Small Grain Variety Performance Trials
San Luis Valley Research Center
Center, Colorado, 2000

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Summary and Recommendations

Each year small grain variety performance tests are conducted at the San Luis Valley Research Center to identify varieties that are productive and adapted for commercial production in the San Luis valley. The 2000 season can be characterized by warm, dry weather. Heading dates were 7-10 days earlier than for the cool, wet season of 1999. Grain yields in the soft white spring (SWS) wheat trial were very high, averaging 8592 lbs/acre (143.2 bu/acre). Grain yields in the hard red spring (HRS) and durum wheat trial also produced high yields, averaging 8010 lbs/acre (133.5 bu/acre). The winter wheat trial produced the highest grain yields this year, averaging 9306 lbs/acre (155.1 bu/acre). Grain yields in the barley trial were fairly poor averaging 5933 lbs/acre (123.6 bu/acre). The oat variety performance trial produced excellent yields, averaging 6228 lbs/acre (163.9 bu/acre at 38 lbs/bu).

Introduction and Objectives

Small grains, which includes wheat, barley and oats, have been produced in the San Luis Valley traditionally. Oats have declined from historical high acreages. Barley and wheat acreages vary from year to year. Wheat acreage has declined after the high prices of 1996. Oats is often planted as hay, either planted with alfalfa or planted early for hay so alfalfa can be planted in late summer. Malt barley acreage is dominated by Coors contracts with small acreages of other contracted or non-contracted malt barley or feed barley. Wheat types also vary with demand and grower preferences. Durum acreage is still small, with varying acreage. SWS acreage varies with price; the dominant market being in Denver. HRS acreage also varies and the winter wheat acreage is still small but growing. The objective of this research was to evaluate varieties and experimental lines for their performance under high-yield center pivot conditions in the San Luis Valley.

Materials and Methods

These field research studies were conducted either at the San Luis Valley Research Center or on neighboring farms. These experiments were conducted as randomized complete blocks with four replications. Plots are planted to 35 foot lengths and trimmed at harvest to about 30 foot. Eight rows are planted in 8-inch rows which make a plot 5.3 feet wide. Unless the plots are severely lodged, only the middle 6 rows (4 feet) are harvested with the Hege combine. Yields are corrected to 12% moisture and for wheat 60 lbs/bushel. For barley, yields are corrected to 48

lbs/bushel and oats are corrected to 38 lbs/bushel. Wheat protein and hardness are determined by the wheat breeding program at Colorado State University. Barley protein and screenings are tested at the Coors Office in Monte Vista.

Soft White Spring Wheat Performance Trial
Tables 1 & 2.

Eleven entries, 5 named varieties and 6 advanced numbered lines from University of Idaho, Aberdeen, Idaho, were compared in 2000. This trial was located ½ mile west on L Bar S Ranch, Larry Scott , Mgr. This field is a gravelly sandy loam soil, the previous crop was potatoes. A total of 275 lbs nitrogen was applied per acre. The seeding rate was 100 lbs/acre. Plots were seeded at 120 lbs/acre on April 21. Broadleaf and wild oat herbicides were applied. Irrigation was by center pivot, as needed. Normally, only the middle 6 row (4 feet) is harvested; however, since all plots were severely lodged, the entire width was harvested with the Hege combine, harvest was September 13. The nitrogen fertility and irrigation combined to produce vigorous vegetative growing conditions resulting in severe lodging. Yields were not statisitically different between cultivars, averaging a hefty 143 bu/acre. Blanca was the high yielding variety; however, remember that there was no significant difference. Table 2 shows that over 6 years, Centennial is still the high yielding SWS variety. Over that past 14 years, Centennial has outyielded Blanca 116.4 vs 110.8 bu/acre (unpublished data). Centennial is earlier maturing, shorter height, and has less lodging than most new or old varieties grown in comparison trials here.

Hard Red Spring and Durum Wheat Performance Trial
Tables 3 & 4.

