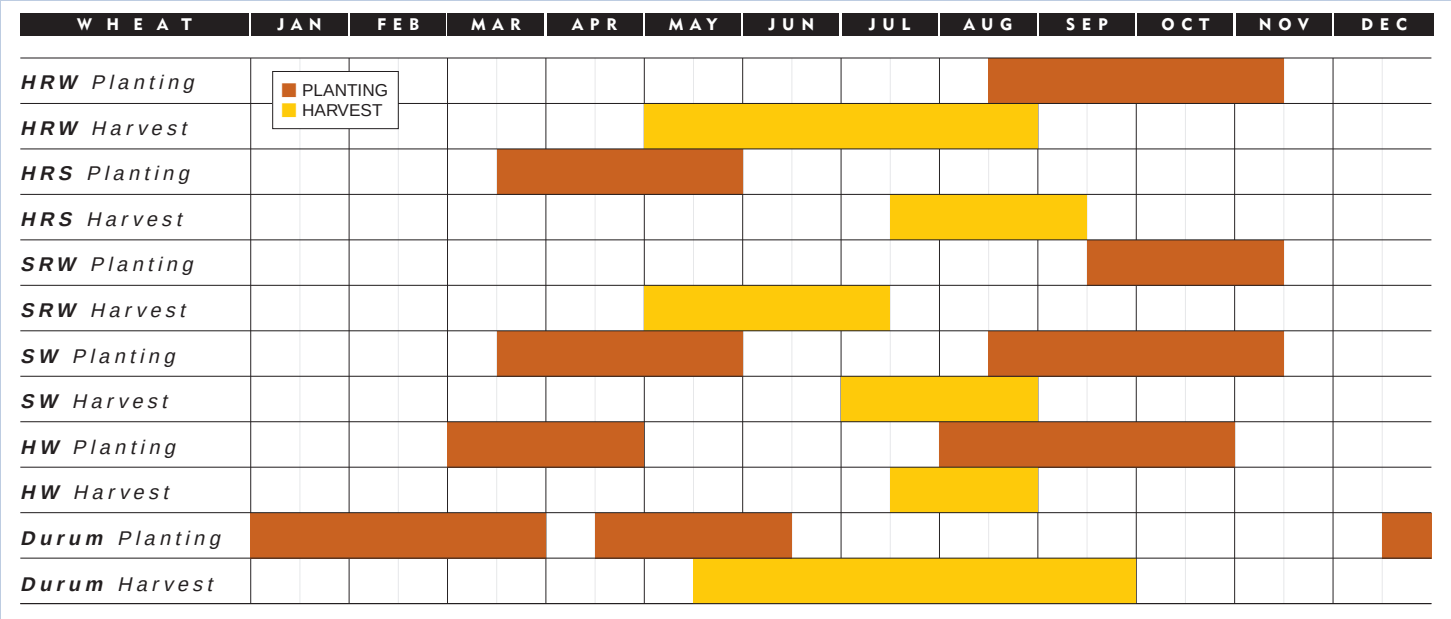
U.S. WHEAT ASSOCIATES

2005

CROP QUALITY REPORT

Planting and harvest dates



U.S. Wheat Associates is funded by the U.S. Department of Agriculture, Foreign Agricultural Service, and by wheat producers through the following member organizations:

Arizona Grain Research and Promotion Council

Arkansas Wheat Promotion Board

California Wheat Commission

Colorado Wheat Administrative Committee

Idaho Wheat Commission

Kansas Wheat Commission

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Minnesota Wheat Research and Promotion Council

Montana Wheat and Barley Committee

Nebraska Wheat Board

North Dakota Wheat Commission

Oklahoma Wheat Commission

Oregon Wheat Commission

South Dakota Wheat Commission

Texas Wheat Producers Board

Virginia Small Grains Board

Washington Wheat Commission

Wyoming Wheat Marketing Commission

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SUMMARY OF CLASSES

	Hard Red Winter		Hard Red Spring		Soft Red Winter		Soft White		Durum*	
	2005	5-Year Avg	2005	5-Year Avg	2005	5-Year Avg	2005	5-Year Avg	2005	5-Year Avg
Test Weight (lb/bu)	59.9	59.6	60.1	60.3	60.3	58.7	60.1	59.8	60.8	60.0
(kg/hl)	78.8	78.3	79.1	79.4	79.3	77.3	79.1	78.8	79.2	78.2
Grade	2 HRW	2 HRW	1 NS	1 DNS	1 SRW	2 SRW	1 SW	2 SW	1 HAD	2 HAD
Dockage (%)	0.8	0.7	1.2	1.1	0.9	0.7	0.6	0.7	1.5	1.3
Wheat Moisture (%)	11.1	11.5	12.3	11.9	13.1	13.1	8.8	9.2	12.5	11.5
Wheat Protein (%) **	12.2	12.4	14.5	14.4	9.5	10.3	9.9	10.3	13.4	14.1
Wheat Ash (%) **	1.55	1.55	1.72	1.64	1.53	1.57	1.39	1.39	1.67	1.62
1000 Kernel Weight (g)	28.7	28.3	29.8	29.9	33.8	32.3	33.3	34.1	35.5	36.2
Wheat Falling Number (sec)	401	403	410	368	360	347	350	359	378	322
Flour/Semolina Extraction (%)	69.1	69.6	70.2	68.9	70.1	69.7	67.3	67.4	66.4	63.5
Flour/Semolina Ash (%) **	0.47	0.49	0.53	0.44	0.43	0.44	0.40	0.37	0.71	0.69
Wet Gluten (%)	29.9	29.5	35.3	35.6	20.9	22.6	21.6	23.0	35.0	36.6
Farinograph:										
Peak Time (min)	6.0	6.1	6.4	11.9	1.3	1.7	1.9	1.6	n/a	n/a
Stability (min)	10.5	11.2	9.8	20.5	2.9	3.1	4.8	3.2	n/a	n/a
Absorption (%)	58.5	59.4	64.6	65.0	52.3	52.6	52.7	50.8	n/a	n/a
Alveograph W (10^{-4} joules)	287	304	361	403	98	89	125	115	69	83
Loaf Volume (cc)	840	846	1036	1062	707	743	n/a	n/a	n/a	n/a
Production (mmt)	25.2	22.6	12.7	12.6	8.4	10.1	7.3	6.9	2.7	2.4

* Great Plains durum only, extraction and ash values are for semolina.

** Protein - 12% moisture basis; ash - 14% moisture basis

Hard Red Winter

Midwestern Harvest Survey

Weather and Harvest: Most of the US hard red winter wheat (HRW) is grown in the Great Plains (Colorado, Kansas, Montana, Nebraska, Oklahoma, South Dakota and Texas). Geographical locations, varieties, management practices, and growing and harvesting conditions all have a large influence on harvested wheat quality.

Favorable conditions during the fall and winter in most regions led to strong expectations for the winter wheat crop as it broke dormancy this year. Those expectations were lessened as drier and warmer weather affected spring growth and filling periods that are critical for finishing the crop. Scattered showers in June slowed harvest completion through north Texas and Oklahoma, but conditions improved as harvest proceeded into the northern states. In general, yields in Texas and Oklahoma were lower than last year, lowering overall production, but production was up throughout Kansas, Colorado, Nebraska and South Dakota.

Survey Methods: A total of 1030 samples were collected in 30 crop production areas during harvest. Quality information is based on testing by CII Laboratory Services, Kansas City, Missouri. Protein, test weight, moisture, thousand-kernel weight, wheat ash, falling number and grade were determined on individual samples. For the remaining analyses, four composites were made for each area: an overall composite and three protein ranges, below 11.5%, 11.5% - 12.5%, and above 12.5%. Milling was carried out using a Buhler experimental mill (Model MLU-202). For the calculation of quality averages, data was weighted based on a five-year average for the 30 areas. The resulting averages are presented as composite (overall) averages and the projected averages that can be expected at Pacific Northwest and Gulf of Mexico ports. Testing conforms to the American Association of Cereal Chemists, International, Approved Methods (2005).

Wheat and Grade Data: Test weight is higher than last year by 1.1 lb/bu (1.4 kg/hl) and the five-year average by 0.3 lb/bu (0.5 kg/hl), with average kernel size and weight both higher than last year. Laboratory mill flour yields are similar to last year, but below the five-year average.

The overall wheat and flour protein levels were slightly lower than last year and the five-year average. Wet Gluten values were above the five-year average but lower than the previous year. The farinograph absorption was slightly lower but loaf volume remained equivalent to both last year and the five-year average. A sound 2005 crop was indicated by falling number values that were above last year's results.

Milling and Flour Use: Commercial flour millers and bakers indicate a smooth transition from old crop to new crop this year. Protein levels were down in areas of Texas and Oklahoma but have been supported by good protein in Colorado, Kansas, and Nebraska. Millers have been pleased with higher test weights, larger kernels, and lower moisture levels that are available with the 2005 crop. Commercial baking quality is very similar to last year's crop performance with equal or slightly better loaf volumes and absorption levels which have resulted in very few changes or adjustments necessary by the baking industry.

Summary: Overall, protein levels within the 2005 crop provide an optimum range readily available to supply bakers of traditional and non-traditional products. Milling and baking performance has remained very similar to the five-year averages again, providing a consistent opportunity for buyers of HRW. Higher protein areas of HRW have seen a strong demand to fit into typical spring wheat mixes. Wheat and flour buyers alike should always set meaningful specifications concerning important quality requirements before contracting for purchase.

California Harvest Survey

California's wheat growing regions are defined by climate, value of alternative crops, and the distinct differences in variety selection. This system has led to an implied "identity preserved" program, and most California wheat is traded on a variety-known basis.

The cooler weather during this year's growing season resulted in higher flour water absorption, more mellow gluten characteristics and better bread volume. Differences in average farinograph properties from 2004 to 2005 can be attributed to environmental and varietal differences.

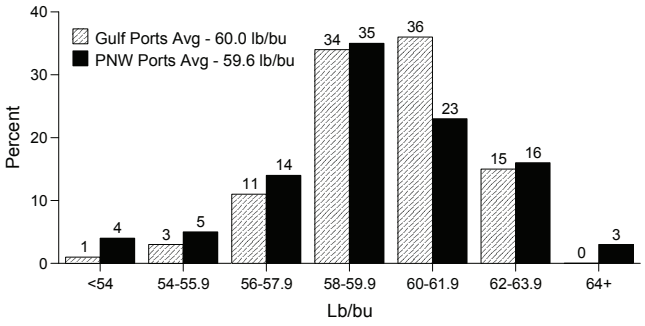
California wheat is predominately exported through the Port of Stockton, located on an inland waterway in Northern California. This grain handling facility is owned and operated by a California company. Wheat that goes into this facility is locally grown and trucked in, often directly from the field that it was harvested from.

California red wheats are harvested in the months of June and July. With the strong demand for new crop wheat in the domestic market place, export buyers are encouraged to express their interest in purchasing California wheat in early spring.

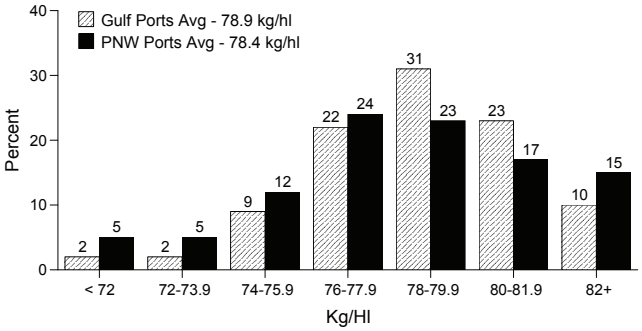
Export Cargo Survey

The export cargo data show the results of analysis of 488 individual sublot samples for marketing years 2005 and 2004. Of the 114 2005-crop samples collected in August and September, 90 are from Gulf ports and 24 from PNW ports. Of the 374 2004-crop samples, 295 were drawn at Gulf ports and 79 at PNW ports. Representative samples were selected from official Federal Grain Inspection Service samples. Grade data are the actual official grades on the individual sublots. Milling and baking analyses were conducted by CII Laboratory Services.

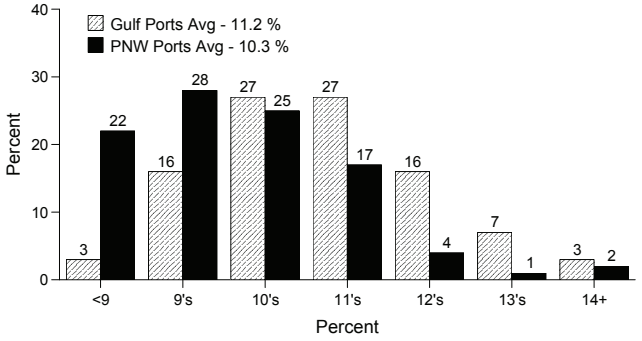
Test Weight



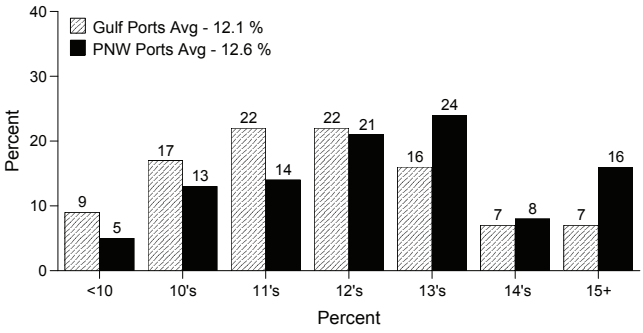
Hectoliter Weight



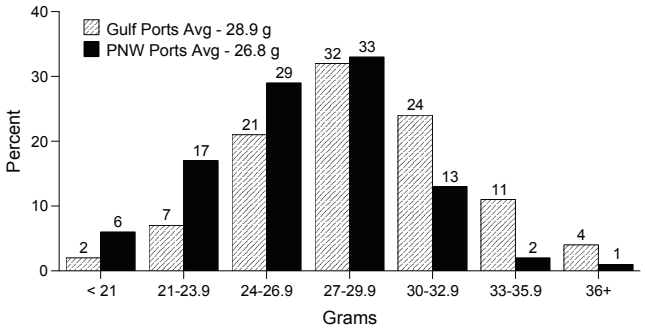
Wheat Moisture



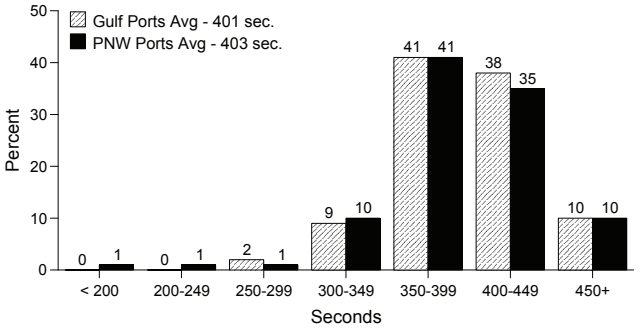
Protein (12% mb)



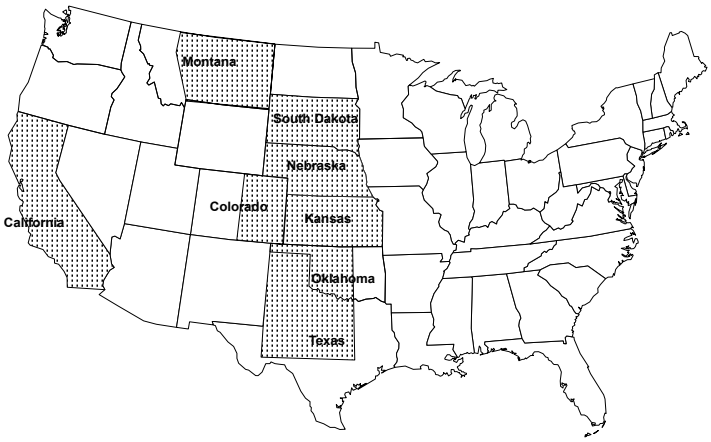
1000 Kernel Weight

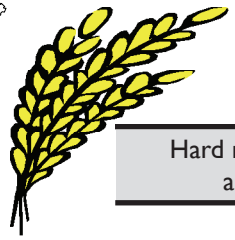


Falling Number



Note: Charts include Great Plains HRW Only.





