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MAKING BETTER DECISIONS

1999 Colorado Spring Wheat, Barley, and Oats Variety Performance Trials

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AUTHORS and SPRING CEREAL INFORMATION RESOURCES
Abdel Berrada, Research Scientist, Southwestern Colorado Research Center (970) 562-4255 aberrada@coop.ext.colostate.edu Merlin Dillon, Area Extension Agent, Rio Grande County (719) 754-3494 mdillon@coop.ext.colostate.edu Jerry Johnson, Extension Crop Production Specialist (970) 491-1454 jjj@lamar.colostate.edu Calvin Pearson, Professor of Soil and Crop Sciences/Research Agronomist, Western Colorado Research Center (970) 858-3629 cpearson@coop.ext.colostate.edu Jim Quick, Professor/Department Head, Soil and Crop Sciences (970) 491-6501 jquick@agsci.colostate.edu

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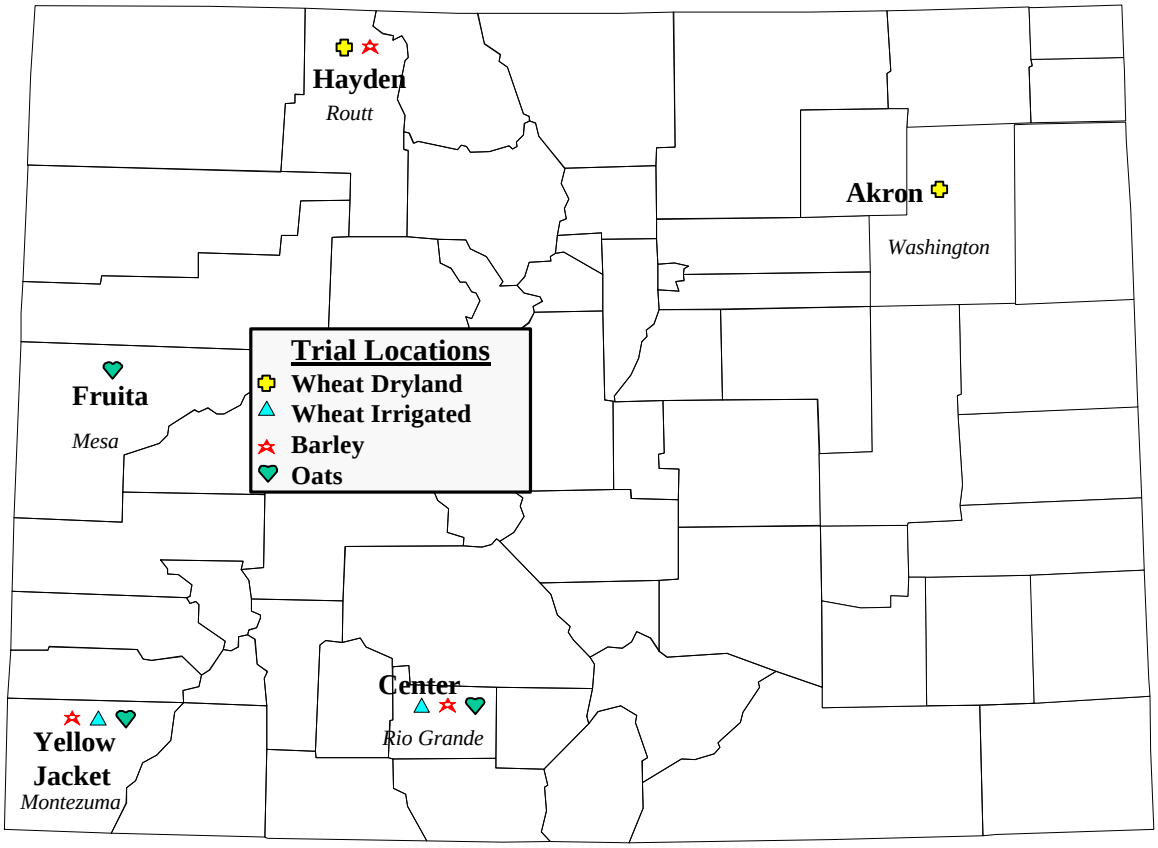
Winter Wheat **2000 Variety Trial Results**	**Dry Beans** **1999 results**	**Corn** **1999 silage results** **1999 dryland and irrigated grain results**
Crop Variety Performance for Colorado Crops		
Sunflower **1999 results-** **oil and confection hybrids**	**Alfalfa** **1999 results**	**Spring Wheat** **Barley, & Oats** **see 1999 results**

ACKNOWLEDGMENTS

The authors are thankful to Cynthia Johnson (Crops Testing program), Lot Robinson and Fred Judson (Western Colorado Research Center staff), and Sara Albertson, Daniel Dawson, and Amy Mannel (part time hourly employees). Most important, the authors are grateful for the cooperation and contributions of land, labor, and equipment made by the following Colorado farmers who consent to having performance trials conducted on their farms: Dutch and Mike Williams (Hayden, Routt County), Summit Farms (Center, Rio Grande County), and Tom Myers (Center, Rio Grande County). We also thank CSU Cooperative Extension personnel, C.J. Mucklow and Ann Franklin, for their assistance with our small grain research effort in northwest Colorado and are grateful to Darrell Wesenberg (USDA-ARS Aberdeen) for providing germplasm for oat and barley testing.