This trial was located on the same field as the SWS trial, L Bar S Ranch, Larry Scott, Mgr. Nitrogen fertility, irrigations, and herbicides were the same as for the SWS wheat trial. There were 5 durums, 8 hard red springs, 3 hard white springs and one check variety, Blanca SWS, for comparison. The seeding rate was 120 lbs/acre for HRS wheat and 140 lbs/acre for durum. This trial was planted a few days earlier than the SWS, planted April 13 and wetted April 16. Only the middle 6 rows (4 feet) were harvested; harvested September 11-12. Pristine, a HWS variety, produced the highest yield, 155 bu/acre. Pristine was entered by Western Plant Breeders but recently sold to General Mills. It is promising for this area because of its yield, its early maturity, low lodging, and high bushel weight. The highest durum variety was Kronos, the one currently grown under durum contract. Kronos produced a very high yield, 152 bu/acre, but the lodging was high, 55%. Oslo produced the highest yield of any HRS wheat, 149 bu/acre with 13.1% protein.

Table 4 gives the same yield data for durums; however, this table gives durum quality as determined by Arizona Grain Co. GM 9004 seems to have exceptional potential for this area. It yielded in the top group, the lodging was only 16%, the protein was 12.2%, an the HVAC was slightly higher than WB881, 98%.

Hard Red Spring Wheat Performance Trial-1999
Table 3a.

This trial was conducted on the SLV Research Center in 1999; however, the data was misplaced and therefore not previously reported. The trial included 10 varieties or experimental lines. The seeding rate was 120 lbs/acre. It was planted April 26 and harvested September 21. The yields were only fair, averaging 105 bu/acre. 1999 was a season of cool, wet weather starting in July. The bushel weights were fairly low, averaging 58.8 lbs/bushel. The cool, rainy,

wet weather probably increased the severity of bacterial leaf blight which impacted bushel weight and yield. Five varieties produced high yields including Zeke (120.4 bu/acre), Id 502, Klasic, and Id 377S.

Winter Wheat Performance Trial
Tables 5 & 6.

This trial was grown in a field of winter wheat (30 acres) grown on the SLV Research Center. The field and plots were irrigated for germination October 4. The seeding rate was 100 lbs/acre. The previous crop was potatoes. Nitrogen fertilizer included 50 #/acre preplant, 75 #/acre at spring greenup, another 20 #/acre through the pivot for a total of 145 #/acre. Another 30 #/acre was applied at heading to improve protein content. Irrigation was applied as needed including winter irrigations in November and January.

Fifteen varieties were compared in the trial including 6 hybrids that are no longer available. Varieties entered were from Kansas State and Colorado State wheat breeding programs. Yields in this trial were very high, averaging 155 bu/acre. Contrary to previous years, Tomahawk produced the highest grain yield with 165 bu/acre. Eleven varieties produced high yields.

The 3-year averages (Table 6.) show an advantage for hybrid QAP 7610 (146.5 bu/acre), Halt (138.1 bu/acre), and Yuma (137.5 bu/acre). Tomahawk has a 3-year average of 124.2 bu/acre. I wonder if this year's lack of a late spring frost may have benefitted Tomahawk and other early heading varieties. Halt and Yuma have a 4-year average of 139 bu/acre compared to 125 bu/acre for Tomahawk.

Barley Performance Trial
Tables 7, 8 & 9.

The location of this trial was a 30 acre field of Moravian 14 malt barley at the SLV Reseaarch Center. The trial included 8 varieties plus 7 experimentals from Coors, ARS-Aberdeen, and Washington State. Two varieties (Rio Grande Commodities) were entered as new introductions from Europe. The seeding rate was 100 lbs/acre. The field was soil sampled and fertilized on a one-acre grid. The plots appeared nitrogen short until finally an additional 50 #/acre was applied just prior to heading. This late nitrogen appeared very beneficial; however, it may have benefitted the later maturing varieties more - since they were a little less mature at the time of application.

Yields ranged from 110 to139 bu/acre, averaging only123.6 bu/acre. Colter, a 6-row malt barley from Aberdeen, topped the trial at 138.9 bu/acre. Moravian 14, another early maturing barley, produced only 112.9 bu/acre.

Table 8 shows barley performance averaged from 1998-2000, 3-year averages. Colter is a high yielding six-row feed barley that has performed well over many years now. Alexis is a contract malt barley that has also performed well in these trials. Moravian 14 has a 3-year average of 124 bu/acre, slightly less than local growers average.

Table 9 shows some longer term averages from the malt barley performance trials. Moravian 14 has the highest average of these varieties; averaging 153 bu/acre over 5 years. Russell, a six-row malt barley, has produced excellent yields, averaging 148.5 bu/acre. Garnet is a 2-row malt barley that may be of interest to Great Western Malting Co.

