

2002

Small Grain Research Report

San Luis Valley Research Center

Center, Colorado

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Small Grain Variety Performance Trials San Luis Valley Research Center Center, Colorado, 2002

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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. Irrigation was problematic this year. The irrigation wells began to pump air and pump less water during June. After drought stress occurred in July more water was applied. This led to late tillers which delayed harvest for all the grain trials and an increase in trial variability for some trials.

The 2002 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. Grain yields in the soft white spring (SWS) wheat trial were exceptionally high, averaging 9624 lbs/acre (160.4 bu/acre). Grain yields in the hard red spring (HRS) and durum wheat trial were not nearly so high; being in a part of the field that was more droughty. The HRS & D trial averaged 118 bu/acre (7080 lbs/acre) but had varieties yielding from 103 to 167 bu/acre. The winter wheat trial was winter damaged and then cut for hay. Grain yields in the barley trial were good, averaging 6677 lbs/acre (139.16 bu/acre). The oat variety performance trial was located in the wheat field near the SWS wheat; it produced super good yields, averaging 8447 lbs/acre (222 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 generally ranged from 23,000 to 34,000; the acreage depending on price. 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. Nine rows are planted in 7-inch rows which make a plot 5.3 feet wide. Unless the plots are severely lodged, only the middle 7 rows (4.1 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

Table 1.

Eight entries, 5 named varieties and 3 advanced numbered lines from University of Idaho, Aberdeen, Idaho, were compared in 2002. This trial was located on station in a field of Oslo hard red spring wheat. This field is a gravelly sandy loam soil; the previous crop was potatoes. A total of 180 lbs nitrogen was applied per acre. Plots were seeded at 120 lbs/acre on April 17. Bronate was applied for broadleaf weed control. Irrigation was by center pivot, as needed. Harvest was September 17. The nitrogen fertility and irrigation combined to produce vigorous vegetative growing conditions resulting in some lodging. Yields were the best ever for this trial, averaging 160 bu per acre. Yield differences were small but statistically significant. Yields ranged only from 157 to 166 bu/acre. Centennial was the high yielding variety at 166 bu/acre. Alturas and Challis were in the same statistical group. However, Challis lodged more than Centennial. IDO 582 resisted lodging and IDO 581 was possibly as good as Centennial.

Hard Red Spring and Durum Wheat Performance Trial

Table 2.

This trial was located on the same field as the SWS trial; however, the area was shorter height and more drought stressed. Nitrogen fertility, irrigations, and herbicides were the same as for the SWS wheat trial. There were 8 durum, 7 hard red springs(HRS), 9 hard white springs (HWS), and one check variety, Blanca SWS, for comparison. This is a big increase in HWS varieties for trial. The seeding rate was 120 lbs/acre for all except durum; it was planted at 140 lbs/acre for durum. Only the middle 7 rows (4.1 feet) were harvested; harvested September 16.

This trial produced yields from 87 to 167 bushel per acre and averaged 118 bu/acre. The trouble is that the variability was too high; some areas being more drought stressed than others. This produced a high CV% at 20.3. This is too high. Therefore, results from this trial this year are not dependable. All you can deduct from this trial is that varieties that did well are good varieties. However, varieties that did poorly likely were in a poor location in the trial. Variety comparisons of height and heading date should be more comparable than yield.

Centennial (SWS) yielded the most this year; producing 167 bu/acre. Good yielding varieties of HWS wheat included Plata, Lolo, and Id 377S. Good varieties of HRS wheats included only Yu 995-241. None of the durums yielded really great this year.

Durum Wheat Performance Trial

Table 3.

_____This table is included to show the results of durum quality. The HVAC (hard vitreous amber color) ranged from 36 to 95%. Durums should be 90% or higher.

Winter Wheat Performance Trial

This trial was grown in a field east of Monte Vista. It suffered winter damage and loss of irrigation water pressure. It was abandoned for grain and harvested for hay in early June.

Barley Variety Performance Trial

Table 4.

