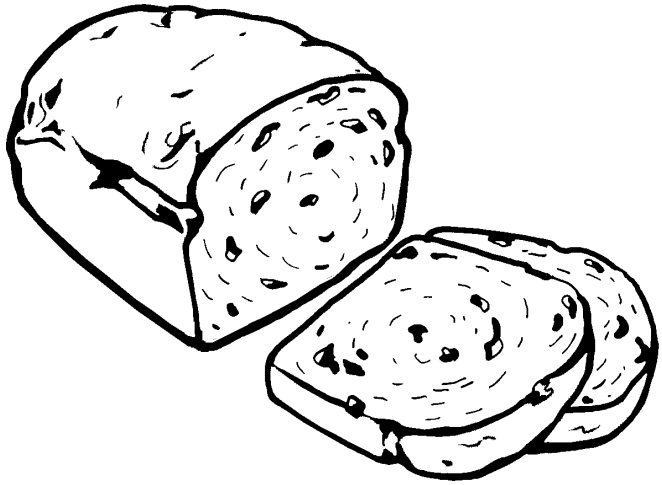
Kansas Wheat Quality 2002



Kansas Wheat Commission

Kansas Department of Agriculture

WEIGHTS, MEASURES AND CONVERSION FACTORS

Weights and Measures and Conversion Factors

Bushel Weights:

- Wheat & Soybeans = 60 lbs.
- Corn, Sorghum & Rye = 56 lbs.
- Barley (grain) = 48 lbs.; Malt - 34 lbs.
- Oats = 32 lbs.

Bushels to Metric Tons:

- Wheat, Soybeans = bu. X .02721555*
- Barley = bu. X .021772
- Corn, Sorghum, Rye = bu. X .025400
- Oats = bu. X .014515

1 Metric Ton Equals:

- 2204.622 Pounds (lbs.)
- 22.046 Hundredweight (cwt)
- 10 Quintals

1,000 Kilograms Equals:

- 36.7437 bu. Wheat or Soybeans
- 39.3683 bu. Corn, Sorghum or Rye
- 45.9296 bu. Barley
- 68.8944 bu. Oats

Area:

- 1 Acre = .404694 Hectares
- 1 Hectare = 2.4710 Acres

Yields:

- Wheat: bu. per acre X 0.6725 = quintals per hectare
- Rye, Corn: bu. per acre X 0.6277 = quintals per hectare
- Barley: bu. per acre X 0.5380 = quintals per hectare
- Oats: bu. per acre X 0.3587 = quintals per hectare

* Kansas wheat production as of August 1, 2002 is forecast at 264.0 million bushels (7,184,905 metric tons).

KANSAS WHEAT QUALITY 2002

KANSAS
AGRICULTURAL
STATISTICS
SERVICE

Fact Finders
For Agriculture

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A Cooperative Function of

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Ken Palmgren, Chairman
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DEPARTMENT OF GRAIN SCIENCE
AND INDUSTRY

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Issued September 2002

FOREWORD

The Kansas Wheat Commission joins the Kansas Department of Agriculture in presenting this 2002 Wheat Quality Report. This information is of vital interest to wheat producers and processors as well as domestic and foreign buyers.

The basic quality information is compiled by summarizing data from inspection certificates for railroad car samples of Kansas wheat moving from first point of sale. In addition, truckloads converted to carlot equivalents were included. Determinations of protein percentage, test weight per bushel, and other grade factors were made by the ***Kansas Grain Inspection Service, Inc.***

The Kansas Wheat Quality profile section is a summary of milling quality information by variety for the current year's Kansas wheat crop. Enumerators from Kansas Agricultural Statistics Service made the field collection of samples used in this project. We are indebted to the Department of Grain Science and Industry, Kansas State University, for milling and evaluating laboratory results from the samples tested.

We also want to give a special word of thanks to the wheat farmers throughout Kansas who cooperated in the Objective Yield Survey and permitted wheat samples to be collected.

Eldon J. Thiessen
State Statistician

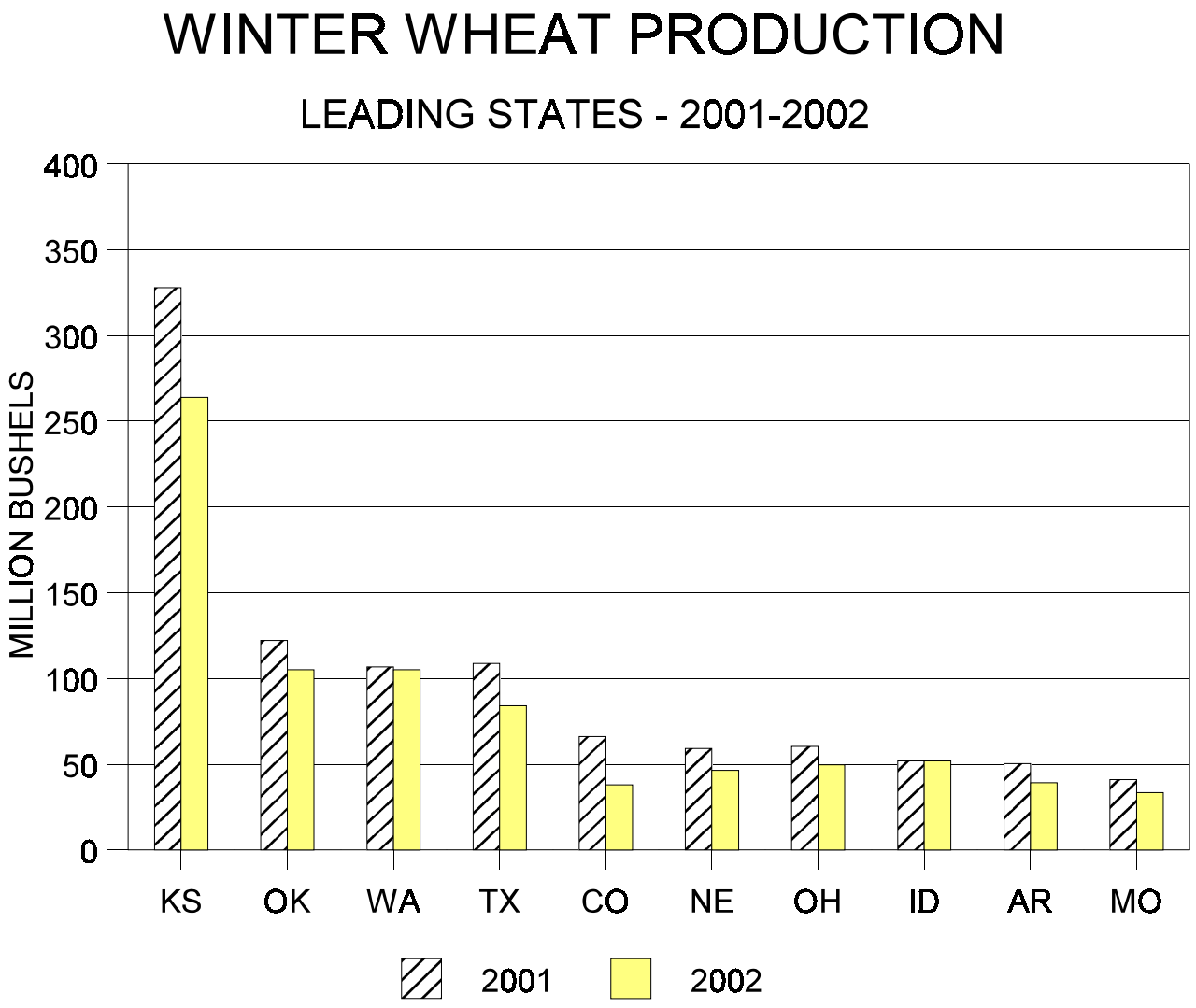
Ken Palmgren, Chairman
Kansas Wheat Commission

KANSAS WHEAT QUALITY 2002

TABLE OF CONTENTS

WHEAT SITUATION

World wheat production as of August 1, 2002 is expected to total 572.3 million metric tons (21.0 billion bushels), down 1 percent from a year ago. Total U.S. wheat production, at 45.9 million metric tons, will be down 14 percent from a year ago and will account for about 8 percent of the world total. Winter wheat production in U.S. is estimated at 31.5 million metric tons, or about 69 percent of the total U.S. wheat production. Kansas, with an estimated 7.2 million metric tons of winter wheat, will account for 23 percent of the U.S. winter wheat production. This output represents 16 percent of the total U.S. wheat output and 1 percent of the world total.



ACRES OF WHEAT PLANTED BY SIZE GROUP

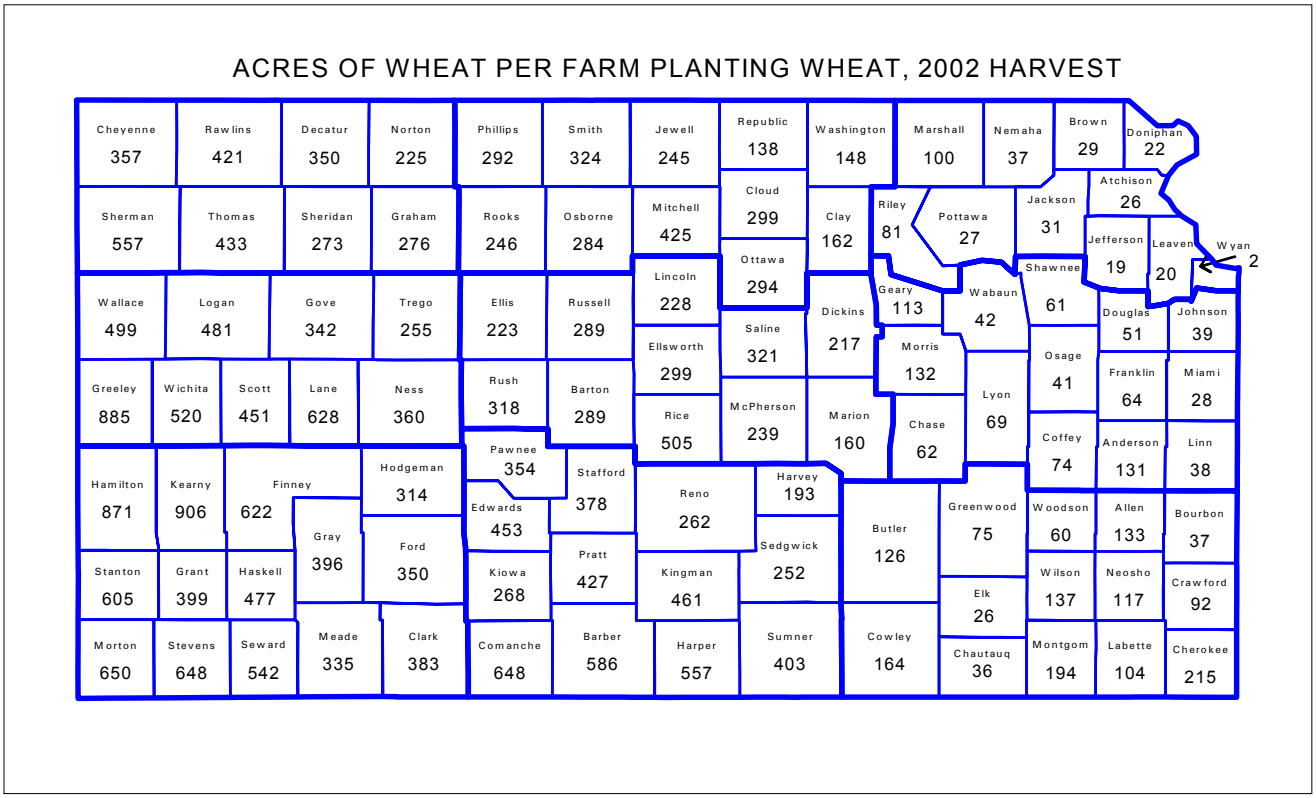
Kansas farmers with 500 or more acres of wheat planted accounted for 23.7 percent of all wheat farms and represent 65.3 percent of acres planted in the fall of 2001. The wheat acres planted totaled 9,500,000 acres.

WHEAT PLANTED IN KANSAS FOR 2002 HARVEST, BY SIZE GROUPS

Acres of Wheat Planted per Farm	Number of Farms	Percent of Farms	Acres of Wheat Planted
1-24	2,500	8.0	30,600
25-74	5,500	17.8	221,600
75-199	7,300	23.6	783,400
200-499	8,300	26.9	2,265,100
500-749	3,200	10.3	1,643,800
750-999	1,600	5.1	1,167,100
1.000-1,999	2,200	6.9	2,409,200
2,000-2,999	300	1.0	600,000
3,000 +	100	0.4	379,200
State	31,000	100.0	9,500,000

AVERAGE ACRES PLANTED, BY COUNTY

Kearny County led the State with an average of 906 acres planted per farm, followed by Greeley County with 885 acres and Hamilton County with 871 acres. Statewide, the average is 306 acres of wheat planted per farm.



U.S. WHEAT SUPPLY AND DISAPPEARANCE, 1994-2003

U.S. wheat supplies for the 2002/03 season are expected to be 2,563 million bushels, down 13 percent from last year. Beginning stocks, at 772 million bushels, are down 12 percent from a year ago. Estimated U.S. wheat production as of August 1, at 1,686 million bushels, is down 14 percent from last year. Disappearance is expected to total 2,096 million bushels, compared with 2,169 million bushels for 2001. Domestic use is expected to account for 1,196 million bushels, down 1 percent from the previous year. Exports, forecast at 900 million bushels, are 6 percent below a year ago. Carry-over at the end of the crop year is expected to total 467 million bushels, 40 percent below the 2001/02 level.

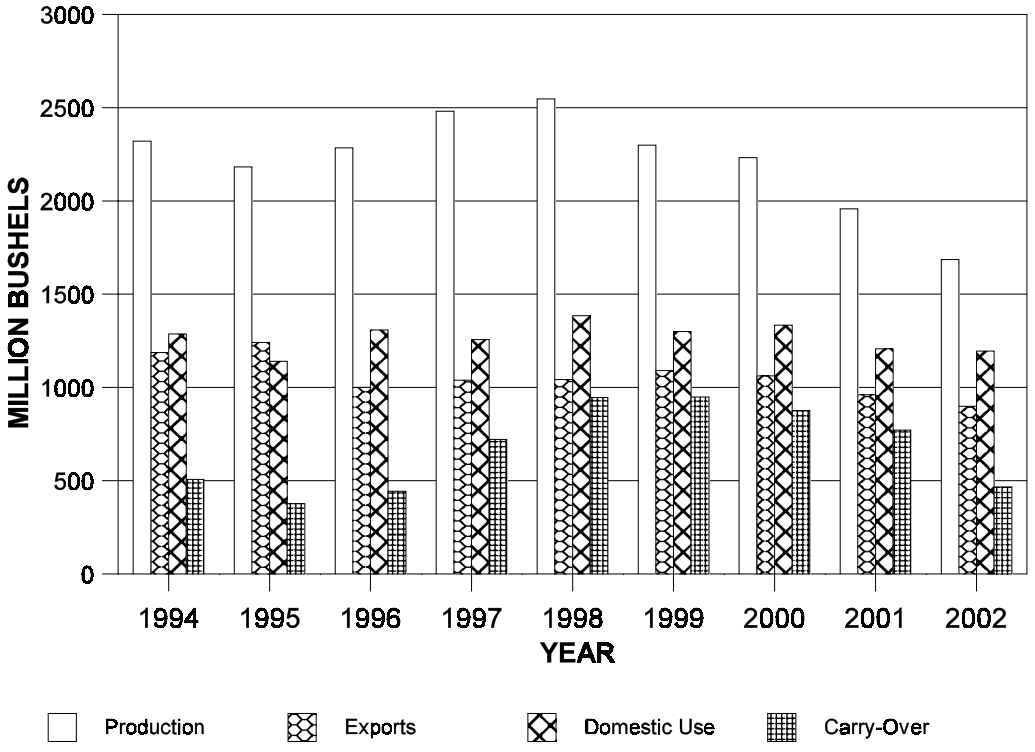
U.S. WHEAT SUPPLY AND DISAPPEARANCE, 1994-2002

Year Beginning June 1	Supply			Disappearance			Ending Stocks May 31
	Beginning Stocks	Production	Total 1/	Domestic Use	Exports	Total 2/	
	Million Bushels						
1994/95	568	2,321	2,981	1,287	1,188	2,475	507
1995/96	507	2,183	2,757	1,140	1,241	2,381	376
1996/97	376	2,285	2,753	1,308	1,001	2,310	444
1997/98	444	2,481	3,020	1,257	1,040	2,298	722
1998/99	722	2,547	3,373	1,385	1,042	2,427	946
1999/00	946	2,299	3,339	1,300	1,090	2,390	950
2000/01	950	2,232	3,272	1,334	1,062	2,396	876
2001/02	876	1,958	2,941	1,208	961	2,169	772
2002/03 3/	772	1,686	2,563	1,196	900	2,096	467

1/ Includes imports. 2/ Totals may not add due to rounding. 3/ Preliminary.

