	57.3	57.2	97.9
CI 17430 NEWANA	8	11.4	44.0	45.4	10.2	26.4	32.6	32.6	115.8	52.1	61.1	59.1	58.0	60.3	59.4	59.4	101.7
C982-324 RAMBO	3	-	-	45.5	7.8	23.6	25.6	31.1	110.5	-	-	59.2	58.0	61.1	59.4	60.2	103.0
CI 15930 OLAF	6	-	-	35.6	9.2	20.6	27.9	30.9	109.9	-	-	57.6	57.1	57.9	59.2	58.5	100.1
ND 582 STOA	6	12.8	38.0	33.1	12.2	22.1	22.4	30.4	108.2	50.6	60.1	57.4	56.3	57.9	56.3	57.4	98.3
WPB 906R WESTBRED 906R	3	-	37.6	-	8.8	21.2	22.6	30.0	106.9	-	60.3	-	56.1	56.8	57.7	57.6	98.5
CI 17429 LEW	8	11.7	36.3	40.0	11.6	22.8	29.4	29.4	104.7	51.6	61.1	57.8	57.7	58.2	58.7	58.7	100.4
CI 17828 PONDERA	8	13.0	42.0	35.4	9.7	21.8	29.2	29.2	104.0	52.0	61.2	58.1	58.5	58.2	59.1	59.1	101.1
NDCUT CUTLESS	3	-	-	39.6	11.6	20.8	24.0	29.1	103.5	-	-	56.8	55.9	58.4	57.0	57.7	98.8
PI476211 LLOYD (durum)	3	11.0	-	-	-	-	26.4	28.2	100.4	49.8	-	-	-	-	56.3	57.1	97.7
CI 13596 FORTUNA	8	12.8	29.1	35.3	9.3	24.9	28.1	28.1	100.0	51.2	61.0	58.4	56.6	58.2	58.4	58.4	100.0
CI 17910 ALEX	7	12.3	38.3	30.3	12.7	22.7	29.6	27.5	97.9	52.5	61.2	57.1	57.6	60.1	59.2	59.2	101.3
CI 17438 CANDO (durum)	4	9.4	-	-	-	-	30.7	27.4	97.6	50.7	-	-	-	-	58.5	58.7	100.4
CI 15892 WARD (durum)	4	9.8	-	-	-	-	28.9	25.8	91.8	51.6	-	-	-	-	58.3	58.4	100.0
CI 10003 THATCHER	3	-	31.5	-	-	-	38.9	25.0	89.0	-	59.5	-	-	-	60.9	57.8	98.9
CI 17920 MARSHALL	6	-	42.1	39.4	12.6	22.1	18.6	20.6	73.2	-	59.4	57.3	56.6	55.8	57.9	57.1	97.7
MEAN (ENTRIES LISTED)		12.1	40.1	41.0	10.9	23.5	-	30.4	-	50.8	60.2	57.4	57.1	58.3	-	58.1	-
6/ Growing Season Precip. (in.)		1.65	8.24	3.42	3.29	5.49	5.10										
7/ Soil PAW (in.) to SD @Pltng		4.50	9.34	9.66	11.96	7.14	8.08										
Total Plant Avail. Water (in.)		6.15	17.58	13.08	15.25	12.63	13.17										
Soil NO3 (lbs.) to SD @Pltng		-	136.0	92.0	102.0	120.0											
SD (Sampling Depth in inches)		-	48.0	48.0	48.0	48.0											
Fertilizer Applied (# N)		55.0	40.0	50.0	13.5	70.0											
(# P2O5)		28.0	35.0	40.0	34.5	0.0											
(# K2O)		15.0	20.0	20.0	0.0	0.0											
(# SO4)		0.0	0.0	10.0	0.0	0.0											

Check variety is Fortuna.

1/ See MCES Bulletin 1093 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making variety selection decisions.

2/ P = Private variety, + = Protected variety.

3/ Only the most recent five years are shown, but summary calculations include all the years noted.

4/ 8-yr. CA = (x/y) * z where x = average yield or test weight of the entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 8-yr. average yield or test weight for the check variety Fortuna.

5/ Percent of Fortuna yield or test weight for the same data years as those in which the entry was tested.

6/ Seeding to 14 days prior to harvest maturity.

7/ Depth of moist soil (ft.) * 2.00 in. PAW/ft except starting in 1986 where soil PAW values are actual gravimetric measurements.

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TABLE 3. DRYLAND FALLOW SPRING WHEAT VARIETY NURSERY GROWN OFF-STATION AT MYERS FARMS, INC., BIG SANDY. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
CI 17904 OWENS (soft white)	23.57	55.97	55.63	13.10
ND 606 AMIDON	25.79	50.36	57.03	14.10
CI 15930 OLAF	23.98	49.70	54.30	14.60
CI 17910 ALEX	27.56	49.58	56.87	15.10
MT 8402 MT7336/SHORTANA	24.40	48.19	58.20	15.30
WA 6920 PENAWAWA (soft white)	22.98	47.30	52.00	12.80
C982-324 RAMDO	23.36	47.29	54.97	14.50
ND 582 STOA	25.84	47.26	54.47	14.70
MT 8182 YDING "S"/PCI "S"-28 (hrd white)	24.63	45.78	53.07	14.40
NK 751 NK 751	22.39	45.35	55.57	13.50
WPB 906R WESTBRED 906R	25.94	45.23	55.13	14.70
CI 17920 MARSHALL	22.68	45.07	53.30	13.90
CI 17430 NEWANA	23.39	44.63	58.03	15.00
CI 17828 PONDERA	24.07	43.91	58.10	14.90
PI483235 GLENMAN	23.23	43.43	55.53	13.90
CI 17429 LEW	25.41	42.75	56.87	14.60
NDCUT CUTLESS	24.23	42.00	56.43	15.70
CI 17790 LEN	23.90	41.41	56.37	14.30
CI 13596 FORTUNA	28.02	40.96	56.57	14.40
CANLANC LANCER	27.56	40.70	56.77	15.50

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
EXPERIMENTAL MEANS	24.64	45.84	55.76	14.50
C.V. 2: (S OF MEAN/MEAN)*100	2.99	3.25	.33	-
LSD (0.05)	2.11	4.27	.53	-

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 05/06/89
Harvest Date: 09/01/89
Seeding Depth: 1.50 in.
Soil Series: Assiniboine variant
Previous Crop: Fallow
Soil Temp @ Sdg: 72F @ 2in., 62F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.50 in.
Probed Moist.Depth @ Sdg: 44.0 in.
Herbicide: `Glean' @ .25oz Fall 88
Initial Stored Soil Water at Seeding: 6.38 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 4.65 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 8.77 in.
Total - all events >.1 inches: 8.67 in.
Adj'd Residual Soil Water @ (HM-14d): 4.65 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 192 , P(ppm olsen)= 12 , K(ppm)= 428 , pH= 7.1, O.M.(%) = 1.0
Fertilizer: 51#N,28#P2O5,9#K2O via NH3 (45#N) injected Fall 88 + 11-52-0 & 0-0-60 deep banded prior to planting Spring 89

