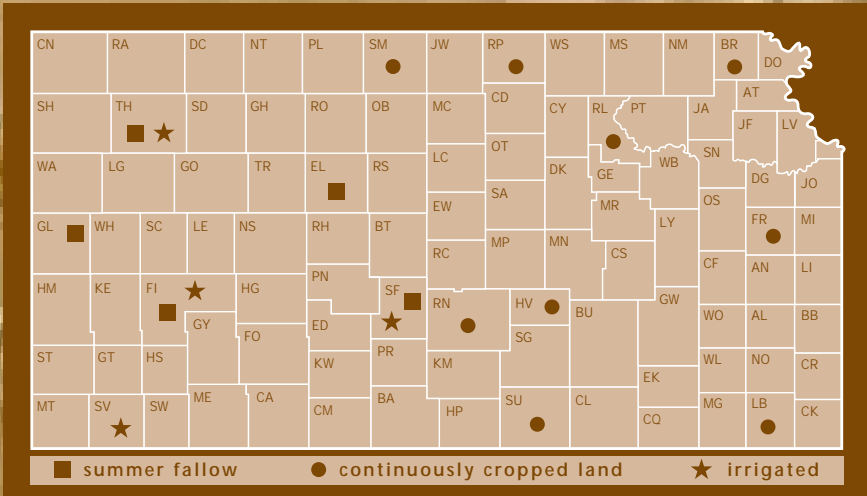
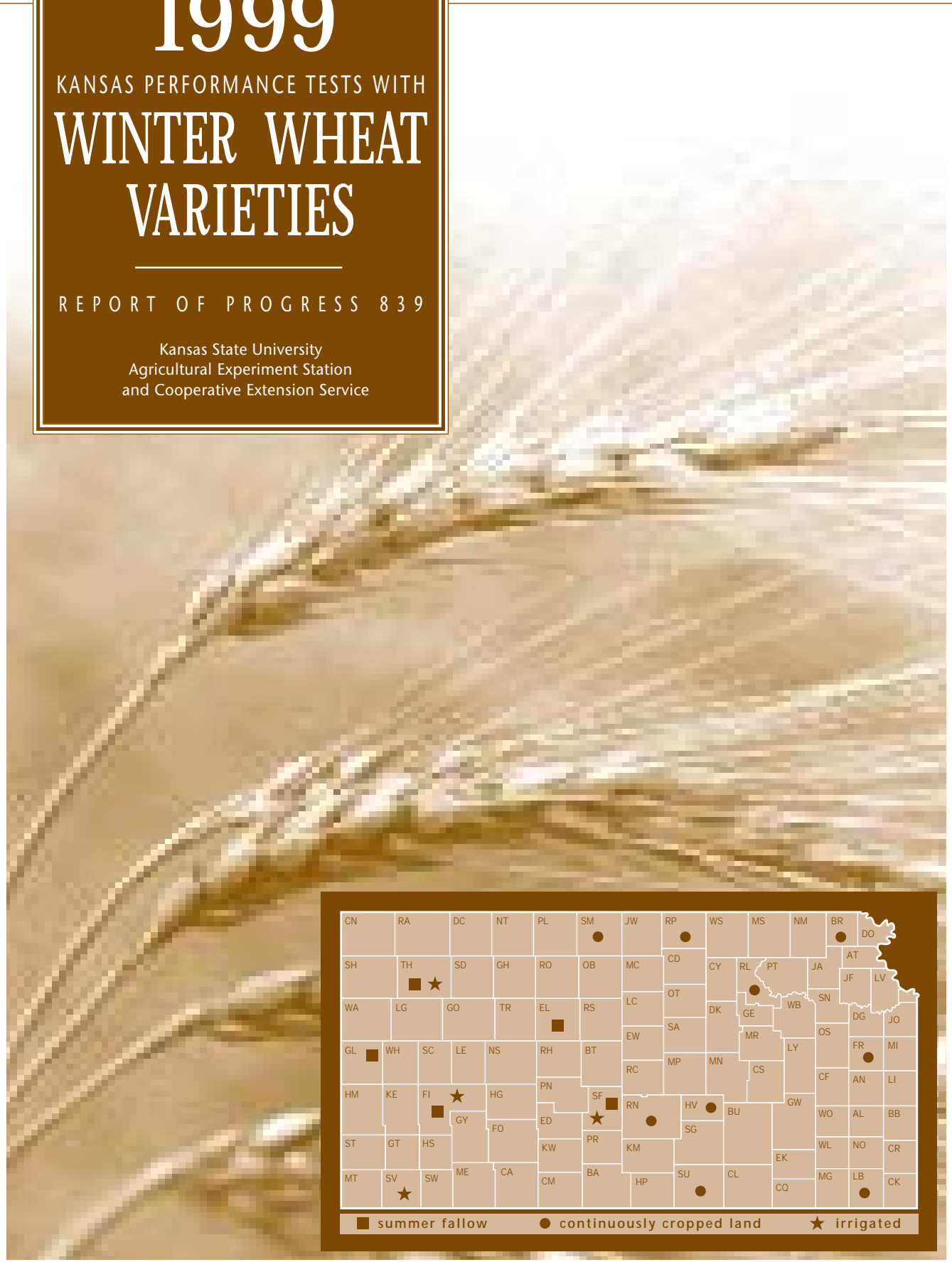


1999

KANSAS PERFORMANCE TESTS WITH WINTER WHEAT VARIETIES

REPORT OF PROGRESS 839

Kansas State University
Agricultural Experiment Station
and Cooperative Extension Service



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1999 KANSAS WHEAT PERFORMANCE TEST

INTRODUCTION

This publication presents results from the 1998-99 Kansas Winter Wheat Performance Tests and other information related to winter wheat variety performance. The information included in the report is intended to assist wheat producers in the variety selection process. The first section summarizes statewide growing conditions and harvest information for the entire 1999 Kansas wheat crop. Statewide acreage distribution of leading Kansas varieties and a summary of important agronomic and quality traits for these varieties follow. The third section presents procedures and results for the 1999 Kansas Winter Wheat Performance Tests.

The June rainfall was particularly troublesome. Heavy rains greatly delayed harvest. Figure 2 shows the June rainfall by division and its departure from normal.

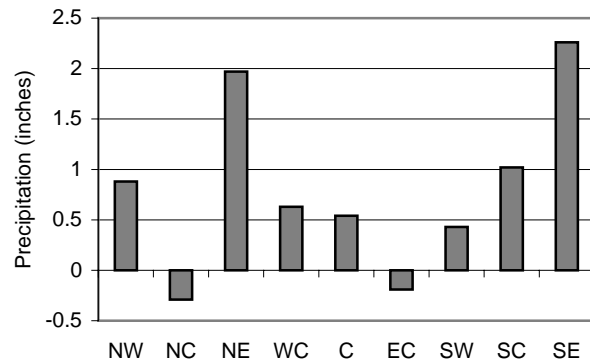


Figure 2. June rainfall departures from normal.

1999 CROP CONDITIONS

Weather Conditions

The critical weather factors for wheat are precipitation and temperature. The precipitation for the 1998-99 wheat season started favorably but deteriorated during the grain fill and harvest period. Excess rainfall was experienced in most divisions during May and June. In fact, all divisions reported above-normal precipitation for the October-June growing season. Figure 1 shows the 1998-99 amounts versus the 1961-90 averages.

Temperatures were favorable for the most part. The cold temperatures were of short duration, and no late-season freeze occurred. June brought slightly below normal temperatures throughout much of the state.

An extensive severe-weather outbreak occurred during April and May, with over 70 events reported. Hail, high winds, and tornadoes affected much of the southern third of the state. Severe hailstorms were more isolated in June, but produced hail of 3 and 4 inches in size.

(From Mary Knapp, KSU State Climatologist).

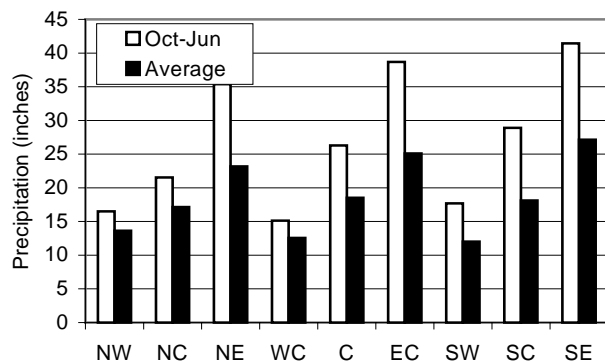


Figure 1. Critical precipitation (October - June) by crop reporting district.

Crop Development

Figure 3 compares several key stages of crop development for the current year with last year and the 5-year average. Emergence was slightly behind that of last year and the average. September seeding was delayed by lack of moisture. Later planting in November was delayed or prevented by excess moisture. Some of the early planting had to be replanted because of uneven emergence. Mild temperatures continued into December, enabling the crop to tiller extensively and reach an adequate size prior to winter. Jointing started out slightly ahead of

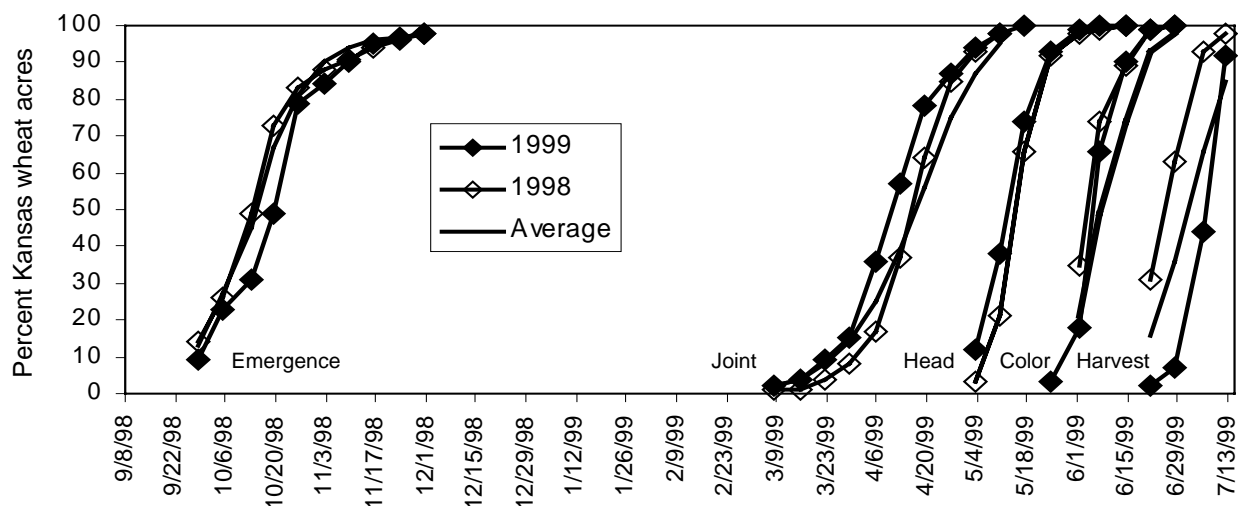


Figure 3. Statewide development of the 1998-99 winter wheat crop.

average and progressed very rapidly after the first few weeks. Heading was slightly ahead of that in past years. The crop turned color at close to the average time, but harvest was delayed over much of the state.

The 1999 crop started out in somewhat poor condition (Figure 4). The mild fall enabled the crop to develop well into December, improving its overall condition. Very little wind or freeze damage occurred during the winter months, and

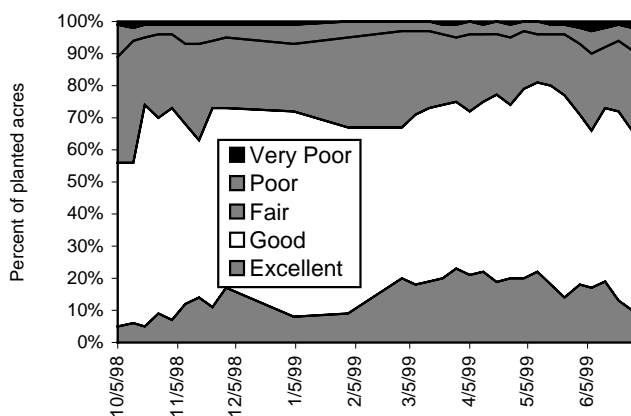


Figure 4. Condition of Kansas winter wheat crop, 1998-1999.

the crop maintained or improved its condition. Insect damage was minimal, and diseases didn't cause significant damage until June. The condition deteriorated again in mid-late June when heavy rains delayed harvest.

Soil moisture made some drastic swings during short portions of the season (Figure 5). Dry conditions in early fall were replaced by adequate or even surplus moisture in many areas in later fall. Fall rains prevented planting on several fields in eastern Kansas. Surplus topsoil moisture was a problem on 20% to 40% of the crop acres during May, June, and early July.

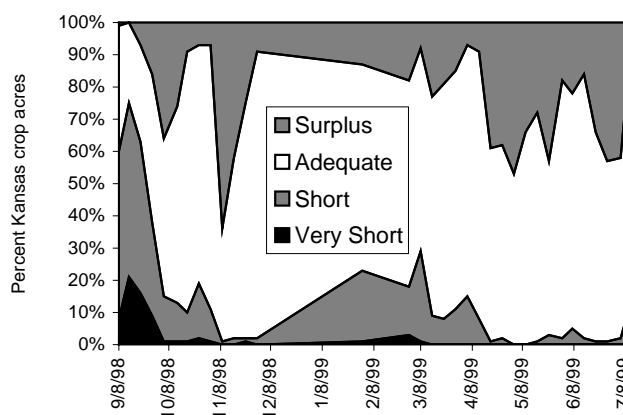


Figure 5. Statewide status of topsoil moisture, 1998-1999.

(From *Crop-Weather* reports, Kansas Agricultural Statistics, Topeka).

Diseases

The fall of 1998 was long and warm with frequent rains throughout much of the state. This allowed the buildup of leaf rust on susceptible varieties in the fall. The winter was relatively mild, so

winterkill and crown rot problems were negligible. Most leaves got burned back in a cold snap around Christmas time, but some remained green through the winter. Green leaves are required for leaf rust to overwinter. By early March, overwintered leaf rust was found in northwestern and northeastern Kansas, but overwintering was generally light.

The fall rains favored infection by spindle streak mosaic virus, soilborne mosaic virus, and the crazy top fungus. Spindle streak mosaic showed up in late February and caused some purpling and stunting in variety 2137. Warm weather caused symptoms to fade in April. During the very cool weather of early May, spindle streak mosaic showed up again on the flag leaves. Soilborne mosaic showed up in test plots across the state, but in a repeat of last year, most reports in production fields were from western Kansas. Crazy top was fairly common in flood-prone fields in central and southeastern Kansas.

The long, warm fall favored infection by wheat streak mosaic virus and barley yellow dwarf virus. Wheat streak was common and occasionally severe in northwestern Kansas. Some hotspots also were found in southwestern Kansas. Barley yellow dwarf was severe in southeastern Kansas and common in central Kansas.

Cool spring weather slowed development of most foliar diseases, but it favored development of strawbreaker foot rot in a few fields in south-central Kansas. In several cases, strawbreaker occurred in the same continuous wheat fields along with take-all root rot. Cool spring weather also allowed development of some stripe rust on a few varieties. Surprisingly, powdery mildew did not seem to take advantage of the cool weather in most places.

Frequent rains allowed foliar diseases to get worse during the late soft dough stage. Several varieties such as Jagger, Heyne, and Big Dawg had more rust than last year, indicating further changes in leaf rust races. Tan spot was probably the most common foliar disease. *Stagonospora nodorum* leaf blotch is difficult to distinguish from tan spot, but it was identified a few times, especially on 2137. Speckled leaf blotch was common but did not seem to get up onto the flag leaf in most localities. Stem rust showed up very late on a few varieties.

Head diseases were more prevalent than in

recent years. Black chaff was more prevalent than any time in the last 10 years in southeast and northeast Kansas. Glume blotch was fairly common in the eastern two thirds of the state. Finally, scab was severe in a few fields in northeastern Kansas. Reports of low levels of scab also came from southeast and north-central Kansas. Delay of harvests by rain allowed sooty molds to colonize mature wheat heads all over the state. However, this is not a disease, just an opportunistic colonizer of dead tissue.

(From Robert Bowden, State Extension Plant Pathologist).

Insects

Many growers planting early for pasture during August and September in southern parts of Kansas battled intense problems with fall armyworms. Numbers had been high throughout the summer in Louisiana, Arkansas, Texas, and Oklahoma. In Kansas, infestations began to develop in August on sorghum and gradually spread to small grains as new plantings emerged. The greatest activity occurred in south central and in part of southeast Kansas. In Cowley County, infestations averaging 12 to 15 worms per square foot during mid-October destroyed large portions of untreated fields. In some instances, also in southern Kansas, the lesser cornstalk borer, a worm that travels underground in silken tunnels and feeds on plant roots, was responsible for stand loss in scattered fields.

Higher than normal numbers of moths caught by the Kansas Department of Agriculture Survey Entomologist in a light trap during October, 1998, provided the first warning of possible army cutworm larval infestations. Some larvae were found in January in alfalfa in Ford County. During February, reports of activity were common in parts of southwest Kansas in both wheat and alfalfa. Feeding continued during March, and infestations spread northward into many counties north of I-70. The major area of concern was in a 37 county area encompassed in a 100-mile-wide diagonal band across the state from southwest to northeast. Most reported infestations were at levels of less than five larvae per square foot, and wheat for the most part had enough size and vigor to withstand all but the highest levels of infestation.

Cereal leaf beetle was detected in wheat and oats in surveys in May in eastern areas near the Missouri border. This imported pest first appeared in Kansas about 5 years ago and can be found in many counties in the eastern third of the state. It is primarily a pest of oats, but wheat is also subject to attack. Damage by most other commonly occurring wheat-attacking insects and related arthropods was light and generally of little economic consequence.

(From Leroy Brooks, State Extension Entomologist).

Harvest Statistics

The Kansas Agricultural Statistics' July 12 estimate of the 1999 crop was 423.2 million bushels harvested from 9.2 million acres (Figure 6). This estimate was up 7% from the June 1 forecast and down 14% from last year's production. The statewide yield average of 46 bushels per acre was up 3 bushels from the June 1 prediction but was 3 bushels lower than last year's average. Estimates of total production were lower than those for last year in all districts.

(From July 12, 1999 *CROPS* report, Kansas Agricultural Statistics, Topeka).

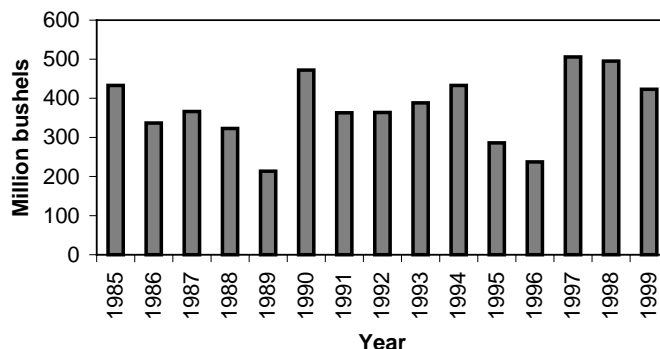


Figure 6. Historical Kansas winter wheat production.

WHEAT VARIETIES GROWN IN KANSAS

Acreage Distribution

The leading wheat varieties planted in Kansas are reported in Figures 7 and 8 and in Table 1. The top five varieties occupied 70.9% of the state's seeded acreage in 1999.

The top 10 varieties for each crop-reporting district are presented in Figure 7. In the western districts, Jagger, 2137, and Akron acreages increased. Acreages of TAM 107 and Karl 92 decreased throughout the western districts. TAM

Jagger 21(15) TAM 107 21(25) 2137 11(6) Vista 11(12) Ike 8(12)	Arapahoe 5(6) Larned 5(3) Karl/Karl 92 2(5) Newton 2(2) Akron 1(1)	2137 23(15) Jagger 20(15) Karl/Karl 92 15(21) 2163 4(14) Tomahawk 3(4)	Dominator 3(1) Champ 3(4) Ike 2(5) Victory 1(2) 7853 1(2)	2137 38(13) Karl/K92 30(53) Jagger 12(11) Dominator 7(2) 2163 5(12)	Champ 1(1) Ike 1(2) Newton 1(0) Pecos 0(0) 7853 0(0)
TAM 107 34(48) Jagger 15(9) 2137 13(5) Ike 12(12) Akron 4(2)	Larned 4(6) Karl/Karl 92 2(3) Ogallala 2(2) TAM 110 2(-) Scout/Scout 66 1(1)	2137 32(21) Jagger 24(16) Karl/Karl 92 9(15) 2163 5(17) Ike 4(6)	TAM 107 3(3) Dominator 2(1) 7853 2(3) Larned 1(2) Coronado 1(1)	Karl/Karl 92 27(43) 2137 26(11) Jagger 17(12) 2163 10(20) Dominator 2(1)	Tomahawk 2(1) 7853 2(1) Victory 1(1) Pecos 1(2) Newton 1(1)
TAM 107 24(34) Ike 20(21) Jagger 14(10) 2137 8(4) Larned 6(8)	7853 4(3) Scout/Scout 66 3(4) Akron 3(1) TAM 110 3(-) TAM 105 2(-)	Jagger 43(31) 2137 24(17) Karl/Karl 92 4(11) 2163 4(14) 7853 3(6)	Coronado 2(2) Pecos 2(3) Tomahawk 1(2) Ike 1(2) TAM 107 1(1)	Jagger 45(30) 2137 22(15) Karl/Karl 92 13(29) 2163 4(11) 7853 2(5)	Coronado 2(1) Tomahawk 1(2) Thunderbird 1(1) Abilene 1(-) Larned 0(0)

Figure 7. Leading wheat varieties in Kansas in 1999, presented as percent of seeded acreage by crop reporting district for 1999 and 1998 (1998 in parentheses). From Wheat Variety report, Kansas Agricultural Statistics, February 4, 1999.

