

Project Title: Montana Statewide Spring Oat Cultivar Performance

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Objectives: To Evaluate the agronomic performance of new and existing cultivars and experimental lines of oats under various growing conditions and environments of Montana.

Results:

The 2005 Montana State Spring Oat Yield Trial was grown at four dryland locations and four irrigated/high rainfall sites in replicated multi-row plots. Yield, test weight, Julian heading date, plant height, and protein are summarized across locations in Tables 1 through 6.

Irrigated oat yields averaged 129 bu/A at **Bozeman**, and ranged from a high of 142 bu/A for Monico, to a low of 109 bu/A for Otana/87Ab4983. Test weights averaged 32 lb/bu, and ranged from a low of 29.6 lb/bu for 81Ab5792/82Ab248 to a high of 34.6 lb/bu for CDC Dancer. CDC Dancer also had the highest test weight when averaged across all locations (36.2 lb/bu).

The average dryland yield at **Havre** was 111 bu/A and ranged from a high of 119 bu/A for 81Ab5792/82Ab248 to a low of 100 bu/A for Otana. Test weights were less than 2004, with an average of 27 lb/bu during 2005. CDC Dancer had the highest test weight, while Monida had the lowest.

Irrigated yields at **Huntley** averaged 146 bu/A, and ranged from a high of 178 bu/A for 90Ab1322/Ogle to a low of 91 bu/A for Otana. Test weights were excellent and averaged 39 lb/bu. The average dryland yield was 59 bu/A and range from a high of 70 bu/A for Maverick to a low of 48 bu/A for Otana. Test weights were less than 2004, with an average of 31 lb/bu during 2005.

Cool temperatures and high soil moisture favored oat growth and development during the 2005 season at **Kalispell**. Unfortunately, six entries experienced moderate to severe lodging due to high rainfall in June and yield was reduced. Yields averaged 187 bu/A, which was slightly lower than 2004 (193 bu/A). Yields ranged from a high of 229 bu/A for Otana/87Ab4983 to a low of 147 bu/A for Monida. Test weights averaged 35 lb/bu during 2005. Consistent with the yield results, Otana/87Ab4983 had the highest test weight (38.4 lb/bu), while Monida had the lowest (28.8 lb/bu)

The average yield at **Moccasin** was less compared to the 2004 season. On average, yields during 2004 were 71 bu/A, while the 2005 yields averaged 57 bu/A. Yields ranged from a high of 68 bu/A for Maverick to a low of 41 bu/A for CDC Dancer. Test weights were slightly higher in 2005, averaging 32.6 lb/bu.

Dryland oat yields at **Sidney** averaged 135 bu/A. Yields ranged from a high of 147 bu/A for Monico to a low of 122 bu/A for CDC Pacer. Test weights were slightly higher in 2005 compared to 2004 (36.6 versus 34.7 lb/bu), but all were within acceptable standards. Irrigated oat yields were on average, 60 bu/A lower in 2005, averaging 157 bu/A in 2005 compared to 218 bu/A during 2004. Irrigated yields ranged from a high of 181 bu/A for OT349/J775-1 to a low of 123 for 86Ab1867/87Ab5597. Test weights under irrigated conditions averaged 36.5 lb/bu, which is about 2 lb/bu less than in 2004.

Summary:

With the exception of Havre, oat yields were generally lower compared to the previous year. Averaged across entries, irrigated yields ranged from 187 bu/A at Kalispell to 129 bu/A at Bozeman. Dryland yields were much more variable and ranged from 135 bu/A at Sidney to 56 bu/A at Moccasin. On average, OT349/J775-1 had the highest yield and the second highest test weight, while CDC Pacer and Monida had the poorest yields. Furthermore, Monida had the lowest overall test weight.

Future Plans:

The Montana Statewide Oat Yield Trial will be continued in 2005.