U.S. WHEAT SUPPLY & DISAPPEARANCE

1994-2002



KANSAS WHEAT STOCKS

Marketing Year	September 1	December 1	March 1	June 1
	- - - - - - - - - - - - - - - - - - Thousand Bushels - - - - - - - - - - - - - - - - - -			
1996/97	179,327	109,012	96,564	33,833
1997/98	351,810	244,197	213,301	106,901
1998/99	379,253	271,381	226,800	148,561
1999/00	394,409	282,868	230,645	168,899
2000/01	384,526	274,900	217,771	156,190
2001/02	377,309	268,240	203,216	122,137

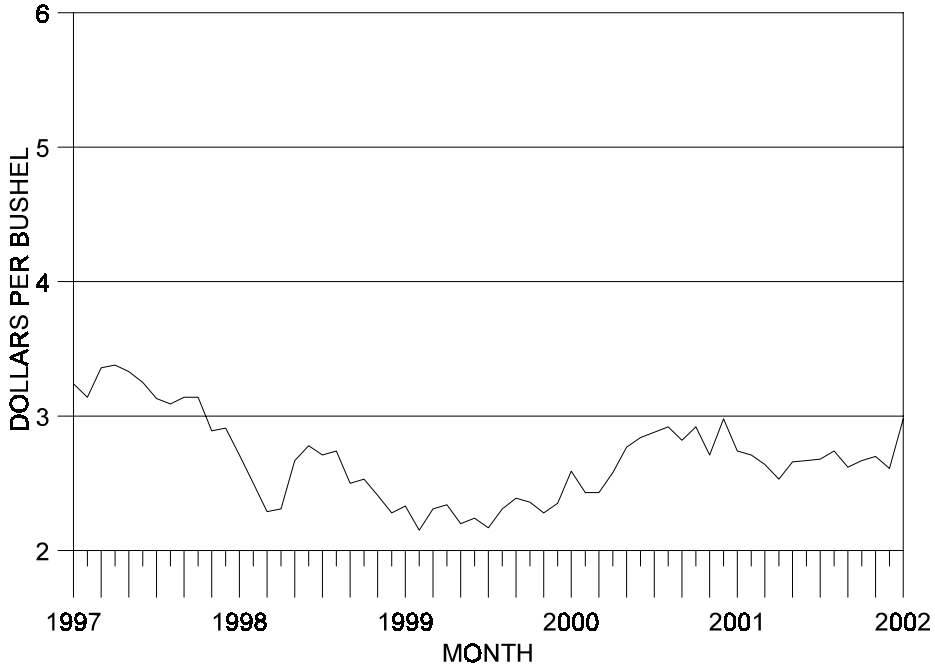
MONTHLY MARKETINGS OF KANSAS WHEAT, 1996-2001

Month	1996-97	1997-98	1998-99	1999-00	2000-01	5-Year Average 1/
	- Percent -					
June	10	7	13	6	16	10
July	33	34	23	37	19	29
August	7	10	10	11	15	11
September	6	4	9	7	6	6
October	4	4	8	2	8	5
November	5	4	4	3	4	4
December	8	7	7	6	5	7
January	8	8	6	10	10	8
February	6	5	3	7	3	5
March	7	6	8	4	3	6
April	4	6	4	3	8	5
May	2	5	5	4	3	4

1/ May not add due to rounding.

KANSAS WHEAT PRICES

JUNE 1997-JUNE 2002



HIGHLIGHTS OF THE 2002 CROP

The 2002 Kansas wheat crop, as of August 1, 2002 was estimated at 264.0 million bushels, down 20 percent from last year. Wheat was planted on 9.5 million acres for the 2002 crop, down 3 percent from 2001. The acres harvested for grain totaled 8.0 million acres, down 200,000 acres from last year.

Seeding of the 2002 wheat crop began in early September. However, by the middle of the month, only 4 percent of the crop had been seeded since topsoil moisture supplies for nearly three-quarters of the State were very short. Scattered rains fell the last half of September through early October. Dry weather returned by mid-October while seeding had progressed to 69 percent complete with 24 percent of the crop emerged. In late October, rain fell across the State with some areas reporting heavy rains. On November 5, 92 percent of the acreage was seeded and 81 percent of the crop had emerged. Seeding continued during November and by the 26th, 98 percent of the acreage was seeded, 92 percent of the crop had emerged, and 55 percent of the crop was in good to excellent condition.

Crop condition declined over the winter months from 47 percent good to excellent in December to 26 percent by the first week of March. Freeze damage was 1 percent severe, 11 percent moderate, 29 percent light, and 59 percent with no damage. Dry conditions persisted during March, continuing to stress the crop. Although scattered light showers in April helped some areas, much of western and central Kansas remained very dry. Crop growth slowed due to the lack of moisture; however, disease and insect damage was generally light to none. The crop began to head the last week of April and progressed ahead of normal throughout May. Cool temperatures during May encouraged wheat head development which, in turn, contributed to higher than expected yields. During mid-May, several inches of rain fell in southeastern Kansas resulting in some flooding. Stripe rust was reported in the southwest, south central, and central districts during the last half of May.

Harvest of the 2002 crop began in a few areas during the second week of June. Widespread showers slowed harvest initially but by the last week of June, harvest progress was nearly average. Producers made rapid progress with harvest as the weather turned hot and dry and were virtually complete by July 7. Protein content for the 2002 crop averaged 12.1 percent with test weight at 60.9 pounds per bushel and moisture at 11.8 percent.

DOMESTIC UNITS

Year	Planted Acres	Harvested Acres	Yield per Acre	Production	Test Weight	Protein 1/	Moisture
	- - - - 1,000 - - - -		Bushels	1,000 Bu.	Lb./Bu.	- - - Percent - - -	
1993	12,100	11,100	35.0	388,500	59.8	11.4	12.4
1994	11,900	11,400	38.0	433,200	60.3	12.1	11.4
1995	11,700	11,000	26.0	286,000	58.4	12.3	11.1
1996	11,800	8,800	29.0	255,200	60.2	13.3	12.3
1997	11,400	10,900	46.0	501,400	60.6	11.8	11.9
1998	10,700	10,100	49.0	494,900	61.5	11.5	11.2
1999	10,000	9,200	47.0	432,400	60.2	11.5	12.2
2000	9,800	9,400	37.0	347,800	59.9	11.9	11.8
2001	9,800	8,200	40.0	328,000	60.9	12.1	11.8
2002	9,500	8,000	33.0	264,000	60.0	13.1	11.2

1/ All protein data shown have been converted to a 12% moisture basis.

METRIC UNITS

Year	Planted Hectares	Harvested Hectares	Yield per Hectare	Production	Test Weight 1/
	- - - - - 1,000 - - - - -		Metric Tons	1,000 MT	Kg/Hl
1993	4,897	4,492	2.4	10,573	77.0
1994	4,816	4,614	2.6	11,790	77.7
1995	4,735	4,452	1.7	7,784	75.2
1996	4,775	3,561	2.0	6,945	77.6
1997	4,614	4,411	3.1	13,646	78.1
1998	4,330	4,087	3.3	13,469	79.2
1999	4,047	3,723	3.2	11,768	77.6
2000	3,966	3,804	2.5	9,466	77.2
2001	3,966	3,318	2.7	8,927	78.5
2002	3,845	3,238	2.2	7,185	77.3

1/ Kilograms/Hectoliter = 1.28841 X (lbs./bu.).

WHEAT QUALITY DATA - KANSAS GRAIN INSPECTION CERTIFICATES

IMPORTANCE OF WHEAT QUALITY

The quality of wheat as characterized by protein content, strength of gluten, weight per bushel, amount of dockage, grades and grade defects, milling data, and physical dough analysis has an important impact on the use of wheat for flour and, hence, its price in the market place.

This report on wheat quality, issued by Kansas Agricultural Statistics Service, helps farmers appraise the quality of the wheat crop being marketed and aids buyers in locating wheat with the desired characteristics.

Information on wheat protein content, weight per bushel, varieties, and grade defects helps producers of high quality grain obtain better prices. The grain trade, in turn, is in a better position to know the areas in which the quality and gluten strength of wheat meet their requirements and direct their purchases accordingly. Thus, the reports facilitate pricing and marketing of the crop. Publication of wheat quality data by counties and agricultural statistics districts as soon as the new crop comes on the market provides everyone with current information coinciding with the harvest period, thus maximizing benefits to producers, grain buyers, and the wheat industry in general.

The following table shows the grading standards used by the Kansas Grain Inspection Service, Inc. in grading samples of hard red winter wheat. This bulletin is based on a summary of samples graded by the Kansas Grain Inspection Service, Inc.

GRADES AND GRADE REQUIREMENTS FOR HARD RED WINTER WHEAT

Grade	Minimum Weight per Bushel	Maximum Limits:						
		Defects					Wheat of Other Classes	
		Heat Damaged Kernels	Damaged Kernels (Total)	Foreign Material	Shrunken and Broken Kernels	Total Defects	Con-trasting Classes	Wheat of Other Classes (Total)
	Pounds	- - - - - - - - - - - - - - - - - Percent - - - - - - - - - - - - - - - - -						
1	60.0	0.2	2.0	0.4	3.0	3.0	1.0	3.0
2	58.0	0.2	4.0	0.7	5.0	5.0	2.0	5.0
3	56.0	0.5	7.0	1.3	8.0	8.0	3.0	10.0
4	54.0	1.0	10.0	3.0	12.0	12.0	10.0	10.0
5	51.0	3.0	15.0	5.0	20.0	20.0	10.0	10.0

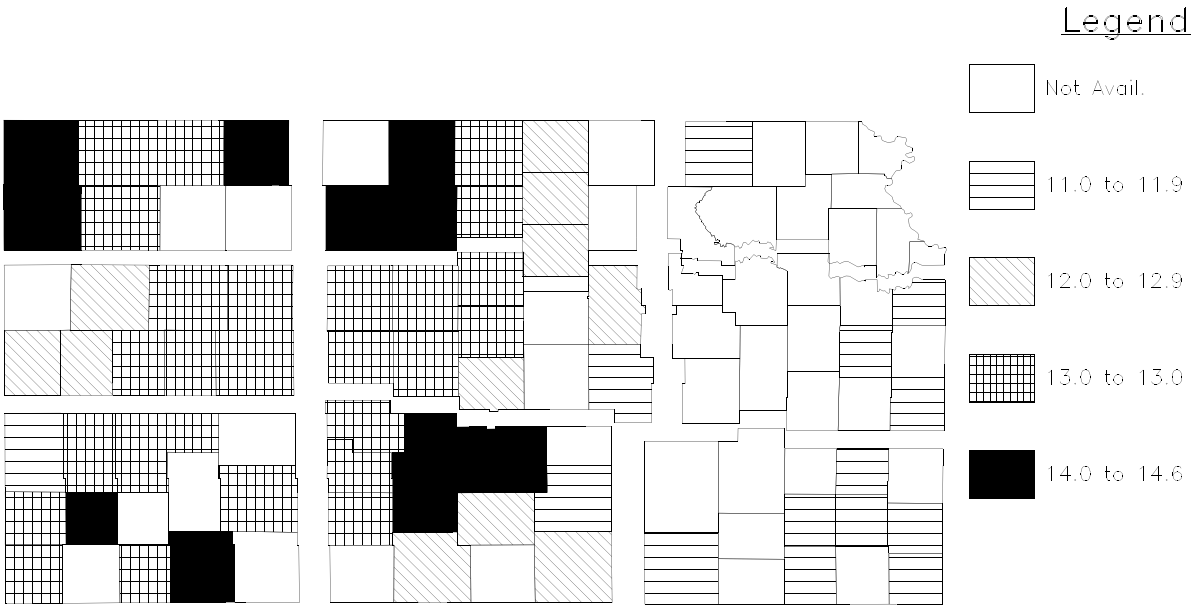
SAMPLE GRADE: Sample grade is wheat that does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4, or 5; or contains 31 or more insect-damaged kernels per 100 grams of wheat; or contains 4 or more stones or any number of stones which have an aggregate weight in excess of 0.1 percent of the sample weight, 1 or more pieces of glass, 2 or more crotalaria seeds, 1 or more castor beans, 3 or more particles of an unknown foreign substance or a commonly recognized harmful toxic substance, 1 or more rodent pellets, bird droppings, or equivalent quantity of other animal filth per 1,000 grams of wheat; or has a musty, sour, or commercially objectionable foreign odor except smut or garlic odor; or is heating or otherwise of distinctly low quality.

PROTEIN CONTENT

The average protein content of the 2002 Kansas wheat crop was 13.1 percent, up from last year's 12.1. This year's protein is also up from the 10-year average of 12.1 percent. By district, protein content ranged from 11.2 percent in the east central district to 13.9 percent in the northwest district. Grant led all counties, averaging 14.6 percent protein. Second highest was Norton County, averaging 14.4 percent protein. See the map below for average protein content by county.

