

PROJECT TITLE: Statewide Spring Oat Variety Performance

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OBJECTIVES:

To evaluate the agronomic performance of new and existing varieties and experimental lines of spring oats under various growing conditions and environments in Montana.

RESULTS:

The 1996 Montana Uniform Oat Yield Trial was grown at five rainfed (dryland) and three irrigated Montana locations in replicated multi-row plots.

Montana's spring soil moisture conditions were generally good and temperatures were cool to cold. The eastern part of the state had fair to good moisture through June. The central and western part of the state had low to extremely low precipitation levels in the June-July period. Temperature and wind conditions were such that the crop's yields were generally good on both dryland and under irrigation for the amount of plant available water.

Dryland oat yields were surprisingly similar to long-term averages with Huntley and Havre having the highest nursery mean yields at 84.1 and 80.1 bu/a, respectively (See Table 1). Irrigated oat nursery mean yields varied by more than 70 bu/a between locations (Table 2). Oat entries producing the top yields were similar at all locations in spite of the difference in yield levels between locations. Monida, Monida re-selection, Cayuse/Monida, and 80Ab988/Monida were among the top producers at dryland and irrigated locations. Hulless entries brought nursery mean test weights up (Tables 3 & 4). Dryland location test weights were lower than the standard 32 lbs/bu due to the dry conditions during kernel development (Table 3). Dryland oat plant heights were generally acceptable except for Ajay which was twenty inches or less at all locations (Table 5). Several entries had plant heights less than 20" under dryland recrop at Sidney. Paul and Otana were the tallest entries under irrigation with average plant heights of 45 and 44.4 inches, respectively (Table 6). Most of the other entries were more than four inches shorter with Ajay being the shortest at 29.9" average.

SUMMARY:

The 1996 Montana Uniform oat nursery provided an excellent indication of relative performance for several oat varieties under both poor and excellent growing conditions.

FUTURE PLANS:

The Montana Uniform Oat Trial will be continued in 1997.

Table 1.

1996 SPRING OAT DRYLAND STATEWIDE SUMMARY

YIELD (bu/ac)

ID	Pedigree	Havre	Sidney	Sidney Recrop	Moccasin	Huntley	Mean	BYX	RSQ
81AB5792	Rio Grande	86.0	76.4	41.0	69.1	96.9	73.9	0.99	0.94
82AB1142	Ajay	63.7	74.8	38.5	57.7	80.2	63.0	0.74	0.88
83AB3250	Cayuse/Monida	90.2	81.3	41.8	61.3	86.6	72.3	0.97	0.98
86AB1616	79Ab3811/S7884	62.9	70.6	25.9	43.2	49.8	50.5	0.71	0.71
86AB4582	Monida Reselection	90.9	80.5	34.3	62.4	91.4	71.9	1.16	0.99
88Ab3073	Pennlo/PI 447276	62.3	61.9	22.3	27.9	47.1	44.3	0.78	0.75
90AB1322	80Ab988/Monida	77.0	86.2	30.3	63.0	93.0	69.9	1.16	0.94
CI 8263	Cayuse	84.1	79.1	41.0	62.8	88.8	71.1	0.94	1.00
CI 9252	Otana	87.4	73.4	44.3	65.7	98.3	73.8	0.95	0.90
CI 9297	Appaloosa	81.4	78.2	34.5	57.8	93.3	69.0	1.11	0.99
CI467882	Border	83.8	74.2	42.5	55.4	90.7	69.3	0.94	0.95
CI483126	Monida	88.4	84.2	37.2	57.8	91.3	71.8	1.13	1.00
ND860416	Otana/Valley	77.3	85.0	29.8	62.2	92.4	69.4	1.17	0.96
ND862915	Paul	60.7	50.0	23.1	32.7	59.1	45.1	0.78	0.95
ND870258	Whitestone	88.3	73.3	31.5	57.8	81.2	66.4	1.07	0.96
NEWDAK	Newdak	96.7	69.7	33.6	63.0	90.7	70.7	1.14	0.89
*****	SITE MEAN *****	80.1	76.1	34.5	56.2	84.1	66.2	1.00	1.00

Table 2.
1996 STATEWIDE OAT STATEWIDE REPORT - IRRIGATED
YIELD (bu/ac)