Table 1. 2005 Montana Spring Oat Statewide Overall Summary

ID	PEDIGREE	Yield bu/ac	Test Weight lb/bu	Heading Date	Plant Height inches	Protein %
OT382	OT349/J775-1	128.5**	35.2	181.1	42.6	12.9
ABSP 9-2	Monico	127.8*	34.7	179.9	38.4	13.1
96AB8796	81Ab5792/82Ab248	127.6*	31.5	181.7	35.7	12.8
90Ab1322	Maverick	126.5*	32.4	180.8	34.4	13.5
98AB6646	IAH61-3-3/90Ab1322	124.8*	34.8	181.5	36.8	13.8
96AB8597	Otana/87Ab4983	124.5*	34.1	182.7	37.9	11.9
94AB5943	86Ab1867/87Ab5597	124.3*	34.2	180.2	37.7	13.3
98AB6491	90Ab1322/Ogle	122.8*	33.6	180.5	36.2	13.2
SiteMean	SITE MEAN	122.6*	33.8	180.7	38.7	13.2
ND930122	Killdeer	122.3*	34.4	178.5**	38.6	13.4
87AB5632	Monida/75Ab861	121.4*	32.3	180.3	38.1	12.7
OT373	CDC Dancer	117.4	36.2	180.3	43.6	13.3
CI 9252	Otana	114.2	34.9	179.9	44.1	14.6
CI483126	Monida	113.5	31.1	182.6	41.2	13.5
OT351	CDC Pacer	112.0	33.5	180.0	41.5	12.3
C.V.	C.V. (S/Mean) * 100	10.73	***	0.44	***	***
F-Value		<.0001	***	<.0001	***	***
L.S.D.	L.S.D. (.05)	7.31	***	0.04	***	***
<p>** indicates entries with highest yield, test weight, plump, earliest heading date and lowest protein within a column. * indicates entries equal to highest entry</p>						

Table 2. 2005 Montana Spring Oat Statewide Overall Summary Yield (bu/ac)

Id	Pedigree	Dryland				Irrigated (1)				Overall		
		Havre	Sidney	Moccasin	Huntley	Kalispell	Sidney	Huntley	Bozeman	Ave.	BYX	RSQ
87AB5632	Monida/75Ab861	114.5	142.2	60.2	66.6	150.0	154.9	149.8	132.7	121.4	0.79	0.91
90Ab1322	Maverick	116.0	143.9	67.7	70.5	186.6	138.4	165.5	123.8	126.5	0.89	0.94
94AB5943	86Ab1867/87Ab5597	113.5	132.5	59.4	66.6	214.2	123.4	144.4	140.4	124.3	0.99	0.88
96AB8597	Otana/87Ab4983	109.5	143.7	58.0	59.5	229.7	124.5	161.3	109.4	124.5	1.13	0.85
96AB8796	81Ab5792/82Ab248	119.0	143.5	59.7	66.8	152.6	173.5	167.4	138.6	127.6	0.88	0.86
98AB6491	90Ab1322/Ogle	103.2	130.9	52.6	53.4	184.3	146.6	177.9	133.3	122.8	1.06	0.93
98AB6646	IAH61-3-3/90Ab1322	104.0	135.4	52.8	50.0	214.2	160.0	147.4	134.3	124.8	1.19	0.98
ABSP 9-2	Monico	117.9	147.1	56.2	64.1	161.8	171.8	161.8	142.0	127.8	0.94	0.92
CI 9252	Otana	100.3	134.6	63.1	48.2	207.8	154.4	91.1	114.3	114.2	1.02	0.82
CI483126	Monida	104.1	139.7	55.5	61.0	146.8	162.6	118.5	119.6	113.5	0.79	0.87
ND930122	Killdeer	109.8	145.7	60.2	56.1	189.8	167.9	106.9	141.8	122.3	0.98	0.87
OT351	CDC Pacer	110.3	122.6	53.2	55.3	192.2	159.1	92.2	111.2	112.0	0.95	0.84
OT373	CDC Dancer	115.7	138.7	41.2	53.4	171.1	178.2	113.5	127.2	117.4	1.02	0.89
OT382	OT349/J775-1	113.9	134.2	53.1	54.7	224.6	181.0	137.7	128.8	128.5	1.24	0.96
SiteMean	SITE MEAN	110.8	134.9	56.6	59.0	187.6	156.9	146.2	128.8	122.6	1.00	1.00
	C.V. (S/Mean) * 100	9.46	5.00	14.65	7.45	11.43	9.00	14.18	9.61	***	***	***
	F-value	0.97	3.52	1.69	7.60	5.15	5.01	5.13	2.37	***	***	***
	L.S.D. (.05)	17.60	11.04	13.93	7.38	35.98	23.69	33.97	17.43	***	***	***
(1) Kalispell high rainfall												

