

# MAKING BETTER DECISIONS

2002 Colorado Spring Wheat, Barley  
and Oats Performance Trials



Agricultural Experiment Station

**Colorado  
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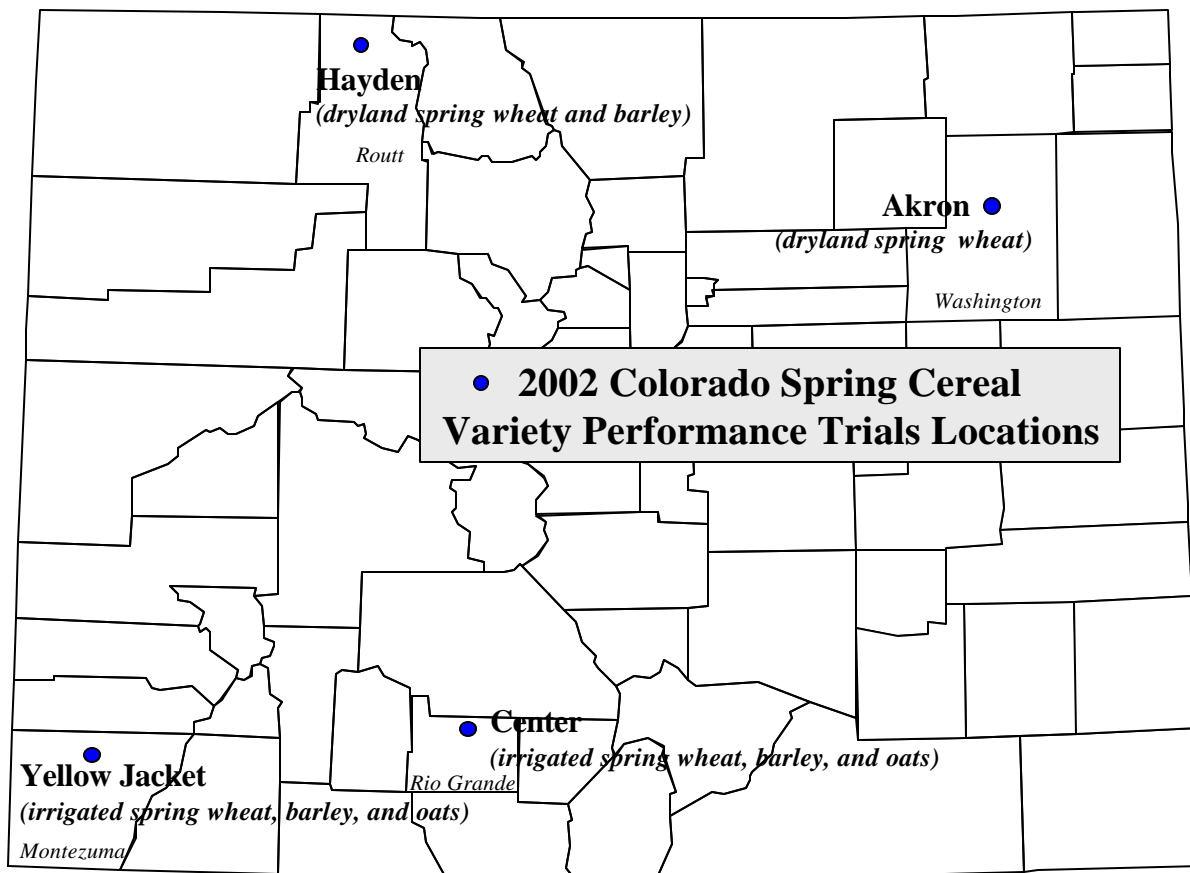
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## 2002 COLORADO SPRING CEREAL VARIETY PERFORMANCE TRIALS

### Introduction

*Making Better Decisions* is a publication intended for use by farmers, seedsmen, consultants, agribusiness, and others. Colorado State University's crop 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 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](http://www.colostate.edu/Depts/SoilCrop/extension/CropVar/index.html)



Spring wheat variety test plots at Hayden, Colorado. June 12, 1998. Photo by Calvin Pearson.

### Description of spring barley varieties in trials.

Variety Name	Origin
<b>Ab2323</b>	USDA-ARS-Aberdeen
<b>Ab8333</b>	USDA-ARS-Aberdeen
<b>Ab11865</b>	USDA-ARS-Aberdeen
<b>Ab11993</b>	USDA-ARS-Aberdeen
<b>Ab12362</b>	USDA-ARS-Aberdeen
<b>Ab12364</b>	USDA-ARS-Aberdeen
<b>Ab12905</b>	USDA-ARS-Aberdeen
<b>Ab13449</b>	USDA-ARS-Aberdeen
<b>Ab13904</b>	USDA-ARS-Aberdeen
<b>Azhul</b>	Western Plant Breeders
<b>Baronesse</b>	Western Plant Breeders
<b>C40</b>	Coors Brewing Co.
<b>C46</b>	Coors Brewing Co.
<b>C53</b>	Coors Brewing Co.
<b>C57</b>	Coors Brewing Co.
<b>Camas</b>	USDA-ARS, ID AES
<b>Colter</b>	USDA-ARS, ID AES
<b>Conlon</b>	North Dakota State University
<b>Creel (Ab688)</b>	USDA-ARS-Aberdeen
<b>Criton</b>	USDA-ARS, ID AES
<b>Farmington</b>	Washington State University
<b>Garnet</b>	USDA-ARS, ID AES
<b>Harrington</b>	University of Saskatoon
<b>Hector</b>	University of Alberta
<b>ID 196</b>	USDA-ARS - Aberdeen
<b>ID 242</b>	USDA-ARS - Aberdeen
<b>ID 1269B</b>	USDA-ARS - Aberdeen
<b>Jersey</b>	Western Plant Breeders
<b>Moravian 14</b>	Coors Brewing Co.
<b>Moravian 37 (C37)</b>	Coors Brewing Co.
<b>MT970116</b>	Montana State University
<b>Steptoe</b>	Colorado State University
<b>Targhee</b>	USDA-ARS, ID AES
<b>WA8682-96</b>	Washington State University
<b>Yu 599-005</b>	Western Plant Breeders
<b>Yu 599-006</b>	Western Plant Breeders
<b>Yu 599-012</b>	Western Plant Breeders
<b>Xena</b>	Western Plant Breeders

## Small grain variety performance tests at Hayden, Colorado 2002

*by Calvin Pearson*

Each year small grain variety performance tests are conducted at Hayden, Colorado to identify varieties that are adapted for commercial production in northwest Colorado. Three small grain variety performance tests (winter wheat, spring wheat, and spring barley) were conducted at Hayden in 2002. The 2002 growing season was very dry and overall yields in the trials were low. The 2002 results provide information about the performance of wheat and barley varieties under high stress conditions. Grain yield in the spring wheat variety performance test averaged 12.0 bu/ac. The highest yielding variety in the spring wheat test was Dirkwin at 18.2 bu/ac with five varieties out-yielding the other six. Grain yield in the spring barley variety performance test averaged 18.4 bu/ac. The highest yielding variety in the spring barley test was Hector at 28.5 bu/ac with eight out-yielding the other fourteen.

