PROJECT TITLE: Evaluation of agronomic performance of spring hulles oat lines/varieties at Moccasin, Montana.

PROJECT LEADER: D. M. Wichman - Res. Agronomist, Moccasin, MT

PROJECT PERSONNEL: J. Vavrovsky – Res. Spec., Moccasin, MT

OBJECTIVES:
Evaluate the relative agronomic performance of spring hulless oat varieties and development lines in central Montana environment.

RESULTS:
The hulles oat lines/variety grain yields were significantly less than hulled checks Spurs, Jerry, and ABSP 9-2. Overall the hulless oat yields were less than 70% as much seed as the three hulled checks. Development lines I9818614, 95A13050, 95A12970, I0211028 were similar in yield to the top two hulless oat varieties Buff and Pennuda. Spurs and Jerry produced the most pounds of protein 286 lbs per acre (Table 1). Provena had the highest recorded protein content at 17.5 percent. Pennuda had the lowest protein content at 12.6 %. Provena was near the bottom for mean yield.

The hulless oat produces a seed coat hair which can be irritating during threshing and handling. An attempt was made to rate the lines for germ hair length, seed coat hair length, and length of the brush hair. These data were too variable for conclusive ranking as to which had the least hair. Pennuda and ND021765 had the lowest (most desirable) total hair scores (Table 2).

SUMMARY:
This was a preliminary look at several hulless oat development lines. High protein food market is the target market for the hulless oat. What the protein level needs to be for this market is unknown. Therefore it is difficult to assess where a break off point is for protein tolerance. The higher protein lines sacrifice a significant amount of yield potential. It is suggested that if hulless oat lines for further evaluations include lines I9818614, 95A13050, 95A12970, I0211028 because of their yield performance. 02084627 and 94AB6860 for total pounds of protein per acre and I9818642 high protein content be entered in future evaluation trials along with the variety checks Buff, Pennuda, and Provena.

FUTURE PLANS:
It is not known if this trial will be continued. It may be more cost effective to raise hulled oats and dehull it for marketing to high protein oat markets. Plus the itchy irritation of the hulled oat is a factor in acceptability to the producers.

Table 1 2007 Montana spring hulless oat development line agronomic performance.
Exp440407 Central Agricultural Research Center. Moccasin, Montana.

Variety/line	Pedigree	Trt	Head Date	Plant Height	Grain Yield	Test Weight	Dry Protein	Protein Yield
		#	d of y	cm	lbs/a	lbs/bu	%	lbs/a
Spurs	Spurs (Jay/Rodeo)	6	166	79	2461	38.0	11.7	**287**
Jerry	Jerry (Valley/3/RL3038/Kelsy/M	7	169	93	2399	38.9	11.9	**286**
ABSP 9-2	83Ab3119/Monida	5	174	87	2351	40.1	10.4	246
I9818614	IL98-18614(IL92-11296/IL92-742	9	164	74	2003	37.8	12.7	254
95A13050	95Ab13050(84Ab825/86Ab5259)	21	176	81	1837	43.2	15.0	276
Buff	Buff	2	166	81	1828	45.2	14.1	257
Pennuda	Pennuda(Numprime/Noble//Obtee)	1	166	79	1787	42.5	12.6	226
95A12970	95Ab12970(87Ab5597/86Ab5259)	22	174	86	1752	43.4	14.0	244
I0211028	IL02-11028(IL97-19238/SD97852)	12	169	89	1751	50.2	14.4	253
02084627	SD020846-27(Jay//SD96288/SD967	28	167	79	1728	50.8	15.9	**275**
I9719238	IL97-19238(IL90-7147/IL92-1031	11	169	85	1722	46.7	13.4	231
94AB6860	87Ab5597/86Ab5259	23	172	79	1683	44.1	15.9	267
02084638	SD020846-38(Jay//SD96288/SD967	29	167	84	1673	49.0	15.7	263
IL971544	Prairie/IL92-10317	8	170	83	1604	42.9	13.2	212
00AB6128	94Ab6921/Ajay	24	174	83	1573	42.7	15.7	247
ND012005	ND900677/Paul	14	177	93	1554	43.3	15.7	244
02AB6953	97Ab8390/ND960892	27	176	77	1536	42.9	16.1	248
LaMont	Lamont (79Ab3811/S7884)	3	179	84	1484	43.7	15.9	235
00AB5023	Coker 87-15/MN 84134	26	170	71	1471	46.9	16.5	243
I9818642	IL98-18642(IL92-11296/IL92-742	10	171	90	1462	47.0	17.0	249
ND012015	ND900677/Paul	13	176	92	1455	45.2	13.7	199
ND020717	ND951306/HIFI	19	175	93	1441	47.8	14.8	213
SD041540	SD97223//SD98522/H98626	30	170	93	1418	50.2	15.5	220
ND021870	Ajay/ND950216EN	16	175	77	1408	45.2	14.1	198
ND020680	HIFHI/Paul	18	177	91	1372	45.4	14.8	203
02AB6763	97Ab8690/ND960892	25	178	74	1315	44.7	16.6	218
Provena	Provena (Pennlo/PI447276)	4	178	75	1311	48.0	17.5	230
ND010638	ND941954/ND961378N	15	175	92	1311	47.7	16.1	212
ND020697	HIFI/Paul	17	177	97	1254	39.9	13.5	169
ND021765	ND9406732/ND891838N	20	180	67	894.9	52.5	16.8	**151**
MEAN			172.5	83.7	1628	44.8	14.7	240
P-VALUE TRTS			0	0	0	0		
CV 1			0.903	7.029	9.677	3.184		
LSD(0.05 by t)			2.546	9.613	257.5	2.919		

