2001 COLORADO SPRING CEREAL VARIETY PERFORMANCE TRIALS

Introduction

Making Better Decisions is a publication intended for use by farmers, seedsmen, consultants, agribusiness, and others. Colorado State University crops researchers try to provide reliable and unbiased performance trial results in a timely manner to Colorado cereal producers. Good information can lead to better variety selection and faster adoption of higher yielding varieties.

The Spring Cereal publication is a collection of all variety performance trials conducted by Colorado State University researchers working on spring wheat, spring barley, and oats. Crops Testing issues the annual report but the trials are conducted in all four corners of the state by different researchers. Scott Haley screens spring wheat varieties at Akron and at Walsh. Merle Dillon hosts high-yield barley, wheat, and oat trials at Center. Mark Stack and Abdel Berrada test barley, wheat, and oat varieties at Yellow Jacket, and Calvin Pearson tests barley, wheat, and oat varieties at Hayden and Fruita. The sum of this collection of work is quite impressive.

CSU's Crops Testing program publishes current trial results on the Crops Testing Internet page: ***www.colostate.edu/Depts/SoilCrop/extension/CropVar/index.html***

Table 1. Dryland spring barley performance trial at Hayden[1] in 2001.

Variety	Yield	Grain Moisture	Test Weight	Plant Height
	bu/ac	%	lb/bu	in
Steptoe	29	9.2	46.2	14
Hector	28	10.7	50.6	15
Targhee	28	10.5	49.4	14
Conlon	26	9.3	48.9	14
Xena	26	9.5	49.5	14
91Ab 3148	26	10.2	48.2	14
C37	26	9.1	49.1	16
85Ab 2323	26	10.5	49.3	14
Camas	25	9.6	50.2	14
91Ab 3203	25	10.2	50.4	15
91Ab 6526	25	10.8	50.1	14
Harrington	25	9.6	49.2	14
CoorsT57	24	8.9	49.7	14
94Ab 12990	24	9.5	49.3	14
Bancroft	24	10.8	49.8	13
Baronesse	24	9.3	48.6	14
95SR7A	24	10.5	48.6	14
92Ab 5180	23	9.7	46.5	15
95Ab 11469	23	9.8	49.0	15
98Ab 11695	23	9.4	49.5	15
Garnet	22	9.6	47.5	14
C22	21	9.6	48.4	15
C47	21	9.3	48.2	13
97Ab 8333	20	9.4	49.3	13
Foster	20	9.0	46.9	13
C40	18	9.1	48.3	15
Average	**24**	**9.7**	**48.9**	**14**
$LSD_{(0.05)}$	4.4			

[1]Trial conducted on the Dutch and Mike Williams farm; seeded 4/30 and harvested 9/5.

Site Information:
Seeding rate: 56 lbs seed/acre
Herbicide: An application of 2,4-D at 0.50 lb/acre was made on June 1, 2001.
Fertilizer: Nitrogen fertilizer at 20 lbs N/acre as 34-0-0 was applied on May 27, 2001.
Irrigation: Precipitation during the 2001 growing season for the months of April, May, June, July, August, September, and October was 0.98, 1.37, 0.69, 1.49, 1.51, 0.90, and 0.99 inches, respectively. Precipitation in the Craig/Hayden area varies considerably from month to month and year to year and is the most limiting factor for dryland grain yields.

Comments: Grain yield in the spring barley variety performance test averaged 23.9 bushels/acre and ten of the twenty-six were considered high yielding compared to other varieties. Grain yield ranged from a high of 29.1 bu/acre for Steptoe to a low of 9.1 bu/acre for Coors C40. Grain moisture averaged 9.7% (Table 2). Grain moisture ranged from a high of 10.8% for Bancroft to a low of 8.9% for Coors T57. Test weight averaged 48.9 lbs/bushel. Test weight ranged from a high of 50.6 lbs/bushel for Hector to a low of 46.2 lbs/bushel for Steptoe. Plant height averaged 14.2 inches. There was not statistically significant differences among the varieties for plant height. There was no lodging in the spring wheat variety performance test in 2001.

Table 2. Irrigated spring malting barley performance trial at Center[1] in 2001.