Growers in northwest Colorado are limited to only a few crops they can grow because of constraints created by dryland production conditions, a short growing season, limited precipitation, and isolation to markets. Growers in this region of Colorado are supportive of agronomic research that provides them with science-based information that when adapted to their farms can lead to increased crop yields and profits. They are also interested in alternative crops for production in northwest Colorado. The principal cash crop grown in northwest Colorado is wheat. Alternative small grains, such as malting barley, triticale, and specialty wheats (i.e., hard white wheats) are of interest to growers because these crops often create specialty markets that demand a premium selling price. Alternative crops, such as these specialty small grains, are also of interest because they can be grown with production practices and equipment already owned by farmers. During 2002, we conducted winter and spring small grain variety tests that included not only traditional small grains but also some of these specialty small grains.

Precipitation during the 2002 growing season for the months of April, May, June, July, August,

September, and October was 1.57, 0.23, 0.35, 0.74, 1.90, 1.26, and 1.61 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.

**Table 1. Dryland spring barley performance trial at Hayden<sup>1</sup> in 2002**  
*by Calvin Pearson.*

Variety	Grain Yield bu/ac	Grain Moisture %	Test Weight lb/bu	Plant Height in
Hector	28.5	13.0	48.2	17
Targhee	28.1	15.0	45.6	16
Powell (oat)	26.5	-	-	12
Monida (oat)	25.0	16.1	32.8	16
C40	24.3	10.0	48.8	15
Harrington	22.2	11.8	48.0	15
Steptoe	21.9	10.1	44.0	14
Ab2323	21.4	16.0	47.3	15
Camas	20.4	13.2	47.9	15
Criton	19.3	15.1	44.9	17
Moravian 37	18.8	10.7	48.2	15
Ab12362	18.7	10.4	45.8	13
Ab13449	16.8	11.3	45.0	13
Ab11865	16.5	19.5	44.1	16
Ajay (oat)	16.3	14.0	33.6	11
Creel	15.4	11.7	42.1	15
Conlon	15.0	10.7	45.9	18
Xena	12.4	11.8	45.3	16
Garnet	11.1	13.8	44.1	15
Lamont (oat)	9.4	13.0	43.4	16
Ab8333	9.2	14.7	42.4	14
Provena (oat)	8.4	12.6	47.5	15
<b>Average</b>	<b>18.4</b>	<b>13.1</b>	<b>44.5</b>	<b>15</b>
LSD <sub>(0.05)</sub>	8.0			2

<sup>1</sup>Trial conducted on Dutch and Mike Williams Farm; seeded 5/6 and harvested 9/4.

### Comments:

Twenty-two spring barley entries were evaluated during the 2002 growing season. 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. Spring barley was planted at 56 lbs seed/acre. No fertilizer, herbicides, or insecticides were applied. Plots were harvested using a Hege small plot combine.

**Table 2. Irrigated spring malting barley performance trial at Center<sup>1</sup> in 2002 by Merlin Dillon.**

Variety	Grain Yield <sup>2</sup> bu/ac	Grain Moisture %	Test Weight lb/bu	Plant Height in	Heading Date <sup>3</sup> June	Grain Protein %	Grain Screenings <sup>4</sup> %
C57	177	18.3	49.3	34	27	10.1	1.9
C46	174	18.6	50.5	34	27	10.2	2.9
Creel	164	10.6	49.8	39	15	9.1	2.4
Moravian 14	164	12.5	53.9	33	18	11.4	4.8
Ab11993	150	13.9	51.2	35	19	10.6	6.8
Ab8333	148	9.9	50.4	38	12	10.3	1.9
WA8682-96	148	13.8	52.7	37	19	11.1	6.4
Farmington	147	15.0	51.8	34	26	10.9	4.0
Criton	144	16.8	48.8	37	18	10.9	9.9
Ab12362	140	10.0	51.2	42	18	10.1	1.7
Ab11865	139	13.4	53.3	32	23	10.4	6.7
Ab12364	137	9.8	49.6	37	15	10.3	1.4
Colter	137	12.2	49.1	39	16	9.6	6.7
C53	137	16.5	49.5	34	26	11.6	3.0
Ab13904	135	10.6	50.1	39	13	10.1	4.3
Ab13449	135	10.7	50.7	41	16	9.6	3.1
Jersey	135	15.0	51.7	35	25	10.8	4.4
Yu 599-005	134	12.3	48.5	30	24	12.1	2.4
Garnet	133	14.7	50.8	41	22	11.4	4.6
Garnet	130	14.1	51.7	41	23	11.4	3.7
Ab2323	129	12.8	52.1	39	20	12.3	5.9
MT970116	124	12.8	53.2	38	18	11.7	5.2
Yu 599-012	118	12.1	47.9	29	23	12.6	6.6
Yu 599-006	114	12.0	56.6	35	24	13.1	22.6
Azhul	98	12.6	51.2	30	13	12.4	9.3
<b>Average</b>	<b>140</b>	<b>13.2</b>	<b>51.0</b>	<b>36</b>	<b>20</b>	<b>11.0</b>	<b>5.3</b>
LSD <sub>(0.20)</sub>	17	1.9	1.4	2	2	0.6	1.2

**Site Information:**

Soil Type: Norte gravelly sandy loam

Previous Crop: Potatoes

Herbicide: Bronate at 1 pt/ac

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

Irrigation: Center pivot = ET

**Comments:**

Yields were very good this year ranging from 98 to 177 bu/ac; the average was 139 bu/ac. Two Coors experimental varieties produced excellent yields; higher than Moravian 14.

<sup>1</sup>Trial conducted at the San Luis Valley Research Center; seeded 4/8 and harvested 8/8.

<sup>2</sup>Yields based on 48 lb/bu and 12% moisture.

<sup>3</sup>Date 50% of the plants headed; days after June 1.

<sup>4</sup>Grain screening: percent that falls through 6/64 inch screen.

\*Plant lodging was low (0-5 %); non-significant differences.

