TABLE OF CONTENTS

INTRODUCTION

Content:

This preliminary draft report is intended to serve as a popularized 2003 summary of "primary" on-going cereal and oilseed crop variety investigations traditionally conducted on-station by the Agronomy Division at Northern Agricultural Research Center. These data represent approximately 21 percent of NARC-Agronomy's total research project effort on-station at Havre, and approximately 29 percent of the cereal and oilseed variety evaluation effort on-station. The remaining 71 percent of the cereal and oilseed variety evaluation effort not reported here is associated with larger nurseries featuring early generation or other unnamed experimental materials not of general interest to the public. Long-term data summaries reported here are limited to the most recent ten years, largely due to need for report brevity and the fact that most varieties have approximately a 10-year life span before they are replaced in common use with newer materials having superior production characteristics. However, variety performance data has been continuously collected and maintained at the Havre station for 88 years beginning in 1916.

Detailed data pertaining to multiple performance characters, along with associated climatic and management inputs are presented for 2003. Abridged, multi-year summaries for each trial are limited to two crop characters. Individuals desiring detailed data for other than the current year may contact the research center or refer to previous editions of this report for the year(s) of interest.

2003 Data:

It should be noted that 2003 data tables in this report represent varietal performance for a single crop year at a single location only, and thus cannot be considered representative of performance expected when differing conditions due to location, year and management are imposed. Therefore, by itself, such 2003 data shall not constitute in any form a recommendation for or against any entry or practice included.

Multi-Year Summary Data:

Use of a "Comparable Average" provides a mechanism for "estimating" the performance of varieties over a period of time longer than that for which actual data is available for them. This is accomplished by comparing the performance of a "variety of interest" for the years it was actually tested with that of a designated long-term "check" or reference variety grown in the same trial in the same years. The performance of the variety is then expressed as a percent of the check variety's performance. This actual percentage or index is then applied to the actual long-term performance of the check to estimate the performance of the variety of interest had it been grown over the same long term. The reliability of comparable average figures improves with increasing years of actual evaluation. For this reason, no entries with less than three years actual data have been included in long-term summaries.

Other References:

It is intended that this report be used as a supplement to variety performance summaries prepared by MSU's Plant Science and Plant Pathology Department on statewide evaluations by MSU-Montana Agricultural Experiment Station:

Winter Wheat Varieties, Extension Service 2B 1098 (Revised February-March annually)
Spring Wheat Varieties, Extension Service 2B 1093 (Revised February-March annually)
Barley Varieties, Extension Service 2B 1094 (Revised February-March annually)
Oat Varieties, Extension Service 2B 1095 (Revised periodically, last revised in 2001)

These summaries include performance data, descriptions, quality assessments, disease and insect considerations, cropping district recommendations, cultural practices, and general crop production management information. These publications are available from MSU-Extension Service offices and can further be accessed via the Internet at

http://ag.montana.edu/narc
http://www.sarc.montana.edu/mwbc/
http://plantsciences.montana.edu/MTgrower.htm

TABLE X. Summary of climatic data by months for the 2002-2003 crop year (September to August) and averages for the period 1916-2003 at the Northern Agricultural Research Center, Havre, Montana.

Month Year	Sep 2002	Oct 2002	Nov 2002	Dec 2002	Jan 2003	Feb 2003	Mar 2003	Apr 2003	May 2003	Jun 2003	Jul 2003	Aug 2003	Crop Year
Precipitation (inches)													**Total**
Current Year	1.35	0.62	0.57	0.09	0.37	0.44	0.47	1.69	1.92	3.05	0.41	0.56	11.54
87-Year Average (1916 to 2002-03)	1.15	0.66	0.43	0.45	0.43	0.33	0.56	0.97	1.76	2.56	1.47	1.22	11.99
Mean Temperature (^{o}F)													**Average**
Current Year	58.0	38.5	35.4	28.6	20.2	21.0	28.9	48.4	53.3	62.6	74.0	74.3	45.3
87-Year Average (1916 to 2002-03)	56.7	46.3	30.3	19.7	15.3	20.1	30.1	44.0	54.7	62.6	69.8	68.0	43.1

Last killing frost in spring*

2003 _____ **May 20th**

Ave. 1916-2003 _____ **May 15th**

First killing frost in fall*

2003 _____ **September 18th**

Ave. 1916-2003 _____ **September 20th**

Frost free period

2003 _____ **117 days**

Ave. 1916-2003 _____ **128 days**

Growing degree days (base 50)

May 1-Oct 31, 2003 _____ **2564**

Ave. 1951-2003 _____ **2392.1**

Maximum summer temperature _____ **105^{o} on July 24, 2003**

Minimum winter temperature _____ **-24^{o} on January, 23, 2003**

*In this summary 32^{o} is considered a killing frost

TABLE 1. Intrastate Winter Wheat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-3502-SW)

ID	CULTIVAR or SELECTION	STAND %	1/ HEAD DATE	PLNT HT Inches	2/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	3/ PROTEIN %	4/ SAWFLY %
BZ96-919	PRYOR	98.3	160.7	28.1	37.7	7.3	61.9	15.5	0.7
GM10002	NUHORIZON	96.2	155.0	25.8	36.0	7.5	62.4	14.6	0.5
GM10001	NUFRONTIER	98.3	158.3	27.7	34.5	7.6	62.1	14.0	0.8
ABOVE	ABOVE	98.6	151.0	25.7	34.5	7.1	59.6	14.2	0.3
MTW01133	NuWest/SD88191	97.9	159.7	26.7	33.8	7.1	60.3	16.2	0.3
MTR9997	PI262605/MT7863//Redwin	99.7	159.3	30.1	33.6	7.3	61.3	16.9	0.7
MTR01108	PI372129/Tbr//Jdh/3/Tbr/M	98.6	160.7	29.1	33.4	7.2	61.8	15.8	0.5
MT9426	PAUL	100.0	161.3	27.5	33.3	7.7	61.2	16.1	1.0
PI593889	RAMPART	99.7	160.3	29.4	32.4	7.1	61.1	16.0	0.3
BZ96-788	Hatten/HRW popn//MTSF1142	99.7	158.3	27.2	32.3	7.3	61.4	15.3	0.2
MT0177	ND8895//ND8892/KS87H6	100.0	161.7	30.4	31.4	7.4	61.0	15.6	0.8
MT9989	Blizzard/Arapahoe	99.0	161.0	31.9	31.3	7.6	59.6	16.0	0.7
ID550	GARY	97.9	160.0	29.9	31.3	7.6	60.6	15.0	1.2
MT01148	Judith/Blizzard	100.0	162.7	29.3	31.0	7.5	60.3	16.4	0.8
MTW01146	Promontory/MT91366	99.3	162.3	31.0	31.0	7.0	60.9	16.5	1.0
PI593891	VANGUARD	99.3	158.3	30.7	30.8	7.2	61.0	15.7	0.2
PI584526	JUDITH	97.9	160.0	30.5	30.8	7.4	58.6	16.1	0.8
S94-4	CDC FALCON	92.4	159.0	26.6	30.4	7.3	59.8	15.8	1.0
CI 17860	NEELEY	99.0	161.7	29.2	30.3	7.5	61.2	15.6	1.2
SD97457	EXPEDITION	99.3	153.3	27.6	30.2	7.4	60.8	15.3	0.7
MT00159	Promontory/Judith	98.6	160.7	29.8	30.2	7.5	60.0	15.9	0.5
RH78W296	BIGHORN	98.6	160.0	26.1	30.2	7.2	61.9	15.7	0.7
PI555458	PROMONTORY	98.6	157.3	29.8	30.1	7.1	61.4	14.8	1.5
MT0097	Erhardt//Judith/Kestrel	99.7	162.0	28.4	29.8	7.6	61.8	16.1	0.7
AP502CL	AP 502CL	98.3	152.3	24.5	29.7	7.0	58.2	14.2	0.2
MT 9432	BIGSKY	99.7	159.0	31.8	29.6	7.4	61.3	16.1	1.2
MT9982	Promontory/Judith	99.0	161.7	31.1	29.2	7.5	60.5	15.7	0.7
MTS0131	Neeley/CH54//MTS92137	99.0	162.7	29.2	29.2	7.5	62.0	16.3	0.7
MTW01132	Neeley*2/PI262605	99.0	159.3	26.8	29.2	7.5	61.9	16.7	0.5
MTS0031	MTS92015//Vanguard/Norstar	99.3	162.0	29.3	28.7	7.4	61.3	16.2	0.5
PI619098	WAHOO	98.3	157.3	28.6	28.5	7.3	60.6	15.5	0.7
PI605389	PROWERS99	97.2	158.3	30.3	28.3	7.8	62.1	14.9	0.8
MTW9441	NUSKY	97.2	161.0	30.2	28.1	7.3	60.7	16.3	0.8
CI 17879	ROCKY	99.3	159.7	30.0	27.6	7.7	62.1	15.0	0.8
MTW01143	Promontory/MT91366	98.6	163.7	29.9	27.4	7.2	61.5	16.5	1.0
PI613099	MILLENIUM	97.9	158.3	30.6	27.4	7.4	60.5	15.6	0.3
UT94415	GOLDEN SPIKE	97.6	160.7	30.4	27.3	7.1	60.7	15.2	1.3
MTI01158	Fidel/Tiber	98.3	158.3	29.9	26.9	7.3	60.8	15.8	0.0
PI599336	MORGAN	99.7	163.0	30.1	26.8	7.2	60.2	16.6	0.7
PI517194	TIBER	98.6	161.3	31.5	26.8	7.3	61.7	16.1	0.8
MTS0125	MTS92137/ID454	99.0	163.0	29.2	26.5	7.2	61.2	16.7	0.3
QT 542	HYBRITECH 542	97.9	156.7	28.7	25.9	7.3	60.1	15.7	1.0
ND9257	JERRY	98.6	161.7	31.9	25.5	7.2	60.5	16.6	0.7

TABLE 1. Intrastate Winter Wheat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-3502-SW)

ID	CULTIVAR or SELECTION	STAND %	1/ HEAD DATE	PLNT HT Inches	2/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	3/ PROTEIN %	4/ SAWFLY %
GM10004	GM10004	95.8	159.3	30.3	25.3	7.3	60.8	16.1	0.5
PI586806	NUWEST	99.7	160.0	31.5	25.2	7.3	60.2	16.3	0.5
PI564761	ERHARDT	99.3	162.0	27.3	24.7	7.5	61.9	17.1	0.7
JAGALENE	JAGALENE	98.3	155.7	27.1	22.5	7.1	60.7	15.8	0.5
CI 17735	NORSTAR	98.3	163.3	32.2	19.0	7.2	61.9	16.9	1.3
PI596352	ELKHORN	98.6	162.0	30.0	18.8	7.2	60.3	16.7	1.0
EXPERIMENTAL MEANS		98.6	159.7	29.2	29.3	7.3	60.9	15.8	0.7
LSD (0.05)		3.8	2.5	2.2	5.7	0.3	0.8	.	0.5
C.V.2: (S of MEAN / MEAN)*100		1.4	0.6	2.7	6.9	1.4	0.5	.	26.2

1/ No. of Days from January 1 (160 = June 9)
2/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.
3/ Protein values are adjusted to 12 percent grain moisture.
4/ Sawfly rating is reported as the percentage of cut stems.

Site Resource & Management Data: (Exp# 03-3502-SW)					
Field	A-6-4	SaltHaz(MMHOS/cm)6-24"	0.72	2" Soil Temp (^{o}F) @ Plnt'g	44
Quarter	NW	Soil Texture 0-6"	CL	4" Soil Temp (^{o}F) @ Plnt'g	43
Section	33	Soil Texture 6-24"	CL	Fertilizer Formulation	Gran.Blend
Township	32N	Soil Texture 24-36"	CL	Fertilizer Placement	Bnd at Plntg
Range	15E	Soil Texture 36-48"	CL	Fert. Rate (lbs/ac) N	70
Latitude		Init Zn (ppm) 0-6"	0.5	Fert. Rate (lbs/ac) P2O5	40
Longitude		Init Mn (ppm) 0-6"	5.3	Fert. Rate (lbs/ac) K2O	25
Soil Series	Hillon CLm	Init Cu (ppm) 0-6"	1	Herbicide App. Date	5/13
pH 0-6"	7.3	Init Fe (ppm) 0-6"	8.8	Herbicide Product	Bronate Adv.
Org.Matter (%) 0-6"	0.9	CEC 0-6"	21.8	Herbicide Rate (/ac)	20 oz
Init N (lbs/ac) 0-6"	20	Init PAW (in.) 0-6"	0.90	Precip (in.) Plnt'g-Harvest	9.49
Init N (lbs/ac) 6-24"	30	Init PAW (in.) 6-24"	3.52	Precip (>.1) Plnt'g-Harvest	7.66
Init N (lbs/ac) 24-36"	64	Init PAW (in.) 24-36"	2.32	Harvest Date	7/25
Init N (lbs/ac) 36-48"	36	Init PAW (in.) 36-48"	2.19	Rooting Depth (in.)	33"
Init P (ppm) Olsen 0-6"	26	Cropping System	NT-ChmFlw	Post PAW (in.) 0-6"	0.25
Init K (ppm) 0-6"	298	Planting Date	9/25	Post PAW (in.) 6-24"	1.05
Init S (ppm) 0-24"	17	Planting Depth (in.)	1.25	Post PAW (in.) 24-36"	0.81
Init Na (MEQ/100g) 0-6"	0.09	Moist Soil Depth @Plnt'g	55+	Post PAW (in.) 36-48"	1.45
SaltHaz (MMHOS/cm) 0-6"	0.68	Dry Surf Soil (in.) @Plnt'g	0.25	Precip (>.1) Hvst-Post	0.00

