TITLE: Winter Wheat, Spring Wheat, Durum, Spring Barley and Safflower Variety Performance Evaluations Under Dryland Chemical Fallow Conditions On-Station at Northern Agricultural Research Center, Havre, Montana. 2008-2017.

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Content:

This report is intended to serve as a popularized 2017 summary of "primary" on-going cereal and oilseed crop variety investigations traditionally conducted on-station by Agronomy at Northern Agricultural Research Center. These data represent approximately 21 percent of NARC-Agronomy's total research project effort on-station at Havre. The remaining 79 percent of the research not reported here includes cultivar and product evaluations associated with larger nurseries featuring early generation or other unnamed experimental materials not of general interest to the public; and/or experimental seed treatment, fertility, fungicide and insecticide evaluations. Long-term data summaries reported here are limited to the most recent ten years. This is 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. Variety performance data has been continuously collected and maintained at the Havre station for 102 years beginning in 1916. Collection of sawfly stem cutting data was added beginning in 2003.

Detailed data pertaining to multiple performance characters, along with associated climatic and management inputs are presented for 2017. Abridged, multi-year summaries for each cereal trial are limited to three crop characters (yield, test weight and sawfly rating) while the safflower summary is limited to two crop characters (yield and oil content). 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.

2017 Data:

It should be noted that 2017 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, 2017 data shall not constitute in any form a recommendation for or against any entry or practice included.

Please note that cereal research trial yield results recorded under wheat stem sawfly pressure are likely much higher than a producer should expect. Small plot variety trials are managed to assess maximum yield potential and are harvested in such a way that nearly, if not all stems and heads are picked up by the combine, regardless of lodging or cutting due to sawfly. Pickup guards coupled with an extremely slow ground speed and exceptionally low cutting height help researchers collect every head possible in order to assess seed yield potential. If you are a producer in a wheat stem sawfly environment, although hollow stemmed varieties may be high yielding in research trials in your area, we recommend against growing those hollow stemmed varieties. Please be aware that if you seed hollow stemmed varieties with sawfly present, you are only creating a breeding ground for future generations of sawfly in your area and not helping combat the pest population.

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 "check" or reference variety grown in the same trial in the same years. The performance of the variety of interest is then expressed as a percentage 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, so no entries with less than three years of 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 the 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)

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://plantsciences.montana.edu/crops/index.html.

Recognition:

This research would not have been possible without the assistance of the following summertime hourly employees: Marley Manoukian, Nicole Parsons and Emily Simonson.

LIST OF TABLES

Summary of climatic data by months for the 2016-2017 crop year (September to August) and averages for the period 1916-2017 at the Northern Agricultural Research Center. Havre, Montana.

Month Year	Sep 2016	Oct 2016	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017	Apr 2017	May 2017	Jun 2017	Jul 2017	Aug 2017	Crop Year
Precipitation (inches)													**Total**
Current Year	2.37	3.04	0.21	0.13	0.41	0.72	0.07	0.25	0.45	1.57	0.14	0.12	9.48
Average (1916-2017)	1.19	0.69	0.50	0.47	0.53	0.37	0.53	0.97	1.91	2.65	1.58	1.21	12.06
Difference	1.18	2.35	-0.29	-0.34	-0.12	0.35	-0.46	-0.72	-1.46	-1.08	-1.44	-1.09	-2.58
Mean Temperature (^{o}F)													**Average**
Current Year	56.7	42.2	40.4	13.9	13.7	23.7	33.9	44.4	54.3	63.8	73.6	67.3	44.0
Average (1916-2017)	56.3	45.7	30.2	19.5	15.5	19.9	29.9	43.2	53.4	61.2	68.6	66.7	42.5
Difference	0.4	-3.5	10.2	-5.6	-1.8	3.8	4.0	1.2	0.9	2.6	5.1	0.6	1.5

Last killing frost in spring*

2017 _____ **May 19th (31˚)**
Ave. 1916-2017 _____ **May 14th**

First killing frost in fall*

2017 _____ **September 25th (30.5˚)**
Ave. 1916-2017 _____ **September 20th**

Frost free period

2017 _____ **129 days**
Ave. 1916-2017 _____ **129 days**

Growing degree days (base 50)

May 19-Sept. 25, 2017 _____ **2038.7**
May 1-Sept. 30, 2017 _____ **2251.2**
Ave. 1951-2017 (May 1 - Sept. 30) _____ **2181.3**

Maximum summer temperature _____ **101˚ F on July 15, 2017.**
Minimum winter temperature _____ **-27.2˚ F on December 17, 2016.**

*In this summary 32° is considered a killing frost.

2017
INDIVIDUAL CROP EXPERIMENT IDENTIFICATION & DESCRIPTION RECORD
Variety Testing Program
Northern Agricultural Research Center
Havre, Montana

Experiment No.	*	Description	Crop	Ents	Reps	Plots	Loc-Field	Legal Desc	Leader	Sponsor	Cooperator
		WINTER WHEAT (WW) INVESTIGATIONS									
ON-STATION											
17-3502-WW		Intrastate Cultivar Nursery	WW	49	3	147	B-1-2	32 32N 15E	Bruckner	MAES-MWBC	Lamb
17-1402-WW		Advanced Cultivar Nursery	WW	36	3	108	B-1-2	32 32N 15E	Bruckner	MAES-MWBC	Lamb
17-5802-WW		Sawfly Line Evaluation Nursery	WW	49	2	98	B-1-2	32 32N 15E	Bruckner	MAES-MWBC	Lamb
17-WQDS-WW		Winter Wheat Quality Drill Strips	WW	6	1	6	B-1-2	32 32N 15E	Bruckner	MAES-MWBC	Lamb
Sub-Totals:			4	140		359	7.30%	of Total Plot Inventory			
OFF-STATION											
17-3851-WW		Off-Station Cultivar Eval Nursery	WW	25	3	75	Turner	13 36N 25E	Lamb	MWBC-MAES	Cederberg Farm
17-3853-WW		Off-Station Cultivar Eval Nursery	WW	25	3	75	Loma	21 27N 10E	Lamb	MWBC-MAES	McKeever Farm
17-5853-WW		Sawfly Line Evaluation Nursery	WW	49	2	98	Gildford	20 31N 11E	Lamb	MWBC-MAES	Borlaug Farm
17-SR01-WW	v	Single-Row Yield Eval Nursery	WW	198	1	198	Gildford	20 31N 11E	Bruckner	MAES-MWBC	Borlaug Farm
17-SR02-WW	v	Single-Row Line Eval Nursery	WW	1000	1	1000	Gildford	20 31N 11E	Bruckner	MAES-MWBC	Borlaug Farm
17-3RSP-WW	v	3-Row Segregating Populations	WW	97	1	97	Gildford	20 31N 11E	Bruckner	MAES-MWBC	Borlaug Farm
Sub-Totals:			6	1394		1543	31.39%	of Total Plot Inventory			
		SPRING WHEAT & DURUM (SW & DUR) INVESTIGATIONS									
ON-STATION											
17-3102-SW		Advanced Yield Nursery	SW	64	3	192	A-6-1	33 32N 15E	Talbert	MAES-MWBC	Lamb
17-3302-SW		Preliminary Yield Nursery	SW	81	3	243	A-6-1	33 32N 15E	Talbert	MAES-MWBC	Lamb
17-9802-DUR		Montana Durum Cultivar Nursery	DUR	24	3	72	A-6-1	33 32N 15E	Giroux	MAES-MWBC	Lamb
17-SWQAC-SW		Spring Wheat Quality Assessm't	SW	7	1	7	A-4-1,2,3	33 32N 15E	MWBC	SW Qual Cncl	Lamb
17-SP02-SW		Spring Wheat Blend Quality Trial	SW	10	4	40	A-6-1	33 32N 15E	Stougaard	MAES-MWBC	Lamb
Sub-Totals:			5	186		554	11.27%	of Total Plot Inventory			
OFF-STATION											
17-9951-SW		Off-Station Cultivar Eval Nursery	SW	23	3	69	Turner	13 36N 25E	Lamb	MWBC-MAES	Cederberg Farm
17-9953-SW		Off-Station Cultivar Eval Nursery	SW	23	3	69	Chester	11 31N 05E	Lamb	MWBC-MAES	Kammerzell Farm
17-9955-SW	h	Off-Station Cultivar Eval Nursery	SW	23	3	69	Loring	24 35N 29E	Lamb	MWBC-MAES	Flansaas/Lumsden
17-9957-SW		Off-Station Cultivar Eval Nursery	SW	23	3	69	Loma	21 27N 10E	Lamb	MWBC-MAES	McKeever Farm
17-9851-DUR		Off-Station Cultivar Eval Nursery	DUR	12	3	36	Turner	13 36N 25E	Lamb	MWBC-MAES	Cederberg Farm
17-9853-DUR		Off-Station Cultivar Eval Nursery	DUR	12	3	36	Chester	11 31N 05E	Lamb	MWBC-MAES	Kammerzell Farm
17-9855-DUR	h	Off-Station Cultivar Eval Nursery	DUR	12	3	36	Loring	24 35N 29E	Lamb	MWBC-MAES	Flansaas/Lumsden
Sub-Totals:			7	128		384	7.81%	of Total Plot Inventory			

Experiment No.	*	Description	Crop	Ents	Reps	Plots	Loc-Field	Legal Desc	Leader	Sponsor	Cooperator
		SPRING BARLEY (SB) INVESTIGATIONS									
ON-STATION											
17-2102-SB		Intrastate Cultivar Eval Nursery	SB	49	3	147	B-1-1	32 32N 15E	Sherman	MAES-MWBC	Lamb
17-3102-SB		Early Yield Evaluation Nursery	SB	64	3	192	B-1-1	32 32N 15E	Sherman	MAES-MWBC	Lamb
17-2502-SB	e	Hulless Intrastate Eval Nursery	SB	16	3	48	B-1-1	32 32N 15E	Sherman	MAES-MWBC	Lamb
Sub-Totals:			3	129		387	7.87%	of Total Plot Inventory			
		SAFFLOWER INVESTIGATIONS									
ON-STATION											
17-7702-SAF	d,e	Cultivar Evaluation Nursery	SA	14	3	42	A-6-2	33 32N 15E	Bergman	NDSU-WREC	Lamb
Sub-Totals:			1	14		42	0.85%	of Total Plot Inventory			
		BRASSICA INVESTIGATIONS									
ON-STATION											
17-CN02-CN		Statewide Canola Trial	CN	20	4	80	A-6-2	33 32N 15E	Fordyce	Var. Industry	Lamb
17-OC06-BC	d,e	B. carinata Advanced Yield Trial	BC	10	4	40	A-6-2	33 32N 15E	Bennett	Agrisoma	Lamb
17-OC07-BC	d,e	B. carinata Prelim. A Yield Trial	BC	24	4	96	A-6-2	33 32N 15E	Bennett	Agrisoma	Lamb
Sub-Totals:			3	54		216	4.39%	of Total Plot Inventory			
		PULSE CROP (PC) INVESTIGATIONS									
ON-STATION											
17-PC01-PC		Statewide Pea Trial	PC	44	4	176	A-6-4	33 32N 15E	Chen	MAES-EARC	Lamb
17-PC02-PC		Statewide Lentil Trial	PC	13	4	52	A-6-4	33 32N 15E	Chen	MAES-EARC	Lamb
17-PC08-PC		WA Crop Imp. Yellow Pea	PC	20	3	60	A-6-4	33 32N 15E	McGee	WA Crop Imp.	Lamb
17-PC09-PC		Western Regional Pea Trial	PC	12	3	36	A-6-3	33 32N 15E	Vandemark	USDA	Lamb
17-PC10-PC		Western Regional Lentil Trial	PC	14	3	42	A-6-4	33 32N 15E	Vandemark	USDA	Lamb
17-PC30-PC		MSU Lentil Prelim Breeding Line	PC	30	3	90	A-6-4	33 32N 15E	McPhee	MAES-MSU	Lamb
Sub-Totals:			6	133		456	9.28%	of Total Plot Inventory			
		OTHER CROP (OC) INVESTIGATIONS									
ON-STATION											
17-CM04-CM	n	ClearSkies, Inc. Camelina VT	CM	7	3	21	A-6-2	33 32N 15E	Johnson	ClearSkies	Lamb
17-OC20-SO	d,e	Sorghum Seeding Date/Rate Trial	SR	24	6	144	A-6-2	33 32N 15E	Lamb	MAES-NARC	Lamb
Sub-Totals:			2	31		165	3.36%	of Total Plot Inventory			

