Small Grain Variety Performance Trials
San Luis Valley Research Center
Center, Colorado, 2003

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Summary

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. Irrigation wells were reworked and irrigation was not a problem this year.

The 2003 season can be characterized as warm and dry. Heading dates were 7-10 days earlier than for some years; however, nearly the same as 2001-02. Grain yields in the soft white spring (SWS) wheat trial were exceptionally high, averaging 8094 lbs/acre (134.9 bu/acre). Grain yields in the hard red spring (HRS) and durum wheat trial were almost as high, averaging 7938 lbs/acre (132.3 bu/acre). Grain yields in the barley trial were exceptional; ranging as high as 185.4 bu/acre (8899 lbs/acre) and averaging 7858 lbs/acre (163.7 bu/acre). The oat variety performance trial produced vigorous vegetative growth but grain yields were not taken because of excessive lodging.

Introduction and Objectives

Small grain trials include wheat, barley and oats which have been produced in the San Luis Valley for many years. Oat acreage has greatly declined from historically highs. Barley and wheat acreage vary from year to year, depending on the wheat price and now depending on water availability. Wheat acreage has generally ranged from 23,000 to 34,000; the acreage depending on price. Oats are often planted for 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 a smaller acreage of other malt barley or feed barley varieties. Wheat types also vary with demand and grower preferences. Durum acreage is still small, with a variable acreage. SWS acreage varies with price; the dominant market being in Denver. HRS acreage also varies and the winter wheat acreage is still small. 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 all conducted at the San Luis Valley Research Center this year. These trials were conducted as a randomized complete block design with four replications. Plots are planted to 35 foot lengths and trimmed at harvest to about 30 feet. Nine rows are planted in 8-inch rows which make a plot 6 feet wide. Unless the plots are severely lodged, only the middle 7 rows (4.7 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. Malt barley protein and screening are tested at the Coors Office in Monte Vista.

Soft White Spring Wheat Performance Trial

Table 1.

Five entries, four named varieties and one advanced numbered line from University of Idaho, Aberdeen, Idaho, were compared in 2003. This trial was located on-station in our field of C14 malting barley. Two extra irrigations were provided for the wheat plots because of later maturity. The field was in potatoes in 2002. The soil is a deep sandy clay loam. The total nitrogen applied was 105 lbs per acre. This was adequate for vegetative growth and produced high yields. The nitrogen fertility and irrigation combined to produce vigorous vegetative growing conditions, but without the usual lodging. Yields were excellent; ranging as high as 145 bu/a and averaging 135 bu per acre.

This trial was more uniform than usual. Plants grew vigorously during vegetative growth; were tall, but yet there was no lodging this year. Yield differences were statistically significant. Yields ranged only from 126 to 145 bu/acre. The coefficient of variation was extremely low (CV = 2.3 %) and the LSD was very low. This means the trial provides a good comparison between varieties. The field trial was harvested with more grain moisture than normal; moisture as high as 15.1%. High moisture indicates later maturity. Centennial and IDO 563 had lower moisture and also headed earlier than other varieties.

Centennial was the high yielding variety this year; it out-yielded Blanca more than normal. Centennial also had better bushel weight, earlier heading, lower moisture, and shorter height compared to Blanca. IDO563 did not produce quite as high as Centennial this year. Two years ago, it out-yielded Centennial by 20+ bu/acre. IDO563 did produce a better bushel weight and earlier heading date, compared to Centennial. Both characteristics would be beneficial to SLV growers.

Table 1a. SWS Wheat 4-yr Averages

Although Centennial has dominated soft white wheat planting for 10 years already, nothing developed in Idaho has been able to supplant it. It is still the highest yielding, earliest maturity, shortest height and least lodging variety available.

Hard Red Spring and Durum Wheat Performance Trial

Table 2.

This trial was located adjacent to the SWS trial. Nitrogen fertility, irrigations, and herbicides were the same as for the SWS wheat trial. Included in the trial were 2 durum, 7 hard red spring (HRS), 2 hard white spring (HWS) varieties and Blanca (SWS) for comparison.

Yields ranged from 113 to 145-bushel per acre and averaged 132 bu/acre. The trial was uniform and produced a low CV% (2.3). Centennial (SWS), IDO593, ID377S and IDO592 were the high yielding varieties this year; producing 140-145 bu/acre. Id 377S was the highest yielding hard white wheat. IDO592 and IDO593 were the highest yielding hard red wheats. Oslo is a very consistent variety, but yielded less than IDO593. Jerome, a new release from Idaho, yielded less than other red varieties. Kronos durum wheat again out-yielded WB881, although 124 bushels produced by WB881 is a good durum yield.

