

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 2004 Montana State Spring Oat Yield Trial was grown at four dryland locations and three irrigated/high rainfall sites in replicated multi-row plots. Yield, test weight, Julian heading date, and plant height are summarized across locations in Tables 1 through 4, respectively.

The average yield at **Havre** was 48 bu/A more than the previous year and ranged from a high of 83 bu/A for Rio Grande to a low of 65 bu/A for IAH61-3-3/90Ab1322. Test weights were similar to 2003, with an average of 30 lb/bu during 2004.

Irrigated yields at **Huntley** also were higher than the previous year, and differed by 53 bu/A. Yields ranged from a high of 230 bu/A for CDC Pacer to a low of 181 bu/A for Monida. Test weights were excellent and averaged 38 lb/bu. The dryland yield results were slightly less than the previous year, differing on average, by only 4 bu/A. The average dryland yield was 61 bu/A and range from a high of 70 bu/A for Mondia/75Ab861 to a low of 53 bu/A for IAH61-3-3/90Ab1322. Once again, all entries had excellent test weights, with an average of 38 lb/bu.

The average yield at **Kalispell** was 91 bu/A greater than the previous year and ranged from a high of 216 bu/A for 83Ab3083/Monida to a low of 163 bu/A for Ajay. Test weights were 1 lb/bu greater compared with 2003, with an average of 37.5 lb/bu during 2003.

The average yield at **Moccasin** was noticeably higher compared to the 2003 season. On average, yields were 47 bu/A greater than the previous year, averaging 71 bu/A. Yields ranged from a high of 81 bu/A for Rio Grande to a low of 64 bu/A for CDC Dancer. Test weights were similar to the previous year, averaging 28 lb/bu. Test weights ranged from a high of 31 lb/bu for CDC Dancer to a low of 27 lb/bu for both Rio Grande and Monida.

Dryland oat yields at **Sidney** were higher in 2004 verse 2003 by an average of 20 bu/A. Yields ranged from a high of 160 bu/A for Otana/87Ab4983 to a low of 132 bu/A for Ajay. Test weights were slightly lower in 2004 compared to 2003

(34.7 verses 36 lb/bu), but all were within acceptable standards. Irrigated oat yields were on average, 37 bu/A higher in 2004, averaging 218 bu/A across entries. Irrigated yields ranged from a high of 243 bu/A for Monida/75Ab861 to a low of 183 for Ajay. Test weights under irrigated conditions averaged 38.5 lb/bu, which is about 2 lb/bu higher than in 2003. The highest test weight was observed with IAH61-3-3/90Ab1322 (40.7 lb/bu) and the lowest test weight was obtained with Ajay (35.7 lb/bu).

Summary:

Oat yields were generally higher compared to the previous year. Averaged across entries, irrigated yields ranged from 218 bu/A at Sidney to 193 bu/A at Kalispell. Dryland yields were much more variable and ranged from 144 bu/A at Sidney to 61 bu/A at Huntley. On average, CDC Pacer, 83Ab3083/Monida, 83 Ab3119/Monida, and Otana/87Ab4983 had the highest yields. However, no single variety stood out as consistently producing the highest yield across all environments. In contrast, Ajay was consistently near the bottom in term of yields across all sites.

Future Plans:

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

Table 1. 2004 Montana Statewide Oat Nursery Summary – Yield (bu/ac).

Id	Pedigree	Dryland				Irrigated (1)			Overall		
		Havre	Sidney	Moccasin	Huntley	Kalispell	Sidney	Huntley	Ave.	BYX	RSQ
81Ab5792	Rio Grande	83.5	154.0	81.4	57.6	198.9	201.4	198.5	139.3	0.93	0.98
87AB5632	Monida/75Ab861	73.0	155.3	69.2	70.3	192.8	243.1	196.7	142.9	1.06	0.99
90Ab1322	Maverick	77.7	147.0	72.7	61.8	186.9	210.1	188.9	135.0	0.93	1.00
96AB8597	Otana/87Ab4983	73.9	160.6	69.3	59.9	193.3	240.5	207.1	143.5	1.10	0.99
98AB6491	90Ab1322/Ogle	70.9	144.5	68.2	50.8	193.3	217.1	203.8	135.5	1.05	0.99
98AB6646	IAH61-3-3/90Ab1322	65.4	146.3	64.5	52.7	194.4	215.5	193.8	133.2	1.05	1.00
ABSP 9-2	Monico	72.3	153.8	69.9	61.6	203.9	220.0	205.3	141.0	1.05	0.99
ABSP14-6	83Ab3119/Monida	83.9	149.8	68.8	58.7	202.7	218.5	218.4	143.0	1.06	0.99
ABSP19-9	83Ab3083/Monida	76.2	147.6	68.2	63.6	215.8	236.9	205.7	144.9	1.12	1.00
CI 9252	Otana	69.6	135.7	72.1	66.0	181.2	220.1	194.1	134.1	0.97	1.00
CI483126	Monida	73.9	147.7	74.0	58.9	195.6	219.4	181.3	135.8	0.97	0.99
ND930122	Killdeer	75.5	147.0	72.6	67.2	198.6	201.9	192.5	136.5	0.93	0.99
OT351	CDC Pacer	77.4	148.4	79.7	69.0	192.6	219.7	229.9	145.2	1.03	0.98
OT373	CDC Dancer	69.3	142.5	63.7	66.7	185.3	215.1	209.5	136.0	1.01	0.98
PI537436	Ajay	66.1	132.7	71.0	54.4	163.3	183.2	182.4	121.9	0.84	0.99
PI583735	Celsia	69.5	145.7	71.2	63.4	186.1	229.9	190.0	136.5	1.01	0.99
*****	SITE MEAN *****	73.6	144.4	71.0	61.4	192.8	218.3	197.1	137.0	1.00	1.00
	C.V. (S/Mean) * 100	9.96	4.84	10.75	6.89	8.50	7.45	8.36	***	***	***
	F-value	1.59ns	3.76	1.11ns	5.54	1.47	2.62	1.50	***	***	***
	L.S.D. (.05)	12.23	11.40	12.74	7.05	27.34	27.12	26.89	***	***	***