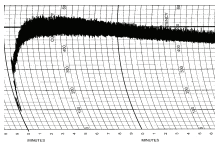
Hard red winter survey results are from eight states.

Midwestern

Composite Average Farinograms and Alveograms

Farinograms:

High Protein:



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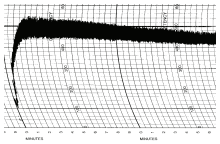

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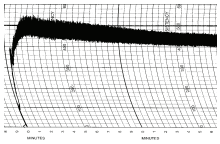
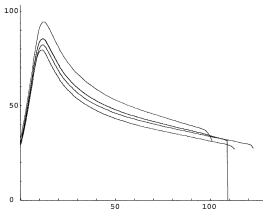
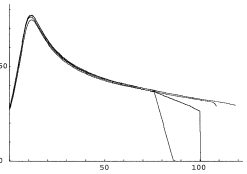


Alveograms:

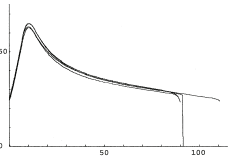
High Protein:



Medium Protein:



Low Protein:



Hard Red Winter	Composite Average					
	2005 By Protein*				2004	5-Year
	Low	Med	High	Overall	Overall	Avg
Wheat Grade Data:						
Test Weight (lb/bu)	60.6	59.9	59.3	59.9	58.8	59.6
(kg/hl)	79.7	78.9	78.0	78.8	77.4	78.3
Damaged Kernels (%)	0.1	0.2	0.3	0.2	1.0	0.4
Foreign Material (%)	0.1	0.1	0.1	0.1	0.1	0.1
Shrunken & Broken (%)	1.1	1.2	1.2	1.2	1.2	1.3
Total Defects (%)	1.3	1.4	1.6	1.4	2.2	1.8
Grade	1 HRW	2 HRW	2 HRW	2 HRW	2 HRW	2 HRW
Wheat Non-Grade Data:						
Dockage (%)	0.7	0.8	0.7	0.8	0.7	0.7
Moisture (%)	11.5	11.0	10.9	11.1	11.6	11.5
Protein (%) 12%/0% moisture basis	10.4/11.8	12.0/13.6	14.0/15.9	12.2/13.8	12.7/14.4	12.4/14.1
Ash (%) 14%/0% moisture basis	1.50/1.74	1.54/1.79	1.62/1.88	1.55/1.81	1.56/1.81	1.55/1.81
1000 Kernel Weight (g)	30.0	28.6	27.5	28.7	27.8	28.3
Kernel Size (%) lg/md/sm	69/30/01	57/41/02	50/48/02	55/43/02	57/42/01	52/46/02
Single Kernel: Hardness	65.5	67.5	68.2	67.2	64.5	73.6
Weight (mg)	31.6	30.0	29.6	30.0	29.0	29.0
Diameter (mm)	2.38	2.29	2.27	2.30	2.24	2.25
Sedimentation (cc)	28.2	35.6	53.4	40.5	46.2	42.2
Falling Number (sec)	391	408	406	401	382	403
Flour Data:						
Extraction Rate (%)	69.5	68.9	68.8	69.1	69.1	69.6
Color: L*	92.3	92.3	92.0	92.2	92.4	92.3
a*	-3.2	-3.2	-3.2	-3.2	-3.2	-3.3
b*	9.1	9.2	9.4	9.3	8.7	9.3
Protein (%) 14%/0% moisture basis	9.4/10.9	10.5/12.3	12.0/13.9	10.9/12.7	11.4/13.3	11.1/12.9
Ash (%) 14%/0% moisture basis	0.47/0.55	0.48/0.56	0.49/0.56	0.47/0.55	0.48/0.56	0.49/0.57
Wet Gluten (%)	24.6	28.6	33.8	29.9	31.2	29.5
Gluten Index	98.3	96.2	95.7	96.5	91.6	
Falling Number (sec)	398	409	438	412	379	419
Amylograph Viscosity 65 g (BU)	645	690	694	667	473	623
Starch Damage (%)	7.2	7.9	7.6	7.7	7.4	8.4
Dough Properties:						
Farinograph:						
Peak Time (min)	4.6	5.6	6.5	6.0	6.6	6.1
Stability (min)	8.5	10.2	11.8	10.5	12.4	11.2
Absorption (%)	56.7	57.9	60.0	58.5	59.2	59.4
Alveograph: P (mm)	76	83	86	84	87	95
L (mm)	93	100	114	102	112	95
W (10^{-4} joules)	236	281	321	287	320	304
Extensigraph: Resistance (BU)						
(45/135 min) Extension (cm)						
Area (sq cm)						
Baking Evaluation:						
Crumb Grain	6.0	6.1	6.6	6.5	7.0	6.9
Crumb Texture	6.2	6.5	7.1	6.8	7.4	7.4
Loaf Volume (cc)	785	846	902	840	844	846
% of Area Production:	36%	26%	38%	100%		

* Low: Less than 11.5%; Med: 11.5 - 12.5%; High: 12.5% or greater

Harvest Data

Gulf Exportable Average						PNW Exportable Average					
2005 By Protein*				2004	5-Year	2005 By Protein*				2004	5-Year
Low	Med	High	Overall	Overall	Avg	Low	Med	High	Overall	Overall	Avg
60.5	60.0	59.4	60.0	58.7	59.4	60.9	59.4	58.9	59.6	59.5	59.8
79.6	79.0	78.1	78.9	77.3	78.2	80.2	78.2	77.5	78.4	78.3	78.6
0.1	0.2	0.3	0.2	1.0	0.4	0.1	0.1	0.2	0.1	0.6	0.4
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1.1	1.1	1.2	1.1	1.2	1.3	1.3	1.7	1.3	1.4	1.3	1.4
1.3	1.4	1.6	1.4	2.3	1.7	1.5	2.0	1.6	1.6	2.0	1.8
1 HRW	1 HRW	2 HRW	2 HRW	2 HRW	2 HRW	1 HRW	2 HRW	2 HRW	2 HRW	2 HRW	2 HRW
0.7	0.8	0.7	0.7	0.7	0.7	0.9	0.9	0.8	0.9	0.9	0.8
11.6	11.1	11.0	11.2	11.6	11.7	10.4	10.1	10.3	10.3	11.1	11.0
10.4/11.8	12.0/13.6	13.9/15.8	12.1/13.8	12.7/14.4	12.3/14.0	10.5/11.9	12.1/13.7	14.2/16.2	12.6/14.3	12.8/14.5	12.8/14.5
1.49/1.74	1.54/1.79	1.61/1.87	1.55/1.80	1.57/1.83	1.56/1.82	1.55/1.80	1.57/1.83	1.65/1.92	1.60/1.86	1.52/1.77	1.53/1.77
30.1	29.0	27.7	28.9	27.8	28.2	28.5	25.9	26.2	26.8	28.3	28.2
70/29/01	59/39/02	52/46/02	56/42/02	57/42/01	53/45/02	59/39/02	46/52/02	38/59/03	46/52/02	55/44/01	48/50/02
65.2	67.0	68.1	66.9	63.9	73.8	68.9	72.1	69.5	70.4	70.2	73.4
31.8	30.3	29.9	30.1	29.0	28.9	29.8	27.6	27.1	29.0	29.1	29.0
2.40	2.31	2.28	2.30	2.25	2.24	2.27	2.15	2.13	2.23	2.19	2.20
28.1	35.6	54.0	40.2	45.6	41.8	29.5	36.3	50.3	42.2	50.5	44.2
390	408	407	401	383	401	400	413	400	403	368	409
69.4	68.9	68.9	69.0	69.1	69.5	70.4	69.3	68.6	69.8	69.1	70.0
92.2	92.3	91.9	92.1	92.4	92.1	92.7	92.7	92.6	92.6	92.5	92.5
-3.2	-3.1	-3.1	-3.1	-3.2	-3.3	-3.3	-3.3	-3.4	-3.3	-3.2	-3.3
9.1	9.1	9.3	9.2	8.7	9.3	9.3	9.6	10.0	9.8	8.9	9.3
9.4/10.9	10.5/12.2	11.9/13.9	10.8/12.6	11.4/13.3	11.0/12.8	9.6/11.1	10.6/12.4	12.3/14.3	11.5/13.4	11.5/13.4	11.4/13.2
0.47/0.55	0.48/0.55	0.48/0.56	0.47/0.55	0.48/0.56	0.49/0.57	0.47/0.55	0.49/0.57	0.49/0.57	0.49/0.57	0.45/0.52	0.47/0.55
24.5	28.4	33.6	29.5	31.0	29.3	24.9	29.8	34.6	32.7	32.5	30.4
98.3	96.8	96.1	96.8	92.0		97.7	91.5	93.2	94.7	88.6	
396	406	433	410	377	414	415	431	464	428	392	439
645	695	694	664	478	624	646	657	689	686	430	621
7.2	7.9	7.6	7.7	7.4	8.5	7.7	7.7	7.6	7.4	7.8	8.1
4.5	5.6	6.5	6.0	6.6	6.1	5.5	5.7	6.7	6.3	6.5	6.3
8.4	10.4	11.7	10.5	12.3	11.2	8.7	9.3	12.5	11.0	12.9	11.6
56.7	57.9	60.0	58.3	58.9	59.3	57.1	58.0	60.0	59.3	60.7	59.8
75	83	87	84	86	96	81	87	81	83	96	95
94	100	113	102	113	94	88	96	117	105	106	96
236	282	324	288	318	304	241	276	303	281	330	305
510/600	545/635	505/575	500/630	575/625	559/590	515/625	540/640	490/555	475/560	590/690	561/597
15.7/17.5	17.7/14.9	19.3/19.9	16.8/18.0	16.9/16.0	18.1/16.5	16.8/15.3	18.0/16.4	20.5/20.1	18.9/18.2	17.7/16.5	17.9/15.8
120/127	128/119	128/148	111/151	125/125	129/127	112/129	128/136	129/141	117/132	133/150	127/125
6.0	6.0	6.5	6.5	7.0	6.9	6.0	6.5	7.2	6.7	6.9	7.0
6.2	6.5	7.0	6.8	7.4	7.4	6.5	6.5	7.5	7.0	7.2	7.2
786	846	907	840	849	845	777	845	877	842	810	841
32%	23%	32%	88%			3%	3%	6%	12%		

California and Export Data

Hard Red Winter	California Harvest Data				Export Cargo Data			
	Medium Protein Average		High Protein Average		Gulf		PNW	
	2005	2004	2005	2004	2005	2004	2005	2004
Wheat Grade Data:								
Test Weight (lb/bu)	60.1	62.1	60.9	62.2	61.2	60.6	62.2	62.0
(kg/hl)	79.1	81.7	80.1	81.8	80.5	79.7	81.8	81.5
Damaged Kernels (%)	*	0.0	*	0.0	1.0	1.4	0.1	0.2
Foreign Material (%)	*	0.0	*	0.0	0.2	0.2	0.1	0.1
Shrunken & Broken (%)	*	0.5	*	0.6	1.4	1.6	1.5	1.2
Total Defects (%)	*	0.5	*	0.6	2.6	3.2	1.7	1.6
Grade	*	1 HRW	*	1 HRW	1 HRW	2 HRW	1 HRW	1 HRW
Wheat Non-Grade Data:								
Dockage (%)	*	0.6	*	0.8	0.6	0.7	0.3	0.3
Moisture (%)	9.8	9.4	9.2	9.4	11.2	11.8	10.1	11.1
Protein (%) 12%/0% moisture basis	11.7/13.3	11.8/13.3	13.4/15.3	13.0/14.7	12.1/13.7	12.3/13.9	12.2/13.8	12.2/13.9
Ash (%) 14%/0% moisture basis	1.46/1.70	1.38/1.60	1.48/1.72	1.49/1.73	1.53/1.78	1.53/1.78	1.43/1.66	1.46/1.7
1000 Kernel Weight (g)	41.7	38.2	41.5	38.8	27.4	26.1	27.9	28.8
Kernel Size (%) lg/md/sm					62/37/1	57/41/2	58/40/2	64/35/1
Single Kernel: Hardness					*	72.9	*	71.5
Weight (mg)					*	28.6	*	31.6
Diameter (mm)					*	2.32	*	2.42
Sedimentation (cc)					32.6	30.8	38.5	37.7
Falling Number (sec)					406	383	400	400
Flour Data:								
Extraction Rate (%)	66.8	68.6	67.8	69.8	70.5	70.3	70.4	71.2
Color: L*					92.6	92.6	92.9	92.5
a*					-3.0	-3.2	-3.2	-3.3
b*					8.9	8.4	9.1	8.5
Protein (%) 14%/0% moisture basis	10.4/12.0	10.3/12.0	12.1/14.0	11.6/13.5	10.7/12.4	10.9/12.7	11.0/12.8	11.0/12.8
Ash (%) 14%/0% moisture basis	0.44/0.51	0.42/0.49	0.44/0.51	0.40/0.47	0.47/0.54	0.47/0.55	0.45/0.52	0.46/0.53
Wet Gluten (%)	26.8	28.9	31.5	32.4	28.7	29.2	30.1	30.1
Gluten Index					96.4	93.3	93.6	89.9
Falling Number (sec)	372	325	385	337	443	422	432	423
Amylograph Viscosity 65 g (BU)					584	441	565	468
Starch Damage (%)								
Dough Properties:								
Farinograph:								
Peak Time (min)	8.0	10.4	9.5	10.3	6.5	6.9	6.6	6.7
Stability (min)	13.7	25.8	13.1	17.6	11.9	13.4	11.8	11.4
Absorption (%)	62.8	61.8	64.7	60.8	58.2	59.4	59.3	61.5
Alveograph: P (mm)					88	107	89	115
L (mm)					97	86	97	83
W (10-4 joules)					291	326	298	336
Extensigraph: Resistance (BU)								
(45/135 min) Extension (cm)								
Area (sq cm)								
Baking Evaluation:								
Crumb Grain					6.3	6.7	6.5	6.5
Crumb Texture					6.6	6.9	6.8	7.1
Loaf Volume (cc)	865	833	933	875	844	806	820	806
Number of Samples					90	295	24	79

* Data not yet available.