1999 Colorado Spring Cereal Variety Performance Trials



Technical Report TR 00-8

Agricultural Experiment Station	Department of Soil and Crop Sciences	Cooperative Extension	August 2000

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1999 COLORADO SPRING CEREAL VARIETY PERFORMANCE TRIALS

Introduction

Making Better Decisions is a publication intended for use by farmers, seedsmen, consultants, agribusiness, and others. We at Colorado State University are committed to providing the best information, in an appealing form, and in a timely manner to Colorado cereal producers. Reliable and unbiased performance trial results can lead to better variety selection and faster adoption of higher yielding varieties.

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

Small Grain Variety Performance Tests at Hayden, Colorado 1999

Dr. Calvin H. Pearson and Dr. James Quick

Summary and Recommendations

Each year small grain variety performances tests are conducted at Hayden, Colorado to identify varieties that are productive and suitable for commercial production in northwest Colorado. Two small grain variety performance tests (spring wheat and spring barley) were conducted at Hayden in 1999. Grain yield in the spring wheat variety performance test averaged 1716 lbs/acre (28.6 bushels/acre) with no statistically significant differences among varieties. Grain yield in the spring barley variety performance test averaged 1236 lbs/acre (25.7 bushels/acre) and half (C37, Moravian 14, 95RWA241, C22, Steptoe) of the varieties were high yielding.

Introduction and Objectives

Growers in northwest Colorado are limited to only a few crops they can grow. The number of crops that are grown in northwest Colorado is limited by environmental constraints created primarily by dryland production conditions, a short growing season, and sporadic and limited precipitation. Farmers are also limited by their isolation to markets for their crops. Growers in northwest Colorado are very supportive of agronomic research that will increase yields of crops and increase grower profits. They are also interested in alternative crops that have potential for production in northwest Colorado and that complement traditional cropping systems. The principle cash crop grown in northwest Colorado is wheat. Alternative small grains, such as malting barley, triticale, and specialty wheats such as hard white wheats and spelt are of interest to growers because these crops have potential in unique markets that often demand a premium price. Alternative crops such as these specialty small grains are also of interest because they can be grown with production practices and equipment growers already have on their farm. During 1999 we conducted winter and spring small grain tests that included not only traditional small grains but also some of these specialty small grains.

Materials and Methods

Spring Small Grain Variety Performance Tests

Six spring wheat and ten spring barley varieties and lines were evaluated during the 1999 growing season at the Dutch and Mike Williams Farm near Hayden, Colorado. The experiment design was a randomized complete block with four replications. Plot size was 4 feet wide x 40 feet long with six seed rows per plot. The soil was sampled at planting to determine fertility. The results were pH 6.3, 0.4 mmhos/cm salts, 3.6% organic matter, 5.0 ppm nitrate-nitrogen, 15 ppm phosphorus, 390 ppm potassium, 2.1 ppm zinc, 44.8 ppm iron, 24.1 ppm manganese, and 3.4 ppm copper. Planting occurred on May 12, 1999. Spring wheat and barley were planted at 60 lbs seed/acre. Ally herbicide was applied at 0.10 oz/acre on May 25, 1999 for weed control. No insecticides were applied. Harvest occurred on September 16, 1999 using a Hege small plot combine.

Results and Discussion

Spring Wheat Variety Performance Test

Plant stands were somewhat sparse and irregular because of crusting that occurred during seedling emergence. Rainfall during the 1999 growing season was sporadic. There were no statistically significant differences among varieties for grain moisture, grain yield, or test weight in the spring wheat trial at Hayden in 1999 (Table 11). Averaged across varieties, grain moisture was 11.3%, grain yield was 1716 lbs/acre or 28.6 bushel/acre, and test weight was 60.8 lbs/bu. Butte 86, Grandin, and Sharp were the tallest varieties. Oxen and 2375 were the shortest varieties. Butte 86 had the highest lodging score, but overall lodging in the spring wheats in 1999 was low.