KANSAS PROTEIN CONTENT – 2002

(PERCENT)



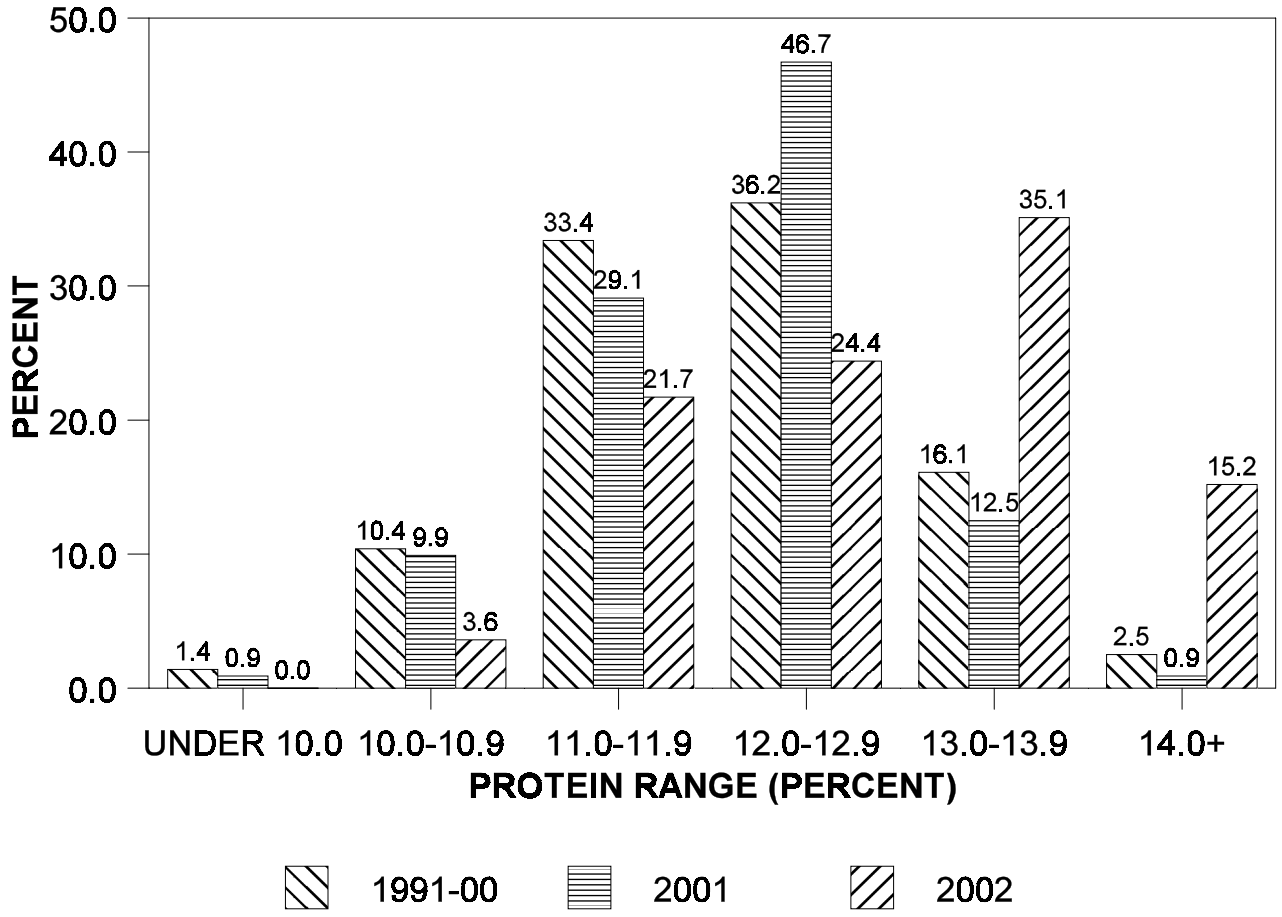
PROTEIN RANGES OF 2002 KANSAS WHEAT 1/

% Protein	District Production (000 bu.)									
	NW	WC	SW	NC	C	SC	NE	EC	SE	State
	24,800	23,900	25,100	44,600	52,900	57,400	7,000	8,600	19,700	264,000
	- Percent -									
Under 10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.0-10.9	0.1	2.0	0.0	0.0	0.1	2.8	7.5	37.8	17.9	3.6
11.0-11.9	3.4	5.8	2.4	1.1	10.4	40.8	87.5	61.0	69.6	21.7
12.0-12.9	11.2	18.4	12.8	49.5	24.6	27.9	5.0	1.2	12.2	24.4
13.0-13.9	46.6	56.1	68.0	27.6	53.6	17.3	0.0	0.0	0.3	35.1
14.0-Over	38.7	17.7	16.8	21.8	11.3	11.2	0.0	0.0	0.0	15.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Protein content adjusted to 12 percent moisture basis.

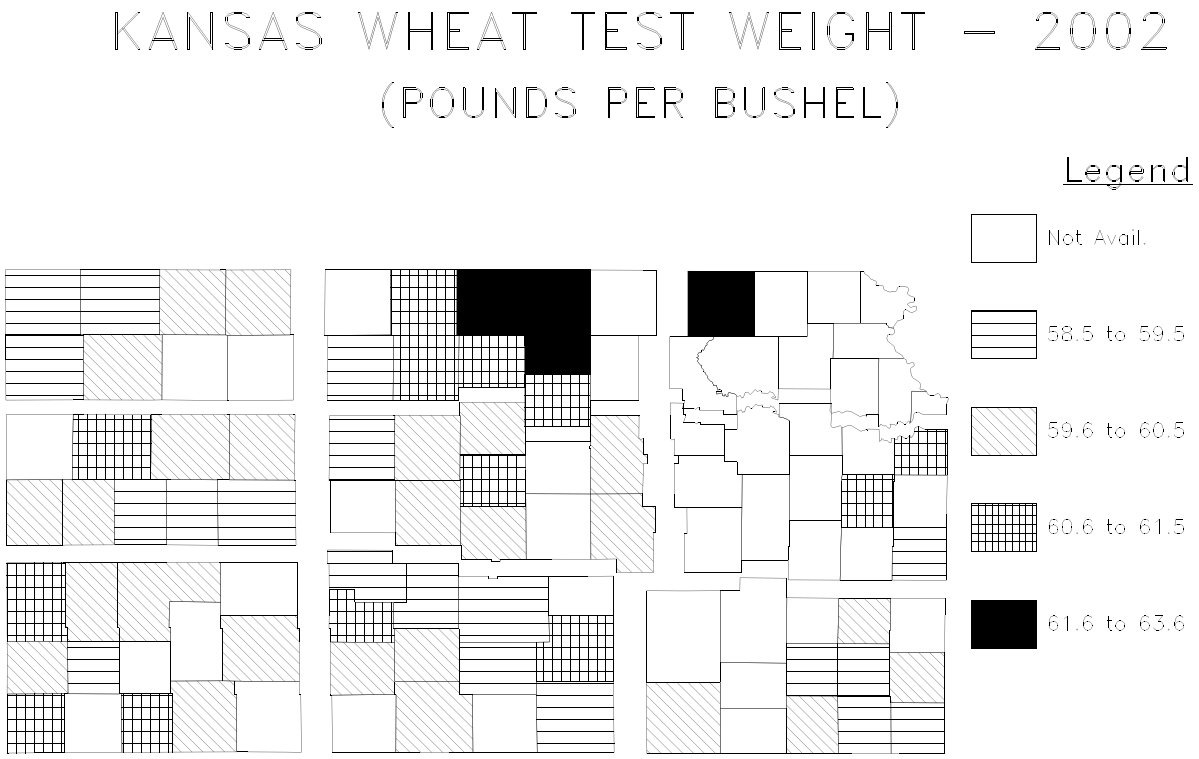
PROTEIN RANGES OF KANSAS WHEAT

1991-00, 2001, & 2002



TEST WEIGHT

The 2002 Kansas wheat crop averaged 60.0 pounds per bushel, compared with 60.9 pounds for the 2001 crop. The 10-year average for Kansas is 60.0 pounds per bushel. Harvest of the 2002 crop began in a few areas of the State during the second week of June. Harvest was slowed by widespread showers initially but by the last week of June harvest progress was nearly average. Hot, dry weather enabled harvest to progress rapidly and was virtually complete by July 7. By district, test weights fell in a range from 59.6 pounds in the northwest to 63.6 pounds in the northeast district. The north central district was second highest in test weight at 61.3 pounds. Marshall County, with a test weight of 63.6 pounds, was the highest in the State. Jewell County followed at 62.2 pounds. See the map below for average weight per bushel by county.

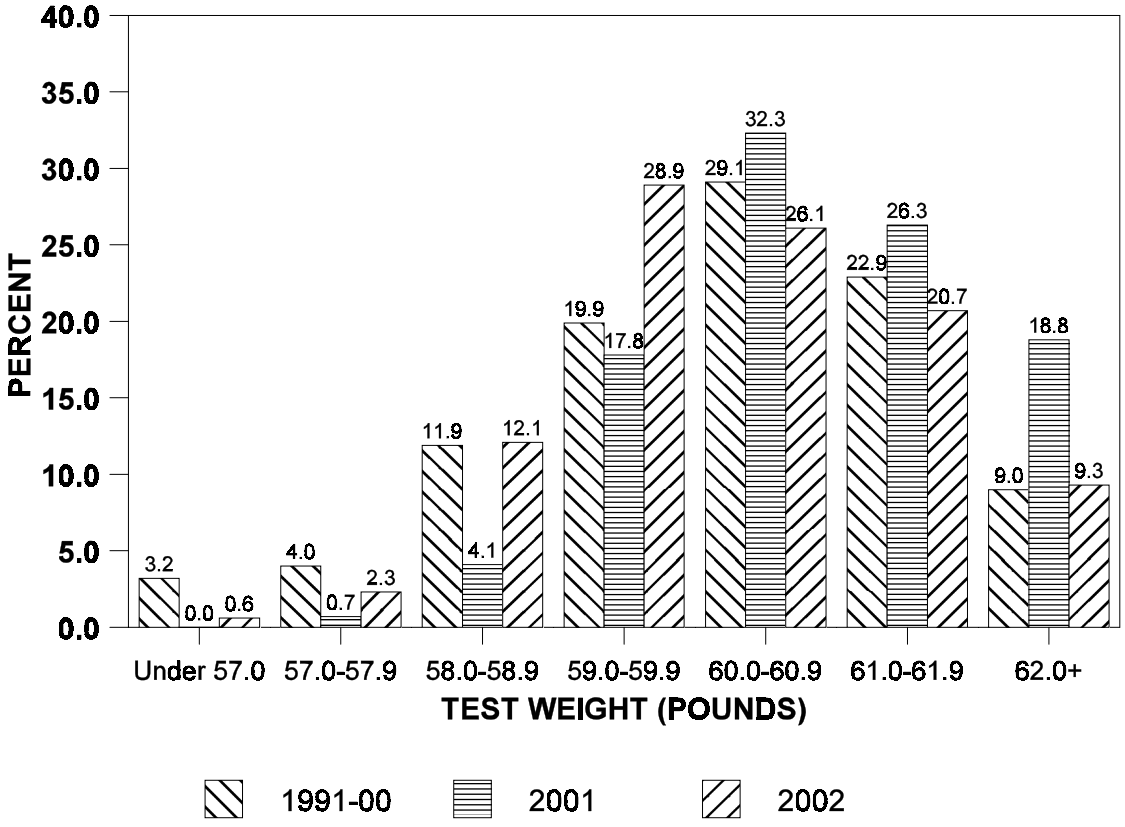


RANGES OF 2002 TEST WEIGHTS

Pounds per Bushel	District Production (000 bu.)									
	NW	WC	SW	NC	C	SC	NE	EC	SE	State
	24,800	23,900	25,100	44,600	52,900	57,400	7,000	8,600	19,700	264,000
	- Percent -									
Under 55.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.1	0.1
55.0-55.9	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
56.0-56.9	0.0	0.0	0.0	0.0	2.2	0.1	0.0	0.0	0.3	0.5
57.0-57.9	2.1	2.7	0.3	0.1	7.8	0.7	0.0	0.0	1.1	2.3
58.0-58.9	14.9	28.3	5.9	1.0	18.6	9.2	0.0	1.2	22.3	12.1
59.0-59.9	36.1	34.7	44.9	3.8	32.4	32.1	0.0	14.6	47.6	28.9
60.0-60.9	41.3	26.4	34.7	14.2	30.3	21.7	0.0	43.9	25.6	26.1
61.0-61.9	5.0	4.7	12.5	52.5	7.2	31.6	1.2	36.6	2.9	20.7
62.0-Over	0.6	3.2	1.7	28.4	1.4	4.6	98.8	2.5	0.1	9.3
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TEST WEIGHT RANGES OF KANSAS WHEAT

1991-00, 2001, & 2002



WEIGHT, PROTEIN, AND MOISTURE

County and District	Samples Tested 2002 1/	Test Weight			Protein Content 2/			Moisture		
		Average 1991-00	2001	2002	Average 1991-00	2001	2002	Average 1991-00	2001	2002
Cheyenne	63	60.0	59.4	58.5	12.5	13.4	14.1	11.3	10.8	10.3
Decatur	123	59.5	59.8	60.4	12.4	12.0	13.9	11.6	11.7	10.3
Graham	*	59.4	*	*	11.7	*	*	11.7	*	*
Norton	47	59.9	61.1	60.0	12.1	12.0	14.4	11.7	11.6	9.3
Rawlins	65	59.7	59.0	59.5	12.3	12.4	13.4	11.2	11.3	10.6
Sheridan	*	58.9	*	*	12.3	*	*	10.9	*	*
Sherman	161	60.0	58.9	59.4	12.3	13.3	14.2	11.6	11.0	10.0
Thomas	441	59.8	59.6	59.9	12.5	12.6	13.4	11.4	11.4	10.5
Northwest	**900**	**59.8**	**59.5**	**59.6**	**12.4**	**12.7**	**13.9**	**11.5**	**11.3**	**10.2**
Gove	222	59.8	60.6	60.0	12.2	12.5	13.6	11.5	11.8	10.5
Greeley	27	60.7	*	60.3	11.6	*	12.2	11.2	*	10.6
Lane	113	60.0	60.7	58.9	11.8	12.0	13.7	11.6	11.2	10.2
Logan	13	60.5	59.2	61.3	11.9	12.7	12.4	11.3	11.6	10.8
Ness	174	60.1	60.4	58.8	11.9	12.2	13.0	12.1	11.9	10.8
Scott	66	60.3	60.7	59.4	12.0	12.3	13.8	11.7	11.4	10.4
Trego	43	60.2	61.3	59.7	12.1	11.4	13.0	11.7	12.0	10.9
Wallace	*	60.5	59.9	*	12.2	12.9	*	11.6	11.3	*
Wichita	66	60.7	61.1	60.5	11.7	12.1	12.6	11.7	11.1	10.5
West Central	**724**	**60.4**	**60.5**	**59.9**	**12.0**	**12.3**	**13.0**	**11.6**	**11.5**	**10.6**
Clark	*	60.0	0.0	*	12.5	0.0	*	11.9	0.0	*
Finney	215	60.2	62.0	59.7	12.2	13.5	13.4	11.4	10.9	10.6
Ford	215	60.4	60.4	59.7	12.4	12.7	13.5	11.8	12.1	11.3
Grant	27	60.7	62.3	58.8	12.3	13.3	14.6	11.1	10.9	10.9
Gray	*	60.3	61.6	*	12.5	13.6	*	11.4	11.0	*
Hamilton	27	60.2	61.5	60.9	12.1	12.0	11.9	11.1	10.8	10.6
Haskell	*	60.2	*	*	12.3	*	*	11.4	*	*
Hodgeman	*	59.5	*	*	12.3	*	*	12.4	*	*
Kearny	21	61.0	61.8	59.7	11.4	13.2	13.6	11.0	10.6	10.1
Meade	46	60.4	62.3	60.1	12.6	13.0	14.1	11.9	11.4	12.3
Morton	111	60.4	62.0	60.8	12.5	12.7	13.0	10.6	10.1	10.1
Seward	48	60.6	63.2	60.8	12.7	12.4	13.6	11.2	10.8	10.8
Stanton	170	60.2	61.9	60.2	12.3	12.7	13.6	10.7	10.6	9.7
Stevens	*	60.5	62.7	*	12.7	13.0	*	11.0	10.5	*
Southwest	**880**	**60.3**	**61.8**	**60.0**	**12.4**	**12.9**	**13.4**	**11.3**	**11.0**	**10.7**
Clay	*	60.0	*	*	11.8	*	*	12.0	*	*
Cloud	1032	59.3	61.2	61.9	11.8	12.1	12.7	12.0	12.3	10.9
Jewell	50	59.8	60.7	62.2	12.1	12.3	13.4	12.1	12.7	11.0
Mitchell	338	59.9	61.2	61.5	12.0	12.7	13.6	11.9	12.6	11.1
Osborne	318	59.7	60.9	60.6	12.3	12.6	14.2	11.9	12.1	10.4
Ottawa	54	60.1	61.0	61.2	11.9	12.2	12.3	12.0	12.1	11.5
Phillips	*	59.8	61.0	*	12.3	11.9	*	11.5	11.5	*
Republic	90	59.5	60.6	61.8	12.2	12.4	12.6	11.9	11.9	11.1
Rooks	50	59.5	60.5	59.1	12.1	11.8	14.0	11.8	11.9	10.2
Smith	131	59.9	60.6	61.4	12.2	12.2	14.2	11.9	12.0	10.2
Washington	*	59.3	62.4	*	11.9	12.2	*	12.2	12.6	*
North Central	**2063**	**59.7**	**61.0**	**61.3**	**12.1**	**12.3**	**13.4**	**11.9**	**12.2**	**10.8**
Barton	494	60.1	60.9	59.8	12.6	12.1	13.6	11.9	12.2	11.8
Dickinson	19	59.9	60.3	59.6	11.6	11.3	12.5	12.4	12.7	12.2
Ellis	209	60.4	60.9	59.3	11.9	12.1	13.1	11.9	11.9	10.9
Ellsworth	25	60.0	61.3	60.7	12.1	11.9	13.2	11.9	12.5	12.2
Lincoln	186	59.5	61.4	60.2	12.1	12.0	13.1	11.8	11.9	11.0
Mcpherson	*	59.8	*	*	12.3	*	*	12.1	*	*
Marion	152	59.8	60.2	59.7	11.6	11.3	11.9	12.3	12.1	11.7
Rice	226	60.2	61.1	60.0	12.5	11.8	12.8	12.1	12.3	11.9
Rush	365	60.4	60.6	58.3	12.0	12.0	13.3	11.8	11.9	10.8
Russell	87	60.0	61.1	60.0	12.3	12.1	13.2	12.0	12.4	11.5
Saline	*	60.3	*	*	12.1	*	*	11.7	*	*
Central	**1763**	**60.1**	**60.8**	**59.7**	**12.1**	**11.8**	**13.0**	**12.0**	**12.2**	**11.6**