TABLE 4. EVALUATION OF DRYLAND FALLOW GRAIN AND RESIDUE PERFORMANCE OF TWELVE SPRING WHEAT CULTIVARS GROWN OFF-STATION AT GRAFF FARMS, INC., NORTH JOPLIN. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC \1	TEST WT LBS/BU	PROTEIN %	RESIDUE LBS/AC \2	RESIDUE LBS/BU \3
PI483235 GLENMAN	23.36	47.01	60.77	15.80	3389.97	72.13
WA 6920 PENAWAWA (soft white)	21.76	45.75	59.70	15.10	3187.23	69.87
CI 17430 NEWANA	21.84	44.72	61.90	15.70	3319.54	69.23
CI 15930 OLAF	23.49	44.30	59.30	17.00	3114.67	69.60
CI 17828 PONDERA	22.80	44.29	60.87	17.00	3329.14	76.03
ND 606 AMIDON	24.80	44.21	60.63	16.80	3226.71	73.30
ND 582 STOA	25.33	43.79	60.33	17.60	3200.03	76.40
C982-324 RAMBO	22.99	43.33	61.73	16.70	3366.49	70.77
CI 17790 LEN	22.93	43.09	59.30	16.40	3338.75	85.77
CI 17920 MARSHALL	21.36	42.45	58.90	16.00	2643.04	65.47
WPB 906R WESTBRED 906R	23.91	42.28	57.97	17.80	2804.16	69.30
CI 17904 OWENS (soft white)	22.24	42.18	60.00	15.40	3379.29	82.77
CI 17429 LEW	26.23	41.56	61.83	17.10	3451.85	80.33
CI 17910 ALEX	27.41	40.60	61.47	17.10	3049.58	68.40
NK 751 NK 751	21.19	40.40	55.57	16.40	3029.31	78.77
MT 8182 YDING "S"/PCI "S"-28 (hard white)	22.89	40.30	59.63	16.80	2950.35	70.17
CANLANC LANCER	26.02	39.57	60.50	17.60	2824.44	70.43
NDCUT CUTLESS	24.97	39.32	60.53	17.40	3234.18	86.37
CI 13596 FORTUNA	25.01	38.60	61.10	17.30	3497.73	83.87
MT 8402 MT7336/SHORTANA	22.35	38.43	57.93	17.20	2870.32	83.40

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC \1	TEST WT LBS/BU	PROTEIN %	RESIDUE LBS/AC \2	RESIDUE LBS/BU \3
EXPERIMENTAL MEANS	23.64	42.31	60.00	16.70	3160.34	75.12
C.V. 2: (S OF MEAN/MEAN)*100	2.53	5.74	.66	-	7.21	8.76
LSD (0.05)	1.71	6.96	1.14	-	652.47	18.83

\1 Based on 45 sqft harvest w/plot combine (precision > than 3sqft hand hvst for `grain')
\2 Based on 3 sqft harvest w/hand clipper (all above-surface plant material less grain)
\3 Based on hand harvest for residue and grain.

Seeding Date: 05/05/89 Soil Temp @ Sdg: 71F @ 2in., 66F @ 4in.
Harvest Date: 08/21/89 Root Penetration Depth: N/A in.
Seeding Depth: 1.25 in. Depth to Moisture at Sdg: 0.00 in.
Soil Series: Joplin-Hillon Probed Moist.Depth @ Sdg: __._ in.
Previous Crop: Flw > Winter-Killed WW Herbicide:
Initial Stored Soil Water at Seeding: 7.59 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 3.05 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 6.99 in.
Total - all events >.1 inches: 6.67 in.
Adj'd Residual Soil Water @ (HM-14d): 3.05 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 144 , P(ppm olsen)= 19 , K(ppm)= 326 , pH= 7.5, O.M.(%) = 1.3
Fertilizer: 78#N,36#P2O5 (8#N,36#P2O5 via 11-51-0 w/winter wheat seed Fall 88), (70#N via 46-0-0 broadcast & disked in prior to replanting Spr 89)

TABLE 5. DRYLAND FALLOW SPRING WHEAT VARIETY NURSERY GROWN OFF-STATION AT THE LEON CEDERBERG FARM, TURNER. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
CI 17904 OWENS (soft white)	21.65	29.79	59.60	14.90
PI483235 GLENMAN	22.31	29.70	58.63	15.70
ND 606 AMIDON	24.97	28.61	59.73	16.70
CI 17429 LEW	23.71	28.49	60.27	16.50
CANLANC LANCER	24.17	27.90	59.60	16.40
CI 17910 ALEX	24.12	25.77	60.60	16.90
WA 6920 PENAWAWA (soft white)	19.00	25.61	59.13	15.10
CI 13596 FORTUNA	23.67	25.25	60.90	15.30
MT 8402 MT7336/SHORTANA	21.18	25.18	59.27	17.00
C982-324 RAMBO	21.21	24.78	60.37	17.30
CI 17790 LEN	21.29	24.73	59.07	16.40
WPB 906R WESTBRED 906R	22.51	24.67	59.57	16.70
ND 582 STOA	23.43	24.58	59.80	16.50
CI 17920 MARSHALL	19.19	24.53	58.10	16.90
CI 17430 NEWANA	21.98	24.05	61.00	16.00
CI 17828 PONDERA	23.52	23.59	59.97	17.00
CI 15930 OLAF	23.10	23.03	59.50	16.50
NDCUT CUTLESS	23.03	22.57	59.53	16.40
NK 751 NK 751	21.48	22.56	57.50	15.40
MT 8182 YDING "S"/PCI "S"-28 (hrd white)	20.80	22.53	57.67	16.20

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
EXPERIMENTAL MEANS	22.32	25.40	59.49	16.30
C.V. 2: (S OF MEAN/MEAN)*100	2.34	4.62	.36	-
LSD (0.05)	1.50	3.36	.62	-

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 04/29/89
Harvest Date: 08/22/89
Seeding Depth: 2.00 in.
Soil Series: Telstad
Previous Crop: Fallow
Soil Temp @ Sdg: 59F @ 2in., 57F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.00 in.
Probed Moist.Depth @ Sdg: 55.0 in.+
Herbicide:

Initial Stored Soil Water at Seeding: 4.80 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 3.58 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 6.84 in.
Total - all events >.1 inches: 6.36 in.
Adj'd Residual Soil Water @ (HM-14d): 3.58 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 52 , P(ppm olsen)= 8 , K(ppm)= 251 , pH= 7.0, O.M.(%) = 0.9
Fertilizer: 70#N via 46-0-0 broadcast & disked in prior to planting

TABLE 6. THREE-YEAR YIELD AND TEST WEIGHT SUMMARY ON SELECTED ENTRIES FROM A FALLOW SPRING WHEAT VARIETY NURSERY GROWN OFF-STATION ON A 'TELSTAD' SOIL AT THE LEON CEDERBERG FARM, TURNER. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1987-1989.