The trial was located in a 30 acre field of Moravian 14 malt barley at the SLV Research Center. The trial included a total of 25 entries, including 16 experimental lines from Coors, ARS-Aberdeen, Western Plant Breeders and Washington State University. Drought stress caused late tillers in some varieties and increased the variability of the trial. Vegetative growth was very adequate producing good plant height; however, lodging was not a problem this year.

Yields ranged from 98 to 177 bu/acre, averaging 139.1 bu/acre. Again, variability was a problem. C 57 from Coors produced the highest yield at 176.6 bu/acre. This was followed closely by C 46, Ab 688 (named Creel) and Moravian 14. These varieties are definitely excellent yield producers and should be counted on to perform very well in this region. Creel is very early maturing.

Malt Barley Four-Year Average

Table 5.

This table shows a four-year average results for 5 varieties. Colter has produced the highest yield (150 bu/acre) followed by Alexis (136 bu/acre) and then Garnet, C37, and Moravian 14. Colter is a 6-row barley, hence, the lower bushel weight. Colter and Moravian 14 are the earlier maturing varieties and Alexis, C37, and Moravian 14 are shorter varieties.

Russian Wheat Aphid Malting Barley Variety Performance Trial

Table 6.

These experimental lines were supplied by Dr. Phil Bregitzer, USDA-ARS in Aberdeen, Idaho. Six experimental Russian Wheat Aphid Resistant lines were compared to Baronesse and Steptoe. Variability was excessive in this trial; however, 981D-242 produced an excellent yield in this trial. It will be named and released as a new variety. Some other lines are taller and yielded less; therefore, they are not so promising for this region. This trial reaffirms the productiveness of the Idaho 2-row variety, Baronesse..

Malt Barley Mold Control Trial

Table 7.

This trial is a repeat of trials conducted in 2000 and 2001. Drought stress added variability and caused late tillers which delayed harvest. The late tillers filled well and, surprisingly, this trial produced a good yield. The weather this year was dry which resulted in better color than last year even though harvest was delayed. Still, the variability masked any treatment effects on grain quality. The bushel weight was very good (52.7 lbs/bu), even for two-row barley. Grain color was acceptable; however, it would have been higher if late tillers had not delayed harvest. The protein was low, not a problem. Screenings were very high; this was probably related to the late tillering.

Oat Variety Performance Trial

Table 8.

This trial was located in the wheat field at the SLV Research Center. It was fertilized less than the wheat but the fertility still created excessive lodging in certain varieties. After several years of trials with little lodging, it was important to see differential lodging. It showed Maverick as resistant to lodging. Previous to this year, Maverick was identified with an experimental number. It lodged only 1% compared to 82% for the most commonly used variety, Monida. Maverick is still fairly tall and produces excellent hay yields (see table 9).

Maverick and Ab 8597 produced excellent yields as well. Maverick produces excellent grain yields, excellent bushel weights, is only slightly earlier maturing than Monida; but is much stronger in resisting lodging. Its height is less than Monida; however, hay yields were measured and Maverick produced almost equal hay yields to Monida. Maverick is now named and will be released ; however, foundation seed will not be available until after the 2003 season.

Two hullless varieties were again included. Lamont again outyielded Provena for grain yield. However, it is taller and probably has less lodging resistance.

Monico produced 231 bu/acre. It too has been named and released as a variety just this year. Monico produces a good yield, is tall and may resist lodging better than Monida.

Five-Year Oat Variety Performance Trial

Table 9.

A 5-year summary for the oat performance trials is shown in Table 9. Monico and Maverick have produced the highest yields, a five-year average of 196.0 and 195.2 bu/acre, respectively. These varieties also have the best bushel weights of those listed. Both varieties are earlier maturity than Monida. Monico is the same height as Monida; however, Maverick is shorter. Maverick lodges much less than Monida and Monico also may lodge less than Monida. Forage yields, tested 3 years, are nearly the same for Monico, Maverick and Monida.

Aknowledgements

Appreciation is expressed to Tom Sanderson (Research Center Farm Manager), 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 performance trial in Center ¹, 2002.