110 and TAM 105 appeared in the top 10 lists for the first time in 1999. Three older varieties, Scout 66, Larned, and Newton, maintained fairly significant acreages. Karl/Karl 92, 2163, Ike, and 7853 acreages continued to drop in the central districts, while 2137, Jagger, and Dominator acreages continued to increase. 2137, Jagger, and Karl/Karl 92 were the most prevalent varieties in eastern Kansas. Acreages of 2137, Jagger, and Dominator were on the upswing, but Karl/Karl 92 and 2163 acreages decreased in eastern Kansas.

Figure 8 illustrates the historical statewide distribution of the top 10 varieties in 1999. These varieties occupied 80.6% of the planted wheat acres in 1999. Jagger and 2137 together accounted for 51.2% of the 1999 acres. Karl 92, 2163, and TAM 107, the predominant varieties for most of the 1990s, accounted for 17.6% of the acreage in 1999.

The remaining 31.2% of 1999 wheat acres was split between two public varieties and three private releases. Larned is a public release that was very popular in the 1980s but has slowly lost acreage for the past several years. AGSECO 7853 has maintained 3% - 4% of the state acreage since 1995 but dropped to 1.9% in 1999. AgriPro Tomahawk acreage grew rapidly to 7% of the state total in 1995 but has dropped off since then. AgriPro Coronado acreage has increased

during the past 2 years, primarily in central and southeastern Kansas. (From February 4, 1999, *Wheat Variety* report, Kansas Agricultural Statistics, Topeka).

Agronomic Characteristics

Comparative ratings for important agronomic traits, pest resistance, and milling and baking quality are listed in Table 1. Varieties are included in this table if they appear in the annual *Wheat Variety* survey report from Kansas Agricultural Statistics. Ratings for a given trait in this table are experts' best estimates of the relative performance of the varieties based on information and observations over several seasons and from numerous sources. The ratings are updated annually to account for changes in performance that occur over time and to adjust for the changes in ranking that arise with the continued additions of new varieties.

New Variety Descriptions

Brief descriptions of new public entries in the performance tests are included below. These descriptions are abstracted from release notices or other material provided by releasing agencies.

Betty hard white winter wheat was released by the Kansas Agricultural Experiment Station in 1998. Betty is best adapted to central and western Kansas where Jagger has done well.

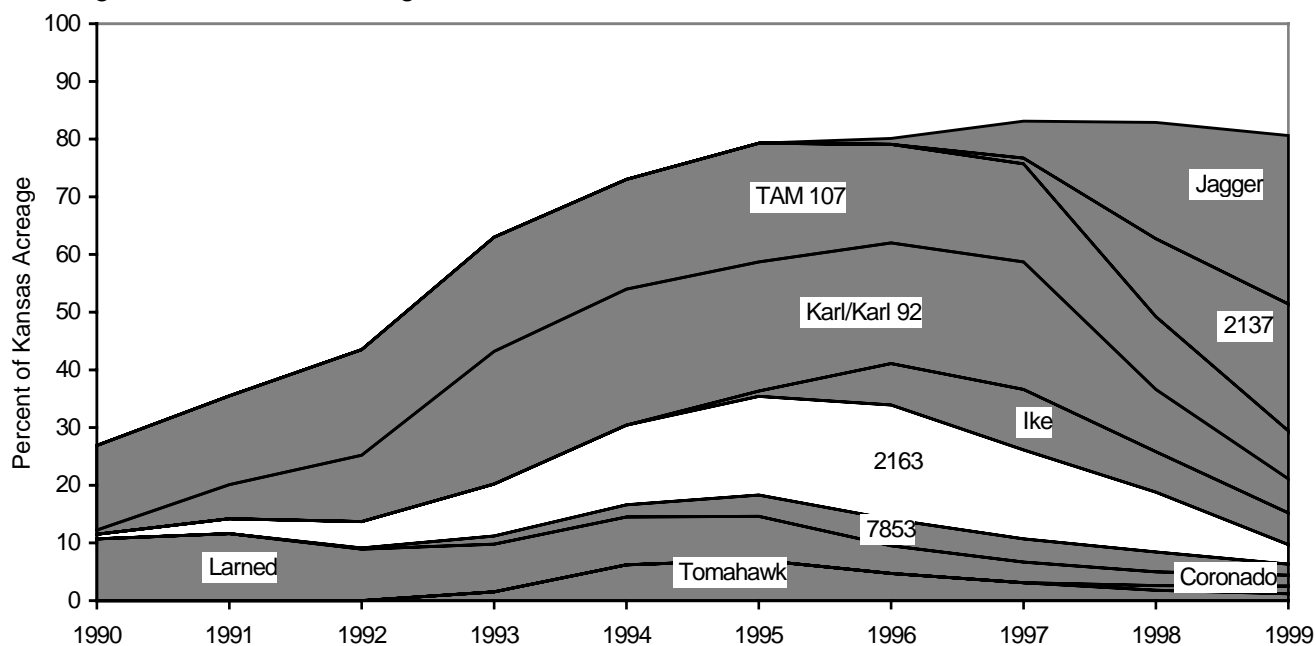


Figure 8. Historical acreage distribution of top 10 varieties in 1999. From Kansas Agricultural Statistics, Topeka.

Table 1. Comparisons of leading winter wheat varieties grown in Kansas.¹

Variety	Percent Kansas seeded acreage 1999 ²	Relative ³						Resistance or tolerance to: ⁴						Relative milling and baking quality ⁵		
		Matur- ity	Test wt.	Straw str.	Shat- tering	AI Toler- ance	Winter hardi- ness	Spck.			Barley Hes- Wheat Stem yellow sian streak borne				Soil- borne mos.	
								Tan spot	leaf blotch	Leaf rust	Stem rust	Barley dwarf	Hes- sian fly			Wheat mos.
Jagger	29.2	1	4	3	4	3	6	3	3	7	3	6	9	4	1	EX
2137	22.0	3	4	1	3	2	3	4	4	6	6	6	2	4	1	AC
TAM 107	8.3	1	4	2	2	9	2	7	6	9	4	8	9	5	8	LD
Karl/Karl 92	5.9	1	3	4	3	9	3	3	5	9	6	8	9	9	1	EX*
Ike	5.5	4	3	4	2	8	3	7	8	9	2	6	1	9	1	AC
2163	3.4	3	6	1	6	2	4	5	4	7	4	6	1	4	1	LD
Larned	1.9	4	4	5	4	8	3	9	7	8	3	9	3	9	8	AC
7853	1.9	3	4	4	3	8	5	6	9	8	4	6	9	5	1	EX
Coronado	1.3	2	3	1	3	3	5	6	6	7	3	6	3	6	1	AC
Tomahawk	1.2	3	4	3	--	8	2	4	8	3	3	8	9	8	1	AC
Vista	0.9	5	4	6	2	7	2	8	5	7	5	--	1	9	8	AC*
Pecos	0.9	1	4	1	--	5	5	6	5	7	4	7	1	6	1	AC
Akron	0.8	5	3	5	3	--	3	--	9	8	3	--	8	9	9	AC
Dominator	0.8	4	4	3	4	8	3	5	4	7	3	6	3	7	1	AC
Ogallala	0.7	3	2	2	6	5	4	6	5	5	3	7	9	5	9	EX
Scout(s)	0.5	4	4	6	3	--	3	9	7	8	3	9	9	7	9	AC
TAM 110	0.5	1	3	4	3	8	--	7	6	8	3	--	9	5	9	AC
Arapahoe	0.4	6	4	6	--	6	3	8	4	5	2	--	3	7	8	AC
Newton	0.4	3	4	4	2	9	5	9	9	9	3	9	9	6	1	AC
Abilene	0.4	--	--	--	--	--	--	6	7	8	2	--	8	5	1	AC
Big Dawg	0.4	6	4	1	2	5	5	3	2	6	5	6	9	4	1	AC
Eagle	0.3	4	4	6	--	--	3	9	7	8	4	9	7	7	9	EX*
TAM 105	0.3	--	--	--	--	--	--	9	7	8	8	8	8	6	8	AC
Victory	0.3	3	4	4	--	--	3	5	9	5	6	8	9	8	1	AC
Champ	0.3	4	5	5	--	7	3	6	6	6	6	7	9	5	1	--
Hickok	0.2	2	2	3	--	7	6	7	8	3	3	6	9	8	1	AC
Laredo	0.2	4	4	3	--	--	3	6	8	6	4	--	9	7	7	LD
Thunderbird	0.2	2	3	3	--	--	2	9	6	7	3	--	9	5	1	AC
Mankato	0.2	4	5	5	3	7	3	6	6	6	5	7	7	5	1	--
Blends	6.1															
Other Hard	4.6															
Other Soft	0.0															

¹ Varieties listed in the Feb. 4, 1999, Wheat Variety survey, KS Ag. Statistics. Ratings are experts' best estimates, based on information and observations from several sources. Rated on a scale of 1 to 9; except for maturity (where 1 is earliest), 1 best and 9 poorest; -- = not tested.

² From February 4, 1999 Wheat Variety survey, Kansas Ag. Statistics Office, Topeka, KS.

³ Agronomic information and some disease ratings provided by Jim Shroyer, Ray Lamond, KSU Agron. and Bob Bowden, KSU Plant Path.

⁴ Disease ratings provided by R.L. Bowden and W.W. Bockus, KSU Plant Path.; Hessian fly ratings by J.H. Hatchett, KSU Entomology.

⁵ Ratings compiled by P.J. McCluskey are based on data from the KSU Department of Grain Science and Industry, the U.S. Grain Marketing and Production Research Center, and inputs from the milling and baking industries.

EX = Exceptional Quality; usually large kernels; high protein content; very good milling, mixing, and commercial bread-baking performances.

AC = Acceptable Quality; milling and baking attributes acceptable but not outstanding for all properties, may have minor defects.

LD = Less Desirable Quality; one or more serious quality defects.

-- = Inadequate information or conflicting data.

*Strong blending wheat; needed for blending with weaker wheats, may not be suitable alone for bread flour.

Milling and baking qualities are similar to those of Jagger. Betty is resistant to stem rust, soilborne wheat mosaic virus, and wheat spindle streak mosaic virus. Betty is tolerant to tan spot and speckled leaf blotch and possesses moderate resistance to glume blotch. It is moderately susceptible to leaf rust and is susceptible to powdery mildew and Hessian fly. (Kansas State University variety description).

Culver hard red winter wheat was released by the Nebraska Agricultural Experiment Station and the Agricultural Research Service, USDA in 1998. Culver is especially well adapted to dryland wheat production in southern and central Nebraska and similar growing areas in adjacent states. It is medium in maturity and coleoptile length. Plant height is similar to that of Arapahoe. Straw strength is moderately strong, and winterhardiness is good to very good. Culver is moderately resistant to leaf rust and stem rust but is susceptible to wheat soilborne mosaic virus, Hessian fly, barley yellow dwarf virus, and wheat streak mosaic virus. (University of Nebraska variety description).

Heyne hard white winter wheat was released by the Kansas Agricultural Experiment Station in 1998. It is best adapted to south central Kansas because of its aluminum tolerance, favorable grazing characteristics, and excellent disease resistance. Winterhardiness is fair, similar to that of Jagger. Straw strength is good; similar to that of Karl 92, but not as good as that of Jagger or 2137. Heyne is resistant to stem rust, leaf rust, soilborne wheat mosaic virus, and wheat spindle streak mosaic virus. It has excellent tolerance to tan spot and speckled leaf blotch. It is moderately susceptible to glume blotch and powdery mildew. (Kansas State University variety description).

Wesley hard red winter wheat was released by the Nebraska Agricultural Experiment Station and the Agricultural Research Service, USDA in 1998. Wesley is a semidwarf variety, similar in height to TAM 107 and with superior straw strength. Coleoptile length is relatively short. Maturity is medium late. Wesley is resistant to stem rust, soilborne wheat mosaic virus, and wheat spindle streak virus, and has shown tolerance to acid soils. Wesley is susceptible to leaf rust, wheat streak mosaic virus, the Great Plains biotype of Hessian fly, and the Russian wheat aphid. (University of Nebraska variety description).

1999 PERFORMANCE TESTS

Objectives

To help Kansas growers select wheat varieties suited for their area and conditions, the Kansas Agricultural Experiment Station annually compares both new and currently grown varieties and hybrids in the state's major crop-producing areas. The objective is to provide Kansas growers with unbiased performance information on all varieties and hybrids likely to become available in the state.

Varieties Included in Tests

Parentage and origin of public varieties included in the 1999 performance tests are listed below.

Table 2. Parentage of public wheat varieties.

Variety	Parentage	Release state yr.
HARD RED:		
Akron	TAM 107/Hail	CO 1994
Alliance	Arkan/Colt//Chisholm	NE 1994
Arapahoe	Brule/3/Pkr*4/Agent/Beloterkovskaia	198/Lancer NE 1988
Culver	Trapper//CMN/OT/3/CIMMYT /Scout/4/ sib/Homestead/5/Arapahoe	Buckskin NE 1998
Custer	F29-76/TAM 105//Chisholm	OK 1994
Halt	Sumner/CO820026,F ₁ //PI372129,F ₁ /3/TAM	107 CO 1994
Ike	Dular/Eagle//2*Larned/Cheney/3/Colt	KS 1993
Jagger	KS82W418/Stephans	KS 1994
Karl 92	F ₁₁ head row selection from 'Karl'	KS 1992
Larned	Scout*5/Ottawa	KS 1976
Nekota	Bennett/TAM 107	NE 1994
Newton	Pitic62/Chris sib//2*Sonora64/Klein Rendidor /4/Scout	KS 1977
Niobrara	TAM 105*4/Amigo//Brule	NE 1994
Scout 66	Composite of 85 Scout selections	NE 1967
TAM 107	TAM 105*4/Amigo	TX 1984
TAM 200	TX71A1039-V1*3/Amigo	TX 1987
Vista	NE68513/NE68457//Centurk/3/Brule	NE 1992
Wesley	PlainsmanV/Odesskaya51//Colt/Cody	NE 1998
Windstar	TX79A2729//Caldwell/Brule field sel #6 /3/Siouxland	NE 1997
Yuma	NS14/NS25//2*Vona	CO 1991
Yumar	Yuma/PI 372129, F ₁ //CO850034/3/4*Yuma	CO 1997
2137	W2440/W9488//2163	KS 1995
2163	Pioneer line W558/5/Etoile de Choisy//Thorne/ Clarkan/3/C115342/4/Purdue 4946A4-18-2 (Pioneer)	KS 1989
2174	IL 71-5662/PL 145//2165	OK 1997

(continued)

Table 2 - continued.

Variety	Parentage	Release state yr.
HARD WHITE:		
Betty	Jagger 'Sib' selection	KS 1998
Heyne	Plainsman V/KS75216//SWM754308/3/ Plainsman V/Lindon//KS82W422	KS 1998
SOFT RED:		
Caldwell	Benhur sib *2/Siette Cerros	IN 1981
Cardinal	Logan 2*/3/Va63-52-12/Logan/BlueboyOH	1986
Ernie	Pike/3/(MO9965,Stoddard/Blueboy// Stoddard/D1707)	MO 1994
IL90-7514	(not available)	IL 1998

Public varieties are selected for inclusion in the tests based on several criteria. Most represent new or established varieties with potential for successful utilization by Kansas wheat producers. Some are included as long-term checks for use in environment or maturity comparisons. Others are entered at the request of the originating

institution.

Privately developed varieties are entered into the Kansas Wheat Performance Tests by their originators or marketers. Entry is voluntary. Entrants choose both the entries and test sites and pay a fee for each entry-location to help defray test expenses. The program is similar to those for corn, sorghum, soybeans, and alfalfa.

The 1999 private entrants and entries are listed in Table 3. Eleven entrants provided a total of 32 varieties and hybrids for testing at locations of their choice. Public and private entries were grown together at random in the same tests. Growers interested in more detailed descriptions of private entries should contact the entrants directly (see addresses and telephone numbers in Table 3 or consult the Kansas Crop Improvement Certified Seed Directory).

Untreated seed was requested for the 1999 tests, but was unavailable for a few entries. Table 13 describes the characteristics of seed submitted

Table 3. Private entrants and entries in 1999 Kansas Wheat Performance Tests.

AgriPro Seeds, Inc. 806 N. Second St., PO Box 30 Berthoud, CO 80513 (970) 532-3721	AgriPro	Big Dawg Coronado Hondo Ogallala Thunderbolt Marion (S) Patton (S)	HybriTech Seed Intl., Inc. P.O. 1320, 806 N 2nd Berthoud, CO 80513 (970) 532-8016	Quantum	7406 AP 7510 XH1888 XH9806
AGSECO, Inc. P.O. Box 7 Girard, KS 66743 (316) 724-6223	AGSECO	7853 Mankato Onaga TAM 110	Novartis 1060 Wheatland Dr. Buhler, KS 67522 (316) 543-2707	NK	Coker 9474 (S) Coker 9543 (S) Coker 9663 (S)
American White Wheat Producers Association P.O. Box 326 Atchinson, KS 66002 (913) 367-4422	Public, KS AgriPro	Arlin (W) Oro Blanco (W)	Pioneer Hi-Bred Intl., Inc. 1616 S Kentucky St. Suite C-150 Amarillo, TX 79102 (806) 356-0160	Pioneer	2540 (S)
Drussel Seed and Supply 2197 W. Parallel Road Garden City, KS 67846 (316) 275-2359	Drussel	T81	Polansky Seed P.O. Box 306, 2729 M St. Belleville, KS 66935 (785) 527-2271	Polansky	Dominator
General Mills Op., Inc. P.O. Box 5022 Great Falls, MT 59403 (406) 761-6252	Gen. Mills	NuWest (W)	Terra International, Inc. Terra Centre, 600 Fourth St. Sioux City, IA 51102 (712) 233-3609	Terra	HR 217 SR 216 (S)
Goertzen Seed Research 14604 S. Haven Rd. Haven, KS 67543 (316) 465-2675	Goertzen	Cossack Enhancer Kalvesta G12058 Exp G15011 Exp G15048 Exp			

for testing and indicates which entries had treated seed.

Seed quality, including such factors as size, purity, and germination, can be important in determining the performance of a variety. Wheat seed used for entries in the Kansas Crop Performance Tests is prepared professionally and usually meets or exceeds Kansas Crop Improvement Certification standards. Relative performance of a given variety or hybrid comparable to that obtained in these tests is best assured under similar environmental conditions and cultural practices and with the use of certified or professionally prepared seed.

Environmental Factors Affecting Individual Tests

Locations of test sites are shown on the map on the front cover. Two of the 18 tests had to be discarded completely in 1999. The Franklin County test near Ottawa was never planted last fall because of the wet conditions. The Sumner County test near Caldwell was overrun by cheat grass. Two irrigated tests, the Finney County test near Garden City and the Thomas County test near Colby, provided no yield data because of late-season hail storms. Descriptions of environmental conditions are included below. Environmental factors should be considered when examining the results for a particular location. Site descriptions and management practices for each site are summarized in Table 4.

Performance test summary: The performance tests were subjected to much the same regimen as described under the statewide growing conditions. A number of the tests yielded much better than expected after the harvest delays in June. The location codes listed in parentheses after each location name are used as column headers in the data tables.

EAST

Brown County (BR), Cornbelt Experiment Field, Powhattan: Some varieties appeared to have somewhat thinner stands than others in the fall, but all eventually achieved adequate stands. Scab eventually became quite severe, almost to the point of causing rejection of the grain at the local elevator.

Riley County (RL), Ashland Research Farm,

Manhattan: Diseases, primarily leaf rust, appeared to decrease yields of susceptible varieties at this location. See disease ratings in Table 13. Harvest was delayed for a week or two by persistent rains.

Franklin County (FR), East Central Experiment Field, Ottawa: Extremely wet conditions last fall prevented planting.

Labette County (LB), Southeast Agricultural Research Center, Parsons: The most important weather factor affecting this test was precipitation. Excess rainfall all season but especially throughout the spring and summer, caused a number of problems. Nitrogen was lost through leaching or volatilization. Waterlogged soil prevented normal root growth. Persistent rains delayed harvest by several weeks. Yields were much lower than normal for this location. Barley yellow dwarf likely reduced yields of susceptible varieties. See Table 13 for ratings.

NORTH CENTRAL

Republic County (RP), North Central Experiment Field, Belleville: Planting was delayed until adequate rainfall was received in October. The resulting stands were excellent. Warm conditions in October and November enabled above-average fall growth. Mild winter conditions caused no noticeable injury to the test. In general, spring and summer rainfall was above normal, and temperatures were below normal. Diseases appeared to have little impact on yields. Low levels of stem rust, leaf rust, and head scab were all noted late in the season. Ratings for leaf rust and tan spot are presented in Table 13.

Smith County (SM), Farmer's field, Smith Center: The test was seeded soon after a much-needed rain. Moisture and seedbed conditions were ideal, resulting in excellent stands. Above-average rains in spring and summer resulted in very high yields for dryland wheat in this part of the state.

SOUTH CENTRAL

Harvey County (HV), Harvey County Experiment Field, Hesston: Excellent stands developed prior to excessive rainfall in late October and early November. Average fall temperatures were near to or slightly above normal. The period from December to March was slightly drier than usual. Average temperatures

Table 4. Wheat Performance Test site descriptions and management in 1999.