Table 2a. Spring Wheat 4-yr Averages

Centennial SWS out-yielded the hard spring wheats. Oslo is several days earlier maturing and the yield is fairly close to Centennial. Oslo tends to lodge less than Centennial. ID377s is a hard white noodle wheat. It produces good yield but is not resistant to lodging. Yecora Rojo is a very early, very short hard red variety. It does not lodge and produces high protein. WB881 is a high quality, low yield durum.

Barley Variety Performance Trial

Table 3.

This year this trial was located in a 30-acre field of Moravian 14 malt barley at the SLV Research Center. The trial included a total of 17 entries, including several experimental lines from Coors or ARS-Aberdeen. Vegetative growth was very excellent this year, producing good plant height. Lodging, however, was not a problem.

Yields were very good and quite consistent, producing a low coefficient of variation (4.1 %) and a low LSD. Yields ranged from 146 to185 bu/acre; the average was 164 bu/acre. There were four Idaho lines or varieties that made the top yields this year. These were followed by Coors C 46. Creel yielded 185 bu/acre. It has been tested previously as Ab 688 and is a very promising, very early maturing feed barley variety. It has, however, produced high screening. Coors C46 yielded 170 bu/acre, but Coors has canceled it in favor of C 69. Coors plans to provide C 69 to their certified seed growers this year and to most malt barley growers next year. C 69 should prove to be deeper rooted, produce larger kernels (less screening problems) and produce higher yields than C 14.

Table 3a. Malt Barley 3-yr Average

Creel has produced the highest yield (176 bu/acre) followed by C46 (164 bu/acre) and then Moravian 14, Ab 8333, Ab 13449 and finally Garnet. Creel is an excellent feed barley; screening might be too high for malt. C46 was an excellent malting variety but has been dropped by Coors Brewing. Moravian 14 has been an excellent improvement over the old Moravian 3, but C69 is slated to replace it. Garnet is a malting variety grown under contract and produces a very excellent yield, good bushel weight, low protein and low screening.

Oat Variety Performance Trial

Table 4.

The oat trial was rained on after it lodged. It was not harvested for grain. Data was obtained for heading date, plant height, and lodging percentage. Maverick is late maturing but is short and resists lodging. Monico is earlier maturing but taller and lodges moderately. Both lodge much less than the standard variety, Monida.

Table 4a. Oat several year averages

Three new varieties released by Idaho, Montana and Colorado have yield advantage over other varieties. Monico, Maverick and Powell have higher yield than Monida. Maverick had good yield, good bushel weight, short height and great lodging resistance in these trials and in Idaho trials. Monico had just as good of yield, good bushel weight, early heading but is taller and lodged moderately. All four varieties produced good forage yield even though Maverick and Powell are shorter height.

Table 4b. Oat 5-yr averages
This table shows results of some additional varieties compared to Table 4a. Ab 406 yielded very well in these trials and is early heading; however, it lodged badly. Rio Grande is the earliest variety tested; however, other newer varieties yield more with less lodging. Ajay is probably the shortest variety ever tested in this program; it has never shown any lodging.

Acknowledgments
Appreciation is expressed to Stanley Price and Ron Price (SLV Research Center Staff) and to Bert Sutton (part-time hourly) for assistance with these trials.

Table 1. Soft white spring wheat variety performance trial in Center[1], 2003.

Variety	Grain Yield	Bushel Weight	Heading Date[2]	Grain Moisture	Plant Height	Plant Lodging
	bu/ac	lbs/bu	(June)	%	inches	%
Centennial	144.9	59.7	31.0	13.1	39.3	0
IDO 563	137.1	61.5	26.5	13.2	39.6	0
Alturas	136.7	58.4	33.5	15.1	41.1	0
Whitebird	130.0	57.1	35.5	14.9	41.7	0
Blanca	125.7	55.3	35.5	14.4	44.1	0
Average	**134.9**	**58.4**	**32.4**	**14.1**	**41.1**	**0**
$LSD_{(0.10)}$	3.9	2.4	0.8	2.8	0.7	--
CV%	2.3	3.2	2.0	15.5	1.4	--

[1]San Luis Valley Research Center, Center, CO. Yield based on 12% moisture and 60 lbs per bushel.
[2]Days after June 1.

Site Information:
Date Planted: April 14
Date Harvested: August 22
Irrigation: center pivot = ET
Seed Rate: 120 lbs/acre in 8-inch row spacing
Herbicide: Bronate @ 1 pt/ac sprinkler
Nitrogen: 75 lbs/acre dry preplant + 30 lb/ac liquid

Summary:
This trial provides a good comparison between varieties this year. Plants grew vigorously during vegetative growth without any lodging this year.

