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FROM THE GROUND UP
Agronomy News

2001 Colorado Winter Wheat Variety Performance Trials

Trial results provide information for making good variety decisions.

Colorado State University conducts variety performance trials to obtain unbiased and reliable information for Colorado wheat producers to make better variety decisions. Good variety decisions can return millions of dollars to Colorado wheat producers.

Inadequate soil moisture conditions throughout much of eastern Colorado in the fall of 2000, especially in southeast Colorado, led to late planting or planting into dry soil. Cooler than normal temperatures in October and November resulted in inconsistent stand establishment and slow fall growth. Significant portions of fall-planted acreage did not emerge until early spring following mild winter temperatures and good winter moisture.

Early spring growth was good at many locations but was followed by late spring drought. Cloudy spring conditions resulted in below normal growing degree-days in many locations and wheat that had been slow to emerge in the fall, or did not emerge until early spring, did not tiller as profusely as usual. High

INSIDE THIS ISSUE

Colorado State University
Knowledge to Go Places

2001 Colorado Winter Wheat Variety Performance Trials (continued)

yield potential for irrigated winter wheat was adversely affected by sub-optimal fall and spring growing degree-days. Cold night temperatures in mid-May led to widespread late spring freeze damage, although less severe this year than in 2000.

Prolonged high temperatures in June affected grain filling and reduced yields, especially in locations already stricken with drought. Heavy June infestations of stripe rust also led to widespread damage, especially in northeast Colorado. Historically, stripe rust occurrence in Colorado has been very rare, only once in approximately 20 years according to Bill Brown, CSU pathologist. Initial estimations of expected yield loss due to stripe rust were minimal due to the late stage of infection followed by long periods of high temperatures and low moisture. Later evidence suggests that yield losses were greater than expected, as much as 25% in the irrigated wheat trial at Haxtun. Dryland trial locations most severely affected by stripe rust were Julesburg, Akron, and Walsh. Moderate stripe rust infection was observed at Briggsdale and Genoa, the latter of which was the only trial in 2000 with stripe rust. Insect pressure was low to non-existent in 2001. Consequently there was only minimal yield loss to due wheat steak mosaic, high plains disease, or barley yellow dwarf disease.

Our dryland winter wheat variety trial, restructured in 1999, is a single uniform variety performance trial conducted at 10 locations. Yields were obtained from eight of the ten locations as hail destroyed the Bennett trial in May and the Sheridan Lake trial, which was in an area dominated by spring emergence, was not harvested due to severe wind erosion in early spring. Of the 60 entries in this trial, approximately half are named varieties and the other half are experimental lines. In addition to CSU varieties, named and experimental lines, the trial included public varieties from Nebraska, Oklahoma, and Kansas, and private varieties from Cargill-Goertzen and General Mills. Irrigated variety trials were conducted at Rocky Ford, Haxtun, and Fort Collins. The Rocky Ford trial, that looked so good all spring, was destroyed by hail in early June. A randomized complete block field design with three replicates is used in all trials. All dryland trials were seeded at 600,000 seeds per acre and planted in six, 12 inch-spaced rows, 46 feet long. The irrigated trials are seeded 1.2 million seeds per acre. The Haxtun irrigated trial was grown under circle sprinkler irrigation with plots seeded in 7 inch-spaced rows, 6' wide and 26 feet long. The Fort Collins, furrow-irrigated, trial was planted in 7 inch-spaced rows on 30-inch beds and plots were 26 feet long.

Variety planting suggestions, based on these trial results, are found in the revised "Decision Tree for Winter Wheat Variety Selection in Colorado". We encourage producers to spread the variety decision risk by planting more than one variety. The average performance over two or three years is a proven tool for yield performance evaluation but producers should be mindful of other varietal characteristics, like maturity, height, disease and insect resistance, quality characteristics, and winter hardiness, that influence variety adaptation, performance, and marketing options. Complete variety descriptions and the full complement of trial results can be viewed on the web at: http://www.colostate.edu/Depts/SoilCrop/extension/CropVar/wheat1.html.

by Jerry Johnson and Scott Haley
Crops Testing and Wheat Breeder
Dept. Soil and Crop Sciences

Colorado Winter Wheat Uniform Variety Performance Trial Summary for 2001.