TABLE 2. Ten-Year Yield Summary on Selected Entries from Dryland Intrastate Winter Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

2/ VARIETY or SELECTION		No. of YEARS TESTED	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK YIELD 4/	**10-YR COMP. AVE. YIELD 5/**
BZ9W96-919	PRYOR	4							71.0	23.6	39.0	37.7	42.8	119.6	**56.6**
MTR9997	MTR9997	3								22.2	37.4	33.6	31.1	114.5	**54.2**
MT9989	MT9989	3								23.4	37.5	31.3	30.7	113.3	**53.6**
S94-4	CDC FALCON	4							66.0	26.4	38.9	30.4	40.4	112.9	**53.4**
MT9426	PAUL	5						70.0	65.4	21.8	33.6	33.3	44.8	110.8	**52.4**
GM10002	NUHORIZON (hard white)	4							61.0	24.3	36.9	36.0	39.5	110.5	**52.3**
MT9982	MT9982	3								24.7	35.1	29.2	29.7	109.4	**51.8**
GM10001	NUFRONTIER (hard white)	4							63.5	22.7	35.3	34.5	39.0	109.0	**51.6**
MTW9441	NUSKY	5						61.1	59.7	25.3	42.5	28.1	43.3	107.1	**50.7**
QT 542	QUANTUM 542 (P)	10	61.9	69.8	51.2	56.6	52.1	60.7	64.7	23.1	39.0	25.9	50.5	106.7	**50.5**
PI555458	PROMONTORY (+)	10	55.8	81.1	52.9	43.2	44.3	78.3	59.1	22.9	31.6	30.1	49.9	105.5	**49.9**
CI 17860	NEELEY	10	56.5	82.0	47.7	42.6	49.7	64.6	69.0	19.9	34.4	30.3	49.7	105.0	**49.7**
RH78W296	BIGHORN (P+)	9		77.5	49.4	48.8	44.8	76.7	58.0	18.4	32.5	30.2	48.5	103.6	**49.0**
PI584526	JUDITH	10	53.4	78.9	46.6	47.1	48.1	64.0	62.2	23.7	33.1	30.8	48.8	103.1	**48.8**
CI 17879	ROCKY (P+)	10	61.4	69.7	48.6	50.0	47.0	57.4	62.7	25.3	35.6	27.6	48.5	102.6	**48.5**
MT9432	BIGSKY	8			50.2	45.8	50.8	65.6	54.5	21.1	32.5	29.6	43.8	102.5	**48.5**
S89-142	MORGAN	8			48.4	49.4	44.9	59.5	56.3	20.7	37.5	26.8	42.9	100.6	**47.6**
PI586806	NUWEST (+) (hard white)	10	56.7	63.3	49.1	49.1	45.9	62.3	57.9	25.2	40.5	24.2	47.4	100.2	**47.4**
PI517194	TIBER	10	52.2	79.4	47.4	46.8	45.1	59.1	61.8	22.5	32.1	26.8	47.3	100.0	**47.3**
PI605389	PROWERS 99	4							57.7	19.9	36.8	28.3	35.7	99.7	**47.2**
ND9257	JERRY	3						49.1			42.9	25.5	39.2	99.6	**47.1**
ID550	GARY	4							55.5	20.4	34.9	31.3	35.5	99.2	**47.0**
BZ9W97-761	GM10004	3							59.1	19.3	36.5		38.3	98.7	**46.7**
UT94415	GOLDEN SPIKE	4							59.1	17.8	33.2	27.3	34.4	95.9	**45.4**
PI564761	ERHARDT	10	57.4	72.2	42.7	47.4	43.9	52.6	52.3	21.0	35.0	24.7	44.9	94.9	**44.9**
PI593889	RAMPART (sawfly resistant)	10	48.6	67.1	38.6	45.2	50.0	51.9	55.8	22.4	36.8	32.4	44.9	94.8	**44.9**
PI593891	VANGUARD (sawfly resistant)	10	48.2	59.0	38.9	48.2	42.4	48.7	52.4	22.5	30.8	30.8	42.2	89.2	**42.2**
CI 17735	NORSTAR	10	46.1	66.6	44.9	42.5	53.4	36.0	49.0	20.9	40.2	19.0	41.9	88.5	**41.9**
MEANS (For Entries Listed)			54.4	72.2	46.9	47.3	47.3	59.9	59.7	22.3	36.1	29.5			49.0
April-July Precip. (in.)			5.61	12.83	5.57	6.20	8.78	8.57	6.01	4.81	8.87	7.07	7.43		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.93		
Soil NO3(lbs) to SD@Pltg			98	70	130	132	92	Pndg	Pndg	Pndg	110	150	112		
SD (Smplng Depth inches)			48	48	48	48	48	Pndg	Pndg	Pndg	48	48	48		
Fertilizer Applied (# N)	(# N)		70	70	70	70	70	70	70	70	70	70	70		
	(# P_2O_5)		40	40	40	40	40	40	40	40	40	40	40		
	(# K_2O)		0	25	25	25	25	25	25	25	25	25	23		

Long-term check variety is Tiber

1/ See MCES Bulletin 1098 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety

3/ Percent of Tiber yield or test weight for the same data years as those in which a given entry was tested.

4/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Tiber for the same years, and z = 10-Yr average yield or test weight for the check variety Tiber.

TABLE 3. Ten-Year Test Weight Summary on Selected Entries from Dryland Intrastate Winter Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

2/ VARIETY or SELECTION		No. of YEARS TESTED	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK TEST WT 4/	**10-YR COMP. AVE. TEST WT 5/**
PI555458	PROMONTORY (+)	10	63.2	63.6	62.8	64.4	64.2	64.0	62.6	61.0	59.9	61.4	62.7	100.7	**62.7**
MT9432	BIGSKY	8			62.8	63.9	64.2	62.7	61.3	60.8	60.9	61.3	62.2	100.2	**62.4**
CI 17879	ROCKY (P+)	10	62.5	62.7	62.4	64.8	64.6	62.1	62.4	60.0	59.7	62.1	62.3	100.1	**62.3**
PI517194	TIBER	10	62.1	64.0	62.8	63.5	64.4	61.5	61.3	60.7	60.7	61.7	62.3	100.0	**62.3**
PI564761	ERHARDT	10	62.0	63.4	62.2	64.1	63.8	63.0	62.0	60.1	59.3	61.9	62.2	99.8	**62.2**
GM10002	NUHORIZON (hard white)	4							63.9	60.7	60.2	62.4	61.8	99.8	**62.2**
MTW9441	NUSKY	5						61.3	61.8	60.3	60.0	60.7	60.8	99.4	**61.9**
RH78W296	BIGHORN (P+)	9		62.4	62.2	63.8	63.6	62.5	62.2	60.0	58.3	61.9	61.9	99.3	**61.9**
PI605389	PROWERS 99	4							62.7	60.7	59.4	62.1	61.2	98.9	**61.6**
MTR9997	MTR9997	3								59.8	60.0	61.3	60.4	98.9	**61.6**
MT9982	MT9982	3								60.4	60.1	60.5	60.3	98.9	**61.6**
GM10001	NUFRONTIER (hard white)	4							63.6	61.3	57.7	62.1	61.2	98.8	**61.5**
QT 542	QUANTUM 542 (P)	10	61.4	63.0	62.0	63.1	64.1	62.2	61.2	58.9	59.0	60.1	61.5	98.8	**61.5**
PI586806	NUWEST (+) (hard white)	10	60.8	62.5	62.1	63.0	62.6	61.4	61.7	59.9	60.0	60.2	61.4	98.6	**61.4**
CI 17735	NORSTAR	10	60.8	63.8	62.0	61.9	63.8	59.4	61.0	59.8	59.6	61.9	61.4	98.6	**61.4**
S89-142	MORGAN	8			61.9	63.4	63.4	61.5	60.8	59.4	57.9	60.2	61.1	98.3	**61.2**
CI 17860	NEELEY	10	61.0	63.0	61.4	62.5	63.1	62.5	61.7	58.2	57.0	61.2	61.2	98.2	**61.2**
PI593889	RAMPART (sawfly resistant)	10	60.5	62.9	61.6	63.5	64.2	60.8	59.8	58.3	58.8	61.1	61.2	98.2	**61.2**
PI593891	VANGUARD (sawfly resistant)	10	60.7	63.1	61.5	63.6	63.7	60.6	60.1	58.6	58.1	61.0	61.1	98.1	**61.1**
BZ9W97-761	GM10004	3							61.2	59.4	58.2		59.6	97.9	**61.0**
MT9426	PAUL	5						61.5	60.6	57.8	57.9	61.2	59.8	97.8	**60.9**
BZ9W96-919	PRYOR	4							61.8	59.1	58.8	61.9	60.4	97.6	**60.8**
ND9257	JERRY	3						61.1			57.7	60.5	59.8	97.5	**60.7**
ID550	GARY	4							61.2	59.7	58.7	60.6	60.1	97.0	**60.4**
PI584526	JUDITH	10	59.8	62.2	60.8	62.2	62.5	61.7	59.8	58.0	57.9	58.6	60.4	96.9	**60.4**
S94-4	CDC FALCON	4							61.5	57.4	57.7	59.8	59.1	95.5	**59.5**
UT94415	GOLDEN SPIKE	4							61.2	58.9	55.6	60.7	59.1	95.5	**59.4**
MT9989	MT9989	3								57.8	57.1	59.6	58.2	95.4	**59.4**
MEANS (For Entries Listed)			61.4	63.0	62.0	63.4	63.7	61.8	61.6	59.5	58.8	61.0			61.3
April-July Precip. (in.)			5.61	12.83	5.57	6.20	8.78	8.57	6.01	4.81	8.87	7.07	7.43		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.93		
Soil NO3(lbs) to SD@Pltg			98	70	130	132	92	Pndg	Pndg	Pndg	110	150	112		
SD (Smplng Depth inches)			48	48	48	48	48	Pndg	Pndg	Pndg	48	48	48		
Fertilizer Applied (# N)	(# N)		70	70	70	70	70	70	70	70	70	70	70		
	(# P_2O_5)		40	40	40	40	40	40	40	40	40	40	40		
	(# K_2O)		0	25	25	25	25	25	25	25	25	25	23		

Long-term check variety is Tiber

1/ See MCES Bulletin 1098 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety

3/ Percent of Tiber yield or test weight for the same data years as those in which a given entry was tested.

4/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Tiber for the same years, and z = 10-Yr average yield or test weight for the check variety Tiber.

TABLE 4. Advanced Yield Spring Wheat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-3102-SW)

ID	CULTIVAR or SELECTION	STAND %	1/ HEAD DATE	PLNT HT Inches	2/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	3/ PROTEIN %	4/ SAWFLY %
MT 9874	OUTLOOK	99.0	180.0	21.1	15.7	7.9	54.3	18.4	0.0
MT 0245	MT9433/ND695	97.6	180.0	23.3	15.2	8.3	55.9	18.4	0.0
MT 0147	MT9565/ERNEST	100.0	174.7	23.0	14.8	8.6	60.5	19.4	0.0
MT 9955	MCNEAL/KS27//MCNEAL	96.9	180.3	21.2	14.3	8.0	52.8	19.6	8.3
MT 0009	MCNEAL/MT9410	98.6	179.0	21.5	14.1	8.4	57.8	18.0	0.0
BZ992588	CONAN	99.3	179.7	20.7	13.9	8.2	56.6	18.2	0.0
MT 0260	MT9653/REEDER	97.9	181.3	23.7	13.8	8.2	55.7	17.7	0.0
MCNB	MCNEAL LARGE SEED	99.3	180.3	21.8	13.5	7.8	53.4	19.3	1.7
MTHW0203	ID377S/MTHW9701	99.7	177.0	20.9	13.4	8.6	57.8	17.9	1.7
SX1501B	SEEDEX SX1501B	96.2	184.0	18.4	13.4	7.9	52.6	19.0	0.0
MT 0265	ND695/MT9755	99.3	177.7	21.1	13.3	7.5	53.5	19.7	0.0
MT 0220	MCNEAL/ND695	99.3	180.0	20.7	13.2	7.7	53.9	19.6	1.7
PI574642	MCNEAL	100.0	181.0	20.9	13.2	7.9	54.0	19.1	1.7
PI619086	EXPLORER	99.7	175.0	20.9	13.1	8.2	56.8	17.7	1.7
MT 0244	MT8808/WA7802	99.0	178.7	21.5	13.1	7.9	55.1	18.7	5.0
ND 695	REEDER	99.3	179.0	21.5	13.0	8.0	57.4	18.3	1.7
MT 0148	MT9565/ERNEST	99.3	181.7	14.2	12.8	8.4	56.7	18.8	0.0
MT 9929	MT9401/MT9328	99.7	178.7	19.8	12.7	8.3	57.8	18.6	0.0
PI592761	ERNEST	97.6	177.7	24.6	12.7	8.0	56.8	19.7	0.0
SX1502B	SEEDEX SX1502B	98.6	181.7	22.1	12.6	7.8	50.5	19.1	0.0
MT 0255	MT9755/WA7802	99.0	178.7	22.6	12.6	7.9	56.0	18.9	5.0
MT 0248	ND695/MT9433	100.0	179.0	20.8	12.5	8.2	56.7	19.4	0.0
MT 0112	ERNEST/MT9410	99.7	174.3	23.0	12.4	8.1	57.6	19.1	0.0
MT 0118	ERNEST/MT9410	98.3	175.3	21.7	12.3	8.0	56.1	19.4	0.0
MT 0103	BZ992632/MCNEAL	99.3	181.0	21.1	12.2	8.0	55.2	18.3	0.0
CI 17430	NEWANA	97.6	181.7	19.9	12.1	8.2	56.2	17.5	0.0
MT 0134	MT9410/ERNEST	99.3	178.0	24.0	12.1	8.2	56.3	19.1	0.0
MT 0253	MT9542/ND695	100.0	180.7	21.2	12.1	8.2	55.9	18.5	1.7
BZ998447	SPILLMAN/906R	97.9	177.3	21.3	12.0	8.0	55.9	17.5	1.7
MT 0249	ND695/MT9433	98.3	177.3	20.8	11.9	8.3	57.5	18.6	0.0
GM40019	PLATA	99.0	179.7	18.6	11.8	8.2	56.4	16.8	0.0
MT 0013	MCNEAL/MT9410	99.7	177.3	18.2	11.8	8.0	56.3	18.8	0.0
MT 0225	ND695/MCNEAL	99.3	180.3	20.3	11.7	8.0	53.1	18.8	0.0
MT 0228	MCNEAL/WA7802	99.3	181.0	21.6	11.6	7.8	53.5	19.7	8.3
BZ996472	BZ992-634/GOLDEN86	98.3	175.3	20.6	11.5	8.7	60.3	17.1	0.0
MT 0252	ND695/MT9433	98.6	177.7	20.7	11.5	8.3	58.9	17.9	5.0
MT 0238	MT8808/MT9653	100.0	173.7	21.1	11.5	8.5	58.7	18.3	5.0
MTHW0204	MTHW9427/MT9410	99.7	178.0	20.3	11.4	8.0	53.7	18.0	1.7
MT 0247	MT9433/ND695	98.6	177.7	20.7	11.2	8.6	59.5	18.6	1.7
PI527682	AMIDON	100.0	177.7	21.8	11.2	8.1	57.1	18.7	0.0
MTHW9901	MT9311/MTHW9417	100.0	179.0	20.7	11.1	8.5	57.9	18.1	0.0
PI549275	HI-LINE	98.3	179.3	19.9	11.1	8.1	56.6	19.1	0.0
MTHW0002	MTHW9520/MTHW9427	100.0	176.3	20.0	11.0	8.3	55.5	17.9	0.0