Centennial out yielded Blanca more than normal this year. Centennial also had better bushel weight, earlier heading, lower moisture, and shorter height compared to Blanca.
IDO563 did not produce quite as high as Centennial this year. Two years ago, it out yielded Centennial by 20+ bu/acre. IDO563 did produce a better bushel weight and earlier heading date, compared to Centennial. Both characteristics would be beneficial to SLV growers.

Table 1a. Four (4) year averages (2000-2003), soft white spring wheat variety performance trial in Center[1].

Variety	Grain Yield	Bushel Weight	Heading Date[2]	Plant Height	Grain Protein
	bu/ac	lbs/bu	(June)	inches	%
Centennial	144.2	56.3	27.7	39.5	12.6
Whitebird	138.9	58.8	31.7	42.2	12.4
Alturas	135.6	59.4	31.1	41.3	12.4
Average	**137.0**	**59.4**	**30.3**	**40.8**	**12.4**

[1]San Luis Valley Research Center, Center, CO. Yield based on 12% moisture and 60 lbs per bushel.
[2]Days after June 1.

Comments:
Although Centennial has dominated soft white wheat planting for 10+ years already, nothing developed in Idaho has been able to supplant it. It is still the highest yielding, earliest maturity, shortest height and lowest lodging variety available.

Table 2. Spring wheat variety performance trial at Center[1] in 2003.

Variety	Wheat Type[2]	Grain Yield	Bushel Weight	Heading Date[3]	Grain Moisture	Plant Height	Grain Protein
		bu/ac	lbs/bu	(June)	%	inches	%
Centennial	SWS	144.9	62.8	30.8	14.0	38.1	11.1
IDO 593	HRS	142.8	62.2	28.5	14.7	37.5	10.8
ID 377S	HWS	142.0	61.4	32.3	17.7	42.6	11.1
IDO 592	HRS	139.6	62.4	30.8	13.1	40.8	10.5
Oslo	HRS	136.7	62.2	28.0	13.3	39.9	11.7
Lolo	HWS	136.3	63.1	33.5	16.8	40.8	10.8
Jerome	HRS	132.1	62.5	29.5	15.0	38.7	11.5
Kronos	Durum	131.1	63.3	24.0	13.5	35.1	10.4
Norpro	HRS	127.5	62.0	35.0	15.7	38.4	11.7
WB881 (D)	Durum	123.6	62.9	28.8	13.5	34.8	11.7
Yecora Rojo	HRS	118.6	61.1	25.5	13.5	29.4	11.6
Knudsen	HRS	112.7	61.8	34.0	14.6	42.3	12.0
Average		**132.3**	**62.3**	**30.0**	**14.6**	**38.2**	**11.2**
$LSD_{(0.10)}$		5.62	0.64	1.15	1.22	1.04	0.71
CV%		3.6	0.85	3.19	5.53	2.27	5.30

[1]San Luis Valley Research Center, Center, CO. Grain yield based on 60 lbs/bushel and 12% moisture.

[2]Wheat Types: SWS is soft white spring; HWS is hard white spring; HRS is hard red spring and D is durum wheat.
[3]Days after June 1.

Site Information:

Date Planted: April 14
Date Harvested: September 2
Irrigation: center pivot
Seed Rate: 120 lbs/acre in 8-inch row spacing
Herbicide: Bronate @ 1 pt/ac
Nitrogen: 75 lbs/acre preplant + 30 lb/ac sprinkler

Both yield and uniformity were excellent this year. The yield average was 132 bushels per acre with a yield range from 113 to 145 bu/acre. Vegetative growth was excellent; producing tall, productive sized plants. There was no lodging this year; which helps uniformity. High yields combined with the nitrogen rate resulted in very low protein this year.

Centennial soft white spring wheat was included for comparison; it produced 145 bu/acre. Two Idaho experimental lines plus ID 377s produced the next highest yields. ID 377s is produced in Idaho specifically to export for Asian noodles. Jerome is a newly named variety from Idaho. It produced average yield, average bushel weight, average maturity, average height and average protein.
Oslo produces an excellent and consistent yield (137 bu/acre); average bushel weight; medium heading date, moisture and height.

Table 2a. Four Year averages (2000-2003), spring wheat variety performance trial at Center[1].