Hard Red Winter Production by Crop Year

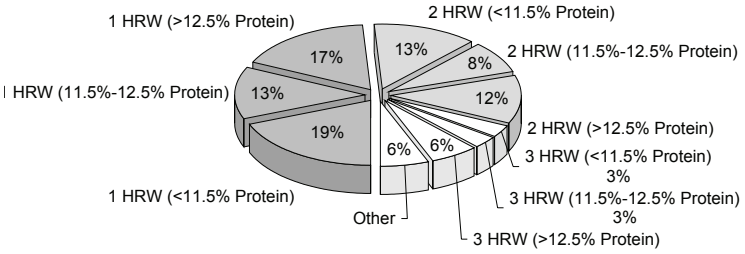
for the major HRW growing region
(million metric tons)

	2005	2004	2003	2002	2001
Kansas	9.93	8.13	12.93	7.29	8.84
Oklahoma	3.41	4.39	4.83	2.79	3.29
Texas	2.43	2.72	2.42	1.96	2.72
Colorado	1.32	1.16	2.10	0.99	1.80
Nebraska	1.83	1.63	2.28	1.37	1.61
Montana	2.46	1.76	1.78	0.58	0.51
South Dakota	1.72	1.53	1.67	0.55	0.32
California	0.50	0.67	0.65	0.59	0.69
Eight-State Total	**23.61**	**21.99**	**28.66**	**16.11**	**19.77**
Total HRW Production	**25.16**	**23.30**	**29.15**	**16.88**	**20.87**

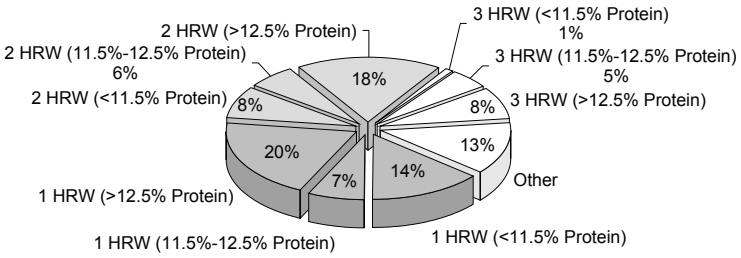
Based on USDA crop estimates of September 30, 2005.

Protein Distribution

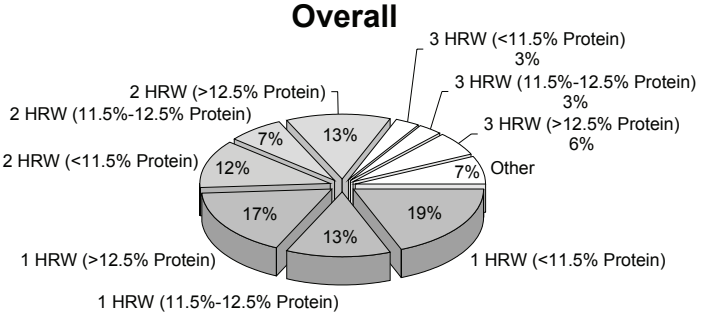
Gulf Exportable



PNW Exportable



Overall



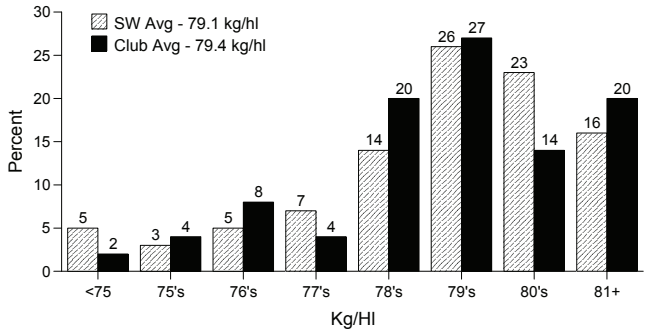
Pacific Northwest Soft White

Harvest Survey

Weather and Harvest: The Pacific Northwest (PNW) had favorable conditions at planting. Most growers experienced dry conditions during the winter, but timely rains in dryland farming areas in Idaho, Oregon, and Washington contributed to a crop with good yield. Hot and dry conditions prevailed during most of the wheat harvest in the PNW.

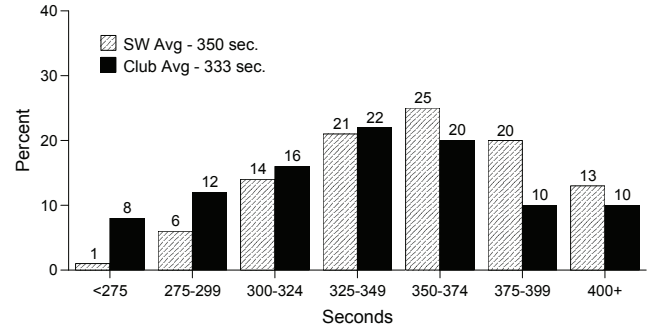
Wheat and Grade Data: The average 2005 test weights of 60.1 lb/bu (79.1 kg/hl) for soft white (SW) and 60.4 lb/bu (79.4 kg/hl) for white club (WC) were slightly above last year and the five-year averages. SW damaged kernels averaged 0.0%, down from 0.5% last year. SW dockage decreased slightly to 0.6%, while WC dockage increased slightly to 0.9% from last year and the five-year averages. Wheat moisture contents of 8.8% for SW and 8.2% for WC were about 0.5 percentage points lower than last year and the five-year averages.

Hectoliter Weight



Protein contents of 9.9% for SW and 9.4% for WC were lower than last year and the five-year averages. Wheat ash was slightly higher than last year and the same as the five-year average for SW, and higher than last year and the five-year averages for WC. Both SW and WC thousand kernel weight and kernel diameter values were slightly less than last year and the five-year averages. Falling number values were 350 seconds for SW and 333 seconds for WC, both of which were slightly lower than last year and the five-year averages.

Falling Number



Flour, Dough and Bake Data: The 2005 Buhler Laboratory Mill flour extractions were slightly less than last year and the five-year average for SW and about one percentage point lower than last year and the five-year average for WC. Flour ash contents for both SW and WC were slightly higher than last year and the five-year averages despite having lower flour extractions. Flour protein contents were 8.2% and 7.6% for SW and WC, respectively. Falling number values indicated sound flour samples for SW and WC, but SW amylograph peak viscosity was lower than last year and the five-year average at 462 BU. Starch damage values for SW and WC were higher than last year and the five-year averages. Although SRC data indicated that SW and WC had lower glutenin contents than last year, farinograph peak and stability times showed that SW and WC had stronger gluten properties than last year and the five-year averages. Alveograph L values, which normally show longer times with higher protein content, displayed significantly longer than last year and five-year averages for both for SW and WC. Extensigraph extensibility indicated a similar trend. Sponge cake volumes for SW and WC were more than 100cc lower than last year and about 50cc lower than the five-year averages at 1148 and 1164cc, respectively. Cake scores, however, were slightly worse than last year and the five-year averages for SW and WC. Cookie spreads for SW and WC were slightly lower to similar when compared with last year and the five-year averages.

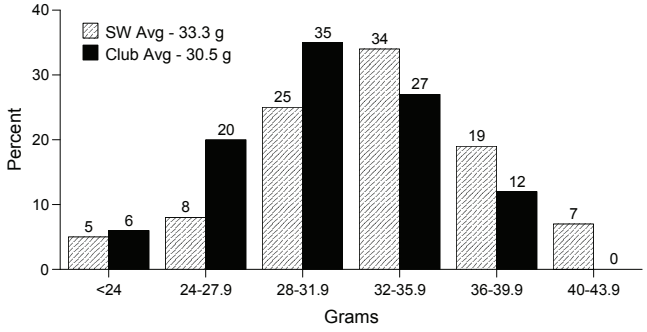
Chinese Southern-Type Steamed Bread: Each flour was made into southern-type steamed bread and compared with a Chinese commercial southern-type steamed bread control flour. Specific volumes were higher than last year, but lower than five-year averages for both SW and WC. Total scores were lower than last year and the five-year averages.

Survey and Analysis Methods: Wheat quality testing and data analyses were conducted by the Wheat Marketing Center, Portland, Oregon. Laboratory testing was conducted according to either American Association of Cereal Chemists Approved Methods (10th Edition) or WMC Standard Methods. Survey samples were collected from producers under the management of the National Agricultural Statistics Services, USDA, and represent a statistical sampling of the crop. USDA's Federal Grain Inspection Service graded the wheat samples. The wheat commissions of Idaho, Oregon, and Washington, US Wheat Associates, Inc., and the US Department of Agriculture supported this program.

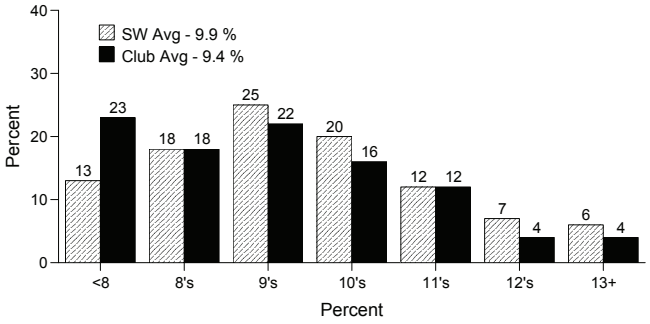
Export Cargo Survey

The PNW SW export cargo data show the results of analyses of individual sublot samples including 91 drawn from the 2003 crop and 57 from the 2004 crop (August 2004 through May 2005). Representative samples were selected from official Federal Grain Inspection Service samples. Grade data are the actual grades on the individual sublots. Milling and processing analyses were conducted by the Wheat Marketing Center, Portland, Oregon.

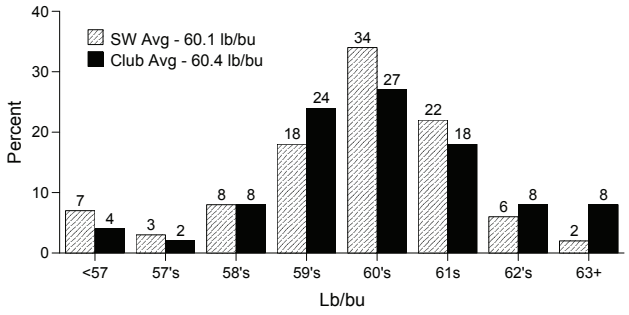
1000 Kernel Weight



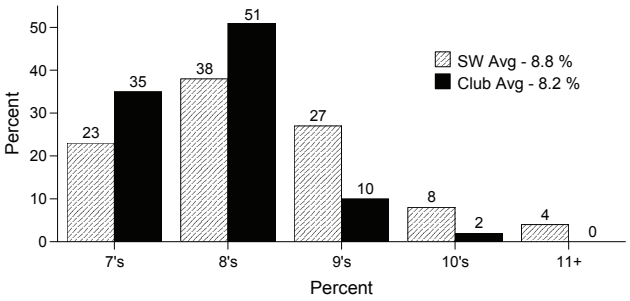
Protein (12% mb)



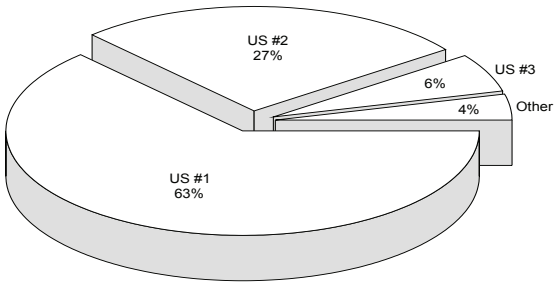
Test Weight



Wheat Moisture



2005 SW Grade Distribution



Pacific Northwest Soft White Wheat Production

by crop year in major white wheat producing states
(million metric tons)

	2005		2004		2003		2002		2001	
	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB
Washington	3.13	0.17	3.10	0.24	3.00	0.31	2.86	0.28	2.91	0.30
Oregon	1.35	0.04	1.54	0.05	1.34	0.04	0.85	0.04	0.81	0.05
Idaho	1.92	0.04	1.53	0.06	1.58	0.04	1.57	0.04	1.49	0.05
Three-state Total	6.40	0.25	6.17	0.34	5.92	0.39	5.28	0.36	5.21	0.40
Three-state Total Soft White Wheat	6.65		6.51		6.31		5.64		5.61	
Total Soft White Wheat Production	7.30		7.33		6.99		6.42		6.31	

Based on USDA crop estimates of September 30, 2005.

Pacific Northwest Harvest Data

Soft White	Soft White By Protein*				Club	2004		5-Year Avg	
	Low	Med	High	All	Avg	SW	Club	SW	Club
Wheat Grade Data:									
Test Weight (lb/bu)	61.1	60.8	59.4	60.1	60.4	60.0	60.3	59.8	60.2
(kg/hl)	80.4	80.0	78.2	79.1	79.4	79.1	79.3	78.8	79.1
Heat Damage (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Damaged Kernels (%)	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.2	0.0
Foreign Material (%)	0.1	0.2	0.1	0.1	0.2	0.0	0.1	0.1	0.1
Shrunken & Broken (%)	0.8	0.8	1.4	0.9	1.2	0.8	1.2	0.9	1.4
Total Defects (%)	0.9	1.0	1.5	1.0	1.5	1.3	1.4	1.1	1.6
Grade	1 SW	1 SW	2 SW	1 SW	1 WC	1 SW	1 WC	2 SW	1 WC
Wheat Non-Grade Data:									
Dockage (%)	0.5	0.9	0.6	0.6	0.9	0.7	0.8	0.7	0.8
Moisture (%)	8.9	8.9	8.7	8.8	8.2	9.3	8.9	9.2	8.6
Protein (%) 12%/0% moisture basis	7.9/9.0	9.3/10.6	11.4/13.0	9.9/11.2	9.4/10.7	10.3/11.7	10.1/11.5	10.3/11.7	9.9/11.2
Ash (%) 14%/0% moisture basis	1.34/1.56	1.39/1.62	1.43/1.66	1.39/1.62	1.32/1.53	1.37/1.59	1.24/1.44	1.39/1.62	1.27/1.48
1000 Kernel Weight (g)	34.6	33.4	30.7	33.3	30.5	36.0	31.9	34.1	30.7
Kernel Size (%) lg/md/sm	86/14/0	85/15/0	70/29/1	80/19/1	77/22/1	87/13/0	79/21/0		
Single Kernel: Hardness	32.6	34.8	30.5	34.7	37.5	31.4	35.5	31.7	36.9
Weight (mg)	39.1	35.5	33.3	35.9	33.3	33.9	35.1	34.6	33.4
Diameter (mm)	2.61	2.41	2.32	2.42	2.27	2.49	2.29	2.44	2.26
Sedimentation (cc)	12.1	16.5	23.1	17.2	13.1	18.2	13.4	18.2	13.6
Falling Number (sec)	340	352	387	350	333	360	354	359	350
Flour Data:									
Extraction Rate (%)	70.4	67.6	63.9	67.3	67.6	67.9	68.9	67.4	68.7
Color: L*	92.4	92.4	92.4	92.4	92.3	92.4	92.4	92.5	92.5
a*	-2.6	-2.5	-2.3	-2.5	-2.4	-2.8	-2.6	-2.7	-2.5
b*	8.3	8.1	7.8	8.1	7.4	6.6	6.7	7.1	6.9
Protein (%) 14%/0% moisture basis	7.0/8.1	7.8/9.1	9.9/11.5	8.2/9.5	7.6/8.8	8.9/10.3	8.6/10.0	8.7/10.1	8.3/9.7
Ash (%) 14%/0% moisture basis	0.41/0.48	0.41/0.48	0.39/0.45	0.40/0.47	0.39/0.45	0.37/0.43	0.37/0.43	0.37/0.43	0.38/0.44
Wet Gluten (%)	10.1	23.5	30.8	21.6	20.7	23.0	18.0	23.0	18.5
Gluten Index	28.7	38.6	72.3	46.5	49.8				
Falling Number (sec)	321	372	366	353	356	361	353	355	350
Amylograph Viscosity 65 g (BU)	365	545	470	462	530	510	545	536	555
Starch Damage (%)	4.5	4.1	3.9	4.1	4.0	3.6	3.2	3.7	3.3
Solvent Retention Capacity (%)									
Water/50% Sucrose	56/105	55/106	52/112	54/108	43/96	54/103	45/95		
5% Lactic Acid/5% Sodium Carbonate	96/83	101/81	115/81	104/82	76/74	111/83	80/78		
Dough Properties:									
Farinograph:									
Peak Time (min)	1.5	1.5	2.8	1.9	1.2	1.5	1.0	1.6	1.2
Stability (min)	1.9	4.5	5.5	4.8	1.9	2.9	0.9	3.2	1.3
Absorption (%)	52.6	52.5	53.9	52.7	51.5	50.5	49.1	50.8	49.6
Alveograph: P (mm)	32	38	40	39	24	40	23	42	26
L (mm)	91	129	195	138	93	97	86	110	80
W (10^{-4} joules)	77	112	179	125	47	102	40	115	45
Extensigraph: Resistance (BU)	199	244	278	241	110	270	120	261	115
(45 min) Extension (cm)	13.3	17.0	19.6	16.7	15.0	16.1	14.8	16.0	14.8
Area (sq cm)	40	62	79	60	26	64	27	61	26
Baking Evaluation:									
Sponge Cake: Volume (cc)	1163	1152	1130	1148	1164	1265	1267	1193	1201
Score	55	51	48	51	46	52	49	52	49
Cookie Diameter (cm)	8.4	8.3	8.0	8.2	8.7	8.4	8.8	8.3	8.7
Chinese Southern-Type Steamed Bread Evaluation:									
Specific Volume (ml/g)	2.48	2.54	2.84	2.62	2.57	2.58	2.44	2.67	2.68
Total Score	64.0	66.8	65.8	65.6	62.0	68.8	63.5	68.6	64.0
% of Area Production:	33	35	32	100	100	100	100	100	100