2/ VARIETY OR SELECTION	NO. OF YEARS TESTED	1/ YIELD (BUSHELS PER ACRE) 1987	1988	1989	AVERAGE FOR YEARS TESTED	3-YR. COMPAR. AVERAGE YIELD 3/	PERCENT OF FORTUNA YIELD 4/	TEST WEIGHT (POUNDS PER BUSHEL) 1987	1988	1989	AVERAGE FOR YEARS TESTED	3-YR. COMPAR. AVERAGE TEST WT 3/	PERCENT OF FORTUNA TEST WT 4/
PI483235 GLENMAN	3	32.2	21.7	29.7	27.8	27.8	137.2	58.9	60.9	58.6	59.5	59.5	98.4
CI 17429 LEW	3	30.4	19.0	28.5	26.0	26.0	127.8	60.3	62.3	60.3	61.0	61.0	101.0
CI 17904 OWENS(sft wht)	3	26.0	18.3	29.8	24.7	24.7	121.7	59.5	62.7	59.6	60.6	60.6	100.3
CI 17790 LEW	3	27.1	19.7	24.7	23.8	23.8	117.4	59.1	61.2	59.1	59.8	59.8	99.0
C982-324 RAMBO	3	25.4	19.7	24.8	23.3	23.3	114.6	60.7	63.3	60.4	61.5	61.5	101.8
CI 17430 NEWANA	3	25.0	20.4	24.1	23.2	23.2	114.1	60.3	59.3	61.0	60.2	60.2	99.7
ND 582 STOA	3	24.9	19.9	24.6	23.1	23.1	114.0	59.3	62.0	59.8	60.4	60.4	100.0
CI 17910 ALEX	3	22.4	20.0	25.8	22.7	22.7	112.0	60.2	62.7	60.6	61.2	61.2	101.3
CI 17920 MARSHALL	3	17.0	19.8	24.5	20.4	20.4	100.7	59.2	62.4	58.1	59.9	59.9	99.2
CI 17828 PONDERA	3	19.8	17.7	23.6	20.4	20.4	100.3	59.9	59.5	60.0	59.8	59.8	99.0
CI 15930 OLAF	3	19.7	18.2	23.0	20.3	20.3	100.1	59.0	61.5	59.5	60.0	60.0	99.4
CI 13596 FORTUNA	3	20.9	14.7	25.3	20.3	20.3	100.0	58.5	61.7	60.9	60.4	60.4	99.9
NDCUT CUTLESS	3	20.0	15.2	22.6	19.3	19.3	94.9	58.5	62.0	59.5	60.0	60.0	99.3
WPB 906R WESTBRED 906R	2	-	11.8	24.7	18.3	18.5	91.3	-	61.7	59.6	60.7	59.4	98.3
MEAN (ENTRIES LISTED)		23.9	18.3	25.4		22.4		59.5	61.7	59.8		60.2	
5/ Growing Season Precip. (in.)		6.05	6.00	6.84	6.30								
6/ Soil PAW (in.) to SD @Plntng.		5.97	8.58	4.86	6.47								
Total Plant Avail. Water (in.)		12.02	14.58	11.70	12.77								
Soil NO3 (lbs.) to SD @Plntng.		68.0	84.0	52.0									
SD (Sampling Depth in inches)		48.0	48.0	48.0									
Fertilizer Applied (# N)		53.0	50.0	70.0									
(# P205)		35.0	0.0	0.0									

Check variety is Fortuna.

1/ See MCES Bulletin 1093 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making variety selection decisions.

2/ P = Private variety, + = Protected variety.

3/ 2-yr. CA = (x/y) * z where x = average yield or test weight of the entry for years tested, y = average yield or test weight for Fortuna for the same years, and z = 5-yr. average yield or test weight for the check variety Fortuna.

4/ Percent of Fortuna yield or test weight for the same data years as those in which the entry was tested.

5/ Seeding to 14 days prior to harvest maturity.

6/ Depth of moist soil (ft.) * 2.00 in. PAW/ft except starting in 1986 where soil PAW values are actual gravimetric measurements.

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TABLE 7. DRYLAND FALLOW SPRING WHEAT VARIETY NURSERY GROWN OFF-STATION AT THE HAROLD SOLBERG FARM, WAGNER. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
PI483235 GLENMAN	27.97	40.74	57.50	16.90
ND 582 STOA	29.97	38.15	57.07	17.00
CI 17828 PONDERA	26.76	37.16	58.07	18.50
NDCUT CUTLESS	29.70	36.18	59.00	18.40
C982-324 RAMBO	27.32	35.75	59.17	16.80
NK 751 NK 751	26.52	35.27	55.67	17.60
WPB 906R WESTBRED 906R	26.86	35.20	56.07	19.30
MT 8402 MT7336/SHORTANA	25.10	34.79	56.37	18.90
WA 6920 PENAWAWA (soft white)	24.82	34.66	57.07	17.30
CI 17904 OWENS (soft white)	24.57	34.31	56.10	18.20
CI 17920 MARSHALL	24.28	33.56	56.33	17.20
CI 17790 LEN	25.35	33.45	56.70	18.10
CI 17429 LEW	31.77	32.75	59.53	17.60
MT 8182 YDING "S"/PCI "S"-28 (hrd white)	26.10	32.74	55.23	17.90
CI 17910 ALEX	29.99	32.69	59.57	17.90
CI 17430 NEWANA	23.92	32.38	58.10	17.90
CI 13596 FORTUNA	32.66	32.20	60.33	16.40
CI 15930 OLAF	27.20	32.03	58.33	18.50
ND 606 AMIDON	29.89	31.49	58.70	18.30
CANLANC LANCER	29.63	31.43	58.93	19.10

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
EXPERIMENTAL MEANS	27.52	34.35	57.69	17.90
C.V. 2: (S OF MEAN/MEAN)*100	2.96	9.29	1.20	-
LSD (0.05)	2.34	9.13	1.98	-

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 05/02/89
Harvest Date: 08/17/89
Seeding Depth: 1.75 in.
Soil Series: Phillips-Elloam
Previous Crop: Fallow
Soil Temp @ Sdg: 57F @ 2in., 56F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.50 in.
Probed Moist.Depth @ Sdg: 55.0 in.+
Herbicide: 2,4-D LV4+`Banvel' (8oz+1oz)
Initial Stored Soil Water at Seeding: 8.02 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 4.67 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 4.35 in.
Total - all events >.1 inches: N/A in.
Adj'd Residual Soil Water @ (HM-14d): 4.67 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 72 , P(ppm olsen)= 34 , K(ppm)= 391 , pH= 7.1, O.M.(%) = 0.9
Fertilizer: 70#N via 46-0-0 broadcast & disked in prior to planting

TABLE 8. SIX-YEAR YIELD AND TEST WEIGHT SUMMARY ON SELECTED ENTRIES FROM A FALLOW-SPRING WHEAT VARIETY NURSERY GROWN OFF-STATION AT THE HAROLD SOLBERG FARM, WAGNER. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1984-1989.

2/ VARIETY OR SELECTION	NO. OF YEARS TESTED 3/	1/ YIELD (BUSHELS PER ACRE) 1985	1986	1987	1988	1989	AVERAGE FOR YEARS TESTED	6-YR. COMPAR. AVERAGE YIELD 4/	PERCENT OF FORTUNA YIELD 5/	TEST WEIGHT (POUNDS PER BUSHEL) 1985	1986	1987	1988	1989	AVERAGE FOR YEARS TESTED	6-YR. COMPAR. AVERAGE TEST WT 4/	PERCENT OF FORTUNA TEST WT 5/
ND CUT CUTLESS	3	-	-	40.5	19.2	36.2	31.9	28.7	125.3	-	-	58.9	60.6	59.0	59.5	58.6	99.2
MT 7819 GLENMAN	6	10.0	34.6	42.1	23.8	40.7	27.9	27.9	121.7	52.2	57.9	57.0	59.3	57.5	56.6	56.6	95.8
MT 7926 ND 681/MT 6830	3	9.7	-	39.6	24.9	-	24.7	27.8	121.2	55.8	-	60.5	62.2	-	59.5	60.7	102.7
CI 17911 WAVERLY(sft white)	3	10.2	34.3	-	-	-	21.3	27.0	117.9	55.0	57.7	-	-	-	56.3	57.1	96.7
C982-324 RAMBO	3	-	-	39.3	22.0	35.8	32.4	26.7	116.8	-	-	60.3	61.6	59.2	60.4	59.5	100.6
CI 17904 OWENS (soft white)	6	9.8	33.5	50.2	14.0	34.3	26.7	26.7	116.7	54.8	58.5	58.3	60.6	56.1	57.3	57.3	96.9
CI 17790 LEN	4	-	33.1	38.6	22.4	33.5	31.9	26.3	114.7	-	58.6	58.1	59.9	56.7	58.3	57.2	96.7
CI 17903 McKAY	3	8.4	34.8	-	-	-	20.3	25.7	112.2	55.0	57.2	-	-	-	56.5	57.3	97.0
CI 17828 PONDERA	6	9.8	31.7	40.7	20.5	37.2	25.6	25.6	111.9	54.6	59.8	59.7	61.5	58.1	58.8	58.8	99.5
ND 582 STOA	6	9.3	25.4	41.2	21.7	38.2	25.4	25.4	110.7	56.1	58.3	59.1	60.3	57.1	58.2	58.2	98.5
CI 17430 NEWANA	6	9.8	25.2	40.5	24.0	32.4	25.0	25.0	109.1	56.0	58.6	60.4	62.2	58.1	59.2	59.2	100.1
WPB 906R WESTBRED 906R	3	-	36.4	-	10.6	35.2	27.4	24.2	105.5	-	59.9	-	60.5	56.1	58.8	57.3	97.0
CI 15930 OLAF	4	-	-	34.5	19.7	32.0	25.9	23.9	104.5	-	-	60.1	60.9	58.3	59.2	58.5	99.0
CI 17429 LEW	6	8.9	23.7	37.9	21.2	32.8	23.7	23.7	103.5	52.4	59.8	59.6	61.1	59.5	58.5	58.5	98.9
CI 13596 FORTUNA	6	10.2	28.1	33.4	17.6	32.2	22.9	22.9	100.0	54.2	61.2	59.1	60.5	60.3	59.1	59.1	100.0
CI 17920 MARSHALL (+)	5	-	14.8	38.4	23.1	33.6	25.3	22.8	99.5	-	57.3	58.5	60.0	56.3	57.8	56.7	95.9
CI 17910 ALEX	5	8.9	17.8	36.6	20.3	32.7	23.3	21.9	95.7	56.8	61.1	59.9	61.6	59.6	59.8	59.8	101.3
MEAN (ENTRIES LISTED)		9.5	28.7	46.1	23.5	34.8	-	25.4	-	54.8	58.9	59.2	60.9	58.0	-	58.3	-
6/ Growing Season Precip. (in.)		1.60	8.44	5.30	5.05	4.35		4.30									
7/ Soil PAW (in.) to SD @Plntng.		3.67	9.76	10.74	12.66	8.02		8.50									
Total Plant Avail. Water (in.)		5.27	18.20	16.04	17.71	12.37		12.81									
Soil NO3 (lbs.) to SD @Plntng.		-	66.0	80.0	182.0	72.0											
SD (Sampling Depth in inches)		-	48.0	48.0	48.0	48.0											
Fertilizer Applied (# N)		0.0	75.0	0.0	45.0	70.0											
(# P205)		0.0	35.0	0.0	0.0	0.0											