Oat Variety Performance Trial
Tables 10-11.

This trial was located on the Tom Myers Farm, roads 4 East and 11 North in Rio Grande County. This field is a sandy loam. The trial included 12 entries, only 5 were named varieties. Experimental entries come from the federal (USDA-ARS) oat breeding program in Aberdeen, Idaho. Six replications (reps) were planted so that 2 reps could be harvested for forage and 4 reps for grain yield. The seeding rate was 100 lbs/acre. Fertilizer added was 100 lbs/acre of 11-52-0 plus another 25 lbs N/acre on June 12. Harvest was August 25. The trial was excellent this year, providing a uniform trial with good yields and no lodging. It is possible. Yields, calculated at 38 lbs/bu, ranged from 103 to 219 bu/acre. Six varieties were high yielding including the experimental Absp 19-9 and Monida.

Three varieties are naked-seeded. Naked-seeded oats look more like wheat when harvested, since they do not retain the lemma and palea (chaff) when threshed. These varieties had very high bushel weight, all over 45 lbs/bushel.

Table 11 gives a 2-year summary for the oat performance trials. Powell is the highest yielding named variety over the past two years, 187 bu/acre. Several experimentals have also performed very well averaging over 180 bu/acre. Monida, a popular variety locally, has yielded slightly less than Powell. Plus in other years that showed lodging, Powell averaged 17% compared to 30% for Monida over 9 trial years. Yield averages for the same 9 years were 177 bu/acre for Powell vs. 170 bu/acre for Monida.

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Table 1. Soft white spring wheat variety performance trial, SLV Research Center, Center, Colorado in 2000. Yield based on 60 lbs/bu and 12% moisture.

Variety	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Grain Protein	Grain Hardness	3 Year Yield Average
	bu/ac	lbs/bu	(June)	inches	%	rating	bu/acre
Blanca	160.8	54.4	28.8	41	13.4	-6	133.1
Whitebird	160.5	56.3	28.5	41	13.4	-12	129.6
Centennial	160.4	56.5	25.3	41	13.2	-12	134.7
Id 523	151.3	55.8	24.0	41	12.9	-8	
Id 505	146.8	57.1	35.3	40	13.3	7	130.8
Id 506	146.1	57.3	28.5	41	12.3	1	
Pomerelle	143.2	52.3	28.5	41	13.3	-12	

Treasure	142.7	55.8	29.0	41	12.7	1	
Id 524	140.6	55.4	30.3	40	12.7	-8	127.9
Id 525	130.5	55.8	32.5	41	13.4	-9	
Id 526	128.9	53.6	30.0	40	12.9	-4	
Average	**143.2**	**59.8**	**11.1**	**39.7**	**10.2**	**-5.6**	**125.8**
LSD, 5%	**NS**	**NS**	**2.5**	**NS**	**NS**	**NS**	**---**

** Number of days after June 1
[1/] Grain hardness reading of <40 indidates soft wheat and >40 indicates hard wheat.

Table 2. Soft white spring wheat variety performancesummary; SLV Research Center, Center, Colorado.

Variety	**Grain Yield**			**Bushel Weight**	**Heading Date****	**Plant Height**	**Plant Lodging**	**Grain Protein**
	----------Bu/acre-------			**lbs/bu**	**(June)**	**inches**	**%**	**%**
	2 yr	**3 yr**	**6 yr**	**3 yr**	**3 yr**	**3 yr**	**3 yr**	**3 yr**
Centennial	133.8	134.7	122.7	59.2	31.5	38.5	36.7	12.4
Blanca	132.2	133.1	116.8	56.9	34.0	40.1	42.9	12.7
Whitebird	128.1	129.6	120.6	59.1	36.3	39.9	46.3	12.5
Id 505	125.5	130.8	---	59.5	38.7	39.6	40.4	12.0
Id 524	123.9	127.9	---	58.7	35.9	37.3	37.1	12.0
Id 506	123.4	---	---	---	---	---	---	---
Average	**122.2**	**125.8**	**114.0**	**58.3**	**34.7**	**38.8**	**41.5**	**12.2**

** Number of days after June 1

Table 3. Hard red spring and durum wheat variety performance,SLV Research Center, Center,

Colorado in 2000. Yield based on 60 lbs/bu and 12% moisture.