WEIGHT, PROTEIN, AND MOISTURE

County and District	Samples Tested 2002 1/	Test Weight			Protein Content 2/			Moisture		
		Average 1991-00	2001	2002	Average 1991-00	2001	2002	Average 1991-00	2001	2002
Barber	76	59.8	60.7	60.1	12.0	11.4	12.3	11.8	11.2	12.0
Comanche	*	60.2	*	*	12.5	*	*	12.1	*	*
Edwards	37	60.4	62.5	60.7	12.5	13.1	13.8	12.0	12.2	12.1
Harper	*	59.2	*	*	12.0	*	*	12.0	*	*
Harvey	*	60.0	*	*	11.8	*	*	12.3	*	*
Kingman	218	60.6	61.8	59.5	11.7	11.0	12.9	12.0	11.6	12.1
Kiowa	74	60.1	61.2	60.3	12.6	12.1	13.4	12.2	12.4	12.6
Pawnee	199	59.9	60.8	59.5	12.7	12.4	13.6	11.9	12.1	11.8
Pratt	85	60.1	60.2	59.7	12.5	11.8	14.0	11.9	12.2	12.4
Reno	5	60.4	61.4	59.0	12.3	11.3	14.1	11.9	12.0	10.4
Sedgwick	816	60.3	60.5	61.2	11.9	11.0	11.5	11.9	12.4	11.8
Stafford	30	60.3	62.6	59.1	12.8	11.9	14.2	11.7	12.3	11.9
Sumner	260	59.4	*	59.3	12.0	*	12.5	12.0	*	12.3
South Central	**1800**	**60.1**	**61.3**	**59.7**	**12.1**	**11.6**	**13.1**	**12.0**	**12.0**	**11.9**
Atchison	*	59.6	*	*	11.7	*	*	12.5	*	*
Brown	*	59.3	*	*	11.6	*	*	12.6	*	*
Doniphan	*	*	*	*	*	*	*	*	*	*
Jackson	*	*	*	*	*	*	*	*	*	*
Jefferson	*	*	*	*	*	*	*	*	*	*
Leavenworth	*	*	*	*	*	*	*	*	*	*
Marshall	80	59.4	62.2	63.6	11.6	11.8	11.3	12.5	12.8	11.5
Nemaha	*	59.3	*	*	11.8	*	*	12.9	*	*
Pottawatomie	*	60.8	*	*	11.5	*	*	12.0	*	*
Riley	*	*	*	*	*	*	*	*	*	*
Wyandotte	*	59.7	*	*	11.3	*	*	12.5	*	*
Northeast	**80**	**59.4**	**62.2**	**63.6**	**11.6**	**11.8**	**11.3**	**12.6**	**12.8**	**11.5**
Anderson	*	*	*	*	*	*	*	*	*	*
Chase	*	60.1	*	*	11.8	*	*	11.6	*	*
Coffey	*	60.2	59.3	*	10.9	10.0	*	12.6	12.5	*
Douglas	*	58.7	*	*	11.7	*	*	13.8	*	*
Franklin	71	60.6	59.7	60.7	11.4	10.7	11.0	12.3	12.1	11.7
Geary	*	*	*	*	*	*	*	*	*	*
Johnson	1	60.2	61.2	61.4	12.2	12.2	11.2	11.7	11.3	11.5
Linn	10	0.0	59.3	59.2	0.0	10.4	11.4	0.0	12.5	12.3
Lyon	*	*	*	*	*	*	*	*	*	*
Miami	*	*	*	*	*	*	*	*	*	*
Morris	*	59.5	*	*	12.0	*	*	12.5	*	*
Osage	*	60.1	*	*	11.5	*	*	13.1	*	*
Shawnee	*	60.2	*	*	11.8	*	*	12.4	*	*
Wabaunsee	*	*	*	*	*	*	*	*	*	*
East Central	**82**	**60.0**	**59.7**	**60.2**	**11.7**	**10.6**	**11.2**	**12.4**	**12.2**	**11.9**
Allen	94	59.4	59.8	59.7	10.1	10.2	11.1	13.1	12.5	12.4
Bourbon	*	*	*	*	*	*	*	*	*	*
Butler	*	58.9	*	*	11.5	*	*	12.5	*	*
Chautauqua	*	*	*	*	*	*	*	*	*	*
Cherokee	85	59.1	60.3	59.5	10.6	10.6	11.0	13.4	12.6	12.8
Cowley	161	59.2	61.2	59.8	11.5	10.9	11.6	12.1	11.9	12.1
Crawford	122	59.1	60.6	60.4	10.9	10.6	11.4	13.1	12.6	12.7
Elk	*	*	*	*	*	*	*	*	*	*
Greenwood	*	*	*	*	*	*	*	*	*	*
Labette	68	58.7	59.2	59.5	10.2	10.1	10.7	13.1	12.5	13.1
Montgomery	174	58.6	60.0	59.7	11.2	10.4	11.1	13.2	12.4	12.6
Neosho	240	59.3	60.3	59.0	11.1	10.6	11.5	13.0	12.5	12.5
Wilson	245	59.1	60.0	59.1	11.4	11.0	11.7	12.9	12.4	12.4
Woodson	*	*	*	*	*	*	*	*	*	*
Southeast	**1189**	**58.9**	**60.4**	**59.6**	**11.2**	**10.7**	**11.3**	**12.8**	**12.3**	**12.5**
State	9481	60.0	60.9	60.0	12.1	12.1	13.1	11.8	11.8	11.2

1/Samples tested represent data from inspection certificates of railroad cars (truckloads are converted to carlot equivalents). Summarized data include old crop and new crop wheat moving from first point of sale and inspected by the Kansas Grain Inspection Service, Inc. 2/ Adjusted to 12 percent moisture.* Not published due to insufficient data or no sample taken but included in district and State totals.

GRADES, DOCKAGE AND GRADE DEFECTS

Ninety-six percent of the 2002 wheat carlots sampled averaged number 2 or better, compared with 98 percent for 2001. Wheat grading number 1, at 48 percent, was down 19 points from the 67 percent for 2001. Samples grading number 2, at 48 percent, were up 17 points from 31 percent for 2001. The northeast district of the State had the highest average, with 100 percent of the samples grading number 1. The north central district was second with 94 percent of the samples grading number 1. The southeast had the lowest average grading number 1, with 30 percent. Ninety-four percent of all samples had less than 0.9 percent dockage, compared with 70 percent in 2001. Total defects, at 1.7 percent, were down from the 1.9 percent in 2001.

PERCENTAGE OF KANSAS WHEAT IN EACH GRADE

Year	District									State
	NW	WC	SW	NC	C	SC	NE	EC	SE	
					Grade No. 1					
1995	64	28	2	23	3	5	1	48	1	16
1996	48	73	64	63	60	49	19	40	36	55
1997	71	80	46	90	90	63	92	77	63	72
1998	90	92	90	81	91	88	73	80	42	88
1999	58	73	74	51	63	46	17	39	1	61
2000	5	34	25	42	88	57	88	99	41	39
2001	26	80	87	71	78	70	100	10	68	67
2002	41	31	40	94	35	32	100	84	30	48
					Grade No. 2					
1995	33	61	37	55	50	34	43	34	23	43
1996	38	20	32	30	38	46	45	60	51	38
1997	20	15	47	7	8	29	8	13	29	23
1998	9	7	9	18	8	9	27	20	52	11
1999	35	26	25	38	34	47	78	60	54	34
2000	49	63	71	51	12	39	12	1	50	52
2001	68	19	12	26	21	26	0	89	31	31
2002	57	66	57	6	53	64	0	16	68	48
					All Other Grades					
1995	3	11	61	22	47	61	56	18	76	41
1996	14	7	4	7	2	5	36	0	13	7
1997	9	5	7	3	2	8	0	10	8	5
1998	1	1	1	1	1	3	0	0	6	1
1999	7	1	1	11	3	7	5	1	47	5
2000	46	3	4	7	0	4	0	0	9	9
2001	6	1	1	3	1	4	0	1	1	2
2002	2	3	3	0	12	4	0	0	2	4

KANSAS WHEAT DOCKAGE PERCENTAGES

Year	Number of Cars Sampled 1/	Percent of Samples with Dockage				Average Dockage of Samples	
		Zero Percent	0.1-0.4 Percent	0.5-0.9 Percent	Over 0.9 Percent	Over 0.9%	All
1995	9,879	0	14	59	27	1.7	0.9
1996	14,735	0	20	47	33	2.0	1.1
1997	19,601	0	51	39	10	4.1	0.8
1998	18,190	1	36	56	7	1.3	0.6
1999	12,735	0	47	43	10	1.4	0.6
2000	16,302	0	28	61	11	1.3	0.6
2001	10,470	0	19	51	30	1.4	0.8
2002	9,481	0	50	44	6	1.2	0.5

1/ Includes truckloads converted to carlot equivalents.

GRADE DEFECT PERCENTAGES OF KANSAS WHEAT

Year	District									State
	NW	WC	SW	NC	C	SC	NE	EC	SE	
Damaged Kernels										
1995	0.1	0.2	0.3	0.7	0.4	0.3	2.6	0.5	0.8	0.4
1996	0.2	0.2	0.5	0.3	0.3	0.2	1.8	0.5	0.3	0.3
1997	0.1	0.2	0.2	0.0	0.1	0.2	0.2	0.3	0.1	0.1
1998	0.2	0.2	0.2	0.1	0.1	0.1	0.3	0.7	0.9	0.2
1999	0.1	0.1	0.3	0.3	0.7	0.6	0.8	0.9	1.8	0.4
2000	0.1	0.1	0.2	0.2	0.2	0.3	0.1	1.3	0.9	0.2
2001	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.4	0.1	0.1
2002	0.1	0.1	0.2	0.2	0.2	0.4	0.1	0.8	0.4	0.2
Foreign Material										
1995	0.0	0.0	0.1	0.2	0.2	0.3	0.1	0.1	0.2	0.2
1996	0.0	0.0	0.1	0.3	0.2	0.2	0.1	0.1	0.2	0.2
1997	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1
1998	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1
1999	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.1
2000	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.2	0.1	0.1
2001	0.0	0.1	0.0	0.3	0.2	0.2	0.0	0.1	0.1	0.1
2002	0.0	0.0	0.1	0.1	0.2	0.2	0.0	0.1	0.1	0.1
Shrunken and Broken Kernels										
1995	2.4	2.9	2.8	2.4	2.6	2.9	2.0	2.3	2.9	2.7
1996	1.7	1.7	1.4	1.5	1.4	1.9	1.2	1.4	1.2	1.6
1997	1.3	1.5	1.5	0.9	1.0	1.3	0.9	0.9	1.1	1.2
1998	1.4	1.7	1.9	1.3	1.4	1.6	0.8	1.0	1.2	1.5
1999	1.6	1.2	1.2	0.9	0.8	1.1	0.9	1.1	1.1	1.1
2000	2.0	2.1	2.2	1.5	1.5	1.5	1.0	1.1	0.8	1.8
2001	2.0	2.1	1.5	1.3	1.6	1.7	1.0	1.0	1.0	1.6
2002	1.9	1.8	1.7	1.0	1.2	1.2	0.8	1.1	1.0	1.4
Total Defects 1/										
1995	2.5	3.1	3.2	3.3	3.2	3.5	4.7	2.9	3.9	3.3
1996	1.9	1.9	2.0	2.1	1.9	2.3	3.1	2.0	1.7	2.1
1997	1.4	1.8	1.8	1.0	1.2	1.6	1.1	1.3	1.3	1.4
1998	1.6	2.0	2.1	1.6	1.6	1.8	1.1	1.8	2.2	1.8
1999	1.7	1.3	1.5	1.3	1.7	1.8	1.8	2.1	3.0	1.6
2000	2.2	2.3	2.5	1.8	1.8	1.9	1.1	2.5	1.8	2.1
2001	2.1	2.2	1.7	1.8	1.9	2.2	1.2	1.5	1.2	1.9
2002	2.0	2.0	2.0	1.3	1.5	1.7	0.9	1.9	1.5	1.7

1/ Percentages by defect type may not add to total defects due to rounding.

WHEAT GRADES AND DOCKAGE

County and District	Grade						Dockage				Average Dockage of Samples	
	1	2	3	4	5	Sample	Zero %	0.1-0.4%	0.5-0.9%	Over 0.9%	Over 0.9%	All
	Percent of Total 1/						Percent of Total 1/				Percent	
Cheyenne	0	78	22	0	0	0	0	6	70	24	1.2	0.8
Decatur	65	33	1	1	0	0	0	37	58	5	1.2	0.5
Graham	*	*	*	*	*	*	*	*	*	*	*	*
Norton	49	51	0	0	0	0	0	4	90	6	1.0	0.6
Rawlins	23	75	2	0	0	0	0	8	80	12	1.1	0.7
Sheridan	*	*	*	*	*	*	*	*	*	*	*	*
Sherman	20	78	2	0	0	0	0	4	74	22	1.1	0.8
Thomas	49	50	1	0	0	0	0	3	83	14	1.1	0.8
Northwest	**41**	**57**	**2**	**0**	**0**	**0**	**0**	**7**	**78**	**15**	**1.1**	**0.7**
Gove	54	46	0	0	0	0	0	14	75	11	1.2	0.7
Greeley	59	41	0	0	0	0	0	4	59	37	1.3	0.9
Lane	2	96	2	0	0	0	0	3	87	10	1.2	0.7
Logan	92	8	0	0	0	0	0	23	77	0	0.0	0.6
Ness	10	80	10	0	0	0	0	18	75	7	1.0	0.6
Scott	22	76	2	0	0	0	0	47	53	0	0.0	0.5
Trego	26	72	0	0	2	0	0	14	79	7	1.2	0.7
Wallace	*	*	*	*	*	*	*	*	*	*	*	*
Wichita	47	53	0	0	0	0	0	82	16	2	1.1	0.3
West Central	**31**	**66**	**3**	**0**	**0**	**0**	**0**	**23**	**68**	**9**	**1.2**	**0.6**
Clark	*	*	*	*	*	*	*	*	*	*	*	*
Finney	29	67	2	2	0	0	0	0	99	1	1.2	0.6
Ford	27	73	0	0	0	0	0	9	90	1	1.0	0.6
Grant	0	93	7	0	0	0	0	44	52	4	1.3	0.5
Gray	*	*	*	*	*	*	*	*	*	*	*	*
Hamilton	96	4	0	0	0	0	0	0	96	4	1.1	0.7
Haskell	*	*	*	*	*	*	*	*	*	*	0.0	*
Hodgeman	*	*	*	*	*	*	*	*	*	*	*	*
Kearny	57	43	0	0	0	0	0	48	52	0	*	0.5
Meade	46	52	2	0	0	0	0	33	63	4	1.2	0.5
Morton	78	22	0	0	0	0	0	24	64	12	1.1	0.7
Seward	94	6	0	0	0	0	0	15	85	0	0.0	0.6
Stanton	51	42	5	2	0	0	0	11	77	12	1.2	0.7
Stevens	*	*	*	*	*	*	*	*	*	*	*	*
Southwest	**40**	**57**	**2**	**1**	**0**	**0**	**0**	**10**	**86**	**4**	**1.1**	**0.6**
Clay	*	*	*	*	*	*	*	*	*	*	*	*
Cloud	100	0	0	0	0	0	0	94	6	0	0.0	0.3
Jewell	98	2	0	0	0	0	0	78	20	2	1.0	0.4
Mitchell	98	2	0	0	0	0	0	79	20	1	1.1	0.4
Osborne	85	14	1	0	0	0	0	54	41	5	1.4	0.5
Ottawa	72	24	2	2	0	0	0	72	24	4	1.5	0.4
Phillips	*	*	*	*	*	*	*	*	*	*	*	*
Republic	97	2	0	1	0	0	0	48	45	7	1.2	0.5
Rooks	4	96	0	0	0	0	0	22	76	2	1.1	0.6
Smith	92	7	0	1	0	0	0	77	22	1	1.0	0.4
Washington	*	*	*	*	*	*	*	*	*	*	*	*
North Central	**94**	**6**	**0**	**0**	**0**	**0**	**0**	**79**	**19**	**2**	**1.2**	**0.4**
Barton	38	56	5	1	0	0	0	55	41	4	1.1	0.5
Dickinson	21	79	0	0	0	0	0	42	58	0	0.0	0.5
Ellis	17	76	7	0	0	0	0	27	60	13	1.2	0.6
Ellsworth	96	4	0	0	0	0	0	76	24	0	0.0	0.4
Lincoln	70	28	2	0	0	0	0	75	20	5	1.2	0.4
Mcpherson	*	*	*	*	*	*	*	*	*	*	*	*
Marion	38	59	3	0	0	0	0	51	48	1	1.1	0.5
Rice	48	49	3	0	0	0	0	76	23	1	1.3	0.4
Rush	9	48	42	1	0	0	0	32	66	2	1.1	0.5
Russell	49	51	0	0	0	0	0	44	51	5	1.0	0.5
Saline	*	*	*	*	*	*	*	*	*	*	*	*
Central	**35**	**53**	**12**	**0**	**0**	**0**	**0**	**52**	**44**	**4**	**1.2**	**0.5**