Variety	Yield[2]	Test Weight	Grain Moisture	Heading Date	Plant Height	Plant Lodging	Grain Protein	Grain Screenings[3]
	bu/ac	lb/bu	%	June	in	%	%	%
Ab 688	178	50.2	13.7	17	36	4	8.6	9.3
Jersey	160	52.2	13.4	27	29	0	9.3	2.5
Ab 12210	159	53.1	13.6	26	30	0	9.9	8.9
Farmington	154	52.2	13.8	27	31	4	9.7	4.0
96 RWA 1192	153	50.3	13.1	15	38	41	9.9	7.4
C53	152	50.3	13.9	26	27	0	10.1	2.0
Legacy	152	50.8	12.2	19	40	0	10.0	3.4
Ab 11865	150	52.4	15.2	27	31	10	9.5	5.8
Colter	149	48.9	13.8	17	35	9	8.5	8.2
Ab 12905	147	49.3	13.4	14	34	3	9.0	4.7
C46	147	51.9	14.2	28	28	3	9.3	2.0
Ab 5180	147	46.5	15.5	19	35	15	8.8	5.9
Merit	144	50.6	15.0	25	37	0	9.5	3.3
Alexis	143	52.1	15.0	26	30	3	9.8	2.7
C57	143	49.3	13.3	27	29	0	9.5	3.2
Comarque	143	52.5	15.0	25	32	0	9.1	2.9
Ab 8333	141	49.9	13.2	12	31	0	9.3	9.1
Ab 13449	140	49.6	14.5	15	35	15	10.7	7.4
C56	140	53.7	12.3	19	23	0	10.0	2.1
Ab 859	138	52.5	15.0	24	33	26	10.1	2.6
Moravian14	136	52.9	12.9	16	26	0	7.8	4.3
Moravian 37	135	53.1	15.9	25	26	0	9.8	2.5
Kendall	133	51.7	13.0	25	37	24	10.7	1.7
Galena	131	51.8	13.5	26	29	0	9.5	2.5
Garnet	130	52.1	13.3	26	34	9	9.5	1.6
Ab 1368	127	49.4	13.6	15	34	19	9.2	4.1
2B96-5057	127	52.1	14.6	26	36	6	9.5	2.3
C40	123	49.2	13.2	17	29	0	10.6	4.7
6B95-2482	116	50.3	13.1	20	36	21	10.9	4.1
Average	**143**	**51.0**	**13.7**	**22**	**32**	**7.2**	**9.5**	**4.3**
$LSD_{(0.10)}$	37.0							

[1]Trial conducted at the San Luis Valley Research Center; planted 4/10 and harvested 8/14 & 8/15.
[2]Yield based on 48 lbs/bu and 12% moisture.
[3]Grain screening: percent smaller than 6/64 inch.

Site Information:
Soil Type: Norte gravelly sandy loam
Previous Crop: potatoes
Herbicide: Bronate at 1 pt/acre
Fertilizer: Nitrogen; 75 preplant + 66 fertigation
Irrigation: center pivot.

Comments: Yields were very good this year; however, there was a shortage of N on a part of the trial which increased the variability of the test. The large LSD = 36 bu/acre limits the usefulness of variety comparisons.

Table 3. Irrigated spring barley performance trial at Yellow Jacket[1] in 2001.

Variety	Yield[2]	Test Weight	Plant Height	Heading Date[3]
	bu/ac	lb/bu	in	date
93Ab 688	151	47.5	26	6/27
98Ab 12905	145	47.4	26	6/29
98Ab 11865	144	51.7	22	7/3
96RWA 1192	141	48.2	25	6/27
Baronesse	137	50.1	21	6/27
Garnet	135	50.4	25	7/2
93Ab 859	131	51.5	26	7/2
97Ab 8333	130	45.6	26	6/27
94Ab 13449	128	47.9	28	6/29
Colter	127	44.8	27	6/26
98Ab 12210	127	49.4	19	7/2
Alexis	126	50.2	21	7/5
92Ab 5180	125	43.9	27	6/29
Comarque	112	48.6	21	7/3
Moravian 14	99	50.1	17	6/24
Average	**131**	48.5	24	
$LSD_{(0.05)}$	11			

[1]Trial conducted at the Southwestern Colorado Research Center; seeded 5/1, harvested 9/6.
[2]Bushel yield based on 48 lb/bu and 12% moisture.
[3]Date 50% of the plants headed.