Variety	Grain Yield ^{2/}	Bushel Weight	Heading Date ^{3/}	Grain Moisture	Plant Height	Plant Lodging	Grain Protein	Grain Hardness
	bu/ac	lbs/bu	(June)	%	in.	%	%	rating ^{4/}
Centennial	166.1 a	61.3	29.5	11.0	40.5	1.3	12.6	-1.3
Alturas	162.7 ab	60.1	31.0	11.3	43.5	13.8	11.7	-0.8
Challis	161.0 abc	59.0	31.0	11.0	43.5	40.0	11.7	-2.5
IDO 581	160.5 bc	60.2	32.5	12.0	42.9	15.0	11.6	8.8
IDO 569	160.3 bc	60.1	32.0	12.0	42.6	30.0	12.0	5.3
Blanca	159.3 bc	60.7	30.0	12.0	44.1	3.8	12.3	-0.5
Whitebird	158.3 bc	61.7	32.8	12.1	44.7	10.0	11.7	3.5
IDO 582	156.9 c	62.0	30.8	11.9	39.0	0.0	12.2	2.3
Average	160.4	60.6	31.2	11.7	42.6	14.2	12.0	1.8
LSD, .20	5.3	0.56	0.54	0.25	0.88	13.3	0.4	5.6
CV, %	2.2							

^{1/} Trial conducted at SLV Research Center; seeded 4/17 and harvested 9/17.

^{2/} Yield based on 12% moisture and 60 lbs per bushel.

^{3/} Number of days after June 1.

^{4/} Grain hardness rating; <40 indicates soft wheat and >40 indicates hard wheat.

Irrigation: center pivot = ET

Seed Rate: 120 lbs/acre in 7-inch row spacing

Herbicide: Bronate @ 1.2 pt/ac

Nitrogen: 75 lbs/acre dry preplant +75 lb/ac dry postplant + 30 lbs/acre fertigation

Field Notes.: The yields were exceptional (160 bu/acre) and there was only moderate lodging on most varieties. The test had good precision (CV = 2.2%); however, yield differences were relatively small. Leaf diseases were minimal which produced good bushel weights. Statistical differences were noted in lodging percentages; Centennial, Blanca and ID582 showed the most lodging resistance. Grain protein differences were also significant; low protein is better for soft white wheats. Centennial, Blanca and ID 582 showed lodging resistance this year.

Table 2. Hard red spring and durum wheat performance trial at Center ^{1/} in 2002.

Variety	Grain Type	Source	Grain Yield ^{2/}	Bushel Weight	Heading Date**	Plant Height	Grain Moisture	Grain Protein	Grain Hardness
			bu/ac	lbs/bu%	(June)	in.	%	%	Rating ^{4/}
Centennial	SWS	Check	167.5	61.2	28.8	37.2	11.2	12.9	4
Plata	HWS	Gen. Mills	164.2	62.7	31.0	34.2	11.3	13.3	45
Lolo	HWS	Idaho	156.7	62.6	27.8	40.2	11.8	13.2	66
Id 377S	HWS	Idaho	154.6	62.0	26.3	39.3	11.8	13.7	58
BR 7030	HWS	Gen. Mills	110.9	61.7	26.8	36.0	11.6	14.7	57
CO1955W	HWS	Gen. Mills	107.5	61.6	23.3	41.7	12.5	15.6	49
Yu 995-231W	HWS	WPB	101.8	59.4	24.3	26.7	14.5	16.3	54
Blanca Grande	HWS	Gen. Mills	98.5	59.7	23.3	33.3	13.7	16.4	40
Pristine	HWS	Gen. Mills	88.4	55.3	21.5	34.5	15.4	17.1	47
CO 1963	HWS	Gen. Mills	87.3	57.7	20.2	39.9	13.3	16.6	47
Yu 995-241	HRS	WPB	145.6	60.2	25.3	33.0	11.3	15.4	45
Nora	HRS	AgriPro	126.6	62.0	30.0	35.4	11.1	16.8	62
Oslo	HRS	Agri Pro	119.1	60.0	24.3	38.1	12.1	15.3	47
Hank	HRS	WPB	117.8	59.3	24.3	36.0	12.5	16.1	45
IDO 566	HRS	Idaho	117.2	61.1	24.0	36.9	11.8	16.6	44
Yecora Rojo	HRS	CIMMYT	100.1	60.1	22.8	28.5	11.8	16.6	47
IDO 577	HRS	Idaho	96.5	57.6	23.5	35.7	13.1	16.8	37
Yu 895-99	Durum	WPB	125.9	61.4	26.5	37.5	11.1	14.0	86
Sky	Durum	APB	118.5	59.9	24.5	32.4	11.5	14.5	90
Yu 894-75	Durum	WPB	116.9	57.2	23.0	39.0	14.8	15.5	80
WB 881	Durum	WPB	112.1	60.4	27.8	38.4	10.9	15.2	87
Matt	Durum	APB	109.6	57.7	23.3	35.4	15.0	15.8	95
Orita	Durum	APB	107.3	59.6	21.3	31.5	11.7	15.9	83
Kronos	Durum	APB	106.9	59.6	23.0	35.4	13.6	15.7	87
Ocotillo	Durum	APB	103.1	60.6	24.8	39.3	12.0	16.1	84
Average			118.0	60.0	24.9	35.9	12.4	15.4	59.2
LSD, .20			9.8	1.2	0.82	1.4	0.97	0.6	8.6
CV, %			20.3						