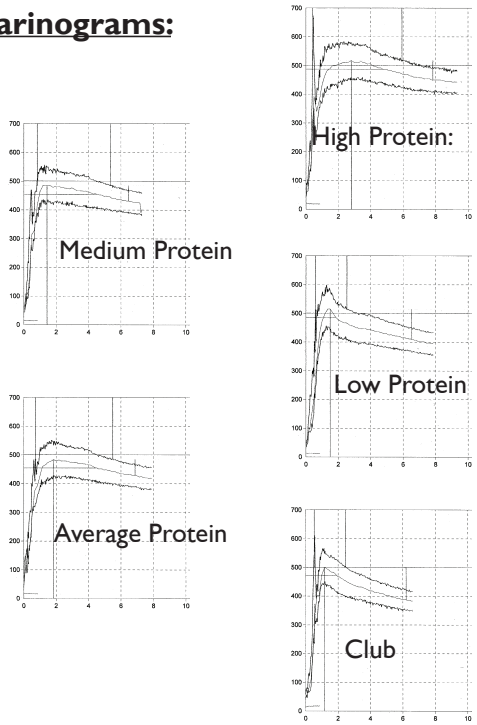
* Low: Less than 9.0%; Med: 9.0 - 10.5%; High: Greater than 10.5%

Export Cargo Data

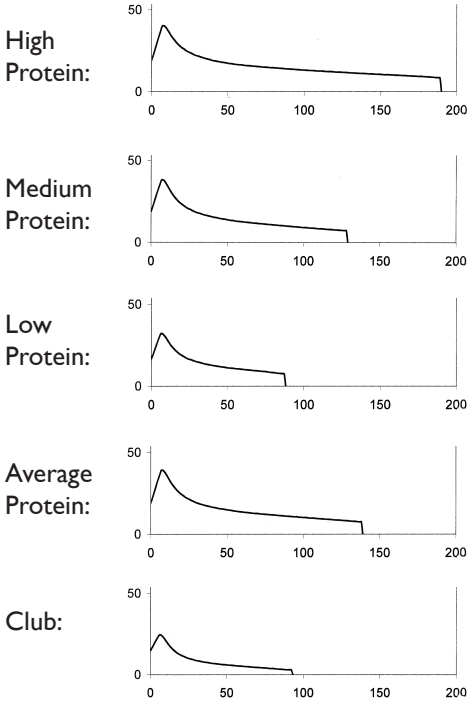
Soft White	2004	2003
Wheat Grade Data:		
Test Weight (lb/bu)	60.9	61.3
(kg/hl)	80.1	80.6
Heat Damage (%)	0.0	0.0
Damaged Kernels (%)	0.9	0.1
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	1.1	1.2
Total Defects (%)	2.1	1.4
Grade	1 SW	1 SW
Wheat Non-Grade Data:		
Dockage (%)	0.4	0.4
Moisture (%)	9.1	8.9
Protein (%) 12%/0% moisture basis	10.3/11.8	10.2/11.6
Ash (%) 14%/0% moisture basis	1.34/1.56	1.33/1.54
1000 Kernel Weight (g)	35.6	34.5
Kernel Size (%) lg/md/sm	81/18/1	77/22/1
Single Kernel: Hardness	34.7	38.9
Weight (mg)	35.0	33.1
Diameter (mm)	2.46	2.40
Sedimentation (cc)	21.4	18.5
Falling Number (sec)	298	406
Flour Data:		
Extraction Rate (%)	68.0	69.9
Color: L*	92.4	92.4
a*	-2.4	-2.6
b*	7.3	7.0
Protein (%) 14%/0% moisture basis	8.4/9.8	8.5/9.9
Ash (%) 14%/0% moisture basis	0.37/0.43	0.40/0.47
Wet Gluten (%)	23.2	23.3
Gluten Index	46.0	53.7
Falling Number (sec)	324	414
Amylograph Viscosity 65 g (BU)	267	588
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Sodium Carbonate		
Dough Properties:		
Farinograph:		
Peak Time (min)	1.3	1.3
Stability (min)	2.4	2.5
Absorption (%)	49.5	50.1
Alveograph: P (mm)	34	38
L (mm)	137	119
W (10-4 joules)	106	109
Extensigraph: Resistance (BU)		
(45 min) Extension (cm)		
Area (sq cm)		
Baking Evaluation:		
Sponge Cake: Volume (cc)	1170	1158
Score	47	44
Cookie Diameter (cm)	8.4	8.2
Chinese Southern-Type Steamed Bread Evaluation:		
Specific Volume (ml/g)		
Total Score		
Sample Count:	57	91

Composite Average Farinograms and Alveograms

Farinograms:



Alveograms:



Hard Red Spring

Harvest Survey

Weather and Harvest: The 2005 growing season was characterized by early planting, above-average rainfall and temperatures, and a rapid, dry harvest period. The resulting crop is notably higher in protein and soundness compared with 2004 and averages US Grade No. 1, but also incurred more heat and disease pressures which reduced yields and affected quality, especially in central and eastern parts of the region. Production is about 10% less than 2004's record yielding crop.

There was abundant moisture over much of the region following the earlier than normal planting which boosted initial yield outlooks region wide. By early June the central and eastern areas had excessive moisture with some field flooding and elevated disease pressures during the critical flowering period. Yield outlook declined in those regions but crop conditions remained good in western areas and in the later maturing portion of the crop. Drier conditions in late July lessened disease pressures, although hot temperatures during grain fill affected yields in some southern areas.

Harvest began in late July and advanced rapidly through August thanks to continued warm, dry conditions. By mid-August harvest was nearly one-half complete, ahead of the five-year average and well ahead of the prolonged 2004 harvest. Continued favorable conditions allowed harvest to be completed by mid-September.

Samples and Methods: Sample collection and analysis were conducted by the Hard Red Spring Wheat Quality Lab, Department of Plant Sciences, North Dakota State University, Fargo, North Dakota. A total of 811 HRS samples were collected from growers and grain elevators at the time of harvest in Minnesota (110), Montana (194), North Dakota (380) and South Dakota (127). The samples represent approximately 90% of the HRS harvested in the four states. Samples were segregated by wheat protein content and composited by each export region as follows: less than 13.5%, 13.5%-14.5% and greater than 14.5%. The methods are described in the Analysis Methods section of this booklet.

Wheat and Grade Data: The 2005 HRS average grade is No. 1 NS with average protein of 14.5% and falling number of 410 seconds, both much improved from 13.8% and 339 seconds in 2004. Fifty-seven percent of the crop graded No. 1, down from 80% in 2004, reflective of lighter test weights and increased damaged kernels in some areas. The average vitreous kernel count is 68%, also down slightly from last year and the five-year average. Average test weight of 60.1 lb/bu (79.1 kg/hl) and thousand kernel weight of 29.8 grams are similar to the five-year average but down from 2004's exceptionally high 61.1 lb/bu (80.4 kg/hl) and 32 grams. Damaged kernels average 1%, up from 0.3% in 2004 and the five-year average of 0.5%. The increase in damage is due to Fusarium head blight in central and eastern areas. In western areas average damage of 0.3% is notably less, but shrunken and broken kernels increased slightly due to heat stress during kernel fill.

Flour and Baking Data: The average flour extraction on a Buhler laboratory mill is 70%, up from 2004 and the five-year average. However, flour ash is also higher. Wet gluten and amylograph record significantly higher values than last year. Somewhat unique are the higher wet gluten values in the Gulf/Great Lakes tributary region compared with the Pacific Northwest. Dough mixing properties measured by the farinograph show weaker than the traditional strength found in HRS wheat. Peak times and stabilities are both shorter compared with last year and the five-year average. The average farinogram classification is 5.2 (on a scale of 1-8), down from 5.7 last year and the five-year average of 6.5. The strongest stabilities are found in the medium to high protein segments of the Pacific Northwest tributary region. However, the greatest year-to-year decline in mixing strength is in the high protein segment of the PNW region. In the Gulf/Great Lakes tributary, the decline in dough strength results primarily from disease pressures. Average farinograph absorption is similar to last year and the five-year average, although western areas do show an improvement in absorption compared with last year. The alveograph and extensigraph reveal weaker, less resistant dough properties. Average loaf volume is similar to last year at 1036 cubic centimeters. Crumb grain and texture are similar to last year as well but somewhat below the five-year average. In central and eastern parts of the region, some doughs are exhibiting slight stickiness during the handling process.

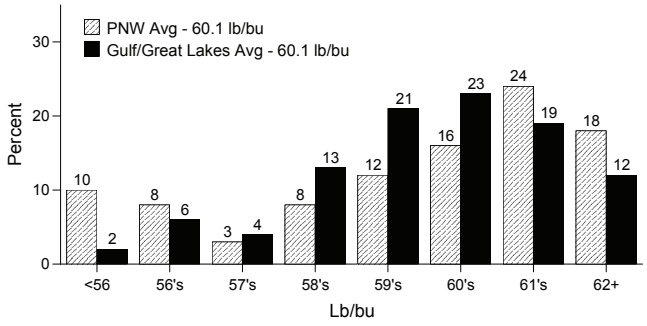
Summary: The 2005 HRS crop shows a marked improvement in average protein content and soundness compared with last year. There is more variability in grade and performance compared with recent years when disease pressures were negligible. Fusarium head blight in central and eastern areas had the greatest impact on producer yields but also increased damaged kernels and mycotoxin (DON) levels, which buyers may want to control through appropriate contract specifications. Despite the higher incidence of disease, 75% of the 2005 crop grades No. 2 or better, down only slightly from 85% last year.

While milling yields are higher than and flour absorption values similar to 2004, dough mixing properties are weaker than is traditionally found in HRS, likely due to higher than expected yields in western areas and disease in eastern areas. Mixing strength improves from east to west across the region, especially in the medium to high protein segments of the crop. Loaf volumes and grain and texture scores are generally similar to 2004 but show an improvement over last year in western production areas.

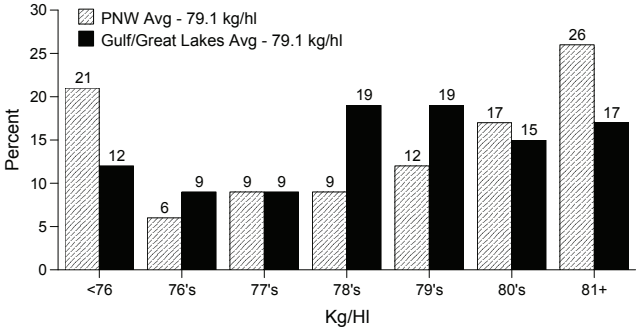
Export Cargo Survey

The export cargo survey shows the results of analysis of 175 individual sublot samples for crop year 2004 (collected from October through August) and 256 for crop year 2003. Of the 175 2004-crop samples, 89 were collected from PNW ports, 55 from the Lakes and 31 from Gulf ports. Representative samples were selected from official Federal Grain Inspection Service samples. Grade data are the official grades on the individual sublots. Milling and baking analyses were conducted by North Dakota State University.