(1) Kalispell high rainfall

Table 2. 2004 Montana Statewide Oat Nursery Summary – Test Weight (lb/bu).

Id	Pedigree	Dryland				Irrigated (1)			Overall		
		Havre	Sidney	Moccasin	Huntley	Kalispell	Sidney	Huntley	Ave.	BYX	RSQ
81Ab5792	Rio Grande	29.3	33.0	27.3	39.6	35.4	36.7	37.4	34.1	1.07	0.94
87AB5632	Monida/75Ab861	29.8	34.3	27.7	39.7	36.7	39.3	37.9	35.1	1.15	0.98
90Ab1322	Maverick	28.4	33.7	27.5	38.0	38.1	36.0	36.8	34.1	1.07	0.96
96AB8597	Otana/87Ab4983	30.0	35.8	27.7	38.5	37.5	39.2	36.8	35.1	1.07	0.97
98AB6491	90Ab1322/Ogle	31.4	35.8	30.3	36.8	38.0	38.7	38.8	35.7	0.83	0.94
98AB6646	IAH61-3-3/90Ab1322	32.2	36.3	30.1	37.2	37.5	39.0	38.7	35.8	0.81	0.95
ABSP 9-2	Monico	31.4	35.7	28.1	40.9	39.1	40.7	39.0	36.4	1.21	0.99
ABSP14-6	83Ab3119/Monida	31.6	34.7	27.6	39.0	37.6	38.8	37.5	35.3	1.04	0.97
ABSP19-9	83Ab3083/Monida	29.6	35.0	28.7	36.9	37.3	40.0	37.9	35.1	1.03	0.95
CI 9252	Otana	31.9	37.0	29.3	38.5	37.9	39.3	39.1	36.1	0.95	0.97
CI483126	Monida	28.6	33.5	27.3	36.9	35.3	36.5	36.0	33.4	0.97	1.00
ND930122	Killdeer	32.7	36.0	30.8	39.7	37.8	37.2	38.2	36.0	0.76	0.94
OT351	CDC Pacer	29.9	36.5	28.0	38.9	39.5	38.7	39.4	35.8	1.18	0.97
OT373	CDC Dancer	33.3	36.2	31.3	39.5	38.3	40.5	39.4	36.9	0.85	0.98
PI537436	Ajay	28.3	33.5	27.8	39.2	36.3	35.7	35.7	33.8	1.01	0.92
PI583735	Celsia	28.3	35.5	28.9	35.5	37.2	39.5	37.0	34.6	0.99	0.88
SiteMean	SITE MEAN *****	30.4	34.7	28.6	38.4	37.5	38.5	37.8	35.1	1.00	1.00
***	C.V. (S/Mean) * 100	5.11	1.75	2.72	1.40	***	3.12	2.42	***	***	***
***	F-value	3.40**	16.61	5.89	21.02	***	5.21	4.85	***	***	***
***	L.S.D. (.05)	2.59	0.99	1.66	0.90	***	2.00	1.50	***	***	***

(1) Kalispell high rainfall

Table 3. 2004 Montana Statewide Oat Nursery Summary – Heading Date.