Spring Barley Variety Performance Test

As in the spring wheat test, plant stands in the spring barley variety performance test were also somewhat sparse and irregular because of crusting that occurred during seedling emergence. Grain moisture was highest for the spring barley entry, 95RWA241, with most varieties having grain moistures lower than 12% in this test (Table 2). Half (C37, Moravian 14, 95RWA241, C22, Steptoe) of the varieties were high yielding compared to other varieties. Six varieties (C37, Moravian 14, C22, 95RWA249, C47, and 95RWA104 had high test weights compared to other varieties. Moravian 14 was the shortest variety, and 95RWA241 and 95RWA249 were the tallest varieties. 95RWA82 had the highest lodging score, although overall lodging in the spring barley test in 1999 was low.

Oat Variety Performance Test at Fruita, Colorado 1999

Dr. Calvin H. Pearson

Summary and Recommendations

Each year small grain variety performance tests are conducted at the Western Colorado Research Center at Fruita to identify varieties that are productive and adapted for commercial production in western Colorado. Grain yield in the oat variety performance test averaged 3535 lbs/acre (110.5 bushels/acre) and five oat entries (Absp19-9, Rio Grande, 91Ab406, Russell, and Powell) were high yielding.

Introduction and Objectives

Small grains, which include wheat and oats, have been produced traditionally in western Colorado. The importance of these two small grain crops, in terms of the number of acres planted, varies from year to year. Often, these crops are used for rotational purposes and to meet other farm needs. For example, oats may be planted to feed on-farm animals or winter wheat may be planted so it is harvested in time so the field can be prepared for planting alfalfa in late summer or early fall. Farmers also require up-to-date and local, site-specific information to assist them when choosing small grain varieties for planting on their farms. The objective of this research was to evaluate oat varieties for their performance under western Colorado conditions.

Materials and Methods

This study was conducted at the Colorado State University, Western Colorado Research Center at Fruita. This experiment was a randomized complete block with four replications.

Oat Variety Performance Test

The previous crop was dry bean. Plot size was 2, 30-inch wide beds, 40 feet long with six seed rows per plot. Seeding rate was 88 lbs/acre and the planting date was April 8, 1999. Harvest occurred on August 25, 1999. Fertilizer applications were 11-52-0 at 104 lbs P_2O_5/acre and 22 lbs N/acre disced in on March 31, 1999. A top-dressed fertilizer application as ammonium nitrate at 95 lbs N/acre occurred on May 14, 1999. Harmony Extra at 0.4 oz/acre and 6 oz/acre of 2,4-D herbicides were applied on May 12, 1999. Seven irrigations were applied during the growing season.

Results and Discussion

Oat Variety Performance Test

Provena and Lamont had the highest grain moisture contents (Table 6). Both of these oat varieties are naked-seeded oats. Naked-seeded oats do not retain the lemma and palea (chaff) during harvest. Naked-seeded oats as a harvested grain are more similar in appearance to wheat kernels than they are to barley kernels. Grain yield averaged 3535 lbs/acre (110.5 bushels/acre). Five oat entries (Absp19-9, Rio Grande, 91Ab406, Russell, Powell) were high yielding. As would be expected, test weights were highest for the two naked-seeded oat varieties, Provena and Lamont. Six varieties (Rio Grande, 91Ab406, Powell, 90Ab1322, Monida, Colorado 37) had tests weights that were lower than other varieties. Russell, Otana, HyTest, and Colorado 37 were the tallest and 90Ab1322 and Ajay were the shortest varieties. Oat varieties lodged considerably during 1999. The average lodging score for the study was 4.8. Ten oat entries had lodging scores greater than 4.5. Five oat entries had lodging scores less than 4.0.

Description of spring barley varieties in western trials.

Variety Name	Origin
6B93-2978	USDA-ID
Ab1368	USDA-ID
Ab2323	USDA-ID
Ab3148	USDA-ID
Ab5189	USDA-ID
Ab688	USDA-ID
Ab859	USDA-ID
Alexis	Rio Grande Comm.
B1202	Busch
Baronesse	Westbred
C22	Coors Brewing
C37	Coors Brewing
C40	Coors Brewing
C43	Coors Brewing
C47	Coors Brewing
Colter	USDA-ID
Harrington	Canada
Jersey	Westbred
Merit	USDA-ID
Moravian 14	Coors Brewing
Nebula	Westbred
RWA104	Univ. Idaho/ARS Oklahoma
RWA241	Univ. Idaho/ARS Oklahoma
RWA249	Univ. Idaho/ARS Oklahoma
RWA82	Univ. Idaho/ARS Oklahoma
Steptoe	CSU
WA9504-94	Washington
Xena	Westbred

Table 1. Irrigated spring barley variety performance trial at Center in 1999[1].