Variety	Wheat Type[2]	Grain Yield	Bushel Weight	Heading Date[3]	Plant Height	Grain Protein
		bu/ac	lbs/bu	(June)	inches	%
Centennial	SWS	134.5	59.0	27.7	38.8	12.6
Oslo	HRS	128.7	59.4	23.0	38.3	13.8
ID377s	HWS	119.8	58.3	26.0	40.3	13.5
Yecora Rojo	HRS	117.6	60.2	20.6	29.0	14.3
WB881	Durum	117.6	59.7	18.9	36.5	13.8
Average		**121.8**	**59.4**	**24.4**	**37.2**	**13.8**

[1]San Luis Valley Research Center, Center, CO. Grain yield based on 60 lbs/bushel and 12% moisture.
[2]Wheat Types: SWS is soft white spring; HWS is hard white spring; HRS is hard red spring.
[3]Days after June 1.

Comments:

Centennial SWS is included for comparison. Oslo has produced almost as high yield as Centennial. Oslo is several days earlier maturing which is beneficial. It is somewhat shorter with less lodging tendency (not shown). Oslo usually has only average or less protein content.
ID377s is a hard white noodle wheat. It produces good yield; but is later maturing, very tall and lodges badly (not shown). Yecora Rojo is a very early, very short hard red variety. It resists

lodging and produces a good grain with high protein. The yield, however, can be either great or very poor. WB881 is a high quality, low yielding durum.

Table 3. Irrigated spring malting barley variety performance trial at Center[1] in 2003.

Variety	Source	Grain Yield[2]	Bushel Weight	Heading Date	Grain Moisture	Plant Height	Grain Protein	Grain Screening[2]
		bu/ac	lbs/bu	(June)	%	inches	%	%
Creel	ARS-Idaho	185.4	48.8	19.5	10.7	41.4	9.5	12.2
Ab 12362	ARS-Idaho	179.0	49.7	21.5	12.3	42.6	9.7	4.7
Ab 11993	ARS-Idaho	176.2	52.5	25.0	10.7	39.0	10.5	2.5
Ab 13449	ARS-Idaho	170.0	49.1	16.0	11.6	39.9	9.8	6.6
C 46	Coors Brewing	170.0	50.7	31.0	18.4	30.3	10.3	2.2
Ab 8333	ARS-Idaho	169.9	47.8	13.8	10.8	37.2	9.9	6.4
Mt 960228	Montana	169.6	51.7	24.5	10.6	39.0	10.5	2.6
Baronesse	ARS-Idaho	169.3	52.2	25.0	11.0	35.1	9.6	2.0
C 69	Coors Brewing	167.8	49.7	30.3	13.7	27.6	9.9	3.4
Moravian 14	Coors Brewing	163.8	52.7	19.5	10.9	28.5	10.5	2.9
Moravian 37	Coors Brewing	163.4	52.3	28.0	12.7	27.9	10.0	1.4
C 60	Coors Brewing	161.4	51.4	30.5	15.4	28.2	9.7	2.5
Garnet	ARS-Idaho	148.2	52.5	28.0	12.6	38.4	10.6	1.0
Ab 2323	ARS-Idaho	148.1	52.3	24.3	11.4	38.1	10.9	2.3
98ID 242	ARS-Idaho	147.5	51.7	27.3	11.0	37.2	10.2	1.8
98ID 251	ARS-Idaho	146.8	52.3	27.5	11.1	34.5	10.3	1.8
Mt 970116	Montana	146.0	52.7	22.3	11.0	42.3	11.0	2.4
Average		**163.7**	**51.1**	**24.3**	**12.1**	**35.7**	**10.2**	**3.4**
$LSD_{(0.10)}$		7.9	1.9	1.3	0.8	1.9	0.5	1.9
CV%		4.1	1.1	4.4	5.9	4.4	4.3	45.6

[1]Trial conducted at the San Luis Valley Research Center, 0249 E Road 9 North, Center, CO.
[2]Yield based on 48 lbs/bu and 12% moisture.
[3]Grain screening: percent that falls through 6/64 inch screen.

Site Information:

Soil Type: Norte gravelly sandy loam
Previous Crop: potatoes
Fertilizer: Nitrogen; 75 #/ac dry preplant + 30 #/ac fertigation
Planted: April 14
Irrigation: center pivot irrigation = ET.
Herbicide: Bronate at 1 pt/acre
Harvest: August 11

Plant lodging was zero for all varieties this year

Comments:
Yields were very good and quite consistent giving a low coefficient of variation (4.1%) and a low LSD. The trial provides an excellent variety comparison. Even though yields were excellent; there was no lodging this year.

There were five Idaho lines or varieties plus C 46 and Montan Mt960228 that made the top yields this year. Coors C 46 has been dropped in favor of C 69. Coors plans to provide C 69 to their certified seed growers this year and to most malt barley growers next year. C 69 should prove to be deeper rooted, produce larger kernels, and produce higher yields than C 14.