Experiment No.	*	Description	Crop	Ents	Reps	Plots	Loc-Field	Legal Desc	Leader	Sponsor	Cooperator
		FORAGE RESEARCH (FR) INVESTIGATIONS									
ON-STATION											
17-FR02-FR		Winter Cereal Forage Trial	FR	19	3	57	B-1-1	32 32N 15E	Carr	MAES-CARC	Lamb/Boss
17-FR03-FR		Spring Cereal Forage Trial	FR	19	3	57	B-1-1	32 32N 15E	Carr	MAES-CARC	Lamb/Boss
Sub-Totals:			2	38		114	2.32%	of Total Plot Inventory			
		NUTRIENT RESEARCH (NR) INVESTIGATIONS									
ON-STATION											
17-NM03-SW		Mosaic SW MicroNutrients	SW	10	4	40	B-1-3	32 32N 15E	Mann	Mosaic	Lamb
17-NM05-SW		Foliar Zinc on Spring Wheat	SW	24	3	72	A-6-1	33 32N 15E	Budak	MFAC	Lamb
Sub-Totals:			2	34		112	2.28%	of Total Plot Inventory			
		PEST MANAGEMENT (PM) INVESTIGATIONS									
ON-STATION											
17-PM34-WW		WW Seeding Date/Rate/Variety	WW	24	4	96	An-2-5	33 32N 15E	Burrows	Industry-MAES	Lamb
17-PM35-SW		SW Seeding Date/Rate/Variety	SW	24	4	96	An-2-5	33 32N 15E	Burrows	Industry-MAES	Lamb
17-PM36-WW		Wheat Curl Mite Tolerant WW	WW	4	4	16	A-6-3	33 32N 15E	Bruckner	MAES-MWBC	Lamb
17-PM37-SW		Spring Wheat Insecticide	SW	3	6	18	An-2-5	33 32N 15E	Burrows	Industry-MAES	Lamb
17-PM38-SW		Spring Wheat Seed Treatment	SW	12	6	72	B-1-4	32 32N 15E	Burrows	Industry-MAES	Lamb
17-PM50-PM		WW on Pulse Herb. Plant Back	WW	51	3	153	B-3-1	32 32N 15E	Jha	MAES-SARC	Lamb
Sub-Totals:			6	118		451	9.18%	of Total Plot Inventory			
		PEST MANAGEMENT (PM) INVESTIGATIONS									
OFF-STATION											
17-PM42-SW		Thimet Insectide on Reeder SW	SW	6	4	24	BigSandy	24 29N 10E	Weaver	AmVac	Edwards Farm
17-PM43-WW	r	Thimet on Yellowstone & Warhorse WW	WW	4	6	24	Gildford	20 31N 11E	Weaver	AmVac	Borlaug Farm
17-PM44-SB		Spring Barley Sawfly Trial	SB	12	3	36	Big Sandy	24 29N 10E	Weaver		Edwards Farm
17-PM45-WW		Thimet on Warhorse WW	WW	6	4	24	BigSandy	17 29N 11E	Weaver	AmVac	Edwards Farm
17-PM46-WW		Thimet on Yellowstone WW	WW	6	4	24	BigSandy	19 29N 11E	Weaver	AmVac	Edwards Farm
17-PM60-PM		Hill Plots	SW				Big Sandy	24 29N 10E	Talbert/Weaver	Var. Industry	Edwards Farm
Sub-Totals:			6	34		132	2.69%	of Total Plot Inventory			

2017 SUMMARY: Project Inventory - (Plots Established)

TOTALS - VARIETY TESTING PROGRAM PROJECTS	53	Experiments or Trials
	2433	Entries in 4915 Plots
	3266	Plots for Harvest

GEOGRAPHIC DISTRIBUTION OF PLOT WORK: (by plot count only, not by resources expended. Demos not included.)

ON-STATION	=	58.11%
OFF-STATION	=	41.89%

(Percent of TOTAL OFF-STATION by County): (by plot count only, not by resources expended. Demos not included.)

^ Blaine County	=	8.74%	1-Loc:	WW, SW, DUR, Vars
^ Chouteau County	=	12.24%	2-Loc:	WW & SW Vars & Sawfly, Multi-specie Hill Plots, WW & SW Insecticide
^ Hill County	=	68.82%	1-Loc:	WW Sawfly & WW Sawfly Insecticide
^ Liberty County	=	5.10%	1-Loc:	SW, DUR Vars
^ Phillips County	=	5.10%	1-Loc:	SW, DUR Vars + 3 Spring Crop Demos by M.Manoukian

^ Denotes counties traditionally served by NARC-Agronomy (Current off-station plot inventory for Hill County is abnormally high due to extensive cooperative wheat stem sawfly work at the Borlaug farm near Gildford. This site alone had 28.8% of NARC-Agronomy's total inventory of plots managed for 2017, but such is somewhat misleading due to all the breeder and entomology observation plots there.

* Note: A code letter after an experiment number signifies that the trial listed was not carried through to final report status due to one or more conditions outlined below. Where more than one condition was involved, the code used denotes the factor most responsible.

c = experiment planned, but CANCELLED 'prior' to actual plot establishment (proposal rejection or other reasons)
d = severe DROUGHT stress not associated with treatment differences
e = stand ESTABLISHMENT problems not associated with treatment differences
f = FROST or winter injury not associated with treatment differences
g = GRANT proposal submitted / preliminary establishment only - subject to cancellation if funding not received
h = HAIL injury
I = INSECT injury
n = NATURAL calamity to include weather effects other than drought, freezing or hail
o = OTHER (human error - staff or cooperator, equipment malfunction, animal damage, vandalism, etc.)
p = PATHOGEN effects not associated with treatment differences
r = Grant proposal REJECTED 'after' significant establishment effort put forth - ie, continued in reduced format
s = SPRAY damage not associated with treatment differences
t = proposed grant project TERMINATED (after preliminary establishment) due to proposal rejection
u = undue, non-partitionable VARIABILITY
w = WEED infestation effects not associated with treatment differences
v = VIEW only - no formal data collection or analysis
x = plots in place, from previous endeavor - inactive current year, but retained for future viewing/reference

2015-2017
CROP EXPERIMENT INFORMATION RECORD
Agronomy
Northern Agricultural Research Center
Havre, Montana

Location	Description	Number of Trials			Number of Entries			Number of Plots			% of Total Plot Inventory		
		2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
On-Station	Winter Wheat*	5	4	4	200	140	140	419	359	359	11.2%	10.8%	9.7%
Off-Station	Winter Wheat*	6	6	6	1525	214	196	362	363	345	9.7%	10.9%	9.3%
On-Station	Spring Wheat and Durum	5	4	5	222	163	186	540	483	554	14.4%	14.6%	14.9%
Off-Station	Spring Wheat and Durum*	7	7	7	122	145	128	366	435	384	9.8%	13.1%	10.3%
On-Station	Spring Barley	4	3	3	189	129	129	447	387	387	12.0%	11.7%	10.4%
Off-Station	Spring Barley	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
On-Station	Safflower	1	2	1	20	34	14	60	102	42	1.6%	3.1%	1.1%
On-Station	Brassica sp.	8	5	3	127	57	54	440	228	216	11.8%	6.9%	5.8%
On-Station	Covered Wheat	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
On-Station	Pulse Crops	4	7	6	83	133	133	332	424	456	8.9%	12.8%	12.3%
Off-Station	Pulse Crops	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
On-Station	Other Crops	5	4	2	43	36	31	136	112	165	3.6%	3.4%	4.4%
On-Station	Forage	2	2	2	26	31	38	78	93	114	2.1%	2.8%	3.1%
On-Station	Nutrient Research	2	1	2	52	16	34	208	64	112	5.6%	1.9%	3.0%
On-Station	Special Projects	5	0	0	101	0	0	270	0	0	7.2%	0.0%	0.0%
Off-Station	Special Projects	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
On-Station	Pest Management	0	2	6	0	61	118	0	183	451	0.0%	5.5%	12.1%
Off-Station	Pest Management*	3	4	6	20	24	34	80	84	132	2.1%	2.5%	3.6%
Grand Total		57	51	53	2730	1183	1235	3738	3317	3717	100.0%	100.0%	100.0%
Harvested								3542	3202	3266	94.8%	96.5%	87.9%
On-Station Plots								2930	2435	2856	78.4%	73.4%	76.8%
Off-Station Plots								808	882	861	21.6%	26.6%	23.2%

* Winter Wheat, Spring Wheat & Pest Management:

2015: 1312 single row plots - individual hill plots no longer included in count
2016: 1223 single row plots - individual hill plots are no longer included in count
2017: 1198 single row plots - individual hill plots are no longer included in count

TABLE 1. Intrastate Winter Wheat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, MT. (Exp# 17-3502-WW)

Cultivar/Line	Release/Pedigree	Stand %	1/ Head Date	Plant Ht Inches	2/ Yield Bu/Ac	Test Wt Lbs/Bu	3/ Protein %	4/ FN Sec	5/ Sawfly %
Bearpaw	Montana, 2011	99.7	151.0	21.4	42.9	61.5	**14.7**	355	0.7
Brawl CLP	Colorado Wheat Res. Fdn., 2011	99.0	146.7	27.7	43.8	62.6	14.1	358	1.0
Decade	Montana/North Dakota, 2010	99.0	151.7	24.9	47.3	61.7	**14.7**	**370**	1.0
Denali	Colorado Wheat Res. Fdn., 2011	99.0	149.7	25.7	52.7	**62.9**	13.3	357	0.7
Judee	Montana, 2011	99.7	151.0	26.2	48.9	**62.9**	**14.4**	333	0.0
Keldin	WestBred, 2011	98.7	151.3	27.1	**56.2**	62.2	12.5	334	0.7
Langin	Colorado Wheat Res. Fdn., 2016	99.7	146.3	23.2	49.8	61.9	13.1	353	0.0
LCS Chrome	Limagrain Cereal Seeds, 2016	99.7	148.7	26.1	47.3	61.6	14.1	356	0.3
LCS Jet	Limagrain Cereal Seeds, 2015	99.0	155.3	20.2	48.8	60.2	13.0	326	0.3
Loma	Montana, 2016	98.0	154.3	22.2	48.0	62.1	14.0	337	0.3
Long Branch	Dyna-Gro Wheat, 2015	100.0	147.3	25.7	49.3	60.1	13.4	356	1.0
Northern	Montana, 2015	100.0	153.7	22.9	51.6	62.2	**14.6**	**383**	0.0
SY Clearstone 2CL	Montana/Syngenta, 2012	99.7	152.7	26.4	48.5	62.0	**14.8**	**378**	0.0
SY Monument	Syngenta (AgriPro), 2015	99.3	150.0	25.8	53.0	61.5	12.7	345	0.3
SY Sunrise	Syngenta (AgriPro), 2015	98.7	149.7	22.3	50.8	62.1	13.7	365	0.7
SY Wolf	Syngenta (AgriPro), 2010	99.3	150.0	25.3	53.2	**63.1**	13.9	313	0.0
Warhorse	Montana, 2013	99.3	152.7	23.6	43.8	62.2	**14.8**	361	0.3
WB4483	WestBred, 2016 (solid stem, BZ9W09-2212)	99.0	153.0	22.3	49.1	62.3	**14.3**	351	0.0
WB4575	WestBred, 2016 (BZ9W09-2075)	99.7	150.7	24.3	52.8	**62.9**	**14.9**	**370**	0.0
WB4614	WestBred, 2014	99.0	152.0	24.0	50.0	62.1	13.7	359	0.7
WB4623CLP	WestBred, 2015	97.4	150.7	23.1	42.4	62.0	13.6	350	0.0
WB-Quake	WestBred, 2011	98.7	153.3	23.1	43.3	**62.7**	**14.3**	336	0.3
07CL039-7	Syngenta (AgriPro) CLP exp. line	99.0	146.3	25.0	34.9	**62.8**	**14.4**	364	1.0
BZ9W09-2216	Westbred exp. solid stem	98.4	152.0	22.8	48.8	62.6	13.8	347	0.3
BZ9WM09-1620	Westbred exp. CLP	98.4	153.7	27.2	45.0	**63.2**	13.5	313	0.7
CO13003C	Colorado Wheat Res. Fdn., exp. line	98.7	149.0	25.1	51.0	61.3	13.8	358	0.3
MT1265	Yellowstone*4/KS96WGRC40 (Lr41, wcm)	100.0	153.0	27.3	**55.5**	62.5	**14.4**	367	0.0
MT1348	PI572290/BigSky	99.0	150.3	26.3	52.6	62.3	13.4	368	0.0
MT1444	Yellowstone*2/MTW0590	99.3	152.3	26.8	**54.9**	62.6	13.8	367	0.7
MT1465	Yellowstone/MT0684	99.3	150.3	25.0	50.4	62.5	**14.4**	341	0.3
MT1471	Yellowstone/NuDakota	100.0	152.3	25.2	49.2	62.1	**14.9**	341	0.0
MT1488	MTR00118/MT0241//CDC Falcon	99.3	152.7	23.4	50.1	62.5	**14.3**	362	0.3
MT1507	MT0686//Yellowstone/Duster	100.0	151.0	26.5	**54.1**	**63.0**	13.4	358	0.3
MT1540	Yellowstone*2/MTW0590	100.0	151.7	26.8	47.0	**62.7**	**14.8**	**372**	0.7
MT1542	MT0097/Yellowstone/MT03108	100.0	152.7	24.6	53.5	62.5	13.7	352	0.3
MT1547	Yellowstone/MT0684	99.0	151.0	25.9	49.4	62.6	**14.3**	341	0.0
MT1563	Yellowstone*2/PI640431	99.0	152.7	27.6	**59.3**	**62.8**	13.6	368	0.3
MT1564	Yellowstone*2/PI640431	99.7	147.7	28.6	51.2	62.4	13.8	366	0.7
MT1565	Decade*2//Promontory/3*Yellowstone	98.7	150.3	23.4	51.3	61.2	**14.6**	361	0.0
MTCL1131	Clearstone sib	99.3	153.7	26.3	50.1	62.2	**14.5**	359	0.0