REGION COUNTY and Cooperator	Site, location code, and nearest town	Dates of planting, harvest	Soil type and previous crop	Ferlizer			Seeding rate ¹ and row spacing
				lbs/acre			
				N	P	K	
<u>EAST</u>							
BROWN	Cornbelt Experiment Field (BR)	10/27/98	Grundy silty clay loam	--	18	267	Fall 90 lb/a
Larry Maddux	Powhattan	7/6/99	Soybeans, 1998	75	--	--	Spring 7.5 in. row spacing
RILEY	Ashland Agronomy Farm (RL)	10/22/98	Reading silt loam	70	25	--	Fall 75 lb/a
Wheat Breeding Project	Manhattan	7/4/99	Oats, 1998	50	--	--	Spring 9 in. row spacing
FRANKLIN	EC KS Experiment Field (FR)	Abandoned	Woodson silt loam	--	--	--	Fall 1200000 seeds/a
Keith Janssen	Ottawa	N/A	Soybeans, 1998	--	--	--	Spring 7 in. row spacing
LABETTE	SE Agric Res Ctr (LB)	10/15/98	Parsons silt loam	61	60	60	Fall 75 lb/a
Jim Long	Parsons	7/5/99	Corn, 1998	40	--	--	Spring 7 in. row spacing
<u>NORTH CENTRAL</u>							
SMITH	Farmer's Field	10/11/98	Silty loam	--	--	--	Fall 60 lb/a
Barney Gordon	Smith Center	7/7/99	Corn, 1997	90	30	--	Spring 7.5 in. row spacing
REPUBLIC	NC KS Experiment Field (RP)	10/9/98	Crete silt loam	--	--	--	Fall 60 lb/a
Barney Gordon	Belleville	7/8/99	Wheat, 1998	90	30	--	Spring 7.5 in. row spacing
<u>SOUTH CENTRAL</u>							
HARVEY	Harvey Co Expt Field (HV)	10/15/98	Ladysmith silty clay loam	90	32	--	Fall 60 lb/a
Mark Claassen	Hesston	6/29/99	Soybeans, 1998	--	--	--	Spring 8 in. row spacing
RENO	SC KS Experiment Field (RN)	10/14/98	Ost silt loam	75	40	--	Fall 60 lb/a
Bill Heer	Hutchinson	6/29/99	Wheat, 1998	50	--	--	Spring 8 in. row spacing
STAFFORD	Sandyland Expt Field (SD)	10/12/98	Pratt loamy fine sand	68	46	--	Fall 60 lb/a
Vic Martin	St. John	6/26/99	Sorghum, 1997	50	--	--	Spring 7 in. row spacing
SUMNER	Max Kolarik Farm (SU)	Abandoned	Sandy loam	--	--	--	Fall 60 lb/a
Wheat Breeding Project	Caldwell	N/A	Wheat, 1998	--	--	--	Spring 9 in. row spacing
<u>WEST</u>							
ELLIS	Agric Res Ctr - Hays	9/28/98	Harney clay loam	--	--	--	Fall 60 lb/a
T. Joe Martin	Hays	6/25/99	Wheat, 1997	70	--	--	Spring 12 in. row spacing
THOMAS	NW Res-Ext Ctr (TD)	9/18/98	Keith silt loam	--	--	--	Fall 60 lb/a
Pat Evans	Colby	7/5/99	Wheat, 1997	50	20	--	Spring 12 in. row spacing
GREELEY	SW Res-Ext Ctr (GD)	9/15/98	Richfield silt loam	12	40	--	Fall 50 lb/a
Alan Schlegel	Tribune	7/4/99	Wheat, 1997	80	--	--	Spring 10 in. row spacing
FINNEY	SW Res-Ext Ctr (FD)	9/18/98	Keith silt loam	--	--	--	Fall 45 lb/a
Merle Witt	Garden City	6/29/99	Wheat, 1997	50	--	--	Spring 10 in. row spacing
<u>IRRIGATED</u>							
STAFFORD	Sandyland Expt Field (SI)	10/9/98	Pratt loamy fine sand	68	46	--	Fall 90 lb/a
Vic Martin	St. John	6/27/99	Corn, 1997	50	--	--	Spring 7 in. row spacing
THOMAS	NW Res-Ext Ctr (TI)	9/18/98	Keith silt loam	--	--	--	Fall 90 lb/a
Pat Evans	Colby	N/A	Wheat, 1998	110	30	--	Spring 12 in. row spacing
FINNEY	SW Res-Ext Ctr (FI)	9/23/98	Keith silt loam	--	--	--	Fall 90 lb/a
Merle Witt	Garden City	N/A	Wheat, 1997	90	--	--	Spring 10 in. row spacing
STEVENS	Jim Kramer Farm	10/15/98	Richfield sandy loam	50	30	--	Fall 90 lb/a
Wheat Breeding Project	Hugoton	7/8/99	Corn, 1998	50	--	--	Spring 9 in. row spacing

¹ Seed weight of 1999 entries ranged from 22 to 43 grams/1000 kernels, averaging 32 grams/1000 kernels (see Table 13).

were above normal from November through February, which was particularly warm. Rainfall was below average in May, but well above normal in April and June. Temperatures were cooler than normal during March through June. Soilborne mosaic virus was the most serious disease present, causing major stunting and delayed heading in susceptible varieties. Spindle streak mosaic virus also affected a few varieties. See Table 13 for ratings. Speckled leaf blotch and leaf rust infections were light and/or occurred too late to have a major effect on yields. Some *Septoria nodorum* was present, particularly on 2137. Wet weather in June delayed harvest. Yields were very good, but rainfall after grain was ripe contributed to low test weights.

Reno County (RN), South Central Experiment Field, Hutchinson: Good soil conditions and moisture resulted in good stand establishment and fall growth. The winter months brought mild, moist conditions. Even though precipitation was below normal, it was distributed such that the wheat was wet almost continually. The wheat matured and remained wet from several showers before it could be harvested. Several diseases moved in with the wet conditions. Heavy leaf rust may have reduced yields of susceptible varieties. Stem rust, powdery mildew, tan spot, and septoria all were present also. See ratings in Table 13.

Stafford County, dryland (SD), Sandyland Experiment Field, St. John: Adequate moisture at planting promised good stand establishment, but heavy rains and standing water soon after planting decreased stands somewhat. The winter months were mild with adequate moisture. Cutworms damaged a few plots during that time. The wheat was dormant only briefly during late December and early January. Several heavy, late snows arrived during the spring. Barley yellow dwarf moved in during May. Wheat spindle streak was noted. Summer rains delayed harvest and lowered test weights.

Sumner County (SU), Max Kolarik farm, Caldwell: Abandoned because of severe cheat grass infestation.

WEST

Ellis County (EL), KSU Agricultural Research Center, Hays: Good stands enabled normal fall growth. A mild winter with few severe

temperatures resulted in no winter damage. The only significant problem was leaf rust, which likely reduced yields of susceptible varieties by only a few bushels. Once the wheat ripened, harvest proceeded with few weather delays. Little shattering occurred because the harvest was timely.

Thomas County, dryland (TD), Northwest Research-Extension Center, Colby: Good moisture at planting resulted in good stands. Mild winter conditions caused no freeze or wind damage. A late-season hail storm caused most of the shattering, but it was not nearly as severe as in the irrigated test.

Greeley County, dryland (GD), Southwest Research-Extension Center, Tribune: Seed had to be placed fairly deep to reach moisture, but good stands resulted. Some Russian wheat aphid damage was noted, but no measures were taken for control. Barley yellow dwarf occurred, but likely caused little yield reduction. Yields were very good for this location.

Finney County, dryland (FD), Southwest Research-Extension Center, Garden City: An excellent seedbed combined with good moisture provided for good emergence and resulting stands. Mild conditions allowed continued growth during the winter. Cool, wet weather in spring and summer resulted in a long grain filling period. A low-level infestation of Russian wheat aphid was observed.

IRRIGATED

Stafford County, irrigated (SI), Sandyland Experiment Field, St. John: See notes for dryland test at this location. This test had less standing water and spindle streak mosaic virus but more soilborne mosaic virus than the dryland test.

Thomas County, irrigated (TI), Northwest Research-Extension Center, Colby: No yields are reported for this test because of hail damage during the grain filling period.

Finney County, irrigated (FI) Southwest Research-Extension Center, Garden City: No yields are reported for this test because of a severe hail storm immediately prior to harvest.

Stevens County, irrigated (ST), Jim Kramer farm, Hugoton: Yields were good, but slightly lower than typical for this site.

Test Results and Variety Characterization

Results from Kansas tests are presented in Tables 5 through 14. The information in these tables is derived from replicated varietal comparisons at several sites representing various wheat-producing areas of the state.

Characteristics of specific 1999 entries can best be determined by examining Table 1 and data in Tables 5 through 14 for the relative performance of new varieties or hybrids of interest compared to those the grower is currently planting. Yields are reported in Table 5a-d as bushels per acre (60 pounds per bushel) adjusted to a moisture content of 13%, where moistures were reported at harvest. In Table 6a-d, bushel yields are converted to yields as percentages of the test averages to speed recognition of highest yielding entries (more than 100%, the test average). The excellent performances of several of the entries are highlighted in these tables.

Growers should examine Table 7a-d to check the performance of entries over several years at locations closest to their farms. These tables present yields averaged over 2, 3, and 4 years. One-year or one-location results can be misleading because of the possibility of unusual weather conditions.

Measurements of characteristics often contributing to yield performance are shown in Table 8a-d (test weights), Table 9a-d (relative heading dates), Table 10a-d (heights), Table 11 (lodging), Table 12 (shattering ratings), Table 13 (disease ratings), and Table 14 (planted seed characteristics, coleoptile lengths, and Hessian fly ratings).

At the bottom of each table is the LSD (least significant difference) for each column of replicated data. The use of the LSD is intended to reduce the chance of overemphasizing small differences in yield or other characteristics. Small variations in soil structure, fertility, water-holding characteristics, and other test-site characteristics can cause considerable yield variation among plots of the same variety grown only a short distance apart.

Another statistical parameter is the coefficient of variation (CV) shown at the bottom of most columns. This figure, if properly interpreted, can be used to estimate the degree of confidence one may have in the data presented. In this testing program, CV's below 10% generally indicate

reliable, uniform data, whereas CV's from 11% to 15% usually indicate less desirable but generally useful data for the rough performance comparisons desired from these tests.

Coleoptile Measurements

Coleoptile length is a primary factor in determining the relative ability of a variety to emerge from deep planting. We have no evidence that coleoptile length plays a significant role in a variety's ability to emerge through a crust or compacted soil. However, long coleoptiles elongate faster than short coleoptiles, thereby sometimes escaping crusting problems as the result of quicker emergence.

Coleoptile length measurements will predict the relative ability of a cultivar to emerge from deep plantings through noncrusted soil. The actual planting depth for a variety is not limited to its coleoptile length. Once the coleoptile has reached its maximum length, the primary leaf breaks through the coleoptile and has the ability to move through an additional 2 to 3 inches of dry, noncompacted soil. Recent tests demonstrated that if a coleoptile elongated to 3.75 inches, the plant still had an 80% chance of emerging from a 6-inch planting depth. Emergence decreased to 40% for 2.5 inch coleoptiles and 20% for 2.0 inch coleoptiles.

Maximum coleoptile elongation of a variety is influenced heavily by soil temperature. As soil temperature increases from 65° F to 85° F, the coleoptile lengths of all varieties are reduced about 30%. As soil temperature decreases from 65° F, coleoptile lengths of standard height varieties, Larned and Eagle, change very little, but the coleoptiles of semidwarf varieties TAM 107, Karl 92, and TAM 200 actually increase in length. At 53° F, the coleoptile lengths of TAM 107, Karl 92, and TAM 200 are equal to that of Eagle, and at 40° F, they are equal to that of Larned. If a producer is faced with deep planting because of dry soil late in the planting season, choice of variety will have minimal effects on stand establishment. The same can be said for plantings made during our optimum planting times when soil temperature is already below 65° F. Plantings made in the latter part of August or early September when soil temperature is high will be the most vulnerable to poor emergence because of coleoptile length. If plantings have to be made deeper than 3.5 inches when soil

temperature is high, it is advisable to use a variety that has a long coleoptile.

Coleoptile ratings reported in Table 13 are based on measurements at 75° F, which is the average soil temperature in western Kansas on Sept 1 at the 4-inch depth. Varieties with a rating of 8 had average coleoptile lengths of 2.4±.2 inches, whereas those rated 3 averaged 4.2±.2 inches. For one variety to be significantly different from another, the ratings must differ by at least 2 points.

Protein Content

Samples of grain from each variety harvested from Kansas Wheat Performance Tests are submitted annually for analysis of protein content, kernel hardness, and kernel weight and other tests. Screening for protein and other analyses are conducted by the staff at the U.S. Grain Marketing and Production Research Center in Manhattan, Kansas. Because of the time requirement for obtaining analyses, protein results included in this report are for the previous year's tests. Results for the 1998 harvest are presented in Table 14 and Figure 13.

Graphical Performance Summaries

Figures 9-12 summarize performance information for several varieties. Varieties are included if they were entered in 1999 tests and at least one prior year, if they were included in at least two tests within a given region in each year of entry, and if they were named and released cultivars.

Varieties are ranked left to right based on desirable performance characteristics. Yield and test weight are sorted in decreasing order for obvious reasons. Heading date and height are sorted in increasing order, because early maturing, relatively short varieties have tended to be more desirable under Kansas growing conditions. Early maturing varieties fill grain sooner and may avoid the heat and moisture stresses often encountered later in the season. Shorter varieties may be less susceptible to lodging; however, straw strength is not necessarily related to height.

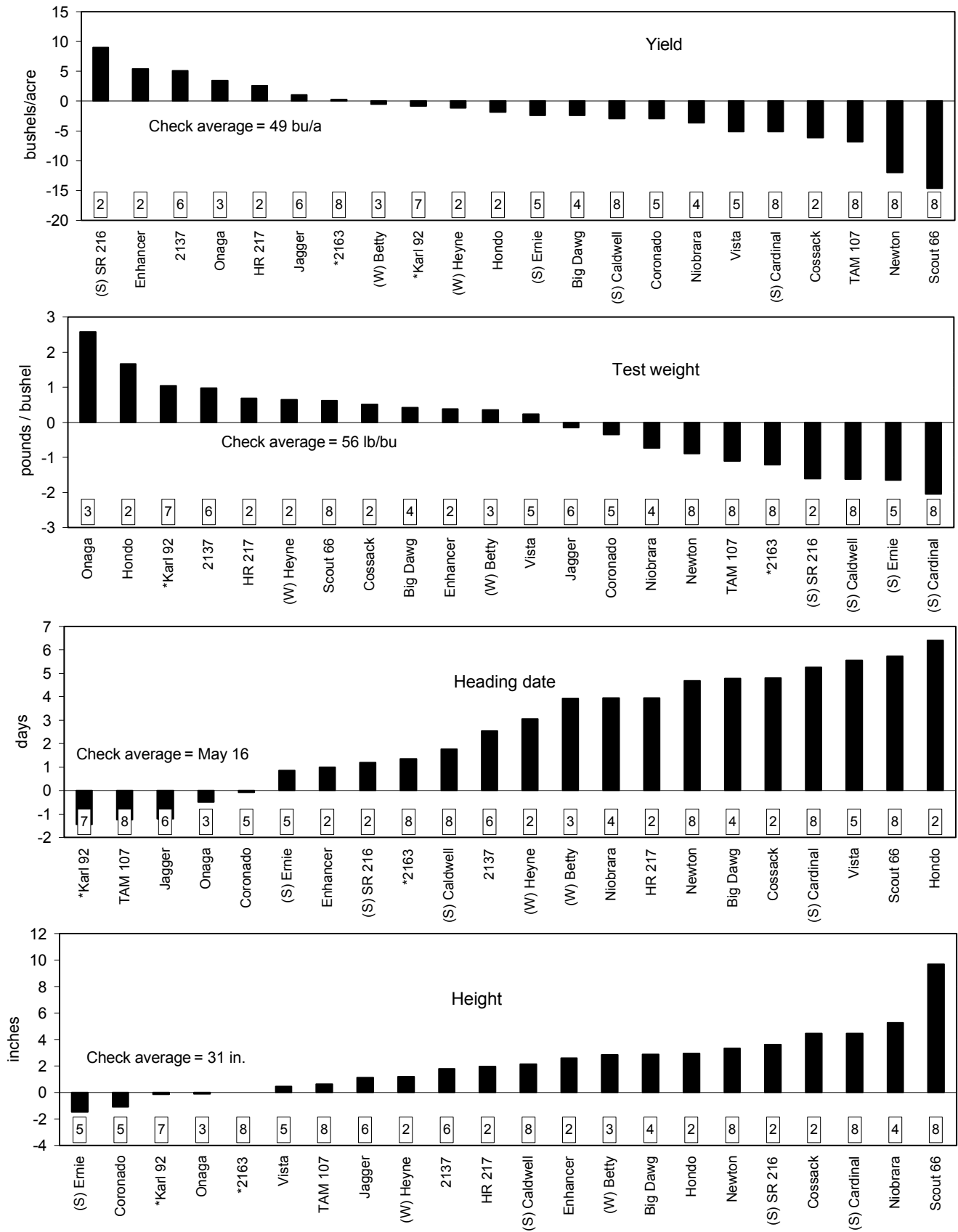
Figures 9-12 illustrate the difference of each variety from the average of two check varieties. TAM 107 and Ike were used as checks in the western and irrigated tests. Karl 92 and 2163 were checks in the eastern and central tests. The

zero line in each graph represents the average of the checks.

The number of direct comparisons of a given variety with the check varieties has a bearing on the confidence one can place in the differential performance of that variety. The number in the box directly above each variety name shows the number of years that variety was compared to the check varieties in at least two tests within that region. In general, the greater the number of years that a variety has been tested, the greater confidence one can put in comparisons of that variety with the checks.

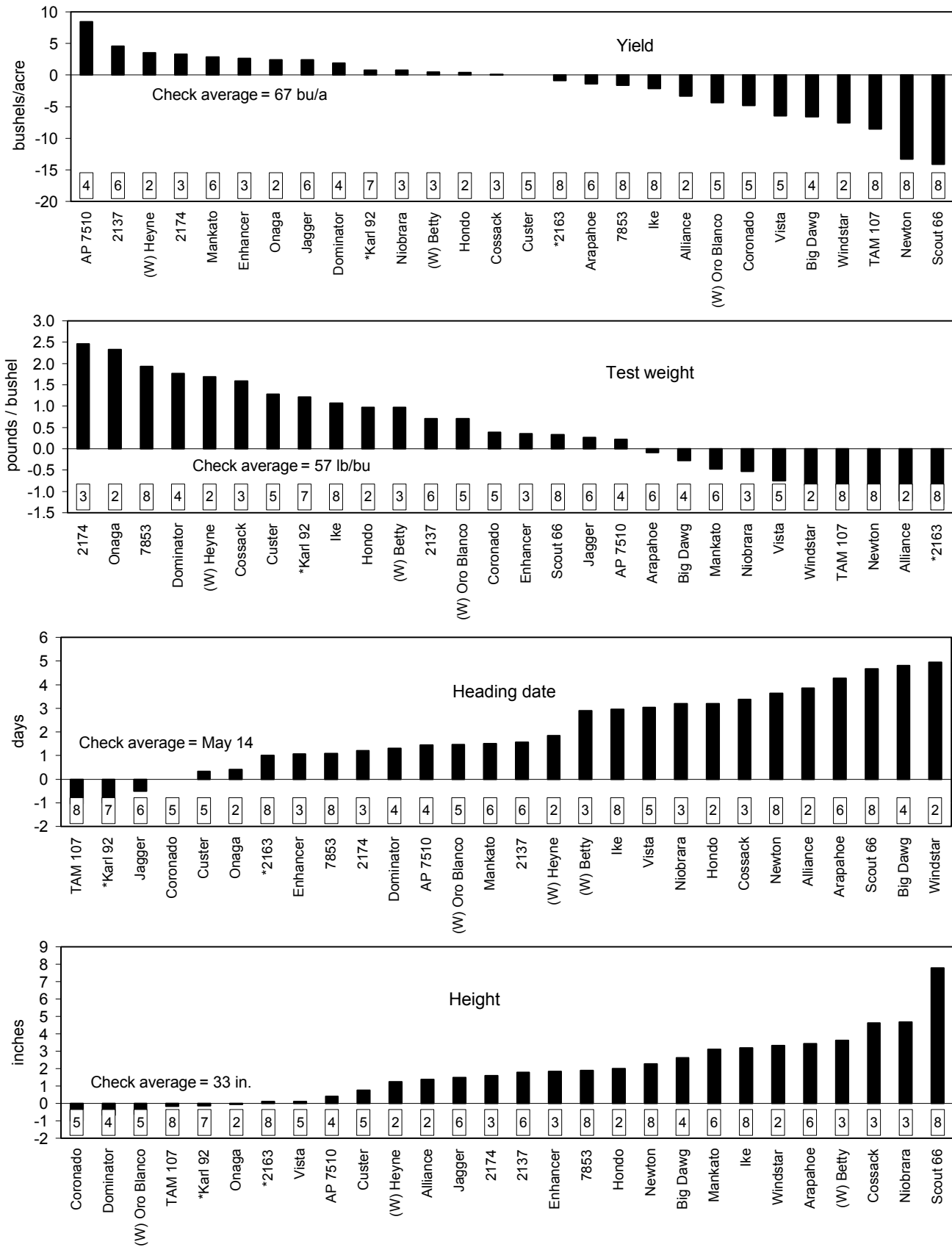
As with individual test results, small differences should not be overemphasized. Rather, relative ranking and large differences are better indicators of varietal performance.

Figure 9. Eastern Kansas wheat variety performance summary, 1992-1999.