Check variety is Fortuna.

1/ See MCES Bulletin 1093 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making variety selection decisions.

2/ P = Private variety, + = Protected variety.

3/ Only the most recent five years are shown, but summary calculations include all years noted.

4/ 6-yr. CA = (x/y) * z where x = average yield and test weight of the entry for years tested, y = average yield and test weight of Fortuna for the same years, and z = 5-yr. average yield or test weight for the check variety Fortuna.

5/ Percent of Fortuna yield and test weight for the same data years as those in which the entry was tested.

6/ Seeding to 14 days prior to harvest maturity.

7/ Depth of moist soil (ft.) * 2.00 in. PAW/ft except starting in 1986 where soil PAW values are actual gravimetric measurements.

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TABLE 9. DRYLAND FALLOW SPRING BARLEY VARIETY NURSERY GROWN OFF-STATION AT THE MARK & NANCY PETERSON FARM, HAVRE. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %
CI 15514 Hector	25.46	54.91	47.33	49.30	21.20	14.70
MT140523 Hector/Klages	23.02	51.08	47.47	39.70	46.70	15.40
PI491534 Gallatin	23.11	50.77	47.23	39.00	28.00	15.30
MT 81161 Lewis//Kgs/Smt	22.05	49.00	43.27	33.80	42.80	15.00
PI483237 Bowman	22.51	48.91	47.27	55.40	15.30	15.30
BA 1202 Busch Agr 1202	20.55	46.81	45.40	26.10	41.10	15.70
CI 15229 Steptoe	25.35	45.03	38.73	36.30	31.10	14.30
CI 15856 Lewis	21.92	44.71	47.67	28.60	35.70	15.80
MT 81616 TR440/Clark	21.21	43.63	45.63	30.30	31.20	16.30
CI 15857 Clark	21.56	43.38	44.83	22.60	45.90	15.10
CI 9558 Piroline	23.29	41.49	43.83	4.50	75.00	17.20
SK 76333 Harrington	20.87	39.51	45.73	43.70	19.30	14.90

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %
EXPERIMENTAL MEANS	22.57	46.60	45.37	34.11	36.11	15.40
C.V. 2: (S OF MEAN/MEAN)*100	4.00	8.14	1.90	-	-	-
LSD (0.05)	2.65	11.12	2.53	-	-	-

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 05/01/89
Harvest Date: 08/09/89
Seeding Depth: 1.75 in.
Soil Series: Telstad
Previous Crop: Fallow
Soil Temp @ Sdg: 65F @ 2in., 61F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.00 in.
Probed Moist.Depth @ Sdg: 24.0 in.
Herbicide: MCP Ester @ 1 pt/ac + Surf.
Initial Stored Soil Water at Seeding: 7.14 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 3.35 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 5.49 in.
Total - all events >.1 inches: 4.91 in.
Adj'd Residual Soil Water @ (HM-14d): 3.35 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 120 , P(ppm olsen)= 9 , K(ppm)= 240 , pH= 7.8, O.M.(%) = 0.9
Fertilizer: 70#N via 46-0-0 broadcast & disked in prior to planting

TABLE 10. EIGHT-YEAR YIELD AND TEST WEIGHT SUMMARY ON SELECTED ENTRIES FROM A FALLOW SPRING BARLEY VARIETY NURSERY GROWN OFF-STATION AT THE MARK & NANCY PETERSON FARM, NORTH HAVRE. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1982-1989.