WHEAT GRADES AND DOCKAGE

County and District	Grade						Dockage				Average Dockage of Samples	
	1	2	3	4	5	Sample	Zero %	0.1-0.4%	0.5-0.9%	Over 0.9%	Over 0.9%	All
	- - - - - - - Percent of Total 1/- - - - - - -						- - - - - Percent of Total 1/- - - - -				- - -Percent- - -	
Barber	46	50	4	0	0	0	0	38	50	12	1.4	0.6
Comanche	*	*	*	*	*	*	*	*	*	*	*	*
Edwards	68	32	0	0	0	0	0	76	21	3	1.7	0.4
Harper	*	*	*	*	*	*	*	*	*	*	*	*
Harvey	*	*	*	*	*	*	*	*	*	*	*	*
Kingman	20	73	7	0	0	0	0	61	36	3	1.1	0.4
Kiowa	46	54	0	0	0	0	0	7	77	16	1.1	0.7
Pawnee	24	73	3	0	0	0	0	47	46	7	1.4	0.5
Pratt	24	71	4	1	0	0	0	24	45	31	1.2	0.8
Reno	0	100	0	0	0	0	0	20	80	0	0.0	0.5
Sedgwick	51	43	6	0	0	0	0	62	38	0	1.2	0.4
Stafford	0	100	0	0	0	0	0	87	13	0	0.0	0.3
Sumner	7	92	1	0	0	0	0	83	10	7	1.9	0.4
South Central	**32**	**64**	**4**	**0**	**0**	**0**	**0**	**63**	**32**	**5**	**1.4**	**0.5**
Atchison	*	*	*	*	*	*	*	*	*	*	*	*
Brown	*	*	*	*	*	*	*	*	*	*	*	*
Doniphan	*	*	*	*	*	*	*	*	*	*	*	*
Jackson	*	*	*	*	*	*	*	*	*	*	*	*
Jefferson	*	*	*	*	*	*	*	*	*	*	*	*
Leavenworth	*	*	*	*	*	*	*	*	*	*	*	*
Marshall	100	0	0	0	0	0	0	84	16	0	0.0	0.3
Nemaha	*	*	*	*	*	*	*	*	*	*	*	*
Pottawatomie	*	*	*	*	*	*	*	*	*	*	*	*
Riley	*	*	*	*	*	*	*	*	*	*	*	*
Wyandotte	*	*	*	*	*	*	*	*	*	*	*	*
Northeast	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**84**	**16**	**0**	**0.0**	**0.3**
Anderson	*	*	*	*	*	*	*	*	*	*	*	*
Chase	*	*	*	*	*	*	*	*	*	*	*	*
Coffey	*	*	*	*	*	*	*	*	*	*	*	*
Douglas	*	*	*	*	*	*	*	*	*	*	*	*
Franklin	83	17	0	0	0	0	0	37	62	1	1.1	0.5
Geary	*	*	*	*	*	*	*	*	*	*	*	*
Johnson	100	0	0	0	0	0	0	0	100	0	0.0	0.7
Linn	90	10	0	0	0	0	0	40	50	10	1.2	0.6
Lyon	*	*	*	*	*	*	*	*	*	*	*	*
Miami	*	*	*	*	*	*	*	*	*	*	*	*
Morris	*	*	*	*	*	*	*	*	*	*	*	*
Osage	*	*	*	*	*	*	*	*	*	*	*	*
Shawnee	*	*	*	*	*	*	*	*	*	*	*	*
Wabaunsee	*	*	*	*	*	*	*	*	*	*	*	*
East Central	**84**	**16**	**0**	**0**	**0**	**0**	**0**	**37**	**61**	**2**	**1.1**	**0.6**
Allen	37	63	0	0	0	0	0	50	47	3	1.7	0.5
Bourbon	*	*	*	*	*	*	*	*	*	*	*	*
Butler	*	*	*	*	*	*	*	*	*	*	*	*
Chautauqua	*	*	*	*	*	*	*	*	*	*	*	*
Cherokee	28	72	0	0	0	0	0	80	19	1	1.8	0.3
Cowley	51	47	2	0	0	0	0	38	8	54	1.9	1.2
Crawford	75	25	0	0	0	0	0	89	11	0	0.0	0.3
Elk	*	*	*	*	*	*	*	*	*	*	*	*
Greenwood	*	*	*	*	*	*	*	*	*	*	*	*
Labette	14	84	1	1	0	0	0	53	43	4	1.6	0.5
Montgomery	34	64	2	0	0	0	0	50	31	19	2.0	0.7
Neosho	1	97	2	0	0	0	0	53	43	4	1.7	0.5
Wilson	13	82	4	1	0	0	0	71	26	3	1.4	0.4
Woodson	*	*	*	*	*	*	*	*	*	*	*	*
Southeast	**30**	**68**	**2**	**0**	**0**	**0**	**0**	**57**	**25**	**18**	**1.7**	**0.6**
State	48	48	4	0	0	0	0	50	44	6	1.2	0.5

1/ May not add due to rounding.*Not published due to insufficient data or no sample taken, but included in district and State totals.

GRADE DEFECT PERCENTAGES

County and District	Samples Tested 2002 1/	Total Damaged Kernels			Foreign Material			Shrunken and Broken Kernels			Total Defects 2/		
		Average 1991-00	2001	2002	Average 1991-00	2001	2002	Average 1991-00	2001	2002	Average 1991-00	2001	2002
Cheyenne	63	0.1	0.1	0.0	0.0	0.0	0.0	2.0	2.4	2.8	2.2	2.4	2.8
Decatur	123	0.1	0.1	0.0	0.0	0.1	0.0	1.7	1.6	1.2	1.8	1.8	1.3
Graham	*	0.1	*	*	0.1	*	*	2.1	*	*	2.3	*	*
Norton	47	0.1	0.0	0.2	0.1	0.0	0.0	1.6	1.4	1.7	1.8	1.5	1.9
Rawlins	65	0.0	0.0	0.1	0.0	0.0	0.0	1.9	2.3	1.8	2.0	2.3	1.9
Sheridan	*	0.0	*	*	0.0	*	*	2.0	*	*	2.0	*	*
Sherman	161	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.1	1.9	1.9	2.1	2.0
Thomas	441	0.1	0.2	0.2	0.0	0.0	0.2	1.8	2.1	1.8	2.0	2.3	2.2
Northwest	**900**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**1.8**	**2.0**	**1.9**	**2.0**	**2.1**	**2.0**
Gove	222	0.1	0.0	0.2	0.0	0.0	0.0	1.8	1.8	1.4	1.9	1.8	1.5
Greeley	27	0.2	*	0.2	0.0	*	0.0	1.8	*	2.5	2.0	*	2.7
Lane	113	0.2	0.1	0.2	0.0	0.1	0.0	2.0	1.8	1.4	2.3	1.9	1.7
Logan	13	0.0	0.0	0.0	0.0	0.1	0.0	1.6	3.4	2.0	1.7	3.5	2.0
Ness	174	0.2	0.0	0.1	0.0	0.1	0.0	1.9	2.1	1.9	2.1	2.2	2.0
Scott	66	0.2	0.1	0.1	0.0	0.0	0.0	1.8	1.9	1.7	2.0	2.0	1.9
Trego	43	0.2	0.3	0.2	0.1	0.1	0.2	2.1	1.8	1.7	2.4	2.2	2.1
Wallace	*	0.1	0.3	*	0.0	0.0	*	1.8	2.1	*	1.9	2.4	*
Wichita	66	0.2	0.0	0.1	0.0	0.0	0.0	2.1	1.7	1.6	2.3	1.7	1.7
West Central	**724**	**0.1**	**0.1**	**0.1**	**0.0**	**0.1**	**0.0**	**1.9**	**2.1**	**1.8**	**2.1**	**2.2**	**2.0**
Clark	*	0.4	*	*	0.0	*	*	1.9	*	*	2.3	*	*
Finney	215	0.2	0.0	0.1	0.1	0.0	0.2	1.9	1.8	1.6	2.1	1.8	1.9
Ford	215	0.3	0.2	0.1	0.1	0.2	0.1	1.9	2.0	1.8	2.3	2.3	2.1
Grant	27	0.2	0.1	0.0	0.0	0.1	0.0	2.0	1.7	1.7	2.2	1.9	1.8
Gray	*	0.2	0.1	*	0.0	0.0	*	1.8	0.9	*	2.0	1.0	*
Hamilton	27	0.3	0.0	0.2	0.0	0.0	0.0	2.1	2.1	2.2	2.4	2.2	2.4
Haskell	*	0.3	*	*	0.0	*	*	1.7	*	*	2.0	*	*
Hodgeman	*	1.2	*	*	0.0	*	*	1.8	*	*	3.1	*	*
Kearny	21	0.1	0.0	0.1	0.0	0.0	0.0	1.6	0.7	1.4	1.8	0.7	1.5
Meade	46	0.3	0.0	0.2	0.1	0.2	0.1	1.7	1.4	1.2	2.1	1.7	1.5
Morton	111	0.3	0.1	0.2	0.0	0.0	0.1	2.1	1.8	2.0	2.4	1.9	2.2
Seward	48	0.2	0.0	0.1	0.1	0.1	0.0	1.9	1.3	1.3	2.2	1.4	1.4
Stanton	170	0.1	0.1	0.5	0.0	0.0	0.0	2.2	1.7	2.2	2.4	1.7	2.8
Stevens	*	0.2	0.1	*	0.0	0.0	*	1.9	1.2	*	2.2	1.3	*
Southwest	**880**	**0.3**	**0.1**	**0.2**	**0.1**	**0.0**	**0.1**	**1.9**	**1.5**	**1.7**	**2.2**	**1.7**	**2.0**
Clay	*	0.1	*	*	0.2	*	*	1.6	*	*	1.8	*	*
Cloud	1,032	0.3	0.5	0.3	0.2	0.4	0.1	2.0	1.6	1.2	2.5	2.4	1.6
Jewell	50	0.2	0.0	0.1	0.1	0.2	0.1	1.6	1.2	1.0	2.0	1.4	1.2
Mitchell	338	0.2	0.2	0.1	0.2	0.3	0.1	1.6	1.2	0.9	2.0	1.8	1.1
Osborne	318	0.2	0.1	0.1	0.1	0.3	0.1	1.7	1.4	0.9	2.0	1.8	1.1
Ottawa	54	0.1	0.0	0.3	0.3	0.9	0.4	1.6	1.4	1.2	1.9	2.3	1.8
Phillips	*	0.2	0.0	*	0.0	0.2	*	1.6	1.4	*	1.8	1.7	*
Republic	90	0.6	0.3	0.3	0.1	0.2	0.2	1.6	1.4	1.1	2.4	1.9	1.5
Rooks	50	0.1	0.0	0.1	0.1	0.3	0.0	1.5	1.7	1.4	1.7	2.0	1.6
Smith	131	0.2	0.1	0.1	0.1	0.1	0.1	1.4	1.5	0.9	1.6	1.7	1.1
Washington	*	0.7	0.3	*	0.1	0.1	*	1.6	0.6	*	2.4	1.0	*
North Central	**2,063**	**0.3**	**0.1**	**0.2**	**0.2**	**0.3**	**0.1**	**1.6**	**1.3**	**1.0**	**2.1**	**1.8**	**1.3**
Barton	494	0.3	0.1	0.1	0.2	0.2	0.2	1.6	1.6	0.9	2.1	1.9	1.2
Dickinson	19	0.2	0.2	0.3	0.1	0.2	0.2	1.5	1.3	1.2	1.9	1.8	1.6
Ellis	209	0.2	0.2	0.3	0.1	0.2	0.1	1.8	1.3	1.4	2.2	1.7	1.7
Ellsworth	25	0.2	0.1	0.2	0.1	0.3	0.1	1.6	1.4	1.0	1.9	1.7	1.3
Lincoln	186	0.2	0.2	0.1	0.1	0.2	0.1	1.8	1.5	1.1	2.2	1.9	1.3
Mcpherson	*	0.3	*	*	0.2	*	*	1.4	*	*	1.9	*	*
Marion	152	0.3	0.2	0.3	0.2	0.2	0.2	1.6	1.7	1.4	2.1	2.1	1.9
Rice	226	0.2	0.1	0.1	0.1	0.2	0.2	1.4	1.8	0.9	1.7	2.1	1.2
Rush	365	0.3	0.1	0.1	0.1	0.2	0.1	1.7	1.8	1.5	2.1	2.1	1.6
Russell	87	0.2	0.2	0.2	0.1	0.4	0.1	1.7	1.4	1.2	2.1	2.0	1.5
Saline	*	0.5	*	*	0.3	*	*	1.9	*	*	2.7	*	*
Central	**1,763**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**1.6**	**1.6**	**1.2**	**2.1**	**1.9**	**1.5**