TABLE 4. Continued **Advanced Yield Spring Wheat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-3102-SW)**

ID	CULTIVAR or SELECTION	STAND %	1/ HEAD DATE	PLNT HT Inches	2/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	3/ PROTEIN %	4/ SAWFLY %
PI607557	SCHOLAR	100.0	180.3	22.0	11.0	8.3	57.3	19.4	3.3
BZ992322	HANK	98.3	177.0	18.7	11.0	8.1	56.5	19.0	0.0
MT 0234	ERNEST/ND695	99.0	175.7	21.6	10.7	8.3	57.3	18.1	0.0
MT 0202	MCNEAL/GRANDIN	97.9	177.0	21.8	10.7	8.5	60.2	18.4	0.0
BZ996434	BORDER/CONAN	100.0	178.7	20.1	10.3	8.5	57.7	19.3	0.0
MT 9918	MT9328/MT9419	100.0	177.3	22.4	10.0	8.3	57.1	18.6	0.0
WB 926	WESTBRED 926	99.7	176.0	19.6	9.8	8.0	56.7	19.4	0.0
GM40004	BR 7030	99.0	179.0	19.6	9.7	8.5	53.3	17.4	0.0
MT 0205	MCNEAL/MT8808	99.3	178.7	21.1	9.6	8.0	53.6	18.8	3.3
MT 0212	MCNEAL/MT8808	99.0	178.0	20.5	9.5	8.2	57.3	18.3	3.3
CI 13596	FORTUNA	98.6	178.0	23.6	9.5	8.3	56.8	19.1	1.7
GM40020	BLANCA GRANDE	97.2	174.0	17.7	9.5	8.3	58.7	17.4	3.3
MTHW0202	ID377S/MTHW9701	99.0	174.3	19.9	9.5	8.4	57.3	17.2	0.0
MT 0266	ND695/MT9755	99.3	177.3	21.9	9.3	7.9	54.9	18.5	3.3
MTHW0201	ID377S/MTHW9701	99.0	178.3	20.1	9.3	8.3	56.6	18.0	0.0
MT 0261	ND695/MT9653	99.7	177.7	21.1	9.1	8.0	56.6	18.8	3.3
AGRIPRO1	NORPRO	99.0	177.7	20.2	8.9	8.4	57.1	18.0	0.0
PI612605	MTHW9420	100.0	178.7	18.1	7.9	8.1	55.8	17.5	0.0
MT 0237	GRANDIN/WA7802	99.0	177.3	21.6	7.8	8.2	56.7	18.9	5.0
AGRIPRO2	KNUDSON	99.7	179.7	19.8	7.6	8.3	57.4	19.2	0.0
CI 10003	THATCHER	100.0	184.0	24.2	6.9	7.5	50.3	20.3	3.3
EXPERIMENTAL MEANS		99.0	178.4	20.9	11.6	8.2	56.2	18.6	1.3
LSD (0.05)		2.5	1.7	3.1	3.6	0.2	2.0	.	4.0
C.V.2: (S of MEAN / MEAN)*100		0.9	0.3	5.2	11.1	1.0	1.3	.	109.7

1/ No. of Days from January 1 (178 = June 27)
2/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.
3/ Protein values are adjusted to 12 percent grain moisture.
4/ Sawfly rating is reported as the percentage of cut stems.

Site Resource & Management Data: (Exp# 03-3102-SW)							
Field	A-6-1		SaltHaz(MMHOS/cm)6-24"	0.64		2" Soil Temp (^{o}F) @ Plnt'g	50
Quarter	NW		Soil Texture 0-6"	CL		4" Soil Temp (^{o}F) @ Plnt'g	48
Section	33		Soil Texture 6-24"	CL-		Fertilizer Formulation	Gran.Blend
Township	32N		Soil Texture 24-36"	CL		Fertilizer Placement	Bnd at Plntg
Range	15E		Soil Texture 36-48"	CL		Fert. Rate (lbs/ac) N	70
Latitude			Init Zn (ppm) 0-6"	0.5		Fert. Rate (lbs/ac) P2O5	40
Longitude			Init Mn (ppm) 0-6"	4.7		Fert. Rate (lbs/ac) K2O	25
Soil Series	Scobey CLm		Init Cu (ppm) 0-6"	0.7		Herbicide App. Date	6/14
pH 0-6"	7.2		Init Fe (ppm) 0-6"	8.2		Herbicide Product	Bronate Adv.
Org.Matter (%) 0-6"	0.9		CEC 0-6"	21.8		Herbicide Rate (/ac)	20 oz
Init N (lbs/ac) 0-6"	8		Init PAW (in.) 0-6"	0.49		Precip (in.) Plnt'g-Harvest	5.91
Init N (lbs/ac) 6-24"	18		Init PAW (in.) 6-24"	0.95		Precip (>.1) Plnt'g-Harvest	5.15
Init N (lbs/ac) 24-36"	8		Init PAW (in.) 24-36"	1.29		Harvest Date	8/18
Init N (lbs/ac) 36-48"	12		Init PAW (in.) 36-48"	1.72		Rooting Depth (in.)	35"
Init P (ppm) Olsen 0-6"	28		Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.49
Init K (ppm) 0-6"	439		Planting Date	5/1		Post PAW (in.) 6-24"	0.95
Init S (ppm) 0-24"	30		Planting Depth (in.)	1.25		Post PAW (in.) 24-36"	1.29
Init Na (MEQ/100g) 0-6"	0.05		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	1.72
SaltHaz (MMHOS/cm) 0-6"	0.44		Dry Surf Soil (in.) @Plnt'g	0.5		Precip (>.1) Hvst-Post	1.28

TABLE 5. Ten-Year Yield Summary on Selected Entries from Dryland Advanced Spring Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

2/ VARIETY or SELECTION		No. of YEARS TESTED	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK YIELD 3/	**10-YR COMP. AVE. YIELD 4/**
MT9874	OUTLOOK	5						44.1	41.0	22.9	43.4	15.7	33.4	136.5	**42.0**
ND695	REEDER	5						49.1	43.3	22.5	34.9	13.0	32.6	133.1	**40.9**
PI574642	McNEAL	10	41.4	73.0	36.6	54.4	44.9	49.2	40.2	18.9	36.5	13.2	40.8	132.8	**40.8**
CI17430	NEWANA	10	42.5	69.2	39.0	52.1	39.3	45.9	35.6	21.5	38.5	12.1	39.6	128.7	**39.6**
PI607557	SCHOLAR	9		69.5	38.5	52.1	45.5	42.2	38.5	21.0	36.8	11.0	39.4	128.3	**39.4**
PI549275	HI-LINE	10	41.0	63.9	45.8	45.0	40.0	45.3	37.6	19.7	36.0	11.1	38.5	125.4	**38.5**
BZ992588	CONAN	8		65.9	36.7	48.0		47.8	36.0	20.4	33.7	13.9	37.8	124.4	**38.2**
BZ996472	BZ992-634/GOLDEN86	5						44.7	37.8	18.6	37.7	11.5	30.1	122.8	**37.8**
MT9955	MCNEAL/KS27//MCNEAL	4							36.8	19.8	39.4	14.3	27.6	122.6	**37.7**
BZ992322	HANK	4							41.7	20.5	36.4	11.0	27.4	121.9	**37.5**
GM40019	PLATA	3								19.8	40.1	11.8	23.9	120.7	**37.1**
PI592761	ERNEST (+)	10	39.0	64.3	35.7	47.1	35.7	39.9	37.3	19.6	36.1	12.7	36.7	119.5	**36.7**
MT9918	MT9328/MT9419	4							37.7	17.7	41.3	10.0	26.7	118.6	**36.5**
PI619086	EXPLORER	3								19.8	36.7	13.1	23.2	117.1	**36.0**
MT0009	MCNEAL/MT9410	3								21.3	34.1	14.1	23.2	116.8	**35.9**
PI527682	AMIDON	10	40.5	70.5	35.3	47.6	47.3	4.0	35.9	22.2	40.6	11.2	35.5	115.5	**35.5**
WB926	WB 926 (P)	10	46.1	51.9	33.9	46.1	33.7	41.9	38.0	18.7	30.4	9.8	35.1	114.0	**35.1**
MT9929	CHOTEAU	4							34.2	19.3	35.7	12.7	25.5	113.3	**34.8**
MTHW9901	MT9311/MTHW9417	4							37.4	19.1	31.6	11.1	24.8	110.4	**33.9**
BZ996434	WPB BZ996434	3								20.0	35.4	10.3	21.9	110.4	**33.9**
CI13596	FORTUNA	10	40.7	46.3	33.6	44.0	40.1	35.9	35.9	16.7	29.9	9.5	33.3	108.2	**33.3**
PI612605	MTHW9420	5						35.6	38.7	16.4	30.8	7.9	25.9	105.8	**32.5**
MTHW0002	MTHW9520/MTHW9427	4							33.0	18.3	31.7	11.0	23.5	104.5	**32.1**
MT0013	MCNEAL/MT9410	3								18.4	31.2	11.8	20.5	103.2	**31.7**
GM40004	GENERAL MILLS GM40004	3								19.0	32.5	9.7	20.4	103.0	**31.7**
CI10003	THATCHER	10	30.6	49.2	31.0	40.5	33.6	32.5	30.4	18.4	34.2	6.9	30.7	100.0	**30.7**
MEANS (For Entries Listed)			40.2	62.4	36.6	47.7	40.0	39.9	37.3	19.6	35.6	11.6			36.1
April-July Precip. (in.)			6.04	12.42	5.17	5.65	8.78	8.57	6.01	4.81	8.87	7.07	7.34		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.93		
Soil N (lbs) to SD @PLtg			210	72	130	116	140	Pndg	Pndg	Pndg	98	44	116		
SD (Smplng Depth inches)			48	48	48	48	48	Pndg	Pndg	48	48	48	48		
Fertilizer Applied	(# N)		70	70	70	70	70	70	70	70	70	70	70		
	(# P2O5)		40	40	40	40	40	40	40	40	40	40	40		
	(# K2O)		0	25	25	25	25	25	25	25	25	25	23		

Long-term check variety is Thatcher

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

2/ P = Private Variety, + = Protected Variety

3/ Percent of Thatcher yield or test weight for the same data years as those in which a given entry was tested.

4/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Thatcher for the same years, and z = 10-Yr average yield or test weight for the check variety Thatcher.