TABLE 1. Continued **Intrastate Winter Wheat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, MT. (Exp# 17-3502-WW)**

Cultivar/Line	Release/Pedigree	Stand %	1/ Head Date	Plant Ht Inches	2/ Yield Bu/Ac	Test Wt Lbs/Bu	3/ Protein %	4/ FN Sec	5/ Sawfly %
MTF1432	Yellowstone*2/98X168E1	99.0	155.3	28.0	51.5	61.5	13.5	362	0.3
MTF1435	MT08186//Yellowstone(L)*2/98X168E1	100.0	153.7	32.2	44.7	62.6	13.8	339	0.0
MTF1559	Yellowstone*2/98X168E1	99.0	156.7	25.9	49.4	60.6	**14.3**	368	0.0
MTS1573	Danby/2*MTS04114	99.0	150.3	24.9	50.2	62.1	13.6	366	0.3
MTS1588	MT0598/98X366E29-1	100.0	153.0	23.5	**56.4**	62.2	14.0	339	0.3
MTW1491	MT08189//MT08187/(MTW08166, WB3768 sib)	99.7	152.7	27.5	**58.8**	**62.9**	13.2	368	0.7
PSB13NEDH-7-140	Limagrain Cereal Seeds exp. line	100.0	150.0	27.7	53.0	**62.7**	**14.5**	367	2.0
PSB13NEDH-7-45	Limagrain Cereal Seeds exp. line	98.0	148.3	25.6	45.6	59.7	**14.6**	369	1.0
EXPERIMENTAL MEANS		99.2	151.3	25.3	49.8	62.1	14.0	355	0.4
LSD (0.05)		2.0	1.1	2.9	5.8	0.6	0.7	13.5	0.9
C.V.%		1.2	0.5	7.0	7.1	0.6	3.2	2.4	143.4
P-VALUE (Entries)		0.8634	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0421

Bold Indicates highest yeilding entry based on Fisher's Protected LSD at the 0.05 probability level.
Bold Indicates cultivars yielding equal to the highest yielding entry based on Fisher's Protected LSD at the 0.05 probability level.
1/ No. of days from January 1 (151 = May 31).
2/ Volumetric yields are based on plot weights adjusted to uniform 13 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.
3/ Protein values are adjusted to 13 percent grain moisture.
4/ FN is the falling number reported in seconds adjusted to 14 percent flour moisture.
5/ Sawfly rating is reported as the percentage of cut stems.

Management Information (17-3502-WW)

Seeding Date:	September 19, 2016	Herbicide:	Bromac, 32 oz/ac, 5/5/2017
Harvest Date:	July 14, 2017	Insecticide:	none
Fertility:	125-20-10-10 side banded	Previous Crop:	Chemical Fallow - Barley
System:	No-till	Precipitation:	8.06" (planting to harvest)

TABLE 2. Nine-Year Yield Summary on Selected Entries from Dryland Intrastate Winter Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 3502-WW)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ YIELD (Bushels Per Acre) 2008	2009	2010	2011 3/	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK YIELD 4/	**9-YR COMP. AVE. YIELD 5/**
04BC74-2	SY MONUMENT (P+)	3								61.0	103.3	53.0	72.4	119.9	**72.0**
ACS55017	KELDIN (P+)	4							61.5	54.8	107.8	56.2	70.1	117.8	**70.8**
BZ9W07-2034	WB4614 (P+)	3								55.9	97.5	50.0	67.8	112.2	**67.4**
BC01007-7	SY WOLF (P+)	6					56.2	70.4	69.4	56.5	97.8	53.2	67.2	111.9	**67.2**
MT0978	NORTHERN (+)	6					54.8	73.1	60.5	56.9	103.8	51.6	66.8	111.1	**66.8**
MT08172	COLTER (+)	5					70.7	56.9	60.9	60.9	94.7		68.8	109.8	**66.0**
06BC796#68	SY SUNRISE (P+)	3								55.5	92.8	50.8	66.3	109.8	**66.0**
MTCL1077	SY CLEARSTONE 2CL (P+)	6					59.6	75.4	57.3	53.5	98.4	48.5	65.5	108.9	**65.4**
MT00159	YELLOWSTONE (+)	8	69.8	39.7	70.7		52.1	68.2	64.1	62.4	103.6		66.3	107.5	**64.6**
MTW08168	WB3768 (P+,HW)	5					52.1	68.3	53.7	61.1	100.6		67.2	107.1	**64.4**
LE1911	BROADVIEW (P)	6			73.8		52.8	67.2	58.3	66.9	83.4		67.1	105.2	**63.2**
MTS0713	JUDEE (+)(saw fly tol)	9	66.4	42.4	72.2		48.9	70.6	61.5	56.9	85.2	48.9	61.4	102.2	**61.4**
S94-4	CDC FALCON (P+)	8	68.2	42.1	72.5		53.3	55.9	58.7	64.4	87.3		62.8	101.8	**61.2**
MT0552	DECADE (+)	9	73.5	37.3	69.3		55.8	66.9	56.7	53.3	80.7	47.3	60.1	100.0	**60.1**
CO06052	BRAWL CL PLUS (+)	3								47.2	89.7	43.8	60.2	99.7	**59.9**
BZ9WM09-1663	WB4623CLP (P+)	3								52.9	84.9	42.4	60.1	99.4	**59.7**
BZ9W05-2043	WB-QUAKE (P+)	6					48.4	70.0	51.2	55.8	87.4	43.3	59.3	98.7	**59.3**
MTS0808	WARHORSE (+)(saw fly res)	6					51.7	65.1	47.9	57.7	89.8	43.8	59.3	98.7	**59.3**
MTS1224	LOMA (++)	4							50.5	52.9	80.8	48.0	58.0	97.5	**58.6**
MTS0721	BEARPAW (+)(saw fly tol)	8		38.4	67.1		55.4	64.0	51.8	60.4	64.1	42.9	55.5	95.0	**57.1**
BZ9WM07-1516	WB4059CLP (P+)	3							56.9	47.4	74.4		59.6	93.7	**56.3**
PI593889	RAMPART (saw fly res)	8	53.7	37.8	59.9		46.6	62.3	57.2	56.8	81.1		56.9	92.3	**55.5**
ND9257	JERRY	8	59.9	38.3	67.6		44.2	66.2	51.3	51.6	69.9		56.1	91.0	**54.7**
MEANS (For Entries Listed)			65.3	39.4	69.1		53.5	66.7	57.2	56.6	89.5	48.2			**62.5**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			9.26	9.34	9.43	9.66	n/a	9.12	n/a	9.43	9.95	9.26	9.43		
Total Plant Available Water (in.)			17.35	15.63	19.12	18.41	7.33	22.40	4.87	16.95	22.19	11.67	15.59		
Soil NO_3 (lbs.) to SD at Planting			275	172	204	32	60	59	48	37	113	65	107		
SD (Sampling Depth in Inches)			48	48	48	48	48	48	48	48	48	48	48		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	100	100	88		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		

Check variety is Decade.

1/ See MCES Bulletin 1098 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 Pending, HW = Hard White Wheat.

3/ No harvest due to spotty, poor stands unrelated to variety differences.

4/ Percent of Decade yield for the same data years as those in which a given entry was tested.

5/ 9-Yr Comparable Average = (x/y) * z where x = average yield of a given entry for years tested, y = average yield for Decade for the same years, and z = 9-Yr average yield for the check variety Decade.

TABLE 3. Nine-Year Test Weight Summary on Selected Entries from Dryland Intrastate Winter Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 3502-WW)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ TEST WEIGHT (Pounds Per Bushel) 2008	2009	2010	2011 3/	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK TEST WT 4/	**9-YR COMP. AVE. TEST WT 5/**
CO06052	BRAWL CL PLUS (+)	3								62.1	61.0	62.6	61.9	102.6	**62.1**
06BC796#68	SY SUNRISE (P+)	3								62.2	61.0	62.1	61.8	102.3	**61.9**
BC01007-7	SY WOLF (P+)	6					60.7	58.4	62.2	62.2	61.4	63.1	61.3	102.2	**61.8**
BZ9W07-2034	WB4614 (P+)	3								61.4	61.1	62.1	61.5	101.9	**61.7**
BZWM07-1663	WB4623CLP (P+)	3								60.9	61.7	62.0	61.5	101.9	**61.7**
ACS55017	KELDIN (P+)	4							61.1	61.7	61.2	62.2	61.6	101.7	**61.5**
MTW08168	WB3768 (P+,HW)	5					59.0	60.2	61.5	60.5	60.8		60.4	101.2	**61.2**
MT0978	NORTHERN (+)	6					58.5	59.6	61.0	62.1	59.2	62.2	60.4	100.6	**60.9**
04BC74-2	SY MONUMENT (P+)	3								60.9	59.6	61.5	60.7	100.5	**60.8**
BZ9WM07-1516	WB4059CLP (P+)	3							60.1	61.6	59.4		60.4	100.4	**60.8**
MT08172	COLTER (+)	5					58.7	59.4	61.3	60.9	59.4		59.9	100.4	**60.7**
MTS0713	JUDEE (+)(saw fly tol)	9	57.5	62.2	61.0		56.9	60.2	61.8	61.8	61.3	62.9	60.6	100.2	**60.6**
BZ9W05-2043	WB-QUAKE (P+)	6					58.8	58.0	60.7	60.7	60.0	62.7	60.1	100.2	**60.6**
MTS0808	WARHORSE (+)(saw fly res)	6					57.6	59.0	61.1	60.6	60.4	62.2	60.1	100.2	**60.6**
MTS1224	LOMA (++)	4							60.5	61.0	58.6	62.1	60.6	100.1	**60.6**
MT0552	DECADE (+)	9	60.5	61.5	62.3		59.7	58.6	61.0	61.6	57.8	61.7	60.5	100.0	**60.5**
S94-4	CDC FALCON (P+)	8	60.2	61.8	61.5		59.3	58.7	60.8	60.2	59.8		60.3	99.9	**60.4**
MTCL1077	SY CLEARSTONE 2CL (P+)	6					57.1	58.2	60.8	60.9	59.5	62.0	59.8	99.5	**60.2**
MT00159	YELLOWSTONE (+)	8	57.5	61.7	61.2		58.1	59.3	60.7	60.9	59.4		59.9	99.2	**60.0**
PI593889	RAMPART (saw fly res)	8	59.1	61.3	60.4		58.7	57.9	61.0	59.6	60.8		59.8	99.1	**60.0**
MTS0721	BEARPAW (+)(saw fly tol)	8		61.1	61.4		58.8	57.6	60.6	60.6	57.3	61.5	59.9	98.9	**59.9**
LE1911	BROADVIEW (P)	6			61.0		58.2	57.7	60.3	60.0	59.4		59.4	98.8	**59.8**
ND9257	JERRY	8	56.7	60.5	61.1		57.7	57.5	60.1	60.2	57.7		58.9	97.6	**59.1**
MEANS (For Entries Listed)			58.6	61.5	61.2		58.5	58.7	60.9	61.1	59.9	62.2			**60.8**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			9.26	9.34	9.43	9.66	n/a	9.12	n/a	9.43	9.95	9.26	9.43		
Total Plant Available Water (in.)			17.35	15.63	19.12	18.41	7.33	22.40	4.87	16.95	22.19	11.67	15.59		
Soil NO_3 (lbs.) to SD at Planting			275	172	204	32	60	59	48	37	113	65	107		
SD (Sampling Depth in Inches)			48	48	48	48	48	48	48	48	48	48	48		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	100	100	88		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		

Check variety is Decade.