**Table 3. Irrigated spring barley performance trial at Yellow Jacket<sup>1</sup> in 2002 by Mark Stack.**

Variety	Grain Yield <sup>2</sup> bu/ac	Grain Moisture %	Test Weight lb/bu	Plant Height in	Heading Date <sup>3</sup> days	Lodging <sup>4</sup> rating
MT970116	142	9.6	53.7	29	177	1
Criton	138	9.4	52.2	26	179	2
ID 242	135	9.4	52.9	27	179	1
Farmington	132	9.8	51.7	23	184	3
Baronesse	132	8.9	51.7	24	178	2
Ab12364	132	9.1	48.8	29	177	1
Creel	132	9.5	48.2	29	173	1
Colter	129	9.2	46.3	29	173	1
ID 1269B	128	9.3	49.1	33	178	1
Ab11993	127	9.3	50.7	25	177	4
Ab2323	125	10.7	51.8	28	179	3
WA8682-96	125	9.6	52.2	25	178	2
Garnet	124	8.9	52.5	29	179	3
Ab12362	124	8.2	48.9	32	177	1
Ab11865	124	11.2	51.8	23	184	6
Ab8333	120	10.1	47.6	28	168	1
ID 196	118	10.2	51.4	29	184	1
Ab12905	113	10.0	47.3	28	173	1
Ab13449	111	10.4	47.7	29	173	1
<b>Average</b>	<b>127</b>	<b>9.6</b>	<b>50.4</b>	28	177	2
LSD <sub>(0.05)</sub>	14					

<sup>1</sup>Trial conducted at the Southwestern Colorado Research Center; seeded 4/23 and harvested 8/26.

<sup>2</sup>Yields based on 48 lb/bu and 12% moisture.

<sup>3</sup>Number of days after January 1.

<sup>4</sup>Rating scale 1-9; 1 = no lodging and 9 = completely lodged.

### Description of spring oat varieties in trials.

Variety Name	Origin
<b>Ab406</b>	USDA-ARS-Aberdeen
<b>Ab502</b>	USDA-ARS-Aberdeen
<b>Ab8597</b>	USDA-ARS-Aberdeen
<b>Ab10854</b>	USDA-ARS-Aberdeen
<b>AbSP19-9</b>	USDA-ARS-Aberdeen
<b>Ajay</b>	USDA-ARS, ID AES
<b>Lamont</b>	USDA-ARS, ID AES
<b>Maverick (Ab1322)</b>	USDA-ARS-Aberdeen
<b>Monico (AbSP9-2)</b>	USDA-ARS-Aberdeen, MT-ID-CO AES
<b>Monida</b>	USDA-ARS, ID-MT-OR-WA AES
<b>Otana</b>	USDA-ARS, MT AES
<b>Powell</b>	USDA-ARS, ID AES
<b>Provena</b>	USDA-ARS, ID AES
<b>Rio Grande</b>	USDA-ARS, ID-CO AES
<b>Russell</b>	Canada

### Site Information:

Soil type: Wetherill silty clay loam

Previous crop: Dry bean

Seeding rate: 100 lb/ac; (8-inch row spacing)

Fertilizer: 75 lb N/ac broadcast preplant + 20 lb N/ac top-dress

Herbicide: Harmony Extra 0.5 oz/ac + 2,4-D Ester 8 oz/ac

Insecticide: Lorsban SG 1 pt/ac. Seed was treated with Vitavax for loose smut.

Irrigation: 22.5 inches (sprinkler)

Precipitation: January 1, 2002 thru August 26, 2002: 1.1 inches (long-term average 9.7 inches)

### Comments:

The spring barley variety trial yielded remarkably well notwithstanding the hot and dry conditions that persisted throughout the growing season. Lorsban SG was applied on June 18 to control Russian wheat aphid. The lines ID 242, ID 1269B, and ID 196 were developed with resistance to the Russian wheat aphid.

The 2-row barleys all had greater test weights (50.7 lb/bu or better) than the 6-row barley types. Colter had the lowest test weight (46.3 lb/bu). The 6-row barley types also were prone to developing late tillers. These tillers had small heads that were still green at harvest. Stress to the barley plant early in the growing season may have caused the plants to produce the late tillers.

**Table 4. Irrigated spring oat performance trial at Center<sup>1</sup> in 2002 by Merlin Dillon.**

Variety	Grain Yield <sup>2</sup> bu/ac	Test Weight lb/bu	Plant Height in	Heading Date <sup>3</sup> June	Plant Lodging %
Ab8597	250	38.9	56	34	33.8
Maverick	247	37.9	48	33	1.3
Ajay	233	38.1	44	33	0.0
Powell	232	38.0	50	33	58.8
Monico	231	39.1	56	31	43.8
Ab10854	228	39.9	53	36	42.5
Ab406	228	36.9	49	31	58.1
Rio Grande	220	38.9	52	30	52.5
Monida	218	37.4	57	33	81.9
AbSP19-9	209	38.5	56	34	76.3
Lamont (HL)	206	42.8	58	36	8.8
Provena (HL)	166	44.4	49	36	1.3
<b>Average</b>	<b>222</b>	<b>39.2</b>	<b>52</b>	<b>33</b>	<b>38.2</b>
LSD <sub>(0.20)</sub>	18	0.9	2	1	16.0

<sup>1</sup>Trial conducted at San Luis Valley Research Center; seeded 4/17 and harvested 9/4.

<sup>2</sup>Yields based on 38 lb/bu and 12% moisture.

<sup>3</sup>Date 50% of the plants headed; days after June 1. (HL) indicates hullless oat varieties.

**Site Information:**

Soil type: Norte sandy loam

Previous crop: Potatoes

Seed rate: 97 lb/ac, 7-inch row spacing

Fertilizer: 75 lb/ac preplant + 75 lb/ac + 40 lb/ac (all broadcast dry)

Herbicide: Bronate at 1 pt/ac

**Comments:**

This trial was located in a spring wheat field and was fertilized excessively. However, this does reveal the lodging tendency and grain yields of the varieties under high yield conditions. *Monico*, a newly released variety from Aberdeen, Idaho, performed very well with an excellent yield (231 bu/ac), excellent bushel weight (39.1), and similar maturity and height as Monida but much lower lodging. Foundation seed of Monico is available from the CSU Southwestern Colorado Research Center at Yellow Jacket, CO. *Maverick* (AB1322), a proposed release from Aberdeen, Idaho looks even more promising with excellent yield, bushel weight, and is less prone to lodging.