Variety	Yield	Test Wt	Plant Ht	Heading Date[2]	Grain Screening	Grain Protein
	bu/ac	lb/bu	in	day	%	%
Nebula	144.0	44.9	31	31	5.3	10.2
Ab688	144.0	48.0	38	25	8.8	10.1
Colter	135.0	48.3	40	26	8.6	9.7
Ab1368	128.4	47.9	41	23	3.6	10.6
Xena	127.2	48.3	37	28	9.7	10.4
6B93-2978	126.7	48.2	40	28	7.0	10.4
Ab5189	126.6	45.9	36	26	10.9	10.3
C40	119.2	48.1	32	27	4.4	10.7
Jersey	117.8	46.7	34	33	9.5	10.6
WA9504-94	116.8	47.5	34	33	14.3	11.2
Alexis	115.6	47.1	34	33	12.2	10.8
C37	114.8	48.6	32	31	4.3	10.6
Harrington	114.1	48.0	39	29	8.1	10.6
Merit	112.3	46.7	36	31	13.5	10.0
Ab3148	108.6	48.5	38	31	4.2	10.7
C43	108.2	48.9	32	31	4.5	10.6
Ab859	106.7	46.3	38	30	7.8	10.9
Moravian 14	106.6	50.4	29	27	7.2	10.5
Ab2323	104.0	48.5	37	30	4.6	10.7
B1202	95.0	46.1	36	31	11.7	10.6
Average	**118.6**	**47.7**	**36**	**29**	**8.0**	**10.5**
$LSD_{(0.05)}$	15.2					

[1]Trial conducted on the San Luis Valley Research Center; seeded 4/13/99 and harvested 8/18/99.
[2]Date 50% of the plants headed; days after June 1.

Site Information:
Previous crop: potatoes.
Fertilizer: Nitrogen @ 70 lbs/acre + 20 lbs thru sprinkler.
Herbicide: Bronate.
Irrigation: Center Pivot.

Notes: Malt barley yields were fairly low this year; averaging 119 bu/acre. The highest yield was 144 bu/acre. Snow (1.6 inches moisture) fell immediately after an irrigation which leached our nitrogen. Another 20 # N/acre was applied. The nitrogen leaching increased variability. Luckily, six replications were used this year so that we have a usable trial. Lodging was too low to rate this year.

Comment: Nebula was the high yielding variety again this year. Nebula is a short-statured, high yielding (6-row) feed barley. Ab688, Colter, Ab1368, and Xena made up the high yield group. Bushel weights were low (uncleaned). Grain screenings were fairly high (average 8%) and grain protein was low (10.5 %). Low protein indicates nitrogen limited yield this year.

Contact: Merlin Dillon, Area Extension Agent, Agronomy

San Luis Valley Research Center

Table 2. Spring barley variety performance trial at Hayden in 1999[1].

Variety	Grain Yield	Grain Yield	Grain Moist	Test Wt	Plant Ht	Lodging[2]
	lb/ac	bu/ac	%	lb/bu	in	0.2-9.0
C37	1637	34.1	11.0	48.6	15.6	1.2
Moravian 14	1515	31.6	10.5	50.4	13.6	1.2
95RWA241	1498	31.2	19.1	42.8	21.2	1.2
C22	1379	28.7	11.8	47.8	16.3	1.2
Steptoe	1326	27.6	10.8	44.8	16.1	1.4
95RWA249	1287	26.8	14.8	49.0	19.4	1.3
C47	1202	25.0	10.6	49.0	17.9	1.3
C40	982	20.4	10.8	45.0	15.7	1.3
95RWA104	908	18.9	11.2	49.3	17.1	1.6
95RWA82	626	13.0	11.9	43.6	18.4	2.7
Average	**1236**	**25.7**	**12.2**	**47.0**	**17.1**	**1.4**
CV%	18.0					
$LSD_{(0.05)}$	322.0					

[1]Trial conducted on the Dutch and Mike Williams farm; seeded 5/12/99 and harvested 9/16/99.
[2]Lodging: 0.2 = no lodging, 9 = total area lodged flat.

Contact: Calvin Pearson, Professor
Western Colorado Research Center

Table 3. Irrigated spring barley variety performance trial at Yellow Jacket in 1999[1].

Variety	Yield	Grain Moist	Test Wt	Plant Ht	Heading Date[2]
	bu/ac	%	lb/bu	in	date
93Ab688	123.0	12.2	46.9	36	6/24
Xena	121.5	12.5	48.6	33	6/26
Baronesse	117.4	12.1	48.4	31	6/24
Nebula	116.7	11.9	43.2	25	6/28
Steptoe	113.5	11.7	44.0	37	6/24
91Ab3148	110.5	12.3	46.1	33	6/26
Colter	110.5	12.2	45.0	33	6/24
Jersey	107.1	12.1	48.2	31	6/28
92Ab5189	106.8	12.6	42.6	33	6/24
93Ab859	104.0	12.2	47.6	31	6/28
92Ab1368	102.7	11.8	45.5	41	6/22
Average	**112.2**	**12.1**	**46.0**	**33**	
CV%	6.5				
$LSD_{(0.05)}$	10.6				

[1]Trial conducted on the Southwestern Colorado Research Center; seeded 4/19/99 and harvested 9/7/99.
[2]50% of the plants headed.