1/ See MCES Bulletin 1098 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 Pending, HW = Hard White Wheat.

3/ No harvest due to spotty, poor stands unrelated to variety differences.

4/ Percent of Decade test weight for the same data years as those in which a given entry was tested.

5/ 9-Yr Comparable Average = (x/y) * z where x = average test weight of a given entry for years tested, y = average test weight for Decade for the same years, and z = 9-Yr average test weight for the check variety Decade.

TABLE 4. Ten-Year Sawfly Summary on Selected Entries from Dryland Intrastate Winter Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 3502-WW)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ SAWFLY RATING (% Cut and Lodged) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK SAWFLY 3/	**10-YR COMP. AVE. SAWFLY 4/**
MTS0808	WARHORSE (+)(saw fly res)	7				1.0	2.3	2.3	1.0	2.0	0.0	0.3	1.3	68.2	**6.5**
PI593889	RAMPART (saw fly res)	9	13.3	1.0	3.7	1.0	0.0	3.7	1.0	1.0	0.0		2.7	83.8	**8.0**
MTS0721	BEARPAW (+)(saw fly tol)	9		4.0	2.3	1.0	2.5	5.3	1.0	2.3	0.0	0.7	2.1	90.6	**8.6**
MTS0713	JUDEE (+)(saw fly tol)	10	8.3	4.0	4.0	4.0	2.1	5.3	1.0	0.7	0.0	0.0	2.9	100.0	**2.9**
BZ9WM07-1516	WB4059CLP (P+)	4				3.7			1.0	1.0	0.0		1.4	100.6	**9.6**
BZ9W05-2043	WB-QUAKE (P+)	7				2.3	4.3	3.7	5.0	0.7	0.0	0.3	2.3	123.8	**11.8**
MT0978	NORTHERN (+)	7				2.3	9.3	6.7	2.3	2.3	0.0	0.0	3.3	174.8	**16.6**
LE1911	BROADVIEW (P)	7			8.7	3.7	9.1	10.0	2.3	2.3	0.0		5.2	211.2	**20.1**
BC01007-7	SY WOLF (P+)	7				6.7	4.7	8.3	2.3	8.3	0.0	0.0	4.3	231.8	**22.1**
S94-4	CDC FALCON (P+)	9	36.7	13.3	7.0	1.0	6.9	5.0	1.0	6.7	0.0		8.6	263.5	**25.1**
MT00159	YELLOWSTONE (+)	9	18.3	23.3	11.7	5.3	8.9	10.0	2.3	2.3	0.0		9.1	279.1	**26.6**
MTS1224	LOMA (++)	4							2.3	2.3	0.0	0.3	1.3	299.8	**28.5**
CO06052	BRAWL CL PLUS (+)	3								1.0	0.0	1.0	0.7	300.3	**28.6**
MT08172	COLTER (+)	6				6.7	10.7	13.3	1.0	8.3	0.0		6.7	305.9	**29.1**
MT0552	DECADE (+)	10	35.0	16.7	3.7	6.7	9.5	8.3	1.0	13.3	0.0	1.0	9.5	323.3	**9.5**
MTCL1077	SY CLEARSTONE 2CL (P+)	6					11.0	13.3	2.3	11.7	0.0	0.0	6.4	420.4	**40.0**
MTW08168	WB3768 (P+,HW)	6				5.3	18.0	15.0	3.7	13.3	0.0		9.2	422.1	**40.2**
ND9257	JERRY	9	21.7	40.0	28.3	5.3	14.2	10.0	2.3	3.7	0.0		13.9	426.3	**40.6**
04BC74-2	SY MONUMENT (P+)	3								3.7	0.0	0.3	1.3	600.6	**57.2**
06BC796#68	SY SUNRISE (P+)	3								3.7	0.0	0.7	1.4	650.7	**61.9**
BZ9W07-2034	WB4614 (P+)	3								3.7	0.0	0.7	1.4	650.7	**61.9**
ACS55017	KELDIN (+)	4							2.3	15.0	0.0	0.7	4.5	1079.1	**102.7**
BZWM07-1663	WB4623CLP (P+)	3								10.0	0.0	0.0	3.3	1501.5	**142.9**
MEANS (For Entries Listed)			22.2	14.6	8.7	3.7	7.6	8.0	2.0	5.2	0.0	0.4			**34.8**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			9.26	9.34	9.43	9.66	n/a	9.12	n/a	9.43	9.95	9.26	9.43		
Total Plant Available Water (in.)			17.35	15.63	19.12	18.41	7.33	22.40	4.87	16.95	22.19	11.67	15.59		
Soil NO_3 (lbs.) to SD at Planting			275	172	204	32	60	59	48	37	113	65	107		
SD (Sampling Depth in Inches)			48	48	48	48	48	48	48	48	48	48	48		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	100	100	88		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		

Check variety is Judee.

1/ See MCES Bulletin 1098 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 Pending, HW = Hard White Wheat.

3/ Percent of Judee saw fly rating 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 saw fly rating of a given entry for years tested, y = average saw fly rating for Judee for the same years, and z = 10-Yr average saw fly rating for the check variety Judee.

TABLE 5. Advanced Yield Spring Wheat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, MT. 2017. (Exp# 17-3102-SW)

ID	Cultiver or Selection	Stand %	1/ Head Date	Plant Ht Inches	2/ Yield Bu/Ac	Test Wt Lbs/Bu	3/ Protein %	4/ Sawfly %
WSCIA	ALUM	99.7	163.0	22.3	30.8	58.7	15.8	0.0
AGRIPR 10	BRENNAN	98.0	159.3	19.3	24.5	59.1	16.3	0.0
PI 633974	CHOTEAU	100.0	163.3	22.4	26.4	57.8	16.4	0.0
WB 9879CLP	CHOTEAU*3/CHOTEAU/IMI8134	100.0	163.7	22.3	29.1	58.2	16.3	0.0
BZ 996434	CORBIN	98.7	160.0	21.1	25.3	59.0	16.2	0.0
PI 660981	DUCLAIR	99.7	160.7	22.0	26.2	57.2	16.3	0.0
PI 671855	EGAN	99.7	163.3	23.6	30.5	56.1	**16.9**	0.0
CI 13596	FORTUNA	97.7	163.0	28.4	27.5	57.9	15.6	0.0
WF 162	HRS 3504	98.7	163.3	21.8	27.2	59.4	15.7	0.0
WF 163	HRS 3530	99.7	164.3	25.1	27.0	58.5	16.6	0.0
WF 161	HRS 3616	99.0	161.3	21.2	24.9	59.3	16.6	0.0
PI 676978	LANNING	99.7	161.3	19.1	27.7	58.3	16.8	0.0
LIMAGR 161	LCS Prime	99.0	161.3	24.8	29.5	**61.3**	15.1	0.0
LIMAGR 143	LCS Pro	98.7	163.0	24.7	27.3	60.4	16.3	0.3
LIMAGR 171	LNR 13-0594 (LCS Rebel)	100.0	161.7	24.0	24.5	60.3	16.7	0.0
PI 574642	MCNEAL	100.0	163.7	26.6	32.2	57.1	16.0	0.3
PI 679964	NS Presser CL	100.0	165.3	23.1	**34.7**	58.6	15.4	0.0
ND 695	REEDER	100.0	163.3	22.8	29.0	58.4	16.0	0.0
AGRIPR 141	SY Ingmar	100.0	163.0	22.9	30.8	59.6	16.3	0.0
AGRIPR 161	SY Rockford	99.3	164.0	23.4	30.9	57.8	16.0	0.0
AGRIPR 14	SY Soren	99.3	162.0	21.5	31.0	58.9	16.4	0.0
AGRIPR 12	SY Tyra	98.7	163.3	21.2	31.5	60.5	15.3	0.0
AGRIPR 151	SY Valda	100.0	161.7	21.1	27.7	60.0	16.3	0.0
CI 10003	THATCHER	100.0	166.0	29.5	28.1	55.8	15.8	0.0
PI 642366	VIDA	99.3	164.0	22.7	**35.6**	58.7	15.6	0.0
WB 171	WB 9590	99.3	159.3	19.1	23.4	**61.0**	16.3	0.0
WB 172	WB 9616CLP	99.3	166.3	23.0	31.3	58.1	16.4	0.0
WB 173	WB 9719	99.3	163.7	20.8	31.9	60.5	15.3	0.0
BZ 92413R	WB GUNNISON	97.7	161.0	21.7	26.7	58.6	15.1	0.0
MT 1320	MT0415/MT0747	99.3	161.0	22.6	29.3	57.9	16.0	0.0
MT 1348	MT0852/MT0858	100.0	160.0	22.6	23.2	58.0	16.7	0.0
MT 1401	VIDA/MT0827	99.7	161.3	23.9	26.8	59.9	15.7	0.0
MT 1442	MT0827/MT0928	99.3	162.0	24.4	26.0	59.4	16.0	0.0
MT 1451	MT0827/09SR27	99.0	162.3	23.8	28.9	57.8	15.7	0.0
MT 1455	MT0832/MT0921	99.7	161.7	23.3	28.8	58.2	**17.0**	0.7
MT 1509	MT1002/MT1034	99.3	164.7	22.0	32.2	57.1	16.0	0.0
MT 1512	MT1002//CHOTEAU/YELLOWSTONE-15	99.3	161.7	22.4	26.2	58.8	16.4	0.3
MT 1514	MT1002//CHOTEAU/YELLOWSTONE-26	99.0	166.0	22.9	31.0	56.9	16.5	0.0
MT 1525	MT1015/MT1007 (BULK)	99.3	162.7	19.5	25.9	59.9	16.2	0.3
MT 1542	CHOTEAU/YELLOWSTONE-26//CHOTEAU/	99.7	161.0	22.6	22.6	59.3	16.0	0.0
MT 1543	CHOTEAU/YELLOWSTONE-26//CHOTEAU/	99.0	161.3	20.9	21.4	57.9	15.9	0.0
MT 1570	CHOTEAU/MT0516//CAP151-3	97.7	160.0	19.9	18.6	58.9	16.7	0.0
MT 1601	DUCLAIR/AC BARRIE	100.0	160.7	22.2	30.4	58.2	16.3	0.7
MT 1607	DUCLAIR/STETTLER	99.7	161.7	22.9	30.3	59.2	16.5	0.0

TABLE 5. Continued **Advanced Yield Spring Wheat Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, MT. 2017. (Exp# 17-3102-SW)**