TABLE 6. Ten-Year Test Weight Summary on Selected Entries from Dryland Advanced Spring Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

2/ VARIETY or SELECTION		No. of YEARS TESTED	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK TEST WT 3/	**10-YR COMP. AVE. TEST WT 4/**
BZ996472	BZ992-634/GOLDEN86	5						60.5	60.6	60.0	61.2	60.3	60.5	108.2	**60.8**
MT0009	MCNEAL/MT9410	3								58.4	61.0	57.8	59.1	108.0	**60.7**
MTHW9901	MT9311/MTHW9417	4							59.0	58.3	61.0	57.9	59.1	107.4	**60.3**
PI607557	SCHOLAR	9		63.0	61.8	61.3	62.3	58.1	60.7	59.4	61.3	57.3	60.6	107.3	**60.3**
BZ996434	WPB BZ996434	3								57.4	60.9	57.7	58.7	107.3	**60.3**
PI619086	EXPLORER	3								58.0	60.3	56.8	58.4	106.7	**59.9**
BZ992588	CONAN	8		62.3	61.6	61.5		58.2	59.4	59.5	61.1	56.6	60.0	106.6	**59.9**
PI592761	ERNEST (+)	10	59.1	62.0	62.0	61.4	61.9	57.4	59.7	58.0	60.0	56.8	59.8	106.5	**59.8**
GM40019	PLATA	3								57.9	60.4	56.4	58.2	106.4	**59.8**
CI13596	FORTUNA	10	59.7	62.0	62.2	60.4	62.6	57.9	59.2	57.2	59.2	56.8	59.7	106.3	**59.7**
MT9929	CHOTEAU	4							58.5	57.0	60.2	57.8	58.4	106.1	**59.6**
PI527682	AMIDON	10	58.2	61.9	61.2	61.0	60.9	57.0	59.1	57.7	59.8	57.1	59.4	105.7	**59.4**
ND695	REEDER	5						58.6	60.1	58.2	60.6	57.4	59.0	105.5	**59.3**
CI17430	NEWANA	10	57.8	61.1	61.0	60.2	60.5	55.0	57.7	59.6	62.0	56.2	59.1	105.2	**59.1**
BZ992322	HANK	4							57.3	57.7	59.6	56.5	57.8	105.0	**59.0**
MT9918	MT9328/MT9419	4							57.6	56.2	59.0	57.1	57.5	104.5	**58.7**
GM40004	GENERAL MILLS GM40004	3								57.8	60.1	53.3	57.1	104.3	**58.6**
WB926	WB 926 (P)	10	56.7	59.8	61.3	59.0	60.9	56.6	56.5	58.3	60.3	56.7	58.6	104.3	**58.6**
MT0013	MCNEAL/MT9410	3								55.4	59.2	56.3	57.0	104.2	**58.5**
PI549275	HI-LINE	10	55.2	61.2	60.3	59.5	61.6	57.1	56.0	56.4	60.7	56.6	58.5	104.0	**58.5**
MTHW0002	MTHW9520/MTHW9427	4							55.3	56.7	59.8	55.5	56.8	103.3	**58.1**
PI574642	McNEAL	10	56.0	62.3	57.8	58.7	59.1	56.6	57.4	57.7	60.1	54.0	58.0	103.2	**58.0**
MT9955	MCNEAL/KS27//MCNEAL	4							56.5	56.3	60.3	52.8	56.5	102.7	**57.7**
PI612605	MTHW9420	5						54.5	57.1	57.0	60.6	55.8	57.0	101.9	**57.3**
MT9874	OUTLOOK	5						56.6	56.9	56.9	59.9	54.3	56.9	101.8	**57.2**
CI10003	THATCHER	10	53.9	60.7	58.2	57.7	57.5	53.8	55.9	55.5	58.3	50.3	56.2	100.0	**56.2**
MEANS (For Entries Listed)			57.1	61.6	60.8	60.1	60.8	57.0	58.0	57.6	60.3	56.2			59.1
April-July Precip. (in.)			6.04	12.42	5.17	5.65	8.78	8.57	6.01	4.81	8.87	7.07	7.34		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.93		
Soil N (lbs) to SD @PLtg			210	72	130	116	140	Pndg	Pndg	Pndg	98	44	116		
SD (Smplng Depth inches)			48	48	48	48	48	Pndg	Pndg	48	48	48	48		
Fertilizer Applied	(# N)		70	70	70	70	70	70	70	70	70	70	70		
	(# P2O5)		40	40	40	40	40	40	40	40	40	40	40		
	(# K2O)		0	25	25	25	25	25	25	25	25	25	23		

Long-term check variety is Thatcher

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

2/ P = Private Variety, + = Protected Variety

3/ Percent of Thatcher yield or test weight for the same data years as those in which a given entry was tested.

4/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Thatcher for the same years, and z = 10-Yr average yield or test weight for the check variety Thatcher.

TABLE 7. Montana Spring Durum Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-9802-SW)

ID	CULTIVAR or SELECTION	STAND %	1/ HEAD DATE	PLNT HT Inches	2/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	3/ PROTEIN %	4/ SAWFLY %
PI574642	MCNEAL	99.0	179.3	22.7	15.6	7.7	55.2	18.6	1.7
WPBLAKER	LAKER	97.6	180.7	21.5	12.7	7.5	58.3	17.7	0.0
CANKYLE	KYLE	97.6	181.7	24.6	12.5	7.5	57.7	19.0	5.0
D91080	PLAZA	93.7	181.3	21.3	12.4	7.5	57.1	18.6	0.0
PI510696	RENVILLE	98.6	181.0	21.6	11.6	7.3	57.4	19.0	5.0
PIERCE	PIERCE	97.9	180.7	21.6	11.6	7.4	57.4	19.1	1.7
D901313	MOUNTRAIL	97.9	180.3	20.5	11.6	7.2	56.7	19.2	3.3
97DU2	UTOPIA	98.6	176.0	17.6	11.1	7.3	57.9	17.7	0.0
DILSE	DILSE	98.3	182.7	21.2	11.1	7.2	56.9	19.9	1.7
CI 17789	VIC	95.8	180.7	21.5	10.9	7.4	58.1	18.3	6.7
NDMUNICH	MUNICH	97.2	180.7	19.3	10.6	7.1	55.4	20.0	3.3
D901442	LEBSOCK	96.9	181.0	20.1	10.5	7.5	58.2	18.5	0.0
D89135	MAIER	99.0	181.0	19.9	10.0	7.3	56.6	20.0	3.3
AP 1526	GENERAL MILLS AP 1526	99.3	180.0	19.8	9.6	7.4	57.7	19.4	5.0
D00AL-27	AZ PLANT BREEDERS D00AL-2	99.3	176.7	18.9	9.6	7.6	58.4	18.4	8.3
YU894-75	WPB YU 894-75	99.0	177.0	18.4	9.1	7.4	58.1	18.4	6.7
YU894163	WPB YU 894-163	99.7	176.7	18.0	8.4	7.1	57.4	19.1	6.7
D87130	BEN	99.7	179.0	20.4	8.4	7.1	57.5	19.0	5.0
ACAVONLE	AC AVONLEA	98.3	179.0	19.0	8.1	7.0	56.8	20.2	3.3
PI478289	MONROE	99.7	176.3	20.1	7.1	6.9	56.7	19.3	8.3
EXPERIMENTAL MEANS		98.2	179.6	20.4	10.6	7.3	57.3	19.0	3.8
LSD (0.05)		4.8	2.1	1.5	2.6	0.3	1.1	.	4.5
C.V.2: (S of MEAN / MEAN)*100		1.7	0.4	2.5	8.7	1.4	0.6	.	42.0

1/ No. of Days from January 1 (180 = June 29)
2/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 60 lbs/bu as the standard test weight for durum.
3/ Protein values are adjusted to 12 percent grain moisture.
4/ Sawfly rating is reported as the percentage of cut stems.

Site Resource & Management Data: (Exp# 03-9802-SW)							
Field	A-6-1		SaltHaz(MMHOS/cm)6-24"	0.64		2" Soil Temp (^{o}F) @ Plnt'g	50
Quarter	NW		Soil Texture 0-6"	CL		4" Soil Temp (^{o}F) @ Plnt'g	48
Section	33		Soil Texture 6-24"	CL-		Fertilizer Formulation	Gran.Blend
Township	32N		Soil Texture 24-36"	CL		Fertilizer Placement	Bnd at Plntg
Range	15E		Soil Texture 36-48"	CL		Fert. Rate (lbs/ac) N	70
Latitude			Init Zn (ppm) 0-6"	0.5		Fert. Rate (lbs/ac) P2O5	40
Longitude			Init Mn (ppm) 0-6"	4.7		Fert. Rate (lbs/ac) K2O	25
Soil Series	Scobey CLm		Init Cu (ppm) 0-6"	0.7		Herbicide App. Date	6/14
pH 0-6"	7.2		Init Fe (ppm) 0-6"	8.2		Herbicide Product	Bronate Adv.
Org.Matter (%) 0-6"	0.9		CEC 0-6"	21.8		Herbicide Rate (/ac)	20 oz
Init N (lbs/ac) 0-6"	8		Init PAW (in.) 0-6"	0.49		Precip (in.) Plnt'g-Harvest	5.91
Init N (lbs/ac) 6-24"	18		Init PAW (in.) 6-24"	0.95		Precip (>.1) Plnt'g-Harvest	5.15
Init N (lbs/ac) 24-36"	8		Init PAW (in.) 24-36"	1.29		Harvest Date	8/19
Init N (lbs/ac) 36-48"	12		Init PAW (in.) 36-48"	1.72		Rooting Depth (in.)	35"
Init P (ppm) Olsen 0-6"	28		Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.49
Init K (ppm) 0-6"	439		Planting Date	5/1		Post PAW (in.) 6-24"	0.95
Init S (ppm) 0-24"	30		Planting Depth (in.)	1.25		Post PAW (in.) 24-36"	1.29
Init Na (MEQ/100g) 0-6"	0.05		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	1.72
SaltHaz (MMHOS/cm) 0-6"	0.44		Dry Surf Soil (in.) @Plnt'g	0.5		Precip (>.1) Hvst-Post	1.28

TABLE 8. Eight-Year Yield Summary on Selected Entries from Dryland Montana Spring Durum Nursery. Northern Agricultural Research Center. Havre, Montana. 1996-2003.

VARIETY or SELECTION		No. of YEARS TESTED	1/ YIELD (Bushels Per Acre) 1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK YIELD 2/	**8-YR COMP. AVE. YIELD 3/**
PI574642	McNEAL (HRSW check)	7		48.0	39.6	43.8	39.4	18.9	39.1	15.6	34.9	115.1	**35.6**
WPBLAKER	LAKER	8	38.4	43.5	33.5	45.7	37.1	22.2	39.9	12.7	34.1	110.5	**34.1**
D901313	MOUNTRAIL	5				41.4	34.6	18.9	39.5	11.6	29.2	108.2	**33.4**
ACAVONLE	AC AVONLEA	3						21.4	40.3	8.1	23.3	106.9	**33.0**
D89135	MAIER	5				45.2	34.3	15.7	39.0	10.0	28.8	106.9	**33.0**
97DU2	UTOPIA	7		49.2	31.5	49.0	35.4	12.1	37.6	11.1	32.3	106.4	**32.9**
D91080	PLAZA	4					33.8	19.1	38.0	12.4	25.8	104.8	**32.4**
CANPLENTY	PLENTY	5	39.1	48.9	33.1	35.8	32.9				38.0	104.4	**32.2**
PI510696	RENVILLE	8	35.3	45.2	35.1	38.0	32.9	21.5	37.8	11.6	32.2	104.2	**32.2**
NDMUNICH	MUNICH	8	35.2	43.1	32.7	42.6	36.0	17.0	38.7	10.6	32.0	103.6	**32.0**
DT433	MEDORA	7	34.7	43.5	34.7	40.1	34.8	16.5	39.5		34.8	103.2	**31.9**
CANKYLE	KYLE	8	38.1	43.5	32.4	39.6	31.4	20.5	36.7	12.5	31.8	103.1	**31.8**
YU894-75	WPB YU 894-75	3						18.9	39.2	9.1	22.4	102.9	**31.8**
NDBELZER	BELZER	3			35.8	39.5	31.3				35.5	102.6	**31.7**
D87130	BEN	8	35.8	43.7	36.5	38.9	33.8	15.8	35.9	8.4	31.1	100.7	**31.1**
PI476211	LLOYD	4	33.0	41.6	36.1	38.9					37.4	100.7	**31.1**
CI17789	VIC	8	34.8	43.1	34.3	36.4	33.2	19.1	35.3	10.9	30.9	100.0	**30.9**
CI15892	WARD	7	34.4	43.2	32.4	37.1	32.8	18.3	37.9		33.7	100.0	**30.9**
CI17282	CROSBY	3	32.6		33.6	37.9					34.7	98.7	**30.5**
D901442	LEBSOCK	4					35.1	16.3	35.2	10.5	24.3	98.6	**30.4**
PI478289	MONROE	8	35.5	45.5	28.8	40.0	35.0	16.9	33.7	7.1	30.3	98.2	**30.3**
DT380	SCEPTRE	5			33.2	40.4	30.2	16.1	31.2		30.2	95.5	**29.5**
MEANS (For Entries Listed)			35.6	44.8	34.0	40.6	34.1	18.1	37.5	10.8			31.9
April-July Precip. (in.)			5.17	5.65	8.78	8.57	6.01	4.81	8.87	7.07	6.87		
Tot.Annual Precip. (in.)			10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.58		
Soil NO3 (lbs.) to SD at Planting			130	116	140	Pndg	Pndg	Pndg	98	46	106		
SD (Sampling Depth in Inches)			48	48	48	Pndg	Pndg	48	48	48	48		
Fertilizer Applied	(# N)		70	70	70	70	70	70	70	70	70		
	(# P_2O_5)		40	40	40	40	40	40	40	40	40		
	(# K_2O)		25	25	25	25	25	25	25	25	25		

Long-term check variety is Vic.

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

2/ Percent of Vic yield or test weight for the same data years as those in which a given entry was tested.

3/ 8-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Vic for the same years, and z = 8-Yr average yield or test weight for the check variety Vic.