Site Information:
Fertilizer: 130 lb N/ac + 75 lb P_2.
Insecticide: Lorsban 1 pt/ac on 6/30/99 for Russian wheat aphid.
Irrigation: 8.5 inches (4 sprinkler irrigations).
Precipitation: 4/20/99 - 8/15/99 7.1 inches.
Previous crop: irrigated pinto bean.
Soil type: Wetherill silty clay loam.

Comment: Cooler temperatures and competition from volunteer pinto bean may have contributed to lower yields compared to previous years. Also, irrigation water applied was considerably less than prior years due to a wet July and August.

Contact: Abdel Berrada, Research Scientist
Southwestern Colorado Research Center

Description of spring oats varieties in western trials.

Variety Name	Origin
Ab1322	USDA-ID
Ab406	USDA-ID
Ab406	USDA-ID
Absp19-9	USDA-ID
Absp9-2	USDA-ID
Ajay	AES, USDA-ARS-ID
Colorado 37	Colorado
HyTest	South Dakota
Jerry	North Dakota
Lamont	AES, USDA-ARS-ID
Monida	AES, USDA-ARS-ID-MT-OR-WA
Otana	AES, ARS-USDA-MT
Powell	AES, USDA-ARS-ID
Provena	AES, USDA-ARS-ID
Rio Grande	AES USDA-ARS-ID-CO
Russell	Canada

Table 4. Irrigated spring oat variety performance trial at Center in 1999[1].

Variety	Yield	Plant Ht	Forage Yield
	bu/ac	feet	tons/ac
Ab1322	180.0	3.1	4.5
Powell	177.4	2.9	4.1
Absp19-9	173.2	3.3	4.5
Ab406	167.7	2.8	3.1
Monida	158.1	3.7	3.9
Absp9-2	156.5	3.4	3.9
Rio Grande	153.4	2.8	3.6
Ajay	145.1	2.5	4.0
Average	**163.9**	**3.0**	**4.0**
CV%	7.4		
$LSD_{(0.05)}$	17.9		NS

[1]Trial conducted on the Tom Myers farm; seeded 4/13/99 and harvested 9/7/99 (grain) and 7/30 (forage).

Site Information:
Previous crop: potatoes.
Soil type: sandy loam.
Fertilizer: 11 lbs N; 52 lbs phos/acre.
Irrigation: center pivot.

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

Table 5. Yield arranged by plant height.

Variety	Plant Ht	Forage Yield
	feet	tons/ac
Monida	3.7	3.9
Absp9-2	3.4	3.9
Absp19-2	3.3	4.5
Ab1322	3.1	4.5
Powell	2.9	4.1
Rio Grande	2.8	3.6
Ab406	2.8	3.1
Ajay	2.5	4.0

This table arranged by height shows that hay forage yield is not determined by plant height. Ajay, the shortest variety made the same tonnage as Monida, the tallest variety. Absp19-2 and Ab1322 made high tonnage (4.5 tons/acre), but were only average height.

Table 6. Irrigated spring oat variety performance trial at Fruita in 1999[1].

Variety	Yield	Grain Moist	Test Wt	Plant Ht	Lodging
	bu/ac	%	lb/bu	in	0.2-9.0[2]
Absp19-9	162.7	8.82	33.1	42	4
Rio Grande	140.3	8.30	30.1	42	6
91Ab406	128.3	8.22	27.9	38	6
Russell	128.2	8.28	31.5	45	6
Powell	125.0	9.10	29.8	37	5
Jerry	115.8	8.60	36.0	43	6
Otana	112.6	9.05	31.0	47	6
90Ab1322	112.0	8.02	29.1	34	4
Monida	103.9	9.12	29.9	42	6
Lamont	99.6	9.80	38.1	40	1
Ajay	95.1	8.28	31.0	32	4
HyTest	86.4	8.80	37.5	46	5
Colorado 37	85.1	8.88	30.4	47	6
Provena	81.1	10.05	40.8	37	3
Absp9-2	80.9	8.58	31.2	40	7
Average	**110.5**	**8.79**	**32.5**	**41**	**5**
CV%	25.4				
$LSD_{(0.05)}$	40.1				

[1]Trial conducted on the Western Colorado Research Center; seeded 4/8/99 and harvested 8/25/99.
[2]0.2 = no lodging, 9.0 = totally area lodged flat.