Site Information:
Soil type: Wetherill silty clay loam
Previous crop: Alfalfa
Seeding rate: 90 lb/acre; 8 in. row spacing
Fertilizer: 75 lb N/ac broadcast preplant
Herbicide: 2,4-D Amine 1 pt/ac
Insecticide: Lorsban SG 1pt/ac on June 15
Precipitation: May thru August 4.4 inches
Irrigation: 14.5 inches (center pivot)

Comments: Precipitation was below normal for May thru August (4.4 in. vs. 5.0 in. long-term average). The excellent barley yields for southwestern Colorado may be attributed to alfalfa in the crop rotation. Lorsban was applied to control Russian wheat aphid.

The best yielding entry 93Ab688 averaged 25% lodging in the four replications. Baronesse's lodging ranged from 10 to 50% while Comarque's lodging ranged from 50 to 75%. Alexis, Garnet, 93Ab859, and 98Ab12210 also lodged to a lesser extent.

The entry 98Ab12905 may mature too late for southwestern Colorado.

Table 4. Irrigated spring oat performance trial at Center[1] in 2001.

Variety	Yield[2]	Test Weight	Heading Date[3]	Plant Height	Forage Yield
	bu/ac	lb/bu	June	in	t/ac
Absp 19-9	182	40.6	30	41	4.5
Absp 9-2	171	41.9	25	42	4.1
Ab 5543	165	41.1	29	40	--
Powell	164	38.9	29	36	4.0
Monida	157	40.9	31	36	4.3
Ab 406	156	40.3	25	34	3.7
Ab 502	155	39.7	22	36	--
Ab 1322	151	40.9	28	37	4.1
Rio Grande	151	39.1	23	33	3.7
Ajay	147	39.1	26	32	3.8
Ab 9074	140	40.5	26	35	--
Ab 12970	133	41.1	24	40	--
Lamont	121	46.1	32	36	--
Provena	93	47.3	30	34	--
Average	**149**	**41.2**	**27**	**38**	**3.6**
$LSD_{(0.05)}$	34.5				

[1]Trial conducted on Jim Myers Farm.
[2]Yield based on 38 lbs/bu and 12% moisture.
[3]Date 50% of the plants headed.

Table 5. Irrigated oat performance summary; SLV Research Center, Center, Colorado. Two-year average, 1999-2000.

Variety	Yield	Test Weight	Heading Date[1]	Plant Height	Forage Yield
	bu/ac	lb/bu	June	in	t/ac
Ab 406	187	39.7	29	36	3.8
Powell	187	38.9	31	36	4.2
Ab 1322	186	41.7	31	38	4.5
Absp 19-9	182	40.4	32	41	4.8
Monida	183	39.5	34	42	4.3
Absp 9-2	174	40.5	29	41	4.2
Rio Grande	167	40.2	27	35	3.8
Ajay	161	39.5	30	31	4.1
Average	**164**	**39.4**	**31**	**38**	**4.2**

[1]Date 50% of the plants headed; days after June 1.
*No lodging.

Table 6. Irrigated spring oat performance trial at Yellow Jacket[1] in 2001.

Variety	Yield[2]	Test Weight	Heading Date[3]
	bu/ac	lb/bu	date
Absp9-2	154	36.7	7/2
95Ab 10854	152	39.8	7/10
90Ab 1322	151	36.2	7/5
Powell	151	36.4	7/6
91Ab 406	148	33.6	7/5
94Ab 5546	146	37.6	7/5
Absp19-9	146	35.4	7/5
94Ab 5818	143	36.3	6/27
91Ab 502	140	33.9	6/25
Ajay	138	36.7	7/6
Monida	137	35.1	7/6
Rio Grande	135	34.9	7/2
Lamont	133	44.0	7/12
Otana	132	37.8	7/12
Russell	124	35.7	7/4
95Ab 12970	118	40.0	7/2
Average	**141**	36.9	
$LSD_{(0.05)}$	16.0		

[1]Trial conducted at the Southwestern Colorado Research Center; seeded 5/7, harvested 9/14.
[2]Bushel yield based on 38 lb/bu and 12% moisture.
[3]Date 50% of the plants headed.