TABLE 9. Eight-Year Test Weight Summary on Selected Entries from Dryland Montana Spring Durum Nursery. Northern Agricultural Research Center. Havre, Montana. 1996-2003.

VARIETY or SELECTION		No. of YEARS TESTED	1/TEST WEIGHT (Pounds Per Bushel) 1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK TEST WT 2/	**8-YR COMP. AVE. TEST WT 3/**
WPBLAKER	LAKER	8	62.0	61.3	59.8	60.4	60.2	62.4	62.3	58.3	60.8	101.1	**60.8**
D87130	BEN	8	62.1	61.3	60.9	59.5	60.0	60.6	62.3	57.5	60.5	100.6	**60.5**
D901442	LEBSOCK	4					60.4	61.2	62.3	58.2	60.5	100.5	**60.5**
ACAVONLE	AC AVONLEA	3						61.2	62.8	56.8	60.3	100.2	**60.3**
DT433	MEDORA	7	61.7	61.3	60.7	58.3	60.7	59.7	61.3		60.5	100.1	**60.2**
CI17789	VIC	8	60.1	60.1	60.3	60.0	60.5	60.2	62.2	58.1	60.2	100.0	**60.2**
YU894-75	WPB YU 894-75	3						60.9	61.4	58.1	60.1	100.0	**60.2**
CANKYLE	KYLE	8	60.7	60.2	58.7	59.2	59.1	61.7	62.9	57.7	60.0	99.8	**60.0**
PI510696	RENVILLE	8	60.5	59.8	60.4	59.7	59.4	60.3	61.7	57.4	59.9	99.6	**59.9**
D91080	PLAZA	4					59.3	61.5	62.0	57.1	60.0	99.5	**59.9**
CI15892	WARD	7	61.8	61.2	60.1	55.5	59.8	60.3	61.6		60.0	99.3	**59.7**
D89135	MAIER	5				59.9	59.1	60.8	62.1	56.6	59.7	99.2	**59.7**
97DU2	UTOPIA	7		58.5	61.0	59.1	59.2	60.2	61.6	57.9	59.6	99.1	**59.6**
PI478289	MONROE	8	61.3	59.4	60.3	58.6	59.9	59.2	61.0	56.7	59.6	99.0	**59.6**
CI17282	CROSBY	3	59.0		59.8	58.7					59.2	98.4	**59.2**
D901313	MOUNTRAIL	5				58.8	58.8	60.1	61.7	56.7	59.2	98.4	**59.2**
CANPLENTY	PLENTY	5	60.4	59.6	57.9	58.5	59.4				59.2	98.3	**59.1**
PI476211	LLOYD	4	61.7	59.1	57.6	57.9					59.1	98.2	**59.1**
NDMUNICH	MUNICH	8	60.2	59.8	58.8	58.1	59.1	59.6	60.4	55.4	58.9	97.9	**58.9**
DT380	SCEPTRE	5			57.6	58.2	58.9	59.2	60.7		58.9	97.2	**58.5**
NDBELZER	BELZER	3			58.5	58.6	57.3				58.1	96.5	**58.0**
PI574642	McNEAL (HRSW check)	7		58.4	57.4	57.3	57.0	58.8	60.2	55.2	57.8	96.0	**57.7**
MEANS (For Entries Listed)			61.0	60.0	59.4	58.7	59.3	60.4	61.7	57.2			59.6
April-July Precip. (in.)			5.17	5.65	8.78	8.57	6.01	4.81	8.87	7.07	6.87		
Tot.Annual Precip. (in.)			10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.58		
Soil NO3 (lbs.) to SD at Planting			130	116	140	Pndg	Pndg	Pndg	98	46	106		
SD (Sampling Depth in Inches)			48	48	48	Pndg	Pndg	48	48	48	48		
Fertilizer Applied	(# N)		70	70	70	70	70	70	70	70	70		
	(# P_2O_5)		40	40	40	40	40	40	40	40	40		
	(# K_2O)		25	25	25	25	25	25	25	25	25		

Long-term check variety is Vic.

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

2/ Percent of Vic yield or test weight for the same data years as those in which a given entry was tested.

3/ 8-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Vic for the same years, and z = 8-Yr average yield or test weight for the check variety Vic.

TABLE 10. Intrastate Spring Barley Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions at Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-2102-SB)

ID	CULTIVAR or SELECTION	STAND %	1/ HEAD DATE	PLNT HT Inches	2/ YIELD Bu/Ac	MOIST %	TEST WT Lbs/Bu	PLUMP %	THIN %	3/ PROTEIN %
MT010158	MT920041/Harrington	98.6	185.3	18.8	19.3	8.1	48.9	53.0	22.9	17.4
MT010162	MT920041/Harrington	97.9	190.7	18.5	18.0	8.0	45.9	20.7	48.8	18.6
MT010213	MT920073/Logan	98.6	192.0	19.7	17.6	7.9	47.1	41.3	29.4	19.3
MT010205	MT920073/Baronesse	100.0	188.7	19.3	17.5	8.0	47.3	47.2	24.0	19.1
MT010095	MT890008/Logan	98.6	185.7	19.9	17.4	7.7	46.3	19.8	47.2	18.5
MT000047	Chinook/MT920161	100.0	186.3	18.8	16.7	8.0	47.2	39.3	30.7	19.2
MT010183	MT920053/Baronesse	97.9	191.3	20.1	16.0	8.2	46.9	19.8	48.0	19.6
MT010093	MT890008/H2860224	98.6	193.0	18.1	15.8	7.6	45.0	39.1	34.2	18.5
MT000092	MT890008/Lewis	100.0	184.7	20.4	15.6	7.8	46.3	41.6	32.7	18.0
MT010198	MT920059/ND 13300	97.9	185.3	18.6	15.5	8.2	49.5	66.8	18.0	18.2
MT960099	Manley/Baronesse	97.9	190.7	17.6	15.3	7.7	46.2	15.8	52.5	18.6
MT970148	MT861596/ND 11120	99.3	188.0	17.6	15.2	8.0	47.8	59.6	20.6	17.8
MT010160	MT920041/Harrington	97.2	187.0	19.6	15.1	8.1	47.3	37.9	31.5	18.3
MT010097	MT890008/Logan	99.3	185.0	19.5	14.9	7.9	45.6	36.2	36.3	17.3
MT010212	MT920073/Baronesse	100.0	186.3	19.4	14.7	8.1	47.1	51.6	25.3	19.1
MT000138	MT920041/H1851195	96.5	184.0	19.5	14.6	8.1	50.1	69.3	13.5	18.3
MT981210	MT910150/Stark	98.6	188.0	20.1	14.5	7.9	48.3	45.5	32.0	19.0
MT010061	Elisa/Baronesse	99.3	190.3	20.5	14.5	7.7	46.1	37.1	34.8	19.1
MT000063	H3860224/MT920041	98.6	186.7	19.1	14.4	8.0	47.2	34.3	36.1	20.1
MT970229	MT890021/Stark	98.6	188.0	19.8	14.4	8.1	47.4	48.4	27.6	18.4
PI568246	BARONESSE	99.3	188.7	19.8	14.2	7.7	46.0	38.2	33.8	18.5
MT010155	MT920041/H1851195	100.0	184.3	20.0	14.0	7.9	47.9	53.8	24.6	19.0
MT010080	MT886610/H1851195	98.6	186.0	19.1	14.0	7.7	46.7	37.1	38.4	19.3
MT010133	MT910189/Baronesse	99.3	188.3	19.3	14.0	8.0	47.5	33.3	37.1	18.2
MT981030	Baronesse/MT910160	98.6	187.3	19.9	13.9	8.0	46.5	17.1	48.8	18.0
MT960101	Manley/Baronesse	99.3	192.3	17.7	13.7	7.9	47.1	20.8	24.5	19.3
MT010001	78A10274/Baronesse	98.6	188.3	19.0	13.7	8.1	47.9	47.8	27.4	18.7
MT000180	MT930029/Baronesse	99.3	184.3	20.1	13.7	8.3	48.0	43.2	29.2	18.3
MT981091	MT851195/MT140523	98.6	186.0	18.7	13.7	8.1	48.5	45.2	29.7	17.7
MT010191	MT920053/Harrington	100.0	193.3	18.5	13.6	7.8	45.5	37.4	34.0	19.1
PI605472	GARNET	99.3	190.7	20.3	13.6	8.0	45.2	48.7	25.2	19.0
MT981006	Baronesse/H2860224	99.3	186.7	19.2	13.5	7.7	45.7	43.9	28.6	19.3
MT981004	Baronesse/H2860224	99.3	188.3	18.8	13.4	7.6	45.8	44.5	28.2	19.4
MT990106	Apex/H1851195	100.0	185.3	18.4	13.3	8.1	47.4	52.6	25.9	19.3
MT010081	MT886610/H1851195	99.3	189.7	19.2	13.3	7.9	47.1	40.7	37.2	18.8
B99AL621	B99AL-621	99.3	189.0	18.2	13.1	7.9	46.9	41.0	32.6	19.4
SK 76333	HARRINGTON	99.3	189.3	20.3	12.8	7.8	45.5	33.5	37.0	19.2
MT000239	Harrington/MT920059	98.6	192.0	20.2	12.7	7.7	43.6	32.0	39.0	20.0
MT000040	Chinook/MT920161	98.6	187.7	17.1	12.3	7.9	49.0	38.4	30.1	19.4
MT000045	Chinook/MT920161	99.3	188.3	18.5	12.3	8.1	48.7	51.0	25.9	18.7
MT010177	MT920041/MT890008	100.0	185.3	18.9	12.3	7.7	46.9	32.5	35.8	18.0
MT981060	HAYS	99.3	187.0	17.7	12.1	7.3	43.0	25.7	48.1	18.4
2B914947	MERIT	100.0	185.7	19.3	12.1	7.8	44.4	31.0	38.9	18.9

TABLE 10. Intrastate Spring Barley Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions at Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-2102-SB)

Continued

ID	CULTIVAR or SELECTION	STAND %	1/ HEAD DATE	PLNT HT Inches	2/ YIELD Bu/Ac	MOIST %	TEST WT Lbs/Bu	PLUMP %	THIN %	3/ PROTEIN %
MT010219	MT930029/Baronesse	100.0	190.7	20.5	12.1	8.0	46.2	41.6	30.8	18.9
MT970116	Klages/Baronesse	98.6	186.3	19.2	12.1	8.1	48.8	54.2	22.3	18.0
MT950186	HAXBY	99.3	186.0	19.4	12.0	7.9	49.1	42.5	36.4	18.0
MT010156	MT920041/H1851195	100.0	185.3	18.9	11.9	7.7	47.5	53.1	26.9	18.7
MT981238	ND112311/Lewis	100.0	182.3	20.1	11.8	8.1	47.5	40.0	33.5	18.5
PI610264	VALIER	99.3	191.3	18.2	11.6	7.9	46.8	25.9	40.9	19.1
MT970155	MT886610/MT140523	100.0	192.0	17.9	11.4	7.6	46.4	46.5	30.5	19.5
MT981212	MT910150/Stark	99.3	185.7	18.6	11.4	7.9	48.5	41.8	32.6	19.3
PI491534	GALLATIN	98.6	185.0	18.2	11.3	7.9	47.7	36.9	34.9	19.2
MT960228	Stark/Baronesse	100.0	190.0	19.6	11.2	7.7	46.3	24.4	47.2	18.1
MT910189	ND 7293/Bearpaw	98.6	187.3	17.9	11.0	8.2	49.3	61.2	18.4	17.3
ND13299	CONLON	99.3	179.3	17.6	10.8	8.2	49.7	75.9	12.5	16.5
BZ594-19	XENA	97.9	191.3	19.4	10.7	7.9	45.8	20.5	44.9	17.5
MT000153	MT920059/Baronesse	100.0	186.3	19.3	10.3	8.1	47.9	43.1	29.3	18.8
MT000130	MT910189/MT890070	97.2	187.0	19.6	9.9	7.7	48.0	48.0	29.3	17.5
MT000125	MT910189/Lewis	100.0	198.7	18.4	9.7	8.3	48.2	49.2	27.0	17.9
MT000156	MT920059/Baronesse	99.3	185.0	18.3	9.3	7.9	47.0	51.1	23.6	19.6
MT970026	Baronesse/MT860756	97.2	187.7	19.9	9.3	7.6	47.4	36.0	39.0	18.3
6B952482	(BA6B95-2482) 6B89--2126/	97.9	182.7	18.0	8.8	7.5	45.1	45.5	32.3	17.1
6B932978	LEGACY	99.3	183.3	18.5	7.9	7.5	45.9	50.0	26.7	17.1
PI533600	HAYBET	100.0	184.0	18.2	7.1	7.2	42.2	8.3	66.9	20.4
EXPERIMENTAL MEANS		99.0	187.6	19.0	13.2	7.9	47.0	40.8	32.7	18.6
LSD (0.05)		2.1	4.2	1.6	2.6	0.3	1.2	.	.	.
C.V.2: (S of MEAN / MEAN)*100		0.8	0.8	3.1	7.0	1.2	0.9	.	.	.

1/ No. of Days from January 1 (188 = July 7)
2/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 48 lbs/bu as the standard test weight for barley.
3/ Protein values are reported on a 100% dry matter basis.