Contact: Calvin Pearson, Professor
Western Colorado Research Center

Table 7. Irrigated spring oat variety performance trial at Yellow Jacket in 1999[1].

Variety	Yield	Grain Moist	Test Wt	Plant Ht	Heading Date[2]	Lodging
	bu/ac	%	lb/bu	in	date	%
91Ab406	152.8	8.8	36.8	34	7/2	0
Powell	147.2	8.8	36.8	34	7/4	0
Absp19-9	144.7	9.1	39.4	35	7/6	25
Monida	140.3	9.0	37.2	38	7/8	20
Absp9-2	135.0	9.2	39.3	35	6/30	10
Rio Grande	133.2	8.8	37.5	31	6/30	5
90Ab1322	131.0	9.2	38.2	33	7/2	0
Otana	130.8	9.3	38.8	45	7/2	0
Ajay	121.3	8.8	36.2	34	7/6	5
Russell	114.2	9.1	38.2	38	7/2	4
Average	**135.1**	**9.0**	**37.8**	**36**		**7**
CV%	14.1					
$LSD_{(0.05)}$	27.6					

[1]Trial conducted on the Southwestern Colorado Research Center; seeded 4/19/99 and harvested 9/7/99.
[2]50% of the plants headed.

Site Information:
Fertilizer: 130 lb N/ac + 75 lb P_2.
Irrigation: 8.5 inches (4 sprinkler irrigations).
Precipitation: 4/20/99 - 8/15/99 7.1 inches.
Previous crop: irrigated pinto bean.
Soil type: Wetherill silty clay loam.

Comment: Cooler temperatures and competition from volunteer pinto bean may have contributed to lower yields compared to previous years. Also, irrigation water applied was considerably less than prior years due to a wet July and August.

Contact: Abdel Berrada, Research Scientist
Southwestern Colorado Research Center

Spring Wheat Improvement

Jim Quick

The spring wheat breeding program began in 1996 with major agronomic objectives of Russian wheat aphid resistance, heat tolerance, and early maturity. A greenhouse-based Single Seed Descent program allows for rapid generation advance. In 1999, 600 F5 lines were evaluated in the field. We are developing cultivars having the following desirable agronomic traits: high yield and test weight with satisfactory kernel appearance; straw height and strength to maximize yield potential under desirable climatic conditions; early maturity and resistance to grain shattering; drought and heat tolerance; pest resistance, especially to leaf and stem rust, smuts, and Russian wheat aphid. New spring wheat cultivars for Colorado may be released as early as 2003.

New spring wheat cultivars must also have desirable milling and bread baking properties. For milling, we produce cultivars with high extraction of good straight-grade flour with acceptable ash, color, and sifting properties. The resulting bread flour has desirable levels of water absorption, dough development time, mixing tolerance, loaf volume, grain, texture, and crumb color.

Spring wheat could be planted in rotations which include a spring crop, either following winter wheat or following another spring crop such as corn, proso millet or sorghum. Acreage of rotations including spring crops has increased from about 20,000 to 200,000 acres (based on an increase in dryland corn acreage) during the past ten years.

Description of spring wheat varieties in trials.

Variety Name	Class	Origin
2375	Hard Red	North Dakota
AC Teal	Hard Red	Canada
B91 0228	Hard Red	Agripro Biosciences, Inc.
B92 0709	Hard Red	Agripro Biosciences, Inc.
Blanca	Soft White	Colorado
Butte 86	Hard Red	North Dakota
BZ692-108	Soft White	Western Plant Breeders
Centennial	Soft White	Idaho
Forge	Hard Red	South Dakota
Grandin	Hard Red	North Dakota
Hamer	Hard Red	Agripro Biosciences, Inc.
Hiline	Hard Red	Montana
ID377S	Hard White	Idaho
ID488	Soft White	Idaho
ID502	Hard Red	Idaho
ID505	Soft White	Idaho
ID506	Soft White	Idaho
ID524	Soft White	Idaho
Kauz	Hard White	CIMMYT
Kulm	Hard Red	North Dakota
MT RWA116	Hard Red	Montana
N93-0119	Hard Red	Agripro Biosciences, Inc.
N93-0136	Hard Red	Agripro Biosciences, Inc.
N93-0211	Hard Red	Agripro Biosciences, Inc.
N94-0105	Hard Red	Agripro Biosciences, Inc.
N94-0241	Hard Red	Agripro Biosciences, Inc.
N94-0287	Hard Red	Agripro Biosciences, Inc.
N94-0404	Hard Red	Agripro Biosciences, Inc.
N94-0440	Hard Red	Agripro Biosciences, Inc.
Nora	Hard Red	Agripro Biosciences, Inc.
Norlander	Hard Red	Agripro Biosciences, Inc.
Oslo	Hard Red	Agripro Biosciences, Inc.
Owens	Soft White	Idaho
Oxen	Hard Red	South Dakota
Russ	Hard Red	South Dakota
Sharp	Hard Red	South Dakota
Spillman	Hard Red	Washington
Sylvan	Hard Red	Colorado
Trenton	Hard Red	North Dakota
V5	Hard White	Israel
Whitebird	Soft White	Idaho
Zeke	Hard Red	Western Plant Breeders

Table 8. Irrigated soft white spring wheat variety performance trial at Center in 1999[1].