GRADE DEFECT PERCENTAGES

County and District	Samples Tested 2002 1/	Total Damaged Kernels			Foreign Material			Shrunken and Broken Kernels			Total Defects 2/		
		Average 1991-00	2001	2002	Average 1991-00	2001	2002	Average 1991-00	2001	2002	Average 1991-00	2001	2002
Barber	76	0.2	0.1	0.2	0.2	0.2	0.1	1.8	1.7	1.3	2.1	2.0	1.6
Comanche	*	0.3	*	*	0.2	*	*	1.9	*	*	2.3	*	*
Edwards	37	0.3	0.0	0.1	0.0	0.0	0.1	1.6	1.0	0.8	1.9	1.0	0.9
Harper	*	0.2	*	*	0.4	*	*	2.0	*	*	2.6	*	*
Harvey	*	0.2	*	*	0.2	*	*	1.4	*	*	1.8	*	*
Kingman	218	0.2	0.0	0.1	0.3	0.2	0.2	1.5	1.6	0.9	2.0	1.8	1.2
Kiowa	74	0.4	0.0	0.9	0.1	0.2	0.2	1.6	1.5	1.2	2.1	1.6	2.3
Pawnee	199	0.2	0.1	0.3	0.1	0.2	0.1	1.8	1.7	1.0	2.1	2.0	1.4
Pratt	85	0.3	0.1	0.1	0.2	0.2	0.2	1.7	1.9	1.0	2.1	2.2	1.3
Reno	5	0.5	0.2	0.3	0.3	0.3	0.2	1.8	1.9	1.3	2.5	2.3	1.8
Sedgwick	816	0.5	1.6	1.1	0.2	0.2	0.3	1.8	2.1	1.8	2.5	4.0	3.1
Stafford	30	0.3	0.1	0.1	0.2	0.2	0.1	1.7	1.3	0.8	2.1	1.6	1.0
Sumner	260	0.2	*	0.5	0.3	*	0.2	1.8	*	1.2	2.3	*	1.9
South Central	**1,800**	**0.3**	**0.3**	**0.4**	**0.2**	**0.2**	**0.2**	**1.7**	**1.7**	**1.2**	**2.2**	**2.2**	**1.7**
Atchison	*	1.0	*	*	0.1	*	*	1.3	*	*	2.4	*	*
Brown	*	1.0	*	*	0.0	*	*	1.1	*	*	2.2	*	*
Doniphan	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Jackson	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Jefferson	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Leavenworth	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Marshall	80	0.7	0.2	0.1	0.1	0.0	0.0	1.3	1.0	0.8	2.0	1.2	1.0
Nemaha	*	1.1	*	*	0.1	*	*	1.5	*	*	2.7	*	*
Pottawatomie	*	0.4	*	*	0.0	*	*	1.4	*	*	1.8	*	*
Riley	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Wyandotte	*	1.3	*	*	0.1	*	*	1.4	*	*	2.8	*	*
Northeast	**80**	**0.9**	**0.2**	**0.1**	**0.1**	**0.0**	**0.0**	**1.3**	**1.0**	**0.8**	**2.3**	**1.2**	**0.9**
Anderson	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Chase	*	0.2	*	*	0.0	*	*	2.1	*	*	2.3	*	*
Coffey	*	0.4	0.2	*	0.1	0.1	*	1.1	0.5	*	1.6	0.8	*
Douglas	*	1.9	*	*	0.1	*	*	1.3	*	*	3.3	*	*
Franklin	71	0.5	0.2	0.8	0.0	0.1	0.1	1.1	0.6	0.8	1.6	0.9	1.6
Geary	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Johnson	1	0.7	0.8	0.3	0.1	0.2	0.1	1.9	3.1	2.4	2.8	4.1	2.8
Linn	10	0.0	0.7	0.9	0.0	0.1	0.1	0.0	0.7	1.0	0.0	1.4	2.0
Lyon	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Miami	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Morris	*	0.2	*	*	0.3	*	*	1.8	*	*	2.3	*	*
Osage	*	0.7	*	*	0.1	*	*	1.2	*	*	2.0	*	*
Shawnee	*	0.6	*	*	0.1	*	*	1.7	*	*	2.4	*	*
Wabaunsee	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
East Central	**82**	**0.7**	**0.4**	**0.8**	**0.1**	**0.1**	**0.1**	**1.5**	**1.0**	**1.1**	**2.3**	**1.5**	**1.9**
Allen	94	0.4	0.1	0.7	0.0	0.0	0.1	0.7	0.8	0.8	1.1	0.9	1.5
Bourbon	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Butler	*	0.2	*	*	0.2	*	*	1.5	*	*	1.9	*	*
Chautauqua	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Cherokee	85	1.2	0.4	0.4	0.1	0.1	0.0	1.0	1.2	1.1	2.3	1.6	1.5
Cowley	161	0.5	0.1	0.4	0.2	0.1	0.1	1.6	1.0	0.9	2.2	1.2	1.5
Crawford	122	1.7	0.4	0.6	0.1	0.1	0.1	1.1	0.7	0.7	2.9	1.2	1.4
Elk	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Greenwood	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Labette	68	0.7	0.0	0.2	0.1	0.0	0.1	1.1	1.0	1.1	1.9	1.1	1.4
Montgomery	174	1.0	0.1	0.2	0.1	0.1	0.1	1.4	1.0	1.0	2.6	1.1	1.3
Neosho	240	0.8	0.0	0.5	0.1	0.0	0.1	1.2	0.9	1.0	2.1	1.0	1.6
Wilson	245	0.9	0.2	0.4	0.1	0.1	0.1	1.3	1.2	1.2	2.3	1.5	1.8
Woodson	*	0.0	*	*	0.0	*	*	0.0	*	*	0.0	*	*
Southeast	**1,189**	**0.8**	**0.1**	**0.4**	**0.1**	**0.1**	**0.1**	**1.3**	**1.0**	**1.0**	**2.3**	**1.2**	**1.5**
State	9,481	0.3	0.1	0.2	0.1	0.1	0.1	1.7	1.6	1.4	2.1	1.9	1.7

1/ Samples tested represent data from inspection certificates of railroad cars (truckloads are converted to carlot equivalents). Summarized data include old crop and new crop wheat moving from first point of sale and inspected by the Kansas Grain Inspection Service, Inc. 2/ Percentages by defect may not add to total due to rounding. * Not published due to insufficient data or no sample taken, but included in district and State totals.

KANSAS 2002 WHEAT VARIETIES

Jagger was the leading variety of wheat seeded in Kansas for the 2002 crop. Accounting for 42.8 percent of the State's wheat, Jagger increased 7 points from a year ago and was the most popular variety in seven of the nine districts. Jagger made the biggest gain in the southwest district. The KSU maintained variety 2137 ranked second over all, with 15.5 percent of the acreage. It ranked first in two districts and second in the other seven. Karl and improved Karl moved up to third position, and increased .3 points from last year. The OSU maintained variety 2174 moved up to fourth place with 3.1 percent of the acreage. The fifth most popular variety was TAM 110 with 3.0 percent of the State's acreage. TAM 107 moved down to sixth place with 2.9 percent. Ike moved down to seventh place, with 2.6 percent. Dominator moved up to eighth place, with 2.0 percent. The KSU maintained variety 2163 remained in the top ten with 1.3 percent. Back in the top ten is Vista, with .9 percent. Acres planted with multiple varieties blended together were not included in the rankings by variety. Blends accounted for 11.4 percent of the acres planted State-wide and were used more extensively in the north central and central parts of the State. Out of the total State acres planted with blends, 96.5 percent had Jagger in the blend and 75.8 percent had 2137 in the blend. All Hard White varieties accounted for 1.1 percent of the State's acreage. Trego was the leading Hard White variety, accounting for .8 percent of the State's wheat. The majority of the white wheat was planted in the western third of the State.

DISTRIBUTION OF KANSAS WINTER WHEAT VARIETIES, 1993-2002

VARIETY	BY SPECIFIED YEARS									
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	PERCENT OF SEEDED ACREAGE									
Jagger	--	--	--	1.0	6.4	20.2	29.2	34.0	35.8	42.8
2137	--	--	--	--	1.0	13.5	22.0	23.1	22.3	15.5
Karl/Karl 92	23.0	23.6	22.4	20.9	22.1	10.8	5.9	3.5	3.3	3.6
2174	--	--	--	--	--	--	--	1.1	3.0	3.1
TAM 110	--	--	--	--	--	--	0.5	1.3	2.8	3.0
TAM 107	19.8	19.0	20.6	17.1	17.0	12.6	8.3	6.3	5.3	2.9
Ike	--	--	0.9	7.2	10.5	7.0	5.5	4.1	3.6	2.6
Dominator	--	--	--	--	--	0.2	0.8	1.4	1.5	2.0
2163	9.0	13.8	17.1	19.8	15.4	10.4	3.4	2.3	2.0	1.3
Vista	--	--	0.3	0.8	1.2	1.1	0.9	0.9	1.0	0.9
Larned	8.3	8.3	7.6	4.8	3.6	2.4	1.9	1.2	1.0	0.9
Trego 1/	--	--	--	--	--	--	--	--	0.3	0.8
T81	--	--	--	--	--	--	--	0.2	0.2	0.8
Coronado	--	--	--	--	--	0.8	1.3	1.0	1.1	0.7
Thunderbolt	--	--	--	--	--	--	--	--	0.2	0.6
7853	1.4	2.1	3.7	4.6	4.0	3.4	1.9	1.5	0.9	0.4
Ogallala	--	--	0.2	1.5	1.3	0.8	0.7	0.8	0.4	0.4
Akron	--	--	--	--	--	0.4	0.8	1.0	0.4	0.4
Alliance	--	--	--	--	--	--	0.1	0.3	0.5	0.3
Tomahawk	1.5	6.2	7.0	4.7	3.1	1.8	1.2	0.8	0.4	0.3
Pecos	--	0.2	1.1	1.8	1.6	1.6	0.9	0.7	0.4	0.2
Niobrara	--	--	--	--	--	--	--	0.5	0.3	0.2
Big Dawg	--	--	--	--	--	0.2	0.4	0.5	0.3	0.2
Prairie Red	--	--	--	--	--	--	--	--	0.1	0.2
Eagle	1.0	1.1	1.1	0.6	0.5	0.4	0.3	0.2	0.2	0.2
Onaga	--	--	--	--	--	--	0.1	0.1	0.2	0.2
Scout/Scout 66	1.3	1.3	1.0	1.2	0.8	0.7	0.5	0.3	0.1	0.2
Longhorn	--	0.6	0.7	0.5	0.3	0.2	0.1	0.2	0.1	0.2
Blends	--	--	--	--	--	2.6	6.1	7.5	7.0	11.4
Hard White Varieties	--	--	--	--	--	--	--	0.2	0.5	0.3
Other Hard Varieties	34.4	23.4	16.2	13.3	10.9	8.9	7.2	5.0	4.8	3.3
Other Soft Varieties	0.3	0.4	0.1	0.2	0.3	--	--	--	--	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

NOTE:* = Variety not reported in this district. 0=Less than .1 percent.
1/ Trego is a Hard White Winter variety.

SURVEY AND PROJECT PROCEDURES

The wheat quality profile is a joint project of the Kansas State University Department of Grain Science and Industry and Kansas Agricultural Statistics Service. This report provides additional information for the evaluation of the milling and baking characteristics of Kansas wheat and makes available some meaningful comparisons with previous years. Historic data are shown at the end of this bulletin for selected characteristics for the period 1993-2002.

Users of these data should recognize there are some limitations in making inferences from the results. Sample size is a limiting factor for some varieties and quality characteristics. However, one of the major indications the survey provides is quality factors by variety. This information should be useful in evaluating the milling and flour qualities of the different varieties as produced in farm fields as well as comparing variety data with that summarized in previous Wheat Quality publications.

SAMPLE COLLECTION

Wheat from which the quality profile data were developed was collected as a part of the regular Wheat Objective Yield Survey program of Kansas Agricultural Statistics Service. Survey samples were distributed proportionally to the acreage grown in each area of the State with a total of 310 sample units selected. Two small plots were laid out in each field for observation during the growing season. Plant and head counts were made within the plots about May 1, June 1, and July 1. Enumerators were instructed to return to each sample field immediately prior to harvest (normally within three days) to clip the wheat heads within the sample plots. These heads were sent to the Kansas Agricultural Statistics Service lab in Topeka for threshing and the yield per acre was computed. Wheat for the quality profile testing was also collected from these sample fields. If a sample was abandoned or lost, an alternate sample was collected from the immediate area. Based on average head weight and quantities needed for laboratory analysis, about 1,200 grams of grain were collected from each sample field.

QUALITY TESTS

The threshed grain was sent to the Department of Grain Science and Industry at Kansas State University for quality analysis.

Moisture and protein contents, test weight, 1,000 kernel weight, kernel size distribution, degree of softening, and falling number were determined on the individual samples.

The individual samples were then composited by districts in order to provide sufficient grain and flour for reliable milling and dough testing. When there were several samples of the same variety from a district, equal weights of that variety were composited. A mixed variety composite was made for each district using equal weights of any remaining varieties. The resulting flours were used for chemical and rheological tests.

DESCRIPTION OF TESTING PROCEDURES

MARKETING TESTS

Wheat grades are based on tests conducted by inspectors who are licensed and supervised by the Federal Grain Inspection Service (FGIS). These tests determine the physical and biological condition of the grain. They include test weight, moisture and protein contents, presence of diseased and damaged kernels, unmillable material, and sanitary condition.

Flour millers perform additional tests to determine specific qualities desired for milling and baking. A major portion of Kansas hard red winter wheat is milled into flour for large wholesale bread bakeries.

The following test descriptions are intended as an aid in interpreting the tables on the following pages. For additional information on hard red winter wheat quality analysis see "Evaluating Bread Wheat" published by the Wheat Quality Council, P.O. Box 966, Pierre, SD 57501-0966.

PROTEIN

The protein test is used to predict the quantity of gluten and not the quality. The protein content of wheat or flour is predicted by determining the percent of nitrogen using the combustion nitrogen analysis (CNA) method, then multiplying by an appropriate conversion factor. Combustion nitrogen analysis involves combusting a sample in pure oxygen, collecting the combustion gases, then analyzing the gases for nitrogen content by measuring the thermal conductivity of the gases.

Wheat protein content is reported on a 12% moisture basis while flour protein content is reported on a 14% moisture basis.

Protein content of commercially milled flour averages about 1% less than the wheat from which it was milled. Flour for pan bread is usually milled from wheats having at least 12% to 13% protein. Hearth breads and hard rolls usually require higher protein content flour.

SINGLE KERNEL CHARACTERIZATION SYSTEM (SKCS)

The SKCS unit directly measures physical characteristics of wheat such as kernel hardness, kernel diameter, and kernel weight. Measurements are made on 300 individual kernels of wheat, and the single kernel average and standard deviation (uniformity) are calculated. Additionally, a classification such as "Hard", "Mixed", or "Soft" is assigned. Single kernel weight value is highly correlated with the One Thousand Kernel Weight value.

TEST WEIGHT PER BUSHEL

This test determines the weight per Winchester bushel of a sample under controlled conditions. Determinations were made using a one quart kettle for 1000 grams, or for small samples, a 1/8 quart kettle and 125 grams of wheat. This method is described in Circular No. 921 issued by the United States Department of Agriculture.

There is a correlation between the test weight and the yield of straight grade flour from a sample. Straight grade flour is a blend of all the flour streams from each grinding operation in the mill. As the test weight increases, the expected yield of flour also increases.

The test weight of wheat decreases as moisture is added. This decrease is the result of:

1) the lower specific gravity of water as compared to wheat
2) the swelling of the kernels as water is absorbed

If the wetted wheat is redried, it doesn't regain the original test weight because the kernel is unable to shrink after swelling and the roughened bran coat prevents close packing of the kernels. Shriveled kernels also show a decreased test weight because of their inability to pack tightly.

A low test weight is a strong indicator of unsound wheat. This test, used along with the 1000 kernel weight and the wheat size tests, provides an estimate of milling extraction (flour yield).

HECTOLITER WEIGHT

To convert test weight in pounds per Winchester bushel (lb/bu) to kilograms per hectoliter (kg/hl), the following formula is used:

$$kg/hl = (1.292 \times lb/bu) + 1.419$$

This is a change for 2001. The formula used in previous years was: kg/hl = lb/bu X 1.287.

1000 KERNEL WEIGHT (TKW)

An electronic seed counter is used to count 40 grams of cleaned whole kernels of wheat. Kernel weight is reported in grams per 1000 kernels on a 12% moisture basis.

The percentage of endosperm in wheat kernels of the same variety is normally greater in larger wheat kernels than in smaller kernels. Plump kernels of wheat weigh more; and therefore, have a higher 1000 kernel weight which suggests good milling extraction. However, this conclusion must be substantiated by the test weight and wheat size tests.

WHEAT KERNEL (SIZE) DISTRIBUTION

Kernel size distribution is determined by sifting 200 grams of wheat over wire mesh screens of two different sizes (7w and 9w) for one minute.

Higher percentages over the 7w represent larger, plumper kernels containing a large percentage of endosperm indicating a higher potential flour yield. Factors such as wetting or scouring will affect the outcome of this test. Wetting will increase the size of the wheat kernels. Although the kernels are larger, the milling extraction will remain the same. On the other hand, scouring will decrease the size of the wheat kernels by removing the dust and smoothing the bran of the kernels. Although the theoretical yield is lower, the milling extraction is unchanged. To eliminate false conclusions, the wheat size test should be used in conjunction with the test weight and 1000 kernel weight tests.