Site Resource & Management Data: (Exp# 03-2102-SB)							
Field	A-6-1		SaltHaz(MMHOS/cm)6-24"	0.72		2" Soil Temp (^{o}F) @ Plnt'g	50
Quarter	NW		Soil Texture 0-6"	CL		4" Soil Temp (^{o}F) @ Plnt'g	48
Section	33		Soil Texture 6-24"	CL		Fertilizer Formulation	Gran.Blend
Township	32N		Soil Texture 24-36"	CL		Fertilizer Placement	Bnd at Plntg
Range	15E		Soil Texture 36-48"	CL		Fert. Rate (lbs/ac) N	70
Latitude			Init Zn (ppm) 0-6"	0.4		Fert. Rate (lbs/ac) P2O5	40
Longitude			Init Mn (ppm) 0-6"	2.9		Fert. Rate (lbs/ac) K2O	25
Soil Series	Scobey Cl-Lm		Init Cu (ppm) 0-6"	0.7		Herbicide App. Date	6/14
pH 0-6"	7.6		Init Fe (ppm) 0-6"	7.2		Herbicide Product	Bronate Adv.
Org.Matter (%) 0-6"	0.9		CEC 0-6"	21.8		Herbicide Rate (/ac)	20 oz
Init N (lbs/ac) 0-6"	12		Init PAW (in.) 0-6"	1.37		Precip (in.) Plnt'g-Harvest	5.86
Init N (lbs/ac) 6-24"	18		Init PAW (in.) 6-24"	3.04		Precip (>.1) Plnt'g-Harvest	5.15
Init N (lbs/ac) 24-36"	28		Init PAW (in.) 24-36"	1.77		Harvest Date	8/16
Init N (lbs/ac) 36-48"	60		Init PAW (in.) 36-48"	1.71		Rooting Depth (in.)	36"
Init P (ppm) Olsen 0-6"	35		Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.57
Init K (ppm) 0-6"	426		Planting Date	5/1		Post PAW (in.) 6-24"	1.47
Init S (ppm) 0-24"	35		Planting Depth (in.)	1.25		Post PAW (in.) 24-36"	1.18
Init Na (MEQ/100g) 0-6"	0.09		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	1.77
SaltHaz (MMHOS/cm) 0-6"	0.72		Dry Surf Soil (in.) @Plnt'g	0.25		Precip (>.1) Hvst-Post	1.28

TABLE 11. Ten-Year Yield Summary on Selected Entries from Dryland Intrastate Spring Barley Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ YIELD (Bushels Per Acre) 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK YIELD 3/	**10-YR COMP. AVE. YIELD 4/**
MT960099	Manley/Baronesse	6					70.6	80.6	64.5	30.9	61.5	15.3	53.9	110.2	**61.9**
MT970229	MT890021/Stark	5						81.6	60.6	32.1	56.3	14.4	49.0	108.8	**61.1**
PI568246	BARONESSE (P+)	10	70.3	87.4	52.0	83.8	70.6	85.3	62.5	32.2	57.2	14.2	61.6	108.5	**61.0**
MT960228	Stark/Baronesse	5						80.6	63.5	28.1	59.7	11.2	48.6	108.0	**60.6**
MT990106	Apex/H1851195	3								33.8	55.3	13.3	34.1	106.7	**59.9**
MT981210	MT910150/Stark	4							73.4	31.2	52.9	14.5	43.0	106.6	**59.9**
MT950186	HAXBY	7				89.1	77.0	65.9	66.0	28.9	54.0	12.0	56.1	106.2	**59.6**
BZ594-19	WPB XENA	5				85.0	77.3	65.2		29.0		10.7	53.4	106.2	**59.6**
MT981212	MT910150/Stark	4							66.8	34.6	56.3	11.4	42.3	104.8	**58.9**
MT981060	HAYS	2									55.1	12.1	33.6	104.6	**58.8**
MT960101	Manley/Baronesse	5						79.2	56.8	26.8	57.6	13.7	46.8	104.0	**58.4**
MT970155	MT886610/MT140523	4							60.6	37.1	57.3	11.4	41.6	103.1	**57.9**
PI610264	VALIER	7				80.5	71.4	71.0	62.4	30.2	54.3	11.6	54.5	103.0	**57.9**
MT970148	MT861596/ND 11120	5						73.0	59.3	32.3	50.8	15.2	46.1	102.4	**57.5**
MT970026	Baronesse/MT860756	5						64.8	62.8	32.5	60.1	9.3	45.9	101.9	**57.3**
MT910189	ND 7293/Bearpaw	10	67.9	79.2	62.0	79.5	72.5	57.8	65.8	29.5	51.9	11.0	57.7	101.8	**57.2**
MT981030	Baronesse/MT910160	4							62.9	33.0	53.5	13.9	40.8	101.2	**56.8**
PI605472	GARNET	3								32.9	50.5	13.6	32.4	101.1	**56.8**
MT981004	Baronesse/H2860224	4							61.4	35.0	52.8	13.4	40.7	100.8	**56.6**
MT981091	MT851195/MT140523	4							66.2	27.2	54.2	13.7	40.3	99.9	**56.1**
ND13299	CONLON	3								30.1	54.6	10.8	31.8	99.5	**55.9**
PI491534	GALLATIN	10	66.5	65.5	59.6	76.4	68.5	63.8	65.5	31.6	52.9	11.3	56.2	99.0	**55.6**
MT981238	ND112311/Lewis	4							63.6	32.2	49.3	11.8	39.2	97.3	**54.6**
MT981006	Baronesse/H2860224	4							58.7	28.2	54.7	13.5	38.8	96.1	**54.0**
SK76333	HARRINGTON	10	59.4	63.9	52.5	75.7	58.6	71.8	53.5	31.2	54.5	12.8	53.4	94.1	**52.9**
MT970116	Klages/Baronesse	4							55.5	29.4	53.1	12.1	37.5	93.0	**52.2**
2B914947	MERIT	8			49.5	67.1	60.0	71.9	54.9	28.5	49.0	12.1	49.1	86.6	**48.7**
6B932978	LEGACY	4							53.8	21.9	51.8	7.9	33.9	83.9	**47.1**
MEANS (For Entries Listed)			66.0	74.0	55.1	79.7	69.6	72.3	61.8	30.8	54.5	12.4			57.0
April-July Precip. (in.)			5.59	11.80	5.18	5.65	8.78	8.57	6.01	4.81	8.87		7.25	7.07	
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27	8.83	13.29		11.97	11.54	
Soil NO3(lbs) to SD@Pltg			212	54	130	114	172	Pndg	Pndg	Pndg	102		131	76	
SD (Smplng Depth inches)			48	48	48	48	48	Pndg	Pndg	48	48		48	48	
Fertilizer Applied (# N)	(# N)		70	70	70	70	70	70	70	70	70		70	70	
	(# P_2O_5)		40	40	40	40	40	40	40	40	40		40	40	
	(# K_2O)		0	25	25	25	25	25	25	25	25		22	25	

Long-term check variety is Gallatin

1/ See MCES Bulletin 1094 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety

3/ Percent of Gallatin yield or test weight for the same data years as those in which a given entry was tested.

4/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Gallatin for the same years, and z = 10-Yr average yield or test weight for the check variety Gallatin.

TABLE 12. Ten-Year Test Weight Summary on Selected Entries from Dryland Intrastate Spring Barley Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ TEST WEIGHT (Pounds Per Bushel) 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK TEST WT 3/	**10-YR COMP. AVE. TEST WT 4/**
MT950186	HAXBY	7				55.4	52.1	53.1	51.9	49.4	50.4	49.1	51.6	104.0	**51.6**
MT970116	Klages/Baronesse	4							50.8	49.7	50.5	48.8	49.9	103.3	**51.2**
MT981212	MT910150/Stark	4							51.5	50.0	49.2	48.5	49.8	103.0	**51.1**
MT981238	ND112311/Lewis	4							51.4	49.4	49.2	47.5	49.4	102.1	**50.6**
MT981091	MT851195/MT140523	4							50.8	48.2	49.7	48.5	49.3	102.0	**50.6**
MT970229	MT890021/Stark	5						52.3	50.6	49.2	50.2	47.4	49.9	102.0	**50.6**
MT981210	MT910150/Stark	4							50.1	49.0	49.4	48.3	49.2	101.8	**50.5**
MT970026	Baronesse/MT860756	5						52.0	50.0	49.8	49.7	47.4	49.8	101.6	**50.4**
ND13299	CONLON	3								48.1	48.5	49.7	48.8	101.4	**50.3**
MT910189	ND 7293/Bearpaw	10	47.8	48.6	51.2	50.1	53.6	52.5	50.2	48.2	49.7	49.3	50.1	101.3	**50.2**
PI610264	VALIER	7				54.6	49.5	51.4	49.0	48.5	49.8	46.8	49.9	100.6	**49.9**
PI491534	GALLATIN	10	46.5	52.3	48.7	53.5	49.1	51.5	49.0	48.1	48.5	47.7	49.5	100.0	**49.6**
MT981030	Baronesse/MT910160	4							48.9	49.1	48.8	46.5	48.3	100.0	**49.6**
MT960228	Stark/Baronesse	5						51.4	49.3	47.7	49.6	46.3	48.9	99.8	**49.5**
MT970155	MT886610/MT140523	4							48.6	49.0	48.7	46.4	48.2	99.7	**49.4**
BZ594-19	WPB XENA	5				53.0	48.9	51.3		48.4		45.8	49.5	99.0	**49.1**
MT960101	Manley/Baronesse	5						49.0	47.3	48.6	49.1	47.1	48.2	98.5	**48.8**
MT990106	Apex/H1851195	3								46.5	48.2	47.4	47.4	98.5	**48.8**
MT970148	MT861596/ND 11120	5						50.9	47.9	46.5	47.1	47.8	48.0	98.1	**48.6**
PI568246	BARONESSE (P+)	10	45.6	49.3	47.2	52.8	47.0	51.2	47.6	48.1	48.9	46.0	48.4	97.7	**48.5**
MT981004	Baronesse/H2860224	4							47.5	47.0	48.3	45.8	47.2	97.6	**48.4**
MT960099	Manley/Baronesse	6					46.5	49.1	47.6	47.3	48.8	46.2	47.6	97.1	**48.2**
MT981006	Baronesse/H2860224	4							46.8	47.4	47.8	45.7	46.9	97.1	**48.1**
PI605472	GARNET	3								46.7	48.0	45.2	46.7	97.0	**48.1**
SK76333	HARRINGTON	10	42.7	49.9	46.5	50.7	46.0	49.1	46.8	46.2	48.4	45.5	47.2	95.3	**47.3**
2B914947	MERIT	8			43.4	49.1	43.6	49.0	46.8	46.6	47.3	44.4	46.3	93.5	**46.4**
6B932978	LEGACY	4							43.4	44.7	45.2	45.9	44.8	92.7	**46.0**
MT981060	HAYS	2									45.3	43.0	44.2	91.7	**45.5**
MEANS (For Entries Listed)			45.6	50.0	47.4	52.4	48.5	51.0	48.9	48.1	48.7	46.9			49.2
April-July Precip. (in.)			5.59	11.80	5.18	5.65	8.78	8.57	6.01	4.81	8.87	7.07	7.23		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.93		
Soil NO3(lbs) to SD@Pltg			212	54	130	114	172	Pndg	Pndg	Pndg	102	76	131		
SD (Smplng Depth inches)			48	48	48	48	48	Pndg	Pndg	48	48	48	48		
Fertilizer Applied (# N)	(# N)		70	70	70	70	70	70	70	70	70	70	70		
	(# P_2O_5)		40	40	40	40	40	40	40	40	40	40	40		
	(# K_2O)		0	25	25	25	25	25	25	25	25	25	23		

Long-term check variety is Gallatin

1/ See MCES Bulletin 1094 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

2/ P = Private Variety, + = Protected Variety

3/ Percent of Gallatin yield or test weight for the same data years as those in which a given entry was tested.

4/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Gallatin for the same years, and z = 10-Yr average yield or test weight for the check variety Gallatin.

TABLE 13. Montana Spring Oat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-0402-OA)

ID	CULTIVAR or SELECTION	STAND %	1/ HEAD DATE	PLNT HT Inches	2/ YIELD Bu/Ac	MOISTURE %	TEST WT Lbs/Bu	3/ PROTEIN %
87AB5632	MONIDA/75Ab861	100.0	182.3	21.7	30.8	6.6	28.5	13.5
90Ab1322	MAVERICK	100.0	182.0	17.8	29.0	6.5	28.1	16.7
95A10854	(95Ab10854) 84Ab835/MONIDA	100.0	187.0	20.6	28.5	6.7	26.2	15.5
ABSP19-9	83Ab3083/MONIDA	100.0	183.3	21.0	27.9	6.8	27.3	15.1
PI583735	CELSIA	100.0	185.0	23.3	26.7	6.1	29.3	16.2
95AB5543	83Ab3119/86Ab1867A	100.0	186.0	20.5	26.4	6.3	27.6	16.2
81Ab5792	RIO GRANDE	100.0	180.3	18.2	26.1	6.6	30.8	16.8
ABSP 9-2	MONICO	100.0	180.3	19.3	25.3	6.9	30.2	15.0
OT351	CDC PACER	100.0	182.3	22.4	24.3	6.6	26.5	14.5
ABSP14-6	83Ab3119/MONIDA	99.3	180.0	19.7	24.2	6.7	28.9	15.0
CI483126	MONIDA	100.0	184.7	22.1	24.2	6.8	30.3	15.5
ND930122	KILLDEER	100.0	180.0	21.5	24.1	6.4	30.3	17.1
PI537436	AJAY	100.0	181.0	16.4	23.9	6.3	29.2	18.3
98AB6646	IAH61-3-3/90Ab1322	100.0	181.7	18.9	23.2	6.7	29.2	16.0
CI 9252	OTANA	100.0	181.7	22.9	21.1	7.1	30.9	16.5
OT373	CDC DANCER	100.0	181.3	22.2	19.9	7.3	27.3	15.8
EXPERIMENTAL MEANS		100.0	182.4	20.5	25.3	6.7	28.8	15.9
LSD (0.05)		0.5	1.5	2.0	4.3	0.5	3.7	.
C.V.2: (S of MEAN / MEAN)*100		0.2	0.3	3.4	5.9	2.5	4.5	.