ID	Pedigree	Sidney	Kalispell	Bozeman	Avg.	BYX	RSQ
81AB5792	Rio Grande	163.3	132.2	211.4	169.0	0.98	0.99
82AB1142	Ajay	163.2	109.1	184.2	152.1	0.86	0.80
83AB3250	Cayuse/Monida	178.4	144.5	228.1	183.7	1.03	0.99
86AB1616	79Ab3811/S7884	115.8	122.7	169.1	135.9	0.65	0.82
86AB4582	Monida Reselection	177.2	148.6	230.6	185.5	1.03	1.00
88Ab3073	Pennlo/PI 447276	103.2	107.7	152.8	121.2	0.63	0.86
90AB1322	80Ab988/Monida	169.2	151.4	224.8	181.8	0.94	0.99
CI 8263	Cayuse	173.4	145.9	211.2	176.8	0.80	0.98
CI 9252	Otana	143.9	144.5	208.8	165.8	0.88	0.91
CI 9297	Appaloosa	164.6	137.7	225.5	175.9	1.11	1.00
CI467882	Border	150.9	111.8	220.9	161.2	1.37	1.00
CI483126	Monida	178.6	148.6	229.6	185.6	1.01	1.00
ND860416	Otana/Valley	180.8	120.0	232.1	177.7	1.34	0.93
ND862915	Paul	113.9	102.3	157.7	124.6	0.72	0.99
ND870258	Whitestone	161.8	130.9	229.1	173.9	1.24	1.00
NEWDAK	Newdak	146.4	130.9	203.0	160.1	0.93	0.99
*****	SITE MEAN *****	155.3	130.5	209.6	165.2	1.00	1.00

Table 3.
1996 SPRING OAT DRYLAND STATEWIDE SUMMARY
TEST WEIGHT (lb/bu)

ID	Pedigree	Havre	Sidney	Sidney Recrop	Moccasin	Huntley	Mean	BYX	RSQ
81AB5792	Rio Grande	31.3	31.8	29.5	31.3	34.9	31.8	0.39	0.10
82AB1142	Ajay	31.1	33.8	31.3	33.9	32.2	32.5	0.80	0.87
83AB3250	Cayuse/Monida	28.5	30.4	27.1	30.5	29.8	29.3	0.76	0.68
86AB1616	79Ab3811/S7884	30.3	41.5	39.0	40.9	38.9	38.1	2.48	0.74
86AB4582	Monida Reselection	32.2	33.5	29.4	32.2	35.5	32.6	0.58	0.17
88Ab3073	Pennlo/PI 447276	31.9	43.7	44.6	47.9	46.1	42.8	3.28	0.66
90AB1322	80Ab988/Monida	29.2	31.5	28.4	30.4	28.2	29.5	0.51	0.32
CI 8263	Cayuse	30.5	29.6	27.0	30.8	30.6	29.7	0.33	0.10
CI 9252	Otana	33.0	36.7	33.6	35.4	34.6	34.7	0.82	0.77
CI 9297	Appaloosa	28.7	27.8	26.1	31.2	27.3	28.2	0.54	0.19
CI467882	Border	28.9	31.1	27.8	30.6	29.8	29.6	0.69	0.67
CI483126	Monida	29.3	35.4	30.2	31.5	31.9	31.7	1.06	0.51
ND860416	Otana/Valley	34.6	36.4	31.3	37.1	35.4	35.0	1.01	0.49
ND862915	Paul	33.1	43.9	43.7	43.2	42.3	41.2	2.18	0.55
ND870258	Whitestone	31.3	32.5	29.8	34.3	33.3	32.2	0.90	0.63
NEWDAK	Newdak	29.7	34.2	32.3	33.4	32.3	32.4	0.96	0.79
*****	SITE MEAN *****	30.9	34.1	31.9	34.7	33.4	33.0	1.00	1.00

Table 4.
1996 STATEWIDE OAT STATEWIDE REPORT IRRIGATED
TEST WEIGHT (lb/bu)

ID	Pedigree	Sidney	Kalispell	Bozeman	Avg.	BYX	RSQ
81AB5792	Rio Grande	39.5	37.2	40.5	39.1	1.49	0.98
82AB1142	Ajay	39.0	37.5	39.1	38.5	0.74	0.86
83AB3250	Cayuse/Monida	38.0	37.7	38.1	37.9	0.18	0.92
86AB1616	79Ab3811/S7884	44.8	42.4	45.8	44.3	1.53	0.97
86AB4582	Monida Reselection	40.8	39.1	42.4	40.8	1.47	1.00
88Ab3073	Pennlo/PI 447276	47.2	44.8	48.2	46.7	1.53	0.98
90AB1322	80Ab988/Monida	39.3	38.2	40.9	39.5	1.19	0.97
CI 8263	Cayuse	38.0	36.1	40.4	38.2	1.90	0.98
CI 9252	Otana	40.0	39.6	42.0	40.5	1.03	0.81
CI 9297	Appaloosa	37.0	35.3	39.9	37.4	2.02	0.95
CI467882	Border	37.8	37.1	41.1	38.7	1.72	0.83
CI483126	Monida	38.5	38.2	41.7	39.5	1.50	0.75
ND860416	Otana/Valley	39.7	39.6	41.0	40.1	0.60	0.73
ND862915	Paul	47.3	44.6	46.9	46.3	1.08	0.69
ND870258	Whitestone	39.0	38.7	41.6	39.8	1.24	0.77
NEWDAK	Newdak	37.0	36.6	38.9	37.5	0.99	0.82
*****	SITE MEAN *****	40.2	38.9	41.2	40.1	1.00	1.00