Site Information:
Soil type: Wetherill silty clay loam
Previous crop: Alfalfa
Seeding rate: 100 lb/acre; 8 in. row spacing
Fertilizer: 75 lb N/ac broadcast preplant
Herbicide: 2,4-D Amine 1 pt/ac on June 15
Precipitation: May thru August 4.4 inches
Irrigation: 14.5 inches (center pivot)

Comments: Precipitation was below normal for May thru August (4.4 in. vs. 5.0 in. long-term average). The excellent oat yields may be attributed to alfalfa in the crop rotation. The USDA-ARS may release AbSP9-2 as a named variety this year.

All of the entries had significant lodging at harvest. Plant height was not measured due to the lodging. The lodging was due to the good soil fertility conditions. The relatively low test weights may be attributable to the extensive lodging in the trial.

Lamont and 95Ab12970 are hull-less spring oats.

Table 7. Irrigated soft white spring wheat performance trial at Center[1] in 2001.

Variety	Yield[2]	Test Weight	Heading Date[3]	Plant Height
	bu/ac	lb/bu	June	in
ID563	127	60.9	22	40
Challis	118	59.3	27	40
Jubilee	113	60.1	31	41
ID526	113	58.2	30	41
Whitebird	107	60.1	30	41
Centennial	106	59.7	25	37
Pomerelle	99	56.2	31	39
Treasure	98	55.8	31	39
Average	**109**	**58.7**	**28**	**40**
$LSD_{(0.05)}$	11.9			

[1]Trial conducted on the Mike Jordan farm; seeded 4/15 and harvested 9/1.
[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.

Site Information:
Seed Rate: 120 lbs/acre
Herbicide: 2,4-D
Nitrogen: 180 lbs/acre

Comments: Freeze damage very light; stripe rust very light. The crop matured too early; test weights were light; yields were lower than expected.

Table 8. Irrigated hard red spring and durum wheat performance trial at Center[1] in 2001.

Variety	Yield[2]	Test Weight	Heading Date[3]	Plant Height	Plant Lodging
	bu/ac	lb/bu	June	in	%
GM 0009	117	56.1	24	36	0
GM 40020	117	60.2	19	35	13
GM 40003	117	58.9	19	40	28
Utopia	110	54.2	23	37	44
Yecora Rojo	110	59.5	19	31	8
Oslo	110	57.0	23	38	11
GM 40002	109	57.3	18	40	61
ID560	109	53.3	29	41	3
WB 881	108	56.4	25	37	5
YU995-241	106	55.2	25	35	8
GM 0002	105	59.0	24	39	28
Centennial	103	56.5	27	38	4
GM 40016	103	59.1	20	41	30
Hank	102	53.2	24	39	14
ID566	101	54.9	20	40	23
Pristine	101	58.5	19	41	48
GM 40019	101	55.6	29	35	0
Zeke	99	54.1	25	42	65
GM 40004	94	56.3	26	38	13
Lolo	94	55.9	28	42	63
ID557	89	54.9	25	41	55
ID377S	75	52.4	25	40	69
Average	**103**	**56.3**	**23**	**38**	**26.7**
$LSD_{(0.05)}$	21.2				

[1]Trial conducted on the Mike Jordan farm; seeded 4/15 and harvested 8/31.
[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.

Site Information:
Seed Rate: 120 # /ac; durum at 140 # /ac
Nitrogen: Field at 180 # /ac + 2 Reps at 40 # /ac and 2 Reps at 70 # /ac.

Comments: Freeze damage was very light; stripe rust was light
The field matured too quick; bushel weights were low; yields were lower than expected.

Table 9. Irrigated spring wheat performance trial at Yellow Jacket[1] in 2001.

Variety	Yield[2]	Test Weight	Plant Height	Heading Date[3]	Grain Protein	Grain Hardness[4]
	bu/ac	lb/bu	in	date	%	rating
Sylvan	109	59.8	35	7/5	15.9	50
GM 40019	108	62.3	29	7/6	16.1	19
GM 40016	100	62	29	6/23	13.6	63
GM 40004	99	59.8	29	6/25	15.0	80
ID377S	97	58.7	30	6/25	15.6	60
Centennial	93	58.7	27	6/29	16.7	65
GM 40020	92	62	25	6/25	15.3	69
GM 40003	91	61.7	25	6/23	14.7	63
Spillman	90	55.8	32	7/5	18.2	53
GM 90009	83	55.1	24	6/26	15.2	88
Utopia	80	55.1	25	6/23	14.3	63
GM 90002	80	56.8	25	6/23	14.1	111
Kronos	75	57	25	6/27	13.8	109
GM 40002	74	61.6	27	6/23	14.5	39
Average	**91**	59.0	28		15.2	67
$LSD_{(0.05)}$	13.0					