**Table 5. 5-Yr average irrigated oat performance summary at Center, 1998-2002 by Merlin Dillon.**

Variety	Grain Yield bu/ac	Test Weight lb/bu	Plant Height in	Heading Date <sup>1</sup> June	Plant Lodging <sup>2</sup> %	Forage Yield <sup>3</sup> t/ac
AbSP19-9	200	40.3	45	32	6.3	4.5
Monico	196	40.9	45	29	43.8	4.0
Maverick	195	40.8	40	31	1.3	4.1
Powell	195	38.9	40	31	58.8	4.0
Ab406	191	39.4	38	29	58.1	3.7
Monida	188	39.7	45	32	81.9	4.2
Rio Grande	178	39.8	39	26	52.5	3.7
Ajay	177	39.3	34	30	0.0	3.8
<b>Average</b>	<b>190</b>	<b>39.9</b>	<b>41</b>	<b>30</b>	<b>46.6</b>	<b>4.0</b>

<sup>1</sup>Days after June 1.

<sup>2</sup>Plant lodging occurred only one year, 2002.

<sup>3</sup>Forage yields averaged for 3 years, 1999-2001.

**Comments:**

Results show yield advantage for the new varieties Monico, Maverick, and Powell. Monico and Maverick both have very good bushel weight. Monico is the earliest to head while Maverick has good standability.



**Table 6. Irrigated spring oat performance trial at Yellow Jacket<sup>1</sup> in 2002 by Mark Stack.**

Variety	Grain Yield <sup>2</sup> bu/ac	Grain Moisture %	Test Weight lb/bu	Plant Height in	Heading Date <sup>3</sup> days	Lodging <sup>4</sup> rating
AbSP19-9	166	7.5	38.5	36	180	1
Maverick	162	7.9	37.4	32	181	2
Monico	161	7.9	40.5	35	179	1
Ajay	157	7.6	38.0	31	180	1
Powell	156	7.8	38.1	32	179	2
Ab406	155	7.7	37.8	31	178	3
Ab8597	152	8.1	38.1	37	180	2
Ab10854	143	7.6	39.8	37	184	3
Rio Grande	140	7.6	37.9	33	175	2
Monida	140	7.5	37.2	38	181	3
Otana	129	8.0	38.7	38	180	2
Lamont	124	9.5	45.1	37	185	1
Russell	120	7.6	38.3	38	179	3
Provena	114	9.7	49.4	35	186	1
<b>Average</b>	<b>144</b>	<b>8.0</b>	<b>39.6</b>	35	181	2
LSD <sub>(0.05)</sub>	14					

<sup>1</sup>Trial conducted at the Southwestern Colorado Research Center; seeded 4/23, harvested 8/26.

<sup>2</sup>Yields based on 38 lb/bu and 12% moisture.

<sup>3</sup>Number of days after January 1.

<sup>4</sup>Rating scale 1-9; 1 = no lodging and 9 = completely lodged.

## RELEASE OF 'MONICO' A SPRING OAT VARIETY

United States Department of Agriculture  
Agricultural Research Service  
Washington, D.C.

and

Idaho Agricultural Experiment Station  
University of Idaho  
Moscow, Idaho

and

Montana Agricultural Experiment Station  
Montana State University  
Bozeman, Montana

and

Colorado Agricultural Research Station  
Colorado State University  
Fort Collins, Colorado

The Agricultural Research Service, U.S. Department of Agriculture, and the Idaho, Montana, and Colorado Agricultural Experiment Stations

### Site Information:

Soil type: Wetherill silty clay loam

Previous crop: Dry bean

Seeding rate: 100 lb/ac; (8-inch row spacing)

Fertilizer: 75 lb N/ac broadcast preplant

Herbicide: Harmony Extra 0.5 oz/ac + 2,4-D Ester 8 oz/ac

Insecticide: None (seed treated with Vitavax for loose smut)

Irrigation: 22.5 inches (sprinkler)

Precipitation: January 1, 2002 thru August 26, 2002: 1.1 inches (long-term average 9.7 inches)

### Comments:

The oat variety trial yielded remarkably well notwithstanding the hot and dry conditions that persisted throughout the growing season.

Monico performed very well with a yield of 161 bu/ac and 40.5 lb/bu test weight with no lodging. Maverick also yielded very good (162 bu/ac) and it's relatively short plant height provides superior lodging resistance. Ajay (157 bu/ac) continues to perform very well in southwestern Colorado.

Lamont and Provena are hullless spring oats and consequently had the best test weights. Hullless oats are used as a high-quality feed for horses and dairy cows.

announce the joint release of 'Monico', spring oat (*Avena sativa*) variety developed cooperatively by Agricultural Research Service, U.S. Department of Agriculture; the Idaho Agricultural Experiment Station, the Montana Agricultural Experiment Station, and the Colorado Agricultural Experiment Station. Monico (M4n §cÇ) is named after the three states joining in its release (Montana, Idaho, Colorado).

Monico originated as a F<sub>4</sub> spaced plant harvested in 1993 at Aberdeen, Idaho, and was given the selection designation of AbSP9-2. It is a selection from the cross 83Ab3119/ 'Monida' and was developed utilizing a modified bulk selection program. The parent 83Ab3119 had the pedigree of 'Cayuse'/76Ab6343 (K71299 ('Minn II'/Cayuse))/3/'Otana' //Coker X848-1-1-2/Cayuse). Breeder's seed of Monico originated from 370 spaced plants grown at Aberdeen in 2000, increased in four-row plots in 2001 and approximately 340 plots were harvested and bulked. Monico was entered in the Uniform Northwestern States Oat Nursery from 1995 through 2001, and grown in replicated trials at

Aberdeen (irrigated) and Tetonia (dryland), Idaho since 1995.

Monico is an early to midseason, relatively tall spring with excellent yield potential under both irrigated and dryland conditions. Juvenile plant growth is erect and immature foliage is blue-green in color. Panicles are equilateral and spreading. Leaf sheath, leaf margins, and culm internodes are glabrous. Kernels of Monico are typically plump, mid-long, creamy-white, and similar in appearance to those of Otana, Cayuse, and Monida.

Monico was first tested in replicated trials in Idaho in 1995. It was widely tested in both irrigated and dryland trials in Idaho and other western states since regional testing in the Uniform Northwestern States Oat Nursery was initiated in 1998. Monico has an excellent yield record in Idaho and other locations in the West. In seven location-years of testing in irrigated trials at Aberdeen, Idaho in 1995-2001, Monico averaged 219.6 bu/A (7841 kg ha<sup>-1</sup>) in grain yield. Yields for other varieties in the same trials were 218.4 bu/A (7800 kg ha<sup>-1</sup>) for Monida; 206.1 bu/A (7361 kg ha<sup>-1</sup>) for Cayuse; and 187.1 bu/A (6682 kg ha<sup>-1</sup>) for Otana. In seven location-years of testing in dryland trials at Tetonia, Idaho in 1995-2001, Monico averaged 114.3 bu/A (4083 kg ha<sup>-1</sup>) compared to 109.3 bu/A (3894 kg ha<sup>-1</sup>) for Cayuse, 108.0 bu/A (3855 kg ha<sup>-1</sup>) for Monida, and 94.5 bu/A (3373 kg ha<sup>-1</sup>) for Otana. In 18 location-years of testing in irrigated trials in Montana in 1998-2001, Monico averaged 196.7 bu/A (7023 kg ha<sup>-1</sup>), Monida averaged 195.2 bu/A (6970 kg ha<sup>-1</sup>), and Otana averaged 181.5 bu/A (6480 kg ha<sup>-1</sup>). In dryland trials in Montana in 1998-2001 (25 location-years), Monico had an average grain yield of 95.0 bu/A (3391 kg ha<sup>-1</sup>) compared to 96.7 bu/A (3452 kg ha<sup>-1</sup>) for Monida and 90.8 bu/A (3242 kg ha<sup>-1</sup>) for Otana.