Table 3. 2005 Montana Spring Oat Statewide Overall Summary Test Weight (lb/bu)

Id	Pedigree	Dryland				Irrigated (1)				Overall		
		Havre	Sidney	Moccasin	Huntley	Kalispell	Sidney	Huntley	Bozeman	Ave.	BYX	RSQ
87AB5632	Monida/75Ab861	26.6	36.2	31.8	29.1	31.0	32.8	38.7	32.4	32.3	0.94	0.83
90Ab1322	Maverick	25.3	36.2	30.8	29.3	33.0	35.7	38.1	31.0	32.4	1.12	0.99
94AB5943	86Ab1867/87Ab5597	28.0	37.5	32.8	30.3	36.1	37.0	39.3	32.8	34.2	1.04	0.98
96AB8597	Otana/87Ab4983	26.4	37.3	30.6	30.3	38.4	37.7	40.3	32.0	34.1	1.28	0.93
96AB8796	81Ab5792/82Ab248	26.4	34.3	29.2	29.5	32.8	32.7	37.4	29.6	31.5	0.91	0.93
98AB6491	90Ab1322/Ogle	27.4	35.0	34.1	31.4	35.9	38.0	36.8	29.9	33.6	0.90	0.83
98AB6646	IAH61-3-3/90Ab1322	27.8	38.5	32.0	32.9	37.0	37.3	40.3	32.6	34.8	1.09	0.95
ABSP 9-2	Monico	27.5	38.2	34.7	32.3	33.6	38.2	40.1	33.0	34.7	1.06	0.93
CI 9252	Otana	29.0	36.8	34.4	32.8	37.6	37.5	38.1	33.2	34.9	0.82	0.92
CI483126	Monida	24.5	34.8	30.7	28.2	28.8	34.2	36.7	30.8	31.1	1.00	0.86
ND930122	Killdeer	28.8	36.8	34.2	30.6	33.8	37.5	39.5	34.1	34.4	0.92	0.92
OT351	CDC Pacer	26.2	35.8	32.9	30.7	34.7	37.0	38.7	32.4	33.5	1.06	0.98
OT373	CDC Dancer	30.1	38.3	35.4	33.8	37.9	38.5	40.7	34.6	36.2	0.90	0.99
OT382	OT349/J775-1	29.5	36.5	32.2	32.9	38.0	37.5	41.0	34.2	35.2	0.95	0.90
SiteMean	SITE MEAN	27.4	36.6	32.6	31.0	34.9	36.5	38.9	32.2	33.8	1.00	1.00
	C.V. (S/Mean) * 100	3.47	1.82	3.18	4.43	***	3.57	3.12	3.43	***	***	***
	F-value	8.65	12.99	6.28	4.63	***	6.61	3.57	4.57	***	***	***
	L.S.D. (.05)	1.59	1.09	2.24	2.30	***	2.19	1.99	2.27	***	***	***
(1) Kalispell high rainfall												

Table 4. 2005 Montana Spring Oat Statewide Overall Summary Heading Date (days from Jan.1)