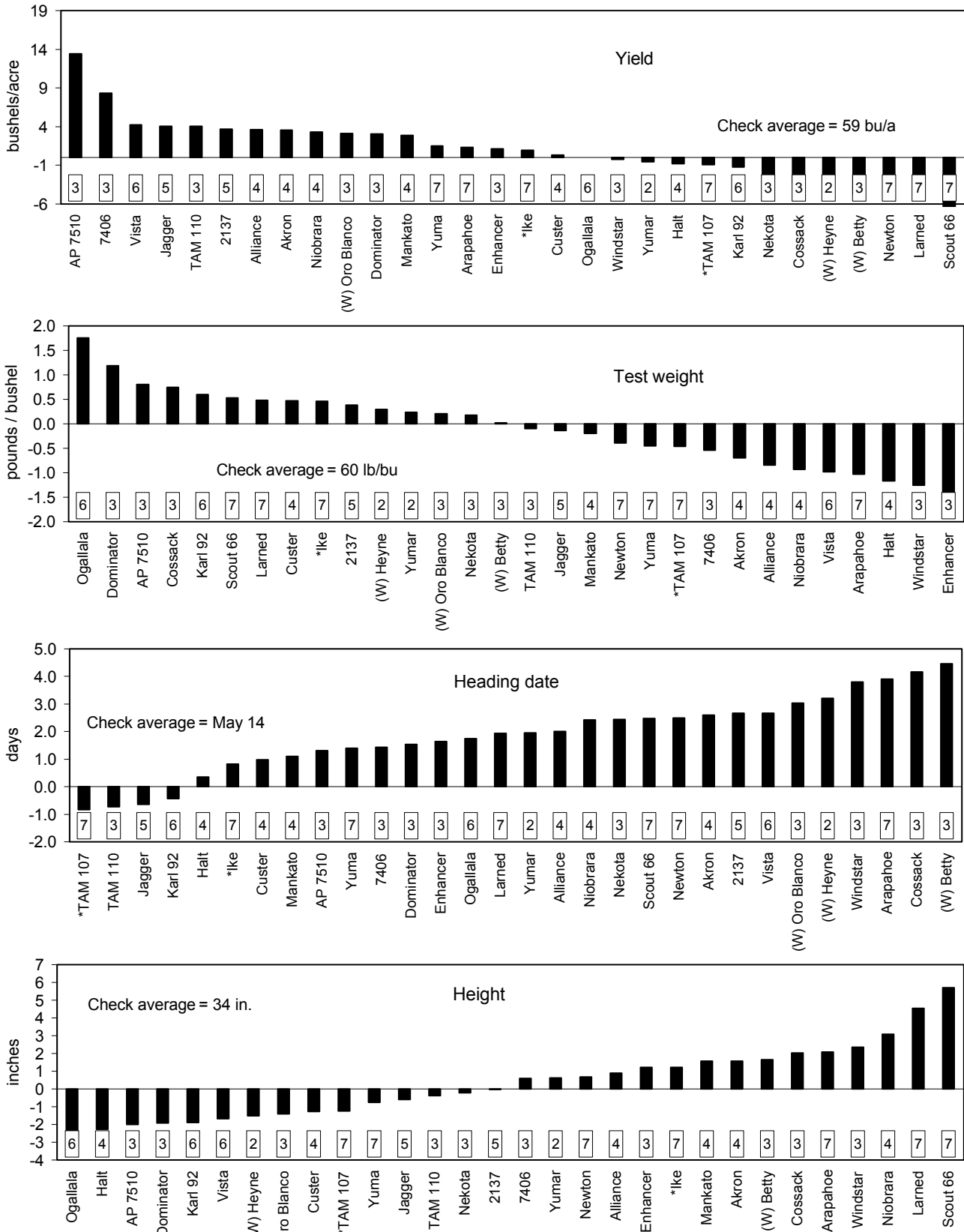
Bars show differences between variety and average of checks*. Values in boxes are the numbers of years variety was tested.

Figure 10. Central Kansas wheat variety performance summary, 1992-1999.



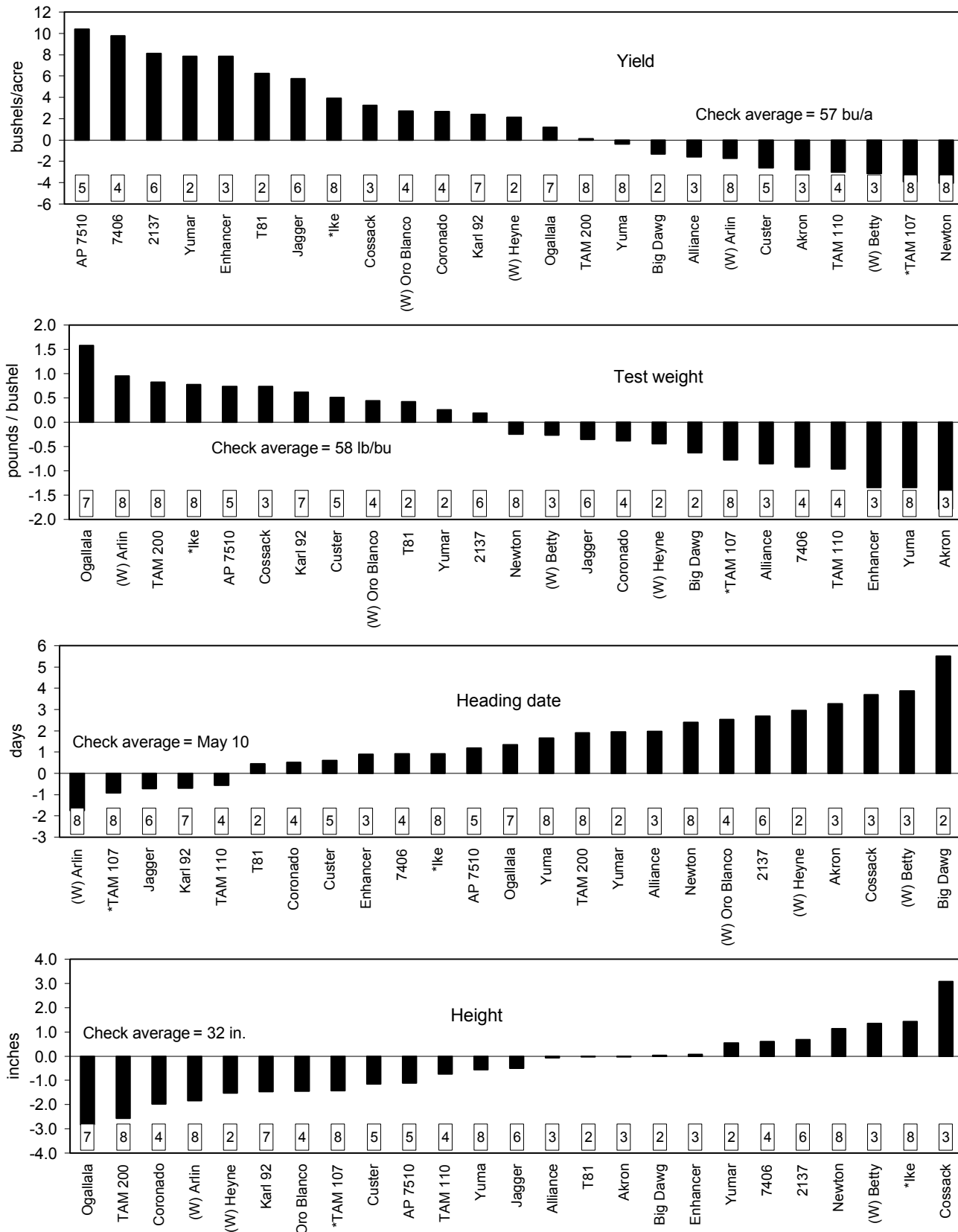
Bars show differences between variety and average of checks*. Values in boxes are the numbers of years variety was tested.

Figure 11. Western Kansas wheat variety performance summary, 1992-1999.



Bars show differences between variety and average of checks*. Values in boxes are the numbers of years variety was tested.

Figure 12. Kansas irrigated wheat variety performance summary, 1992-1999.



Bars show differences between variety and average of checks*. Values in boxes are the numbers of years variety was tested.

**Table 5a. Yield (bushels per acre)
1999 EASTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.	Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.
AgriPro						Public					
(S) Marion	--	--	--	34	--	(S) Caldwell	48	38	--	26	37
(S) Patton	52	--	--	--	--	(S) Cardinal	31	33	--	25	30
Big Dawg	25	31	--	33	30	(S) Ernie	53	41	--	24	39
Coronado	32	33	--	23	29	(S) IL90-7514	57	53	--	28	46
Hondo	40	36	--	--	--	(W) Betty	37	37	--	35	36
AGSECO						(W) Heyne	48	31	--	21	33
7853	--	--	--	26	--	2137	36	35	--	31	34
Mankato	--	40	--	--	--	2163	45	38	--	25	36
Onaga	54	49	--	26	43	2174	45	38	--	23	36
General Mills						Culver	46	37	--	--	--
(W) NuWest	--	17	--	--	--	Custer	--	--	--	22	--
Goertzen						Jagger	47	37	--	29	38
Cossack	33	36	--	--	--	Karl 92	53	38	--	24	38
Enhancer	56	49	--	--	--	KS89180B Exp	53	35	--	22	36
G12058 Exp	35	49	--	--	--	KS95H167-3	41	37	--	19	32
NK						KS95HW62-6Exp	42	29	--	24	32
(S) Coker 9474	--	--	--	25	--	KS96HW115Exp	48	38	--	22	36
(S) Coker 9543	--	--	--	27	--	Newton	28	34	--	23	28
(S) Coker 9663	--	--	--	33	--	Niobrara	46	33	--	--	--
Pioneer						Scout 66	39	23	--	15	26
(S) 2540	--	--	--	34	--	TAM 107	43	40	--	17	33
Polansky						Vista	34	30	--	--	--
Dominator	--	36	--	--	--	Average	44	37	--	26	36
Terra						CV (%)	10	17	--	16	--
(S) SR 216	64	56	--	29	50	LSD (0.05)**	5	8	--	5	--
HR 217	42	38	--	39	39						

¹ BR = Brown County test at Cornbelt Experiment Field near Powhattan, KS.

² RL = Riley County test at Ashland Experiment Farm near Manhattan, KS.

³ FR = Franklin County test at East Central Experiment Field near Ottawa, KS. Not planted because of wet fall conditions.

⁴ LB = Labette County test at KSU Southeast Agricultural Research Center near Parsons, KS.

(S) = Soft red winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 5b. Yield (bushels per acre)
1999 CENTRAL Kansas Winter Wheat Performance Tests.**

Brand / Name	NORTH			SOUTH				Brand / Name	NORTH			SOUTH			
	RP ¹	SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.		RP ¹	SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.
AgriPro								(W) Heyne	75	78	76	52	70	62	62
Big Dawg	--	--	--	59	51	66	58	2137	86	89	87	52	60	54	55
Coronado	76	--	--	58	59	50	56	2163	81	73	77	52	62	61	58
Hondo	88	80	84	56	61	64	60	2174	91	85	88	51	59	58	56
Thunderbolt	--	69	--	--	--	--	--	Alliance	80	83	82	--	--	57	--
AGSECO								Arapahoe	89	84	86	--	--	50	--
7853	--	--	--	55	70	62	62	Culver	90	89	89	--	--	56	--
Mankato	88	86	87	--	--	--	--	Custer	92	86	89	26	73	48	49
Onaga	80	80	80	52	69	--	--	Ike	88	82	85	53	55	53	54
AWWPA								Jagger	77	75	76	64	71	69	68
(W) Oro Blanco	79	80	80	52	58	55	55	Karl 92	86	81	84	57	62	50	56
General Mills								KS89180B Exp	88	85	86	52	68	61	60
(W) NuWest	62	--	--	--	--	--	--	KS95H167-3	89	84	87	29	61	43	45
Goertzen								KS95HW62-6Exp	93	91	92	55	65	63	61
Cossack	78	80	79	57	54	68	60	KS96HW115Exp	94	80	87	56	59	68	61
Enhancer	85	88	87	61	64	57	61	KS96HW94 Exp	--	87	--	--	60	58	--
G12058 Exp	89	82	85	58	76	74	69	Nekota	90	82	86	--	--	--	--
Kalvesta	82	83	83	--	--	--	--	Newton	72	76	74	54	53	58	55
Polansky								Niobrara	85	89	87	--	--	61	--
Dominator	88	83	86	64	61	67	64	Scout 66	62	65	63	22	42	47	37
Quantum								TAM 107	74	82	78	26	64	50	47
7406	79	--	--	--	--	54	--	Vista	84	83	83	--	--	44	--
AP 7510	102	96	99	--	68	--	--	Wesley	91	94	93	--	--	--	--
XH1888	95	92	93	--	68	75	--	Windstar	76	80	78	--	--	60	--
Terra								Yuma	90	90	90	--	--	--	--
(S) SR 216	90	92	91	56	83	58	66	Yumar	83	85	84	--	--	--	--
HR 217	87	90	89	58	58	62	59	Average	84	83	84	52	62	59	58
Public								CV (%)	5	4	--	7	5	16	--
(W) Betty	82	79	80	60	54	64	59	LSD (0.05)**	5	4	--	4	4	11	--

¹ RP = Republic County test at North Central Experiment Field near Belleville, KS.

² SM = Smith County test near Smith Center, KS.

³ HV = Harvey County test at Harvey County Experiment Field near Hesston, KS.

⁴ RN = Reno County test at South Central Experiment Field near Hutchinson, KS.

⁵ SD = Stafford County Dryland test at Sandyland Experiment Field near St. John, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 5c. Yield (bushels per acre)
1999 WESTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.	Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.
AgriPro						Public					
Big Dawg	69	--	--	--	--	(W) Betty	67	61	68	57	63
Ogallala	77	56	88	64	71	(W) Heyne	73	52	75	55	64
Thunderbolt	78	54	78	60	67	2137	72	64	80	65	70
AGSECO						2174					
7853	--	--	--	58	--	Akron	79	61	86	60	72
Mankato	74	66	87	59	71	Alliance	77	69	90	64	75
TAM 110	80	69	82	68	75	Arapahoe	70	60	81	58	67
AWWPA						Culver					
(W) Arlin	--	--	--	57	--	Custer	75	61	82	62	70
(W) Oro Blanco	73	64	82	58	69	Halt	80	60	86	56	70
Drussel						Ike					
T81	--	--	88	62	--	Jagger	84	59	80	66	72
General Mills						Karl 92					
(W) NuWest	54	43	--	--	--	KS89180B Exp	82	58	87	66	73
Goertzen						KS95H167-3					
Cossack	65	61	73	55	64	KS95HW62-6Exp	82	77	90	71	80
Enhancer	81	65	82	55	71	KS96HW115Exp	78	70	90	71	77
G12058 Exp	80	57	83	57	70	KS96HW94 Exp	70	65	80	63	70
G15011 Exp	77	61	82	60	70	Larned	68	62	65	51	62
G15048 Exp	70	67	87	64	72	Nekota	66	58	80	61	66
Kalvesta	78	61	83	60	70	Newton	70	60	77	56	66
Polansky						Niobrara					
Dominator	79	65	--	--	--	Scout 66	59	54	58	51	56
Quantum						TAM 107					
7406	78	67	90	--	--	Vista	77	74	89	63	76
AP 7510	88	71	91	--	--	Wesley	72	64	82	--	--
XH1888	83	74	91	--	--	Windstar	73	57	80	58	67
XH9806	--	75	90	--	--	Yuma	79	68	83	60	72
Terra						Yumar					
(S) SR 216	74	54	78	58	66	Average	75	63	82	61	70
HR 217	72	57	79	57	66	CV (%)	5	9	5	8	--
						LSD (0.05)**					
						5					
						6					
						5					
						6					
						--					

¹ EL = Ellis County test at KSU Agricultural Research Center near Hays, KS.

² TD = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS.

³ GD = Greeley County test at KSU Southwest Research-Extension Center near Tribune, KS.

⁴ FD = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 5d. Yield (bushels per acre)
1999 IRRIGATED Kansas Winter Wheat Performance Tests.**

Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.	Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.
AgriPro						Public					
Big Dawg	83	--	--	--	--	(W) Betty	74	--	--	59	66
Coronado	95	--	--	80	87	(W) Heyne	88	--	--	74	81
Ogallala	--	--	--	83	--	2137	87	--	--	77	82
Thunderbolt	--	--	--	85	--	2174	78	--	--	67	73
<hr/>						<hr/>					
AGSECO						Akron					
Onaga	66	--	--	--	--	Alliance	--	--	--	73	--
TAM 110	--	--	--	59	--	Custer	--	--	--	70	--
<hr/>						Ike					
AWWPA						Jagger					
(W) Arlin	--	--	--	67	--	Karl 92	86	--	--	69	77
(W) Oro Blanco	77	--	--	79	78	KS89180B Exp	--	--	--	79	--
<hr/>						KS95H167-3					
Drussel						KS95HW62-6Exp					
T81	--	--	--	77	--	KS96HW115Exp	84	--	--	92	88
<hr/>						KS96HW94 Exp					
Goertzen						Newton					
Cossack	84	--	--	70	77	TAM 107	71	--	--	66	69
Enhancer	84	--	--	75	80	TAM 200	--	--	--	80	--
G12058 Exp	87	--	--	80	84	Yuma	--	--	--	89	--
G15011 Exp	71	--	--	75	73	Yumar	--	--	--	92	--
G15048 Exp	79	--	--	87	83	<hr/>					
Kalvesta	85	--	--	70	78	Average					
<hr/>						CV (%)					
Quantum						LSD (0.05)**					
7406	94	--	--	82	88	<hr/>					
AP 7510	99	--	--	91	95	Average					
XH1888	105	--	--	92	98	CV (%)					
<hr/>						LSD (0.05)**					
Terra						Average					
(S) SR 216	83	--	--	85	84	CV (%)					
HR 217	75	--	--	71	73	LSD (0.05)**					
<hr/>						<hr/>					

¹ SI = Stafford County test at Sandyland Experiment Field near St. John, KS.

² TI = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS. Hail destroyed plots before harvest.

³ FI = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS. Hail destroyed plots before harvest.

⁴ ST = Stevens County test at Jim Kramer farm near Hugoton, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 6a. Yield (% of test average)
1999 EASTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.	Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.
AgriPro						Public					
(S) Marion	--	--	--	129	--	(S) Caldwell	111	102	--	100	104
(S) Patton	119	--	--	--	--	(S) Cardinal	71	89	--	95	85
Big Dawg	58	84	--	125	89	(S) Ernie	121	112	--	93	108
Coronado	73	88	--	87	83	(S) IL90-7514	130	142	--	108	127
Hondo	92	96	--	--	--	(W) Betty	84	101	--	133	106
AGSECO						(W) Heyne	110	83	--	79	91
7853	--	--	--	98	--	2137	81	95	--	117	98
Mankato	--	107	--	--	--	2163	104	104	--	97	102
Onaga	123	133	--	99	118	2174	104	103	--	88	98
General Mills						Culver	106	99	--	--	--
(W) NuWest	--	46	--	--	--	Custer	--	--	--	83	--
Goertzen						Jagger	107	101	--	113	107
Cossack	75	97	--	--	--	Karl 92	122	102	--	91	105
Enhancer	129	132	--	--	--	KS89180B Exp	121	93	--	85	100
G12058 Exp	80	131	--	--	--	KS95H167-3	94	101	--	71	89
NK						KS95HW62-6Exp	95	78	--	93	89
(S) Coker 9474	--	--	--	95	--	KS96HW115Exp	111	102	--	85	99
(S) Coker 9543	--	--	--	104	--	Newton	64	91	--	89	81
(S) Coker 9663	--	--	--	126	--	Niobrara	106	88	--	--	--
Pioneer						Scout 66	90	63	--	59	70
(S) 2540	--	--	--	132	--	TAM 107	99	107	--	67	91
Polansky						Vista	77	82	--	--	--
Dominator	--	96	--	--	--	Average	44	37	--	26	36
Terra						CV (%)	10	17	--	16	--
(S) SR 216	148	152	--	113	137	LSD (0.05)**	12	8	--	19	--
HR 217	96	102	--	147	115						

¹ BR = Brown County test at Cornbelt Experiment Field near Powhattan, KS.

² RL = Riley County test at Ashland Experiment Farm near Manhattan, KS.

³ FR = Franklin County test at East Central Experiment Field near Ottawa, KS. Not planted because of wet fall conditions.

⁴ LB = Labette County test at KSU Southeast Agricultural Research Center near Parsons, KS.

(S) = Soft red winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 6b. Yield (% of test average)
1999 CENTRAL Kansas Winter Wheat Performance Tests.**

Brand / Name	NORTH				SOUTH				Brand / Name	NORTH				SOUTH			
	RP ¹	SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.	RP ¹		SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.		
AgriPro								(W) Heyne	89	94	91	101	113	106	107		
Big Dawg	--	--	--	114	81	112	103	2137	102	106	104	100	97	92	96		
Coronado	90	--	--	111	95	85	97	2163	96	87	92	101	99	105	102		
Hondo	105	97	101	109	97	109	105	2174	108	102	105	99	94	99	97		
Thunderbolt	--	83	--	--	--	--	--	Alliance	95	100	97	--	--	97	--		
AGSECO								Arapahoe	105	100	103	--	--	86	--		
7853	--	--	--	106	111	106	108	Culver	107	107	107	--	--	95	--		
Mankato	105	103	104	--	--	--	--	Custer	109	103	106	50	117	82	83		
Onaga	95	96	96	100	111	--	--	Ike	105	99	102	103	89	91	94		
AWWPA								Jagger	91	90	91	123	113	118	118		
(W) Oro Blanco	94	96	95	100	93	94	96	Karl 92	102	98	100	111	100	85	99		
General Mills								KS89180B Exp	104	102	103	100	110	104	105		
(W) NuWest	73	--	--	--	--	--	--	KS95H167-3	106	101	104	57	98	74	76		
Goertzen								KS95HW62-6Exp	110	109	110	106	104	108	106		
Cossack	93	96	95	110	87	116	104	KS96HW115Exp	112	96	104	108	94	116	106		
Enhancer	101	106	104	119	103	97	106	KS96HW94 Exp	--	104	--	--	96	99	--		
G12058 Exp	105	98	102	112	121	127	120	Nekota	107	98	102	--	--	--	--		
Kalvesta	97	100	99	--	--	--	--	Newton	86	91	88	105	85	99	96		
Polansky								Niobrara	101	107	104	--	--	105	--		
Dominator	104	100	102	124	98	115	112	Scout 66	73	78	75	42	67	81	63		
Quantum								TAM 107	88	98	93	51	103	86	80		
7406	94	--	--	--	--	93	--	Vista	99	99	99	--	--	75	--		
AP 7510	121	115	118	--	109	--	--	Wesley	109	113	111	--	--	--	--		
XH1888	113	110	111	--	108	128	--	Windstar	90	96	93	--	--	102	--		
Terra								Yuma	107	109	108	--	--	--	--		
(S) SR 216	107	110	109	109	133	99	114	Yumar	99	101	100	--	--	--	--		
HR 217	104	108	106	113	92	105	103	Average	84	83	84	52	62	59	58		
Public								CV (%)	5	4	--	7	5	16	--		
(W) Betty	97	94	96	116	86	110	104	LSD (0.05)**	6	5	--	8	6	19	--		

¹ RP = Republic County test at North Central Experiment Field near Belleville, KS.