	Location								Averages			
Variety	Akron	Briggsdale	Burlington	Cheyenne Wells	Genoa	Julesburg	Lamar	Walsh	2001 Yield bu/ac	Twt lb/bu	2-Yr 2000/01 bu/ac	3-Yr 1999/00/01 bu/ac
	Yield (bu/ac)											
Trego	56.5	56.4	37.9	42.6	42.3	48.0	47.7	50.7	47.8	58.9	44.5	52.7 (1)
Jagger	56.1	65.0	38.8	35.4	52.4	43.9	34.4	47.1	46.7	57.0	41.5	------
Stanton	54.8	60.8	43.2	34.9	43.2	43.5	47.4	42.5	46.3	56.8	42.5	------
GM10002	55.6	56.3	33.4	39.1	47.4	42.9	44.0	45.9	45.6	58.8	------	------
Enhancer	60.7	52.5	36.3	40.4	47.6	48.7	41.3	36.8	45.5	56.7	42.4	50.9 (3)
Alliance	45.1	65.1	34.3	35.8	41.3	41.8	48.9	39.4	44.0	56.1	42.1	51.9 (2)
Akron	52.9	62.6	34.7	32.8	37.4	42.3	41.7	40.8	43.2	56.4	41.3	50.4 (5)
Yuma	54.0	56.3	41.7	36.1	36.0	44.1	40.3	36.2	43.1	56.0	41.1	50.0
Golden Spike	51.6	51.6	29.3	31.8	45.2	41.0	46.6	47.0	43.0	55.2	------	------
Halt	49.6	63.2	35.8	39.0	39.0	40.1	42.3	34.1	42.9	56.2	39.2	47.6
Above	45.3	56.1	35.2	35.2	35.6	46.5	41.3	40.4	41.9	55.5	40.8	------
GM10001	50.3	49.6	33.1	32.5	38.6	45.1	43.1	40.4	41.6	56.9	------	------
Prowers 99	42.5	51.7	35.4	35.6	34.0	35.8	47.5	48.9	41.4	58.8	37.2	------
Avalanche	47.3	52.8	33.8	38.7	37.9	39.0	39.7	40.9	41.3	57.7	41.1	50.8 (4)
Yumar	46.4	53.1	36.2	33.6	36.1	42.4	41.1	36.9	40.7	57.1	38.4	48.5
Prairie Red	47.0	57.1	36.7	36.6	32.8	39.0	40.0	36.3	40.7	56.3	39.8	49.1
Kalvesta	52.1	51.9	41.0	40.3	32.1	37.6	35.3	31.9	40.3	57.1	38.9	48.1
TAM 107	45.2	56.2	35.8	42.3	30.2	37.3	40.6	33.8	40.2	56.5	39.0	47.6
AP502 CL	50.8	57.2	29.6	32.3	32.7	41.2	38.2	34.1	39.5	55.2	39.2	------
Intrada	43.4	59.3	36.4	31.7	32.3	41.8	36.3	28.9	38.8	56.8	------	------
Lakin	37.4	54.6	35.5	34.3	28.1	37.8	43.8	34.0	38.2	57.1	38.9	------
TAM 110	41.6	57.6	38.2	32.5	33.0	42.6	29.8	28.1	37.9	55.1	38.8	47.8
2137	31.3	53.9	32.9	34.4	33.7	37.4	42.8	36.2	37.8	55.7	39.0	48.8
Venango	42.8	47.9	33.4	34.1	27.9	36.2	35.8	39.3	37.2	58.1	38.4	46.7
Nuplains	29.0	56.6	35.8	31.5	32.1	30.7	41.0	28.3	35.6	55.8	37.6	------
Wichita	34.5	45.4	30.6	33.4	30.3	26.3	36.0	36.9	34.2	58.8	31.5	36.8
Average	47.1	55.8	35.6	35.7	36.9	40.5	41.0	38.3	41.4	-	-	-
CV%	15.9	13.1	13.2	16.4	11.1	8.2	11.5	13.8	13.3	-	-	-
LSD(0.30)	6.7	6.0	3.9	6.3	3.6	2.7	3.9	4.3	1.7	-	-	-

Varieties in table ranked by the average yield over eight locations in 2001.
[1.....5] Varieties ranked based on 3-Yr average yields.
*CO989889 - red-chaffed hard red CLEARFIELD wheat (tentatively named "AP502 CL").