ID	Cultiver or Selection	Stand %	1/ Head Date	Plant Ht Inches	2/ Yield Bu/Ac	Test Wt Lbs/Bu	3/ Protein %	4/ Sawfly %
MT 1617	CHOTEAU/NICK//MT1103	100.0	164.3	25.9	32.1	56.9	16.4	0.0
MT 1619	MT1133/MT1148	99.0	161.3	18.9	29.0	59.3	16.8	0.0
MT 1621	MT1148/MT1133	99.0	161.0	20.9	29.4	59.2	16.2	0.0
MT 1622	MT1148/MT1133	99.7	160.7	19.7	28.1	57.8	**17.2**	0.0
MT 1624	MT1148/MT1133	99.7	158.3	20.0	22.8	58.8	16.7	0.0
MT 1625	MT1148/MT1133	99.7	161.0	20.1	26.8	59.2	16.8	0.0
MT 1627	MT1133//CHOTEAU/MT0614	100.0	162.3	24.4	29.0	59.6	16.6	0.0
MT 1630	MT1133//CHOTEAU/YELLOWSTONE (44)	100.0	162.0	22.9	23.7	60.2	16.7	0.0
MT 1635	MT1134/MT1133	99.7	163.7	23.8	29.3	58.9	16.6	0.0
MT 1636	MT1134/MT1133	99.3	163.0	23.9	29.6	59.0	16.8	0.0
MT 1643	MT1134/MT1148	99.7	159.3	21.5	28.5	60.1	16.6	0.3
MT 1645	MT1134//CHOTEAU/MT0614	99.3	163.3	22.1	26.4	58.7	16.7	0.0
MT 1651	MT1148//CHOTEAU/MT0614	99.0	162.3	22.2	30.8	58.9	16.8	0.0
MT 1653	MT1167/MT1172	98.4	163.3	24.3	27.5	58.2	15.9	0.0
MT 1659	CHOTEAU/PETIT//MT1148	100.0	158.0	21.0	23.9	59.4	16.2	0.0
MT 1664	CHOTEAU/YELLOWSTONE 44//MT1148	99.0	160.7	21.6	24.4	58.9	16.4	0.0
MT 1666	CHOTEAU/YELLOWSTONE 44//MT1148	99.3	164.0	24.0	28.1	57.7	16.5	0.3
MT 1668	CHOTEAU/YELLOWSTONE 57//MT0744/M	99.7	158.3	18.2	22.6	58.3	**17.0**	0.0
MT 1672	08521XMcNeal/Glupro, +, fam 45	99.0	162.7	24.6	24.1	58.3	**17.2**	0.0
MT 1673	Duclair x McNeal/Glupro, +, fam 72-17	98.4	159.7	22.2	25.9	57.3	16.7	0.0
EXPERIMENTAL MEANS		99.4	162.1	22.5	27.8	58.7	16.3	0.1
LSD (0.05)		1.6	1.4	1.9	2.7	0.9	0.3	0.3
C.V.: (S / MEAN)*100		1.0	0.5	5.4	6.1	0.9	1.3	393.5
P-VALUE (Entries)		0.3919	<.0001	<.0001	<.0001	<.0001	<.0001	0.0170

Bold Indicates highest yeilding entry based on Fisher's Protected LSD at the 0.05 probability level.
Bold Indicates cultivars yielding equal to the highest yielding entry based on Fisher's Protected LSD at the 0.05 probability level.
1/ No. of days from January 1 (162 = June 11).
2/ Volumetric yields are based on plot weights adjusted to uniform 13 percent grain moisture and 60 lbs/bu as the standard test weight for wheat.
3/ Protein values are adjusted to 13 percent grain moisture.
4/ Sawfly rating is reported as the percentage of cut stems.

Management Information (17-3102-SW)

Seeding Date:	April 13, 2017
Harvest Date:	August 1, 2017
Fertility:	125-20-10-10 side banded
System:	no till
Herbicide:	RTIII, 32 oz/ac, 4/5/2017
Insecticide:	none
Previous Crop:	Chemical Fallow-Barley
Precipitation:	2.21" (planting to harvest)

TABLE 6. **Ten-Year Yield Summary on Selected Entries from Dryland Advanced Spring Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 3102-SW)**

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ YIELD (Bushels Per Acre) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK YIELD 3/	**10-YR COMP. AVE. YIELD 4/**
PI642366	VIDA (+)	10	55.3	55.6	58.3	44.6	35.1	67.2	47.9	45.9	40.5	35.6	48.6	138.9	**48.6**
PI676978	LANNING (++)	4							44.2	44.3	45.6	27.7	40.5	132.0	**46.2**
04S0258-12	SY INGMAR (P+)	4							44.9	43.7	41.2	30.8	40.1	130.9	**45.8**
PI679964	NS PRESSER CL (P+)	4					32.1	69.4			35.3	34.7	42.9	130.6	**45.7**
LNR10-0493	LCS PRO (P+)	4							39.8	43.4	48.9	27.3	39.9	130.0	**45.5**
ND695	REEDER (+)	10	51.0	49.9	54.6	41.8	31.4	62.7	45.7	42.3	44.7	29.0	45.3	129.5	**45.3**
03S0253-7	SY ROWYN (P+)	3						59.6	40.7	36.3			45.5	127.6	**44.6**
BZ902-413R	WB-GUNNISON (P+)	10	55.3	46.6	62.4	44.1	32.3	56.5	43.4	39.7	34.0	26.7	44.1	126.1	**44.1**
01S0263-28	SY SOREN (P+)	7				42.6	29.7	56.6	42.5	44.3	42.2	31.0	41.3	125.4	**43.9**
PI671855	EGAN (+)	6					31.6	55.5	37.8	38.9	46.5	30.5	40.1	124.5	**43.5**
BZ 996-434	CORBIN (P+)(saw fly tol)	10	47.8	45.2	53.3	45.5	31.3	59.3	38.8	42.3	45.7	25.3	43.4	124.1	**43.4**
IMICHT-79	WB9879CLP (P+)	8			54.8	40.0	29.8	58.9	40.5	38.0	43.6	29.1	41.8	123.4	**43.2**
T 1052	BUCK PRONTO (+)	4				48.2	32.9	55.5	37.0				43.4	123.3	**43.1**
PI660981	DUCLAIR (+)	9		42.3	55.5	41.0	34.9	61.7	46.9	43.2	38.6	26.2	43.4	123.3	**43.1**
0150042-10	BRENNAN (P+)	9		54.2	53.9	35.8	38.4	56.3	41.5	46.3	38.4	24.5	43.2	122.9	**43.0**
06S0385-5	SY VALDA (P+)	3								42.5	38.5	27.7	36.2	121.3	**42.4**
04S0515-2-2	SY TYRA (P+)	9		44.8	51.0	39.7	26.6	64.2	46.3	41.7	32.8	31.5	42.1	119.6	**41.8**
PI574642	McNEAL	10	45.9	41.9	49.9	36.4	34.1	53.0	41.5	43.4	39.2	32.2	41.7	119.3	**41.7**
PI633974	CHOTEAU (+)(saw fly tol)	10	45.1	42.3	53.3	38.8	31.1	53.9	40.2	39.5	36.8	26.4	40.7	116.5	**40.7**
CI13596	FORTUNA (saw fly tol)	10	46.1	45.6	50.1	40.5	33.6	49.3	37.2	34.2	36.4	27.5	40.1	114.5	**40.1**
MN02072-7	LCS BREAKAWAY (P+)	3					25.4	47.3		34.6			35.8	107.3	**37.5**
CI10003	THATCHER	10	33.2	45.5	40.6	37.0	25.9	44.9	33.0	29.2	32.3	28.1	35.0	100.0	**35.0**
MEANS (For Entries Listed)			47.5	46.7	53.1	41.1	31.5	57.3	41.6	40.7	40.1	29.0			**43.1**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			7.61	10.32	8.62	6.95	n/a	9.24	8.26	9.76	8.79	8.73	8.70		
Total Plant Available Water (in.)			15.7	16.61	18.31	15.7	7.33	22.52	13.13	17.28	21.03	11.14	15.88		
Soil NO_3 (lbs.) to SD at Planting			252	139	141	124	35	56	86	75	55	85	105		
SD (Sampling Depth in Inches)			48	48	48	36	48	48	48	48	48	45	47		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	125	125	93		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		
		(# S)	0	0	0	0	0	0	0	0	10	10	2		

Check variety is Thatcher.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 Pending.

3/ Percent of Thatcher yield 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 of a given entry for years tested, y = average yield for Thatcher for the same years, and z = 10-Yr average yield for the check variety Thatcher.

TABLE 7. **Ten-Year Test Weight Summary on Selected Entries from Dryland Advanced Spring Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 3102-SW)**

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ TEST WEIGHT (Pounds Per Bushel) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK TEST WT 3/	**10-YR COMP. AVE. TEST WT 4/**
04S0258-12	SY INGMAR (P+)	4							60.6	54.0	58.1	59.6	58.1	107.4	**59.9**
06S0385-5	SY VALDA (P+)	3								54.9	58.5	60.0	57.8	107.3	**59.8**
0150042-10	BRENNAN (P+)	9		59.3	58.4	62.4	56.5	63.3	61.5	56.6	59.8	59.1	59.7	106.9	**59.6**
LNR10-0493	LCS PRO (P+)	4							58.1	51.7	59.1	60.4	57.3	106.0	**59.1**
PI676978	LANNING (++)	4							59.1	53.0	58.1	58.3	57.1	105.7	**58.9**
MN02072-7	LCS BREAKAWAY (P+)	3					53.0	63.4		54.5			57.0	105.6	**58.9**
03S0253-7	SY ROWYN (P+)	3						62.2	58.8	53.7			58.3	105.1	**58.6**
BZ902-413R	WB-GUNNISON (P+)	10	59.0	60.2	59.5	60.2	52.9	62.6	58.2	56.1	56.8	58.6	58.4	104.8	**58.4**
01S0263-28	SY SOREN (P+)	7				61.3	51.5	63.0	59.5	53.1	58.5	58.9	58.0	104.7	**58.3**
CI13596	FORTUNA (saw fly tol)	10	58.8	59.4	57.7	60.7	54.6	61.9	58.7	54.6	59.0	57.9	58.3	104.7	**58.3**
ND695	REEDER (+)	10	58.2	60.0	57.8	61.3	52.9	62.8	58.5	54.4	58.2	58.4	58.2	104.5	**58.2**
T 1052	BUCK PRONTO (+)	4				60.7	53.6	62.3	59.3				59.0	104.3	**58.1**
04S0515-2-2	SY TYRA (P+)	9		59.4	56.7	59.9	52.8	63.9	61.5	53.5	55.8	60.5	58.2	104.3	**58.1**
BZ 996-434	CORBIN (P+)(saw fly tol)	10	57.0	59.9	57.2	61.2	51.3	62.7	59.5	53.3	58.6	59.0	58.0	104.0	**58.0**
IMICHT-79	WB9879CLP (P+)	8			56.9	60.2	51.9	61.7	58.6	53.8	57.7	58.2	57.4	103.6	**57.7**
PI642366	VIDA (+)	10	58.6	58.8	57.7	60.8	50.8	62.4	58.6	53.8	56.5	58.7	57.7	103.5	**57.7**
PI671855	EGAN (+)	6					54.1	60.8	56.9	53.5	57.0	56.1	56.4	103.2	**57.5**
PI633974	CHOTEAU (+)(saw fly tol)	10	56.3	57.9	56.5	59.6	52.0	61.5	58.3	52.8	58.1	57.8	57.1	102.5	**57.1**
PI574642	McNEAL	10	56.0	58.5	57.4	59.1	52.3	61.8	56.8	54.5	55.7	57.1	56.9	102.2	**56.9**
PI660981	DUCLAIR (+)	9		57.8	57.3	59.1	51.6	61.2	58.1	52.5	57.5	57.2	56.9	102.0	**56.9**
PI679964	NS PRESSER CL (P+)	4					49.2	61.7			53.8	58.6	55.8	100.1	**55.8**
CI10003	THATCHER	10	55.1	58.9	55.5	59.8	50.2	61.5	54.7	50.1	55.6	55.8	55.7	100.0	**55.7**
MEANS (For Entries Listed)			57.4	59.1	57.4	60.4	52.4	62.3	58.7	53.7	57.5	58.4			**58.1**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			7.61	10.32	8.62	6.95	n/a	9.24	8.26	9.76	8.79	8.73	8.70		
Total Plant Available Water (in.)			15.7	16.61	18.31	15.7	7.33	22.52	13.13	17.28	21.03	11.14	15.88		
Soil NO_3 (lbs.) to SD at Planting			252	139	141	124	35	56	86	75	55	85	105		
SD (Sampling Depth in Inches)			48	48	48	36	48	48	48	48	48	45	47		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	125	125	93		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		
		(# S)	0	0	0	0	0	0	0	0	10	10	2		

Check variety is Thatcher.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 Pending.

3/ Percent of Thatcher 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 test weight of a given entry for years tested, y = average test weight for Thatcher for the same years, and z = 10-Yr average test weight for the check variety Thatcher.