Monico is similar in appearance to Monida and Otana for plant type and color. Monico was 1.6 in (4.0 cm) taller than Cayuse, 2.0 in (5.1 cm) shorter than Monida, and 4.1 in (10.4 cm) shorter than Otana when grown under irrigation at Aberdeen. Under dryland conditions at Tetonia, Idaho, Monida was 0.9 in (2.3 cm) shorter than Cayuse, 5.0 in (12.5 cm) shorter than Monida, and 5.4 in (13.8 cm) shorter than Otana. Monico averaged 1.4 d earlier in heading date than Otana and 3.5 d earlier than

Monida in regional trials in Idaho and Montana. In 57 location-years of testing in irrigated and dryland trials in Idaho and Montana, Monico demonstrated good test weight, averaging 37.8 lbs/bu (486 kg m<sup>-3</sup>). Monida averaged 36.7 lbs/bu (472 kg m<sup>-3</sup>) and Otana averaged 38.4 lbs/bu (494 kg m<sup>-3</sup>).

Breeder's seed of Monico was increased in 2000, and foundation seed was produced in 2001. The Montana, Idaho, and Colorado Agricultural Experiment Stations will maintain breeder's and foundation seed of Monico. Requests for breeder's seed should be directed to the Coordinator, Foundation Seed Program, College of Agriculture, Kimberly Research and Extension Center, 3793 N 3600 E, Kimberly, Idaho 83341. Requests for foundation seed should be directed to the Director, Montana Foundation Seed Stocks Program, Montana State University, Bozeman, MT 59717. It is requested that appropriate recognition of source be given when this germplasm contributes to research or development of a new breeding line or cultivar. The U.S. Department of Agriculture has no seed for distribution.

## **PROPOSED RELEASE OF 'MAVERICK' A SPRING OAT VARIETY**

SELECTION NO.: 90Ab1322  
PARENTAGE: 80Ab988 (PI 578241)/Monida  
SOURCE: USDA-Agricultural Research Service,  
Aberdeen, Idaho  
University of Idaho Aberdeen Research and Extension  
Center, Aberdeen, Idaho  
DEVELOPED BY: Darrell M. Wesenberg  
Telephone: (208) 226-2638  
ARS-USDA, (retired)  
SUBMITTED BY: Charles A. Erickson  
Telephone: (208) 397-4162, ext. 185  
ARS-USDA, Aberdeen, Idaho FAX: (208) 397-4165

### **DESCRIPTION:**

Growth Habit: spring  
Head: equilateral, medium, spreading  
Rachis: straight  
Glumes: white

## **HISTORY:**

'Maverick' was developed cooperatively by the USDA Agricultural Research Service and the Idaho Agricultural Experiment Station. Maverick was selected in 1990 from an F<sub>5</sub> head row and given the selection number 90Ab1322. Maverick has the pedigree of 80Ab988(PI 578241)/Monida. The cross was made in 1984 at Aberdeen, the F<sub>1</sub> and F<sub>2</sub>'s were increased as bulks at Aberdeen, and then increased as head rows through the F<sub>5</sub>. Maverick was tested in Uniform Northwestern States Oat Nursery from 1993 through 2001. It has been grown in replicated trials at Aberdeen, Idaho under irrigation since 1992 and in irrigated and dryland trials at Teton, Idaho, since 1993. Maverick was tested in the Montana Oat trials from 1994-2001. It is a short strawed variety that is suited to irrigated and high moisture areas in Idaho and Montana, and is the type of white hulled, high protein oat favored in the equine industry.

Approximately 400 bushels of breeders seed is available in Montana for spring of 2002. This would be a joint release with Idaho and Montana.

## **Description of spring wheat varieties in trials.**

<b>Variety Name</b>	<b>Class</b>	<b>Origin</b>
<b>Alturas</b>	Soft White	Idaho
<b>Blanca</b>	Soft White	Colorado
<b>Blanca Grande</b>	Hard White	General Mills
<b>BR 7030</b>	Hard White	General Mills
<b>Briggs</b>	Hard Red	South Dakota
<b>Butte 86</b>	Hard Red	North Dakota
<b>Centennial</b>	Soft White	Idaho
<b>Challis</b>	Soft White	Western Plant Breeders
<b>CO1955W</b>	Hard White	General Mills
<b>CO1963</b>	Hard White	General Mills
<b>CO98S01</b>	Hard Red	Colorado
<b>CO98S12</b>	Hard Red	Colorado
<b>CO98S13</b>	Hard Red	Colorado
<b>CO98S17</b>	Hard Red	Colorado
<b>CO98S21</b>	Hard Red	Colorado
<b>CO98S24</b>	Hard Red	Colorado
<b>CO98S28</b>	Hard Red	Colorado
<b>CO98S31</b>	Hard Red	Colorado
<b>CO98S44</b>	Hard Red	Colorado
<b>CO98S49</b>	Hard Red	Colorado
<b>CO98S68</b>	Hard Red	Colorado