^{1/} Trial conducted at SLV Research Center; seeded 4/17 and harvested 9/16.

^{2/} Yield based on 12% moisture and 60 lbs/bushel.

^{3/} Number of days after June 1.

^{4/} Grain hardness reading of <40 indicates soft wheat and >40 indicates hard wheat.

Seed Rate: 120 # /ac; durum at 140 # /ac

Nitrogen: 75 #/ac dry preplant + 75 #/ac dry postplant + 30 #/ac fertigation.

Field Note: This field got too dry near heading; then more water was applied resulting in late tillers. This drought stress may have affected some varieties differently depending on their stage of maturity. The yield range was very great; from 88 to 168 bu/acre. The variability was high resulting in a CV of 20.3%. The trial averaged 118 bu. per acre.

Trial Note: Many hard white spring wheats were entered this year. Some show much promise exhibiting good yield, bushel weight, etc.

Table 3. Durum wheat variety performance trial, San Luis Valley Research Center, Center, Colorado, 2002. By Merlin A. Dillon, Area Extension Agronomist. Yield based on 60 lbs/bu and 12% moisture.

Variety	Source	Grain Yield	Bushel Weight	Heading Date ^{1/}	Plant Height	Grain Moisture	Ergot	HVAC ^{4/}	Grain Protein	Grain Hardness
		bu/ac	lbs/bu	(June)	inches	%	Rating	%	%	Rating ^{3/}
Yu 895-99	WPB	125.9	61.4	26.5	37.5	11.1	2.3	36	14.0	86
Sky	APB	118.5	59.9	24.5	32.4	11.5	3.3	79	14.5	90
Yu 894-75	WPB	116.9	57.2	23.0	39.0	14.8	2.0	72	15.5	80
WB 881	WPB	112.1	60.4	27.8	38.4	10.9	2.5	88	15.2	87
Matt	APB	109.6	57.7	23.3	35.4	15.0	3.8	82	15.8	95
Orita	APB	107.3	59.6	21.3	31.5	11.7	3.0	90	15.9	83
Kronos	APB	106.9	59.6	23.0	35.4	13.6	6.5	95	15.7	87
Ocotillo	APB	103.1	60.6	24.8	39.3	12.0	4.8	83	16.1	84
Durum Average		112.5	59.6	24.3	34.9	12.6	3.5	78.1	15.3	86.5
Trial LSD, .20		9.8	1.2	0.82	1.4	0.97	--	--	8.6	8.6
Trial CV, %		20.3								

^{1/} Days after June 1.

^{2/} Ergot visual rating: (0=none; 7= very high)

^{3/} Grain hardness reading of <40 indicates soft wheat and >40 indicates hard wheat.

^{4/} HVAC = hard vitreous amber color, %

Site Information:

Planting Date: 4/17

Harvest Date: 9/16

Seed Rate: 140 # /ac

Nitrogen: 75 #/ac dry preplant + 75 #/ac dry postplant + 30 #/ac fertigation.