2/ VARIETY OR SELECTION	NO. OF YEARS TESTED 3/	1/ YIELD (BUSHELS PER ACRE) 1985	1986	1987	1988	1989	AVERAGE FOR YEARS TESTED	8-YR. COMPAR. AVERAGE YIELD 4/	PERCENT OF PIROLINE YIELD 5/	TEST WEIGHT (POUNDS PER BUSHEL) 1985	1986	1987	1988	1989	AVERAGE FOR YEARS TESTED	8-YR. COMPAR. AVERAGE TEST WT 4/	PERCENT OF PIROLINE TEST WT. 5/
MT 81616 BEARPAW	4	-	72.5	71.2	49.8	43.6	59.3	59.2	112.1	-	50.4	47.8	48.0	45.6	47.9	48.1	98.2
CI 15856 LEWIS	7	20.1	68.5	64.7	38.7	44.7	53.8	57.9	109.7	41.6	51.9	51.0	49.2	47.7	49.6	50.3	102.6
PI491534 GALLATIN	6	22.9	66.3	67.6	39.4	50.8	47.0	57.7	109.3	40.2	51.3	49.4	48.5	47.2	49.7	51.2	104.5
CI 15229 STEPTOE	5	25.5	66.3	74.3	32.4	45.0	48.7	57.0	108.0	34.4	45.1	43.1	43.0	38.7	40.9	41.0	83.7
PI483237 BOWMAN	5	22.4	52.9	68.6	43.8	48.9	47.3	55.4	104.9	43.4	51.6	49.8	48.7	47.3	48.2	48.3	98.7
CI 15857 CLARK	8	17.4	63.9	66.6	38.3	43.4	55.1	55.1	104.4	38.2	50.3	49.3	47.1	44.8	48.2	48.2	98.3
CI 15860 KARLA	5	22.2	54.0	-	-	-	56.5	53.1	100.6	36.3	48.6	-	-	-	46.6	45.9	93.6
MT 729 SUMMIT (P+)	4	11.1	-	-	-	-	52.7	52.8	100.0	38.3	-	-	-	-	49.3	49.2	100.4
CI 9558 PIROLINE	8	14.2	70.0	62.8	37.1	41.5	52.8	52.8	100.0	38.4	52.5	49.7	49.3	43.8	49.0	49.0	100.0
SK 76333 HARRINGTON	8	11.2	72.4	66.8	39.2	39.5	52.4	52.4	99.2	38.4	50.9	48.1	47.1	45.7	48.3	48.3	98.6
CI 15514 HECTOR	8	19.4	65.6	51.6	40.0	54.9	52.2	52.2	98.8	40.8	51.7	51.5	48.8	47.3	50.9	50.9	103.9
MT 81161 MT 81161	3	-	-	50.5	35.7	49.0	45.1	50.5	95.6	-	-	48.1	46.4	43.3	46.0	47.3	96.5
CI 15687 KIMBERLY	3	-	68.8	43.6	42.7	-	51.7	48.2	91.3	-	51.7	49.9	47.9	-	49.8	48.3	98.7
CI 15478 KLAGES	3	7.9	-	-	-	-	51.1	45.3	85.8	40.2	-	-	-	-	47.8	48.5	99.1
CI 15773 MOREX	4	18.6	45.5	-	-	-	48.2	40.9	77.5	36.4	49.4	-	-	-	46.7	46.4	94.7
ND 5569 HAZEN	4	21.3	57.9	32.4	-	-	34.6	40.8	77.2	37.8	48.9	44.1	-	-	45.4	46.2	94.4
MN 36 ROBUST (+)	4	18.0	47.1	-	-	-	36.4	38.1	72.2	36.3	51.2	-	-	-	47.1	47.1	96.1
MEANS (ENTRIES LISTED)		18.0	62.3	60.1	39.7	46.1	-	51.1	-	38.6	50.4	48.5	47.6	45.1	-	47.9	-
6/ Growing Season Precip. (in.)		1.65	8.24	3.42	3.24	5.49	5.07										
7/ Soil PAW (in.) to SD @Pltng.		4.50	9.34	9.66	9.76	7.14	7.80										
Total Plant Avail. Water (in.)		6.15	17.58	13.08	13.00	12.63	12.87										
Soil NO3 (lbs.) to SD @Pltng.		-	136.0	92.0	90.0	120.0											
SD (Sampling Depth in inches)		-	48.0	48.0	48.0	48.0											
Fertilizer Applied (# N)		55.0	40.0	50.0	13.5	70.0											
(# P2O5)		28.0	35.0	40.0	34.5	0.0											
(# K2O)		15.0	20.0	20.0	0.0	0.0											
(# SO4)				10.0	0.0	0.0											

Check variety is Piroline.

1/ See MCES Bulletin 1094 for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making variety selection decisions.

2/ P = Private variety, + = Protected variety.

3/ Only the five most recent years shown, but summary calculations include all years noted.

4/ 8-yr. CA = (x/y) * z where x = average yield or test weight of the entry for years tested, y = average yield or test weight for Piroline for the same years, and z = 8-yr. average yield or test weight for the check variety Piroline.

5/ Percent of Piroline yield or test weight for the same data years as those in which the entry was tested.

6/ Seeding to 14 days prior to harvest maturity.

7/ Depth of moist soil (ft.) * 2.00 in. PAW/ft except starting in 1986 where soil PAW values are actual gravimetric measurements

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TABLE 11. DRYLAND FALLOW SPRING BARLEY VARIETY NURSERY GROWN OFF-STATION AT MYERS FARMS, INC., BIG SANDY. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %
BA 1202 Busch Agr 1202	21.05	74.03	44.10	95.30	1.00	12.30
PI491534 Gallatin	23.02	72.92	45.93	96.20	.70	11.80
MT 81616 TR440/Clark	22.64	72.85	40.63	97.40	.70	12.10
MT140523 Hector/Klages	22.94	72.40	46.17	92.80	1.00	12.80
MT 81161 Lewis//Kgs/Smt	23.18	67.92	43.13	94.10	1.40	11.80
CI 15229 Steptoe	24.51	67.60	41.27	94.10	.90	10.90
CI 15856 Lewis	22.51	67.55	45.60	97.30	.60	11.90
CI 9558 Piroline	23.53	67.19	44.30	93.90	.90	12.50
CI 15857 Clark	24.12	64.74	45.00	96.10	.60	12.60
CI 15514 Hector	24.87	64.53	47.20	95.80	.60	12.60
PI483237 Bowman	20.71	63.46	45.77	99.00	.40	12.00
SK 76333 Harrington	22.13	56.03	44.00	98.40	.40	12.50

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %
EXPERIMENTAL MEANS	22.93	67.60	44.43	95.87	.77	12.15
C.V. 2: (S OF MEAN/MEAN)*100	4.26	4.60	.97	-	-	-
LSD (0.05)	2.86	9.12	1.27	-	-	-

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 05/06/89
Harvest Date: 09/01/89
Seeding Depth: 1.50 in.
Soil Series: Assiniboine variant
Previous Crop: Fallow
Soil Temp @ Sdg: 72F @ 2in., 62F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.50 in.
Probed Moist.Depth @ Sdg: 44.0 in.
Herbicide: `Ally' @ .1oz + MCPA @ 6oz/a
Initial Stored Soil Water at Seeding: 6.38 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 5.35 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 8.77 in.
Total - all events >.1 inches: 8.67 in.
Adj'd Residual Soil Water @ (HM-14d): 5.35 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 192 , P(ppm olsen)= 12 , K(ppm)= 428 , pH= 7.1, O.M.(%) = 1.0
Fertilizer: 51#N,28#P2O5,9#K2O via NH3 (45#N) injected Fall 88 + 11-52-0 & 0-0-60 deep banded prior to planting Spring 89

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TABLE 12. EVALUATION OF DRYLAND FALLOW GRAIN AND RESIDUE PERFORMANCE OF TWELVE SPRING BARLEY CULTIVARS GROWN OFF-STATION AT GRAFF FARMS, INC., NORTH JOPLIN. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC \1	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %	RESIDUE LBS/AC \2	RESIDUE LBS/BU \3
MT 81161 Lewis//Kgs/Sat	24.55	58.86	46.23	54.70	14.40	15.10	2779.62	43.23
PI491534 Gallatin	25.42	58.80	49.57	60.60	11.40	14.40	3204.30	47.13
MT140523 Hector/Klages	24.61	55.94	48.30	60.80	12.40	15.20	2700.66	44.17
MT 81616 TR440/Clark	21.88	55.16	46.43	76.70	6.40	13.90	2746.54	59.37
CI 15856 Lewis	26.51	54.89	49.43	72.00	7.00	15.40	2821.24	48.63
CI 15514 Hector	23.60	53.96	49.63	75.80	6.00	14.50	3328.08	61.23
CI 9558 Piroline	23.14	51.50	48.67	34.50	23.90	16.20	2826.57	51.80
PI483237 Bowman	26.57	51.44	49.63	91.00	1.60	15.40	2974.89	47.63
BA 1202 Busch Agr 1202	20.54	51.37	48.03	56.70	11.60	16.20	3012.24	60.27
CI 15229 Steptoe	25.52	50.72	43.03	54.60	18.40	14.00	2900.20	47.80
SK 76333 Harrington	20.72	45.94	48.80	85.80	2.90	15.50	3239.51	81.37
CI 15857 Clark	24.84	45.50	47.53	62.20	11.20	15.10	2901.26	50.43
STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC \1	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %	RESIDUE LBS/AC \2	RESIDUE LBS/BU \3
EXPERIMENTAL MEANS	23.99	52.84	47.94	54.70	14.40	15.08	2952.93	53.59
C.V. 2: (S OF MEAN/MEAN)*100	3.97	3.92	2.16	-	-	-	7.75	8.58
LSD (0.05)	2.79	6.08	3.04	-	-	-	670.80	13.49

\1 Based on 45 sqft harvest w/plot combine (precision was > than 3 sqft hand harvest for `grain')
\2 Based on 3 sqft harvest w/hand clipper (includes all above-surface plant material less grain)
\3 Based on hand harvest for residue and grain.