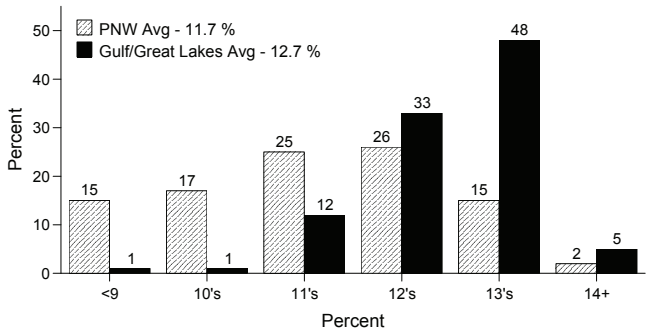
Test Weight



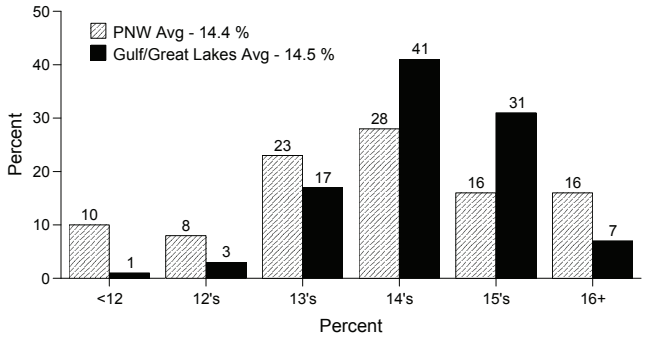
Hectoliter Weight



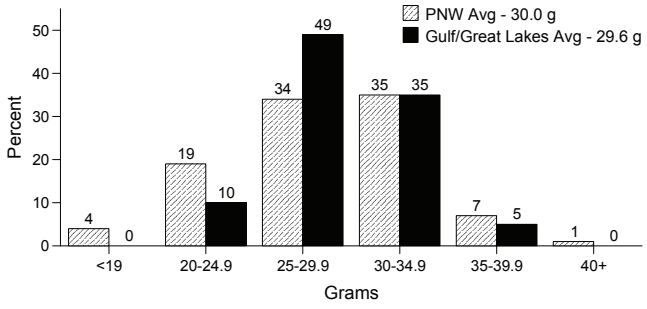
Wheat Moisture



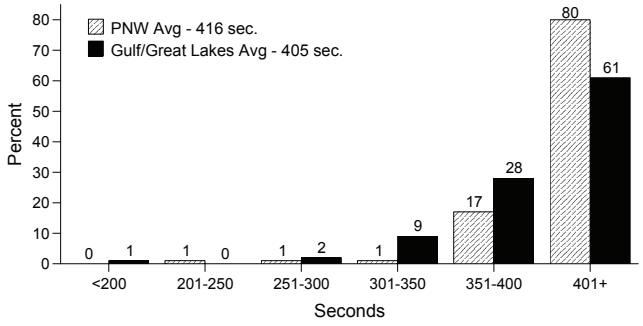
Protein (12% mb)

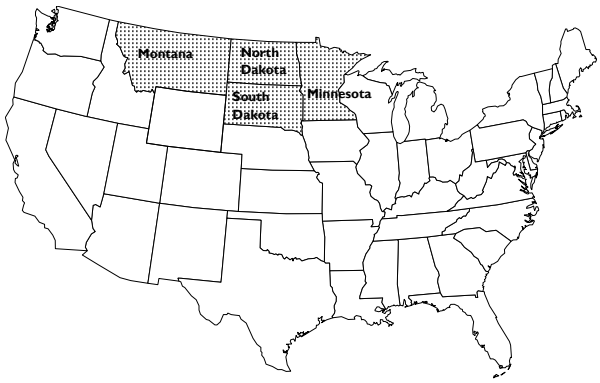


1000 Kernel Weight



Falling Number



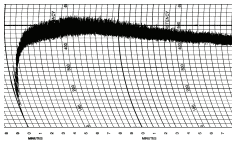


Hard red spring survey results are from four states.

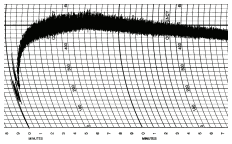
Composite Average Farinograms and Alveograms

Farinograms:

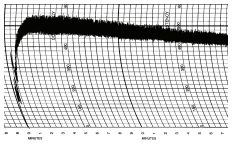
High Protein:



Medium Protein:

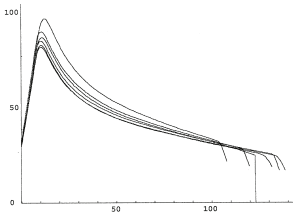


Low Protein:

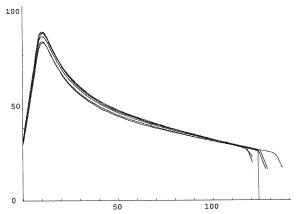


Alveograms:

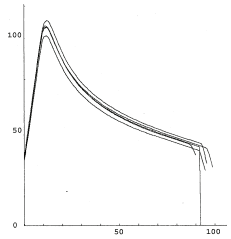
High Protein:



Medium Protein:



Low Protein:



Hard Red Spring	Composite Average					
	2005 By Protein*				2004	5-year
	Low	Med	High	Overall	Overall	Avg
Wheat Grade Data:						
Test Weight (lb/bu)	61.0	60.2	59.8	60.1	61.1	60.3
(kg/hl)	80.2	79.1	78.7	79.1	80.4	79.4
Damaged Kernels (%)	0.6	1.0	1.1	1.0	0.3	0.5
Foreign Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Shrunken & Broken (%)	1.6	1.2	2.7	2.0	0.8	1.3
Total Defects (%)	2.2	2.2	3.8	3.0	1.1	1.8
Vitreous Kernels (%)	71.4	61.9	70.9	68.0	73.5	74.8
Grade	1 NS	1 NS	2 NS	1 NS	1 NS	1 DNS
Wheat Non-Grade Data:						
Dockage (%)	1.5	1.1	1.1	1.2	1.0	1.1
Moisture (%)	12.0	12.6	12.2	12.3	12.5	11.9
Protein (%) 12%/0% moisture basis	12.8/14.5	14.1/16.0	15.4/17.5	14.5/16.5	13.8/15.7	14.4/16.4
Ash (%) 14%/0% moisture basis	1.72/1.99	1.70/1.98	1.73/2.01	1.72/2.00	1.56/1.81	1.64/1.90
1000 Kernel Weight (g)	30.4	30.3	29.2	29.8	32.0	29.9
Kernel Size (%) lg/md/sm	49/41/10	50/41/9	46/44/11	48/42/10	66/30/4	55/38/7
Single Kernel: Hardness	82.3	83.1	81.4	82.1	80.5	81.8
Weight (mg)	32.0	32.6	31.0	31.7	34.2	31.0
Diameter (mm)	2.32	2.36	2.30	2.32	2.39	2.30
Sedimentation (cc)	49.8	54.9	61.8	57.3	61.8	56.5
Falling Number (sec)	420	411	405	410	339	368
Flour Data:						
Extraction Rate (%)	70.8	71.0	69.4	70.2	68.7	68.9
Color: L*	91.3	91.0	91.1	91.1	91.6	90.8
a*	-1.4	-1.3	-1.2	-1.2	-1.3	-1.3
b*	9.3	9.4	9.0	9.2	9.2	9.4
Protein (%) 14%/0% moisture basis	11.6/13.5	12.7/14.8	14.3/16.7	13.3/15.5	12.5/14.5	13.2/15.3
Ash (%) 14%/0% moisture basis	0.53/0.61	0.53/0.61	0.53/0.62	0.53/0.61	0.43/0.50	0.44/0.52
Wet Gluten (%)	29.6	33.6	38.6	35.3	32.9	35.6
Gluten Index	96.0	88.9	82.7	87.2	93.6	
Falling Number (sec)	404	408	419	413	366	398
Amylograph Viscosity: 65g (BU)	733	735	732	733	554	629
100g (BU)	2556	2582	2570	2571	1734	2197
Starch Damage (%)	7.8	8.3	8.2	8.2	7.7	6.7
Dough Properties:						
Farinograph:						
Peak Time (min)	3.7	6.6	7.2	6.4	10.1	11.9
Stability (min)	9.4	10.1	9.7	9.8	15.5	20.5
Absorption (%)	63.1	63.7	65.8	64.6	65.1	65.0
Classification	4.4	5.4	5.4	5.2	5.7	6.5
Alveograph: P (mm)	118	98	99	102	131	103
L (mm)	87	114	108	106	98	112
W (10^{-4} joules)	368	365	355	361	471	403
Extensigraph: Resistance (BU)	524/596	451/461	392/396	435/453	561/641	535/605
(45/135 min) Extension (cm)	19.8/19.2	22.3/21.7	22.0/23.3	21.7/22.0	20.3/19.6	22.6/22.0
Area (sq cm)	133/146	131/128	111/119	122/127	142/156	150/169
Baking Evaluation:						
Absorption (%)	61.6	62.2	64.3	63.1	63.6	63.5
Crumb Grain and Texture	8.0	8.0	7.7	7.8	7.8	8.2
Loaf Volume (cc)	926	1041	1074	1036	1036	1062
% Area Production:	18	33	49	100	100	100

* Low: Less than 13.5%; Med: 13.5 - 14.5%; High: 14.5% or greater.

Data

PNW Average						Gulf/Great Lakes Average					
2005 By Protein*					5-year	2005 By Protein*					5-year
Low	Med	High	Overall	2004	Avg	Low	Med	High	Overall	2004	Avg
61.4	60.6	59.0	60.1	61.1	60.3	60.2	59.9	60.3	60.1	61.1	60.3
80.7	79.7	77.6	79.1	80.4	79.4	79.2	78.8	79.3	79.1	80.4	79.3
0.4	0.2	0.2	0.3	0.1	0.3	0.9	1.5	1.6	1.5	0.4	0.6
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.6	1.6	2.0	1.8	1.1	1.7	1.6	1.0	3.1	2.2	0.7	1.0
2.0	1.8	2.2	2.0	1.2	2.0	2.5	2.5	4.7	3.7	1.1	1.6
77.0	77.0	76.0	76.6	88.6	87.8	61.0	53.0	68.0	61.9	63.4	64.2
1 DNS	1 DNS	1 DNS	1 DNS	1 DNS	1 DNS	1 NS	1 NS	2 NS	2 NS	1 NS	1 NS
1.0	1.3	1.1	1.1	0.9	1.1	2.3	1.0	1.1	1.2	1.0	1.1
11.6	12.1	11.6	11.7	11.9	11.1	12.6	12.9	12.6	12.7	12.8	12.5
12.6/14.3	14.2/16.1	15.7/17.8	14.4/16.3	14.4/16.3	14.8/16.8	13.1/14.9	14.0/15.9	15.2/17.3	14.6/16.6	13.4/15.2	14.1/16.0
1.67/1.94	1.64/1.91	1.66/1.93	1.66/1.93	1.51/1.76	1.59/1.85	1.80/2.09	1.74/2.02	1.77/2.06	1.76/2.05	1.58/1.84	1.67/1.94
30.7	30.6	29.1	30.0	30.9	29.5	29.7	30.2	29.2	29.6	32.9	30.2
51/40/9	48/42/10	38/48/14	44/44/12	57/37/6	48/43/8	47/42/11	51/40/9	50/41/9	50/41/9	72/25/3	60/33/7
83.0	85.0	82.0	83.2	83.5	82.1	81.0	82.0	81.0	81.4	78.9	81.6
32.5	32.9	30.1	31.6	33.7	30.6	31.2	32.4	31.5	31.8	34.5	31.2
2.33	2.37	2.20	2.29	2.33	2.27	2.30	2.35	2.36	2.35	2.43	2.33
54.0	58.0	65.0	59.9	64.9	57.6	42.0	53.0	60.0	55.7	59.6	55.5
427	413	411	416	360	387	407	410	402	405	325	351
70.8	71.3	69.7	70.5	67.7	68.0	70.9	70.9	69.2	70.0	69.4	69.6
91.5	91.1	91.1	91.2	91.7	90.7	91.0	90.9	91.1	91.0	91.5	90.7
-1.3	-1.3	-1.2	-1.2	-1.3	-1.3	-1.5	-1.3	-1.2	-1.3	-1.4	-1.4
9.1	9.4	9.1	9.2	8.9	9.1	9.8	9.5	9.0	9.2	9.4	9.6
11.5/13.4	12.9/15.0	14.9/17.3	13.4/15.5	13.0/15.1	13.6/15.8	11.8/13.7	12.6/14.6	14.0/16.3	13.3/15.4	12.1/14.0	12.8/14.9
0.52/0.60	0.52/0.60	0.50/0.58	0.51/0.59	0.41/0.48	0.44/0.51	0.54/0.63	0.53/0.62	0.55/0.64	0.54/0.63	0.44/0.51	0.45/0.52
29.0	33.3	38.8	34.5	33.8	36.7	30.6	33.8	38.5	36.0	32.0	34.5
98.0	93.9	92.9	94.6	96.5		92.4	86.0	77.0	81.8	92.3	
412	436	432	428	385	418	389	392	411	402	353	380
745	855	825	811	701	727	710	665	680	678	452	540
2570	3180	2960	2915	2148	2578	2530	2230	2350	2325	1441	1856
7.6	7.9	8.1	7.9	8.0	6.7	8.3	8.6	8.3	8.4	7.4	6.7
3.0	7.5	8.5	6.7	16.5	16.1	5.0	6.0	6.5	6.2	5.4	8.3
8.5	12.0	11.0	10.6	22.8	26.4	11.0	9.0	9.0	9.2	10.2	15.6
63.9	64.7	66.7	65.3	64.9	65.8	61.7	63.1	65.3	64.1	65.2	64.2
4.0	6.0	6.0	5.4	6.4	7.1	5.0	5.0	5.0	5.0	5.2	6.0
132	124	128	128	132	110	92	83	82	83	130	97
81	101	101	95	101	105	98	122	112	114	96	118
402	445	471	444	494	416	306	318	290	302	455	393
555/640	520/530	520/530	530/561	585/716	548/626	465/515	410/420	320/320	367/376	549/599	525/593
20.3/18.6	23.4/20.4	21.6/22.7	21.8/20.9	20.8/19.4	23.3/23.0	19.0/20.2	21.7/22.5	22.2/23.6	21.7/22.9	19.8/19.4	22.0/22.0
143/150	154/137	146/155	147/148	151/175	158/176	114/138	117/123	92/98	103/111	136/142	142/164
62.4	63.2	65.2	63.8	63.4	64.3	60.2	61.6	63.8	62.6	63.7	62.7
8.0	8.0	8.0	8.0	7.8	8.2	8.0	8.0	7.5	7.7	7.9	8.1
910	1025	1090	1021	1006	1067	955	1050	1065	1049	1048	1054
28	29	43	100	100	100	10	36	54	100	100	100