Table 5.

1996 SPRING OAT DRYLAND STATEWIDE SUMMARY

PLANT HEIGHT (inches)

ID	Pedigree	Havre	Sidney	Sidney Recrop	Moccasin Recrop	Mean	BYX	RSQ
81AB5792	Rio Grande	24.8	23.8	20.2	22.7	22.9	0.72	0.93
82AB1142	Ajay	19.9	20.1	13.9	18.3	18.0	1.04	0.92
83AB3250	Cayuse/Monida	23.3	23.5	18.5	20.7	21.5	0.89	0.99
86AB1616	79Ab3811/S7884	26.7	26.5	18.4	23.0	23.7	1.47	0.99
86AB4582	Monida Reselection	28.9	28.7	22.8	25.0	26.4	1.11	0.99
88Ab3073	Pennlo/PI 447276	23.7	24.3	19.0	21.3	22.1	0.91	0.99
90AB1322	80Ab988/Monida	23.6	23.4	18.0	18.7	20.9	1.08	0.91
CI 8263	Cayuse	26.3	27.0	19.9	24.7	24.5	1.15	0.92
CI 9252	Otana	32.0	32.0	27.4	29.3	30.2	0.84	1.00
CI 9297	Appaloosa	25.2	25.3	20.6	22.0	23.3	0.88	0.98
CI467882	Border	26.4	25.2	22.3	22.0	24.0	0.72	0.77
CI483126	Monida	28.4	29.0	20.1	24.0	25.4	1.57	0.99
ND860416	Otana/Valley	27.8	28.4	23.6	25.0	26.2	0.84	0.97
ND862915	Paul	28.5	29.9	22.1	27.7	27.0	1.21	0.86
ND870258	Whitestone	25.5	24.1	21.1	21.0	22.9	0.75	0.79
NEWDAK	Newdak	28.1	27.6	22.4	25.3	25.9	0.97	0.98
*****	SITE MEAN *****	26.2	26.1	20.6	23.2	24.0	1.00	1.00

Table 6.
1996 STATEWIDE OAT STATEWIDE REPORT - IRRIGATED
PLANT HEIGHT (inches)

ID	Pedigree	Sidney	Kalispell	Bozeman	Mean	BYX	RSQ
81AB5792	Rio Grande	34.8	37.8	35.5	36.0	0.53	0.87
82AB1142	Ajay	28.2	31.9	29.7	29.9	0.65	0.96
83AB3250	Cayuse/Monida	33.5	37.9	37.7	36.4	0.84	0.86
86AB1616	79Ab3811/S7884	37.0	43.4	41.5	40.7	1.18	0.98
86AB4582	Monida Reselection	36.6	41.3	40.3	39.4	0.87	0.95
88Ab3073	Pennlo/PI 447276	34.4	40.3	37.2	37.3	1.06	0.99
90AB1322	80Ab988/Monida	29.1	35.7	34.1	33.0	1.21	0.96
CI 8263	Cayuse	36.2	40.7	40.4	39.1	0.83	0.87
CI 9252	Otana	40.7	49.3	44.4	44.8	1.54	0.97
CI 9297	Appaloosa	35.3	43.0	40.3	39.5	1.41	1.00
CI467882	Border	37.0	41.3	40.3	39.5	0.80	0.97
CI483126	Monida	40.2	46.3	43.8	43.4	1.12	1.00
ND860416	Otana/Valley	39.4	47.0	42.4	42.9	1.35	0.96
ND862915	Paul	42.4	47.1	45.5	45.0	0.86	0.99
ND870258	Whitestone	36.6	40.2	40.0	38.9	0.66	0.85
NEWDAK	Newdak	34.2	40.8	40.6	38.6	1.23	0.84
*****	SITE MEAN *****	36.0	41.5	39.2	38.9	1.00	1.00