Table 3a. Three (3) Year Averages (2001-2003), malting barley variety performance trial at Center[1].

Variety	Source	Grain Yield [2]	Bushel Weight	Heading Date	Plant Height	Grain Protein	Grain Screening[3]
		bu/ac	lbs/bu	(June)	inches	%	%
Creel	ARS-Idaho	175.7	49.6	17.1	38.8	9.1	8.0
C 46	Coors	163.7	51.0	28.8	30.7	9.9	2.4
Moravian 14	Coors	154.4	51.9	17.8	29.2	10.6	4.0
Ab 8333	ARS-Idaho	153.1	49.4	12.4	35.6	9.9	5.8
Ab 13449	ARS-Idaho	148.3	49.8	15.3	38.6	10.0	4.2
Garnet	ARS-Idaho	136.7	51.9	25.5	37.7	9.9	2.2
Average		**148.5**	**51.0**	**26.9**	**34.6**	**10.2**	**4.3**

[1]Trial conducted at the San Luis Valley Research Center, 0249 E Road 9 North, Center, CO.
[2]Yield based on 48 lbs/bu and 12% moisture.
[3]Grain screening: percent that falls through 6/64 inch screen.

Comments:
Creel has produced excellent grain yields; averaging 176 bushels per acre over 5 years trials. It is very early maturing but also is very tall and has high screening. C 46 has an averaged 164 bu/ac and has other good characteristics; however, it has been dropped by Coors. Moravian 14 has performed very well averaging 154 bu/ac; however, C69 will probably replace it soon.

Ab8333 and Ab13449 have performed very well; however, screening are rather high for malting barley. Garnet has a very respectable yield. good bushel weight, low protein and very low screening.

Table 4. Spring oat variety performance trial in Center[1], 2003.

Variety	Heading Date[2]	Plant Height	Plant Lodging
	(June)	inches	%

Monida	42.3	53.1	83.8
Powell	41.3	49.5	87.4
Maverick	39.0	49.8	33.8
Monico	38.8	53.4	42.8
Ab10854	41.0	52.2	60.6
Ab 8597	39.8	54.0	74.1
Absp 19-9	39.5	52.8	63.6
Lamont (HL)	44.3	57.0	72.5
Provena	41.5	55.2	47.5
Average	**39.4**	**48.9**	**53.3**

[1]San Luis Valley Research Center, Center, CO. Yield based on 12% moisture and 60 lbs per bushel.
[2]Days after June 1.

Site Information:

Date Planted: April 14
Date Harvested: August 22
Irrigation: center pivot = ET
Seed Rate: 120 lbs/acre in 8-inch row spacing
Herbicide: Bronate @ 1 pt/ac sprinkler
Nitrogen: 75 lbs/acre dry preplant + 30 lb/ac liquid

Field Notes:

This trial was located in a malting barley field situated to allow late irrigations needed for wheat and oats. Two irrigations were applied after barley was mature. Vegetative growth was excellent and plants grew tall. Growth was excessive and resulted in severe lodging. Rainfall after lodging meant severe losses during machine combining. The trial was not combine harvested.

Table 4a. Several year averages (1998-2003), oat variety performance trial in Center.

Variety	Grain Yield 5 yr	Bushel Weight 5 yr	Heading Date[1] 6 yr	Plant Height 6 yr	Plant[2] Lodging 3 yr	Forage Yield[3] 3 yr
	bu/ac	lbs/bu	(June)	inches	%	tons/acre
Monico	196.0	40.9	30.3	44.9	43.3	4.0
Maverick	195.2	40.8	32.0	40.2	17.6	4.1
Powell	194.6	38.9	32.8	39.7	73.1	4.0
Monida	187.8	39.7	33.9	44.9	82.9	4.2
Average	**177.2**	**40.2**	**30.2**	**41.0**	**45.8**	**4.0**

[1]Days after June 1.
[2]Plant lodging occurred only one year, 2002.
[3]Forage yield averaged for 3 years, 1999-2001.

Comments:

Monico was tested as experimental Absp 9-2; Maverick was tested as Ab 1322. Results show yield advantages for all 3 new Idaho varieties; Monico, Maverick, and Powell. Powell is moderate height but has lodged badly in these trials. Monico and Maverick had better bushel weight than the others. Maverick had good yield, good bushel weight, short height and is much lower lodging in these trials and in Idaho trials. Monico had good yield, good bushel weight, early heading but is taller and lodged moderately. All four varieties have produced good forage yield even though Maverick and Powell are shorter height.