Variety	Yield	Test Wt	Plant Ht	Lodging	Grain Protein	Grain[2] Hardness
	bu/ac	lb/bu	in	%	%	rating
ID524	107.2	59.7	34	16.3	11.5	10.8
Centennial	107.1	59.6	38	15.0	12.4	3.8
ID505	104.1	59.2	38	26.3	12.2	4.3
Blanca	103.6	57.1	41	33.8	13.2	9.3
ID506	100.7	57.9	38	16.3	12.1	6.8
BZ692-108	96.9	58.6	38	36.3	11.8	8.5
Whitebird	95.6	59.1	39	43.8	11.9	13.3
Owens	87.1	57.6	40	47.5	12.5	8.3
Average	**101.1**	**58.6**	**38.4**	**29.4**	**12.2**	**8.1**
CV%	11.0					
$LSD_{(0.05)}$	16.3					

[1]Trial conducted on the San Luis Valley Research Center; seeded 4/16 and harvested 9/22.
[2]Grain Hardness: soft wheats below 40; hard wheats above 40.

Site Information:
Previous crop: potatoes
Soil type: sandy loam
Fertilizer: variable; precision applied
Weed control: bronate at 2 pt/acre
Irrigation: center pivot, as needed

Note: Spring wheat yields were fairly low this year; averaging only 101 bu/acre. The highest yield was 107 bu/acre. Snow fell immediately after an irrigation April 30 (1.5 inches moisture). This excess moisture leached much of our nitrogen. Another 20 # N/acre was applied. Nitrogen leaching also increased the variability of the trial.

Comments: Experimental lines ID524 and ID505 performed very well this year. The low yields of this trial make it hard to see the yield potential. ID524 is promising since it is short stature; lodging was about the same as Centennial. Maturity of ID524 is 3 days later which is not good. Centennial is still the best soft white spring variety for this area.

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

Table 9. Irrigated spring wheat variety performance trial at Yellow Jacket in 1999[1].

Variety	Yield	Grain Moist	Test Wt	Plant Ht	Heading Date[2]
	bu/ac	%	lb/bu	in	date
Blanca	100.5	10.9	54.8	36	7/2
Whitebird	92.9	10.3	57.9	34	7/2
Sylvan	92.1	10.2	56.8	38	7/4
BZ692-108	90.7	10.0	55.4	33	6/30
Zeke	87.5	10.2	54.2	32	6/28
ID377S	86.2	10.2	57.7	35	6/28
ID506	81.9	10.6	54.6	33	6/30
Spillman	80.1	10.0	54.1	33	7/2
ID502	79.1	10.0	56.4	33	6/30
MT RWA116	69.2	10.1	55.4	34	6/30
Average	**86.0**	**10.2**	**55.7**	**34**	
CV%	8.6				
$LSD_{(0.05)}$	10.7				

[1]Trial conducted on the Southwestern Colorado Research Center; seeded 4/19/99 and harvested 9/7/99.
[2]50% of the plants headed.

Site Information:
Fertilizer: 130 lb N/ac + 75 lb P_2.
Insecticide: Lorsban 1 pt/ac on 6/30/99 for Russian wheat aphid.
Irrigation: 8.5 inches (4 sprinkler irrigations).
Precipitation: 4/20/99 - 8/15/99 7.1 inches.
Previous crop: irrigated pinto bean.
Soil type: Wetherill silty clay loam.

Comment: Cooler temperatures and competition from volunteer pinto bean may have contributed to lower yields compared to previous years. Also, irrigation water applied was considerably less than prior years due to a wet July and August.

Contact: Abdel Berrada, Research Scientist
Southwestern Colorado Research Center

Table 10. Dryland spring wheat variety performance trial at Akron in 1999[1].