² SM = Smith County test near Smith Center, KS.

³ HV = Harvey County test at Harvey County Experiment Field near Hesston, KS.

⁴ RN = Reno County test at South Central Experiment Field near Hutchinson, KS.

⁵ SD = Stafford County Dryland test at Sandyland Experiment Field near St. John, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 6c. Yield (% of test average)
1999 WESTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.	Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.
AgriPro						Public					
Big Dawg	92	--	--	--	--	(W) Betty	89	98	83	94	91
Ogallala	103	90	107	106	101	(W) Heyne	98	82	91	91	91
Thunderbolt	105	86	95	98	96	2137	97	102	98	107	101
AGSECO						2174	93	95	90	96	94
7853	--	--	--	95	--	Akron	105	98	106	99	102
Mankato	99	105	107	96	102	Alliance	103	110	110	106	107
TAM 110	107	110	100	112	107	Arapahoe	94	95	99	95	96
AWWPA						Culver	101	97	108	99	101
(W) Arlin	--	--	--	95	--	Custer	101	97	100	103	100
(W) Oro Blanco	98	102	100	95	99	Halt	107	95	105	91	100
Drussel						Ike	103	94	94	109	100
T81	--	--	107	102	--	Jagger	112	94	98	109	103
General Mills						Karl 92	100	108	96	106	102
(W) NuWest	72	69	--	--	--	KS89180B Exp	110	93	106	109	105
Goertzen						KS95H167-3	98	103	98	111	102
Cossack	87	98	89	91	91	KS95HW62-6Exp	110	122	110	118	115
Enhancer	109	104	101	91	101	KS96HW115Exp	104	112	110	116	111
G12058 Exp	108	92	102	94	99	KS96HW94 Exp	94	104	98	104	100
G15011 Exp	103	98	101	99	100	Larned	91	99	79	85	89
G15048 Exp	94	107	106	106	103	Nekota	88	93	98	100	95
Kalvesta	104	98	101	99	100	Newton	94	96	95	92	94
Polansky						Niobrara	103	111	102	112	107
Dominator	106	103	--	--	--	Scout 66	79	86	71	84	80
Quantum						TAM 107	104	102	99	104	102
7406	105	107	110	--	--	Vista	103	117	109	104	108
AP 7510	118	113	111	--	--	Wesley	97	101	100	--	--
XH1888	111	119	112	--	--	Windstar	98	91	98	96	96
XH9806	--	119	110	--	--	Yuma	106	108	101	99	104
Terra						Yumar	104	101	97	94	99
(S) SR 216	99	86	95	96	94	Average	75	63	82	61	70
HR 217	96	90	96	94	94	CV (%)	5	9	5	8	--
						LSD (0.05)**	6	10	6	9	--

¹ EL = Ellis County test at KSU Agricultural Research Center near Hays, KS.

² TD = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS.

³ GD = Greeley County test at KSU Southwest Research-Extension Center near Tribune, KS.

⁴ FD = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 6d. Yield (% of test average)
1999 IRRIGATED Kansas Winter Wheat Performance Tests.**

Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.	Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.
AgriPro						Public					
Big Dawg	99	--	--	--	--	(W) Betty	88	--	--	77	83
Coronado	114	--	--	104	109	(W) Heyne	106	--	--	97	102
Ogallala	--	--	--	108	--	2137	104	--	--	101	102
Thunderbolt	--	--	--	111	--	2174	94	--	--	87	91
AGSECO						Akron					
Onaga	79	--	--	--	--	Alliance	--	--	--	95	--
TAM 110	--	--	--	77	--	Custer	--	--	--	91	--
AWWPA						Ike					
(W) Arlin	--	--	--	87	--	Jagger	119	--	--	101	110
(W) Oro Blanco	92	--	--	103	98	Karl 92	104	--	--	89	97
Drussel						KS89180B Exp					
T81	--	--	--	100	--	KS95H167-3	83	--	--	97	90
Goertzen						KS95HW62-6Exp					
Cossack	101	--	--	91	96	KS96HW115Exp	100	--	--	121	111
Enhancer	101	--	--	98	99	KS96HW94 Exp	102	--	--	93	97
G12058 Exp	105	--	--	105	105	Newton	106	--	--	87	96
G15011 Exp	85	--	--	98	91	TAM 107	86	--	--	86	86
G15048 Exp	95	--	--	113	104	TAM 200	--	--	--	104	--
Kalvesta	102	--	--	92	97	Yuma	--	--	--	116	--
Quantum						Yumar					
7406	113	--	--	108	110	Average	83	--	--	77	80
AP 7510	119	--	--	119	119	CV (%)	8	--	--	11	--
XH1888	126	--	--	120	123	LSD (0.05)**	9	--	--	13	--
Terra											
(S) SR 216	99	--	--	111	105						
HR 217	90	--	--	93	92						

¹ SI = Stafford County test at Sandyland Experiment Field near St. John, KS. Abandoned in 1998 because of plot variability.

² TI = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS. Hail destroyed plots before harvest.

³ FI = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS. Hail destroyed plots before harvest.

⁴ ST = Stevens County test at Jim Kramer farm near Hugoton, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

Table 7a. Multiyear yield averages (bu/acre) Kansas Wheat Performance Tests - EAST.

Brand / Name	<u>Brown-Powhattan</u>			<u>Riley-Manhattan</u>			<u>Franklin-Ottawa (95-98)</u>			<u>Labette-Parsons</u>		
	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR	4YR
AGSECO												
7853	--	--	--	--	--	--	67	56	52	--	--	--
Mankato	--	--	--	44	52	--	--	--	--	--	--	--
Onaga	53	55	--	58	--	--	62	--	--	43	--	--
AgriPro												
(S) Marion	--	--	--	--	--	--	--	--	--	49	--	--
(S) Patton	53	--	--	--	--	--	--	--	--	--	--	--
Big Dawg	43	47	--	40	49	56	66	55	--	43	57	54
Coronado	44	49	44	44	52	57	67	58	54	37	52	50
Hondo	50	--	--	46	--	--	--	--	--	--	--	--
Goertzen												
Cossack	45	--	--	42	--	--	--	--	--	--	--	--
Enhancer	60	--	--	50	--	--	--	--	--	--	--	--
NK												
(S) Coker 9474	--	--	--	--	--	--	55	52	--	44	53	51
(S) Coker 9543	--	--	--	--	--	--	--	--	--	45	60	58
(S) Coker 9663	--	--	--	--	--	--	--	--	--	47	57	--
Pioneer												
(S) 2540	--	--	--	--	--	--	--	--	--	51	--	--
Polansky												
Dominator	--	--	--	43	53	58	--	--	--	--	--	--
Terra												
(S) SR 216	60	--	--	--	--	--	--	--	--	47	--	--
HR 217	49	--	--	--	--	--	--	--	--	49	--	--
Public												
(S) Caldwell	48	51	51	40	53	62	55	53	52	40	53	52
(S) Cardinal	33	41	43	35	47	54	45	39	42	35	50	52
(S) Ernie	49	48	50	43	55	60	53	45	45	36	51	49
(S) IL90-7514	53	--	--	53	--	--	--	--	--	45	--	--
(W) Betty	41	47	--	44	51	--	70	--	--	46	55	--
(W) Heyne	52	--	--	45	--	--	--	--	--	38	--	--
2137	49	53	47	48	58	66	74	65	58	46	56	58
2163	52	52	50	48	57	63	68	60	56	41	56	54
2174	--	--	--	--	--	--	--	--	--	--	--	--
Custer	--	--	--	--	--	--	--	--	--	46	55	52
Jagger	53	58	56	43	55	60	50	42	42	45	58	56
KS95H167-3	44	--	--	43	--	--	--	--	--	35	--	--
KS95HW62-6Exp	50	--	--	40	--	--	--	--	--	41	--	--
Karl 92	56	53	50	43	51	58	61	57	51	35	49	48
Newton	42	41	36	35	39	46	51	44	40	32	42	46
Niobrara	53	55	50	39	46	55	--	--	--	--	--	--
Scout 66	45	49	43	26	34	39	41	38	32	29	39	42
TAM 107	50	49	44	35	42	50	53	49	45	38	48	47
Vista	43	48	46	38	47	52	--	--	--	--	--	--
Average	49	52	49	43	51	57	61	52	49	42	53	52

Table 7b. Multiyear yield averages (bu/acre) Kansas Wheat Performance Tests - CENTRAL.

Brand / Name	Republic-Belleville			Harvey-Hesston			Reno-Hutchinson			Stafford-St. John			Sumner-Caldwell (95-98)		
	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR	4YR
AGSECO															
7853	--	--	--	56	60	51	61	58	60	59	44	43	40	31	28
Mankato	84	79	74	--	--	--	--	--	--	--	--	--	--	--	--
Onaga	80	--	--	57	--	--	64	--	--	--	--	--	--	--	--
AWWPA															
(W) Oro Blanco	78	73	63	55	56	51	51	51	52	61	44	--	37	31	26
AgriPro															
Big Dawg	--	--	--	60	64	49	49	48	48	61	--	--	40	--	--
Coronado	73	73	65	57	60	48	57	55	55	59	44	--	37	27	23
Hondo	80	--	--	56	--	--	51	--	--	61	--	--	--	--	--
Goertzen															
Cossack	71	--	--	54	58	--	53	55	--	64	--	--	--	--	--
Enhancer	76	--	--	63	65	--	59	57	--	54	--	--	--	--	--
Polansky															
Dominator	84	83	77	61	63	57	56	55	56	63	--	--	38	--	--
Quantum															
7406	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
AP 7510	94	90	83	--	--	--	63	60	60	--	--	--	--	--	--
Terra															
(S) SR 216	--	--	--	52	--	--	--	--	--	--	--	--	--	--	--
HR 217	--	--	--	59	--	--	--	--	--	--	--	--	--	--	--
Public															
(W) Betty	79	74	--	58	64	--	50	52	--	62	--	--	37	--	--
(W) Heyne	77	--	--	56	--	--	63	--	--	65	--	--	--	--	--
2137	84	85	78	57	62	63	59	56	59	59	45	44	51	42	34
2163	75	76	72	54	58	52	56	54	54	61	47	43	40	32	30
2174	--	--	--	55	58	--	57	54	--	62	--	--	46	--	--
Alliance	78	82	78	--	--	--	--	--	--	49	--	--	--	--	--
Arapahoe	80	79	74	--	--	--	--	--	--	54	41	40	--	--	--
Custer	84	80	75	45	54	45	69	64	62	54	38	--	54	39	35
Ike	79	77	72	58	59	56	50	--	--	51	40	38	33	26	21
Jagger	79	72	65	63	68	52	65	63	61	72	53	48	49	38	36
KS95H167-3	80	--	--	45	--	--	57	--	--	46	--	--	--	--	--
KS95HW62-6Exp	84	--	--	60	--	--	60	--	--	58	--	--	--	--	--
Karl 92	86	79	74	60	62	61	58	54	56	51	38	37	38	33	28
Nekota	83	82	76	--	--	--	--	--	--	--	--	--	--	--	--
Newton	67	62	57	53	49	39	46	43	45	56	41	40	23	19	15
Niobrara	82	81	76	--	--	--	--	--	--	60	45	--	--	--	--
Scout 66	59	61	58	35	40	37	41	40	44	48	35	34	28	22	18
TAM 107	75	72	66	42	46	42	56	53	56	55	39	38	24	20	17
Vista	75	76	72	--	--	--	--	--	--	36	30	32	--	--	--
Windstar	69	74	--	--	--	--	--	--	--	51	--	--	--	--	--
Yuma	83	77	68	--	--	--	--	--	--	--	--	--	--	--	--
Yumar	82	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Average	79	76	70	55	58	51	57	54	55	57	42	41	40	31	27

Table 7c. Multiyear yield averages (bu/acre) Kansas Wheat Performance Tests - WEST.

Brand / Name	Ellis-Hays			Thomas-Colby			Greeley-Tribune			Finney-Garden City		
	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR	4YR
AGSECO												
7853	--	--	--	--	--	--	--	--	--	54	52	45
Mankato	76	73	66	73	70	65	79	70	64	53	50	--
TAM 110	81	79	--	71	68	63	77	70	--	58	57	--
AWWPA												
(W) Arlin	--	--	--	--	--	--	--	--	--	54	52	43
(W) Oro Blanco	75	--	--	69	--	--	79	--	--	52	--	--
AgriPro												
Big Dawg	76	73	--	--	--	--	--	--	--	--	--	--
Ogallala	77	73	67	62	61	56	77	70	65	54	52	46
Drussel												
T81	--	--	--	--	--	--	82	--	--	--	--	--
Goertzen												
Cossack	71	--	--	65	--	--	68	60	--	52	53	--
Enhancer	79	--	--	70	--	--	78	69	--	51	51	--
Polansky												
Dominator	82	78	--	--	--	--	--	--	--	--	--	--
Quantum												
7406	80	--	--	77	75	69	--	--	--	--	--	--
AP 7510	85	--	--	77	72	67	--	--	--	--	--	--
Terra												
(S) SR 216	69	--	--	--	--	--	--	--	--	--	--	--
HR 217	72	--	--	--	--	--	--	--	--	--	--	--
Public												
(W) Betty	69	68	--	65	62	--	66	58	--	52	51	--
(W) Heyne	74	--	--	63	--	--	72	--	--	52	--	--
2137	78	75	67	70	68	65	76	68	64	58	58	51
2174	77	73	--	--	--	--	--	--	--	--	--	--
Akron	79	77	69	70	68	63	82	73	68	51	52	46
Alliance	77	74	66	73	69	66	84	71	--	52	52	--
Arapahoe	71	71	65	69	65	62	79	69	64	52	51	46
Custer	78	74	68	65	62	55	74	65	62	55	51	43
Halt	76	71	62	67	65	61	79	72	65	52	50	42
Ike	76	72	65	65	62	58	75	66	59	59	56	50
Jagger	82	80	73	71	70	64	77	70	64	60	58	49
KS95H167-3	76	--	--	69	--	--	81	--	--	58	--	--
KS95HW62-6Exp	81	--	--	76	--	--	86	--	--	59	--	--
Karl 92	80	73	66	72	65	61	72	62	58	56	52	44
Larned	70	70	60	64	62	58	66	60	53	46	48	39
Nekota	71	68	--	63	61	58	75	66	--	52	52	--
Newton	68	62	54	64	57	53	74	63	56	48	47	40
Niobrara	78	74	67	74	69	66	77	68	63	55	54	48
Scout 66	65	65	55	59	58	55	59	56	50	43	43	36
TAM 107	78	74	64	68	65	62	76	68	61	55	53	44
Vista	79	76	69	73	68	65	83	71	67	53	54	49
Windstar	72	72	--	66	65	--	79	68	--	51	51	--
Yuma	80	78	70	74	71	66	78	69	64	56	54	48
Yumar	78	--	--	69	--	--	74	--	--	53	--	--
Average	76	72	65	69	66	61	76	67	62	53	52	45

Table 7d. Multiyear yield averages (bu/acre) Kansas Wheat Performance Tests - IRR.

Brand / Name	Stafford-St.John			Thomas-Colby (95-8)			Finney-Garden City (93-8)			Stevens-Hugoton	
	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR	4YR	2YR	3YR
AGSECO											
Onaga	--	--	--	--	--	--	--	--	--	--	--
TAM 110	--	--	--	84	83	--	--	--	--	74	73
AWWPA											
(W) Arlin	--	--	--	--	--	--	44	54	57	80	77
(W) Oro Blanco	--	--	--	--	--	--	41	--	--	80	76
AgriPro											
Big Dawg	--	--	--	71	--	--	--	--	--	--	--
Coronado	--	--	--	78	--	--	43	--	--	86	79
Ogallala	--	--	--	79	77	73	42	51	55	85	78
Drussel											
T81	--	--	--	--	--	--	--	--	--	--	--
Goertzen											
Cossack	84	--	--	--	--	--	--	--	--	77	--
Enhancer	81	--	--	--	--	--	--	--	--	78	--
Quantum											
7406	--	--	--	90	88	--	--	--	--	90	--
AP 7510	--	--	--	85	84	79	50	--	--	91	87
Terra											
(S) SR 216	--	--	--	--	--	--	--	--	--	--	--
HR 217	--	--	--	--	--	--	--	--	--	--	--
Public											
(W) Betty	75	--	--	71	--	--	--	--	--	69	70
(W) Heyne	--	--	--	--	--	--	--	--	--	82	--
2137	87	66	63	83	83	78	50	60	--	77	76
2174	77	--	--	--	--	--	--	--	--	--	--
Akron	--	--	--	85	--	--	--	--	--	77	76
Alliance	--	--	--	85	--	--	--	--	--	77	75
Custer	--	--	--	74	72	66	43	--	--	82	81
Ike	80	61	58	84	81	72	45	56	61	79	75
Jagger	79	58	58	87	84	77	49	59	--	82	78
KS95H167-3	--	--	--	--	--	--	--	--	--	80	--
KS95HW62-6Exp	--	--	--	--	--	--	--	--	--	83	--
Karl 92	73	55	54	75	74	68	47	56	60	83	78
Newton	80	58	57	74	74	66	34	44	47	69	66
TAM 107	50	36	34	82	83	72	45	52	53	77	73
TAM 200	--	--	--	78	78	72	44	50	53	79	76
Yuma	--	--	--	88	86	77	40	51	53	86	81
Yumar	--	--	--	--	--	--	--	--	--	85	--
Average	74	54	52	80	79	72	43	52	55	81	77

**Table 8a. Test weight (pounds per bushel)
1999 EASTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.	Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.
AgriPro						Public					
(S) Marion	--	--	--	55	--	(S) Caldwell	--	53	--	55	54
(S) Patton	--	--	--	--	--	(S) Cardinal	--	54	--	54	54
Big Dawg	--	57	--	56	56	(S) Ernie	--	55	--	52	53
Coronado	--	55	--	55	55	(S) IL90-7514	--	58	--	56	57
Hondo	--	57	--	--	--	(W) Betty	--	51	--	55	53
AGSECO						(W) Heyne	--	55	--	54	54
7853	--	--	--	58	--	2137	--	55	--	56	56
Mankato	--	55	--	--	--	2163	--	55	--	55	55
Onaga	--	59	--	57	58	2174	--	56	--	57	56
General Mills						Culver	--	55	--	--	--
(W) NuWest	--	54	--	--	--	Custer	--	--	--	56	--
Goertzen						Jagger	--	55	--	56	55
Cossack	--	56	--	--	--	Karl 92	--	55	--	55	55
Enhancer	--	54	--	--	--	KS89180B Exp	--	54	--	54	54
G12058 Exp	--	56	--	--	--	KS95H167-3	--	56	--	54	55
NK						KS95HW62-6Exp	--	57	--	56	56
(S) Coker 9474	--	--	--	56	--	KS96HW115Exp	--	55	--	56	56
(S) Coker 9543	--	--	--	55	--	Newton	--	54	--	56	55
(S) Coker 9663	--	--	--	56	--	Niobrara	--	55	--	--	--
Pioneer						Scout 66	--	56	--	57	57
(S) 2540	--	--	--	54	--	TAM 107	--	55	--	54	55
Polansky						Vista	--	54	--	--	--
Dominator	--	57	--	--	--	Average	--	55	--	55	55
Terra						CV (%)	--	2	--	2	--
(S) SR 216	--	54	--	55	54	LSD (0.05)**	--	1	--	1	--
HR 217	--	54	--	56	55						

¹ BR = Brown County test at Cornbelt Experiment Field near Powhattan, KS. Test weights not available for 1999.

² RL = Riley County test at Ashland Experiment Farm near Manhattan, KS.

³ FR = Franklin County test at East Central Experiment Field near Ottawa, KS. Not planted because of wet fall conditions.

⁴ LB = Labette County test at KSU Southeast Agricultural Research Center near Parsons, KS.