<b>Variety Name</b>	<b>Class</b>	<b>Origin</b>
<b>CO98S75</b>	Hard Red	Colorado
<b>Dirkwin</b>	Hard Red	Idaho
<b>Eden (WA7902)</b>	Club	Washington State
<b>Forge</b>	Hard Red	South Dakota
<b>Grandin</b>	Hard Red	North Dakota
<b>Hank</b>	Hard Red	Western Plant Breeders
<b>Hanna</b>	Hard Red	Agripro Biosciences, Inc
<b>ID 377s</b>	Hard White	Idaho (Promar)
<b>ID 557</b>	Hard Red	Idaho
<b>ID 566</b>	Hard Red	Idaho
<b>ID 569</b>	Soft White	Idaho
<b>ID 577</b>	Hard Red	Idaho
<b>ID 581</b>	Soft White	Idaho
<b>ID 582</b>	Soft White	Idaho
<b>Ingot</b>	Hard Red	South Dakota
<b>Jagger (winter)</b>	Soft White	Kansas
<b>Keystone</b>	Hard Red	Western Plant Breeders
<b>Knudsen</b>	Hard Red	Agripro Biosciences, Inc
<b>Kronos</b>	Durum	Arizona Plant Breeders
<b>Lolo</b>	Hard White	Idaho
<b>Matt</b>	Durum	Arizona Plant Breeders
<b>Nora</b>	Hard Red	Agripro Biosciences, Inc
<b>Ocotillo</b>	Durum	Arizona Plant Breeders
<b>Orita</b>	Durum	Western Plant Breeders
<b>Oslo</b>	Hard Red	Agripro Biosciences, Inc
<b>Oxen</b>	Hard Red	South Dakota
<b>Plata</b>	Hard White	General Mills
<b>Pomerelle</b>	Soft White	Idaho
<b>Pristine</b>	Hard White	General Mills
<b>Reeder</b>	Hard Red	North Dakota
<b>Russ</b>	Hard Red	South Dakota
<b>Sky</b>	Durum	Arizona Plant Breeders
<b>Sylvan</b>	Hard Red	Utah/Colorado
<b>Walworth</b>	Hard Red	South Dakota
<b>WB 881</b>	Durum	Western Plant Breeders
<b>Whitebird</b>	Soft White	Idaho
<b>Winsome</b>	Hard White	Oregon
<b>Yecora Rojo</b>	Hard Red	California
<b>Yu 894-75</b>	Durum	Westbred Plant Breeders
<b>Yu 895-99</b>	Durum	Westbred Plant Breeders
<b>Yu 995-231W</b>	Hard White	Westbred Plant Breeders
<b>Yu 995-241</b>	Hard Red	Westbred Plant Breeders

**Table 7. Dryland spring wheat performance trial at Hayden<sup>1</sup> in 2002 by Calvin Pearson.**

Variety	Grain Yield	Grain Moisture	Test Weight	Plant Height
	bu/ac	%	lb/bu	in
Dirkwin	18.2	10.2	53.4	15
ID 566	16.2	9.8	57.2	16
ID 377s	14.1	9.7	57.9	15
Forge	13.6	9.7	58.4	14
ID 577	13.6	10.1	57.1	14
Oxen	11.7	9.7	56.5	13
Eden	11.7	9.7	57.8	13
Winsome	9.7	9.8	55.7	13
Grandin	8.3	9.9	57.1	13
Briggs	8.1	9.5	56.7	14
Walworth	6.9	10.9	53.6	13
<b>Average</b>	<b>12.0</b>	<b>9.9</b>	<b>56.5</b>	<b>14</b>
LSD <sub>(0.05)</sub>	5.7			2

<sup>1</sup>Trial conducted on Dutch and Mike Williams Farm; seeded 5/6 and harvested 9/4.

**Comments:**

Eleven spring wheat entries were evaluated during the 2002 growing season. 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. Spring wheat was planted at 60 lb/ac. No fertilizer, herbicides, or insecticides were applied. Plots were harvested with a Hege small plot combine.

Grain moisture in the spring wheat variety performance test averaged 9.9% (Table 7). Grain yields averaged 12.0 bu/ac. Grain yield ranged from a high of 18.2 bu/ac for Dirkwin to a low of 6.9 bu/ac for Walworth. Test weight averaged 56.5 lb/bu. Plant height averaged 14 inches. Plant height ranged from a high of 15.5 inches for ID 566 to a low of 12.5 inches for Eden. There was no lodging in the spring wheat variety performance test in 2002.

**Table 8. Dryland spring wheat performance trial at Akron<sup>1</sup> in 2002 by Scott Haley.**

Variety	Planting Date 1			Planting Date 2			Overall Average
	Low Seed Rate	High Seed Rate	Average	Low Seed Rate	High Seed Rate	Average	
	----- Yield (bu/ac) -----						
Russ	13.0	7.6	10.3	7.0	5.5	6.3	8.3
CO98S49	11.0	7.0	9.0	11.9	2.7	7.3	8.1
CO98S28	8.0	7.4	7.7	6.5	9.1	7.8	7.7
CO98S44	12.2	6.9	9.5	10.2	1.1	5.7	7.6
Grandin	10.5	3.0	6.8	10.5	6.4	8.4	7.6
Ingot	10.0	3.9	7.0	7.9	7.5	7.7	7.3
Walworth	11.2	6.4	8.8	3.5	7.4	5.5	7.1
Hanna	9.5	9.9	9.7	7.3	1.6	4.4	7.1
CO98S21	12.6	3.8	8.2	6.4	5.1	5.7	7.0
CO98S13	10.7	1.7	6.2	6.6	7.8	7.2	6.7
CO98S75	9.9	5.2	7.5	2.3	7.5	4.9	6.2
Keystone	9.2	3.9	6.6	6.5	4.8	5.7	6.1
Briggs	9.6	2.5	6.1	3.7	8.1	5.9	6.0
Forge	3.8	6.2	5.0	8.3	4.8	6.5	5.8
CO98S24	10.6	2.3	6.4	4.9	4.7	4.8	5.6
CO98S12	8.8	2.8	5.8	4.0	6.5	5.3	5.6
Oxen	5.6	7.1	6.3	3.5	5.4	4.4	5.4
CO98S17	7.7	2.0	4.9	5.0	6.2	5.6	5.2
Reeder	7.0	3.2	5.1	3.7	5.6	4.7	4.9
Butte 86	5.3	1.8	3.6	4.8	5.4	5.1	4.3
Knudsen	8.2	2.2	5.2	3.2	3.1	3.1	4.2
CO98S01	4.6	2.4	3.5	5.0	4.2	4.6	4.1
Jagger	8.2	6.5	7.3	1.3	0.1	0.7	4.0
CO98S31	7.0	4.5	5.8	3.9	0.5	2.2	4.0
CO98S68	5.6	3.9	4.7	3.5	1.3	2.4	3.6
<b>Average</b>	<b>8.8</b>	<b>4.6</b>	<b>6.7</b>	<b>5.7</b>	<b>4.9</b>	<b>5.3</b>	

<sup>1</sup>Trial conducted on the Rick Lewton Farm.

**Notes:**

- S Trial conducted at the Rick Lewton Farm south of Akron, planted into millet stubble. Good soil moisture at planting was followed by minimal rainfall and high temperatures through harvest.
- S An identical trial at the Akron Central Great Plains Research Station was abandoned prior to harvest due to absence of rain.
- S Both planting date treatments included three replications for each seeding rate and entry treatment. Statistical analysis revealed an extremely high degree of variability within both planting date treatments; no statistical differences were observed between planting dates, seeding rates, or entries.
- S Planting date treatments: date 1 = March 11, 2002; date 2 = April 1, 2002.
- S Seeding rate treatments: low rate=1 million seeds/acre, high rate=2 million seeds/acre.
- S Entries denoted as "CO98S" are experimental spring wheat lines with Russian wheat aphid resistance developed by the CSU Wheat Breeding Program.