Id	Pedigree	Dryland				Irrigated (1)				Overall		
		Havre	Sidney	Moccasi	Huntley	Kalispell	Sidney	Huntley	Bozeman	Ave.	BYX	RSQ
87AB5632	Monida/75Ab861	184.7	175.0	187.0	174.7	178.0	175.0	176.0	192.0	180.3	1.03	0.98
90Ab1322	Maverick	184.7	174.7	187.3	177.3	178.7	175.0	176.3	192.5	180.8	1.02	0.99
94AB5943	86Ab1867/87Ab5597	184.7	174.3	187.0	175.0	177.3	174.7	176.7	192.0	180.2	1.05	0.99
96AB8597	Otana/87Ab4983	185.7	177.0	188.7	177.3	182.3	176.7	180.7	193.2	182.7	0.94	0.99
96AB8796	81Ab5792/82Ab248	186.7	175.7	188.3	176.7	179.0	175.0	179.7	192.5	181.7	1.01	0.97
98AB6491	90Ab1322/Ogle	184.0	173.7	188.7	177.3	177.7	174.3	176.0	192.0	180.5	1.06	0.97
98AB6646	IAH61-3-3/90Ab1322	185.7	174.7	188.7	177.3	179.0	175.0	179.0	192.8	181.5	1.04	0.99
ABSP 9-2	Monico	183.7	174.7	186.7	174.0	178.0	174.7	175.7	191.5	179.9	1.02	0.99
CI 9252	Otana	179.3	175.7	187.3	175.0	179.3	174.7	176.3	191.8	179.9	0.95	0.94
CI483126	Monida	187.0	176.7	190.0	177.7	182.0	176.3	177.0	194.0	182.6	1.06	0.97
ND930122	Killdeer	180.0	173.7	184.0	174.3	177.0	173.7	175.0	190.2	178.5	0.92	0.98
OT351	CDC Pacer	181.7	174.3	185.0	175.0	178.0	175.0	179.3	192.0	180.0	0.93	0.96
OT373	CDC Dancer	183.7	174.3	186.7	175.7	179.7	174.7	176.0	192.0	180.3	1.01	0.99
OT382	OT349/J775-1	182.3	176.3	187.0	176.3	180.3	175.0	179.7	192.0	181.1	0.90	0.97
SiteMean	SITE MEAN	183.8	174.9	187.3	176.0	179.0	175.0	177.6	192.2	180.7	1.00	1.00
	C.V. (S/Mean) * 100	0.92	0.32	0.28	0.45	0.32	0.30	0.35	0.24	***	***	***
	F-value	5.51	21.02	25.71	8.12	24.55	6.18	35.97	36.85	***	***	***
	L.S.D. (.05)	2.85	0.91	0.89	1.33	0.95	0.87	1.03	0.64	***	***	***
(1) Kalispell high rainfall												

Table 5. 2005 Montana Spring Oat Statewide Overall Summary Plant Height (inches)

Id	Pedigree	Dryland				Irrigated (1)				Overall		
		Havre	Sidney	Moccasin	Huntley	Kalispell	Sidney	Huntley	Bozeman	Ave.	BYX	RSQ
87AB5632	Monida/75Ab861	35.8	34.2	33.2	36.4	46.2	37.5	47.7	33.9	38.1	0.90	0.99
90Ab1322	Maverick	32.1	30.4	28.6	33.0	41.7	34.6	45.9	28.9	34.4	0.99	0.99
94AB5943	86Ab1867/87Ab5597	36.4	32.6	30.7	37.1	46.1	36.5	47.4	34.9	37.7	0.93	0.95
96AB8597	Otana/87Ab4983	35.9	32.8	29.9	36.8	46.7	36.5	52.2	32.5	37.9	1.21	0.98
96AB8796	81Ab5792/82Ab248	32.9	31.6	28.5	34.0	43.6	36.8	46.9	31.3	35.7	1.01	0.97
98AB6491	90Ab1322/Ogle	34.7	33.3	30.2	32.6	43.2	36.5	48.0	31.4	36.2	0.97	0.95
98AB6646	IAH61-3-3/90Ab1322	36.0	34.5	30.2	32.4	44.1	37.8	47.3	31.7	36.8	0.94	0.93
ABSP 9-2	Monico	33.9	33.3	31.8	37.9	45.5	40.3	51.5	32.7	38.4	1.10	0.95
CI 9252	Otana	42.5	39.8	39.0	43.4	52.6	43.7	54.0	37.9	44.1	0.97	0.99
CI483126	Monida	39.4	37.7	35.6	40.6	49.5	40.4	51.8	34.4	41.2	1.00	0.99
ND930122	Killdeer	36.8	33.7	33.3	38.0	45.9	38.1	48.7	34.1	38.6	0.92	0.99
OT351	CDC Pacer	39.6	38.7	35.8	40.8	47.6	39.6	53.3	36.3	41.5	0.94	0.96
OT373	CDC Dancer	41.7	42.1	36.2	43.2	52.6	42.1	52.3	38.7	43.6	0.91	0.93
OT382	OT349/J775-1	41.1	37.8	35.6	40.6	51.2	43.2	54.4	36.9	42.6	1.09	1.00
SiteMean	SITE MEAN	37.1	34.2	32.8	37.6	46.9	38.8	49.4	33.1	38.7	1.00	1.00
	C.V. (S/Mean) * 100	3.50	4.80	6.51	3.60	4.63	8.43	3.73	4.73	***	***	***
	F-value	19.41	9.43	7.02	22.89	7.57	2.17	6.83	8.55	***	***	***
	L.S.D. (.05)	2.18	2.69	3.58	2.27	3.64	5.49	3.02	2.21	***	***	***
(1) Kalispell high rainfall												