[1]Trial conducted at the Southwestern Colorado Research Center; seeded 5/2, harvested 9/11.
[2]Bushel yield based on 60 lb/bu and 12% moisture.
[3]Date 50% of the plants headed.
[4]Grain hardness: Hard wheats >35; Soft wheats <35.

Site Information:
Soil type: Wetherill silty clay loam
Previous crop: Alfalfa (spring mold-board plowed)
Seeding rate: 90 lb/acre; 8 in. row spacing
Fertilizer: 75 lb N/ac broadcast preplant, + 40 lb N/ac top-dress on June 15
Herbicide: 2,4-D Amine 1 pt/ac on June 15
Insecticide: Lorsban SG 1pt/ac on June 15
Precipitation: May thru August 4.4 inches
Irrigation: 14.5 inches (center pivot)

Comments: Precipitation was below normal for May thru August (4.4 in. vs. 5.0 in. long-term average). The spring wheat benefitted from following alfalfa in the rotation – less compaction and root diseases. The high grain protein indicates that nitrogen did not limit grain yields. The good test weights indicate that yields were not impacted by insufficient irrigation water. Lorsban was applied to control Russian wheat aphid.

The hard white entries (GM40002, GM40003, GM400016, GM400020) incurred some frost damage to their heads from a freeze on June 14 (31^0F). GM 40004 and GM 400019 escaped damage from the freeze. None of the other entries exhibited any freeze damage to their heads.

Both Sylvan and Spillman had lodging that ranged from 10 to 50% in the four replications. ID377S lodged 20 to 90% while the durum entry GM 90009 had lodging that ranged from 10 to 50%. None of the other entries had significant lodging.

Sylvan was released in 1994 by Colorado State University and is the predominant spring wheat planted in southwestern Colorado.

Table 10. Dryland spring wheat performance test at Hayden[1] in 2001.

Variety	Yield	Grain Moisture	Test Weight	Plant Height	Grain Protein	Grain Hardness[2]
	bu/ac	%	lb/bu	in	%	rating
ID377S	21	8.3	58.9	19	14.9	29
Dirkwin	19	8.6	54.0	18	11.7	9
Edwin	19	8.2	55.3	18	12.8	0.5
Winsome	18	8.1	57.2	19	12.5	48
Grandin	17	8.0	60.0	21	13.4	92
Forge	17	8.0	60.4	20	12.8	59
Keene	17	7.9	59.2	21	14.4	67
Ember	16	8.1	62.0	20	12.1	85
Butte 86	16	7.8	60.5	21	14.7	71
Alsen	15	7.7	59.8	19	14.6	48
Pristine	14	8.2	60.5	18	14.7	50
2375	14	8.1	58.0	18	13.5	49
Average	**17**	**8.1**	**58.8**	**19**	**13.5**	
$LSD_{(0.05)}$	3.4					

[1]Trial conducted on the Dutch and Mike Williams farm; seeded 4/30 and harvested 8/29.
[2]Reading of <40 indicates soft wheat and reading of >40 indicates hard wheat.

Site Information:
Seeding rate: 60 lbs seed/acre
Herbicide: An application of 2,4-D at 0.50 lb/acre was made on June 1, 2001.
Fertilizer: Nitrogen fertilizer at 20 lbs N/acre as 34-0-0 was applied on May 27, 2001.

Comments: Grain yield in the spring wheat variety performance test averaged 16.8 bushels/acre. There was no lodging. Varieties with a hardness below 40 were Dirkwin, Edwin, and 377S. Precipitation during the 2001 growing season for the months of April, May, June, July, August, September, and October was 0.98, 1.37, 0.69, 1.49, 1.51, 0.90, and 0.99 inches, respectively. Precipitation in the Craig/Hayden area varies considerably from month to month and year to year and is the most limiting factor for dryland grain yields.