**Table 9. Irrigated spring wheat performance trial at Center<sup>1</sup> in 2002 by Merlin Dillon.**

Variety		Grain Yield <sup>2</sup> bu/ac	Grain Moisture %	Test Weight lb/bu	Plant Ht in	Heading Date <sup>3</sup> June	Grain Protein %	Grain Hardness <sup>4</sup> rating
Centennial	SW	168	11.2	61.2	37	29	12.9	4
Plata	HW	164	11.3	62.7	34	31	13.3	45
Lolo	HW	157	11.8	62.6	40	28	13.2	66
ID 377s	HW	155	11.8	62.0	39	26	13.7	58
BR 7030	HW	111	11.6	61.7	36	27	14.7	57
CO1955W	HW	108	12.5	61.6	42	23	15.6	49
Yu 995-231W	HW	102	14.5	59.4	27	24	16.3	54
Blanca Grande	HW	99	13.7	59.7	33	23	16.4	40
Pristine	HW	88	15.4	55.3	35	22	17.1	47
CO1963	HW	87	13.3	57.7	40	20	16.6	47
Yu 995-241	HR	146	11.3	60.2	33	25	15.4	45
Nora	HR	127	11.1	62.0	35	30	16.8	62
Oslo	HR	119	12.1	60.0	38	24	15.3	47
Hank	HR	118	12.5	59.3	36	24	16.1	45
ID 566	HR	117	11.8	61.1	37	24	16.6	44
Yecora Rojo	HR	100	11.8	60.1	29	23	16.6	47
ID 577	HR	97	13.1	57.6	36	24	16.8	37
Yu 895-99	Durum	126	11.1	61.4	38	27	14.0	86
Sky	Durum	119	11.5	59.9	32	25	14.5	90
Yu 894-75	Durum	117	14.8	57.2	39	23	15.5	80
WB 881	Durum	112	10.9	60.4	38	28	15.2	87
Matt	Durum	110	15.0	57.7	35	23	15.8	95
Orita	Durum	107	11.7	59.6	32	21	15.9	83
Kronos	Durum	107	13.6	59.6	35	23	15.7	87
Ocotillo	Durum	103	12.0	60.6	39	25	16.1	84
<b>Average</b>		<b>118</b>	<b>12.4</b>	<b>60.0</b>	<b>36</b>	<b>25</b>	<b>15.4</b>	<b>59</b>
LSD <sub>(0.20)</sub>		10						

<sup>1</sup>Trial conducted at San Luis Valley Research Center; seeded 4/17 and harvested 9/16.

<sup>2</sup>Yields based on 60 lb/bu and 12% moisture.

<sup>3</sup>Days after June 1.

<sup>4</sup>Grain hardness rating; <40 indicates soft wheat and >40 indicates hard wheat.

**Site Information:**

Seeding rate: 120 lb/ac; durum at 140 lb/ac

Nitrogen: 75 lb/ac dry pre-plant + 75 lb/ac dry post-plant + 30 lb/ac fertigation.

**Comments:**

The spring wheat trial included hard white, hard red, and durum wheats. The results are grouped by market class.

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 87 to 168 bu/ac.



Spring wheat variety test plots at Hayden, Colorado, June 19, 2001. Photo by Calvin Pearson.

**Table 10. Irrigated soft white spring wheat performance trial at Center<sup>1</sup> in 2002 by Merlin Dillon.**

Variety	Grain Yield <sup>2</sup> bu/ac	Grain Moist. %	Test Weight lb/bu	Plant Ht. in	Heading Date <sup>3</sup> June	Plant Lodging %	Grain Protein %	Grain Hardness rating <sup>4</sup>
Centennial	166	11.0	61.3	41	30	1.3	12.6	-1.3
Alturas	163	11.3	60.1	44	31	13.8	11.7	-0.8
Challis	161	11.0	59.0	44	31	40.0	11.7	-2.5
ID 581	161	12.0	60.2	43	33	15.0	11.6	8.8
ID 569	160	12.0	60.1	43	32	30.0	12.0	5.3
Blanca	159	12.0	60.7	44	30	3.8	12.3	-0.5
Whitebird	158	12.1	61.7	45	33	10.0	11.7	3.5
ID 582	157	11.9	62.0	39	31	0.0	12.2	2.3
<b>Average</b>	<b>160</b>	<b>11.7</b>	<b>60.6</b>	<b>43</b>	<b>31</b>	<b>14.2</b>	<b>12.0</b>	<b>1.8</b>
LSD <sub>(0.20)</sub>	5							

<sup>1</sup>Trial conducted at San Luis Valley Research Center; seeded 4/17 and harvested 9/17.

<sup>2</sup>Yields based on 60 lb/bu and 12% moisture.

<sup>3</sup>Number of days after June 1.

<sup>4</sup>Grain hardness rating; <40 indicates soft wheat and >40 indicates hard wheat.

**Site Information:**

Irrigation: Center pivot = ET

Seeding rate: 120 lb/ac in 7-inch row spacing

Herbicide: Bronate @ 1 pt/ac Nitrogen: 75 lb/ac dry pre-plant +75 lb/ac dry post-plant + 30 lb/ac fertigation

**Comments:**

The yields were exceptional (160 bu/ac) 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 ID 582 showed the most lodging resistance. Grain protein differences were also significant; low protein is better for soft white wheats.

**Table 11. Irrigated durum wheat performance trial at Center<sup>1</sup> in 2002 by Merlin Dillon.**

Variety	Grain Yield <sup>2</sup> bu/ac	Grain Moist. %	Test Wt lb/bu	Plant Ht. in	Heading Date <sup>3</sup> June	Grain Protein %	Grain Hardness <sup>4</sup> rating	Ergot <sup>5</sup> rating	HVAC <sup>6</sup> %
Yu 895-99	126	11.1	61.4	38	27	14.0	86	2.3	36
Sky	119	11.5	59.9	32	25	14.5	90	3.3	79
Yu 894-75	117	14.8	57.2	39	23	15.5	80	2.0	72
WB 881	112	10.9	60.4	38	28	15.2	87	2.5	88
Matt	110	15.0	57.7	35	23	15.8	95	3.8	82
Orita	107	11.7	59.6	32	21	15.9	83	3.0	90
Kronos	107	13.6	59.6	35	23	15.7	87	6.5	95
Ocotillo	103	12.0	60.6	39	25	16.1	84	4.8	83
<b>Average</b>	<b>113</b>	<b>12.6</b>	<b>59.6</b>	<b>36</b>	<b>24</b>	<b>15.3</b>	<b>87</b>	<b>3.5</b>	<b>78</b>
LSD <sub>(0.20)</sub>	10								

<sup>1</sup>Trial conducted at San Luis Valley Research Center; seeded 4/17 and harvested 9/16.