TABLE 8. Ten-Year Sawfly Summary on Selected Entries from Dryland Advanced Spring Wheat Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 3102-SW)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ SAWFLY RATING (% cut and lodged) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK SAWFLY 3/	**10-YR COMP. AVE. SAWFLY 4/**
BZ902-413R	WB-GUNNISON (P+)	10	10.0	2.3	1.0	5.3	1.0	0.7	0.0	0.0	0.0	0.0	2.0	16.8	**2.0**
06S0385-5	SY VALDA (P+)	3								0.3	0.0	0.0	0.1	33.4	**4.0**
PI642366	VIDA (+)	10	6.7	8.7	7.0	10.0	5.0	1.0	0.3	3.7	0.0	0.0	4.2	35.0	**4.2**
01S0263-28	SY SOREN (P+)	7				2.3	10.0	2.0	0.7	0.7	0.0	0.0	2.2	48.0	**5.8**
BZ 996-434	CORBIN (P+)(saw fly tol)	10	33.3	5.3	12.0	5.0	7.5	0.7	0.3	0.7	0.0	0.0	6.5	53.6	**6.5**
04S0515-2-2	SY TYRA (P+)	9		6.7	20.0	10.0	8.0	0.7	0.7	0.0	0.0	0.0	5.1	68.0	**8.2**
03S0253-7	SY ROWYN (P+)	3						1.0	1.7	0.3			1.0	69.3	**8.4**
0150042-10	BRENNAN (P+)	9		5.3	18.3	11.7	12.5	0.7	0.7	2.3	0.0	0.0	5.7	76.1	**9.2**
PI660981	DUCLAIR (+)	9		10.0	13.3	28.3	7.5	1.0	0.3	1.0	0.0	0.0	6.8	90.9	**11.0**
CI 10003	THATCHER	10	31.7	10.0	30.0	15.0	17.5	2.3	3.7	2.3	0.0	0.0	11.3	93.0	**11.3**
CI 13596	FORTUNA (saw fly tol)	10	53.3	15.0	20.0	18.3	10.0	2.3	1.0	1.0	0.0	0.0	12.1	100.0	**12.1**
04S0258-12	SY INGMAR (P+)	4							1.0	1.0	0.0	0.0	0.5	100.0	**12.1**
PI633974	CHOTEAU (+)(saw fly tol)	10	51.7	10.0	31.7	28.3	8.0	1.0	0.7	0.7	0.0	0.0	13.2	109.1	**13.2**
IMICHT-79	WB9879CLP (P+)	8			18.3	28.3	10.0	0.7	0.3	1.0	0.0	0.0	7.3	111.4	**13.5**
ND 695	REEDER (+)	10	55.0	6.7	33.3	16.7	20.0	2.3	2.3	2.3	0.0	0.0	13.9	114.6	**13.9**
T 1052	BUCK PRONTO (+)	4				13.3	22.5	2.3	2.3				10.1	127.9	**15.5**
PI679964	NS PRESSER CL (P+)	4					15.0	1.0			0.0	0.0	4.0	129.7	**15.7**
PI671855	EGAN (+)	6					15.0	2.3	2.3	1.0	0.0	0.0	3.4	144.2	**17.4**
MN02072-7	LCS BREAKAWAY (P+)	3					15.0	3.7		0.7			6.4	145.0	**17.5**
PI574642	McNEAL	10	51.7	18.3	25.0	36.7	30.0	7.0	5.0	5.0	0.0	0.3	17.9	147.9	**17.9**
PI 676978	LANNING (++)	4							1.0	2.3	0.0	0.0	0.8	166.7	**20.2**
LNR10-0493	LCS PRO (P+)	4							2.3	5.0	0.0	0.3	1.9	381.7	**46.2**
MEANS (For Entries Listed)			36.7	8.9	19.2	16.4	12.6	1.8	1.4	1.6	0.0	0.0			**13.0**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			7.61	10.32	8.62	6.95	n/a	9.24	8.26	9.76	8.79	8.73	8.70		
Total Plant Available Water (in.)			15.7	16.61	18.31	15.7	7.33	22.52	13.13	17.28	21.03	11.14	15.88		
Soil NO_3 (lbs.) to SD at Planting			252	139	141	124	35	56	86	75	55	85	105		
SD (Sampling Depth in Inches)			48	48	48	36	48	48	48	48	48	45	47		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	125	125	93		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		
		(# S)	0	0	0	0	0	0	0	0	10	10	2		

Check variety is Fortuna.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 Pending.

3/ Percent of Fortuna saw fly rating 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 saw fly rating of a given entry for years tested, y = average saw fly rating for Fortuna for the same years, and z = 10-Yr average saw fly for the check variety Fortuna.

Table 9. Montana Spring Durum Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions. Northern Agricultural Research Center. Havre, Montana. 2017. (Exp# 17-9802-DUR)

Entry	Culitvar Source	Stand %	1/ Head Date	Plant Ht Inches	2/ Yield Bu/Ac	Test Wt Lbs/Bu	Protein %	3/ FN Seconds	4/ Sawfly %
ALKABO	NDSU	94.5	165.0	22.3	27.0	59.4	15.8	361.9	0.3
ALZADA	WestBred	96.7	160.0	22.1	24.1	59.4	16.3	**416.2**	0.0
CARPIO	NDSU	91.5	168.0	23.6	26.7	56.2	16.3	353.8	0.0
DIVIDE	NDSU	93.5	165.0	25.6	27.4	58.7	16.3	361.8	0.0
DYNAMIC	CDC	97.1	167.7	25.3	28.1	57.6	**17.8**	351.1	0.0
FORTITUDE	CDC	91.9	166.0	23.8	27.6	58.3	17.2	376.6	0.0
GRENORA	NDSU	96.1	164.3	22.5	**30.8**	58.4	16.3	377.5	0.0
JOPPA	NDSU	92.5	164.7	25.5	28.0	58.6	16.6	369.1	0.0
MOUNTRAIL	NDSU	94.8	165.3	22.6	28.2	58.6	16.6	359.5	0.0
PRECISION	CDC	91.8	163.7	23.7	**29.7**	58.5	17.2	387.0	0.0
TIOGA	NDSU	97.4	166.3	26.9	**30.8**	58.3	16.4	362.9	0.3
VIVID	CDC	89.2	166.0	24.1	24.5	58.6	17.3	365.6	0.0
MT112219	MSU	97.1	163.3	20.6	27.1	**60.3**	15.7	372.6	0.0
MTD16001	MSU	96.4	167.3	23.2	26.8	57.6	15.8	348.3	0.0
MTD16002	MSU	99.3	168.0	25.2	**29.1**	57.8	16.1	375.9	0.0
MTD16003	MSU	98.7	165.0	25.8	**29.5**	59.2	14.8	361.5	0.0
MTD16004	MSU	99.0	165.0	24.3	**30.1**	59.3	15.8	369.6	0.0
MTD16005	MSU	94.5	167.0	24.1	27.2	57.9	16.7	362.2	0.0
MTD16006	MSU	100.0	165.0	24.4	**30.9**	58.6	16.0	351.4	0.0
MTD16007	MSU	98.7	166.0	25.0	**31.3**	58.9	16.8	364.7	0.0
MTD16008	MSU	95.4	164.0	25.2	**30.1**	57.9	16.1	376.6	0.0
MTD16009	MSU	95.4	168.0	25.1	27.4	55.0	17.1	389.4	0.0
MTD16010	MSU	99.0	167.0	22.3	28.0	58.5	16.4	359.9	0.0
MTD16011	MSU	98.4	166.7	22.9	**30.5**	58.1	16.6	378.4	0.0
EXPERIMENTAL MEANS		95.8	165.6	24.0	28.4	58.3	16.4	368.9	0.0
LSD (0.05)		6.7	2.0	1.8	2.8	0.6	0.4	10.3	-
C.V.: (S / MEAN)*100		4.2	0.7	4.6	5.9	0.6	1.6	1.7	-
P-VALUE (Entries)		0.1042	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	-

1/ No. of days from January 1 (166 = June 15).
2/ Volumetric yields are based on plot weights adjusted to uniform 13 percent grain moisture and 60 lbs/bu as the standard test weight for durum.
3/ FN is the falling number value reported in seconds adjusted to 14 percent flour moisture.
4/ Sawfly rating is reported as the percentage of cut stems.
Bold indicates highest value within a column.
Bold indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05).

Management Information (17-9802-DUR)

Seeding Date:	April 13, 2017	Herbicide:	Brox-M, 24 oz/ac, 4/5/2017
Harvest Date:	August 3, 2017	Insecticide:	none
Fertility:	125-20-10-10	Previous Crop:	Chemical Fallow-Barley
System:	no till	Precipitation:	2.32" (planting to harvest)

TABLE 10. Ten-Year Yield Summary on Selected Entries from Dryland Montana Spring Durum Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 9802-DUR)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ YIELD (Bushels Per Acre) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK YIELD 3/	**10-Yr COMP. AVE. YIELD 4/**
DT712	STRONGFIELD (+)	6	46.6	45.8	68.0	40.7	27.8		38.6				44.6	109.7	**43.6**
D03028	CARPIO (+)	5						59.8	39.7	34.6	41.3	26.7	40.4	108.3	**43.1**
YU894-75	ALZADA (P+)	9	45.2	39.5	58.4	43.9	34.4	58.7	40.6		36.4	24.1	42.3	106.4	**42.3**
D04581	JOPPA (+)	4							41.3	34.8	31.5	28.0	33.9	104.8	**41.7**
D00095	TIOGA (+)	8			64.1	41.9	30.1	54.1	36.3	34.4	35.9	30.8	41.0	103.4	**41.1**
D96604	ALKABO (+)	10	40.5	41.4	62.7	39.5	29.7	61.3	42.2	35.0	29.5	27.0	40.9	102.7	**40.9**
D9715-11	DIVIDE (+)	10	39.1	44.7	60.1	36.4	28.0	55.7	38.6	34.9	39.7	27.4	40.5	101.7	**40.5**
MT03012	SILVER (+)	9	44.5	40.1	55.3	40.4	28.3	54.9	41.2	35.2	35.6		41.7	101.6	**40.4**
D97780	GRENORA (+)	10	41.4	42.8	57.7	36.5	26.0	62.3	37.0	31.3	36.2	30.8	40.2	101.0	**40.2**
D901313	MOUNTRAIL (+)	10	39.8	41.1	63.2	39.4	27.9	57.0	32.4	38.8	30.1	28.2	39.8	100.0	**39.8**
MEANS (For Entries Listed)			42.4	42.2	61.2	39.8	29.0	58.0	38.8	34.9	35.1	27.9			**41.4**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			7.70	10.32	8.62	6.95	n/a	9.13	8.26	9.76	8.21	8.73	8.63		
Total Plant Available Water (in.)			15.79	16.61	18.31	15.70	7.33	22.41	13.13	17.28	20.45	11.14	15.82		
Soil NO_3 (lbs.) to SD at Planting			252	139	141	124	60	22	86	75	28	85	101		
SD (Sampling Depth in Inches)			48	48	48	36	n/a	48	48	48	48	45	46		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	125	125	93		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		
		(# S)	0	0	0	0	0	0	0	0	10	10	2		

Check variety is Mountrail.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 or Title 5 Pending.

3/ Percent of Mountrail yield 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 of a given entry for years tested, y = average yield for Mountrail for the same years, and z = 10-Yr average yield for the check variety Mountrail.

TABLE 11. Ten-Year Test Weight Summary on Selected Entries from Dryland Montana Spring Durum Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 9802-DUR)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ TEST WEIGHT (Pounds Per Bushel) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK TEST WT 3/	**10-Yr COMP. AVE. TEST WT 4/**
D96604	ALKABO (+)	10	58.3	58.6	58.7	60.9	57.7	63.6	57.8	56.7	54.9	59.4	58.7	102.0	**58.7**
D9715-11	DIVIDE	10	57.8	58.4	58.2	60.0	56.6	63.6	57.6	55.4	56.5	58.7	58.3	101.4	**58.3**
YU894-75	ALZADA (P+)	9	55.7	58.9	58.2	59.9	55.8	62.8	58.1		54.5	59.4	58.1	100.8	**58.0**
DT712	STRONGFIELD (+)	6	57.2	58.8	58.7	59.9	54.3		56.6				57.6	100.8	**58.0**
D00095	TIOGA	8			58.0	60.7	55.7	64.0	56.9	55.7	54.9	58.3	58.0	100.7	**57.9**
MT03012	SILVER (+)	9	55.6	58.2	56.6	60.4	57.2	62.9	58.8	54.2	55.5		57.7	100.6	**57.8**
D04581	JOPPA (+)	4							58.1	55.8	53.7	58.6	56.6	100.5	**57.8**
D97780	GRENORA (+)	10	57.4	57.5	58.0	60.6	55.2	63.3	56.9	55.8	54.5	58.4	57.7	100.4	**57.7**
D03028	CARPIO (+)	5						63.4	56.7	56.2	56.3	56.2	57.8	100.1	**57.6**
D901313	MOUNTRAIL (+)	10	55.7	58.4	58.4	59.9	54.2	63.4	56.3	55.9	54.3	58.6	57.5	100.0	**57.5**
MEANS (For Entries Listed)			56.8	58.4	58.1	60.3	55.8	63.4	57.4	55.7	55.0	58.5			**57.9**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			7.70	10.32	8.62	6.95	n/a	9.13	8.26	9.76	8.21	8.73	8.63		
Total Plant Available Water (in.)			15.79	16.61	18.31	15.70	7.33	22.41	13.13	17.28	20.45	11.14	15.82		
Soil NO_3 (lbs.) to SD at Planting			252	139	141	124	60	22	86	75	28	85	101		
SD (Sampling Depth in Inches)			48	48	48	36	n/a	48	48	48	48	45	46		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	125	125	93		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		
		(# S)	0	0	0	0	0	0	0	0	10	10	2		

Check variety is Mountrail.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 or Title 5 Pending.