Variety	Grain Type	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Plant Lodging	Grain Protein	Grain Hardness
		bu/ac	lbs/bu	(June)	inches	%	%	Rating [1/]
Pristine	HWS	154.7	61.2	15.3	38.4	7.5	13.9	57
GM 9004	D	152.2	59.5	19.5	35.1	16.3	12.1	114
Kronos	D	151.5	59.1	16.5	35.4	55.0	13.6	77
Oslo	HRS	149.0	58.4	17.0	37.5	8.8	13.1	31
GM 9000	D	142.1	58.9	15.5	33.6	50.0	11.9	104
GM 40003	HWS	142.0	60.5	14.3	36.9	32.5	13.1	40
Y. Rojo	HRS	141.6	60.2	15.0	27.3	0.0	14.1	41
GM 9002	D	137.4	60.9	18.0	37.2	18.8	11.9	109
GM 50018	HRS	136.4	59.3	17.5	30.0	5.0	14.2	46
Nora	HRS	136.1	61.1	22.5	35.1	42.5	15.8	53
GM 40001	HRS	133.7	59.6	20.5	38.4	66.3	12.5	66
WB 881	D	132.1	58.9	19.0	35.7	20.0	13.4	84
Norpro	HRS	130.1	58.5	22.8	36.9	58.8	14.1	72
GM 50004	HRS	127.5	58.2	20.8	40.8	56.3	14.0	71
GM 40002	HWS	124.4	58.6	13.8	35.1	50.0	14.0	33
Blanca	SWS	122.2	55.6	27.5	41.7	62.5	13.0	3
GM 50002	HRS	114.7	59.1	28.3	39.3	80.0	13.2	66
Id 377S	HWS	108.1	57.4	20.3	39.0	83.8	13.9	55
Average		**133.5**	**59.1**	**19.1**	**36.3**	**39.7**	**13.4**	**65.8**
LSD, 5%		**15.4**	**1.5**	**3.4**	**2.4**	**23**	**NS**	**NS**

** **Number of days after June 1**

[1/] **Grain hardness** reading of <40 indidates soft wheat and >40 indicates hard wheat.

Wheat types: **SWS**=soft white spring; **D**=durum; **HWS**=hard white spring; **HRS**=hard red spring.

Table 4. Durum wheat variety performance and quality , SLV Research Center, Center, Colorado in 2000. Yield based on 60 lbs/bu and 12% moisture.

Variety	Source	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Plant Lodging	Grain Protein	HVAC
		bu/ac	lbs/bu	(June)	inches	%	%	%
GM 9004	GM	152.2ab	59.5	19.5	35.1	16.3	12.2	98
Kronos	AGC	151.5abc	59.1	16.5	35.4	55.0	12.3	78
GM 9000	GM	142.1a - e	58.9	15.5	33.6	50.0	11.6	75
GM 9002	GM	137.4a - f	60.9	18.0	37.2	18.8	11.0	83
WB 881	WPB	132.1 def	58.9	19.0	35.7	20.2	12.4	96
Durum Means		**143.1**	**59.5**	**17.7**	**35.4**	**32.0**	**11.9**	**86**
LSD, 5%		**15.4**	**1.5**	**3.4**	**2.4**	**23**	**---**	**---**

Source: GM=General Mills; AGC=Arizona Grain Co.; WPB=Western Plant Breeders
** **Number of days after June 1**
HVAC is Hard Vitreous Amber Color, a quality parameter for durum wheat, a percentage of the kernels.

Table 5. Winter wheat variety performance trial, SLV Research Center, Center, Colorado in 2000. Yield based on 12% moisture and 60 lbs/bushel.

Variety	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Plant Lodging	Grain Protein	Grain Hardness	3 Yr. Yield Avg
	bu/ac	Bu/acre	(June)	inches	%	%	Rating 1/	Bu/acre
Tomahawk	164.6	60.0	6.3	39.3	15.0	10.7	53	124.2
Prairie Red	164.6	60.4	8.3	38.4	0.0	10.5	63	133.0
QAP 7406	162.3	59.6	9.3	39.6	0.0	9.5	50	146.5
Platte	161.9	61.0	11.5	36.3	0.0	10.1	48	125.9
XH 9801	160.1	60.3	12.3	40.2	0.0	10.7	51	---
Q7588	159.9	59.3	10.8	40.8	0.0	9.2	58	---