Export Cargo Data

Hard Red Spring	PNW Average		Great Lakes Average		Gulf Average	
	2004	2003	2004	2003	2004	2003
Wheat Grade Data:						
Test Weight (lb/bu)	61.2	61.4	61.6	62.3	61.3	62.1
(kg/hl)	80.5	80.8	80.9	81.9	80.7	81.7
Damaged Kernels (%)	0.6	0.2	1.8	1.4	1.2	1.2
Foreign Material (%)	0.1	0.1	0.1	0.1	0.1	0.2
Shrunken & Broken (%)	1.3	1.6	0.9	1.0	0.9	1.2
Total Defects (%)	2.0	2.0	2.8	2.5	2.2	2.5
Vitreous Kernels (%)	78.2	83.9	43.3	61.8	52.8	65.8
Grade	1 DNS	1 DNS	1 NS	1 NS	1 NS	1 NS
Wheat Non-Grade Data:						
Dockage (%)	0.3	0.3	0.5	0.5	0.5	0.5
Moisture (%)	11.7	10.7	13.0	12.2	13.0	12.2
Protein (%) 12%/0% moisture basis	13.9/15.8	14.3/16.2	13.4/15.2	13.7/15.6	13.5/15.4	13.9/15.8
Ash (%) 14%/0% moisture basis	1.53/1.77	1.56/1.81	1.56/1.81	1.58/1.83	1.57/1.82	1.58/1.83
1000 Kernel Weight (g)	33.4	32.1	33.6	33.5	33.5	33.2
Kernel Size (%) lg/md/sm	59/35/5	49/42/8	74/23/3	65/30/5	69/27/4	62/33/5
Single Kernel: Hardness	79.5	84.2	79.0	85.0	78.7	83.8
Weight (mg)	31.6	28.9	32.5	30.0	31.8	29.7
Diameter (mm)	2.46	2.37	2.56	2.43	2.51	2.42
Sedimentation (cc)						
Falling Number (sec)	378	437	331	360	379	403
Flour Data:						
Extraction Rate (%)	68.3	69.0	69.5	70.2	69.4	70.1
Color: L*	91.4	91.2	91.1	91.0	91.2	91.0
a*	-1.3	-1.2	-1.3	-1.3	-1.4	-1.3
b*	8.9	9.1	9.2	9.7	9.4	9.6
Protein (%) 14%/0% moisture basis	12.6/14.6	13.1/15.2	12.1/14.1	12.4/14.4	12.2/14.1	12.7/14.7
Ash (%) 14%/0% moisture basis	0.46/0.54	0.49/0.57	0.47/0.55	0.48/0.56	0.45/0.53	0.48/0.56
Wet Gluten (%)	33.5	34.4	30.8	32.7	31.7	33.3
Gluten Index	92.0	92.8	95.6	96.1	95.5	91.9
Falling Number (sec)	405	460	346	377	394	418
Amylograph Viscosity: 65g (BU)	550	735	394	474	531	631
100g (BU)						
Starch Damage (%)						
Dough Properties:						
Farinograph:						
Peak Time (min)	6.5	10.5	4.7	7.3	5.9	8.0
Stability (min)	13.9	18.5	10.9	14.0	12.8	15.1
Absorption (%)	63.8	66.5	64.5	65.4	63.6	65.0
Classification	6.2	6.7	5.1	5.8	5.8	6.1
Alveograph: P (mm)	123	123	122	113	118	109
L (mm)	102	100	89	105	97	107
W (10-4 joules)	445	442	399	424	416	412
Extensigraph: Resistance (BU)						
(45/135 min) Extension (cm)						
Area (sq cm)						
Baking Evaluation:						
Absorption (%)	62.6	65.0	63.0	63.9	62.1	63.5
Crumb Grain and Texture	8.2	8.1	8.1	8.2	8.1	8.3
Loaf Volume (cc)	994	1000	978	1008	971	997
Sample Count:	89	151	55	53	31	52

Hard Red Spring Production by Crop Year

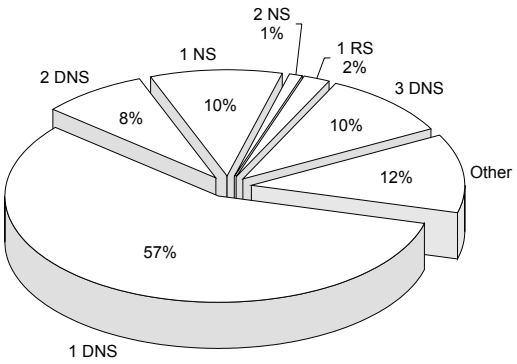
for the major producing states
(million metric tons)

	2005	2004	2003	2002	2001
Minnesota	1.93	2.41	2.84	1.67	2.16
Montana	2.20	2.38	1.63	2.05	1.77
North Dakota	6.11	6.64	6.88	4.50	6.38
South Dakota	1.84	1.96	1.53	0.65	1.75
Four-State Total	**12.08**	**13.39**	**12.88**	**8.86**	**12.06**
Total HRS Production	**12.70**	**14.30**	**13.60**	**9.57**	**12.94**

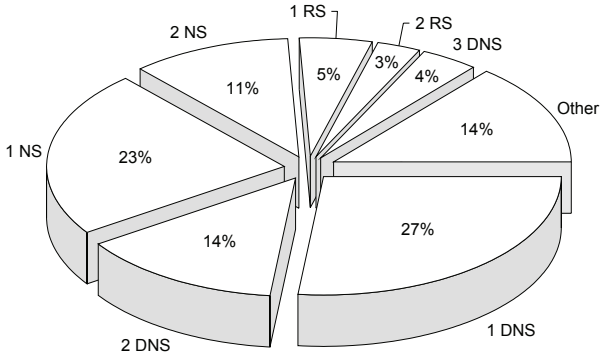
Based on USDA crop estimates of September 30, 2005.

Grade Distribution

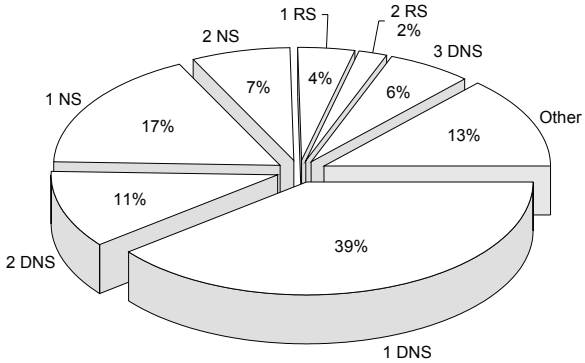
PNW



Gulf/Great Lakes



Overall



Soft Red Winter

Harvest Survey

Weather and Harvest: Soft red winter wheat (SRW) is grown over a wide area of the eastern United States with diverse weather patterns which result in variations in SRW quality. Planting of SRW in the fall of 2004 was hampered by excessively wet conditions which sharply reduced planted area and ultimately reduced production. Growing conditions during the rest of the year were generally favorable and yields on the reduced acreage were consistently higher than last year across nearly all SRW states. Harvest was somewhat delayed due to rains and wet conditions in North Carolina and Arkansas, but otherwise progressed rapidly.

Survey Methods: Sample collection and analysis were conducted by CII Laboratory Services, Kansas City, Missouri. For 2005, 309 samples were collected in nine key production states: Arkansas, Illinois, Indiana, Maryland, Missouri, Ohio, North Carolina, Virginia and Kentucky. These states are divided into 18 reporting areas, and samples were collected in each state except Arkansas at two different times reflecting early and late harvest conditions. The Arkansas harvest was completed so quickly that a second set of samples was not available. Test weight, moisture, protein, thousand kernel weight and falling number were determined on the individual samples, while the remaining tests were determined on 33 composite samples. The results were weighted by five-year average production for the 18 reporting areas and combined into the "Composite Average", "East Coast" and "Gulf Ports" values shown in this report. States tributary to the East Coast include Maryland, North Carolina and Virginia, while the other states are considered Gulf tributary.

Wheat and Grade Data: Grade, test weight, and thousand kernel weight were higher than last year and the five-year average for both East Coast and Gulf Ports, reflecting the favorable growing conditions. Wheat moisture content and falling number were about equal to the five-year average and damaged kernels were much lower than average, indicating a sound crop with relatively favorable harvest conditions. Wheat protein was lower than last year and the five-year average across nearly all areas, which is consistent with the high yields and lack of stress on the crop.

Flour and Baking Data: Laboratory mill flour yield is higher than last year and the five-year average by a percentage point for the Gulf tributary states, but lower by a percentage point or more for the East Coast states. Baking performance is better than last year and similar to the five-year average for the samples tested.

(continued on p. 21)

Soft Red Winter Production

in major soft red winter wheat producing states
(million metric tons)

	2005	2004	2003	2002	2001
Alabama	0.06	0.08	0.09	0.07	0.09
Arkansas	0.23	0.89	0.78	1.04	1.37
Georgia	0.20	0.23	0.29	0.22	0.29
Illinois	0.99	1.43	1.40	0.82	1.17
Indiana	0.67	0.74	0.81	0.45	0.68
Kentucky	0.54	0.54	0.57	0.45	0.62
Louisiana	0.13	0.22	0.15	0.23	0.21
Maryland	0.25	0.23	0.15	0.31	0.30
Michigan	0.61	0.59	0.65	0.43	0.55
Mississippi	0.09	0.19	0.17	0.20	0.32
Missouri	0.75	1.25	1.39	0.88	1.08
North Carolina	0.67	0.63	0.40	0.49	0.50
Ohio	1.60	1.50	1.85	1.37	1.64
South Carolina	0.23	0.22	0.20	0.17	0.25
Tennessee	0.23	0.37	0.37	0.38	0.50
Virginia	0.27	0.27	0.20	0.28	0.28
16-State Total	**7.52**	**9.39**	**9.44**	**7.78**	**9.85**
Total SRW Production	**8.41**	**10.35**	**10.35**	**8.74**	**10.88**

Data are based on USDA crop estimates of September 30, 2005.

Harvest Data

Soft Red Winter	Composite Average			East Coast*			Gulf Ports*		
	2005	2004	5-Year Avg	2005	2004	5-Year Avg	2005	2004	5-Year Avg
Wheat Grade Data:									
Test Weight (lb/bu)	60.3	58.2	58.7	60.3	58.1	58.6	60.3	58.3	58.8
(kg/hl)	79.3	76.7	77.3	79.4	76.5	77.1	79.3	76.7	77.3
Damaged Kernels (%)	0.2	1.8	1.5	0.6	1.2	1.5	0.2	1.9	1.5
Foreign Material (%)	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1
Shrunken & Broken (%)	0.8	0.7	0.6	0.5	0.8	0.7	0.8	0.7	0.6
Total Defects (%)	1.1	2.5	2.1	1.1	2.1	2.3	1.0	2.6	2.1
Grade	1 SRW	2 SRW	2 SRW	1 SRW	2 SRW	2 SRW	1 SRW	2 SRW	2 SRW
Wheat Non-Grade Data:									
Dockage (%)	0.9	0.7	0.7	0.5	0.9	0.9	0.9	0.7	0.7
Moisture (%)	13.1	13.5	13.1	13.2	13.7	13.3	13.1	13.5	13.1
Protein (%) 12%/0% moisture basis	9.5/10.8	10.3/11.7	10.3/11.7	9.8/11.1	10.6/12.0	10.9/12.3	9.4/10.7	10.2/11.6	10.2/11.5
Ash (%) 14%/0% moisture basis	1.53/1.78	1.59/1.85	1.57/1.83	1.49/1.74	1.61/1.87	1.55/1.80	1.54/1.79	1.58/1.84	1.58/1.83
1000 Kernel Weight (g)	33.8	31.3	32.3	35.5	31.1	31.7	33.4	31.3	32.4
Kernel Size (%) lg/md/sm	84/15/01	81/18/01	82/17/01	87/12/01	80/19/01	80/19/01	84/15/01	81/18/01	81/18/01
Single Kernel: Hardness	18.4	17.3	21.8	22.4	15.4	21.6	17.4	17.7	21.9
Weight (mg)	24.6	31.9	32.4	35.0	31.9	31.9	22.1	31.9	32.4
Diameter (mm)	1.72	2.28	2.31	2.43	2.26	2.25	1.55	2.29	2.33
Sedimentation (cc)	12.8	12.9	14.5	14.3	14.4	17.6	12.5	12.6	13.9
Falling Number (sec)	360	357	347	356	354	350	362	358	346
Flour Data:									
Extraction Rate (%)	70.1	69.4	69.7	68.5	70.1	69.5	70.5	69.3	69.7
Color: L*	92.9	92.8	93.2	93.4	92.9	93.2	92.8	92.8	93.2
a*	-3.0	-3.2	-3.3	-3.2	-3.3	-3.4	-2.9	-3.2	-3.3
b*	8.2	8.0	8.0	8.2	8.0	8.0	8.2	8.0	8.0
Protein (%) 14%/0% moisture basis	7.9/9.2	8.6/10.0	8.6/10.0	8.1/9.4	8.9/10.3	9.1/10.6	7.9/9.2	8.6/10.0	8.5/9.9
Ash (%) 14%/0% moisture basis	0.43/0.50	0.45/0.52	0.44/0.51	0.43/0.50	0.43/0.50	0.43/0.50	0.43/0.50	0.45/0.52	0.44/0.51
Wet Gluten (%)	20.9	22.1	22.6	20.3	23.1	23.9	21.0	21.9	22.3
Gluten Index	91.7	90.1		95.4	94.5		90.9	89.0	
Falling Number (sec)	343	335	338	346	336	294	342	335	289
Amylograph Viscosity 65 g (BU)	674	510	472	596	525	444	693	507	437
Starch Damage (%)	4.3	4.1	4.4	4.1	3.8	4.2	4.3	4.2	4.3
Solvent Retention Capacity (%)									
Water/50% Sucrose	56/105	56/111		55/107	56/114		54/100	57/107	
5% Lactic Acid/5% Sodium Carbonate	112/77	115/84		115/79	119/84		107/76	110/81	
Dough Properties:									
Farinograph:									
Peak Time (min)	1.3	1.6	1.7	1.4	1.8	2.0	1.3	1.6	1.7
Stability (min)	2.9	3.0	3.1	3.3	3.1	3.5	2.8	3.0	3.1
Absorption (%)	52.3	53.1	52.6	53.1	53.4	53.5	52.1	53.0	52.4
Alveograph: P (mm)	39	34	34	46	38	39	37	33	33
L (mm)	90	107	107	86	113	113	91	105	106
W (10^{-4} joules)	98	90	89	115	105	113	94	86	85
Baking Evaluation:									
Crumb Grain	5.5	5.3	5.6	5.9	5.5	5.8	5.5	5.3	5.6
Crumb Texture	5.8	5.8	5.9	5.7	5.9	6.1	5.8	5.8	5.8
Loaf Volume (cc)	707	723	743	729	724	750	701	722	741
Cookie Spread Ratio	8.5	8.3	8.3	8.1	8.2	8.1	8.6	8.4	8.4
% of Area Sampled:	100%			19%			81%		

* East Coast - Maryland, Virginia, North Carolina; Gulf Ports - Arkansas, Illinois, Indiana, Kentucky, Missouri and Ohio

Export Cargo Data

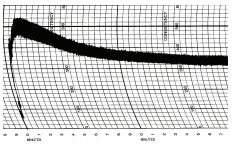
Soft Red Winter	2005	2004
Wheat Grade Data:		
Test Weight (lb/bu)	60.3	58.7
(kg/hl)	79.3	77.2
Damaged Kernels (%)	2.2	2.8
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	0.8	0.9
Total Defects (%)	3.1	3.8
Grade	2 SRW	2 SRW
Wheat Non-Grade Data:		
Dockage (%)	0.7	0.7
Moisture (%)	12.8	13.0
Protein (%) 12%/0% moisture basis	9.9/11.2	10.3/11.7
Ash (%) 14%/0% moisture basis	1.6/1.86	1.57/1.82
1000 Kernel Weight (g)	32.3	29.5
Kernel Size (%) lg/md/sm	85/15/1	80/19/1
Single Kernel: Hardness	*	23.3
Weight (mg)	*	31.8
Diameter (mm)	*	2.34
Sedimentation (cc)	11.8	13.3
Falling Number (sec)	368	336
Flour Data:		
Extraction Rate (%)	69.9	70.8
Color: L*	93.4	93.0
a*	-3.2	-3.2
b*	8.1	7.8
Protein (%) 14%/0% moisture basis	8.1/9.5	8.7/10.1
Ash (%) 14%/0% moisture basis	0.42/0.49	0.45/0.52
Wet Gluten (%)	21.5	23.2
Gluten Index	88.5	72.1
Falling Number (sec)	380	332
Amylograph Viscosity 65 g (BU)	646	404
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Sodium Carbonate		
Dough Properties:		
Farinograph:		
Peak Time (min)	1.3	1.4
Stability (min)	3.2	3.0
Absorption (%)	51.9	52.5
Alveograph: P (mm)	37	40
L (mm)	81	99
W (10-4 joules)	90	108
Baking Evaluation:		
Crumb Grain	4.6	5.5
Crumb Texture	4.6	5.7
Loaf Volume (cc)	685	717
Cookie Spread Ratio	8.9	7.8
Sample Count:	14	90

* Data not yet available.