MOISTURE

The measurement of moisture in wheat and flour is important because:

1) wheat cannot be safely stored above 12-13 percent moisture
2) moisture has a bearing on flour yield in milling
3) all analysis must be on a common moisture basis to be compared

Wheat moisture is measured using a Motomco Moisture Meter. The Motomco Moisture Meter works on the principle of capacitance. The capacitance is greater in water than in the rest of the kernel; as a result, the increase in capacitance can be related to the water content. Moisture calibration of the Motomco is checked with the Air Oven Method (AACC Method 44-15A). Moisture content is calculated from the loss in weight which occurs during oven drying at 130° C for one hour.

LABORATORY MILLING

The composited wheat samples were conditioned by adding enough water to bring the moisture content to 15.0% approximately 24 hours prior to milling. Each composited sample was milled on a Brabender Quadrumat Senior laboratory flour mill. Four products were obtained from each milling: break flour, reduction flour, bran, and shorts. Total flour extraction (yield) was expressed as percentage of the total products recovered from the mill.

The percent of ash, or mineral content (AACC Method 08-01), is given with the flour extraction as an additional measure of milling performance. The bran coat normally contains about ten times the amount of ash as the endosperm. As the level of extraction increases, the ash content typically increases indicating that more bran material was ground into flour. Different wheats also have varying amounts of ash content in the endosperm, depending on the variety and the growing conditions. A wheat with good milling characteristics gives a high yield of low ash flour.

WET GLUTEN

Ten grams of ground wheat meal and 5.2 milliliters of 2 percent salt solution are mixed in the Glutomatic test chamber for 20 seconds. The gluten is then washed for 5 minutes and a separation of gluten and soluble starch is obtained. The gluten ball is then divided and placed in a centrifuge for 1 minute to remove excess water. The weight of the centrifuged gluten x 10 = Percent Wet Gluten.

DRY GLUTEN

The gluten from the wet gluten process above is placed between two heated Teflon-coated plates for approximately 4 minutes. The weight of the dry gluten x 10 = Percent Dry Gluten.

FALLING NUMBER (AACC Method 56-81B)

The falling number test is used to detect sprout damage in wheat. Wet weather during harvest causes sprouting and the release of starch-liquefying enzymes. These enzymes are very active at high temperatures and may cause the baked product to be gummy inside or the flour in gravies and soups to break down.

The falling number test is relatively simple. The falling number value is the number of seconds from the time of immersion of the test tube in boiling water until the stirrer-viscometer has fallen a prescribed distance through a flour paste. As the amount of sprouted wheat increases, the falling number decreases.

There is an optimum falling number value for each flour use.

FARINOGRAPH AND MIXOGRAPH

The mixograph and farinograph measure and record the resistance to mixing of a flour and water dough. The recording, or curve, rises to a "peak" as the flour proteins are developed into a three dimensional structure (gluten) and then falls as the gluten is broken down by continued mixing.

Time required for a mixograph or farinograph curve to reach the "peak" is an estimate of the amount of mixing required to properly develop the dough for bread baking. The rate at which the curve falls and narrows after the peak, and stability of curve height on either side of the peak are indicators of tolerance to over-mixing. Curves made by the two instruments are not directly comparable.

The water absorption values obtained with the farinograph and mixograph provide estimates of water required for baking. Absorption usually increases as protein content increases.

Large mechanized bakeries require flour with high water absorption, medium-long mixing requirement, and adequate mixing tolerance.

Flours with low mixing requirement usually lack mixing tolerance. Flours with excessive mixing requirement have good tolerance but increase bakery energy costs, disrupt production schedules, and may cause machining problems which results in inferior loaves which cannot be sold.

The following information is derived from the mixograph test (AACC Method 54-40A):

Absorption: The percentage of water required to produce an optimum mixogram. Too much water produces a curve that dips during the development stage; too little water causes the curve to be very wide.

Peak (Mixing) Time: The time required for the dough to reach full development. This time can be determined from the intersection of lines drawn through the center of both sides of the curve. The time (minutes) from the start of the curve to the intersection of the two lines is the optimum mixing time.

Mixing Tolerance: There is no standard measure of mixograph mixing tolerance. A dough with poor mixing tolerance will produce a curve with a very sharp peak followed by an immediate decrease in width and height of the curve. A dough with good mixing tolerance will produce a curve with a gradual peak that maintains its width and height after the peak.

Information derived from the farinograph test (AACC Method 54-21,A) include:

Absorption: This is the percentage of water required to center the curve on the 500 Brabender Unit (B.U.) line at the maximum consistency of the dough (Peak). Absorption is reported on a 14% moisture basis.

Peak (Mixing) Time: This is the time required for the curve to reach its full development or maximum consistency. Long peak times are usually associated with strong wheats.

Stability (Tolerance): This is the time that the curve remains above the 500 B.U. line and is measured from the arrival time to the departure time. The longer the stability, the greater the abuse and the longer the fermentation a flour is able to withstand.

Mixing Tolerance Index (MTI) This is the difference in Brabender units between the top of the curve at peak and the top of the curve measured 5 minutes after peak. Flours with good tolerance to mixing have low MTI and the higher the MTI value, the weaker the flour.

WHEAT QUALITY PROFILE - 2002 CROP

INDIVIDUAL SAMPLES

Area & Variety	No. of Samples	Protein 12% M.B.	Test Weight		1,000 K.W. 12% M.B.	Wheat Size Test 1/			SKCS Hardness	Falling Number 2/
						Over 7W	Over 9W	Thru 9W		
		Pct.	Lb/Bu	Kg/Hl	Grams	- - - Percent - - -				Seconds
Northwest										
2137	3	15.2	57.0	75.0	27.2	9.9	85.0	5.1	63.1	430
Jagger	4	15.0	57.9	76.2	28.0	15.6	82.1	2.3	66.7	436
Other	18	14.7	58.9	77.5	28.9	20.9	77.1	2.0	66.4	415
All Varieties	25	14.8	58.5	77.0	28.6	18.7	78.9	2.4	66.0	420
Minimum	-	11.5	55.0	72.5	24.9	1.5	49.1	0.4	55.8	295
Maximum	-	17.2	61.5	80.9	31.5	50.1	92.4	10.8	78.4	504
West Central										
2137	4	14.8	56.2	74.0	29.8	18.3	78.9	2.9	66.4	435
Jagger	5	14.6	58.6	77.1	29.4	28.8	69.1	2.1	69.9	441
TAM 107	7	13.9	57.1	75.2	29.9	26.6	71.9	1.5	65.8	485
TAM 110	4	12.7	58.5	77.0	30.8	48.3	50.9	0.8	68.5	440
Jagger/2136	4	14.7	56.7	74.7	31.1	29.3	69.6	1.1	60.9	478
Other	6	15.2	57.8	76.0	28.6	14.2	82.4	3.4	68.3	433
All Varieties	30	14.3	57.5	75.7	29.8	26.6	71.4	2.0	66.8	454
Minimum	-	10.5	53.8	70.9	26.3	3.5	40.9	0.2	53.3	283
Maximum	-	17.2	62.0	81.5	33.4	58.5	90.3	6.7	74.6	586
Southwest										
2137	6	13.7	59.3	78.0	30.5	35.7	62.8	1.5	70.4	468
Ike	8	15.2	58.2	76.6	30.4	32.5	65.9	1.6	64.6	416
Jagger	10	16.2	57.5	75.7	28.5	30.7	67.3	2.0	70.9	438
TAM 110	5	13.3	59.6	78.5	31.3	50.4	48.9	0.6	70.7	475
Other	12	14.4	59.9	78.8	30.7	44.9	53.7	1.3	71.9	433
All Varieties	41	14.8	58.9	77.5	30.1	38.3	60.2	1.5	69.9	441
Minimum	-	10.1	52.5	69.3	24.4	4.3	22.1	0.2	57.2	251
Maximum	-	18.3	63.3	83.2	36.5	77.8	90.7	5.8	81.1	502
North Central										
2137	6	13.2	60.7	79.9	31.0	38.5	60.3	1.2	68.1	484
Dominator	6	14.5	61.0	80.2	28.3	17.2	80.7	2.1	68.4	462
Jagger	10	13.9	60.6	79.7	30.3	44.4	54.3	1.3	69.5	467
2137/jagger	3	13.6	63.1	82.9	33.0	50.1	49.7	0.2	71.7	393
Jagger/2137/karl 92	3	14.2	60.6	79.7	31.8	43.2	56.2	0.7	67.8	473
Other	14	13.8	60.7	79.8	30.8	38.1	60.8	1.1	68.5	454
All Varieties	42	13.9	60.9	80.1	30.6	37.9	60.9	1.2	68.8	460
Minimum	-	10.9	55.7	73.4	26.5	5.3	24.7	0.0	56.0	372
Maximum	-	17.0	64.8	85.2	35.5	75.0	91.2	3.8	78.7	543
Central										
2137	11	12.9	59.1	77.7	30.6	47.8	51.3	0.9	62.1	514
Ike	3	14.5	58.2	76.6	31.1	29.4	70.4	0.3	61.3	430
Jagger	19	13.5	59.3	78.0	30.1	46.8	52.3	0.9	69.7	489
2137/jagger	4	13.7	59.2	77.9	30.6	48.3	51.3	0.5	66.2	511
Other	16	13.1	60.0	78.9	30.3	47.2	52.0	0.8	67.5	503
All Varieties	53	13.3	59.4	78.1	30.3	46.2	52.9	0.8	66.7	497
Minimum	-	10.4	55.5	73.2	26.1	9.3	15.7	0.1	44.1	393
Maximum	-	16.4	63.1	82.9	34.1	84.3	89.9	4.2	77.7	594

WHEAT QUALITY PROFILE - 2002 CROP

INDIVIDUAL SAMPLES

Area & Variety	No. of Samples	Protein 12% M.B.	Test Weight		1,000 K.W. 12% M.B.	Wheat Size Test 1/			SKCS Hardness	Falling Number 2/
						Over 7W	Over 9W	Thru 9W		
		Pct.	Lb/Bu	Kg/Hl	Grams	- - - Percent - - -				Seconds
South Central										
2137	8	12.6	59.8	78.7	31.3	55.7	43.4	0.9	63.4	489
2174	5	13.2	58.5	77.0	29.8	52.5	46.6	0.9	64.1	506
Jagger	42	13.9	58.5	76.9	29.7	50.6	48.5	0.9	66.9	513
2137/jagger	6	13.4	58.2	76.6	29.8	58.5	40.7	0.7	65.9	518
Jagger (Cheaty)	3	13.3	55.8	73.5	29.0	53.0	45.1	1.9	65.3	484
Jagger/colorado	3	13.1	60.4	79.5	33.8	76.2	23.4	0.4	59.4	536
Other	16	13.7	58.2	76.6	30.0	55.3	43.6	1.1	61.4	541
All Varieties	83	13.6	58.5	77.0	30.0	53.7	45.3	0.9	64.9	516
Minimum	-	10.4	52.2	68.8	24.7	14.3	15.3	0.0	50.9	388
Maximum	-	19.7	69.7	91.5	35.4	84.6	84.9	4.3	77.3	980
Northeast										
Other	9	12.0	60.8	79.9	31.8	53.7	45.4	0.9	62.6	467
All Varieties	9	12.0	60.8	79.9	31.8	53.7	45.4	0.9	62.6	467
Minimum	-	10.4	57.7	76.0	27.3	28.2	30.8	0.3	15.9	413
Maximum	-	15.7	64.0	84.1	34.9	69.0	70.8	2.1	75.4	517
East Central										
Jagger	4	11.3	60.9	80.2	31.0	58.0	40.6	1.4	71.7	491
Other	6	12.3	58.6	77.1	28.8	47.7	50.5	1.8	64.7	469
All Varieties	10	11.9	59.5	78.3	29.7	51.8	46.5	1.6	67.5	478
Minimum	-	10.5	55.4	73.0	25.8	28.6	25.0	0.3	52.0	347
Maximum	-	13.4	61.8	81.3	32.8	74.7	66.6	4.8	76.1	588
Southeast										
2137	3	11.6	60.7	79.8	32.8	72.3	27.0	0.7	64.7	471
Jagger	4	11.6	60.3	79.3	31.4	67.3	32.1	0.7	62.3	471
Other	8	11.1	59.4	78.2	30.3	64.3	34.9	0.8	52.4	473
All Varieties	15	11.3	59.9	78.8	31.1	66.7	32.6	0.8	57.5	472
Minimum	-	10.2	56.5	74.4	28.6	48.3	18.7	0.2	17.6	418
Maximum	-	14.6	61.8	81.2	33.4	80.7	50.7	2.0	75.7	558
State										
2137	45	13.1	59.3	78.1	30.7	43.9	54.7	1.4	65.1	482
2174	8	14.1	59.5	78.3	29.3	53.5	45.9	0.6	68.5	484
Akron	3	14.2	57.6	75.9	27.8	11.5	84.0	4.5	67.4	446
Dominator	8	14.3	61.8	81.3	28.6	20.6	77.5	1.9	66.5	480
Ike	11	15.0	58.2	76.6	30.6	31.6	67.1	1.3	63.7	420
Jagger	98	14.0	58.9	77.5	29.7	45.6	53.2	1.2	68.3	487
Karl 92	8	13.3	59.2	78.0	30.4	42.0	56.5	1.6	63.7	473
TAM 107	10	14.1	57.2	75.3	30.0	31.3	67.2	1.5	67.5	482
TAM 110	11	13.4	58.8	77.4	30.6	42.0	57.0	1.1	69.9	449
2137/jagger	19	13.6	59.7	78.5	30.7	48.7	50.7	0.6	67.8	476
Jagger/2137/dominator	4	12.3	62.8	82.6	32.1	52.5	47.0	0.5	71.3	472
Jagger (Cheaty)	5	12.7	58.0	76.3	30.3	58.2	40.5	1.3	66.6	495
Jagger/colorado	3	13.1	60.4	79.5	33.8	76.2	23.4	0.4	59.4	536
Jagger/2136	4	14.7	56.7	74.7	31.1	29.3	69.6	1.1	60.9	478
Jagger (Trashy)	3	14.2	55.6	73.2	29.1	44.6	53.3	2.2	66.2	512
Jagger/2137/Karl 92	3	14.2	60.6	79.7	31.8	43.2	56.2	0.7	67.8	473
Other	65	13.6	59.3	78.0	30.0	42.7	56.0	1.3	63.8	465
All Varieties	308	13.7	59.1	77.8	30.1	43.3	55.4	1.3	66.3	476
Minimum	-	10.1	52.2	68.8	24.4	1.5	15.3	0.0	15.9	251
Maximum	-	19.7	69.7	91.5	36.5	84.6	92.4	10.8	81.1	980

1/ May not add to 100 percent due to rounding. 2/ 14% moisture basis.