Id	Pedigree	Dryland			Irrigated (1)			Overall		
		Havre	Sidney	Huntley	Kalispell	Sidney	Huntley	Ave.	BYX	RSQ
81Ab5792	Rio Grande	186.0	170.0	166.7	170.3	180.0	168.7	173.6	1.03	1.00
87AB5632	Monida/75Ab861	188.0	173.3	168.0	173.7	182.0	170.7	175.9	1.02	1.00
90Ab1322	Maverick	188.0	174.0	170.7	173.0	182.3	171.3	176.6	0.94	0.99
96AB8597	Otana/87Ab4983	190.0	176.0	170.7	175.0	183.3	173.3	178.1	0.97	0.99
98AB6491	90Ab1322/Ogle	188.7	173.3	170.3	173.3	179.7	172.0	176.2	0.92	0.98
98AB6646	IAH61-3-3/90Ab1322	189.3	173.7	170.3	173.3	180.0	171.0	176.3	0.97	0.98
ABSP 9-2	Monico	187.3	172.0	167.0	171.7	179.0	169.0	174.3	1.02	1.00
ABSP14-6	83Ab3119/Monida	186.7	172.0	166.0	172.3	180.3	169.3	174.4	1.03	0.99
ABSP19-9	83Ab3083/Monida	189.7	176.7	171.0	175.7	183.3	173.0	178.2	0.94	0.99
CI 9252	Otana	187.0	173.7	168.0	173.7	182.0	172.3	176.1	0.94	0.99
CI483126	Monida	190.0	177.0	171.0	175.3	184.3	174.7	178.7	0.95	0.99
ND930122	Killdeer	186.7	172.0	165.3	171.0	180.7	169.3	174.2	1.07	0.99
OT351	CDC Pacer	188.3	173.3	168.0	173.0	182.0	170.3	175.8	1.05	1.00
OT373	CDC Dancer	188.3	174.0	165.7	173.0	179.7	170.7	175.2	1.05	0.97
PI537436	Ajay	187.7	172.3	168.3	173.3	182.3	172.0	176.0	0.99	0.99
PI583735	Celsia	190.3	177.0	172.3	175.3	184.3	175.7	179.2	0.91	0.99
*****	SITE MEAN *****	188.3	173.1	168.7	173.3	181.6	171.1	176.0	1.00	1.00
	C.V. (S/Mean) * 100	0.74	0.55	0.43	0.39	0.81	0.43	***	***	***
	F-value	2.76**	24.63	27.78	15.04	4.12	31.80	***	***	***
	L.S.D. (.05)	2.32	1.56	1.21	1.14	2.45	1.19	***	***	***

(1) Kalispell high rainfall

Table 4. 2004 Montana Statewide Oat Nursery Summary – Plant Height (inches).

Id	Pedigree	Dryland			Irrigated (1)			Overall		
		Havre	Sidney	Huntley	Kalispell	Sidney	Huntley	Ave.	BYX	RSQ
81Ab5792	Rio Grande	30.2	28.7	26.3	38.2	36.4	50.7	35.1	1.00	0.98
87AB5632	Monida/75Ab861	31.0	30.7	25.6	40.3	40.2	49.0	36.1	0.96	0.99
90Ab1322	Maverick	26.4	25.2	23.2	34.3	33.5	48.0	31.8	1.02	0.98
96AB8597	Otana/87Ab4983	30.6	30.2	24.7	37.9	41.5	52.2	36.2	1.10	0.98
98AB6491	90Ab1322/Ogle	30.1	27.0	23.7	36.8	37.1	47.2	33.7	0.96	1.00
98AB6646	IAH61-3-3/90Ab1322	30.3	26.8	23.8	36.5	37.4	46.0	33.5	0.91	0.99
ABSP 9-2	Monico	29.2	30.6	26.1	39.4	40.4	49.3	35.8	0.98	0.99
ABSP14-6	83Ab3119/Monida	31.8	30.5	25.5	41.5	39.4	49.7	36.4	0.99	0.99
ABSP19-9	83Ab3083/Monida	31.0	30.1	25.6	42.8	41.5	53.1	37.3	1.16	1.00
CI 9252	Otana	37.4	36.0	32.2	46.1	45.4	57.1	42.4	1.02	1.00
CI483126	Monida	34.0	34.1	28.3	45.3	41.9	56.6	40.0	1.14	0.99
ND930122	Killdeer	31.1	30.3	28.2	41.2	39.0	46.7	36.1	0.82	0.98
OT351	CDC Pacer	33.4	33.9	29.6	45.9	42.3	53.7	39.8	1.02	0.98
OT373	CDC Dancer	36.8	35.7	28.2	45.0	45.0	57.2	41.3	1.12	0.98
PI537436	Ajay	23.3	23.2	20.1	27.3	30.2	43.5	27.9	0.91	0.92
PI583735	Celsia	33.9	34.8	27.6	43.8	40.0	51.9	38.7	0.95	0.97
*****	SITE MEAN *****	31.3	29.8	26.2	40.1	39.4	50.3	36.2	1.00	1.00
	C.V. (S/Mean) * 100	6.47	5.45	4.86	5.42	5.85	4.77	***	***	***
	F-value	8.79**	15.24	15.35	15.91	8.69	10.19	***	***	***
	L.S.D. (.05)	3.37	2.65	2.12	3.63	3.85	3.92	***	***	***

(1) Kalispell high rainfall