FROM THE GROUND UP

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Web Site: http://www.colostate.edu/Depts/SoilCrop/extension/Newsletters/news.html

Jerry Johnson
Technical Editor

Direct questions and comments to:
Deborah Fields
Phone: 970- 491-6201
Fax: 970-491-2758
E-mail: dfields@lamar.colostate.edu

Colorado Irrigated Winter Wheat Uniform Variety Performance Trial Summary for 2001

Location						2-Yr Average	
Haxtun			Fort Collins			2000/2001	
Variety	Yield	Test Weight	Variety	Yield	Test Weight	Variety	Yield	Test Weight
	bu/ac	lb/bu		bu/ac	lb/bu		bu/ac	lb/bu
Wesley	102.0	63.3	NW97S278	122.8	62.5	Enhancer	104.1	58.2
Enhancer	100.6	63.3	Enhancer	115.2	61.9	Jagger	103.3	58.8
NW97S278	96.7	64.5	Wesley	114.4	60.5	Wesley	102.2	58.2
Golden Spike	93.3	60.9	Jagger	111.0	61.8	Venango	101.1	59.8
GM10002	93.1	62.9	GM10001	108.4	62.1	Yuma	100.8	58.3
Jagger	91.5	63.9	CO980889	106.8	60.3	CO940611	96.6	59.5
GM10001	87.4	64.0	Yuma	104.2	61.3	TAM 107	95.6	57.8
Avalanche	86.3	63.5	CO980894	102.2	60.1	Trego	93.8	60.2
Akron	84.7	62.1	Yumar	101.7	61.0	Yumar	93.1	56.6
Venango	84.1	64.2	GM10002	101.2	62.3	2137	92.7	57.6
Trego	83.3	64.0	Prairie Red	100.0	60.3	Prairie Red	91.7	58.2
Yuma	81.5	63.1	Venango	96.7	61.2	Akron	89.3	58.2
AP502 CL	81.3	59.2	Golden Spike	96.3	58.0	Nuplains	89.2	59.0
Above	80.2	60.7	Trego	95.1	62.1	Kalvesta	85.4	58.8
2137	79.4	62.3	CO940611	94.3	60.8			
Lakin	78.8	60.7	Akron	91.6	60.1			
Yumar	76.4	61.0	TAM 107	90.3	59.6			
Nuplains	75.2	63.2	2137	86.4	59.9			
Intrada	74.4	63.8	Nuplains	85.5	60.7			
Prairie Red	74.0	61.7	Intrada	84.6	62.3			
Kalvesta	72.5	61.8	Lakin	82.0	59.8			
TAM 107	70.8	61.7	Kalvesta	81.3	60.4			
Average	84.0	62.5	Average	98.7	60.9			
CV%	7.2		CV%	17.4				
$LSD_{(0.30)}$	5.2		$LSD_{(0.30)}$	14.7				