WHEAT QUALITY PROFILE - 2002 CROP

COMPOSITED SAMPLES

Area and Variety	Prot. 12% M.B.	Test Weight		1,000 K.W. 12% M.B.	Wheat Size Test 1/			Wheat Data		Milling Data		Flour Data
					Over 7W	Over 9W	Thru 9W	Gluten		Extr-action	Ash 14% M.B.	Flour Protein 2/
								Wet	Dry			
	Pct.	Lb/Bu	Kg/Hl	Grams	- - - - - - - - - - - - - - - - - Percent - - - - - - - - - - - - - - - - -							
Northwest												
2137	15.0	57.4	75.5	27.4	9.7	85.5	4.8	39.3	13.3	64.8	0.47	13.9
Jagger	14.8	58.3	76.7	28.2	13.9	83.6	2.6	37.0	13.7	67.0	0.53	13.5
Blend 3/	14.7	59.5	78.3	28.9	22.6	76.0	1.5	42.0	15.1	67.7	0.49	13.3
All Varieties	14.8	58.4	76.9	28.2	15.4	81.7	3.0	39.4	14.0	66.5	0.49	13.5
West Central												
2137	14.8	56.8	74.8	30.1	17.1	80.4	2.5	37.2	13.6	66.1	0.55	13.1
Jagger	14.7	58.6	77.2	29.0	28.8	69.4	1.8	39.0	14.7	66.8	0.53	13.0
TAM 107	14.0	57.4	75.6	29.9	25.3	73.6	1.2	38.7	13.4	65.1	0.48	12.6
TAM 110	12.3	59.2	77.9	32.6	50.7	49.1	0.3	30.4	12.8	67.3	0.49	10.7
2137/jagger	14.7	57.2	75.3	30.8	27.2	72.2	0.7	37.5	14.5	68.4	0.83	13.4
Blend 3/	14.9	57.2	75.3	29.5	13.3	82.7	4.1	35.5	11.9	64.7	0.55	13.4
All Varieties	14.2	57.7	76.0	30.3	27.0	71.2	1.7	36.4	13.5	66.4	0.57	12.7
Southwest												
2137	13.6	59.6	78.4	30.9	35.3	63.6	1.2	30.6	13.0	66.2	0.49	12.2
Ike	15.5	58.4	76.9	30.7	31.6	66.9	1.6	34.7	12.7	67.5	0.47	13.8
Jagger	15.9	57.4	75.5	30.3	31.7	66.5	1.9	41.1	15.5	66.7	0.57	14.3
TAM 110	13.4	59.5	78.3	32.7	50.7	49.3	0.1	33.0	11.2	68.0	0.45	11.7
Blend 3/	14.4	59.6	78.4	32.3	46.8	52.4	0.9	42.5	15.8	66.7	0.48	12.6
All Varieties	14.5	58.9	77.5	31.4	39.2	59.7	1.1	36.4	13.6	67.0	0.49	12.9
North Central												
2137	13.5	61.1	80.4	31.6	39.7	59.3	1.0	36.0	14.6	67.1	0.45	11.8
Dominator	14.5	61.0	80.2	30.1	16.9	80.9	2.3	35.7	13.8	65.8	0.41	13.1
Jagger	13.9	60.4	79.5	30.7	42.9	55.8	1.4	30.9	13.0	67.0	0.49	12.3
2137/jagger	13.7	62.7	82.4	33.3	46.3	53.4	0.3	33.4	12.7	70.3	0.47	12.2
Blend 3/	14.0	60.8	79.9	32.4	39.6	59.5	0.9	31.6	12.0	67.8	0.46	12.5
All Varieties	13.9	61.1	80.3	31.9	37.8	61.1	1.1	33.0	12.9	67.7	0.45	12.4
Central												
2137	13.0	59.2	77.9	30.9	46.4	52.7	1.0	30.9	10.8	66.9	0.48	11.3
Ike	14.8	58.4	76.9	32.5	28.7	71.0	0.4	36.4	14.1	66.1	0.56	13.0
Jagger	13.3	59.6	78.4	31.0	49.0	50.4	0.7	27.5	10.5	67.8	0.53	11.8
2137/jagger	13.9	59.3	78.0	31.3	46.9	52.4	0.8	31.2	13.0	67.4	0.54	12.1
Blend 3/	13.4	60.1	79.0	30.9	43.9	55.5	0.7	35.4	13.6	67.1	0.49	11.8
All Varieties	13.7	59.3	78.0	31.3	43.0	56.4	0.7	32.3	12.4	67.1	0.52	12.0

WHEAT QUALITY PROFILE - 2002 CROP

COMPOSITED SAMPLES

Area and Variety	Prot. 12% M.B.	Test Weight		1,000 K.W. 12% M.B.	Wheat Size Test 1/			Wheat Data		Milling Data		Flour Data
					Over 7W	Over 9W	Thru 9W	Gluten		Extr-action	Ash 14% M.B.	Flour Protein 2/
								Wet	Dry			
	Pct.	Lb/Bu	Kg/Hl	Grams	Percent							
South Central												
2137	12.8	59.9	78.8	32.0	57.7	41.8	0.5	29.6	11.0	66.4	0.50	11.2
2174	13.2	58.8	77.3	30.9	55.3	44.0	0.8	31.9	11.8	66.6	0.49	11.3
Jagger	14.0	58.1	76.5	30.9	50.6	48.7	0.8	33.1	11.6	67.5	0.53	12.3
2137/jagger	13.5	58.3	76.7	31.2	58.8	40.6	0.7	32.3	11.4	66.6	0.53	11.6
Jagger/colorado	13.0	60.3	79.3	33.9	74.8	25.0	0.3	31.1	11.9	69.9	0.55	11.2
Blend 3/	14.1	58.2	76.6	30.4	51.7	47.5	0.9	33.6	12.1	66.4	0.50	12.2
All Varieties	13.4	58.9	77.5	31.5	58.1	41.3	0.6	31.9	11.6	67.2	0.52	11.7
Northeast												
Blend 3/	12.1	61.0	80.2	32.5	54.5	44.9	0.6	29.4	10.5	66.9	0.46	10.4
All Varieties	12.1	61.0	80.2	32.5	54.5	44.9	0.6	29.4	10.5	66.9	0.46	10.4
East Central												
2137	12.2	57.5	75.6	29.7	52.2	46.3	1.6	30.7	11.6	65.0	0.54	10.7
Jagger	11.3	61.1	80.3	33.1	58.0	40.7	1.4	27.5	10.5	68.1	0.52	9.9
Blend 3/	12.7	59.6	78.5	31.0	44.7	53.9	1.5	27.3	10.1	66.8	0.56	11.2
All Varieties	12.1	59.4	78.2	31.3	51.6	46.9	1.5	28.5	10.7	66.6	0.54	10.6
Southeast												
2137	11.1	60.5	79.6	33.6	72.3	27.4	0.4	23.1	8.5	66.4	0.50	9.3
Jagger	11.5	60.0	78.9	32.5	65.2	34.6	0.3	24.3	8.7	66.1	0.52	9.4
Blend 3/	12.0	59.9	78.8	31.3	64.8	34.5	0.8	28.6	10.5	65.7	0.51	9.7
All Varieties	11.5	60.1	79.1	32.5	67.4	32.1	0.5	25.3	9.2	66.0	0.51	9.5
State												
2137	13.2	59.0	77.6	30.8	41.3	57.1	1.6	32.2	12.1	66.1	0.50	11.7
2174	13.2	58.8	77.3	30.9	55.3	44.0	0.8	31.9	11.8	66.6	0.49	11.3
Dominator	14.5	61.0	80.2	30.1	16.9	80.9	2.3	35.7	13.8	65.8	0.41	13.1
Ike	15.1	58.4	76.9	31.6	30.1	68.9	1.0	35.6	13.4	66.8	0.52	13.4
Jagger	13.7	59.2	77.9	30.7	42.5	56.2	1.3	32.6	12.3	67.1	0.53	12.1
TAM 107	14.0	57.4	75.6	29.9	25.3	73.6	1.2	38.7	13.4	65.1	0.48	12.6
TAM 110	12.9	59.4	78.1	32.7	50.7	49.2	0.2	31.7	12.0	67.6	0.47	11.2
2137/jagger	14.0	59.4	78.1	31.7	44.8	54.6	0.6	33.6	12.9	68.2	0.59	12.3
Jagger/colorado	13.0	60.3	79.3	33.9	74.8	25.0	0.3	31.1	11.9	69.9	0.55	11.2
Blend 3/	13.7	59.8	78.6	31.3	41.9	56.9	1.2	33.6	12.3	66.9	0.49	12.0
All Varieties	13.6	59.3	78.0	31.2	42.1	56.7	1.2	33.2	12.4	66.9	0.51	12.0

1/ May not add to 100 percent due to rounding. 2/ 14% moisture basis. 3/ All other varieties with insufficient grain available for separate tests.

WHEAT QUALITY PROFILE - 2002 CROP
PHYSICAL DOUGH TEST BY COMPOSITED SAMPLES

Area and Variety	Physical Dough Test					
	Mixograph		Farinograph			
	Absorption	Peak Time	Absorption	Peak Time	Stability	Softening
	Percent	Minutes	Percent	- - - - - - - - Minutes - - - - - - - -		Degree
Northwest						
2137	63.5	2.4	59.6	8.0	17	20
Jagger	63.5	3.1	60.2	7.5	17	20
Blend 3/	61.5	3.0	59.3	7.0	17	20
All Varieties	62.8	2.8	59.7	7.5	17	20
West Central						
2137	63.5	3.6	58.4	8.5	17	20
Jagger	61.5	3.5	58.6	8.5	17	20
TAM 107	61.5	3.1	59.6	9.0	18	15
TAM 110	59.5	2.6	60.4	4.5	13	20
2137/jagger	63.5	3.1	59.8	8.0	17	20
Blend 1/	63.5	3.2	58.8	8.5	17	10
All Varieties	62.2	3.2	59.3	7.8	16	18
Southwest						
2137	63.5	3.0	58.2	7.0	18	20
Ike	63.5	2.6	61.1	6.5	11	30
Jagger	65.5	3.0	60.5	7.0	12	40
TAM 110	61.5	2.5	61.1	5.0	18	20
Blend 1/	61.5	2.5	60.1	6.0	17	30
All Varieties	63.1	2.7	60.2	6.3	15	28
North Central						
2137	61.5	3.5	56.7	7.0	18	30
Dominator	63.5	3.8	58.7	12.5	17	10
Jagger	61.5	3.5	58.6	7.0	17	30
2137/jagger	63.5	4.1	58.0	10.5	18	10
Blend 1/	61.5	3.9	57.9	9.8	18	20
All Varieties	62.1	3.8	57.9	9.5	18	20
Central						
2137	59.5	3.5	55.0	9.0	18	30
Ike	63.5	4.2	59.0	15.5	15	10
Jagger	61.5	3.5	57.0	7.5	17	30
2137/jagger	59.5	3.3	56.6	8.0	18	30
Blend 1/	61.5	3.5	55.3	9.0	18	20
All Varieties	61.1	3.6	56.6	9.8	17	24
South Central						
2137	58.5	3.0	55.8	7.0	14	30
2174	59.5	3.0	56.7	7.5	14	30
Jagger	61.5	3.0	57.8	7.0	18	15
2137/jagger	59.5	3.5	58.0	8.0	16	40
Jagger/colorado	61.5	3.9	58.0	8.5	15	30
Blend 1/	61.5	3.5	57.8	9.0	18	20
All Varieties	60.3	3.3	57.4	7.8	16	28
Northeast						
Blend 1/	59.5	3.6	55.1	10.0	19	10
All Varieties	59.5	3.6	55.1	10.0	19	10
East Central						
2137	59.5	2.8	56.2	7.0	11	30
Jagger	59.5	3.5	56.3	2.5	8	35
Blend 1/	59.5	4.0	56.9	7.0	18	15
All Varieties	59.5	3.4	56.5	5.5	13	27
Southeast						
2137	57.5	3.7	56.3	2.0	8	40
Jagger	57.5	3.7	57.3	2.0	11	30
Blend 1/	57.5	3.6	56.0	2.0	14	20
All Varieties	57.5	3.7	56.5	2.0	11	30
State						
2137	60.9	3.2	57.0	6.9	15	28
2174	59.5	3.0	56.7	7.5	14	30
Dominator	63.5	3.8	58.7	12.5	17	10
Ike	63.5	3.4	60.1	11.0	13	20
Jagger	61.5	3.4	58.3	6.1	15	28
TAM 107	61.5	3.1	59.6	9.0	18	15
TAM 110	60.5	2.6	60.8	4.8	15	20
2137/jagger	61.5	3.5	58.1	8.6	17	25
Jagger/colorado	61.5	3.9	58.0	8.5	15	30
Blend 1/	61.0	3.5	57.5	8.0	17	19
All Varieties	61.3	3.3	58.0	7.6	16	23

1/ All other varieties with insufficient grain available for separate tests.

WHEAT QUALITY PROFILE, 2001-2002

RANGES FOR PROTEIN CONTENT - 12% M.B. (MOISTURE BASIS) 1/

Year	Less than 9.0	9.0-9.9	10.0-10.9	11.0-11.9	12.0-12.9	13.0 and Over	State Avg.
	- Percent of Samples -						
2000	0.6	9.6	24.0	21.8	18.3	25.6	12.0
2001	1.3	7.5	14.9	26.3	23.1	26.9	12.1

1/ May not add to 100 percent due to rounding.

RANGES FOR TEST WEIGHT - KILOGRAMS/HECTOLITER 1/

Year	Less than 70.0	70.0-71.9	72.0-73.9	74.0-75.9	76.0-77.9	78.0-79.9	80.0-81.9	82.0 & Over	State Avg.
	- Percent of Samples -								
2000	0.6	1.6	3.5	11.9	19.4	33.5	19.7	9.7	78.6
2001	0.0	1.3	1.0	4.5	13.6	23.1	33.8	22.7	80.0

1/ May not add to 100 percent due to rounding.

RANGES FOR FALLING NUMBER - SECONDS 1/

Year	Less than 180	180-299	300-399	400-419	420 and Over	State Avg.
	- Percent of Samples -					
2000	0.3	1.0	58.0	21.5	19.2	397
2001	0.0	0.6	26.9	23.7	48.7	418

1/ May not add to 100 percent due to rounding.

WHEAT QUALITY PROFILE, 1993-2002

INDIVIDUAL SAMPLES

Year	Number of Samples	Wheat Analysis							SKCS Hardness 2/
		Protein % 12% M.B.	Test Weight		1,000 Kernels	Wheat Size 1/			
					12% M.B.	Over 7W	Over 9W	Thru 9W	
			Lb./Bu.	Kg./Hl.	Grams	- - - - - Percent - - - - -			
1993	273	11.3	60.6	78.0	29.0	50.3	48.3	1.5	68.6
1994	274	12.3	61.3	78.9	27.4	45.1	53.0	1.9	69.3
1995	271	12.4	58.7	75.6	25.3	38.0	58.7	3.3	57.0
1996	274	13.8	60.2	77.5	28.3	50.4	48.2	1.5	62.9
1997	301	11.9	60.4	79.5 3/	30.3	60.2	38.8	1.0	44.5
1998	307	11.4	61.1	80.4	29.1	54.9	43.7	1.4	67.8
1999	307	11.4	59.5	78.3	29.9	63.1	36.2	0.9	62.2
2000	312	12.0	59.7	78.6	28.0	46.1	51.3	2.6	72.8
2001	305	12.1	60.8	80.0	29.1	49.0	49.2	1.8	74.1
2002	308	13.7	59.1	77.8	30.1	43.3	55.4	1.3	66.3

1/ May not add to 100 percent due to rounding. 2/ NIR hardness started in 1991. It changed to SKCS hardness in 1998. 3/ New conversion procedures for 1997 as noted on page 23.

WHEAT QUALITY PROFILE, 1993-2002

COMPOSITED SAMPLES

Year	Wet Gluten 14% M.B. 1/	Dry Gluten 14% M.B. 1/	Falling Number 2/	Physical Dough Test				
				Farinograph				
				Absorption	Peak Time	Stability	Valorimeter	Softening
	- - - - - Percent - - - - -		Seconds	Percent	- - - - - - - - - Minutes - - - - - - - - -			Degree
1993	25.1	9.8	NA	54.9	5.6	16	63	NA
1994	28.7	10.8	NA	56.1	6.3	17	68	NA
1995	30.4	11.1	NA	56.6	5.7	13	64	NA
1996	32.4	12.6	NA	57.8	6.1	11	67	NA
1997	24.5	9.5	NA	55.2	4.2	13	62	NA
1998	25.3	10.6	NA	57.7	4.0	12	59	NA
1999	28.5	10.3	363	54.9	3.4	16	NA	NA
2000	27.2	11.1	412	57.7	4.9	12	NA	NA
2001	27.5	10.1	NA	57.3	5.3	10	NA	NA
2002	33.2	12.4	NA	58.0	7.6	16	NA	23

1/. Gluten is for flour in 1988-1996. Beginning in 1997, Gluten is for wheat. 2/ 14% moisture basis.