Variety	Yield	Test Wt	Plant Ht	Days to Heading
	bu/ac	lb/bu	cm	days
Oxen	32.1	53.3	46	89
2375	27.1	55.9	52	87
N94-0241	25.0	56.7	47	88
Hamer	24.6	56.7	43	91
Kauz	24.5	53.1	40	89
Oslo	23.1	53.9	32	88
N94-0105	22.7	52.4	52	94
Hiline	21.8	54.6	44	89
Forge	20.7	57.8	60	87
B91 0228	20.1	60.1	51	93
Russ	20.0	54.2	50	87
Nora	19.7	55.5	60	89
N93-0136	19.4	53.7	52	92
B92 0709	19.3	59.0	48	94
Butte 86	19.0	58.3	60	89
Norlander	18.9	58.0	53	88
V5	18.6	58.4	45	88
AC Teal	18.3	53.1	37	93
N94-0440	17.1	50.0	36	94
N94-0287	16.8	50.0	57	93
Kulm	16.7	58.7	53	91
N93-0119	15.6	50.9	39	93
N94-0404	15.5	56.9	53	96
ID488	15.5	55.2	55	92
MTRWA 116	15.4	54.6	44	93
Sharp	14.7	58.2	47	87
N93-0211	13.7	55.2	47	92
ID377S	12.6	52.8	45	94
Grandin	11.8	50.9	57	92
Trenton	10.6	51.8	50	92
Average	**19.0**	**57.3**	**49**	**91**
P Value	0.001			
CV%	11.3			
$LSD_{(0.05)}$	4.5			

[1]Trial conducted on the Central Great Plains Research Station; seeded 3/16/99 and harvested 7/19/99.

Note: Analyzed as a Randomized Complete Block Design with two replications (rep one excluded).

Contact: Jim Quick, Professor/Department Head
Department of Soil and Crop Sciences

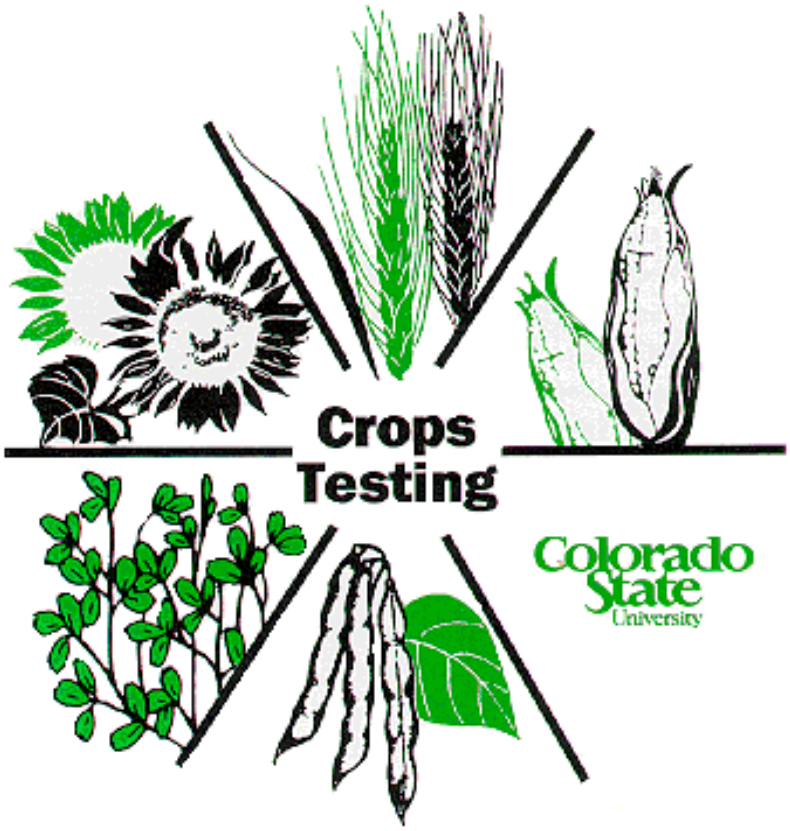
Table 11. Dryland spring wheat variety performance trial at Hayden in 1999[1].

Variety	Yield	Grain Moist	Test Wt	Plant Ht	Lodging[2]
	bu/ac	%	lb/bu	in	0.2-9.0
2375	29.8	11.6	59.6	22	1.2
Grandin	29.3	11.5	60.6	25	1.2
Oxen	29.3	11.8	60.6	22	1.1
Sharp	29.1	11.3	61.4	25	1.4
Forge	28.2	11.2	61.9	24	1.6
Butte 86	26.0	11.4	61.0	26	2.1
Average	**28.6**	**11.3**	**60.8**	**23.9**	**1.4**
CV%	18.9				
$LSD_{(0.05)}$	NS				

[1]Trial conducted on the Dutch and Mike Williams farm; seeded 5/12/99 and harvested 9/16/99.

[2]Lodging: 0.2 = no lodging, 9 = total area lodged flat.

Contact: Calvin Pearson, Professor
Western Colorado Research Center



Jerry Johnson, Extension Specialist Crop Production

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