QAP 7510	155.6	61.3	12.5	37.5	0.0	10.8	59	129.2
Yuma	155.6	59.7	11.8	42.3	37.5	10.3	43	137.5
XH 7463	155.5	60.0	11.0	39.9	0.0	9.3	50	---
Halt	154.1	58.3	11.5	41.1	12.5	11.0	52	138.1
Yumar	152.9	59.5	11.5	42.6	36.3	10.2	53	---
XH 9815	148.9	60.1	8.8	38.1	0.0	9.8	51	---
Wesley	146.0	58.4	9.5	35.7	0.0	10.1	52	---
2137	144.8	59.3	13.3	41.1	0.0	10.5	68	---
Trego	140.0	61.1	15.0	41.7	16.3	10.1	51	---
Average	**155.1**	**59.8**	**11.1**	**39.7**	**7.8**	**10.2**	**53.5**	**132.1**
LSD, 5%	**12.0**	**1.2**	**2.6**	**2.4**	**25**	**NS**	**NS**	**---**

[1/] Grain hardness reading of <40 indidates soft wheat and >40 indicates hard wheat.
** Number of days after June 1.

Table 6. **Summary, winter wheat variety performancetrial**; SLV Research Center, Center, Colorado.

Variety	Grain Yield		Bushel Weight	Heading Date**	Plant Height	Plant Lodging	Grain Protein	Grain Hardness
	----------		lbs/bu	(June)	inches	%	%	Rating1/
	3 yr	4 yr	3 yr	3 yr	3 yr	1 yr	3 yr	3 yr
Q7406	146.5	----	60.8	13.9	38.4	0.0	9.5	52.3
Halt	138.1	139.4	59.8	14.6	37.0	36.3	10.5	50.3
Yuma	137.5	139.3	59.5	14.7	38.4	37.5	9.5	49.7
Prairie Red	133.0	----	60.7	13.0	36.1	0.0	10.0	69.0
Q7510	129.2	----	61.7	12.0	35.6	0.0	10.4	56.7
Platte	125.9	----	61.6	16.9	35.6	0.0	10.2	55.7
Tomahawk	124.2	125.0	59.9	12.5	35.5	15.0	10.3	54.3

Average	**132.3**	**134.4**	**60.6**	**15.1**	**36.8**	**7.8**	**10.0**	**55.5**

[1/] Grain hardness reading of <40 indidates soft wheat and >40 indicates hard wheat.
** Number of days after June 1.

Table 7. <u>Malting barley variety performance trial,</u> SLV Research Center, Center, Colorado in 2000. Yield based on 48 lbs/bu and 12% moisture.

Variety	Source	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Grain Protein	Grain Screenings
		bu/ac	lbs/bu	(June)	inches	%	%
Colter	USDA-ARS-Aberdeen	138.9	49.6	20.0	36.9	9.0	4.4
Wa9504-95	Washington	137.7	51.9	29.5	30.0	9.8	7.0
Alexis	Rio Grande Commodities	133.2	52.2	30.0	29.4	9.3	4.9
Garnet	USDA-ARS-Aberdeen	126.9	51.8	29.3	33.6	9.3	2.5
AB 688	USDA-ARS-Aberdeen	126.4	50.2	17.5	36.6	9.4	5.3
Wa11801-95	Washington	124.4	52.4	26.3	33.9	10.0	4.1
Galena	Coors Brewing Co.	123.4	51.1	29.1	29.0	9.5	6.9
C 37	Coors Brewing Co.	123.2	53.4	29.0	26.1	9.4	3.5
Ab8333	USDA-ARS-Aberdeen	121.9	50.1	17.0	35.1	9.9	4.1
Aspen	Rio Grande Commodities	121.5	52.1	30.0	27.9	9.4	6.2
Ab 1368	USDA-ARS-Aberdeen	119.7	49.9	17.8	37.2	9.8	1.5
Scarlet	Rio Grande Commodities	119.3	52.7	30.0	30.3	9.4	1.7
Ab 241	USDA-ARS-Aberdeen	115.5	51.3	28.0	34.5	10.2	4.5
Moravian 14	Coors Brewing Co.	112.9	52.9	18.5	27.9	10.5	4.2

Ab 15156	USDA-ARS-Aberdeen	110.4	50.3	22.0	33.9	9.5	3.5
	Average	**123.6**	**51.4**	**25.2**	**32.4**	**9.6**	**4.4**
	LSD, 5%	**NS**	**1.0**	**1.8**	**2.8**	**2.8**	**2.2**

**** Days after June 1.**

Table 8. Malt barley variety performance summary; SLV Research Center, Center, Colorado.