Seeded: 17 April 07 into till plant fallow Fertilizer: 10-10-10-5 w/seed. 30 N topdress

Table 2 2007 Montana spring hulless oat development line agronomic performance.
Exp440407 Central Agricultural Research Center. Moccasin, Montana.

		Germ Tip Hair		Endo sperm Hair		Brush Hair		Hairscore
Variety/line	Entry	Length	Density	Length	Density	Length	Density	average
		0-5	0-5	0-5	0-5	0-5	0-5	0-5
Spurs	6	hulled						
Jerry	7	hulled						
ABSP 9-2	5	hulled						
I9818614	9	3.3	2.7	3.7	3.3	3.0	4.0	3.3
95A13050	21	2.7	2.7	4.0	3.7	3.3	4.3	3.4
Buff	2	3.0	3.3	3.3	2.7	2.7	4.3	3.2
Pennuda	1	2.3	2.3	2.7	2.3	2.3	3.7	**2.6**
95A12970	22	3.3	3.7	3.7	3.3	4.0	5.0	3.8
I0211028	12	3.0	3.0	3.3	2.7	2.7	3.0	2.9
02084627	28	3.3	3.3	4.0	3.0	4.0	4.3	3.7
I9719238	11	2.7	2.7	3.3	3.3	3.0	3.3	3.1
94AB6860	23	4.0	4.0	4.7	4.3	4.3	3.7	4.2
02084638	29	3.3	3.0	3.7	2.7	3.3	3.7	3.3
IL971544	8	3.0	2.7	3.3	2.7	2.7	3.3	2.9
00AB6128	24	3.0	4.0	4.3	4.7	4.0	4.3	**4.1**
ND012005	14	2.0	1.7	3.7	3.0	3.0	4.0	2.9
02AB6953	27	2.7	4.0	3.7	3.7	3.0	5.0	3.7
LaMont	3	2.7	3.3	3.7	4.3	3.3	4.7	3.7
00AB5023	26	2.3	3.3	3.7	3.0	3.3	3.3	3.2
I9818642	10	3.0	3.0	3.7	3.0	2.7	3.7	3.2
ND012015	13	1.7	2.0	3.7	3.3	3.7	4.3	3.1
ND020717	19	2.3	3.0	3.0	2.7	3.3	3.7	3.0
SD041540	30	3.3	2.7	3.3	3.3	3.0	3.3	3.2
ND021870	16	2.7	3.0	4.0	3.7	4.3	4.3	3.7
ND020680	18	2.7	3.0	3.0	2.7	2.7	3.7	2.9
02AB6763	25	3.7	3.7	3.7	3.7	2.7	4.0	3.6
Provena	4	2.0	3.3	3.0	3.0	3.0	4.3	3.1
ND010638	15	2.7	3.0	3.0	3.0	3.7	4.3	3.3
ND020697	17	3.7	3.0	3.7	3.0	3.0	4.0	3.4
ND021765	20	2.0	2.7	2.7	2.3	2.3	3.3	**2.6**
MEAN		2.827	3.04	3.53	3.20	3.20	3.96	3.29
P-VALUE TRTS		0.0276	0.063	0.0197	0.0063	0.0119	0.3062	
CV 1		25.74	25.16	16.34	21.5	21.5	21.23	
LSD(0.05 by t)		1.192	1.252	0.9453	1.126	1.126	1.379	