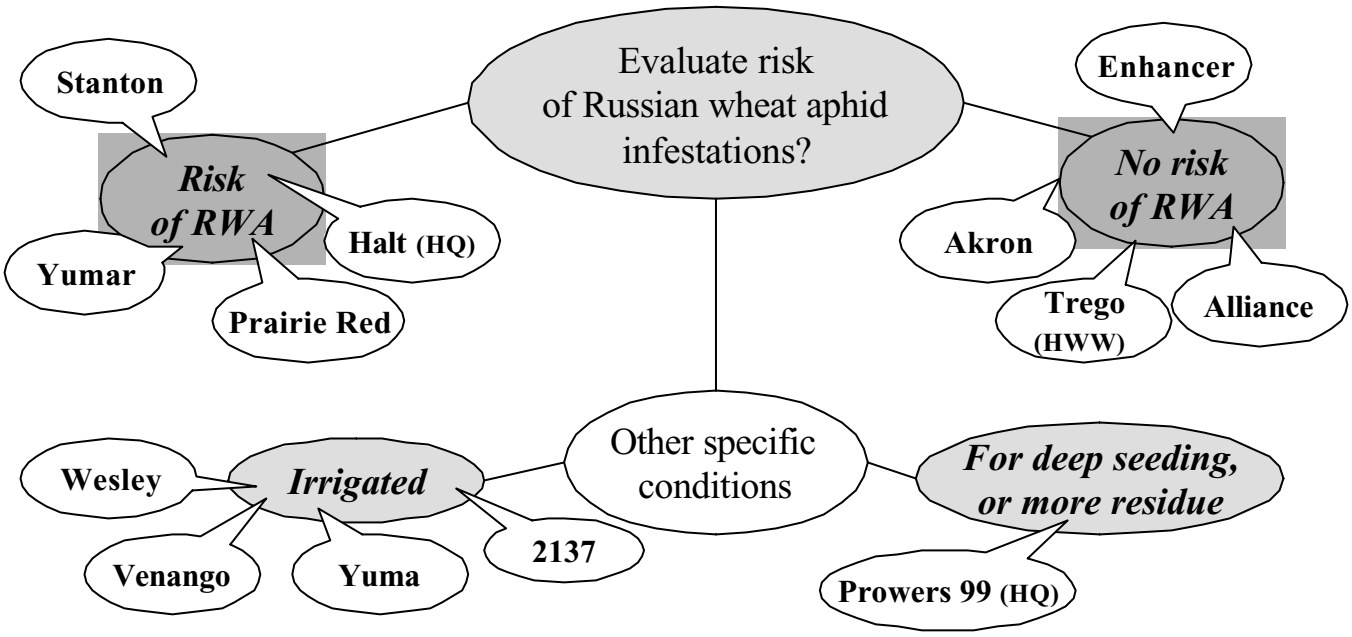
[1]Varieties in table ranked by the average yield for each location in 2001

[2] Variety rank based on 2-Yr average yields.

*CO980889 – red-chaffed hard red CLEARFIELD wheat (tentatively named “AP502 CL”)

Decision Tree for Winter Wheat Variety Selection in Colorado

Jerry Johnson and Scott Haley *(August 2001)*



(HQ) signifies high end-use (milling and baking) quality.

(HWW) signifies Hard White Winter wheat variety.

The best choice of a winter wheat variety in Colorado depends upon variable production conditions. The decision tree combines our knowledge of wheat varieties with their performance in CSU variety trials. Varieties listed in the decision tree are varieties that we think growers should consider for the production conditions specified in the tree. Production risks may be reduced by planting more than one variety and it should be remembered that avoiding poor variety decisions may be as important as choosing the winner among winners.

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Wheat Stripe Rust In Colorado - What Happened?

Weather patterns contributed to arrival of fungus in Colorado.

The same rains that saved much of the state's wheat in 2001 also brought the wheat stripe rust disease. Wheat stripe rust is a fungus that attacked the leaves and in some instances the glumes of wheat. It developed in the unexpectedly cool and humid conditions that prevailed in the last of May and early June.

We have never seen such a problem with stripe rust on the plains in wheat, although it has occasionally been found at insignificant levels. Early in the season it was seen developing in Texas, then Oklahoma and then in Kansas where it is equally rare. Normally it would have been stopped by increasingly high temperatures and dryness, but not this year. In mid May, there were no prevalent diseases and the warm temperature had stopped the stripe rust in Kansas while wheat was in the boot in Colorado. In late May and the first week of June, stripe rust took off again and moved into Colorado wheat during flowering. It eventually moved all the way to the Front Range. Irrigated wheat, such as Platte, was hard hit. Increased nitrogen and high plant populations in irrigated wheat exacerbated the severity of the stripe rust infestations.

Questions about stripe rust have been asked by researchers and growers alike. Bob Bowden in Kansas has addressed these in detail and I am basically quoting his questions and some thoughts here as well as my own experience over 25 years with a similar stripe rust of barley

Wheat stripe rust

Where did it come from? The stripe rust fungus does not survive in the US. Normal it survives on green host tissue in Mexico and sometimes Texas. This year it was first noted in mid-March in the area around Uvalde, Texas. Very strong southerly winds traveling directly from the Gulf Coast to Kansas probably brought the fungus spores into that area much earlier than would be normal.