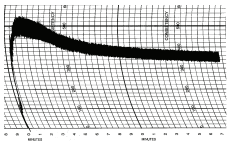
2005 Farinograms and Alveograms

Farinograms:

Gulf

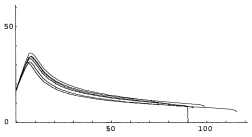


Atlantic



Alveograms:

Gulf



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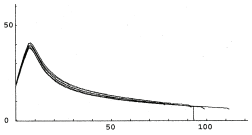
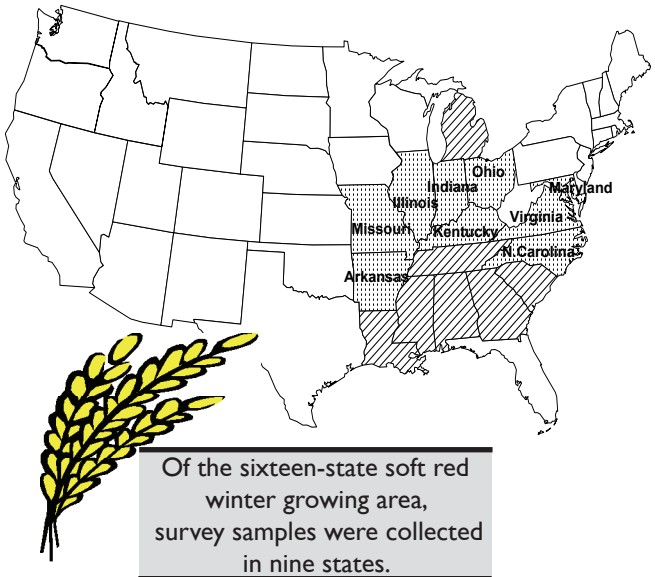
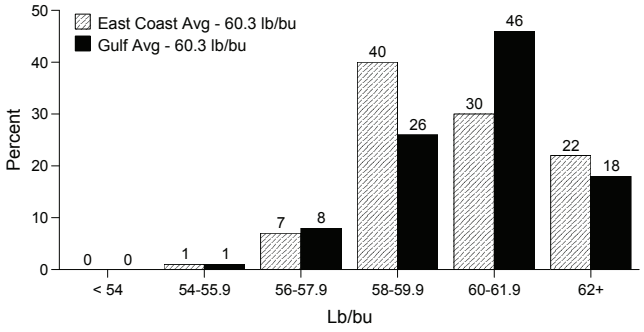


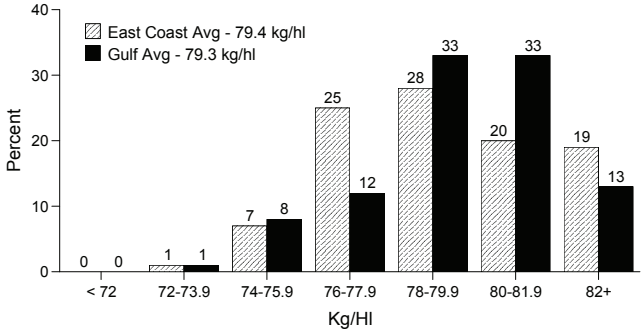


Of the sixteen-state soft red winter growing area, survey samples were collected in nine states.

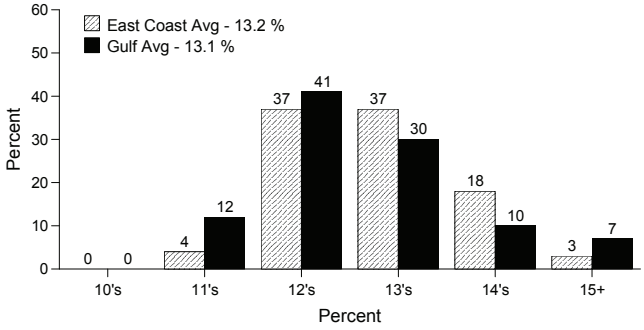
Test Weight



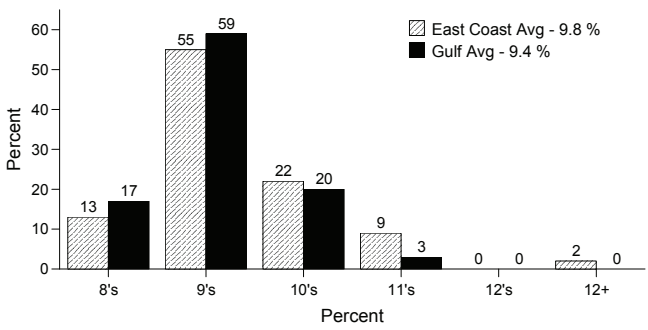
Hectoliter Weight



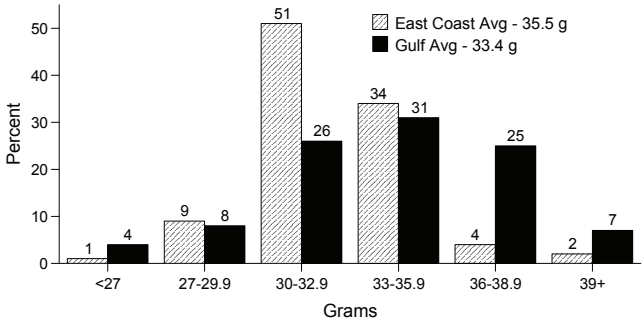
Wheat Moisture



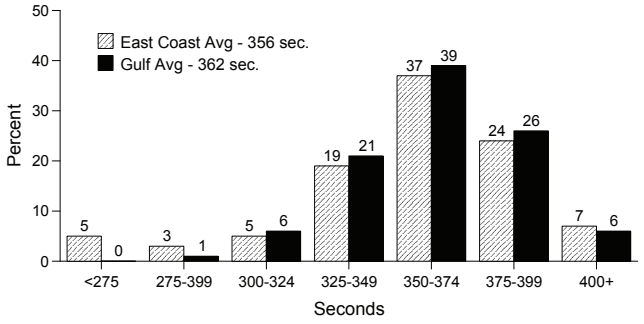
Protein (12% mb)



1000 Kernel Weight



Falling Number



(continued from p. 18)

Summary: Compared with the five-year averages the 2005 SRW crop generally has higher test weight, thousand kernel weight and flour yield; average moisture and falling numbers and slightly lower protein. Grade factors show a very sound crop, averaging US Grade No 1 for both East Coast and Gulf tributary areas. Overall, the flour from this crop has good functionality.

Export Cargo Survey

The export cargo data show the results of analysis of 104 individual sublot samples for marketing years 2005 and 2004 from Gulf of Mexico and East Coast ports. Representative samples were selected from official Federal Grain Inspection Service samples. Grade data are the actual official grades on the individual sublots. Milling and baking analyses were conducted by CII Laboratory Services.

Durum

Northern Great Plains

The 2005 Northern US durum crop produced in Montana and North Dakota is 15% larger than last year, boasts high values for several key quality parameters, and averages Grade No. 1 HAD. A sharp increase in harvested area and yields similar to last year's historically high yielding crop provided the boost in production. Mostly favorable growing and harvest conditions supported the strong quality attributes, and buyers will appreciate the noted improvements in semolina extraction and color.

Weather and Harvest: Durum planting began in April in southern parts of the region and by early May in the north. Nearly ideal weather and soil conditions allowed for excellent progress with planting 60% done by mid-May and nearly complete by the first week of June.

Above normal precipitation and near normal temperatures boosted plant populations and early crop development, and crop condition ratings and yield outlooks remained very high mid-season for all major growing areas. Temperatures in July were above normal but rainfall continued to be adequate. In southern and western areas, an extreme increase in temperatures during kernel fill in late July did affect yields and test weight, but the warmer, drier period limited disease pressures in the denser northern production areas and enhanced yields there. The warmer weather toward the end of the growing season also accelerated crop maturity and allowed for an earlier harvest.

Harvest began in early August in the south and made steady progress to the north through the month. Other than a few days of rainy weather in southern areas in mid-August, weather conditions were near ideal for harvest with 75% of the crop harvested by the first week in September. This was well ahead of average and nearly three times the pace of the prolonged 2004 harvest. By the middle of September, the harvest was nearly complete with the exception of a few northern areas.

Quality: The quality summary for the 2005 northern durum crop is based on analysis of 233 samples collected directly from producers and elevators during harvest. Between August 8 and September 16, 181 samples were collected from North Dakota and 52 from Montana.

The crop averages No. 1 Hard Amber Durum with more than 70% of the crop grading No. 2 HAD or better. Vitreous kernel counts are higher than last year and the five-year average at 91%. Late season heat affected crops in some areas during kernel fill. As a result, the average test weight of 60.8 lb/bu is above average but below last year's exceptionally high level. Average thousand kernel weight of 35.5 grams is also lower than the average of 40.2 grams last year. Total defects of 2.2% include higher levels of damaged kernels and shrunken and broken compared with last year's 1.2%, but is still below the five-year average of 3.6%.

The beneficial growing conditions which boosted yields on crops in northern areas kept protein levels similar to last year's average of 13.4% but below the five-year average of 14.1%. The rapid harvest under mostly dry conditions secured a sound crop with an average falling number of 378 seconds, above last year's 356 seconds and well above the five-year average of 322 seconds. Nearly three-fourths of the crop is above 400 seconds as compared to only 41% last year.

The pasta processing is very good compared with both last year and the five-year average. Both total extraction and semolina extraction on the Buhler laboratory mill are two percentage points higher than last year and three points higher than the five-year average. Ash values increased somewhat but semolina speck counts are slightly lower. A wet gluten value of 35% is equal to last year but below the five-year average, reflective of the lower protein content in the crop. Mixing strength of the semolina, as measured by the mixograph, is rated 6 (scale 1-8), equal to both last year and the five-year average.

Pasta cooking tests reveal a noted improvement in color, scoring a 9.4 on a scale of 1 to 12, up from 8.9 last year and 9 for a five-year average. The cooked spaghetti is showing a higher weight and more firmness as compared to a year ago but a slight increase in cooking loss.

Buyers will be pleased with the large, high quality crop in 2005. There is more consistency across the region compared with 2004, although there are isolated pockets of lower vitreous kernels, as well as areas that have a smaller kernel size due to heat stress prior to harvest. Eastern production areas also show some higher levels of damaged kernels. Buyers are encouraged to use this regional crop quality data to develop appropriate contract specifications to ensure they receive the quality and value they need.

Pacific Southwest

Desert Durum®, a trademark of the Arizona Grain Research and Promotion Council and the California Wheat Commission, applies only to durum wheat produced in the states of Arizona and California.

Desert Durum® is usually delivered "identity preserved" to US domestic and export markets. The identity preservation system allows buyers to purchase grain of varieties having intrinsic quality parameters specific to their needs. Annual production requirements can be contracted ahead with experienced growers using certified seed and then "identity" stored for season-long shipment at the buyer's schedule.

Desert Durum® varieties have consistent kernel size, low moisture (6%-8%), strong gluten properties and very good color. This year, low wheat prices and untimely rains at planting time played a roll in decreased acreage of Desert Durum® in the desert southwest. The Desert Durum® crop averaged US No. 1 grade.

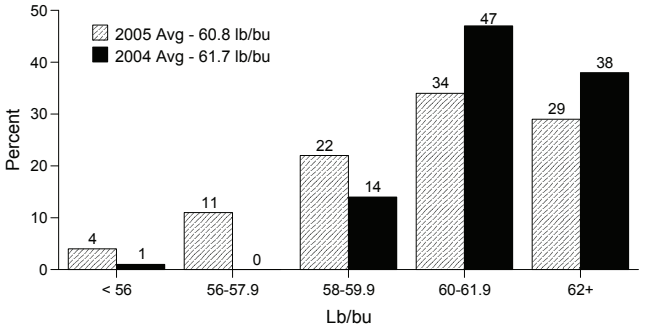
Export Cargo Survey

The durum export cargo survey shows the results of analysis of 36 individual sublot samples for crop year 2004 (collected from October 2004 through June 2005) and 49 samples for 2003. Representative samples were selected from official Federal Grain Inspection Service samples. Grade data are the actual official grades on the individual sublots. Processing analysis was conducted by North Dakota State University.

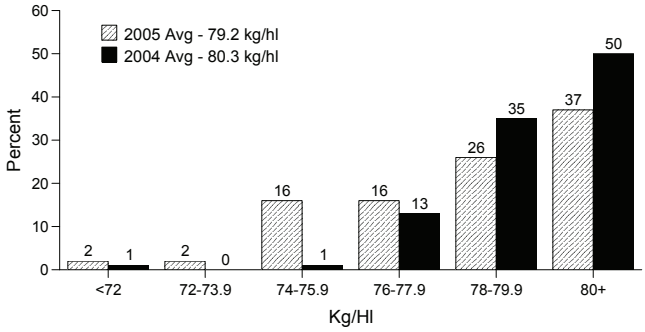
Harvest and Export Data

Durum	Harvest Data					Export Cargo Data			
	Great Plains			Pacific Southwest		Great Plains		Pacific Southwest	
	2005	2004	5- Year Avg.	2005	2004	2004	2003	2004	2003
Wheat Grade Data:									
Test Weight (lb/bu)	60.8	61.7	60.0	62.2	62.2	60.8	60.8	62.5	62.9
(kg/hl)	79.2	80.3	78.2	81.0	81.0	79.2	79.2	81.4	81.9
Damaged Kernels (%)	0.8	0.3	2.0	0.2	0.4	2.2	2.5	0.8	0.7
Foreign Material (%)	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.1	0.2
Shrunken and Broken (%)	1.4	0.9	1.5	0.4	0.4	1.2	1.6	0.6	0.6
Total Defects (%)	2.2	1.2	3.6	0.7	1.0	3.6	4.4	1.5	1.5
Contrasting Classes (%)	0.0	0.0	0.2	0.0	0.0	0.9	1.6	0.3	0.3
Vitreous Kernels (%)	91.0	89.0	85.8	97.5	97.8	81.0	84.0	96.0	93.0
Grade	1 HAD	1 HAD	2 HAD	1 HAD	1 HAD	2 HAD	2 HAD	1 HAD	1 HAD
Wheat Non-Grade Data:									
Dockage (%)	1.5	1.2	1.3	0.3	0.5	0.5	0.6	0.6	0.5
Moisture (%)	12.5	12.5	11.5	7.1	6.6	12.6	11.1	7.6	7.6
Protein (%) 12%/0% moisture basis	13.4/15.2	13.4/15.2	14.1/16.0	14.3/16.2	14.0/15.9	13.5/15.3	14.4/16.3	13.8/15.7	13.3/15.1
Ash (%) 14%/0% moisture basis	1.67/1.94	1.50/1.75	1.62/1.89	1.73/2.00	1.75/2.04	1.52/1.77	1.58/1.83	1.62/1.88	1.6/1.86
1000 Kernel Weight (g)	35.5	40.2	36.2	48.9	48.0	38.4	35.4	49.4	48.9
Kernel Size (%) lg/md/sm	51/40/9	60/36/4	52/41/7	92/8/0	93/7/0	57/38/5	44/49/9	88/10/2	82/15/3
Falling Number (sec)	378	356	322			350	376	1511	876
Sedimentation (cc)	45	49	46						
Semolina Data:									
Total Extraction (%)	73.1	71.2	69.9	78.0	74.0	71.8	69.1	73.7	71.8
Semolina Extraction (%)	66.4	64.3	63.5	65.9	62.2	64.6	62.3	66.4	64.9
Ash (%) 14%/0% moisture basis	0.71/0.83	0.64/0.74	0.69/0.80	0.84/0.98	0.80/0.93	0.65/0.76	0.67/0.78	0.69/0.8	0.66/0.77
Specks (no/10 sq in)	19	20	22	17	14	17	16	17	19
Protein (%) 14%/0% moisture basis	12.6/14.6	12.4/14.5	13.1/15.3	13.1/15.2	12.7/14.7	12.5/14.6	13.4/15.6	12.6/14.7	12.1/14.1
Wet Gluten (%)	35.0	35.0	36.6	34.8	36.2				
Gluten Index	45.0	43.7	37.3			39.9	37.8	80.8	76.6
Mixograph Classification	6.0	6.0	5.8			5.7	5.3	7.1	6.7
Alveograph: P (mm)	39	44	37						
L (mm)	64	90	100						
W (10^{-4} joules)	69	96	83	170	164				
Color: L*	85.0	84.9	84.4			84.8	84.9	84.6	84.9
a*	-2.9	-2.9	-2.8			-2.6	-2.6	-2.6	-2.7
b*	26.1	25.9	27.3	26.1	27.0	24.0	25.9	26.2	25.7
Spaghetti Processing Data:									
Color Score	9.4	8.9	9.0	8.9	9.0	8.4	9.0	9.0	9.2
Cooked Weight (gm)	30.8	30.5	31.1	29.9	29.9	30.9	30.8	31.1	31.1
Cooking Loss (%)	6.1	5.9	5.8	7.6	7.2	6.0	5.5	6.0	5.8
Cooked Firmness (g cm)	5.6	5.4	6.0	7.6	7.9	5.3	5.9	5.8	5.4
Sample Count:						20	23	16	26