Table 6. 2005 Montana Spring Oat Statewide Overall Summary Protein Percent

Id	Pedigree	Dryland				Irrigated (1)				Overall		
		Havre	Sidney	Moccasin	Huntley	Kalispell	Sidney	Huntley	Bozeman	Ave.	BYX	RSQ
87AB5632	Monida/75Ab861	13.4	10.4	15.5	12.8	12.5	10.7	11.8	14.5	12.7	0.88	0.91
90Ab1322	Maverick	15.8	10.2	17.2	14.6	12.9	9.6	12.2	15.8	13.5	1.45	0.99
94AB5943	86Ab1867/87Ab5597	15.2	11.1	15.5	13.7	12.9	10.9	12.5	14.6	13.3	0.92	0.99
96AB8597	Otana/87Ab4983	14.2	10.3	14.7	12.7	10.8	8.4	10.9	13.5	11.9	1.10	0.92
96AB8796	81Ab5792/82Ab248	15.3	10.1	16.1	13.6	13.2	9.1	11.1	13.8	12.8	1.27	0.96
98AB6491	90Ab1322/Ogle	15.6	10.8	16.1	13.3	13.5	10.6	12.3	13.8	13.2	1.01	0.93
98AB6646	IAH61-3-3/90Ab1322	15.3	10.7	16.3	15.1	13.6	11.3	13.2	15.2	13.8	1.04	0.96
ABSP 9-2	Monico	15.1	10.6	15.1	13.5	13.5	9.6	12.4	14.9	13.1	1.08	0.97
CI 9252	Otana	15.7	11.9	16.5	15.1	13.7	14.9	13.6	15.6	14.6	0.58	0.56
CI483126	Monida	14.8	11.5	15.4	14.3	14.5	10.8	12.5	14.3	13.5	0.84	0.90
ND930122	Killdeer	15.4	10.7	16.0	14.1	13.7	10.5	12.9	14.0	13.4	1.02	0.96
OT351	CDC Pacer	13.5	10.8	13.5	12.1	12.9	8.5	12.7	14.1	12.3	0.84	0.77
OT373	CDC Dancer	14.7	10.4	16.0	14.3	12.2	10.8	12.7	15.1	13.3	1.05	0.94
OT382	OT349/J775-1	15.1	10.0	15.1	13.9	13.3	10.0	12.3	13.7	12.9	1.04	0.96
SiteMean	SITE MEAN	14.9	10.8	15.6	13.8	13.1	10.4	12.6	14.6	13.2	1.00	1.00
	C.V. (S/Mean) * 100	***	***	***	***	***	***	***	***	***	***	***
	F-value	***	***	***	***	***	***	***	***	***	***	***
	L.S.D. (.05)	***	***	***	***	***	***	***	***	***	***	***
(1) Kalispell high rainfall												