Variety	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Plant Lodging	Grain Protein	Grain Screenings
	Bu/acre	lbs/bu	(June)	%	%	%	%
	3 yr	3 yr	3 yr	2 yr	3 yr	3 yr	3 yr
Colter	150.0	48.7	21.9	18.5	0	9.0	6.4
Alexis	133.9	50.4	30.6	31.6	0	9.5	6.7
C 37	130.1	51.6	28.6	29.3	0	9.6	4.2
Moravian 14	124.4	52.0	22.6	28.7	0	9.7	5.6
Test Average	**132.7**	**50.0**	**26.2**	**34.1**	**0**	**9.7**	**5.2**

Table 9. Malt barley variety performance summary; SLV Research Center, Center, Colorado. **5-yr average**, (1993-97);**4-yr avg** (1994-97); **3-yr avg** (1995-97); **2-yr** (1995,97).

Variety	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Grain Protein	Grain Screens	Lodging
	Bu/ac	lbs/bu	(June)	inches	%	%	%
	5 yr	5 yr	5 yr	5 yr	4 yr	3 yr	2 yr
Moravian 14	152.6	53.1	23.2	35.8	11.3	9.6	10.0
Russell	148.5	48.8	20.3	44.7	11.2	7.9	16.9

Garnet	132.2	51.4	27.1	40.7	11.6	7.3	39.9
Crystal	131.5	52.2	28.2	40.4	12.2	9.7	25.5
Morex	117.2	49.0	23.0	46.1	12.2	11.5	68.3
Test Average	**148.5**	**51.3**	**27.3**	**39.2**	**11.7**	**8.70**	**19.5**

** Days after June 1.

Table 10. Oat variety performance trial, SLV Research Center, Center, Colorado in 2000. Yield based on 38 lbs/bu and 12% moisture.

Variety	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Forage Yield
	bu/ac[1/]	lbs/bu	(June)	inches	tons/ac
Absp 19-9	218.6 a	41.2	27.5	42.9	5.1
Monida	207.2 ab	40.6	28.5	40.7	4.6
Ab 406	206.4 ab	40.2	25.3	38.1	4.5
Powell	196.0 ab	39.4	27.0	37.2	4.2
Ab 1322	192.8 ab	41.2	26.0	38.1	4.5
Absp 9-2	191.3 ab	41.1	25.3	41.4	4.4
Rio Grande	181.0 bc	40.4	22.8	36.6	3.9
Ajay	177.3 bc	39.9	25.8	32.1	4.2
Lamont	155.4 cd	45.4	29.5	43.2	---
Ab 11633	142.6 d	40.0	26.5	36.6	---
Provena	126.5 de	46.4	28.8	37.2	---
Ab 8902	103.2 e	46.8	34.0	27.3	---
Means	**163.9**	**39.4**	**27.2**	**38.2**	**4.4**
LSD, 5%	**17.7**	**1.9**	**1.0**	**2.8**	**NS**

[1/] Duncan's New Multiple RangeTest: values followed by the same letter are not statistically different.
** Days after June 1.

Table 11. Oat variety performance summary; SLV Research Center, Center, Colorado. Two-year average, 1999-2000.

Variety	Grain Yield	Bushel Weight	Heading Date**	Plant Height	Plant Lodging	Forage Yield
	bu/ac	lbs/bu	(June)	inches	%	tons/acre
Ab 406	187.1	39.7	29.4	36.0	0	3.8
Powell	186.7	38.9	31.3	36.3	0	4.2
Ab 1322	186.4	41.7	30.9	37.8	0	4.5
Absp 19-9	182.3	40.4	32.0	41.3	0	4.8
Monida	182.8	39.5	33.5	42.3	0	4.3
Absp 9-2	173.9	40.5	29.3	41.0	0	4.2
Rio Grande	167.2	40.2	26.9	35.3	0	3.8
Ajay	161.2	39.5	29.9	30.8	0	4.1
Average	**163.9**	**39.4**	**31.0**	**37.5**	**0**	**4.2**

** Days after June 1.