(S) = Soft red winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 8b. Test weight (pounds per bushel)
1999 CENTRAL Kansas Winter Wheat Performance Tests.**

Brand / Name	NORTH			SOUTH				Brand / Name	NORTH			SOUTH			
	RP ¹	SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.		RP ¹	SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.
AgriPro								(W) Heyne	57	58	57	58	59	59	58
Big Dawg	--	--	--	57	59	58	58	2137	58	58	58	59	59	60	59
Coronado	58	--	--	58	58	59	59	2163	57	57	57	57	57	57	57
Hondo	58	57	58	59	59	60	60	2174	58	57	58	60	60	61	60
Thunderbolt	--	57	--	--	--	--	--	Alliance	56	57	57	--	--	57	--
AGSECO								Arapahoe	56	57	57	--	--	58	--
7853	--	--	--	60	61	61	61	Culver	57	58	57	--	--	58	--
Mankato	56	58	57	--	--	--	--	Custer	58	58	58	56	59	60	59
Onaga	59	57	58	60	60	--	--	Ike	58	58	58	60	59	61	60
AWWPA								Jagger	57	57	57	58	58	58	58
(W) Oro Blanco	58	58	58	58	58	60	59	Karl 92	58	58	58	58	59	58	59
General Mills								KS89180B Exp	57	57	57	57	57	58	57
(W) NuWest	55	--	--	--	--	--	--	KS95H167-3	58	58	58	56	60	58	58
Goertzen								KS95HW62-6Exp	59	58	58	59	60	60	60
Cossack	59	58	58	59	60	60	59	KS96HW115Exp	58	58	58	58	58	59	58
Enhancer	57	58	58	58	57	57	58	KS96HW94 Exp	--	58	--	--	58	59	--
G12058 Exp	58	57	58	59	59	60	59	Nekota	57	58	57	--	--	--	--
Kalvesta	57	58	57	--	--	--	--	Newton	58	58	58	59	58	58	58
Polansky								Niobrara	57	58	57	--	--	57	--
Dominator	58	58	58	60	60	60	60	Scout 66	59	58	58	57	59	58	58
Quantum								TAM 107	58	58	58	55	58	58	57
7406	57	--	--	--	--	58	--	Vista	56	57	57	--	--	57	--
AP 7510	58	58	58	--	58	--	--	Wesley	56	58	57	--	--	--	--
XH1888	58	58	58	--	60	59	--	Windstar	56	58	57	--	--	59	--
Terra								Yuma	58	58	58	--	--	--	--
(S) SR 216	57	57	57	57	58	57	58	Yumar	57	58	58	--	--	--	--
HR 217	57	58	57	58	57	58	58	Average	57	58	58	58	59	59	59
Public								CV (%)	1	1	--	1	1	1	--
(W) Betty	58	58	58	58	58	58	58	LSD (0.05)**	1	--	--	1	1	1	--

¹ RP = Republic County test at North Central Experiment Field near Belleville, KS.

² SM = Smith County test near Smith Center, KS.

³ HV = Harvey County test at Harvey County Experiment Field near Hesston, KS.

⁴ RN = Reno County test at South Central Experiment Field near Hutchinson, KS.

⁵ SD = Stafford County Dryland test at Sandyland Experiment Field near St. John, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 8c. Test weight (pounds per bushel)
1999 WESTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.	Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.
AgriPro						Public					
Big Dawg	61	--	--	--	--	(W) Betty	60	58	60	58	59
Ogallala	61	59	61	59	60	(W) Heyne	59	56	59	57	58
Thunderbolt	62	59	61	60	60	2137	60	58	59	57	59
AGSECO						2174					
7853	--	--	--	59	--	Akron	59	57	58	56	58
Mankato	58	57	58	56	57	Alliance	58	58	58	57	58
TAM 110	59	59	58	59	59	Arapahoe	58	56	56	57	57
AWWPA						Culver					
(W) Arlin	--	--	--	60	--	Custer	60	59	60	59	59
(W) Oro Blanco	58	59	59	57	58	Halt	58	57	58	57	57
Drussel						Ike					
T81	--	--	59	58	--	Jagger	59	58	58	57	58
General Mills						Karl 92					
(W) NuWest	57	55	--	--	--	KS89180B Exp	59	57	58	57	58
Goertzen						KS95H167-3					
Cossack	61	58	61	58	60	KS95HW62-6Exp	61	59	59	60	60
Enhancer	57	56	58	54	56	KS96HW115Exp	60	58	60	58	59
G12058 Exp	60	58	60	58	59	KS96HW94 Exp	59	57	59	58	58
G15011 Exp	59	58	59	57	58	Larned	61	60	60	59	60
G15048 Exp	60	59	60	57	59	Nekota	60	58	59	58	59
Kalvesta	60	59	60	57	59	Newton	59	59	60	57	59
Polansky						Niobrara					
Dominator	61	58	--	--	--	Scout 66	61	59	59	59	60
Quantum						TAM 107					
7406	60	57	58	--	--	Vista	58	58	57	58	58
AP 7510	60	59	59	--	--	Wesley	57	57	57	56	57
XH1888	60	57	59	--	--	Windstar	57	55	57	--	--
XH9806	--	58	60	--	--	Yuma	59	57	57	57	58
Terra						Yumar					
(S) SR 216	56	54	56	55	55	Average	59	58	59	58	58
HR 217	57	56	57	55	56	CV (%)	1	1	2	1	--
						LSD (0.05)**	1	1	1	1	--

¹ EL = Ellis County test at KSU Agricultural Research Center near Hays, KS.

² TD = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS.

³ GD = Greeley County test at KSU Southwest Research-Extension Center near Tribune, KS.

⁴ FD = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 8d. Test weight (pounds per bushel)
1999 IRRIGATED Kansas Winter Wheat Performance Tests.**

Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.	Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.
AgriPro						Public					
Big Dawg	59	--	--	--	--	(W) Betty	60	--	--	58	59
Coronado	60	--	--	58	59	(W) Heyne	59	--	--	58	59
Ogallala	--	--	--	62	--	2137	58	--	--	59	59
Thunderbolt	--	--	--	60	--	2174	60	--	--	58	59
AGSECO						Akron					
Onaga	60	--	--	--	--	Alliance	--	--	--	58	--
TAM 110	--	--	--	56	--	Custer	--	--	--	60	--
AWWPA						Ike					
(W) Arlin	--	--	--	60	--	Jagger	59	--	--	58	59
(W) Oro Blanco	60	--	--	60	60	Karl 92	59	--	--	60	59
Drussel						KS89180B Exp					
T81	--	--	--	59	--	KS95H167-3	57	--	--	60	58
Goertzen						KS95HW62-6Exp					
Cossack	59	--	--	57	58	KS96HW115Exp	59	--	--	61	60
Enhancer	58	--	--	58	58	KS96HW94 Exp	59	--	--	59	59
G12058 Exp	59	--	--	59	59	Newton	59	--	--	60	59
G15011 Exp	58	--	--	58	58	TAM 107	58	--	--	58	58
G15048 Exp	59	--	--	59	59	TAM 200	--	--	--	59	--
Kalvesta	55	--	--	60	57	Yuma	--	--	--	56	--
Quantum						Yumar					
7406	60	--	--	57	58	Average	59	--	--	59	59
AP 7510	59	--	--	61	60	CV (%)	3	--	--	3	--
XH1888	57	--	--	59	58	LSD (0.05)**	2	--	--	2	--
Terra											
(S) SR 216	56	--	--	58	57						
HR 217	57	--	--	56	57						

¹ SI = Stafford County test at Sandyland Experiment Field near St. John, KS.

² TI = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS. Hail destroyed plots before harvest.

³ FI = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS. Hail destroyed plots before harvest.

⁴ ST = Stevens County test at Jim Kramer farm near Hugoton, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 9a. Heading (days +/- Scout 66, Scout 66 heading listed as date in May)
1999 EASTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.	Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.
AgriPro						Public					
(S) Marion	--	--	--	-5.0	--	(S) Caldwell	-4.5	-6.5	--	-4.0	-5.0
(S) Patton	-5.0	--	--	--	--	(S) Cardinal	-0.8	-1.3	--	-2.7	-1.6
Big Dawg	-0.8	-0.3	--	-5.0	-2.0	(S) Ernie	-5.3	-7.8	--	-11.0	-8.0
Coronado	-4.0	-5.8	--	-9.5	-6.4	(S) IL90-7514	-4.0	-5.0	--	-3.7	-4.2
Hondo	2.0	-1.5	--	--	--	(W) Betty	0.5	-2.3	--	-5.5	-2.4
AGSECO						(W) Heyne	-1.0	-4.3	--	-7.7	-4.3
7853	--	--	--	-6.5	--	2137	-1.0	-3.8	--	-4.0	-2.9
Mankato	--	-5.3	--	--	--	2163	-3.5	-5.8	--	-5.0	-4.8
Onaga	-7.0	-6.3	--	-10.2	-7.8	2174	-2.8	-4.8	--	-5.7	-4.4
General Mills						Culver	-0.8	-3.5	--	--	--
(W) NuWest	--	2.2	--	--	--	Custer	--	--	--	-9.5	--
Goertzen						Jagger	-6.8	-8.8	--	-12.2	-9.3
Cossack	-0.3	-0.5	--	--	--	Karl 92	-7.3	-9.3	--	-11.2	-9.3
Enhancer	-4.3	-6.8	--	--	--	KS89180B Exp	-3.0	-4.8	--	-9.5	-5.8
G12058 Exp	2.5	-3.3	--	--	--	KS95H167-3	-3.8	-6.0	--	-8.5	-6.1
NK						KS95HW62-6Exp	-2.8	-4.3	--	-6.5	-4.5
(S) Coker 9474	--	--	--	-8.0	--	KS96HW115Exp	-5.0	-4.8	--	-9.2	-6.3
(S) Coker 9543	--	--	--	-10.5	--	Newton	0.5	-4.5	--	-3.2	-2.4
(S) Coker 9663	--	--	--	-8.5	--	Niobrara	-2.3	-4.0	--	--	--
Pioneer						Scout 66	29.0	15.0	--	7.0	17.0
(S) 2540	--	--	--	-3.7	--	TAM 107	-7.5	-9.8	--	-9.5	-8.9
Polansky						Vista	1.3	-2.0	--	--	--
Dominator	--	-5.8	--	--	--	Average	-2.6	-4.5	--	-7.1	-4.7
Terra						CV (%)	0.8	0.9	--	1.2	--
(S) SR 216	-5.0	-5.3	--	-9.5	-6.6	LSD (0.05)**	1.4	1.4	--	1.7	--
HR 217	1.8	-5.5	--	-8.2	-4.0						

¹ BR = Brown County test at Cornbelt Experiment Field near Powhattan, KS.

² RL = Riley County test at Ashland Experiment Farm near Manhattan, KS.

³ FR = Franklin County test at East Central Experiment Field near Ottawa, KS. Not planted because of wet fall conditions.

⁴ LB = Labette County test at KSU Southeast Agricultural Research Center near Parsons, KS.

(S) = Soft red winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 9b. Heading (days +/- Scout 66, Scout 66 heading listed as date in May)
1999 CENTRAL Kansas Winter Wheat Performance Tests.**

Brand / Name	NORTH				SOUTH				Brand / Name	NORTH				SOUTH			
	RP ¹	SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.	RP ¹		SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.		
AgriPro								(W) Heyne	-2.7	--	--	-9.2	-3.2	-2.0	-4.8		
Big Dawg	--	--	--	-6.2	0.0	-0.8	-2.3	2137	-4.0	--	--	-7.2	-1.5	-2.3	-3.7		
Coronado	-3.2	--	--	-12.5	-6.0	-5.8	-8.1	2163	-3.5	--	--	-8.0	-4.0	-2.0	-4.7		
Hondo	-3.5	--	--	-6.2	0.0	-0.5	-2.2	2174	-3.7	--	--	-8.0	-3.2	-1.5	-4.2		
Thunderbolt	--	--	--	--	--	--	--	Alliance	-0.7	--	--	--	--	-0.5	--		
AGSECO								Arapahoe	-0.7	--	--	--	--	1.5	--		
7853	--	--	--	-10.7	-6.2	-5.3	-7.4	Culver	-2.7	--	--	--	--	-0.5	--		
Mankato	-3.0	--	--	--	--	--	--	Custer	-4.0	--	--	-5.0	-6.0	-4.3	-5.1		
Onaga	-3.0	--	--	-10.0	-5.0	--	--	Ike	-2.5	--	--	-7.5	-2.7	-0.3	-3.5		
AWWPA								Jagger	-3.7	--	--	-14.5	-6.5	-7.0	-9.3		
(W) Oro Blanco	-3.0	--	--	-9.5	-5.0	-2.0	-5.5	Karl 92	-5.0	--	--	-13.2	-7.0	-4.8	-8.3		
General Mills								KS89180B Exp	-2.7	--	--	-9.2	-2.5	-2.8	-4.8		
(W) NuWest	3.3	--	--	--	--	--	--	KS95H167-3	-3.0	--	--	-5.2	-5.5	-1.0	-3.9		
Goertzen								KS95HW62-6Exp	-3.2	--	--	-7.2	-4.0	-1.8	-4.3		
Cossack	-1.0	--	--	-6.7	-2.0	0.0	-2.9	KS96HW115Exp	-3.5	--	--	-9.5	-4.5	-4.0	-6.0		
Enhancer	-2.7	--	--	-10.2	-6.0	-4.3	-6.8	KS96HW94 Exp	--	--	--	--	-1.5	-1.8	--		
G12058 Exp	-2.5	--	--	-6.5	-1.7	-1.5	-3.2	Nekota	-1.5	--	--	--	--	--	--		
Kalvesta	-1.7	--	--	--	--	--	--	Newton	-1.5	--	--	-8.2	-4.5	-3.8	-5.5		
Polansky								Niobrara	-1.7	--	--	--	--	-1.0	--		
Dominator	-3.7	--	--	-12.5	-6.0	-3.5	-7.3	Scout 66	14.0	--	--	16.0	10.0	11.0	12.3		
Quantum								TAM 107	-6.2	--	--	-6.0	-7.0	-5.5	-6.2		
7406	-2.0	--	--	--	--	-4.8	--	Vista	-2.0	--	--	--	--	-1.3	--		
AP 7510	-2.2	--	--	--	-6.0	--	--	Wesley	-1.5	--	--	--	--	--	--		
XH1888	-2.7	--	--	--	-3.7	-2.0	--	Windstar	-1.7	--	--	--	--	2.5	--		
Terra								Yuma	-2.5	--	--	--	--	--	--		
(S) SR 216	-4.2	--	--	-9.5	-4.5	-2.8	-5.6	Yumar	-2.5	--	--	--	--	--	--		
HR 217	-2.7	--	--	-6.7	-5.0	-2.3	-4.7	Average	-2.6	--	--	-8.3	-3.9	-2.2	-4.8		
Public								CV (%)	0.4	--	--	0.4	0.7	1.0	--		
(W) Betty	-3.5	--	--	-7.7	-0.7	0.0	-2.8	LSD (0.05)**	0.6	--	--	0.6	1.1	1.6	--		

¹ RP = Republic County test at North Central Experiment Field near Belleville, KS.

² SM = Smith County test near Smith Center, KS. Heading dates not available for 1999.

³ HV = Harvey County test at Harvey County Experiment Field near Hesston, KS.

⁴ RN = Reno County test at South Central Experiment Field near Hutchinson, KS.

⁵ SD = Stafford County Dryland test at Sandyland Experiment Field near St. John, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 9c. Heading (days +/- Scout 66, Scout 66 heading listed as date in May)
1999 WESTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.	Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.
AgriPro						Public					
Big Dawg	0.5	--	--	--	--	(W) Betty	-0.3	4.8	7.0	0.7	3.0
Ogallala	-2.3	1.0	2.5	-1.3	0.0	(W) Heyne	-1.3	4.0	3.7	-0.8	1.4
Thunderbolt	-2.0	1.8	3.7	-0.8	0.7	2137	-0.8	2.8	4.2	0.0	1.6
AGSECO						2174	-1.0	4.3	5.0	-0.3	2.0
7853	--	--	--	-3.5	--	Akron	-1.8	2.3	3.0	-0.3	0.8
Mankato	-2.0	-0.7	0.5	-1.0	-0.8	Alliance	-1.5	0.3	0.5	-1.5	-0.6
TAM 110	-5.0	-3.2	-1.3	-3.8	-3.3	Arapahoe	0.2	3.3	4.5	0.2	2.0
AWWPA						Culver	-1.3	1.0	2.5	0.7	0.7
(W) Arlin	--	--	--	-3.8	--	Custer	-3.3	-0.7	1.0	-2.5	-1.4
(W) Oro Blanco	-2.0	1.8	3.7	-0.8	0.7	Halt	-3.5	-1.7	-0.3	-3.3	-2.2
Drussel						Ike	-2.0	-1.5	-0.5	-2.3	-1.6
T81	--	--	1.0	-3.0	--	Jagger	-4.8	-2.5	-0.8	-3.8	-3.0
General Mills						Karl 92	-3.8	-1.0	0.5	-2.8	-1.8
(W) NuWest	3.5	8.0	--	--	--	KS89180B Exp	-1.0	2.8	4.0	-0.3	1.4
Goertzen						KS95H167-3	-1.8	1.5	2.7	-1.5	0.2
Cossack	0.0	4.5	5.0	1.5	2.8	KS95HW62-6Exp	-1.5	2.8	3.7	-0.8	1.1
Enhancer	-2.0	0.3	3.2	-1.8	-0.1	KS96HW115Exp	-1.5	3.3	3.5	-0.8	1.1
G12058 Exp	-1.0	1.8	3.7	0.5	1.3	KS96HW94 Exp	0.2	0.0	3.0	-0.5	0.7
G15011 Exp	-1.8	2.0	3.5	-1.3	0.6	Larned	-2.0	0.0	1.2	-0.5	-0.3
G15048 Exp	1.0	4.0	4.0	1.5	2.6	Nekota	-1.5	0.5	1.7	0.2	0.2
Kalvesta	-2.8	1.0	2.5	-1.3	-0.1	Newton	-2.8	-1.2	-1.3	-0.5	-1.5
Polansky						Niobrara	-1.8	0.0	0.5	-0.8	-0.5
Dominator	-2.8	0.8	--	--	--	Scout 66	15.0	18.0	19.0	17.0	17.3
Quantum						TAM 107	-4.5	-3.5	-1.5	-3.8	-3.3
7406	-2.5	0.8	2.5	--	--	Vista	-1.5	1.0	1.7	-1.3	0.0
AP 7510	-3.3	-0.2	1.7	--	--	Wesley	-0.8	1.8	2.7	--	--
XH1888	-1.8	2.8	3.5	--	--	Windstar	-0.3	2.5	4.0	0.5	1.7
XH9806	--	1.5	2.7	--	--	Yuma	-2.3	1.0	3.5	-1.3	0.2
Terra						Yumar	-2.5	2.3	3.2	-1.0	0.5
(S) SR 216	-2.0	0.5	1.2	-2.0	-0.6	Average	-1.7	1.3	2.3	-1.1	0.2
HR 217	-1.5	2.8	3.2	0.5	1.3	CV (%)	0.4	0.5	0.7	0.5	--
						LSD (0.05)**	0.7	0.9	1.1	0.8	--

¹ EL = Ellis County test at KSU Agricultural Research Center near Hays, KS.

² TD = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS.

³ GD = Greeley County test at KSU Southwest Research-Extension Center near Tribune, KS.

⁴ FD = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 9d. Heading (days +/- Newton, Newton heading listed as date in May)
1999 IRRIGATED Kansas Winter Wheat Performance Tests.**

Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.	Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.
AgriPro						Public					
Big Dawg	2.0	6.0	--	--	--	(W) Betty	3.5	6.3	0.3	--	3.3
Coronado	-2.5	1.5	-0.8	--	-0.6	(W) Heyne	-0.5	2.0	-0.5	--	0.4
Ogallala	--	0.8	-1.5	--	--	2137	1.7	4.3	-0.8	--	1.7
Thunderbolt	--	2.3	-0.5	--	--	2174	1.7	5.3	0.1	--	2.3
AGSECO						Akron					
Onaga	-2.5	--	--	--	--	Alliance	--	-0.5	-0.8	--	--
TAM 110	--	-2.3	-4.0	--	--	Custer	--	0.0	-1.8	--	--
AWWPA						Ike					
(W) Arlin	--	--	-3.5	--	--	Jagger	-3.5	-1.8	-1.8	--	-2.3
(W) Oro Blanco	-0.3	1.8	-0.5	--	0.3	Karl 92	-3.0	-0.8	-2.0	--	-1.9
Drussel						KS89180B Exp					
T81	--	--	-2.0	--	--	KS95H167-3	0.2	2.0	-1.3	--	0.3
Goertzen						KS95HW62-6Exp					
Cossack	3.0	6.0	1.1	--	3.4	KS96HW115Exp	-0.8	3.0	-0.8	--	0.5
Enhancer	-0.8	1.5	-1.3	--	-0.2	KS96HW94 Exp	-0.3	0.8	-0.3	--	0.1
G12058 Exp	2.2	3.0	0.3	--	1.8	Newton	6.0	16.0	17.0	--	13.0
G15011 Exp	1.2	2.3	-0.9	--	0.8	TAM 107	-3.3	-1.8	-3.8	--	-2.9
G15048 Exp	4.0	4.5	1.8	--	3.4	TAM 200	--	-1.0	-1.8	--	--
Kalvesta	-2.0	0.8	-0.5	--	-0.6	Yuma	--	2.3	-0.3	--	--
Quantum						Yumar					
7406	-2.3	0.8	-1.5	--	-1.0	Average	0.0	1.8	-0.9	--	0.3
AP 7510	-2.5	0.0	-0.8	--	-1.1	CV (%)	0.8	0.5	0.4	--	--
XH1888	0.0	2.8	0.3	--	1.0	LSD (0.05)**	1.1	0.8	0.7	--	--
Terra											
(S) SR 216	-1.5	0.8	-1.8	--	-0.8						
HR 217	2.0	2.0	-0.5	--	1.2						

¹ SI = Stafford County test at Sandyland Experiment Field near St. John, KS. Abandoned in 1998 because of plot variability.

² TI = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS.

³ FI = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS.

⁴ ST = Stevens County test at Jim Kramer farm near Hugoton, KS. Heading dates not available for 1999.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

Table 10a. Plant height (inches)
1999 EASTERN Kansas Winter Wheat Performance Tests.

Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.	Brand / Name	BR ¹	RL ²	FR ³	LB ⁴	Avg.
AgriPro						Public					
(S) Marion	--	--	--	29	--	(S) Caldwell	36	40	--	32	36
(S) Patton	34	--	--	--	--	(S) Cardinal	36	42	--	32	37
Big Dawg	40	41	--	34	38	(S) Ernie	31	37	--	30	32
Coronado	29	37	--	29	32	(S) IL90-7514	35	45	--	33	37
Hondo	37	41	--	--	--	(W) Betty	35	40	--	31	35
AGSECO						(W) Heyne	34	38	--	30	34
7853	--	--	--	35	--	2137	34	41	--	31	36
Mankato	--	42	--	--	--	2163	32	39	--	29	33
Onaga	32	38	--	29	33	2174	33	39	--	30	34
General Mills						Culver	38	45	--	--	--
(W) NuWest	--	40	--	--	--	Custer	--	--	--	30	--
Goertzen						Jagger	33	40	--	31	35
Cossack	36	42	--	--	--	Karl 92	30	38	--	29	32
Enhancer	34	41	--	--	--	KS89180B Exp	33	35	--	32	33
G12058 Exp	33	41	--	--	--	KS95H167-3	37	44	--	33	38
NK						KS95HW62-6Exp	33	41	--	31	35
(S) Coker 9474	--	--	--	29	--	KS96HW115Exp	33	43	--	30	35
(S) Coker 9543	--	--	--	27	--	Newton	36	42	--	31	36
(S) Coker 9663	--	--	--	31	--	Niobrara	40	45	--	--	--
Pioneer						Scout 66	40	44	--	34	40
(S) 2540	--	--	--	31	--	TAM 107	32	41	--	29	34
Polansky						Vista	35	40	--	--	--
Dominator	--	37	--	--	--	Average	34	41	--	31	35
Terra						CV (%)	5	5	--	6	--
(S) SR 216	34	42	--	33	36	LSD (0.05)**	2	2	--	2	--
HR 217	33	40	--	32	35						

¹ BR = Brown County test at Cornbelt Experiment Field near Powhattan, KS.

² RL = Riley County test at Ashland Experiment Farm near Manhattan, KS.

³ FR = Franklin County test at East Central Experiment Field near Ottawa, KS. Not planted because of wet fall conditions.

⁴ LB = Labette County test at KSU Southeast Agricultural Research Center near Parsons, KS.

(S) = Soft red winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

Table 10b. Plant height (inches)
1999 CENTRAL Kansas Winter Wheat Performance Tests.

Brand / Name	NORTH			SOUTH				Brand / Name	NORTH			SOUTH			
	RP ¹	SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.		RP ¹	SM ²	Avg.	HV ³	RN ⁴	SD ⁵	Avg.
AgriPro								(W) Heyne	36	34	35	37	41	32	36
Big Dawg	--	--	--	39	43	38	40	2137	36	35	35	36	42	32	37
Coronado	38	--	--	35	38	30	34	2163	35	34	35	36	40	30	36
Hondo	37	37	37	37	41	36	38	2174	35	35	35	36	42	34	37
Thunderbolt	--	38	--	--	--	--	--	Alliance	35	36	35	--	--	34	--
AGSECO								Arapahoe	38	37	38	--	--	34	--
7853	--	--	--	38	43	34	38	Culver	37	37	37	--	--	34	--
Mankato	35	35	35	--	--	--	--	Custer	37	36	37	29	43	30	34
Onaga	33	35	34	35	40	--	--	Ike	35	34	34	38	42	32	38
AWWPA								Jagger	36	37	37	37	41	34	37
(W) Oro Blanco	36	33	34	33	39	30	34	Karl 92	32	32	32	36	39	32	36
General Mills								KS89180B Exp	36	36	36	35	39	30	35
(W) NuWest	45	--	--	--	--	--	--	KS95H167-3	40	38	39	30	43	31	35
Goertzen								KS95HW62-6Exp	36	36	36	36	41	34	37
Cossack	40	38	39	40	45	40	41	KS96HW115Exp	34	35	34	38	42	34	38
Enhancer	36	35	36	37	42	35	38	KS96HW94 Exp	--	35	--	--	41	33	--
G12058 Exp	36	35	35	36	42	34	37	Nekota	36	36	36	--	--	--	--
Kalvesta	33	33	33	--	--	--	--	Newton	37	35	36	37	44	36	39
Polansky								Niobrara	40	37	38	--	--	38	--
Dominator	34	33	33	34	39	32	35	Scout 66	45	40	43	35	47	43	42
Quantum								TAM 107	35	34	35	28	42	32	34
7406	38	--	--	--	--	34	--	Vista	34	32	33	--	--	30	--
AP 7510	35	35	35	--	40	--	--	Wesley	37	37	37	--	--	--	--
XH1888	38	39	38	--	45	34	--	Windstar	42	38	40	--	--	36	--
Terra								Yuma	38	34	36	--	--	--	--
(S) SR 216	35	35	35	37	42	34	38	Yumar	36	36	36	--	--	--	--
HR 217	35	35	35	35	42	32	36	Average	37	36	36	36	42	34	37
Public								CV (%)	2	4	--	3	2	7	--
(W) Betty	39	38	39	39	42	34	38	LSD (0.05)**	1	2	--	1	1	3	--

¹ RP = Republic County test at North Central Experiment Field near Belleville, KS.

² SM = Smith County test near Smith Center, KS.

³ HV = Harvey County test at Harvey County Experiment Field near Hesston, KS.

⁴ RN = Reno County test at South Central Experiment Field near Hutchinson, KS.

⁵ SD = Stafford County Dryland test at Sandyland Experiment Field near St. John, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

**Table 10c. Plant height (inches)
1999 WESTERN Kansas Winter Wheat Performance Tests.**

Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.	Brand / Name	EL ¹	TD ²	GD ³	FD ⁴	Avg.
AgriPro						Public					
Big Dawg	39	--	--	--	--	(W) Betty	40	38	42	39	40
Ogallala	36	33	36	35	35	(W) Heyne	37	34	37	36	36
Thunderbolt	41	38	42	39	40	2137	39	37	41	36	38
<hr/>						<hr/>					
AGSECO						2174					
7853	--	--	--	37	--	Akron	41	37	44	37	40
Mankato	42	38	42	40	40	Alliance	40	38	41	38	39
TAM 110	39	37	41	38	39	Arapahoe	41	38	44	39	40
<hr/>						Culver					
AWWPA						Custer					
(W) Arlin	--	--	--	35	--	Halt	39	34	38	35	36
(W) Oro Blanco	37	35	37	36	36	Ike	41	39	41	39	40
<hr/>						Jagger					
Drussel						Karl 92					
T81	--	--	38	35	--	KS89180B Exp	36	34	37	35	36
<hr/>						KS95H167-3					
General Mills						KS95HW62-6Exp					
(W) NuWest	40	40	--	--	--	KS96HW115Exp	41	37	41	38	39
<hr/>						KS96HW94 Exp					
Goertzen						Larned					
Cossack	43	38	44	39	41	Nekota	39	35	41	37	38
Enhancer	43	38	41	39	40	Newton	41	38	41	37	39
G12058 Exp	39	36	39	37	38	Niobrara	43	39	45	40	42
G15011 Exp	41	37	40	38	39	Scout 66	46	43	46	41	44
G15048 Exp	37	35	38	34	36	TAM 107	39	35	40	35	37
Kalvesta	38	35	38	37	37	Vista	38	34	38	35	36
<hr/>						Wesley					
Polansky						Windstar					
Dominator	38	35	--	--	--	Yuma	40	35	41	36	38
<hr/>						Yumar					
Quantum						<hr/>					
7406	41	38	42	--	--	Average	40	36	40	37	38
AP 7510	38	35	37	--	--	CV (%)	3	3	4	5	--
XH1888	41	38	43	--	--	LSD (0.05)**	1	1	2	2	--
XH9806	--	36	39	--	--	<hr/>					
<hr/>						<hr/>					
Terra											
(S) SR 216	40	35	41	36	38						
HR 217	40	34	37	37	37						

¹ EL = Ellis County test at KSU Agricultural Research Center near Hays, KS.

² TD = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS.

³ GD = Greeley County test at KSU Southwest Research-Extension Center near Tribune, KS.

⁴ FD = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

Table 10d. Plant height (inches)
1999 IRRIGATED Kansas Winter Wheat Performance Tests.

Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.	Brand / Name	SI ¹	TI ²	FI ³	ST ⁴	Avg.
AgriPro						Public					
Big Dawg	36	--	--	--	--	(W) Betty	33	--	42	--	37
Coronado	32	--	37	--	35	(W) Heyne	33	--	36	--	34
Ogallala	--	--	36	--	--	2137	37	--	40	--	38
Thunderbolt	--	--	41	--	--	2174	33	--	40	--	36
AGSECO						Akron					
Onaga	33	--	--	--	--	Alliance	--	--	40	--	--
TAM 110	--	--	40	--	--	Custer	--	--	39	--	--
AWWPA						Ike					
(W) Arlin	--	--	38	--	--	Jagger	38	--	39	--	38
(W) Oro Blanco	29	--	37	--	33	Karl 92	37	--	38	--	38
Drussel						KS89180B Exp					
T81	--	--	38	--	--	KS95H167-3	--	--	38	--	--
Goertzen						KS95HW62-6Exp					
Cossack	38	--	41	--	39	KS96HW115Exp	32	--	40	--	36
Enhancer	36	--	38	--	37	KS96HW94 Exp	33	--	38	--	35
G12058 Exp	35	--	40	--	37	Newton	33	--	39	--	36
G15011 Exp	34	--	40	--	37	TAM 107	35	--	39	--	37
G15048 Exp	31	--	37	--	34	TAM 200	37	--	39	--	38
Kalvesta	32	--	38	--	35	Yuma	34	--	39	--	36
Quantum						Yumar					
7406	37	--	40	--	38	Average	--	--	35	--	--
AP 7510	32	--	39	--	36	CV (%)	--	--	38	--	--
XH1888	38	--	41	--	39	LSD (0.05)**	3	--	1	--	--
Terra											
(S) SR 216	38	--	40	--	39						
HR 217	32	--	38	--	35						

¹ SI = Stafford County test at Sandyland Experiment Field near St. John, KS. Abandoned in 1998 because of plot variability.

² TI = Thomas County test at KSU Northwest Research-Extension Center near Colby, KS. Height not available for 1999.

³ FI = Finney County test at KSU Southwest Research-Extension Center near Garden City, KS.

⁴ ST = Stevens County test at Jim Kramer farm near Hugoton, KS. No plant heights recored at this location.

(S) = Soft red winter wheat; (W) = Hard white winter wheat.

** Unless two varieties differ by more than the LSD, little confidence can be placed in one being superior to the other.

Table 11. Lodging (% of lodged stalks) from 1999 Kansas Wheat Performance Tests.

Brand / Name	Lodging %										Brand / Name	Lodging %									
	BR	LB	HV	RN	TD	GD	FD	TI	FI	BR		LB	HV	RN	TD	GD	FD	TI	FI		
AgriPro											Terra										
(S) Marion	--	0	--	--	--	--	--	--	--	--	(S) SR 216	0	0	0	2	0	0	0	1	3	
(S) Patton	0	--	--	--	--	--	--	--	--	--	HR 217	0	3	1	4	0	0	0	0	25	
Big Dawg	0	0	0	6	--	--	--	0	--	Public											
Coronado	0	0	0	5	--	--	--	0	15	(S) Caldwell	0	0	--	--	--	--	--	--	--	--	
Hondo	0	--	0	2	--	--	--	--	--	(S) Cardinal	0	0	--	--	--	--	--	--	--	--	
Ogallala	--	--	--	--	0	3	0	0	30	(S) Ernie	0	0	--	--	--	--	--	--	--	--	
Thunderbolt	--	--	--	--	0	3	0	1	21	(S) IL90-7514	0	0	--	--	--	--	--	--	--	--	
AGSECO											(W) Betty	3	0	0	24	0	0	0	0	33	
7853	--	6	1	16	--	--	0	--	--	(W) Heyne	0	0	0	6	0	3	0	3	33		
Mankato	--	--	--	--	1	5	0	--	--	2137	0	0	0	4	0	0	0	0	19		
Onaga	0	0	0	1	--	--	--	--	--	2163	0	0	0	1	--	--	--	--	--		
TAM 110	--	--	--	--	1	0	0	4	81	2174	0	0	0	3	0	0	0	0	5		
AWWPA											Akron	--	--	--	--	1	0	0	0	25	
(W) Arlin	--	--	--	--	--	--	0	--	36	Alliance	--	--	--	--	0	5	3	0	59		
(W) Oro Blanco	--	--	0	0	0	0	0	0	3	Arapahoe	--	--	--	--	4	30	0	--	--		
Drussel											Culver	0	--	--	--	0	0	4	--	--	
T81	--	--	--	--	--	3	0	--	75	Custer	--	0	0	2	1	0	0	3	3		
General Mills											Halt	--	--	--	--	1	0	0	--	--	
(W) NuWest	--	--	--	--	3	--	--	--	--	Ike	--	--	2	19	0	3	1	0	55		
Goertzen											Jagger	0	0	0	38	1	15	0	6	71	
Cossack	0	--	0	26	4	0	1	1	26	Karl 92	0	0	0	38	0	3	0	0	36		
Enhancer	0	--	1	28	1	0	0	6	66	KS89180B Exp	0	0	0	5	0	0	0	0	10		
G12058 Exp	0	--	1	2	3	0	0	1	24	KS95H167-3	0	0	1	2	0	0	0	1	34		
G15011 Exp	--	--	--	--	0	0	0	1	23	KS95HW62-6Exp	0	5	3	48	0	25	0	0	39		
G15048 Exp	--	--	--	--	0	3	0	0	20	KS96HW115Exp	0	0	0	6	0	0	0	0	23		
Kalvesta	--	--	--	--	0	0	0	0	23	KS96HW94 Exp	--	--	--	13	1	0	0	6	51		
NK											Larned	--	--	--	--	3	65	3	--	--	
(S) Coker 9474	--	0	--	--	--	--	--	--	--	Nekota	--	--	--	--	0	0	0	--	--		
(S) Coker 9543	--	0	--	--	--	--	--	--	--	Newton	1	0	5	8	3	0	0	8	50		
(S) Coker 9663	--	0	--	--	--	--	--	--	--	Niobrara	0	--	--	--	0	13	0	--	--		
Pioneer											Scout 66	33	23	14	83	8	63	13	--	--	
(S) 2540	--	0	--	--	--	--	--	--	--	TAM 107	0	0	1	1	1	0	0	3	73		
Polansky											TAM 200	--	--	--	--	--	--	--	4	90	
Dominator	--	--	0	19	0	--	--	--	--	Vista	0	--	--	--	0	3	0	--	--		
Quantum											Wesley	--	--	--	--	0	0	--	--	--	
7406	--	--	--	--	4	0	--	5	9	Windstar	--	--	--	--	3	0	0	--	--		
AP 7510	--	--	--	9	0	0	--	0	6	Yuma	--	--	--	--	0	25	0	0	40		
XH1888	--	--	--	13	1	0	--	1	58	Yumar	--	--	--	--	0	0	0	0	36		
XH9806	--	--	--	--	0	0	--	--	--	Average											
											Average	1	1	1	14	1	6	1	1	35	
											CV (%)	330	227	139	97	182	193	330	169	54	
											LSD (0.05)**	5	3	2	16	2	13	2	3	22	

Table 12. Shattering (% of seed dropped from head) from 1999 Kansas Wheat Performance Tests.

Brand / Name	Shattering					Brand / Name	Shattering				
	BRO	LAB	HAR	THD	THI		BRO	LAB	HAR	THD	THI
AgriPro						Terra					
(S) Marion	--	0	--	--	--	(S) SR 216	4	2	0	2	3
(S) Patton	6	--	--	--	--	HR 217	0	1	0	1	2
Big Dawg	0	1	0	--	2	Public					
Coronado	0	1	0	--	3	(S) Caldwell	8	5	--	--	--
Hondo	0	--	0	--	--	(S) Cardinal	9	3	--	--	--
Ogallala	--	--	--	3	3	(S) Ernie	6	5	--	--	--
Thunderbolt	--	--	--	3	3	(S) IL90-7514	6	5	--	--	--
AGSECO						(W) Betty	0	2	1	1	2
7853	--	1	0	--	--	(W) Heyne	0	3	2	2	4
Mankato	--	--	--	2	--	2137	1	1	0	1	2
Onaga	0	1	1	--	--	2163	4	1	2	--	--
TAM 110	--	--	--	2	2	2174	0	1	0	2	2
AWWPA						Akron	--	--	--	1	2
(W) Arlin	--	--	--	--	--	Alliance	--	--	--	1	2
(W) Oro Blanco	--	--	0	2	3	Arapahoe	--	--	--	1	--
Drussel						Culver	0	--	--	1	--
T81	--	--	--	--	--	Custer	--	1	0	2	2
General Mills						Halt	--	--	--	2	--
(W) NuWest	--	--	--	1	--	Ike	--	--	0	1	1
Goertzen						Jagger	0	1	1	2	3
Cossack	0	--	0	2	3	Karl 92	0	0	0	2	2
Enhancer	0	--	0	1	2	KS89180B Exp	0	4	3	3	4
G12058 Exp	0	--	1	3	4	KS95H167-3	0	0	0	1	2
G15011 Exp	--	--	--	2	2	KS95HW62-6Exp	0	1	0	1	2
G15048 Exp	--	--	--	2	2	KS96HW115Exp	0	1	1	2	3
Kalvesta	--	--	--	2	2	KS96HW94 Exp	--	--	--	2	2
NK						Larned	--	--	--	1	--
(S) Coker 9474	--	5	--	--	--	Nekota	--	--	--	1	--
(S) Coker 9543	--	0	--	--	--	Newton	0	0	0	1	2
(S) Coker 9663	--	3	--	--	--	Niobrara	0	--	--	1	--
Pioneer						Scout 66	0	0	0	2	--
(S) 2540	--	1	--	--	--	TAM 107	0	0	0	1	2
Polansky						TAM 200	--	--	--	--	2
Dominator	--	--	0	2	--	Vista	0	--	--	1	--
Quantum						Wesley	--	--	--	2	--
7406	--	--	--	1	2	Windstar	--	--	--	3	--
AP 7510	--	--	--	3	3	Yuma	--	--	--	2	3
XH1888	--	--	--	1	2	Yumar	--	--	--	1	3
XH9806	--	--	--	2	--	Average					
						Average	1	2	0	2	2
						CV (%)	176	66	83	28	24
						LSD (0.05)**	3	1	0	1	1

Table 13. Disease ratings from 1999 Kansas Wheat Performance Tests.

Brand / Name	Barley						S		Barley						S			
	Leaf Rust			Yellow Dwarf		Tan Spot		B	S	Leaf Rust			Yellow Dwarf		Tan Spot		B	S
	RL	RP	RN	LB	RN	RP	RN	M ¹	M ²	RL	RP	RN	LB	RN	RP	RN	M ¹	M ²
AgriPro									Terra									
(S) Marion	--	--	--	6	--	--	--	--	(S) SR 216	3	3	3	6	4	3	3	1	7
(S) Patton	--	--	--	--	--	--	--	--	HR 217	3	2	3	5	6	3	3	1	2
Big Dawg	5	--	5	6	6	--	3	1	Public									
Coronado	7	6	8	7	7	6	5	1	(S) Caldwell	3	--	--	6	--	--	--	--	--
Hondo	3	2	3	--	6	6	5	2	(S) Cardinal	7	--	--	5	--	--	--	--	--
Ogallala	--	--	--	--	--	--	--	--	(S) Ernie	7	--	--	7	--	--	--	--	--
Thunderbolt	--	--	--	--	--	--	--	--	(S) IL90-7514	2	--	--	5	--	--	--	--	--
AGSECO									(W) Betty	7	6	7	6	7	3	2	2	1
7853	--	--	8	5	5	--	4	1	(W) Heyne	6	4	4	7	6	3	3	1	1
Mankato	7	8	--	--	--	5	--	--	2137	5	3	4	6	7	4	3	1	5
Onaga	5	3	6	5	6	7	8	1	2163	5	3	5	7	5	4	4	1	6
TAM 110	--	--	--	--	--	--	--	--	2174	3	2	4	4	3	3	3	2	5
AWWPA									Akron	--	--	--	--	--	--	--	--	--
(W) Arlin	--	--	--	--	--	--	--	--	Alliance	--	9	--	--	--	9	--	--	--
(W) Oro Blanco	--	9	8	--	8	5	6	2	Arapahoe	--	3	--	--	--	8	--	--	--
Drussel									Culver	6	5	--	--	--	6	--	--	--
T81	--	--	--	--	--	--	--	--	Custer	--	3	6	7	5	5	3	9	5
General Mills									Halt	--	--	--	--	--	--	--	--	--
(W) NuWest	8	8	--	--	--	5	--	--	Ike	--	9	7	--	6	7	7	1	4
Goertzen									Jagger	9	8	8	7	7	3	3	2	1
Cossack	6	6	7	--	9	6	7	1	Karl 92	8	8	8	7	7	4	2	1	2
Enhancer	7	6	8	--	6	5	5	1	KS89180B Exp	1	2	2	7	7	4	6	1	3
G12058 Exp	5	4	4	--	4	5	4	1	KS95H167-3	2	2	2	9	8	9	9	8	6
G15011 Exp	--	--	--	--	--	--	--	--	KS95HW62-6Exp	3	2	2	7	5	8	7	3	4
G15048 Exp	--	--	--	--	--	--	--	--	KS96HW115Exp	8	9	8	8	8	8	8	2	6
Kalvesta	--	9	--	--	--	6	--	--	KS96HW94 Exp	--	--	2	--	4	--	2	--	--
NK									Larned	--	--	--	--	--	--	--	--	--
(S) Coker 9474	--	--	--	5	--	--	--	--	Nekota	--	7	--	--	--	5	--	--	--
(S) Coker 9543	--	--	--	8	--	--	--	--	Newton	9	9	9	7	--	9	9	1	7
(S) Coker 9663	--	--	--	3	--	--	--	--	Niobrara	6	6	--	--	--	8	--	--	--
Pioneer									Scout 66	7	8	7	8	8	7	7	9	7
(S) 2540	--	--	--	4	--	--	--	--	TAM 107	9	9	9	8	--	8	7	9	7
Polansky									TAM 200	--	--	--	--	--	--	--	--	--
Dominator	7	8	8	--	7	4	5	1	Vista	6	6	--	--	--	8	--	--	--
Quantum									Wesley	--	5	--	--	--	5	--	--	--
7406	--	3	--	--	--	5	--	--	Windstar	--	3	--	--	--	6	--	--	--
AP 7510	--	4	3	--	5	5	5	--	Yuma	--	8	--	--	--	5	--	--	--
XH1888	--	2	2	--	7	3	7	--	Yumar	--	6	--	--	--	5	--	--	--
XH9806	--	--	--	--	--	--	--	--	Average	6	5	5	6	6	5	5	2	4
									CV (%)	12	13	10	9	12	12	8	21	21
									LSD (0.05)**	1	1	1	1	1	1	1	1	1

Disease ratings by Bob Bowden, Extension Pathologist; 1 = best, least disease reaction, 9 = poorest, most disease reaction.