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 05/05/89 Soil Temp @ Sdg: 71F @ 2in., 66F @ 4in.
Harvest Date: 08/21/89 Root Penetration Depth: N/A in.
Seeding Depth: 1.25 in. Depth to Moisture at Sdg: 0.00 in.
Soil Series: Joplin-Hillon Probed Moist.Depth @ Sdg: 48.0 in.
Previous Crop: Flw > Winter-Killed WW Herbicide:
Initial Stored Soil Water at Seeding: 7.59 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 5.63 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 6.99 in.
Total - all events >.1 inches: 6.67 in.
Adj'd Residual Soil Water @ (HM-14d): 5.63 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 144 , P(ppm olsen)= 19 , K(ppm)= 326 , pH= 7.5, O.M.(%) = 1.3
Fertilizer: 78#N,36#P2O5 (8#N,36#P2O5 via 11-51-0 w/winter wheat seed Fall 88),
(70#N via 46-0-0 broadcast & disked in prior to replanting Spr 89)

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TABLE 13. DRYLAND FALLOW SPRING BARLEY VARIETY NURSERY GROWN OFF-STATION AT THE LEON CEDERBERG FARM, TURNER. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %
MT 81616 TR440/Clark	21.06	56.44	47.57	79.20	5.20	13.50
PI491534 Gallatin	22.18	53.48	49.70	84.60	2.50	13.60
MT 81161 Lewis//Kgs/Smt	21.98	53.05	47.97	75.30	6.30	13.60
CI 15856 Lewis	21.98	52.54	49.70	83.40	2.60	13.90
CI 9558 Piroline	21.51	52.23	48.47	60.20	8.20	14.70
CI 15229 Steptoe	22.09	52.16	43.87	78.20	5.60	11.60
CI 15857 Clark	20.88	51.92	47.83	74.30	5.40	14.00
MT140523 Hector/Klages	21.61	51.69	48.60	63.30	7.00	14.40
CI 15514 Hector	21.06	48.46	49.50	82.00	3.10	13.90
PI483237 Bowman	22.07	46.73	49.13	94.30	.70	14.30
BA 1202 Busch Agr 1202	19.29	45.76	47.40	67.70	7.80	14.10
SK 76333 Harrington	21.90	44.64	47.90	87.00	2.40	13.70

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %
EXPERIMENTAL MEANS	21.47	50.76	48.14	77.46	4.73	13.80
C.V. 2: (S OF MEAN/MEAN)*100	4.57	5.21	.44	-	-	-
LSD (0.05)	2.88	7.76	.62	-	-	-

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 04/29/89
Harvest Date: 08/22/89
Seeding Depth: 2.00 in.
Soil Series: Telstad
Previous Crop: Fallow
Soil Temp @ Sdg: 59F @ 2in., 57F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.00 in.
Probed Moist.Depth @ Sdg: 55.0 in.+
Herbicide:
Initial Stored Soil Water at Seeding: 4.86 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 3.47 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 6.84 in.
Total - all events >.1 inches: 6.36 in.
Adj'd Residual Soil Water @ (HM-14d): 3.47 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 52 , P(ppm olsen)= 8 , K(ppm)= 251 , pH= 7.0, O.M.(%) = 0.9
Fertilizer: 70#N via 46-0-0 broadcast & disked in prior to planting.

TABLE 14. THREE-YEAR YIELD AND TEST WEIGHT SUMMARY ON SELECTED ENTRIES FROM A FALLOW SPRING BARLEY VARIETY NURSERY GROWN OFF-STATON ON A 'TELSTAD' SOIL AT THE LEON CEDERBERG FARM, TURNER. NORTHERN AGRICULTURAL RESEARCH CENTER, HAVRE, MONTANA. 1987-1989.

		1/ YIELD (BUSHELS PER ACRE)						TEST WEIGHT (POUNDS PER BUSHEL)					
2/ VARIETY OR SELECTION	NO. OF YEARS TESTED	1987	1988	1989	AVERAGE FOR YEARS TESTED	3-YR. COMPAR. AVERAGE YIELD 3/	PERCENT OF PIROLINE YIELD 4/	1987	1988	1989	AVERAGE FOR YEARS TESTED	3-YR. COMPAR. AVERAGE TEST WT 3/	PERCENT OF PIROLIN TEST WT 4/
MT 81616 BEARPAW	3	47.1	41.5	56.4	48.3	48.3	117.2	48.8	51.6	47.6	49.3	49.3	97.9
PI491534 GALLATIN	3	53.3	36.4	53.5	47.8	47.8	115.8	50.3	53.1	49.7	51.0	51.0	101.3
CI 15856 LEWIS	3	46.7	38.4	52.5	45.9	45.9	111.2	50.2	53.6	49.7	51.2	51.2	101.6
CI 15514 HECTOR	3	52.2	36.1	48.5	45.6	45.6	110.6	49.6	53.3	49.5	50.8	50.8	100.9
CI 15857 CLARK	3	46.5	37.1	51.9	45.2	45.2	109.6	48.5	52.5	47.8	49.6	49.6	98.5
MT81161 MT 81161	3	46.4	34.8	53.1	44.8	44.8	108.6	48.4	51.5	50.0	50.0	50.0	99.2
CI 9558 PIROLINE	3	35.4	36.1	52.2	41.2	41.2	100.0	49.8	52.8	48.5	50.4	50.4	100.0
PI483237 BOWMAN	3	42.3	33.7	46.7	40.9	40.9	99.2	49.7	53.2	49.1	50.7	50.7	100.6
SK 76333 HARRINGTON	3	43.7	32.9	44.6	40.4	40.4	97.9	47.9	52.5	47.9	49.4	49.4	98.1
CI 15229 STEPTOE	3	35.9	26.7	52.2	38.2	38.2	92.7	42.8	48.3	43.9	45.0	45.0	89.4
MEANS (ENTRIES LISTED)		44.9	35.4	51.2	-	43.8	-	48.6	52.2	48.4	-	49.7	-
5/ Growing Season Precip. (in.)		6.05	6.00	6.84	6.30								
6/ Soil PAW (in.) to SD at @Plnt		5.97	8.58	4.86	6.47								
Total Plant Avail. Water (in.)		12.02	14.58	11.70	12.77								
Soil NO3 (lbs.) to SD @Plntng.		68.0	84.0	52.00									
SD (Sampling Depth in inches)		48.0	48.0	48.00									
Fertilizer Applied (# N)		53.0	50.0	70.00									
(# P2O5)		35.0	0.0	0.00									

Check variety is Piroline.

1/ See MCES Bulletin 1094 for evaluation of other important variety performance characteristics to include malting potential, disease resistance etc., before making variety selection decisions.

2/ P = Private variety, + = Protected variety.

3/ 3-yr. CA = (x/y) * z where x = average yield or test weight of the entry for years tested, y = average yield or test weight for Piroline for the same years, and z = 3-yr. average yield or test weight for the check variety Piroline.

4/ Percent of Piroline yield or test weight for the same data years as those in which the entry was tested.

5/ Seeding to 14 days prior to harvest maturity.

6/ Depth of moist soil (ft.) * 2.00 in. PAW/ft except starting in 1986 where soil PAW values are actual gravimetric measurements.