Table 4b. Five (5) Year averages (1998-2002), oat variety performance trial in Center.

Variety	Grain Yield	Bushel Weight	Heading Date[1]	Plant Height	Plant[2] Lodging	Forage Yield[3]
	bu/ac	lbs/bu	(June)	inches	%	tons/acre
Monico	196.0	40.9	28.6	44.9	43.8	4.0
Maverick	195.2	40.8	30.6	40.2	1.3	4.1
Powell	194.6	38.9	31.1	39.7	58.8	4.0
Ab 406	191.2	39.4	28.7	38.3	58.1	3.7
Monida	187.8	39.7	32.3	44.9	81.9	4.2
Rio Grande	178.4	39.8	26.3	39.1	52.5	3.7
Ajay	176.6	39.3	29.6	34.3	0.0	3.8
Average	**177.2**	**40.2**	**30.2**	**41.0**	**38.2**	**4.0**

[1]Days after June 1.
[2]Plant lodging occurred only one year, 2002.
[3]Forage yield averaged for 3 years, 1999-2001.

Comments:
This table shows results with additional varieties not shown in Table 4a. Ab 406 yielded very well in these trials and is early heading; however, it had high lodging. Rio Grande is the earliest variety tested; however, other newer varieties yield more with less lodging. Ajay is probably the shortest variety ever tested in this program; it has never showed any lodging.

Hard Spring Wheat variety performance trial, Center[1], Colorado, 2003

By Merlin A. Dillon, Area Extension Agronomist. Yield based on 60 lbs/bu and 12% moisture.

Variety	Grain Yield	Bushel Weight	Heading Date[2]	Grain Moisture	Plant Height	Grain Protein
	bu/ac	lbs/bu	(June)	%	in.	%
Centennial	144.9	62.8	30.8	14.0	38.1	11.1
IDO 593	142.8	62.2	28.5	14.7	37.5	10.8
ID 377S	142.0	61.4	32.3	17.7	42.6	11.1

IDO 592	139.6	62.4	30.8	13.1	40.8	10.5
Oslo	136.7	62.2	28.0	13.3	39.9	11.7
Lolo	136.3	63.1	33.5	16.8	40.8	10.8
Jerome	132.1	62.5	29.5	15.0	38.7	11.5
Kronos	131.1	63.3	24.0	13.5	35.1	10.4
Norpro	127.5	62.0	35.0	15.7	38.4	11.7
WB881	123.6	62.9	28.8	13.5	34.8	11.7
Yecora Rojo	118.6	61.1	25.5	13.5	29.4	11.6
Knudsen	112.7	61.8	34.0	14.6	42.3	12.0
Average	**132.3**	**62.3**	**30.0**	**14.6**	**38.2**	**11.2**
$LSD_{(0.10)}$	5.62	0.64	1.15	1.22	1.04	0.71
CV%	3.6	0.85	3.19	5.53	2.27	5.30

[1]Trial conducted at the San Luis Valley Research Center; seeded 4/14 and harvested 9/2.
[2]Days after June 1.

Site Information:
Irrigation: center pivot
Seed Rate: 120 lbs/acre in 8-inch row spacing
Herbicide: Bronate @ 1 pt/ac
Nitrogen: 75 lbs/acre preplant + 30 lb/ac sprinkler

Field Notes:
Both yield and uniformity were excellent this year. The yield average was 132 bushels per acre with a yield range from 113 to 145 bu/acre. Vegetative growth was excellent; producing tall, productive sized plants. There was no lodging this year; which helps uniformity. High yields resulted in fairly low protein this year.

Centennial soft white spring wheat was included for comparison; it produced 145 bu/acre.

Two Idaho experimental lines plus ID 377s produced the highest yields. ID 377s is produced in Idaho specifically to export for Asian noodles. Jerome is a newly named variety from Idaho. It produced average yield, average bushel weight, average maturity, average height and average protein.

Oslo still produces a consistent excellent yield (137 bu/acre); average bushel weight; medium heading date, moisture and height. Oslo's protein percentage was better than usual.

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Soft White Spring wheat variety performance trial, Center, Colorado, 2003

By Merlin A. Dillon, Area Extension Agronomist. Yield based on 60 lbs/bu and 12% moisture.