¹SBM = Soilborne mosaic virus

²SSM = Spindle streak mosaic virus

Table 14. Planted seed characteristics, coleoptile lengths, and Hessian fly ratings.

Brand / Name	1000					Brand / Name	1000				
	Seed weight (grams)	Test weight (lb/bu)	Seeds per lb. (1000)	Col. length (1-9) ¹	Hess. fly (1-9) ²		Seed weight (grams)	Test weight (lb/bu)	Seeds per lb. (1000)	Col. length (1-9) ¹	Hess. fly (1-9) ²
AGSECO						Terra					
7853	35.6	58.6	12.7	7	S	HR 217	31.0	60.3	14.6	8	H
Mankato	31.8	62.3	14.3	8	S	(S) SR 216	28.0	55.6	16.2	6	S
Onaga	28.0	65.8	16.2	6	R	Public					
TAM 110	37.0	61.9	12.3	5	S	2137	35.4	62.8	12.8	7	R
AWWPA						2163	29.6	57.5	15.3	7	R
(W) Arlin	34.0	64.1	13.3	6	S	2174	30.5	62.1	14.9	5	H
(W) Oro Blanco	27.6	61.9	16.4	8	S	Akron	36.9	62.3	12.3	6	S
AgriPro						Alliance	26.6	57.3	17.1	8	R
Big Dawg	28.9	59.9	15.7	4	S	Arapahoe	29.2	61.3	15.5	7	R
Coronado	26.9	61.1	16.9	8	S	(W) Betty	25.8	58.7	17.6	7	S
Hondo	40.1	62.0	11.3	6	H	Culver*	31.5	56.6	14.4	6	H
Ogallala	23.0	62.3	19.7	7	S	Custer	33.6	59.7	13.5	8	S
Thunderbolt	38.6	62.5	11.8	6	S	Halt	30.1	60.4	15.1	6	S
(S) Marion	35.2	63.1	12.9	8	S	(W) Heyne	26.3	59.2	17.3	6	S
(S) Patton	34.0	61.4	13.3	6	R	Ike	32.8	62.5	13.9	7	R
Drussel						Jagger	37.1	64.3	12.2	6	S
T81	35.0	64.1	13.0	7	S	Karl 92	29.6	59.4	15.3	7	S
General Mills						KS89180B Exp	24.3	54.1	18.7	7	H
(W) NuWest	26.4	61.8	17.2	8	S	KS95H167-3	37.8	62.2	12.0	6	H
Goertzen						KS95HW62-6Exp	32.3	63.1	14.1	6	S
Cossack	35.8	64.0	12.7	4	S	KS96HW115Exp	35.9	62.3	12.7	7	S
Enhancer	32.4	64.1	14.0	5	S	KS96HW94 Exp	26.3	60.4	17.3	8	S
G12058 Exp	25.4	58.1	17.9	7	H	Larned	34.2	62.2	13.3	3	R
Kalvesta	37.2	62.3	12.2	7	S	Wesley*	28.1	53.6	16.1	7	S
G15011 Exp	26.8	59.5	16.9	7	S	Nekota	36.3	60.6	12.5	6	S
G15048 Exp	21.6	57.1	21.0	8	R	Newton	38.5	60.0	11.8	6	S
NK						Niobrara	26.9	56.9	16.9	6	S
(S) Coker 9474	36.0	60.1	12.6	4	H	Scout 66*	33.5	58.4	13.5	3	S
(S) Coker 9543	28.0	59.9	16.2	7	S	TAM 107	32.2	60.2	14.1	5	S
(S) Coker 9663	34.4	58.7	13.2	3	S	TAM 200	28.8	63.4	15.8	7	S
Pioneer						Vista	31.2	61.8	14.5	8	R
(S) 2540*	35.8	60.7	12.7	6	S	Windstar	26.1	56.9	17.4	7	S
Polansky						Yuma	36.3	60.9	12.5	8	S
Dominator	26.8	63.9	16.9	8	R	Yumar*	42.6	63.6	10.6	7	S
Quantum						(S) Caldwell*	32.8	59.6	13.8	8	R
7406	32.2	62.8	14.1	7	S	(S) Cardinal*	39.0	58.1	11.7	7	R
AP 7510	34.4	62.7	13.2	7	S	(S) Ernie	39.0	61.5	11.6	5	S
XH1888	34.8	56.9	13.0	6	S	(S) IL90-7514*	32.5	60.4	14.0	6	R
XH9806	30.4	59.9	14.9	7	H	Maximum	42.6	65.8	21.0	8	
						Minimum	21.6	53.6	10.6	3	
						Average	32.0	60.7	14.5	6	

¹ Coleoptile length measured at 75 degrees F which is the average soil temperature at 4" in western Kansas on September 1. Coleoptile rating of 3 is long and is equal to about 4.2", a rating of 8 is short and is equal to about 2.4". See discussion of coleoptile length on page 12. Ratings provided by T. Joe Martin, Kansas State University Agricultural Research Center - Hays.

² Hessian fly ratings by J. Hatchett, USDA; S = majority of plants susceptible, H = mixture of susceptible and resistant plants, R = majority of plants resistant. Tested with the Great Plains Hessian fly.

* Untreated seed not available. Seed treated with fungicide. - 45 -

Table 15. Protein (% at 14% moisture) 1998 Kansas Winter Wheat Performance Tests.

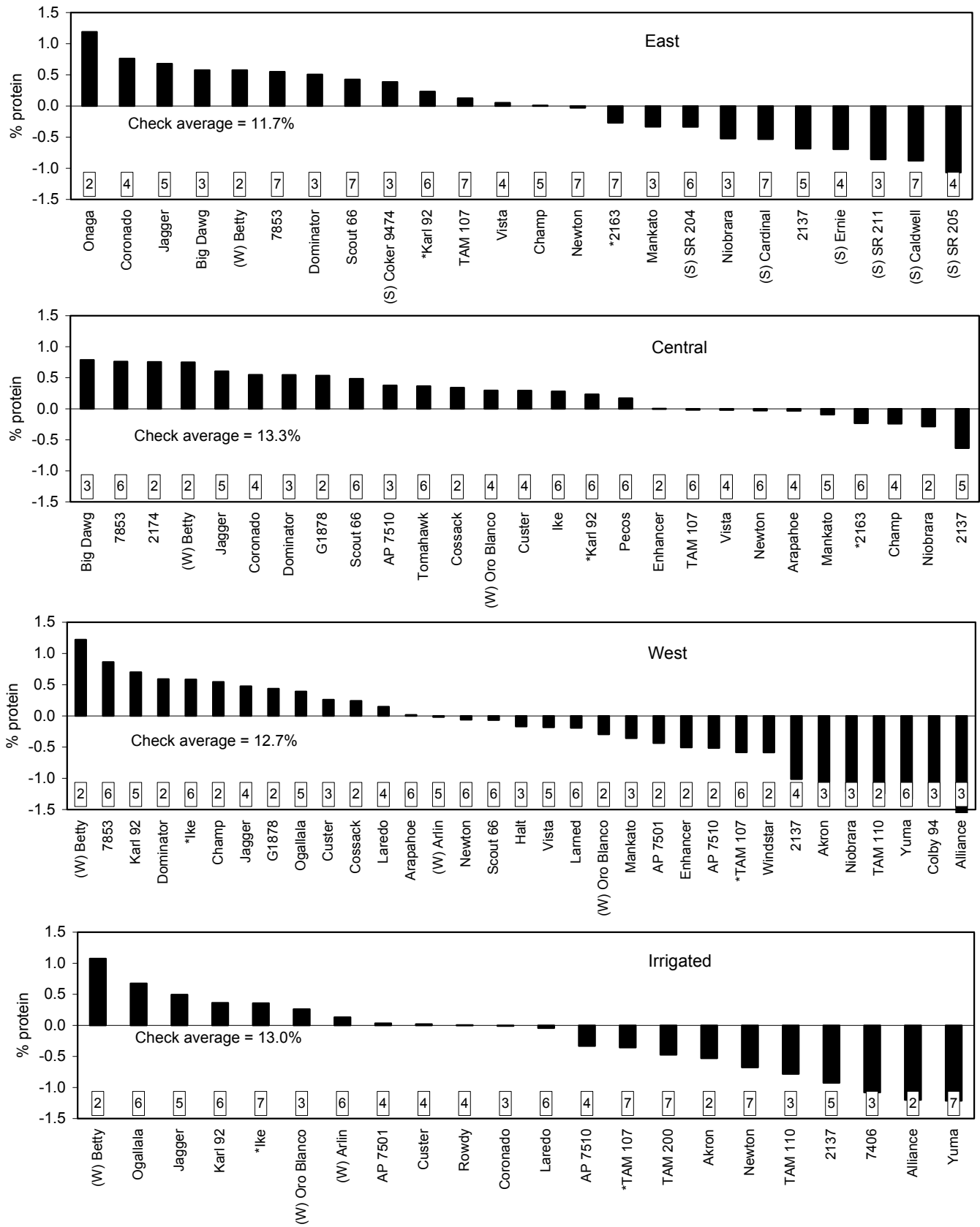
Brand / Name	East					Central					West					Irrigated				
	BR	RL	FR	LB	Avg.	RP	HV	RN	SD	SU	Avg.	EL	TD	GD	FD	Avg.	TI	FI	ST	Avg.
AGSECO																				
7853	10.8	--	10.4	--	--	13.9	11.5	15.5	15.1	13.6	13.9	13.4	13.0	12.9	14.5	13.4	--	--	--	--
Colby 94	--	--	--	--	--	13.4	--	--	--	--	--	12.1	10.9	--	--	--	--	--	--	--
Mankato	10.1	12.3	--	--	--	14.4	11.4	15.6	--	--	--	13.2	12.3	11.0	14.1	12.7	--	--	--	--
Onaga	11.8	13.6	11.7	12.4	12.4	14.5	12.2	15.7	15.0	14.2	14.3	--	--	--	--	--	--	--	--	--
TAM 110	--	--	--	--	--	--	--	--	--	--	--	11.6	11.2	11.5	13.3	11.9	10.3	13.1	13.0	12.1
AWWPA																				
(W) Arlin	--	--	--	--	--	--	--	--	--	--	--	12.5	--	12.8	13.0	--	10.1	14.2	14.1	12.8
(W) Oro Blanco	--	--	--	--	--	14.5	11.7	16.0	14.3	13.6	14.0	13.9	12.4	11.1	14.5	13.0	11.4	15.1	14.5	13.7
AgriPro																				
(S) Elkhart	--	--	10.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(S) Marion	--	--	--	11.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(S) Patton	10.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Big Dawg	10.8	14.4	10.4	12.9	12.1	--	11.4	16.7	14.7	13.2	--	14.5	--	--	--	--	11.1	15.1	15.4	13.9
Coronado	11.4	13.0	11.1	13.0	12.1	13.9	11.7	15.0	14.2	13.6	13.7	--	--	--	--	--	10.7	13.9	13.9	12.8
Hondo	10.4	13.1	10.9	12.9	11.8	14.1	11.2	16.1	14.5	13.6	13.9	--	--	--	--	--	--	--	--	--
Laredo	--	--	--	--	--	--	--	--	--	--	--	12.7	12.4	12.2	--	--	10.8	--	13.9	--
Ogallala	--	--	--	--	--	--	--	--	--	--	--	13.9	11.4	12.2	14.4	13.0	11.6	14.4	14.4	13.5
Pecos	--	--	10.6	--	--	--	11.6	15.0	14.2	13.4	--	--	--	--	--	--	--	--	--	--
Rowdy	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.6	14.4	14.5	13.2
Tomahawk	--	--	--	--	--	14.0	11.7	16.5	14.7	13.9	14.2	--	--	--	--	--	--	--	--	--
Drussel																				
T81	--	--	--	--	--	--	--	--	--	--	--	--	--	11.0	--	--	--	13.6	--	--
Goertzen																				
Cossack	10.3	13.3	--	--	--	14.6	12.1	15.7	15.0	13.3	14.1	13.5	12.5	11.3	14.1	12.9	10.6	14.6	14.1	13.1
Enhancer	10.5	12.9	--	--	--	14.3	11.0	14.8	14.1	13.3	13.5	12.2	11.2	11.4	13.6	12.1	10.4	13.5	13.5	12.5
G1878	11.6	13.4	--	--	--	14.3	11.6	15.5	15.0	13.7	14.0	13.9	12.0	12.3	14.5	13.2	11.0	15.1	14.0	13.4
NK																				
(S) Coker 9474	--	--	11.6	13.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(S) Coker 9543	--	--	--	11.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(S) Coker 9663	--	--	--	11.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pioneer																				
(S) 2540	--	--	--	10.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polansky																				
Dominator	11.5	13.4	10.9	--	--	14.6	11.8	15.8	14.9	14.3	14.3	13.9	--	--	14.6	--	--	--	--	--
Quantum																				
7406	--	--	--	--	--	--	--	--	--	--	--	11.8	10.8	--	--	--	8.9	13.6	13.3	11.9
AP 7501	--	--	--	--	--	--	--	--	--	--	--	13.2	12.1	--	--	--	10.7	14.6	14.9	13.4
AP 7510	--	--	--	--	--	13.9	--	16.1	14.0	--	--	13.5	12.2	--	--	--	10.3	14.4	13.5	12.7
H1881 Exp	--	--	--	--	--	14.1	--	15.1	14.2	--	--	12.6	11.3	--	--	--	--	13.4	--	--
WX94-3504 Exp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.5	13.9	14.8	13.1
Star																				
Champ	10.8	13.0	9.9	--	--	14.3	11.3	14.8	14.5	13.4	13.7	13.4	12.6	--	--	--	--	--	--	--

(continued)

Table 15. Protein (% at 14% moisture) 1998 Kansas Winter Wheat Performance Tests.

Brand / Name	East					Central					West					Irrigated				
	BR	RL	FR	LB	Avg.	RP	HV	RN	SD	SU	Avg.	EL	TD	GD	FD	Avg.	TI	FI	ST	Avg.
Terra																				
(S) Exp215	10.5	--	--	11.8	--	--	10.8	--	--	--	--	12.9	--	--	--	--	--	--	--	--
(S) SR 204	10.4	--	--	11.9	--	--	11.2	--	--	--	--	12.7	--	--	--	--	--	--	--	--
(S) SR 205	9.6	--	--	11.8	--	--	10.8	--	--	--	--	12.4	--	--	--	--	--	--	--	--
(S) SR 211	10.4	--	--	11.2	--	--	11.2	--	--	--	--	12.3	--	--	--	--	--	--	--	--
(S) SR 216	10.0	--	--	12.1	--	--	11.0	--	--	--	--	12.4	--	--	--	--	--	--	--	--
HR 217	10.8	--	--	12.0	--	--	11.5	--	--	--	--	14.5	--	--	--	--	--	--	--	--
Public																				
(S) Caldwell	9.7	11.8	9.3	10.7	10.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(S) Cardinal	11.5	12.1	9.7	11.9	11.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(S) Ernie	10.1	11.9	9.2	11.2	10.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(S) IL90-7514	10.3	11.8	10.1	11.5	10.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(W) Betty	11.4	12.9	10.3	12.6	11.8	14.7	11.1	15.8	14.7	13.1	13.9	14.2	12.8	12.9	15.0	13.7	11.5	15.2	14.9	13.9
(W) Heyne	10.7	13.6	10.6	11.8	11.7	13.9	11.0	15.7	14.7	13.4	13.7	13.8	12.0	12.5	14.2	13.1	11.3	15.6	15.3	14.1
2137	10.0	11.9	9.5	12.0	10.9	13.3	10.9	13.8	13.6	12.4	12.8	12.3	11.2	10.5	13.2	11.8	10.3	13.0	12.9	12.1
2163	10.7	13.0	10.0	12.2	11.5	14.1	11.3	14.7	13.8	12.8	13.3	--	--	--	--	--	--	--	--	--
2174	--	--	--	--	--	--	11.9	16.4	14.4	13.6	--	14.4	--	--	--	--	--	--	--	--
Akron	--	--	--	--	--	--	--	--	--	--	--	12.4	11.3	10.5	13.4	11.9	10.2	13.5	13.4	12.4
Alliance	--	--	--	--	--	13.0	--	--	13.4	--	--	11.9	10.7	10.8	13.5	11.7	9.9	13.5	13.1	12.2
Arapahoe	--	--	--	--	--	13.8	--	--	14.1	--	--	13.1	11.7	11.2	14.3	12.6	--	--	--	--
Custer	--	--	--	11.5	--	14.2	10.9	15.2	14.6	13.4	13.7	13.1	12.6	13.4	13.9	13.3	10.8	14.3	13.8	13.0
Halt	--	--	--	--	--	--	--	--	--	--	--	13.8	12.1	13.0	14.3	13.3	--	--	--	--
Ike	--	--	--	--	--	14.0	11.1	14.7	14.6	13.0	13.5	13.1	12.8	13.6	14.8	13.6	11.3	14.2	15.2	13.6
Jagger	11.2	13.7	10.1	11.5	11.6	14.7	10.8	16.3	15.6	13.0	14.1	13.7	12.4	11.8	14.1	13.0	10.4	14.4	14.4	13.1
KS95H167-3	11.5	12.9	10.3	11.9	11.7	13.8	11.4	14.6	13.7	13.4	13.4	13.2	12.2	11.7	13.8	12.7	11.2	14.2	13.9	13.1
KS95H176-1 Exp	10.8	12.6	10.0	12.1	11.4	13.9	11.3	15.0	14.0	13.2	13.5	12.9	12.1	12.4	14.7	13.0	11.3	14.7	14.6	13.5
KS95HW62-6Exp	10.5	13.0	10.1	10.6	11.1	13.5	10.6	14.4	14.2	12.7	13.1	12.3	11.1	12.3	13.4	12.3	10.1	13.6	13.6	12.4
Karl 92	10.7	13.3	10.5	11.6	11.5	14.0	11.5	14.2	15.5	12.9	13.6	13.2	12.5	12.4	14.4	13.1	11.4	14.4	14.6	13.5
Larned	--	--	--	--	--	--	--	--	--	--	--	13.4	12.0	11.8	14.0	12.8	--	--	--	--
Nekota	--	--	--	--	--	13.9	--	--	--	--	--	13.2	12.4	12.1	13.8	12.9	--	--	--	--
Newton	10.0	12.6	9.6	12.1	11.1	13.8	11.0	15.1	13.8	12.8	13.3	12.6	11.6	11.5	14.3	12.5	9.8	14.2	14.4	12.8
Niobrara	9.9	12.0	--	--	--	13.8	--	--	13.6	--	--	12.0	11.4	11.4	14.0	12.2	--	--	--	--
Scout 66	10.6	13.1	10.6	12.6	11.7	14.4	11.6	15.2	14.2	13.6	13.8	13.6	12.6	12.2	13.9	13.1	--	--	--	--
TAM 107	10.7	13.8	9.8	12.3	11.6	13.7	11.1	14.1	13.8	13.3	13.2	12.2	12.0	12.1	12.9	12.3	10.5	13.2	13.9	12.5
TAM 200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.4	13.7	12.7	12.3
Vista	10.6	12.8	--	--	--	14.0	--	--	14.1	--	--	12.8	11.8	11.3	14.3	12.6	--	--	--	--
Windstar	--	--	--	--	--	13.8	--	--	13.6	--	--	12.8	11.9	10.9	14.2	12.4	--	--	--	--
Yuma	--	--	--	--	--	13.0	--	--	--	--	--	11.7	10.2	11.1	12.6	11.4	9.8	13.2	12.8	11.9
Yumar	--	--	--	--	--	13.2	--	--	--	--	--	12.5	11.3	11.3	13.5	12.2	10.5	13.5	13.4	12.5
Test Average	10.6	12.9	10.3	11.9		14.0	11.3	15.3	14.4	13.3		13.0	11.9	11.8	14.0		10.6	14.1	14.0	

Figure 13. Kansas wheat variety performance test protein summary, 1992 - 1998.



Bars show differences between variety and average of checks*. Values in boxes are the numbers of years variety was tested.

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CONTRIBUTORS

MAIN STATION, MANHATTAN

Kraig Roozeboom, Associate Agronomist (Senior Author)
Robert Bowden, State Extension Plant Pathologist
Leroy Brooks, State Extension Entomologist
Mary Knapp, KSU State Climatologist

RESEARCH CENTERS

Patrick Evans, Colby
James Long, Parsons
T. Joe Martin, Hays
Alan Schlegel, Tribune
Merle Witt, Garden City

EXPERIMENT FIELDS

Mark Claassen, Hesston
W. Barney Gordon, Scandia
William Heer, Hutchinson
Keith Janssen, Ottawa
Larry Maddux, Powhattan
Victor Martin, St. John

Others providing information for this report:

W.W. Bockus, Plant Pathology
J.H. Hatchett, USDA Entomology
Ray Lamond, Agronomy
P.J. McCluskey, Grain Science & Industry

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