How did it develop in Colorado? Wheat stripe rust was first reported in southern Kansas on May 2 at Hutchinson. During the week of May 7, reports of stripe rust were coming from between Dodge City and McPherson and from south of Highway 56 to the Oklahoma border.

Unusually warm weather from May 14-17 was expected to inhibit further development of the epidemic and Dr. Bowden reported rust lesions on most varieties began to dry. On May 19, a cool, wet period began which lasted three weeks and the fungus took off again. By May 29, it was in the Goodland, KS area. It was this second burst of spores that got into Colorado and caused our initial infections.

Have we had this problem before? No, we have seen traces of stripe rust on occasion but never at the level seen this year. Dr. Bowden noted that it is pretty much the same in Kansas but that last year there was a small outbreak of stripe rust in central Kansas that caused an estimated loss of 0.05%. When he examined the official USDA rust loss estimates from 1918
to 1976, there was no data for stripe rust losses in Kansas. However, records indicate that in 1957 and 1958 stripe rust epidemics occurred in the Southern Plains that pretty much matched the situation in 2000 and 2001. Both 1957 and 1958 were unusually cool and wet across the Southern Plains.

Would fungicides have worked? Yes, foliar fungicides would have worked if applied early enough. Excellent control can be obtained with Tilt if applied before disease severity on the lower leaves reaches 5% at the late boot stage. My work with barley stripe rust in South America also supports Dr. Bowden's observations. However, Tilt cannot be used beyond boot in Colorado and we had no rust at boot. At that point with wheat at less than $3 and Tilt at about $12/acre it is unlikely anyone would have sprayed. The rust hit us at flowering and the only alternative was to use Quadris, the new strobilurin fungicide from

Wheat Stripe Rust In Colorado - What Happened? (continued)

Syngentia. Quadris would have cost $24-28/acre and even more critical, has a 45-day pre-harvest interval. So effectively we were out of luck.

Will stripe rust be a problem next year again? It is unlikely that we will see this kind of a problem again for another long time. If the kind of weather that we saw this spring occurs again and the inoculum gets into Kansas early enough then the possibility does exist. Barley stripe rust problems in the early 1900s, can be attributed to four conditions (really outside of Colorado):

1. unusually cool, wet weather in Texas helped develop stripe rust early on,
2. strong southerly winds transported a heavy spore shower to Kansas in mid-April,
3. unusually cool wet weather in Kansas in May allowed the rust to develop to the levels that then served as the inoculum for eastern Colorado, and
4. unusually cool, wet weather developed in late May and early June on the High Plains that allowed the fungus to develop once it arrived.

It seems unlikely that we will get all this together again next year. Our best approach is still to follow the development of disease development in Kansas and base our action on what develops there.

Should we not use susceptible varieties next year? Even though is unlikely we will see this kind of situation again it is always a good idea to use a mix of varieties in your fields. There is always the potential for different problems to develop. The major problem in most years is more likely to be Russian wheat aphid. This year we saw susceptibility to stripe rust but we want to avoid over compensating for stripe rust and getting hit hard with another kind of problem.

William Brown
Extension Plant Pathologist
Dept. of Bioagricultural Sciences
and Pest Management

Meet Dr. William M. Brown, Jr.

Dr. William M. Brown, Jr.

Dr. Brown is professor of Plant Pathology and Extension Integrated Pest Management (IPM) Coordinator in the Department of Bioagricultural Sciences and Pest Management at Colorado State University. Bill's research and plant pathology extension responsibilities include turf and field crops such as wheat, barley, and corn. In collaboration with USDA-ARS Small Grains Germplasm laboratory at Aberdeen, ID, he evaluates barley yellow rust germplasm to help evaluate fungicides, the impact of cultural practices on the yellow rust, and rotational IPM cropping systems.

Dr. Brown participates in and assists in recruiting volunteers for international agriculture and volunteer programs.

He earned his B.S. from the University of California, Davis and his Ph.D. from Oregon State University.