Field Note: These durums were part of the Spring Wheat Variety Performance Trial. This data is included because extra grain quality ratings are included; i.e., ergot ratings and HVAC %. This field was drought stressed near heading; then more water was applied resulting in late tillers. This drought stress may have affected some varieties differently depending on their stage of maturity. The yield range was from 103 to 126 bu/acre. Dry weather made ergot a non-issue in grower's fields this year; however, ergot was high in certain varieties in this trial.

Table 4. Spring malting barley variety performance trial at Center¹, 2002.

Variety	Grain Yield ²	Bushel Weight	Heading Date	Plant Height	Grain Moisture	Grain Protein	Grain Screenings ³
	bu/ac	lbs/bu	(June)	inches	%	%	%
C 57	176.6	49.3	27.0	34.2	18.3	10.1	1.9
C 46	174.2	50.5	27.3	34.2	18.6	10.2	2.9
Ab 688 (Creel)	163.8	49.8	15.3	39.3	10.6	9.1	2.4
Moravian 14	163.8	53.9	18.0	33.3	12.5	11.4	4.8
Ab 11993	150.0	51.2	19.0	35.4	13.9	10.6	6.8
Ab 8333	148.3	50.4	11.8	38.4	9.9	10.3	1.9
WA 8682-96	147.6	52.7	19.0	36.9	13.8	11.1	6.4
Farmington	147.4	51.8	25.5	34.2	15.0	10.9	4.0
Criton	143.7	48.8	17.8	37.2	16.8	10.9	9.9
Ab 12362	139.5	51.2	18.0	42.0	10.0	10.1	1.7
Ab 11865	139.0	53.3	23.0	32.4	13.4	10.4	6.7
Ab 12364	137.0	49.6	15.3	36.6	9.8	10.3	1.4
Colter	136.9	49.1	16.0	39.0	12.2	9.6	6.7
C 53	136.5	49.5	25.5	33.9	16.5	11.6	3.0
Ab 13904	135.4	50.1	13.0	38.7	10.6	10.1	4.3
Ab 13449	135.0	50.7	15.5	40.8	10.7	9.6	3.1
Jersey	134.9	51.7	24.8	34.8	15.0	10.8	4.4
YU599-005	134.0	48.5	24.0	30.0	12.3	12.1	2.4
Garnet	133.3	50.8	22.3	40.5	14.7	11.4	4.6
Garnet	130.3	51.7	23.0	40.5	14.1	11.4	3.7
Ab 2323	128.5	52.1	19.5	39.3	12.8	12.3	5.9
MT 970116	123.8	53.2	17.8	37.8	12.8	11.7	5.2
YU599-012	117.6	47.9	23.3	29.1	12.1	12.6	6.6
YU599-006	113.9	56.6	23.8	34.8	12.0	13.1	22.6
Azhul	97.8	51.2	12.8	30.0	12.6	12.4	9.3
Average	139.1	51.0	34.7	36.1	13.2	11.0	5.3
LSD, .20	16.9	1.4	2.1	1.7	1.9	0.6	1.2
CV, %	17	4.7	3.1	10.8	24.0	4.1	51

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 screenings: percent that falls through 6/64 inch screen.

Plant lodging (not shown) was low (0-5 %); differences were not significant.

Site Information:

Soil Type: Norte gravelly sandy loam

Irrigation: center pivot irrigation = ET.

Previous Crop: potatoes

Herbicide: Bronate at 1.2 pt/acre

Fertilizer: Nitrogen; 75 #/ac dry preplant + 30 #/ac fertigation

Planted; April 8; wetted: April 11

Harvest; August 8

Comments: Yields were highly variable this year. Yields were also very high this year ranging from 98 to 177 bu/acre; the average was 139 bu/acre. Two Coors and several Aberdeen experimentals produced excellent yields. The new Coors lines produced more than Moravian 14. **Note:** Some varieties were dry at harvest (10% moisture); however, others were still high moisture. Several waxy, hullless lines did not thresh complete and probably would have yielded more if harvest had been delayed.

Table 5. Summary: 5-Year Average, Malt Barley Variety Performance Trial ; SLV Research Center, Center, Colorado.