<sup>2</sup>Yields based on 60 lb/bu and 12% moisture.

<sup>3</sup>Days after June 1.

<sup>4</sup>Grain hardness rating; <40 indicates soft wheat and >40 indicates hard wheat.

<sup>5</sup>Ergot rating; 0 = none; 7 = very high.

<sup>6</sup>HVAC = Hard, vitreous amber color.

**Site Information:**

Seeding rate: 140 lb/ac

Nitrogen: 75 lb/ac dry pre-plant + 75 lb/ac dry post-plant + 30 lb/ac fertigation

**Comments:**

The durums were also included in the spring wheat performance trial results. This Table 11 lists extra grain quality ratings; ergot rating and HVAC %.

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 103 to 126 bu/ac. Dry weather made ergot a nonissue in the grower's fields this year; however, ergot was high in certain varieties in this trial.

**Table 12. Irrigated spring wheat performance trial at Yellow Jacket<sup>1</sup> in 2002 by Mark Stack.**

Variety	Grain Yield <sup>2</sup> bu/ac	Test Weight lb/bu	Plant Height in	Heading Date <sup>3</sup> days	Grain Protein %
Centennial	74	62.0	25	173	13.5
ID 377s	73	61.8	27	173	14.5
Sylvan	70	60.2	31	179	15.1
CO98S17	61	61.8	28	173	15.5
CO98S01	60	60.4	26	175	15.6
CO98S12	55	60.0	24	168	15.0
CO98S13	55	60.0	24	166	15.4
CO98S49	54	61.6	24	171	14.7
Kronos	53	59.4	23	168	15.9
CO98S68	47	61.3	30	173	17.2
CO98S28	45	61.5	25	169	17.0
CO98S21	44	61.3	24	166	15.0
CO98S31	43	61.0	28	170	16.3
CO98S24	39	59.9	25	166	17.2
CO98S44	36	59.9	26	168	16.6
<b>Average</b>	<b>54</b>	<b>60.8</b>	<b>26</b>	<b>171</b>	<b>15.6</b>
LSD <sub>(0.05)</sub>	9				

<sup>1</sup>Trial conducted at the Southwestern Colorado Research Center; seeded 4/23 and harvested 8/22.

<sup>2</sup>Yields based on 60 lb/bu and 12% moisture.

<sup>3</sup>Number of days after January 1.

**Site Information:**

Soil type: Wetherill silty clay loam

Previous crop: Dry beans

Seeding rate: 90 lb/ac; (8-inch row spacing)

Fertilizer: 75 lb N/ac broadcast pre-plant + 30 lb N/ac top-dress

Herbicide: Harmony Extra 0.5 oz/ac + 2,4-D Ester 8 oz/ac

Irrigation: 22.5 inches (sprinkler)

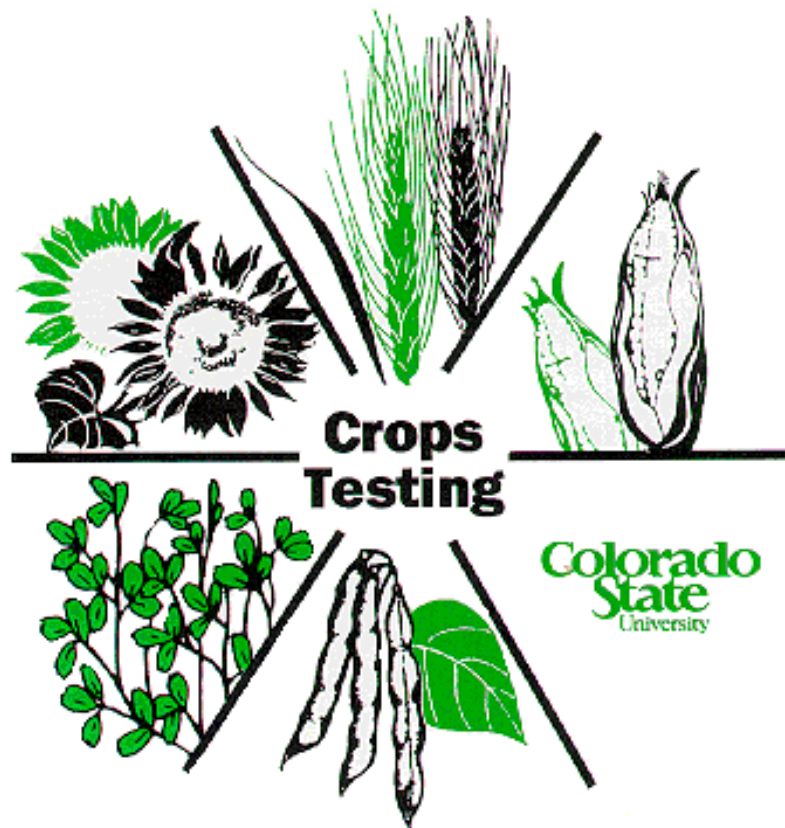
Precipitation: January 1, 2002 thru August 22, 2002: 1.1 inches (long-term average 9.7 inches)

**Comments:**

The spring wheat variety trial yields were below average this year. The check varieties of Sylvan and ID 377s yielded 70 bu/ac and 73 bu/ac compared to their five-year average of 98 bu/ac and 97 bu/ac, respectively. The low yields in 2002 may be due to the hot and dry conditions that persisted throughout the growing season. The grain protein levels indicate that nitrogen was not a limiting factor for yield. Sylvan and ID 377s also headed earlier in 2002 compared to previous years. None of the entries lodged this year. Harvest was two weeks earlier than any spring wheat trial over the past five years at Yellow Jacket.

The CO98S\_\_ entries are experimental lines from Colorado State University with Russian wheat aphid (RWA) resistance. Many of these lines had short tillers with small heads that were late in maturing. Stress to the wheat plant early in the year may have caused the plants to produce the short tillers. The RWA resistant lines also exhibited seed shattering. No insecticide to control RWA was applied in order to subject the experimental lines to RWA feeding pressure. There was moderate RWA activity present in the trial.

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A handwritten signature in black ink, which appears to read 'Jerry Johnson', is positioned below the crop illustrations.

Jerry Johnson, Extension Specialist Crop Production

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