Dryland Wheat Strips for Forage and Grain Yield at Walsh, 1999-2001

TAM 110 is a good multi-purpose variety choice for Southeastern Colorado.

The purpose of this trial was to determine which wheat varieties are best suited for forage and grain production in Southeastern Colorado.

Fifteen or sixteen winter wheat varieties were planted at Walsh from 1998 to 2000 using 45 lb/a seed in 20 ft. by 1110 ft. strips with two replications. In all years, the strips were fertilized at or above recommended rates from soil test results. Weeds were controlled using Ally or a combination of Ally and 2 4-D herbicides. Forage samples (two samples per plot, 2 ft. by 2.5 ft.) were taken at jointing (late March). Fresh forage samples were weighed, oven-dried, and reported as dry weight at 15% moisture content. Plots were harvested with a self-propelled combine and weighed in a digital weigh cart. Grain yields were corrected to 12% moisture content.

Results

1999 results

Jagger produced the highest forage yield and Alliance produced the highest grain yield (Table 1). Jagger was the best overall variety for grain and forage yields. There was a minor infestation of Russian Wheat Aphid (RWA).

2000 results

Jagger produced the highest forage yield at jointing while Ike produced the highest grain yield (Table 2). The best variety for overall forage and grain yield was TAM 110. There was a minor infestation of RWA, but a severe infestation of greenbug and other aphids. Barley Yellow Dwarf, a viral disease vectored by several aphid species (but not by RWA), impacted this study and Ike appeared to be more tolerant of the BYD virus than any of the other varieties.

2001 results

Prowers produced the highest forage yield while Trego produced the highest grain yield (Table 3). Prowers appears to be the best overall variety for grain and forage yield for 2001. Late planting and low heat units in the fall of 2000 and spring of 2001 combined with drought conditions in the spring led to lower than normal plant size and forage yields.

3-Year Summary - Akron had the highest 3 year average forage yields while Alliance yielded the most grain (Table 4). This trial indicates that TAM 110 is probably the best variety choice for overall forage and grain yield in Southeastern Colorado.

Table 1. Dryland Wheat Strips, Forage and Grain Yield at Walsh, 1999.

Variety	Jointing Dry Wt.	Grain Yield	Plant Height	Residue	Test Weight
	lb/ac	bu/ac	in	lb/ac	lb/bu
Jagger	4202	61	34	5196	61
Lamar	3328	60	41	6089	63
7805	3096	55	36	4485	61
Baca	2951	59	44	6079	63
Ike	2663	61	36	5263	64
Prowers	2658	57	40	5743	61
Akron	2654	57	35	5388	61
TAM 107	2620	59	32	3909	60
Prairie Red	2617	63	32	4130	60
TAM 110	2548	64	32	4677	61
Halt	2532	58	30	3410	60
Yuma	2445	61	35	4476	61
2137	2309	62	34	3918	62
Yumar	2293	61	33	4600	61
Alliance	2225	66	36	5330	62
Average	2743	60	35	4846	61
$LSD_{0.05}$	594.3	4.2			

Planted: September 25, 1998; 45 lbs seed/ac; 5 gal/ac 10-34-0.
Jointing sample taken March 31, 1999.
Grain Harvested: July 2, 1999; 20 ft. X 1285 ft.
Dry Weight is corrected to 15% moisture content.
Grain Yield is corrected to 12% seed moisture content.

Table 2. Dryland Wheat Strips, Forage and Grain Yield at Walsh, 2000.

Variety	Jointing Dry Wt.	Grain Yield	Plant Height	Residue	Test Weight
	lb/ac	bu/ac	in	lb/ac	lb/bu
Jagger	2514	31	25	4438	56
TAM 110	2491	40	25	3842	58
Akron	2311	32	25	4582	57
T213	2192	34	27	4476	56
Prowers	2034	27	28	4639	58
TAM 107	2005	35	25	3708	58
Halt	1933	32	24	3179	56
Prairie Red	1926	40	25	3842	58
Ike	1864	42	26	4620	59
Baca	1813	27	30	4880	58
Lamar	1740	29	29	4770	59
Alliance	1673	37	25	3929	56
Yuma	1644	28	25	3429	54
2137	1633	35	25	3400	56
Average	**1984**	**34**	**26**	**4124**	**57**
$LSD_{0.05}$	232.1	4.1			

Planted: September 29, 1999; 45 lbs seed/ac; 5 gal/ac 10-34-0.
Jointing sample taken March 20, 2000.
Grain Harvested: June 26, 2000; 1110 X 20 ft.
Dry Weight is corrected to 15% moisture content.
Grain Yield is corrected to 12% seed moisture content.