Variety	Grain Yield	Bushel Weight	Heading Date	Plant Height	Grain Protein	Grain Screens	Plant Lodging
	bu/ac	lbs/bu	(June)	inches	%	%	%
Colter	149.8	48.7	18.5	35.9	8.8	6.3	---
Alexis	136.3	50.8	28.2	29.6	9.4	3.8	---
Garnet	132.7	53.0	27.6	33.9	9.4	5.2	---
C 37	132.7	52.0	26.9	26.1	9.6	4.7	---
Moravian 14	127.2	52.3	17.2	26.9	9.2	4.4	---
Test Average	135.2	50.2	23.4	32.2	9.6	4.4	---

Table 6. 2002 Russian Wheat Aphid malting barley variety performance trial at Center¹. Conducted in cooperation with Dr. Phil Bregitzer, USDA-ARS, Aberdeen, Idaho.

Variety	Grain Yield ²	Bushel Weight	Heading Date	Plant Height	Grain Moisture	Plant Lodging
	bu/ac	lbs/bu	(June)	inches	%	%
Baronesse	165.0	52.7	20.5	34.5	14.8	0
981D-242	150.1	53.2	21.3	39.0	13.0	0
Step toe	142.7	48.9	17.3	42.3	12.1	0
971D-1270	140.1	50.6	20.5	45.6	14.9	9.5
981D-196	139.5	51.2	24.5	42.0	19.0	17.5
981D-251	138.7	52.1	21.0	39.6	16.1	0
971D-1269B	138.1	50.4	19.0	45.0	13.4	10.0
96 RWA 1194	136.7	49.3	17.8	40.8	11.8	0
Average	143.9	51.0	20.2	41.0	14.4	4.6
LSD, .20	N S	0.64	0.8	0.72	1.8	
CV, %	15.1	3.1	11.3	8.4	19.4	

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.

Site Information:

Soil Type: Norte gravelly sandy loam **Irrigation:** center pivot irrigation = ET.

Previous Crop: potatoes **Herbicide:** Bronate at 1 pt/acre

Fertilizer: Nitrogen; 75 #/ac dry preplant + 30 #/ac fertigation

Planted; April 8; wetted: April 11 **Harvest;** August 8

Contact: Merlin Dillon, Area Extension Agent, Agronomy, San Luis Valley Research Center

Note: Irrigation was problematic this year. The pumps were putting out less than usual so the crop got very dry (stressed) in late June. Then, two wells were used to supply the center pivot and the crop put on late tillers. This added variability to the trial.

Comments: Yields were highly variable this year; CV% = 15.1. High variability is usual here; however, there was more than usual. Yields were also very high this year ranging from 137 to 165 bu/acre; the average was 143 bu/acre.

Table 7. Malt Barley Mold Control Trial, 2002. SLV Research Center, Center, Colorado. By Merlin A. Dillon, Area Extension Agronomist. Yield based on 48 lbs/bu and 12% moisture. Sponsored by Syngenta and BASF Corp.

Treatment	Fungicide Rate	Grain Yield	Bushel Weight	Color	Grain Protein	Grain Screening
	oz/acre	bu/ac	lbs/bu	(1-100)	%	%
Tilt	4.0	135.2	52.2	53.5	10.7	22.5
Propimax	4.0	122.0	52.7	56.0	10.6	12.8
Headline	6.2	128.2	53.0	56.0	10.6	17.8
Headline	9.3	118.8	53.1	56.0	10.6	14.1
Headline	12.4	131.8	51.5	55.8	10.8	17.4
Headline Late	12.4	131.5	53.1	58.0	11.1	14.5
Quadris	6.1	132.2	52.8	55.0	10.9	14.3
Quadris	9.2	129.4	53.5	57.0	10.6	13.4
Quadris	12.2	135.5	52.2	54.0	10.6	18.9
Quadris Late	12.2	119.3	53.0	58.8	10.4	15.0
Water	---	123.5	52.9	56.5	10.6	16.2
Control	---	131.2	52.4	53.8	10.8	14.6
Test Average		128.1	52.7	55.9	10.7	15.9
CV, %		10.9	1.9	4.5	2.7	41.0
LSD, .05		N S	N S	N S	N S	N S

Field Notes:

The soil is Norte gravelly sandy loam; center pivot irrigated as needed. Plot size was 12 ft x 30 ft; harvest was 5 ft x 25 ft.