Variety	Grain Yield	Bushel Weight	Heading Date[2]	Grain Moisture	Plant Height
	bu/ac	lbs/bu	(June)	%	in.
Centennial	144.9	59.7	31.0	13.1	39.3
IDO 563	137.1	61.5	26.5	13.2	39.6
Alturas	136.7	58.4	33.5	15.1	41.1
Whitebird	130.0	57.1	35.5	14.9	41.7
Blanca	125.7	55.3	35.5	14.4	44.1
Average	**134.9**	**58.4**	**32.4**	**14.1**	**41.1**
$LSD_{(0.10)}$	3.9	2.4	0.8	2.8	0.7
CV%	2.3	3.2	2.0	15.5	1.4

[1]Trial conducted at the San Luis Valley Research Center; seeded 4/14 and harvested 8/22.
[2]Days after June 1.
No lodging.

Site Information:
Irrigation: center pivot = ET
Seed Rate: 120 lbs/acre in 8-inch row spacing
Herbicide: Bronate @ 1 pt/ac
Nitrogen: 75 lbs/acre dry preplant + 30 lb/ac liquid sprinkler

Field Notes:
This was a uniform trial, a very good yielding trial. The coefficient of variation (CV) was extremely low; the LSD also was very good. Plants grew vigorously and grew tall; however, there was no lodging this year.

Centennial out-yielded Blanca more than normal this year. Centennial also had better bushel weight, earlier heading, lower moisture, and shorter height compared to Blanca.

IDO563 did not produce quite as high as Centennial this year. Two years ago, it out-yielded Centennial. IDO563 produced a better bushel weight and earlier heading date, both characteristics that would be beneficial to SLV growers.

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2003 Irrigated Spring Barley Performance Trial at Yellow Jacket, CO[1]

		Grain	Test	Plant	Heading
Entry	**Type**	**Yield[2]**	**Weight**	**Height**	**Date[3]**
		bu/ac	lb/bu	in	days
Baronesse	2-row	104.6	50.8	24	179
Ab11993	2-row	100.6	50.3	23	184
Creel	6-row	100.4	48.5	27	178
Ab8333	6-row	96.4	48.4	24	172
Ab13449	6-row	96.2	49.2	26	178
ID242	2-row	93.3	50.6	27	183
Garnet	2-row	91.5	50.5	28	184
Ab12362	6-row	90.5	49.3	27	179
MT960228		89.6	50.5	26	184
MT970116	2-row	86.3	51.4	30	184
ID251	2-row	86.1	50.3	28	186
Ab2323	2-row	85.6	51.1	29	186
Average		**93.4**	**50.1**		
CV%		5.4			
$LSD_{(0.05)}$		8.6			

[1]Trial conducted at the Southwestern Colorado Research Center; seeded 5/1/03 and harvested 9/22/03.
[2]Bushel yield based on 48 lb/bu and 12% moisture.
[3]Number of days after January 1.

Site Information:

Soil Type:	Wetherill silty clay loam
Previous crop:	Dry beans
Seeding rate:	100 lb/ac (8-inch row spacing)
Fertilizer:	75 lb N/ac broadcast pre-plant (April 18, 2003)
Herbicide:	Harmony Extra 0.4 oz/ac + 2,4-D Amine 8 oz/ac (June 10, 2003)
Insecticide:	Lorsban 1 pt/ac (June 10, 2003)
Irrigation:	15.5 inches (center pivot)
Precipitation:	January 1, 2003 thru August 31, 2003: 6.5 inches (long-term average 9.7 inches)

Comments:

The growing season was again hot and dry. The barley trial was damaged by a severe storm with 1-inch diameter hail on September 9 before it could be harvested. Estimated yield losses are in the range of 20 – 30% range. The trial was treated with Lorsban for Russian wheat aphid on June 10. None of the entries lodged except MT960228 where one plot lodged 100%.

Baronesse and Ab11993 yielded very well with good test weight notwithstanding the hailstorm. Two Russian wheat aphid entries (ID242 and ID251) were also tested in the trial. None of the entries in the trial developed the late tillers that resulted in green heads at harvest in 2002.

2003 Irrigated Oat Performance Trial, Yellow Jacket, CO[1]

Entry	Grain Yield[2]	Grain Yield[3]	Test Weight	Plant Height	Heading Date[4]
	bu/ac	bu/ac	lb/bu	in	days
Ab10854	165.8	106.8	37.8	35	190
Ab8597	-----	114.7	37.2	35	187
AbSP19-9	174.0	125.0	37.0	33	188
Ajay	151.7	114.2	36.4	28	188
Lamont	126.8	102.1	41.9	36	190
Maverick	-----	109.7	36.4	31	186
Monico	171.0	126.3	38.4	35	181
Monida	157.3	123.1	35.4	36	188
Powell	156.0	109.5	36.2	31	188
Provena	-----	82.9	47.2	34	188
Russell	157.1	115.5	36.0	36	181
Average	**157.5**	**111.8**	**38.2**		

[1]Trial conducted at the Southwestern Colorado Research Center; seeded 5/1/03. Hailstorm occurred on 9/9/03. Yields based on 38 lb/bu and 12% moisture.