TABLE 15. DRYLAND FALLOW SPRING BARLEY VARIETY NURSERY GROWN OFF-STATION AT THE HAROLD SOLBERG FARM, WAGNER. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %
CI 15514 Hector	28.44	71.60	47.93	53.20	18.80	13.50
CI 9558 Piroline	28.91	68.54	50.27	53.00	14.70	14.40
CI 15229 Steptoe	29.12	62.18	41.93	67.60	12.90	11.40
MT140523 Hector/Klages	28.65	60.20	46.53	24.50	44.10	15.50
MT 81161 Lewis//Kgs/Smt	29.30	59.34	44.30	38.10	31.90	13.10
BA 1202 Busch Agr 1202	26.93	57.99	44.10	26.40	39.80	15.20
CI 15856 Lewis	28.58	56.61	47.73	49.40	26.30	16.00
PI483237 Bowman	28.22	55.93	48.87	81.10	6.00	15.30
PI491534 Gallatin	28.36	54.82	47.87	42.00	24.60	16.40
MT 81616 TR440/Clark	25.63	51.92	44.27	23.60	40.40	15.50
SK 76333 Harrington	26.85	51.69	45.67	52.30	20.10	14.40
CI 15857 Clark	28.61	48.32	44.60	24.80	48.30	15.70

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PLUMP %	THIN %	PROTEIN %
EXPERIMENTAL MEANS	28.13	58.26	46.17	44.67	27.33	14.70
C.V. 2: (S OF MEAN/MEAN)*100	2.67	7.03	1.87	-	-	-
LSD (0.05)	2.20	12.01	2.54	-	-	-

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 05/02/89
Harvest Date: 08/17/89
Seeding Depth: 1.75 in.
Soil Series: Phillips-Elloam
Previous Crop: Fallow
Soil Temp @ Sdg: 57F @ 2in., 56F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.50 in.
Probed Moist.Depth @ Sdg: 55.0 in.+
Herbicide: 2,4-D LV4+`Banvel' (8oz+1oz)
Initial Stored Soil Water at Seeding: 8.02 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 4.97 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 4.35 in.
Total - all events >.1 inches: N/A
Adj'd Residual Soil Water @ (HM-14d): 4.97 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 72 , P(ppm olsen)= 34 , K(ppm)= 391 , pH= 7.1, O.M.(%) = 0.9
Fertilizer: 70%N via 46-0-0 broadcast & disked in prior to planting

TABLE 16. SIX-YEAR YIELD AND TEST WEIGHT SUMMARY ON SELECTED ENTRIES FROM A FALLOW BARLEY VARIETY NURSERY GROWN OFF-STATION AT THE HAROLD SOLBERG FARM, WAGNER. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1984-1989.

2/ VARIETY OR SELECTION	NO. OF YEARS TESTED 3/	1/ YIELD (BUSHELS PER ACRE) 1985	1986 4/	1987	1988 5/	1989	AVERAGE FOR YEARS TESTED	6-YR. COMPAR. AVERAGE YIELD 6/	PERCENT OF PIROLINE YIELD 7/	TEST WEIGHT (POUNDS PER BUSHEL) 1985	1986 4/	1987	1988 5/	1989	AVERAGE FOR YEARS TESTED	6-YR. COMPAR. AVERAGE TEST WT 6/	PERCENT OF PIROLINE TEST WT 7/
CI 15229 STEPTOE	3	22.0	-	44.2	-	62.2	42.8	39.5	113.4	34.8	-	38.7	-	41.9	38.5	39.0	82.3
PI491534 GALLATIN	4	14.8	-	47.5	-	54.8	36.0	36.0	103.4	40.5	-	48.4	-	47.9	46.5	46.5	98.1
CI 15856 LEWIS	3	12.5	-	46.3	-	56.6	38.5	35.5	102.0	42.2	-	49.3	-	47.7	46.4	47.1	99.3
CI 9558 PIROLINE	4	13.0	-	31.7	-	68.5	34.8	34.8	99.9	41.3	-	48.6	-	50.3	47.4	47.4	100.0
PI483238 HAZEN	3	11.8	-	36.7	-	-	23.2	34.2	98.3	35.4	-	42.6	-	-	41.7	42.6	89.9
CI 15857 CLARK	4	11.4	-	50.5	-	48.3	33.8	33.8	97.1	39.9	-	47.1	-	44.6	44.6	44.6	94.1
CI 15514 HECTOR	4	14.0	-	25.2	-	71.6	33.3	33.3	95.6	40.3	-	47.2	-	47.9	46.2	46.2	97.4
PI483237 BOWMAN	3	15.2	-	32.0	-	55.9	34.4	31.7	91.1	40.7	-	48.6	-	48.9	46.1	46.7	98.6
SK 76333 HARRINGTON	4	4.0	-	42.5	-	51.7	29.3	29.3	84.0	41.3	-	48.5	-	45.7	46.3	46.3	97.7
MEAN (ENTRIES LISTED)		13.2	-	39.6	-	58.7	-	34.2	-	39.6	-	46.5	-	46.9	-	45.1	-
8/ Growing Season Precip. (in.)		1.60	8.44	5.30	5.05	8.02	4.92										
9/ Soil PAW (in.) to SD @Plntng.		3.67	9.76	10.74	12.66	8.02	8.50										
Total Plant Avail. Water (in.)		5.27	18.20	16.04	17.71	16.04	13.42										
Soil NO3 (lbs.) to SD @Plntng.		-	66.0	80.0	182.0	72.0											
SD (Sampling Depth in inches)		-	48.0	48.0	48.0	48.0											
Fertilizer Applied (# N)		0.0	75.0	0.0	44.0	70.0											
(# P2O5)		0.0	35.0	0.0	0.0	0.0											

Check variety is Piroline.
1/ See MCES Bulletin 1094 for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making variety selection decisions.
2/ P = Private variety, + = Protected variety.
3/ Only the five most recent years shown, but summary calculations include all years noted.
4/ Severe grasshopper damage in 1986 nursery.
5/ 1988 Nursery lost to wildlife grazing.
6/ 6-yr. CA = (x/y) * z where x = average yield and test weight of the entry for years tested, y = average yield and test weight of Piroline for the same years, and z = 6-yr. average yield or test weight for the check variety Piroline.
7/ Percent of Piroline yield and test weight for the same data years as those in which the entry was tested.
8/ Seeding to 14 days prior to harvest maturity.
9/ Depth of moist soil (ft.) * 2.00 in. PAW/ft except starting in 1986 where soil PAW values are actual gravimetric measurements.

TABLE 17. DRYLAND FALLOW SPRING OAT VARIETY NURSERY GROWN OFF-STATION AT THE MARK & NANCY PETERSON FARM, HAVRE. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989.

VARIETY OR SELECTION	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
ID 75861 Cayuse/Otana	20.30	67.96	28.43	.
ID805807 74AB2608/Cayuse	20.75	65.99	29.87	
ID815792 74Ab2608/Cayuse	21.61	65.84	28.27	
ID 82248 Cayuse/Monida	18.57	64.23	32.17	
CI 8263 Cayuse	22.24	60.86	27.27	
CI467882 Border	20.60	59.03	29.17	
ND820603 Froker/RL 3038/2/Hud	20.93	57.83	34.37	
ID805322 Border74AB1956	16.96	55.63	29.60	
ID821142 74ab1952/74ab2608	16.64	54.86	29.83	
83AB3725 74Ab1952/74Ab2608	19.67	54.39	28.43	
CI483126 Monida (ID 751170)	21.00	53.85	32.73	
SD810109 Trucker (Moore//Dal/	28.31	52.99	37.10	
ID 80988 74AB1952/74AB2608	15.98	52.57	30.03	
ID821178 74AB1952/75AB1576	18.32	51.58	29.07	
ID742608 Cayuse/Otana	18.19	50.23	32.00	
NPB86801 Ogle/OT 32-15, Sel.	16.40	49.49	26.77	
W 82056 Robert (OT 212/RL 30	22.98	49.30	33.43	
OT 308 Calibre	27.64	48.73	35.77	
CI 9297 Appaloosa	19.97	47.14	26.03	
CI 9401 Ogle	25.10	47.00	27.70	
NPB86575 Ogle/OT 32-15, Sel.	17.05	46.87	27.33	
NP871742 Ogle/OT 32-15, Sel.	16.44	46.85	27.00	
W 80474 Riel (RL 3057/Otana)	23.37	45.00	35.53	
ID804725 Cayuse/74/AB1956	17.35	44.68	27.47	
W 78286 Dumont	25.76	44.10	35.13	
83AB3119 Cayuse/76Ab6843	16.82	42.76	27.03	
NPB86586 Ogle/OT 3215 Sel. 85	16.26	42.70	25.50	
CI 9252 Otana	25.26	42.55	32.17	
83AB3250 Cayuse/Monida	16.94	41.91	28.80	
CI 6611 Park	21.76	40.50	31.93	

STATISTICAL SUMMARY	PLNT HT INCHES	YIELD BU/AC	TEST WT LBS/BU	PROTEIN %
EXPERIMENTAL MEANS	20.31	51.58	30.20	.
C.V. 2: (S OF MEAN/MEAN)*100	4.74	10.23	2.83	-
LSD (0.05)	2.73	14.94	2.42	-

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TABLE 17. DRYLAND FALLOW SPRING OAT VARIETY NURSERY GROWN OFF-STATION AT THE MARK & NANCY PETERSON FARM, HAVRE. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1989. (Continued).