Table 3. Dryland Wheat Strips, Forage and Grain Yield at Walsh, 2001.

Variety	Jointing Dry Wt.	Grain Yield	Residue	Test Weight
	lb/ac	bu/ac	lb/ac	lb/bu
Prowers	1487	47	3990	64
Akron	1283	45	3150	63
Trego	1102	57	3006	64
Ike	1081	43	2800	63
TAM 110	1068	41	2497	62
Prairie Red	1023	38	2507	62
T213	1006	43	2838	63
TAM 107	989	40	2310	61
Alliance	853	49	2968	62
Thunderbolt	848	43	2924	63
Halt	803	39	1940	62
2137	758	34	2536	63
Smoky	713	34	2420	59
Soloman	520	40	2800	63
Average	**967**	**42**	**2763**	**62**
$LSD_{0.05}$	340.2	3.0		

Planted: October 13, 2000; 45 lbs seed/ac; 5 gal/ac 10-34-0.
Jointing sample taken April 24, 2001.
Straw residue taken July 20, 2001.
Grain Harvested: July 9, 2001; 20 ft x 1256 ft.
Dry Weight is corrected to 15% moisture content.
Grain Yield is corrected to 12% seed moisture content.

Table 4. Dryland Wheat Strips, Forage and Grain Yield summary at Walsh for 1999-01.

	3-Yr Averages			
Variety	Jointing Dry Wt	Grain Yield	Residue	Test Weight
	lb/ac	bu/ac	lb/ac	lb/bu
Akron	2083	44.7	4373	60.3
Prowers	2060	43.7	4791	61.0
TAM 110	2036	48.3	3672	60.3
TAM 107	1871	44.7	3309	59.7
Ike	1869	48.7	4228	62.0
Prairie Red	1855	47.0	3493	60.0
Halt	1756	43.0	2843	59.3
Alliance	1584	50.7	4076	60.0
2137	1567	43.7	3285	60.3
Average	**1853**	**46.0**	**3785**	**60.3**

Kevin Larson, Dennis Thompson Deborah Harn, Calvin Thompson
Research Scientist, Technician III, Researach Associate, and assistant, respectively
Plainsman Research Center

Websites

http://www.colostate.edu/Depts/SoilCrop/extension/CropVar/index.html
CSU's Crops Testing page for Wheat Variety Performance Trial Results.

http://www.ext.colostate.edu/pubs/crops/pubcrop.html
CSU's Cooperative Extension publications relevant to crops and soils.

http://www.ksu.edu/kscpt/
Kansas State Universisty's Crop Performance page with Variety Trial Results.

http://www.hpj.com
High Plains Journal on the net, requires Internet Explorer 5 or Netscape Navigator 5 for viewing.

http://www.nal.usda.gov/
The Nationals Agricultural Library (NAL), part of the Agricultural Research Service of the U.S. Department of Agriculture, is one of four national Libraries in the United States.

http://www.uidaho.edu/aberdeen/cereals/index.html
University of Idaho, Aberdeen Extension Cereals Propgram: "The Cereals Information Source."

http://varietytest.unl.edu/whttst/2001/index.htm
University of Nebraska Wheat Variety Testing results.

http://www.ianr.unl.edu/pubs/FieldCrops/
University of Nebraska's famous Nebsheets for Crop Production. Excellent information.

http://www.colostate.edu/programs/lifesciences/TransgenicCrops/
Information about transgenic crops including history, explanations of the process, figures on crops in use, and a quiz to test your knowlede about the issue of transgenic crops.

http://triticum.agsci.colostate.edu/vpt.html
Colorado Winter Wheat Variety Performance Database.