[2]Yield based on plots harvested on 9/5/03 before the hailstorm.

[3]Yield based on plots harvested on 9/19/03 after the hail damage.
[4]Number of days after January 1.

Site Information:

Soil Type: Wetherill silty clay loam
Previous crop: Dry beans
Seeding rate: 100 lb/acre (8-inch row spacing)
Fertilizer: 75 lb N/ac broadcast pre-plant
Herbicide: Harmony Extra 0.4 oz/ac + 2,4-d amine 8 oz/ac (June 10, 2003)
Insecticide: None (seed treated with Vitavax for loose smut)
Precipitation: January 1, 2003 thru August 31, 2003: 6.5 inches (long-term average 9.7 inches)
Irrigation: 15.5 inches (center pivot)

Comments:

The results are presented for informational purposes only. The 2003 irrigated oat performance trial was damaged by a storm on Sept. 9 that brought 2.15 inches of rain and was accompanied by 1-inch diameter hail. Approximately 25% of the trial was harvested prior to the storm when mechanical problems with the plot combine forced a delay. The combine was not repaired until after the storm.

It is estimated that the yield loss from the hail ranged from 20 to 35% depending on the entry. Ab8597, Maverick, and Provena did not have any plots harvested before the hailstorm.

Russell had lodging that ranged from 50 to 80% while Monida lodged 50% in one plot and Powell lodged 25% in one plot. None of the other entries lodged. Lamont and Provena are hulless oats which are lower yielding but have higher test weights. Monico and Maverick were released in 2003.

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2003 Irrigated Spring Wheat Performance Trial, Yellow Jacket, CO[1]

Entry	Market Class	Grain Yield[2]	Test Weight	Plant Height	Heading Date[3]
		bu/ac	lb/bu	in	days
Sylvan	Hard Red	76.6	59.3	30	188

Lolo	Hard White	75.2	60.3	29	178
Centennial	Soft White	73.2	59.0	26	176
ID377s	Hard White	72.4	58.9	28	178
CO98S01	Hard Red	69.1	57.8	29	181
Hank	Hard Red	63.3	58.0	25	174
Kronos	Durum	57.6	59.1	20	174
WB881	Durum	55.4	58.3	22	178
Plata	Hard White	50.0	58.4	24	178
CO98S17	Hard Red	45.4	57.3	24	175
CO98S49	Hard Red	40.4	56.8	23	174
Average		**61.7**	**58.5**		
CV%		9.5			
$LSD_{(0.05)}$		8.5			

[1]Trial conducted at the Southwestern Colorado Research Center; seeded 5/1/03 and harvested 9/22/03.
[2]Yields based on 60 lb/bu and 12% moisture.
[3]Number of days after January 1.

Site Information:

Soil Type:	Wetherill silty clay loam
Previous crop:	Dry beans
Seeding rate:	1,200,000 seeds/acre (8-inch row spacing)
Fertilizer:	75 lb N/ac broadcast pre-plant + 30 lb N/ac top-dress
Herbicide:	Harmony Extra 0.4 oz/ac + 2,4-D amine 8 oz/ac (June 10)
Insecticide:	Lorsban 1 pt/ac (June 10)
Precipitation:	January 1, 2003 thru August 31, 2003: 6.5 inches (long-term average 9.7 inches)
Irrigation:	15.5 inches (center pivot)

Comments:

The growing season was again very hot and dry. The spring wheat trial was damaged by a storm on Sept. 9 that brought 2.15 inches of rain and was accompanied by 1-inch diameter hail. Estimated grain yield losses are in the range of 20 to 30%. The trial was treated with Lorsban for control of Russian wheat aphids on June 10. None of the entries lodged.

Sylvan, Lolo, Centennial, and ID377s had acceptable yields and good test weights notwithstanding the hail damage. CO98S01, a Russian wheat aphid resistant line, yielded well but with a lower test weight. The two other Russian wheat aphid resistant lines, CO98S17 and CO98S49, had low yields and low test weights. The Russian wheat aphid resistant lines all exhibit undesirable agronomic characteristics i.e. poor straw strength or seed shattering. The durum wheats, Kronos and WB881, yielded less than the hard red, hard white, and soft white entries.

Sylvan was released in 1994 by Colorado State University and takes a full season to mature in southwestern Colorado. Requests for seed should be directed to the Manager, Southwestern Colorado Research Center, phone 970-562-4255 ext. 13.

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