CLIMATIC and NURSERY MANAGEMENT DATA

Seeding Date: 05/01/89
Harvest Date: 08/09/89
Seeding Depth: 2.00 in.
Soil Series: Telstad
Previous Crop: Flw > Winter-Killed WW
Soil Temp @ Sdg: 65F @ 2in., 62F @ 4in.
Root Penetration Depth: N/A in.
Depth to Moisture at Sdg: 0.00 in.
Probed Moist.Depth @ Sdg: 33.0 in.
Herbicide: MCP Ester @ 1 pt/ac + surf.
Initial Stored Soil Water at Seeding: 5.53 in. (sampling depth = 48 in.)
Measured Soil Water at Harvest: 3.16 in. (sampling depth = 48 in.)
Growing Season Precipitation (Sdg.to 14 days prior to harvest maturity `HM'):
Total - all measurable events: 5.49 in.
Total - all events >.1 inches: 4.91 in.
Adj'd Residual Soil Water @ (HM-14d): 3.16 in. (sampling depth = 48 in.)
Initial Soil Analysis (NO3,P,K at 0-6 in.; NO3 at 6-24, 24-36 & 36-48 in.):
NO3(lbs/ac)= 160 , P(ppm olsen)= 19 , K(ppm)= 326 , pH= 7.5, O.M.(%) = 1.3
Fertilizer: None in Spring 89 (70#N via 46-0-0 broadcast & disked in prior to planting WW Fall 88 which winter-killed and was replanted to oats)

TABLE 18. EIGHT-YEAR YIELD AND TEST WEIGHT SUMMARY ON SELECTED ENTRIES FROM A FALLOW OAT VARIETY NURSERY GROWN OFF-STATION AT THE MARK & NANCY PETERSON FARM, NORTH HAVRE. NORTHERN AGRICULTURAL RESEARCH CENTER. HAVRE, MONTANA. 1982-1989.

2/ VARIETY OR SELECTION	NO. OF YEARS TESTED 3/	1/ YIELD (BUSHELS PER ACRE) 1985	1986	1987	1988	1989	AVERAGE FOR YEARS TESTED	8-YR. COMPAR. AVERAGE YIELD 4/	PERCENT OF OTANA YIELD 5/	TEST WEIGHT (POUNDS PER BUSHEL) 1985	1986	1987	1988	1989	AVERAGE FOR YEARS TESTED	8-YR. COMPAR. AVERAGE TEST WT 4/	PERCENT OF OTANA TEST WT. 5/
ID805807 74AB2608/CAYUS	3	-	-	99.8	65.2	66.0	77.0	90.2	136.0	-	-	37.3	38.7	29.9	35.3	35.0	98.6
ID75861 CAYUSE/OTANA	6	26.9	128.3	90.1	77.0	68.0	70.4	87.2	131.6	22.1	34.8	35.9	38.6	28.4	31.8	33.2	93.5
ID815792 74AB2608/CAYUS	3	-	-	102.5	58.5	65.8	75.6	78.8	118.8	-	-	36.8	38.0	28.3	34.4	34.1	96.0
CI467882 BORDER	8	26.7	117.6	99.2	64.2	59.0	76.4	76.4	115.2	23.1	34.1	34.9	37.7	29.2	33.0	33.0	93.0
CI 8263 CAYUSE	8	23.5	128.9	90.2	49.8	60.9	75.7	75.7	114.2	21.6	34.6	35.9	37.2	27.3	32.9	32.9	92.5
CI 9297 APPALOOSA	7	19.3	127.2	88.8	56.7	47.1	71.6	75.2	113.5	21.4	33.2	34.6	36.2	26.0	32.1	32.6	91.8
CI483126 MONIDA	8	17.7	117.9	83.0	67.6	53.9	73.5	73.5	110.9	23.5	35.3	35.3	39.1	32.7	34.2	34.2	96.2
ID766843 K71299/3/OTANA	4	29.7	108.0	71.4	72.4	-	70.4	72.0	108.5	25.0	36.7	35.5	38.4	-	33.9	34.8	97.8
ID768244 LODI/PARK	4	24.8	110.6	-	-	-	85.8	70.0	105.6	26.0	37.9	-	-	-	35.5	34.9	98.3
CI 9252 OTANA	8	20.8	111.2	72.7	54.6	42.6	66.3	66.3	100.0	24.9	39.0	35.5	39.7	32.2	35.5	35.5	100.0
OT 726 CASCADE	6	15.1	113.4	72.0	45.2	-	66.2	66.0	99.5	22.0	35.9	30.2	36.3	-	32.1	32.1	90.4
CI 6611 PARK	7	16.0	104.5	69.6	55.7	40.5	59.8	62.8	94.8	22.7	36.4	32.6	37.9	31.9	32.5	33.0	93.0
ND 1001 STEELE	3	22.1	100.3	53.3	-	-	58.5	56.9	85.8	28.2	36.8	29.4	-	-	31.5	33.8	95.0
MEAN (ENTRIES LISTED)		22.0	115.3	82.7	60.6	50.4	-	73.2	-	23.7	35.9	34.5	38.0	26.6	-	33.8	-
6/ Growing Season Precip. (in.)		1.65	8.07	2.49	3.24	5.49	4.83										
7/ Soil PAW (in.) to SD @Pltng.		6.00	9.34	9.66	9.76	5.53	7.79										
Total Plant Avail. Water (in.)		7.65	17.41	12.15	13.00	11.02	12.62										
Soil NO3 (lbs.) to SD @Pltng.		-	136.0	92.0	90.0	160.0											
SD (Sampling Depth in inches)		-	48.0	48.0	48.0	48.0											
Fertilizer Applied (# N)		55.0	40.0	50.0	13.5	70.0											
(# P2O5)		28.0	35.0	40.0	34.5	0.0											
(# K2O)		15.0	20.0	20.0	0.0	0.0											
(# SO4)		0.0	0.0	10.0	0.0	0.0											

Check variety is Otana.

1/ See MCES Bulletin 1095 for evaluation of other important variety performance characteristics to include disease resistance before making variety selection decisions.

2/ P = Private variety, + = Protected variety.

3/ Only the five most recent years are shown, but summary calculations include all years noted.

4/ 8-yr. CA = (x/y) * z where x = average yield or test weight of the entry for years tested, y = average yield or test weight for Otana for the same years, and z = 8-yr. average yield or test weight for the check variety Otana.

5/ Percent of Otana yield or test weight for the same data years as those in which the entry was tested.

6/ Seeding to 14 days prior to harvest maturity.

7/ Depth of moist soil (ft.) * 2.00 in. PAW/ft except starting in 1986 where soil PAW values are actual gravimetric measurements.