3/ Percent of Mountrail 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 test weight of a given entry for years tested, y = average test weight for Mountrail for the same years, and z = 10-Yr test weight for the check variety Mountrail.

TABLE 12. Ten-Year Sawfly Summary on Selected Entries from Dryland Montana Spring Durum Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 9802-DUR)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ SAWFLY RATING (% Cut and Lodged) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK SAWFLY 3/	**10-Yr COMP. AVE. SAWFLY 4/**
DT712	STRONGFIELD (+)	6	10.0	5.3	6.7	13.3	2.3		1.0				6.4	35.0	**3.9**
YU894-75	ALZADA (P+)	9	6.7	15.0	8.3	18.3	2.3	2.3	0.3		0.0	0.0	5.9	47.3	**5.3**
D00095	TIOGA	8			13.3	18.3	6.7	2.3	1.0	2.3	0.0	0.3	5.5	68.8	**7.8**
D9715-11	DIVIDE	10	21.7	15.0	10.0	23.3	6.7	1.0	1.0	0.3	0.0	0.0	7.9	70.1	**7.9**
MT03012	SILVER (+)	9	6.7	11.7	23.3	30.0	4.0	2.3	1.0	1.0	0.0		8.9	71.0	**8.0**
D97780	GRENORA (+)	10	38.3	20.0	16.7	25.0	8.3	2.3	0.7	0.3	0.0	0.0	11.2	99.1	**11.2**
D901313	MOUNTRAIL (+)	10	30.0	18.3	18.3	30.0	13.3	2.3	0.3	0.0	0.0	0.0	11.3	100.0	**11.3**
D96604	ALKABO (+)	10	30.0	21.7	26.7	30.0	16.7	2.3	1.0	0.7	0.0	0.3	12.9	114.8	**12.9**
D03028	CARPIO (+)	5						3.7	1.0	1.0	0.0	0.0	1.1	215.1	**24.2**
D04581	JOPPA (+)	4							2.3	2.0	0.0	0.0	1.1	1305.2	**147.0**
MEANS (For Entries Listed)			20.5	15.3	15.4	23.5	7.5	2.3	1.0	1.0	0.0	0.1			**24.0**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			7.70	10.32	8.62	6.95	n/a	9.13	8.26	9.76	8.21	8.73	8.63		
Total Plant Available Water (in.)			15.79	16.61	18.31	15.70	7.33	22.41	13.13	17.28	20.45	11.14	15.82		
Soil NO_3 (lbs.) to SD at Planting			252	139	141	124	60	22	86	75	28	85	101		
SD (Sampling Depth in Inches)			48	48	48	36	n/a	48	48	48	48	45	46		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	125	125	93		
		(# P_2O_5)	40	40	40	40	20	20	20	20	20	20	28		
		(# K_2O)	25	25	25	25	10	10	10	10	10	10	16		
		(# S)	0	0	0	0	0	0	0	0	10	10	2		

Check variety is Mountrail.

1/ See MCES Bulletin 1093 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html 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, ++ = PVP Title 5 or Title 5 Pending.

3/ Percent of Mountrail sawfly rating 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 sawfly rating of a given entry for years tested, y = average sawfly rating for Mountrail for the same years, and z = 10-Yr sawfly rating for the check variety Mountrail.

TABLE 13. Intrastate Spring Barley Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions at Northern Agricultural Research Center. Havre, MT. 2017. (Exp# 17-2102-SB)

ID	Cultivar or Selection	Stand %	1/ Head Date	Plant Ht Inches	2/ Yield Bu/Ac	Test Wt Lbs/Bu	Plump %	Thin %	3/ Protein %
1	Balster	99.7	173.0	18.2	**47.5**	52.8	87.8	2.7	13.4
2	Copeland	99.7	171.0	17.8	45.4	52.3	89.4	2.8	14.0
3	Craft	98.7	168.7	20.3	33.7	54.3	93.5	1.7	14.0
4	Genesis	97.4	164.0	20.3	39.6	53.4	94.5	1.3	12.8
5	Genie	100.0	172.0	15.4	**46.3**	52.8	70.3	5.6	13.8
6	Growler	97.7	173.3	17.1	39.9	51.8	83.5	4.6	**14.5**
7	Harrington	100.0	172.3	17.6	41.4	53.2	87.5	2.7	**14.5**
8	Hockett	100.0	169.0	18.6	37.4	54.0	94.6	1.7	**14.2**
9	Metcalfe	100.0	168.3	18.3	40.1	54.0	93.2	1.8	**14.6**
10	Odyssey	99.3	167.3	18.9	41.7	53.5	94.3	1.5	**14.3**
11	Synergy	100.0	168.3	18.5	39.6	53.4	91.0	1.8	13.5
12	10ARS191-3	98.4	172.7	18.7	43.3	51.7	50.8	12.3	13.4
13	2Ab08-X05M010-65	98.7	176.0	17.4	**47.4**	51.3	78.0	5.7	13.5
14	10WA-106.18	100.0	167.3	19.5	**51.7**	54.4	88.4	2.5	12.8
15	11WA-107.58	99.7	171.3	18.6	**47.3**	**55.2**	92.2	1.6	13.5
16	MT090025	99.3	162.3	17.2	44.8	53.5	64.6	18.7	10.0
17	MT090169	98.7	170.3	18.7	43.7	53.5	91.4	1.8	11.7
18	MT090182	99.3	168.7	21.6	42.0	53.6	84.4	3.4	12.4
19	MT090184	99.3	172.7	20.1	**46.3**	53.7	87.4	2.9	12.1
20	MT090193	98.7	171.7	21.2	38.1	53.0	81.7	3.8	12.7
21	MT090236	100.0	162.7	17.3	38.5	53.4	92.8	1.6	12.3
22	MT100120	99.3	169.7	20.2	41.4	53.9	92.1	2.2	11.9
23	MT124007	98.4	169.0	18.8	38.5	53.2	90.9	2.2	13.6
24	MT124016	99.7	170.0	16.8	**49.9**	52.7	90.0	2.4	13.2
25	MT124018	99.3	169.3	17.8	42.7	53.2	91.8	2.1	13.9
26	MT124069	100.0	170.0	18.2	44.3	52.7	88.9	3.0	13.0
27	MT124071	99.7	168.0	19.8	**46.5**	53.6	91.1	2.3	12.7
28	MT124073	98.7	171.0	19.3	38.7	52.7	85.7	3.2	13.6
29	MT124093	95.8	167.0	20.8	37.0	54.0	93.8	1.5	14.0
30	MT124112	99.0	167.7	18.2	41.2	53.5	95.2	1.2	12.1
31	MT124113	97.4	163.0	18.3	39.2	53.7	96.8	1.1	11.6
32	MT124118	98.7	167.7	19.5	**47.2**	54.3	93.3	1.7	12.9
33	MT124127	100.0	168.3	18.2	35.0	54.4	93.6	1.9	13.6
34	MT124128	98.7	164.3	18.4	38.4	**54.7**	98.0	0.6	12.1
35	MT124134	99.0	163.7	18.9	40.6	54.3	97.6	0.7	12.0
36	MT124164	99.0	169.7	19.0	**50.4**	53.0	92.4	2.3	12.1
37	MT124243	97.7	170.0	18.6	43.3	52.8	91.8	2.5	11.5
38	MT124370	99.3	171.3	16.4	**47.1**	53.0	89.1	3.1	12.4
39	MT124380	98.4	169.0	16.4	43.5	53.5	92.0	1.9	12.8
40	MT124555	98.0	170.7	18.8	35.9	53.2	91.7	2.0	13.5
41	MT124601	99.0	167.7	19.2	**46.7**	53.0	90.7	2.5	12.5
42	MT124645	99.3	169.3	18.8	45.8	53.6	93.8	1.4	13.3
43	MT124659	99.0	164.0	18.0	34.3	53.8	93.2	1.6	12.1

TABLE 13. Continued **Intrastate Spring Barley Cultivar Evaluation Nursery Grown On-Station Under No-Till Dryland Fallow Conditions at Northern Agricultural Research Center. Havre, MT. 2017. (Exp# 17-2102-SB)**

ID	Cultivar or Selection	Stand %	1/ Head Date	Plant Ht Inches	2/ Yield Bu/Ac	Test Wt Lbs/Bu	Plump %	Thin %	3/ Protein %
44	MT124663	100.0	167.0	18.4	**47.2**	53.6	97.5	0.6	12.4
45	MT124664	100.0	168.7	18.7	36.2	54.4	94.1	1.2	12.6
46	MT124673	99.7	169.7	16.4	38.5	53.9	92.5	1.8	12.3
47	MT124677	99.3	167.3	18.0	39.6	54.3	94.3	1.5	12.6
48	MT124688	99.0	169.3	19.0	39.3	53.9	93.7	1.9	12.4
49	MT124716	99.7	171.7	17.1	43.0	53.1	77.7	4.1	**14.1**
EXPERIMENTAL MEANS		99.1	168.9	18.5	42.2	53.4	89.3	2.8	13.0
LSD (0.05)		2.7	2.0	1.6	5.4	0.7	4.3	1.0	0.6
C.V.		1.7	0.7	5.2	7.9	0.8	3.0	22.7	2.7
P-Value (Entries)		0.7668	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

Bold Indicates highest yeilding entry based on Fisher's Protected LSD at the 0.05 probability level.
Bold Indicates cultivars yielding equal to the highest yielding entry based on Fisher's Protected LSD at the 0.05 probability level.
1/ No. of Days from January 1 (169 = June 18).
2/ Volumetric yields are based on plot weights adjusted to uniform 13 percent grain moisture and 48 lbs/bu as the standard test weight for barley.
3/ Protein values are adjusted to 13 percent grain moisture.

Management Information (17-2102-SB)

Seeding Date:	April 8, 2017
Harvest Date:	July 20, 2017
Fertility:	90-30-10 side banded
System:	no till
Herbicide:	Bromac, 32 oz/ac, 6/1/2017
Insecticide:	none
Previous Crop:	Chemical Fallow - Barley
Precipitation:	1.54" (planting to harvest)

TABLE 14. Ten-Year Yield Summary on Selected Entries from Dryland Intrastate Spring Barley Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (EXP# 2102-SB)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ YIELD (Bushels Per Acre) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK YIELD 3/	**10-YR COMP. AVE. YIELD 4/**
CHAMPION (P+)	YU501385	8	85.5	80.5		95.9	47.0	69.7	86.3	78.5	95.0		79.8	105.1	**75.9**
HOCKETT (+)	MT910189	10	73.8	70.4	77.7	76.3	54.4	70.7	88.6	76.1	97.1	37.4	72.3	100.0	**72.3**
CONRAD (+)	2B965057	8	67.4	70.3	82.4	76.9	43.8	78.5	76.4	65.3			70.1	95.4	**68.9**
ESLICK	MT960228	4	69.2				30.9	89.5	88.5				69.5	96.7	**69.9**
COPELAND	Copeland	4			77.0	72.9					82.1	45.4	69.3	96.1	**69.4**
HARRINGTON	SK76333	9		71.0	82.4	76.5	37.7	71.3	82.5	61.0	85.6	41.4	67.7	94.0	**67.9**
GENIE (P+)	Genie	3						67.2			87.0	46.3	66.8	97.7	**70.6**
ODYSSEY (P+)	Odyssey	3						65.6			90.4	41.7	65.9	96.3	**69.6**
HAXBY	MT950186	9	75.8	48.2	51.5	82.6	25.1	67.3	78.1	79.4	80.9		65.4	85.9	**62.1**
EM090105 (+)	05032-068	3				79.7	43.4		73.0				65.4	89.4	**64.6**
METCALFE	TR232	8		68.7	77.9	70.9	39.5		76.3	59.1	76.1	40.1	63.6	88.0	**63.6**
PINNACLE (+)	PI643354	5			76.1	75.4	24.6	61.8	69.4				61.5	83.5	**60.4**
TRADITION (P+)	6B952482	7	73.0	50.5	7.3	68.5	47.3	78.2	79.8				57.8	79.0	**57.1**
CRAFT	MT970116	9	67.0	37.2	37.3	80.8	31.4	60.2	74.9	70.2		33.7	54.7	78.8	**56.9**
MEANS (For Entries Listed)			73.1	62.1	63.3	77.9	38.7	70.9	79.4	69.9	86.8	40.8			**66.4**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			5.58	9.63	n/a	7.45	7.45	8.52	7.82	8.85	8.68	9.09	8.12		
Total Plant Available Water (in.)			17.79	22.09	14.61	22.9	16.91	26.98	21.16	20.9	27.54	18.57	20.95		
Soil NO3 (lbs.) to SD at Planting			157	88	204	374	60	415	57	123	28	103	161		
SD (Sampling Depth in Inches)			48	48	48	48	48	48	48	48	48	41	47		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	125	90	90		
		(# P2O5)	40	40	40	40	20	20	20	20	20	30	29		
		(# K2O)	25	25	25	25	10	10	10	10	10	10	16		
		(#S)	0	0	0	0	0	0	0	0	10	0	1		

Check variety is Hockett.