1/ No. of Days from January 1 (182 = July 1)
2/ Volumetric yields are based on plot weights adjusted to uniform 12 percent grain moisture and 32 lbs/bu as the standard test weight for oats.
3/ Protein values are reported on a 100% dry matter basis.

Site Resource & Management Data: (Exp# 03-0402-OA)							
Field	A-6-1		SaltHaz(MMHOS/cm)6-24"	0.72		2" Soil Temp (^{o}F) @ Plnt'g	60
Quarter	NW		Soil Texture 0-6"	CL		4" Soil Temp (^{o}F) @ Plnt'g	56
Section	33		Soil Texture 6-24"	CL		Fertilizer Formulation	Gran.Blend
Township	32N		Soil Texture 24-36"	CL		Fertilizer Placement	Bnd at Plntg
Range	15E		Soil Texture 36-48"	CL		Fert. Rate (lbs/ac) N	70
Latitude			Init Zn (ppm) 0-6"	0.4		Fert. Rate (lbs/ac) P2O5	40
Longitude			Init Mn (ppm) 0-6"	2.9		Fert. Rate (lbs/ac) K2O	25
Soil Series	Scobey Cl-Lm		Init Cu (ppm) 0-6"	0.7		Herbicide App. Date	6/14
pH 0-6"	7.6		Init Fe (ppm) 0-6"	7.2		Herbicide Product	Bronate Adv.
Org.Matter (%) 0-6"	0.9		CEC 0-6"	21.8		Herbicide Rate (/ac)	20 oz
Init N (lbs/ac) 0-6"	12		Init PAW (in.) 0-6"	1.37		Precip (in.) Plnt'g-Harvest	5.86
Init N (lbs/ac) 6-24"	18		Init PAW (in.) 6-24"	3.04		Precip (>.1) Plnt'g-Harvest	5.15
Init N (lbs/ac) 24-36"	28		Init PAW (in.) 24-36"	1.77		Harvest Date	8/16
Init N (lbs/ac) 36-48"	60		Init PAW (in.) 36-48"	1.71		Rooting Depth (in.)	
Init P (ppm) Olsen 0-6"	35		Cropping System	NT-ChmFlw		Post PAW (in.) 0-6"	0.57
Init K (ppm) 0-6"	426		Planting Date	5/2		Post PAW (in.) 6-24"	1.47
Init S (ppm) 0-24"	35		Planting Depth (in.)	1.25		Post PAW (in.) 24-36"	1.18
Init Na (MEQ/100g) 0-6"	0.09		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	1.77
SaltHaz (MMHOS/cm) 0-6"	0.72		Dry Surf Soil (in.) @Plnt'g	0.5		Precip (>.1) Hvst-Post	1.28

TABLE 14. Ten-Year Yield Summary on Selected Entries from Dryland Northwestern State Oat Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

VARIETY or SELECTION		No. of YEARS TESTED	1/ YIELD (Bushels Per Acre) 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK YIELD 2/	**10-YR COMP. AVE. YIELD 3/**
OT351	CDC PACER	3								37.5	72.3	24.3	44.7	109.9	**91.2**
ABSP19-9	83/AB3083/MONIDA	5						109.5	77.0	36.7	69.3	27.9	64.1	105.2	**87.3**
ND930122	KILLDEER	4							79.1	35.8	64.5	24.1	50.9	103.9	**86.3**
CI483126	MONIDA	10	85.0	161.3	88.4	93.9	97.9	103.8	80.5	37.7	70.5	24.2	84.3	101.6	**84.3**
81AB5792	RIO GRANDE	10	88.5	162.0	86.0	97.0	103.1	97.4	81.0	36.3	65.2	26.1	84.3	101.5	**84.3**
90AB1322	MAVERICK	10	77.2	156.3	77.0	99.2	98.4	106.1	72.5	37.5	78.0	29.0	83.1	100.1	**83.1**
87AB5125	OGLE/75AB861	5				94.1	95.6	114.9	74.3	33.4			82.5	100.0	**83.0**
CI9252	OTANA	10	88.5	153.8	87.4	95.9	100.2	108.7	73.9	33.6	67.3	21.1	83.0	100.0	**83.0**
ABSP9-2	MONICO	7				92.4	93.0	111.3	73.0	29.7	72.5	25.3	71.0	99.3	**82.5**
CELSIA	CELSIA	7				97.8	89.4	103.4	75.5	32.1	66.1	26.7	70.1	98.1	**81.4**
ND870258	WHITESTONE	8		147.0	88.3	98.1	99.1	94.3	75.6	36.6	63.1		87.8	97.4	**80.9**
PI537463	AJAY	10	69.8	141.0	63.7	90.3	87.3	98.0	66.0	34.5	66.4	23.9	74.1	89.3	**74.1**
ND862915	PAUL	4		106.7	60.7			68.9	45.2				70.4	66.4	**55.1**
MEANS (For Entries Listed)			81.8	146.9	78.8	95.4	96.0	101.5	72.8	35.1	68.6	25.3			81.3
April-July Precip. (in.)			5.59	11.80	4.57	5.46	8.79	8.57	6.01	4.81	8.87	7.07	7.15		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.93		
Soil NO3 (lbs.) to SD at Planting			212	NA	130	114	172	Pndg	Pndg	Pndg	102	76	146		
SD (Sampling Depth in Inches)			48	0	48	48	48	Pndg	Pndg	Pndg	48	48	40		
Fertilizer Applied	(# N)		70	70	70	70	70	70	70	70	70	70	70		
	(# P_2O_5)		40	40	40	40	40	40	40	40	40	40	40		
	(# K_2O)		0	25	25	25	25	25	25	25	25	25	23		

Long-term check variety is Otana.

1/ See MCES Bulletin 1095 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

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

3/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Otana for the same years, and z = 10-Yr average yield or test weight for the check variety Otana.

TABLE 15. Ten-Year Test Weight Summary on Selected Entries from Dryland Northwestern State Oat Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

VARIETY or SELECTION		No. of YEARS TESTED	1/TEST WEIGHT (Pounds Per Bushel) 1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	AVE. for YEARS TESTED	% of CHECK TEST WT 2/	**10-YR COMP. AVE. TEST WT 3/**
ND862915	PAUL	4		43.8	33.1			38.6	45.1				40.1	116.0	**39.2**
CI9252	OTANA	10	33.2	37.0	33.0	33.4	31.6	33.1	35.3	36.8	33.5	30.9	33.8	100.0	**33.8**
ABSP9-2	MONICO	7				33.8	30.8	33.5	34.6	37.0	34.6	30.2	33.5	100.0	**33.8**
ND930122	KILLDEER	4							35.7	35.0	33.0	30.3	33.5	98.2	**33.2**
ND870258	WHITESTONE	8		35.1	31.3	32.8	29.4	31.7	36.3	36.2	31.7		33.1	96.6	**32.6**
81AB5792	RIO GRANDE	10	31.5	34.9	31.3	32.0	29.7	31.8	37.2	34.0	30.3	30.8	32.4	95.8	**32.4**
ABSP19-9	83/AB3083/MONIDA	5						30.8	35.7	37.0	31.6	27.3	32.5	95.7	**32.3**
87AB5125	OGLE/75AB861	5				33.1	28.1	30.8	33.4	35.3			32.1	94.4	**31.9**
OT351	CDC PACER	3								36.0	32.8	26.5	31.8	94.1	**31.8**
PI537463	AJAY	10	32.5	33.5	31.1	33.1	28.4	30.6	32.9	35.5	31.0	29.2	31.8	94.1	**31.8**
CI483126	MONIDA	10	30.2	33.5	29.3	30.2	28.6	29.3	33.4	35.9	32.0	30.3	31.3	92.6	**31.3**
90AB1322	MAVERICK	10	30.7	33.9	29.2	30.6	27.6	29.1	33.1	36.1	31.9	28.1	31.0	91.9	**31.0**
CELSIA	CELSIA	7				30.9	28.0	30.0	33.9	32.2	29.7	29.3	30.6	91.2	**30.8**
MEANS (For Entries Listed)			31.6	36.0	31.2	32.2	29.1	31.8	35.6	35.6	32.0	29.3			32.8
April-July Precip. (in.)			5.59	11.80	4.57	5.46	8.79	8.57	6.01	4.81	8.87	7.07	7.15		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27	8.83	13.29	11.54	11.93		
Soil NO3 (lbs.) to SD at Planting			212	NA	130	114	172	Pndg	Pndg	Pndg	102	76	146		
SD (Sampling Depth in Inches)			48	0	48	48	48	Pndg	Pndg	Pndg	48	48	40		
Fertilizer Applied	(# N)		70	70	70	70	70	70	70	70	70	70	70		
	(# P_2O_5)		40	40	40	40	40	40	40	40	40	40	40		
	(# K_2O)		0	25	25	25	25	25	25	25	25	25	23		

Long-term check variety is Otana.

1/ See MCES Bulletin 1095 for evaluation of other important variety performance characteristics to include protein, quality, disease resistance, etc. before making cultivar selecton decisions.

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

3/ 10-Yr Comparable Average = (x/y) * z where x = average yield or test weight of a given entry for years tested, y = average yield or test weight for Otana for the same years, and z = 10-Yr average yield or test weight for the check variety Otana.

TABLE 16. Montana Safflower Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions at Northern Agricultural Research Center. Havre, Montana. 2003. (Exp# 03-7702-SA)

ENTRY	SOURCE	STAND %	1/ FLWR DATE	PLNT HT Inches	YIELD Lbs/Ac	MOIST %	TEST WT Lbs/Bu	OIL % 0%Mois.	OIL % 8%Mois.	Lbs OIL 8%Mois.
95B7174	01DLI2 7107	84.7	204.7	13.5	688.2	5.3	41.3	38.9	35.8	246.9
95B7446		88.9	204.0	12.9	692.8	5.3	41.5	37.8	34.7	240.6
GW9048-1	01DOL2 2124	85.4	205.3	14.7	759.5	5.6	42.8	34.2	31.4	239.2
95B7181	01DOL2 2129	85.7	205.3	12.9	676.7	5.3	43.3	37.9	34.8	235.7
GW9048-2	01DOL3 3102	78.5	205.7	13.0	724.1	5.6	43.2	34.5	31.8	230.1
S-518	01DOL3 3110	94.4	206.0	14.1	630.0	5.2	39.4	38.9	35.8	226.0
00B6524		91.0	204.7	13.0	645.9	5.3	43.6	37.2	34.2	221.1
00B8208	01DOL4 4115	94.5	204.3	13.7	595.8	5.3	41.4	36.4	33.5	199.5
00B7583	01DOL4 4126	89.1	204.3	11.8	537.9	5.2	40.8	39.9	36.7	197.3
97B7433	99DLI1 212/106	92.1	207.3	12.5	556.0	5.2	40.1	37.8	34.8	193.4
96B6731	99MTDSVT 203/101	91.9	205.7	12.0	513.7	5.2	41.2	39.4	36.3	186.4
MONTOLA 2001	99MTDSVT 104	89.4	205.7	12.2	516.6	5.2	41.9	39.1	36.0	186.1
96B6054	99MTDSVT 222/106	90.0	204.0	12.0	468.2	4.5	38.2	42.5	39.1	183.0
CENTENNIAL	99MTDSVT 228/107	93.3	205.0	12.6	493.5	5.2	40.5	40.1	36.9	181.9
98B1475	99MTDSVT 218/108	92.1	204.7	14.0	545.8	5.2	40.7	36.1	33.2	181.7
00B6144	99MTDSVT 109	93.1	203.3	11.1	452.4	4.4	38.4	43.3	39.9	180.5
00B7627	99MTDSVT 317/111	90.5	205.0	11.3	497.2	5.1	40.2	39.3	36.1	179.8
FINCH	99DOL2 125	94.2	204.7	11.8	564.1	5.5	42.0	34.5	31.7	179.1
96B6527		92.6	205.3	12.6	519.7	5.3	41.3	37.4	34.4	178.6
91B2166	99MTDSVT 311/120	89.6	205.3	14.0	514.5	5.1	41.2	37.2	34.2	176.0
97B7182	99DLI2 319/107	90.3	203.7	12.3	479.9	5.2	40.2	39.8	36.6	175.6
MONTOLA 2000	99DOL4 201/122	95.4	203.7	10.7	479.2	5.3	39.5	38.7	35.6	170.5
MORLIN		97.4	204.3	11.9	495.0	4.9	40.3	37.3	34.3	170.0
97B1214	99DLI2 316/130	91.2	204.7	13.1	518.9	5.1	38.4	35.0	32.2	167.1
00B6521	WILL	89.6	203.3	13.6	416.9	4.4	37.9	43.2	39.7	165.6
MONTOLA 2003	99MTDSVT 224/130	93.3	204.0	11.8	468.2	5.2	40.7	37.8	34.8	162.8
S-541	WILL 95FI	90.7	206.3	13.5	413.9	5.2	41.5	41.2	37.9	156.7
95B3538		94.5	206.3	14.7	480.4	5.3	40.3	35.2	32.4	155.7
MONTOLA 2004		92.4	202.7	11.4	448.8	5.3	41.2	37.2	34.2	153.6
00B6878	WILL	95.6	204.0	14.4	413.4	5.2	42.5	39.7	36.5	151.0
00B1126&1127	991-122-6503	96.3	203.7	12.5	463.8	5.2	37.9	34.7	31.9	148.1
97B1286	WILL WOMA2003	93.7	204.7	14.1	447.3	5.1	38.9	36.0	33.1	148.1
97B1744	WILL	97.4	205.3	11.2	451.7	5.4	41.7	34.7	31.9	144.0
00B1027	011-2180	93.3	206.3	14.2	307.3	4.4	37.8	43.5	40.1	123.4
ERLIN	WILL 95FI	91.9	205.0	12.2	360.4	5.1	39.0	36.4	33.5	121.1
91B3842	WILL	85.6	204.7	13.9	211.2	4.3	39.3	46.2	42.5	89.7
EXPERIMENTAL MEANS		91.4	204.8	12.8	512.5	5.1	40.6	38.3	35.2	179.1
LSD (0.05)		7.7	0.8	2.0	128.2	0.1	1.1	0.8	0.7	47.1
C.V.2: (S of MEAN / MEAN)*100		3.0	0.1	5.4	8.9	0.7	1.0	0.7	0.7	9.3