Fungicides were applied with a CO₂ powered backpack sprayer on June 18. The late application was applied less than 45 days pre-harvest, on July 24.

The yield is about average for this area. This area was drought stressed about July 1 because of well problems; then, extra irrigation was applied resulting in severe late tillering. The area had certain areas with 50% late tillers, tillers which matured about 2 weeks later than the early tillers. This variability probably masked any treatment effects on grain quality.

July and early August weather was warm and dry; not conducive to mold formation this year. Harvest was delayed to ripen late tillers. After half the plot area was harvested, the remainder was swathed and irrigated heavily to induce mold and then harvested. Still, natural conditions with cool, cloudy weather and showers and heavy dews create more mold than we could create artificially.

Table 8. Oat variety performance trial at Center¹ in 2002.

Variety	Grain Yield ²	Bushel Weight	Heading Date ³	Plant Height	Plant Lodging
	bu/ac	lbs/bu	(June)	inches	%
Ab 8597	250	38.9	34.3	55.5	33.8
Maverick	247	37.9	33.0	48.0	1.3
Ajay	233	38.1	33.3	44.1	0.0
Powell	232	38.0	33.3	50.1	58.8
Monico	231	39.1	30.8	56.4	43.8
Ab 10854	228	39.9	35.5	52.5	42.5
Ab 406	228	36.9	31.3	48.6	58.1
Rio Grande	220	38.9	30.0	51.6	52.5
Monida	218	37.4	32.8	56.7	81.9
Absp 9-9	209	38.5	33.5	56.4	76.3
Lamont (HL)	206	42.8	35.8	57.6	8.8
Provena (HL)	166	44.4	35.8	49.2	1.3
Means	222	39.2	33.3	52.2	38.2
LSD, 0.20	18.4	0.9	0.6	1.9	16.0
C.V., %	12.3				

^{1/} Trial conducted at SLV Research Center, 0249 E Road 9North, Center, CO

^{2/} Yield based on 38 lbs/bu and 12% moisture.

^{3/} Date 50% of the plants headed; days after June 1.

(HL) indicates hullless oat varieties

Site Information

Soil type: Norte gravelly sandy loam

Previous crop: potatoes

Planting Date: April 17

Harvested: September 4

Seed rate: 97 lbs per acre, 7-inch row spacing

Fertilizer: 75 lb per acre preplant + 75 lb/acre + 40 lb/acre (split applications broadcast dry)

Herbicide: bromate at 1 pt/acre.

Comments: This trial was located in a spring wheat field and was fertilized excessively. However, the trial was uniform and did reveal the lodging resistance of the potential varieties as well as the grain yields under high yield conditions. These yields are exceptionally high; however, they should be attainable. 222 bu/ac at 38 lbs per bushel is equivalent of 8400 lbs per acre or barley at 175 bu/acre or wheat at 141 bu/acre.

Monico, a newly released variety from Aberdeen, Idaho tested as Absp 9-2, performed very well with excellent yield (231 bu/acre); excellent bushel weigh (39.1); same maturity as Monida, same height as Monida (56.4 in.) and less lodging. Foundation seed is available from the CSU Southwest Research Center in Yellowjacket, CO.

Maverick (tested as Ab 1322) looks even more promising with excellent yield, bushel weight, shorter height than Monida and much less lodging than Monida or Monico. Foundation seed of Maverick will not be available until after the 2003 season.

5 Year Average

Table 9. Summary: 5-Year Average. Oat variety performance Trial; SLV Research Center, Center, Colorado. (1998-2002).

Variety	Grain Yield	Bushel Weight	Heading Date ^{1/}	Plant Height	Plant Lodging ^{2/}	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
Test 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: Monico was tested as Absp 9-2; Maverick was tested as Ab 1322. Results show yield advantage for 3 new Idaho varieties: Monico, Maverick, and Powell. Monico is earliest heading of these three new varieties, Monico and Maverick have better bushel weight, and Maverick has much lower lodging than the others. All three have good forage yield even though Maverick and Powell are shorter height.