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making cultivar selecton decisions.

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

3/ Percent of Hockett yield 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 of a given entry for years tested, y = average yield for Hockett for the same years, and z = 10-Yr average yield for the check variety Hockett.

TABLE 15. Ten-Year Test Weight Summary on Selected Entries from Dryland Intrastate Spring Barley Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (EXP# 2102-SB)

2/ VARIETY or SELECTION		No. of YEARS TESTED	1/ TEST WEIGHT (Pounds Per Bushel) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK TEST WT 3/	**10-YR COMP. AVE. TEST WT 4/**
CHAMPION (P+)	YU501385	8	52.7	51.7		52.9	47.5	53.1	53.3	51.4	54.7		52.2	100.7	**52.3**
HOCKETT (+)	MT910189	10	52.0	51.2	51.2	52.2	46.2	53.2	54.2	50.7	54.7	54.0	51.9	100.0	**51.9**
HAXBY	MT950186	9	52.9	52.0	50.6	53.8	43.2	53.9	53.8	51.9	53.3		51.7	100.0	**51.9**
CRAFT	MT970116	9	51.5	51.5	50.6	53.0	43.9	53.2	53.1	51.4		54.3	51.4	99.5	**51.7**
ODYSSEY (P+)	Odyssey	3						52.5			53.0	53.5	53.0	98.3	**51.0**
GENIE (P+)	Genie	3						52.1			53.8	52.8	52.9	98.1	**50.9**
PINNACLE (+)	PI643354	5			49.4	53.4	41.7	53.2	52.7				50.1	97.4	**50.6**
METCALFE	TR232	8		50.7	48.4	51.6	43.8		51.1	48.4	52.4	54.0	50.0	96.6	**50.2**
HARRINGTON	SK76333	9		49.8	49.2	51.0	42.1	52.3	51.0	49.4	53.5	53.2	50.2	96.6	**50.2**
CONRAD (+)	2B965057	8	49.4	49.4	49.1	51.4	44.7	51.8	51.2	48.9			49.5	96.4	**50.1**
ESLICK	MT960228	4	50.1				44.2	52.7	50.9				49.5	96.3	**50.0**
EM090105 (+)	05032-068	3				51.0	44.1		50.9				48.6	95.7	**49.7**
TRADITION (P+)	6B952482	7	49.2	48.6	48.0	49.5	45.0	51.5	52.1				49.1	95.5	**49.6**
COPELAND	Copeland	4			48.4	48.7					51.8	52.3	50.3	94.9	**49.3**
MEANS (For Entries Listed)			51.1	50.6	49.4	51.7	44.2	52.7	52.2	50.3	53.4	53.4			**50.7**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			5.58	9.63	n/a	7.45	7.45	8.52	7.82	8.85	8.68	9.09	8.12		
Total Plant Available Water (in.)			17.79	22.09	14.61	22.9	16.91	26.98	21.16	20.9	27.54	18.57	20.95		
Soil NO3 (lbs.) to SD at Planting			157	88	204	374	60	415	57	123	28	103	161		
SD (Sampling Depth in Inches)			48	48	48	48	48	48	48	48	48	41	47		
Fertilizer Applied		(# N)	70	70	70	70	100	100	100	100	125	90	90		
		(# P2O5)	40	40	40	40	20	20	20	20	20	30	29		
		(# K2O)	25	25	25	25	10	10	10	10	10	10	16		
		f(#S)	0	0	0	0	0	0	0	0	10	0	1		

Check variety is Hockett.

1/ See MCES Bulletin 1094 or the Plant Sciences & Plant Pathology website at http://plantsciences.montana.edu/crops/index.html for evaluation of other important variety performance characteristics to include malting potential, disease resistance, etc. before making cultivar selecton decisions.

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

3/ Percent of Hockett 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 test weight of a given entry for years tested, y = average test weight for Hockett for the same years, and z = 10 average test weight for the check variety Hockett.

TABLE 16. Nine-Year Yield Summary on Selected Entries from Dryland Safflower Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 7702-SA)

1/ VARIETY or SELECTION		No. of YEARS TESTED	YIELD (Lbs Per Acre) 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 2/	AVE. for YEARS TESTED	% of CHECK YIELD 3/	**9-Yr COMP. AVE. YIELD 4/**
Hybrid 446	HYBRID 446	4						1947	1831	1820	3442		2260	309.9	**3073**
Hybrid 200	HYBRID 200	4						1866	2008	1938	3138		2238	306.8	**3043**
HYBRID 621	HYBRID 621	5					1421	1620	1241	1169	2489		1588	245.1	**2430**
Baldy	BALDY	4						1500	1681	1477	2129		1697	232.7	**2307**
HYBRID 1601	HYBRID 1601(+)	9	2178	2839	2117	2559	1858	1588	1280	2657	3602		2298	231.7	**2298**
HYBRID 528	HYBRID 528	3					1685	1721	1313				1573	230.6	**2287**
CARDINAL	CARDINAL(+)	9	1774	2462	2014	2077	1651	1721	1802	1512	2791		1978	199.5	**1978**
HYBRID 9049	HYBRID 9049(+)	7	2264	2606	2229	2201		1816	1988	1872			2139	198.8	**1971**
MON-DAK	MON-DAK(+)	9	1766	2078	2070	1967	1559	1814	1303	1678	2532		1863	187.9	**1863**
WILL 95FI	FINCH	9	1977	2086	1580	2064	1565	1566	1495	1466	2323		1791	180.7	**1791**
Will WOMA2003	MONTOLA 2003 (+)	8	1724	2042	1741	1839		1932	1219	1634	2240		1796	168.5	**1671**
011-2180	MORLIN (+)	8	1723	2077	1924	1927	1253	1828	1002	870			1576	158.7	**1574**
WILL	MONTOLA 2000 (++)	5	2080	2003	1676	1836				467			1612	140.5	**1393**
91B3842	NUTRASAFF (+)	9	1157	1589	1541	1179	323	1289	435	212	982		967	97.5	**967**
MEANS (For Entries Listed)			1849	2198	1877	1961	1414	1708	1431	1444	2567				**2046**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			7.83	10.26	6.73	7.31	n/a	9.58	9.38	8.29	9.24	8.92	8.61		
Total Plant Available Water (in.)			15.92	16.55	16.42	16.06	7.33	22.86	14.25	15.81	21.48	11.33	15.80		
Soil NO3 (lbs.) to SD at Planting			665	219	115	99	35	78	58	115	25	53	146		
SD (Sampling Depth in Inches)			48	48	48	36	48	48	48	48	48	48	47		
Fertilizer Applied		(# N)	0	0	0	0	0	0	0	50	50	50	15		
		(# P_2O_5)	40	45	45	45	45	45	45	15	15	15	36		
		(# K_2O)	0	0	0	0	0	0	0	0	0	0	0		
		(# S)	0	0	0	0	0	0	0	20	20	20	6		

Check variety is Nutrasaff.

1/ + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.

2/ No harvest in 2017 due to poor stand and drought.

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

4/ 9-Yr Comparable Average = (x/y) * z where x = average yield of a given entry for years tested, y = average yield for Nutrasaff for the same years, and z = 9-Yr average yield for the check variety Nutrasaff.

TABLE 17. Nine-Year Percent Oil Summary on Selected Entries from Dryland Safflower Nursery. Northern Agricultural Research Center. Havre, Montana. 2008-2017. (Exp# 7702-SA)

1/ VARIETY or SELECTION		No. of YEARS TESTED	Oil (%) @ 8% Seed Moisture 2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AVE. for YEARS TESTED	% of CHECK Oil 2/	**9-Yr COMP. AVE. Oil 3/**
91B3842	NUTRASAFF (+)	9	44.6	45.8	36.9	52.4	54.1	52.5	52.8	51.9	46.3		48.6	100.0	**48.6**
HYBRID 528	HYBRID 528	3					54.4	48.4	48.2				50.3	94.7	**46.0**
HYBRID 621	HYBRID 621	5					53.5	45.2	46.3	43.4	35.1		44.7	86.8	**42.1**
WILL	MONTOLA 2000 (++)	5	38.2	37.3	38.8	43.3				37.7			39.1	83.7	**40.7**
011-2180	MORLIN (+)	8	37.2	35.3	39.5	41.8	43.7	43.6	43.5	41.9			40.8	83.6	**40.6**
Will WOMA2003	MONTOLA 2003 (+)	8	36.5	34.5	39.3	41.8		41.5	42.7	41.7	34.0		39.0	81.3	**39.5**
WILL 95FI	FINCH	9	34.5	34.9	43.6	40.9	42.6	39.1	41.5	41.2	32.9		39.0	80.3	**39.0**
HYBRID 1601	HYBRID 1601(+)	9	30.4	34.7	39.6	40.3	44.0	43.4	43.6	39.5	34.2		38.8	79.9	**38.8**
MON-DAK	MON-DAK(+)	9	34.6	34.4	41.1	40.5	44.0	39.8	40.3	39.8	32.4		38.5	79.4	**38.5**
CARDINAL	CARDINAL(+)	9	33.7	34.8	43.6	39.2	42.2	39.3	40.5	39.9	32.5		38.4	79.1	**38.4**
HYBRID 9049	HYBRID 9049(+)	7	34.3	29.1	42.8	34.6		34.1	35.3	33.6			34.8	72.3	**35.1**
Hybrid 200	HYBRID 200	4						38.5	36.6	35.2	30.7		35.3	69.3	**33.7**
Hybrid 446	HYBRID 446	4						39.5	37.0	35.6	28.4		35.1	69.0	**33.5**
Baldy	BALDY	4						30.0	29.6	29.2	24.5		28.3	55.7	**27.1**
MEANS (For Entries Listed)			36.0	35.6	40.6	41.7	47.3	41.2	41.4	39.3	33.1				**38.7**
April-July Precip. (in.)			8.09	6.29	9.69	8.75	7.33	13.28	4.87	7.52	12.24	2.41	8.05		
Total Annual Precip. (in.)			12.21	12.46	14.61	15.45	9.46	18.46	13.34	12.05	18.86	9.48	13.64		
Soil PAW (in.) to SD @ Planting			7.83	10.26	6.73	7.31	n/a	9.58	9.38	8.29	9.24	8.92	8.61		
Total Plant Available Water (in.)			15.92	16.55	16.42	16.06	7.33	21.46	14.25	15.81	21.48	11.33	15.80		
Soil NO3 (lbs.) to SD at Planting			665	219	115	99	35	78	58	115	25	53	146		
SD (Sampling Depth in Inches)			48	48	48	36	48	48	48	48	48	48	47		
Fertilizer Applied		(# N)	0	0	0	0	0	0	0	50	50	50	15		
		(# P2O5)	40	45	45	45	45	45	45	15	15	15	36		
		(# K2O)	0	0	0	0	0	0	0	0	0	0	0		
		(# S)	0	0	0	0	0	0	0	20	20	20	6		

Check variety is Nutrasaff.
1/ + = Protected Variety, ++ = PVP Title 5 or Title 5 Pending.
2/ No harvest in 2017 due to poor stand and drought.
3/ Percent of Nutrasaff oil % for the same data years as those in which a given entry was tested.
4/ 9-Yr Comparable Average = (x/y) * z where x = average oil % of a given entry for years tested, y = average yield for Nutrasaff for the same years, and z = 9-Yr average oil % for the check variety Nutrasaff.