1/ No. of Days from January 1 (205 = July 24)

Site Resource & Management Data: (Exp# 03-7702-SA)							
Field	An-4-5		SaltHaz(MMHOS/cm)6-24"	0.84		2" Soil Temp (^{o}F) @ Plnt'g	61
Quarter	NW		Soil Texture 0-6"	CL		4" Soil Temp (^{o}F) @ Plnt'g	55
Section	32		Soil Texture 6-24"	CL		Fertilizer Formulation	Gran.Blend
Township	32N		Soil Texture 24-36"	CL		Fertilizer Placement	Bnd at Plntg
Range	15E		Soil Texture 36-48"	CL		Fert. Rate (lbs/ac) N	70
Latitude			Init Zn (ppm) 0-6"	0.4		Fert. Rate (lbs/ac) P2O5	40
Longitude			Init Mn (ppm) 0-6"	2.2		Fert. Rate (lbs/ac) K2O	25
Soil Series	Joplin Cl-Lm		Init Cu (ppm) 0-6"	0.8		Herbicide App. Date	5/14
pH 0-6"	8		Init Fe (ppm) 0-6"	4.2		Herbicide Product	Treflan MTF
Org.Matter (%) 0-6"	1.2		CEC 0-6"	21.8		Herbicide Rate (/ac)	24 oz
Init N (lbs/ac) 0-6"	22		Init PAW (in.) 0-6"	1.10		Precip (in.) Plnt'g-Harvest	5.61
Init N (lbs/ac) 6-24"	66		Init PAW (in.) 6-24"	3.56		Precip (>.1) Plnt'g-Harvest	4.91
Init N (lbs/ac) 24-36"	100		Init PAW (in.) 24-36"	2.00		Harvest Date	9/30
Init N (lbs/ac) 36-48"	92		Init PAW (in.) 36-48"	1.78		Rooting Depth (in.)	48"
Init P (ppm) Olsen 0-6"	23		Cropping System	CT-MechFlw		Post PAW (in.) 0-6"	0.75
Init K (ppm) 0-6"	332		Planting Date	5/16		Post PAW (in.) 6-24"	3.69
Init S (ppm) 0-24"	42		Planting Depth (in.)	1.25		Post PAW (in.) 24-36"	2.20
Init Na (MEQ/100g) 0-6"	0.11		Moist Soil Depth @Plnt'g	48+		Post PAW (in.) 36-48"	2.22
SaltHaz (MMHOS/cm) 0-6"	0.80		Dry Surf Soil (in.) @Plnt'g	0.75		Precip (>.1) Hvst-Post	0

TABLE 17. Ten-Year Yield Summary on Selected Entries from Dryland Safflower Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

VARIETY or SELECTION		No. of YEARS TESTED	YIELD (Lbs Per Acre) 1994	1995	1996	1997	1998	1999 1/	2000	2001 1/	2002	2003	AVE. for YEARS TESTED	% of CHECK YIELD 2/	**10-YR COMP. AVE. YIELD 3/**
STIRLING		3	1185.1	2240.7	1126.5								1517.4	134.0	**1425.3**
95B7446	99MTDSVT 218/108	4						1366.8	1496.5		1950.3	692.8	1376.6	117.2	**1247.3**
97B1744	99DLI2 319/107	3							1941.9		1785.7	451.7	1393.1	114.1	**1214.2**
95B7181	99MTDSVT 228/107	6				597.2	1079.6	1245.5	1902.9		1541.5	676.7	1173.9	114.0	**1213.1**
S-518	Will 95FI	6				560.8	1044.3	1180.9	1569.6		1870.3	630.0	1142.6	111.0	**1180.8**
95B7174	99MTDSVT 222/106	6				540.2	1066.3	1176.9	1666.0		1691.4	688.2	1138.2	110.6	**1176.2**
MONT2003		4				574.7	917.5	1311.4				468.2	818.0	108.8	**1157.0**
91B6429		3					948.9	1093.5	1490.8				1177.7	108.2	**1151.3**
MONT2000		7	952.1	1997.6	972.1	452.3	920.1	1152.1				479.2	989.4	108.1	**1150.1**
90B6011		3	873.8	1763.9	1024.6								1220.8	107.8	**1146.6**
95B3538	99MTDSVT 104	5					835.1	1160.7	1588.2		1832.6	480.4	1179.4	107.2	**1140.0**
FINCH	Will 95FI	9	1072.1	1727.0	1048.8	470.0	1033.4	1267.5	1516.3		1383.7	564.1	1120.3	105.3	**1120.3**
MORLIN	011-2180	9	813.8	1898.6	942.0	466.6	937.3	1342.4	1313.2		1839.9	495.0	1116.5	105.0	**1116.5**
S-541	Will	5	907.3	1821.7	918.4						1848.6	413.9	1182.0	104.9	**1115.5**
91B1126		3		1633.1	1004.1							514.5	1050.6	101.3	**1077.8**
CENTENNL	Will	9	780.6	1679.5	937.7	673.5	806.6	1034.6	1423.6		1744.7	493.5	1063.8	100.0	**1063.8**
96B6527	99MTDSVT 317/111	4						1345.4	1108.3		1701.4	519.7	1168.7	99.5	**1058.9**
91B6668		4	888.6	1741.1	870.4	517.4							1004.4	98.7	**1049.7**
97B1286	99MTDSVT 311/120	4						1347.7	1036.8		1791.8	447.3	1155.9	98.4	**1047.3**
MONT2001		7	822.9	1533.7	922.7	315.9	854.2	1060.0				516.6	860.8	94.1	**1000.7**
91B2166	99DLI1 212/106	3				567.6	876.9				1552.8		999.1	92.9	**988.8**
96B6731	99DOL2 125	3							1415.5		1473.8	513.7	1134.4	92.9	**988.7**
96B6054	99MTDSVT 109	4						1027.1	1112.1		1503.9	468.2	1027.8	87.5	**931.3**
ERLIN	99MTDSVT 224/130	9	873.2	1784.9	925.0	421.2	565.1	882.3	759.0		1262.5	360.4	870.4	81.8	**870.4**
91B3842	99MTDSVT 203/101	6				484.2	740.8	879.4	833.1		1585.8	211.2	789.1	76.7	**815.5**
MEANS (For Entries Listed)			917.0	1802.0	972.0	510.9	901.9	1169.1	1385.9		1668.3	504.3			1097.9
April-July Precip. (in.)			6.04	12.42	5.17	5.65	8.78	8.57	6.01		8.87	7.69	7.69		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27		13.29	12.36	12.36		
Soil N (lbs) to SD @ PLtg			250	210	88	248	N/A	N/A	N/A		N/A	78	175		
SD (Smplng Depth inches)			48	48	48	48	48	Pndg	Pndg		48	48	48		
Fertilizer Applied		(# N)	70	70	70	70	70	70	70		70	70	70		
		(# P2O5)	40	40	40	40	40	40	40		40	40	40		
		(# K2O)	0	25	25	25	25	25	25		25	25	22		

Long-term check variety is Centennial

1/ The 1993 nursery was destroyed by frost and snow in August. The 1999 oil results are pending. The 2001 nursery was destroyed in October due to extreme stand variablity caused by severe drough conditions prior to planting and throughout the growing season.

2/ 10-Yr Comparable Average = (x/y) * z where x = average yield or oil of a given entry for years tested, y = average yield or oil for Centennial for the same years, and z = 10-Yr average yield or oil for the check variety Centennial.

3/ Percent of Centennial yield or oil for the same data years as those in which a given entry was tested.

TABLE 18. Ten-Year Percent Oil Summary on Selected Entries from Dryland Safflower Nursery. Northern Agricultural Research Center. Havre, Montana. 1994-2003.

VARIETY or SELECTION		No. of YEARS TESTED	Oil (%) 1994	1995	1996	1997	1998	1999 1/	2000	2001 1/	2002	2003	AVE. for YEARS TESTED	% of CHECK OIL 2/	**10-YR COMP. AVE. OIL 3/**
91B3842	99MTDSVT 203/101	5				40.5	36.9		41.6		39.4	46.2	40.9	105.6	**41.4**
S-541	Will	5	42.9	40.1	40.6						37.0	41.2	40.4	102.4	**40.1**
96B6054	99MTDSVT 109	3							38.5		38.3	42.5	39.7	100.5	**39.4**
CENTENNL	Will	8	42.1	38.6	39.0	38.7	36.5		41.3		37.2	40.1	39.2	100.0	**39.2**
MONT2000		6	43.0	39.0	40.2	36.6	36.2					38.7	39.0	99.5	**39.0**
S-518	Will 95FI	5				39.3	37.5		42.5		33.2	38.9	38.3	98.8	**38.7**
MONT2003		3				37.8	36.5					37.8	37.4	97.3	**38.1**
90B6011		3	41.8	35.6	38.1								38.5	97.3	**38.1**
MONT2001		6	42.3	37.8	38.7	34.4	35.9					39.1	38.0	97.1	**38.1**
91B6668		4	42.0	37.9	37.3	36.2							38.3	96.8	**37.9**
91B1126		3		36.0	37.5							37.2	36.9	94.0	**36.8**
ERLIN	99MTDSVT 224/130	8	40.6	37.3	35.9	34.5	34.6		39.7		34.7	36.4	36.7	93.7	**36.7**
MORLIN	011-2180	8	41.0	37.1	35.1	34.8	34.4		38.9		33.8	37.3	36.5	93.3	**36.5**
97B1286	99MTDSVT 311/120	3							39.5		34.7	36.0	36.7	92.9	**36.4**
95B7174	99MTDSVT 222/106	5				37.9	34.2		35.3		32.3	38.9	35.7	92.2	**36.1**
96B6731	99DOL2 125	3							35.9		33.3	39.4	36.2	91.6	**35.9**
91B6429		2					35.0		36.2				35.6	91.5	**35.9**
95B7181	99MTDSVT 228/107	5				35.6	34.4		34.7		32.4	37.9	35.0	90.3	**35.4**
91B2166	99DLI1 212/106	3				34.1	33.0				34.3		33.8	90.2	**35.4**
96B6527	99MTDSVT 317/111	3							37.1		32.2	37.4	35.6	89.9	**35.2**
95B3538	99MTDSVT 104	4					34.3		36.5		32.7	35.2	34.7	89.4	**35.0**
FINCH	Will 95FI	8	37.2	34.7	34.7	33.3	33.6		37.5		32.4	34.5	34.7	88.7	**34.7**
95B7446	99MTDSVT 218/108	3							35.5		31.7	37.8	35.0	88.6	**34.7**
97B1744	99DLI2 319/107	3							36.3		32.3	34.6	34.4	87.0	**34.1**
STIRLING		3	35.3	32.5	33.1								33.6	84.3	**33.0**
MEANS (For Entries Listed)			40.8	37.0	37.3	36.4	35.2		37.9		34.2	38.3			36.9
April-July Precip. (in.)			6.04	12.42	5.17	5.65	8.78	8.57	6.01		8.87	7.69	7.69		
Tot.Annual Precip. (in.)			10.23	16.36	10.20	12.06	12.17	14.30	10.27		13.29	12.36	12.36		
Soil N (lbs) to SD @ PLtg			250	210	88	248	n/a	n/a	n/a		n/a	78	175		
SD (Smplng Depth inches)			48	48	48	48	48	Pndg	Pndg		48	48	48		
Fertilizer Applied	(# N)		70	70	70	70	70	70	70		70	70	70		
	(# P2O5)		40	40	40	40	40	40	40		40	40	40		
	(# K2O)		0	25	25	25	25	25	25		25	25	22		

Long-term check variety is Centennial

1/ The 1999 oil results not reported. The 2001 nursery was destroyed in October due to extreme stand variablity caused by severe drough conditions prior to planting and throughout the growing season.

2/ 10-Yr Comparable Average = (x/y) * z where x = average yield or oil of a given entry for years tested, y = average yield or oil for Centennial for the same years, and z = 10-Yr average yield or oil for the check variety Centennial.

3/ Percent of Centennial yield or oil for the same data years as those in which a given entry was tested.