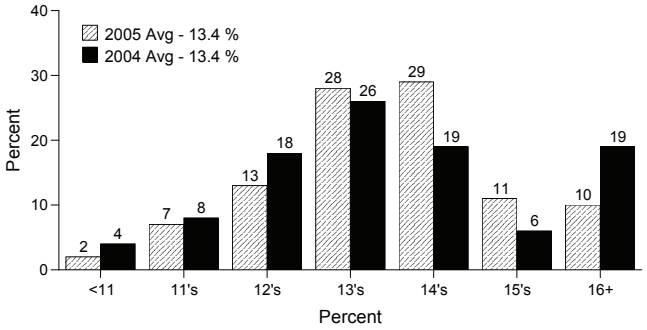
Test Weight



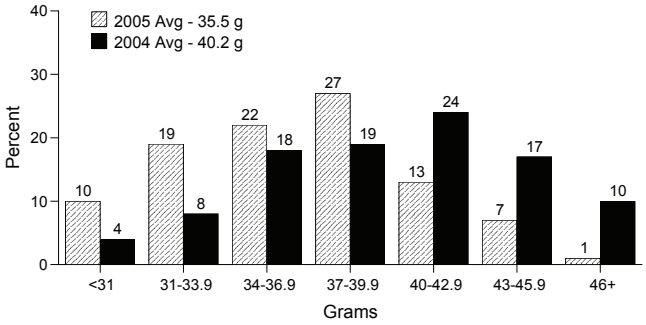
Hectoliter Weight



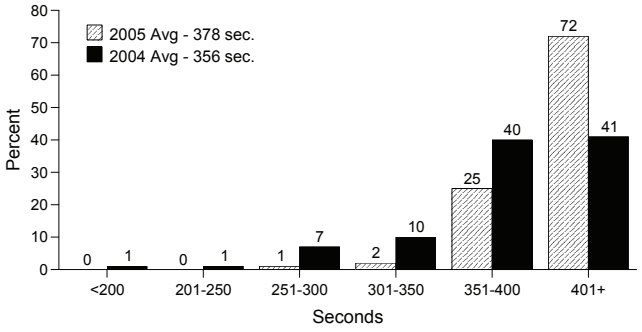
Protein (12% mb)



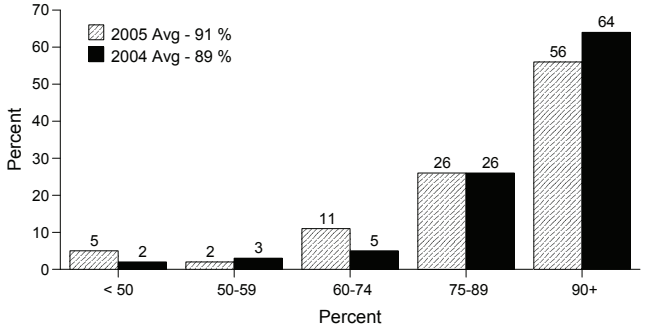
1000 Kernel Weight



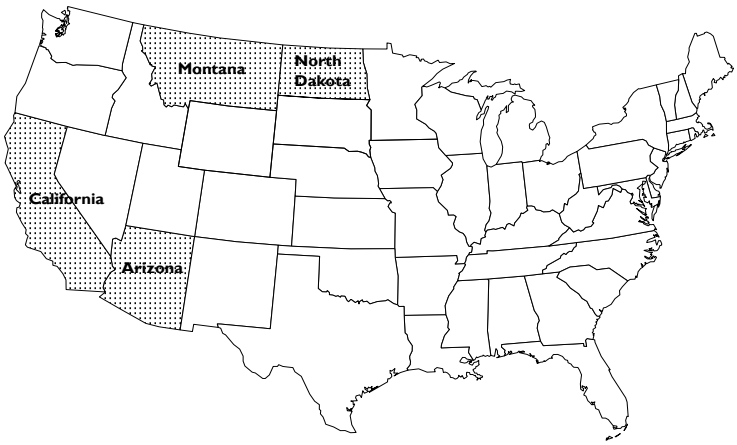
Falling Number

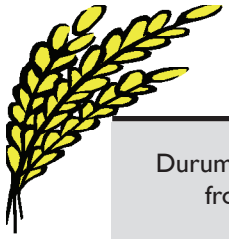


Vitreous Kernels



Note: Charts include Great Plains durum only.





Durum survey results are from four states.

Durum Production by Crop Year

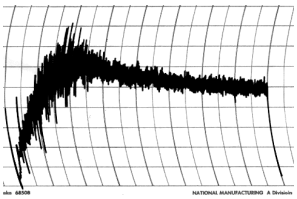
for the major producing states
(million metric tons)

	2005	2004	2003	2002	2001
Arizona	0.20	0.26	0.31	0.24	0.22
California	0.18	0.24	0.31	0.24	0.23
Montana	0.43	0.49	0.39	0.35	0.32
North Dakota	1.86	1.44	1.59	1.33	1.49
Total U.S.	**2.72**	**2.45**	**2.63**	**2.18**	**2.27**

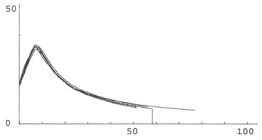
Based on USDA crop estimates of September 30, 2005.

2005 Great Plains Durum Mixogram and Alveogram

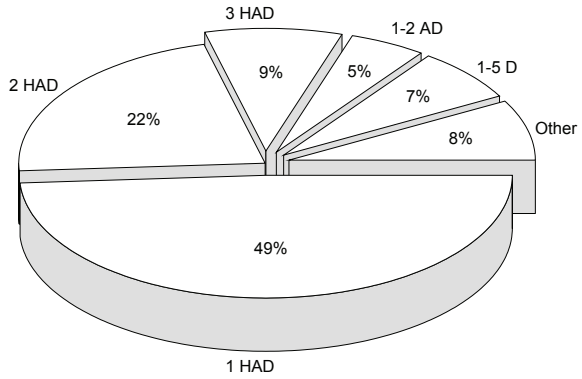
Regional Average Mixogram: (score = 6)



Alveogram



Great Plains Durum Grade Distribution



Hard White

Harvest Survey

Hard white wheat (HW) production for 2005 is estimated at 1.06 million metric tons. Kansas, Colorado, and California accounted for 74% of the total HW production in the US.

Survey Methods: All samples but one were collected by USDA's National Agricultural Statistics Service. One composite was sent directly to Wheat Marketing Center (WMC) from a wheat farm. Wheat grading was conducted by the Federal Grain Inspection Service (FGIS), Portland, Oregon. All other tests were conducted by the WMC, Portland, Oregon. HW samples were made into seven composites based on regions (Pacific Northwest, Southern Plains, and Northern Plains) and protein levels (less than 11.5%, 11.5 – 12.5%, and 12.6 – 13.5%). Wheat and flour tests were done according to the American Association of Cereal Chemists Methods (10th Edition). Chinese raw and wet noodle testing and Chinese northern-type and Taiwan-type steamed bread evaluation were conducted according to the protocols established by Chinese noodle and steamed bread makers and flour millers at the WMC during US Wheat Associates' Asian Products Collaborative Program.

Wheat and Grade Data: All seven samples were graded as US No. 1 with test weights from 60.0 to 62.0 lb/bu (78.9 to 81.5 kg/hl). Wheat moisture was in the range of 8.4-10.6%. PNW composites had lower wheat moisture content than the Southern Plains and the Northern Plains. PNW composites had higher thousand-kernel weights and kernel diameters than the Plains composites. Falling number values ranged from 345 to 441 seconds, indicating little sprout damage.

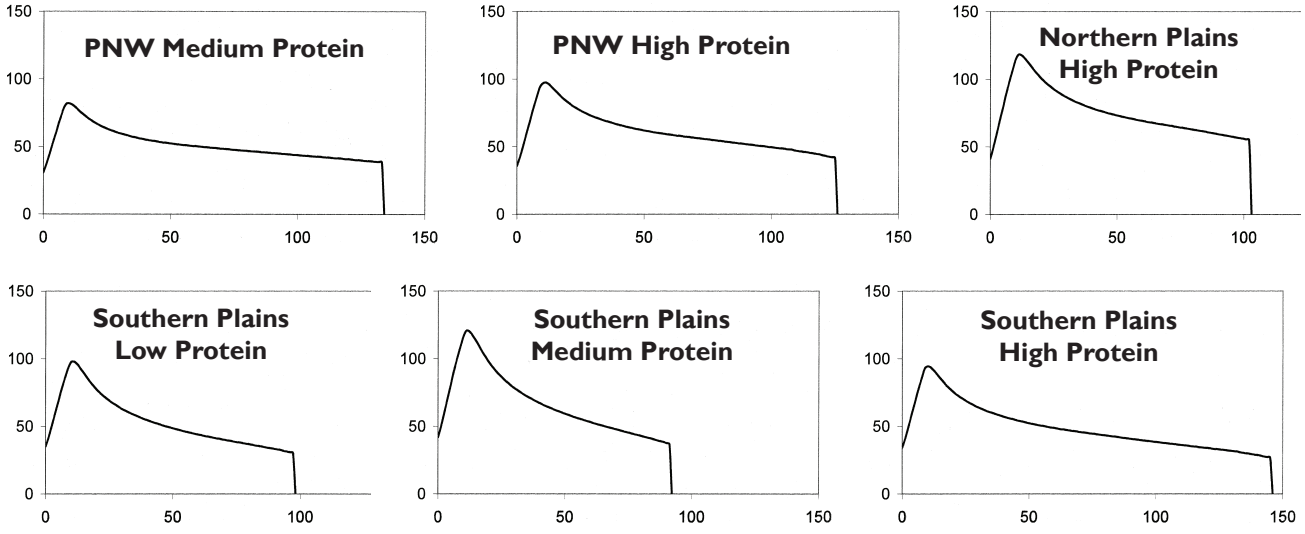
Flour, Dough, and Baking Data: Buhler laboratory mill straight grade flour extractions ranged from 66.4% to 68.5% and flour ash contents varied from 0.37% to 0.43%. All flour falling number values were 362 seconds or higher. Amylograph peak viscosities were between 615 and 780 BU. Starch damage values were in the range of 4.5% to 6.5%. Farinograph absorption ranged from 57.4% to 63.5%, and stability times were 14.3 minutes or longer for all samples. The ranges of alveograph values are: 81-119 mm for P values; 85-146 mm for L values; and 289-456 10^{-4} joules for W values. Extensigraph data indicated strong gluten properties. The bake absorption was in the range of 60.2%-66.4%, and loaf volume ranged from 793 to 974 ml. PNW medium protein and high protein composites showed better bread quality than other composites.

Noodle Evaluation: HW flours along with two control flours were evaluated for both Chinese raw noodles (white salted) and Chinese wet noodles (yellow alkaline). Chinese raw noodle color was acceptable for most samples except for high protein composites from both PNW and the Southern Plains. The boiled noodle texture was acceptable for PNW high protein composite and Southern Plains medium and high protein composites. Chinese wet noodle color was acceptable for most samples except for PNW medium and high protein composites, which had larger discoloration during 24-hour storage. The texture of boiled Chinese wet noodles was acceptable for most samples. PNW low and medium protein composites and Southern Plains low protein composite had slightly soft noodle texture.

Chinese Steamed Bread: HW flours along with two control flours were evaluated for two types of steamed breads: Chinese northern-type and Taiwan-type. Because HW flour alone is too strong for the Chinese northern-type steamed bread, each of the HW flours was blended with the 2005 crop soft white composite (50/50). Results showed that a majority of samples produced steamed breads that were similar to or better than the control flours for both types of steamed breads.

(continued on page 29)

Composite Average Alveograms



Harvest Data

Hard White	Pacific Northwest			Southern Plains			Northern Plains
	Low*	Medium	High	Low	Medium	High	High
Wheat Grade Data:							
Test Weight (lb/bu)	62.0	60.5	61.4	61.3	60.3	61.8	60.0
(kg/hl)	81.5	79.6	80.7	80.6	79.3	81.3	78.9
Heat Damage (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Damaged Kernels Total (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Material (%)	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Shrunken & Broken (%)	1.1	0.4	0.7	0.9	0.5	0.9	1.1
Total Defects (%)	1.1	0.5	0.8	1.0	0.5	0.9	1.1
Grade	1 HW	1 HW	1 HW	1 HW	1 HW	1 HW	1 HW
Wheat Non-Grade Data:							
Dockage (%)	0.6	1.7	0.6	1.2	1.0	0.5	0.2
Moisture (%)	8.7	8.6	8.4	9.8	10.6	10.1	9.6
Protein (%) 12%/0% moisture basis	9.7/11.0	12.1/13.8	13.5/15.3	10.8/12.3	12.4/14.1	13.5/15.3	12.8/14.5
Ash (%) 14%/0% moisture basis	1.55/1.80	1.49/1.73	1.44/1.67	1.54/1.79	1.66/1.93	1.64/1.91	1.58/1.84
1000 Kernel Weight (g)	31.4	36.0	31.6	26.7	25.3	23.9	22.8
Kernel Size (%) lg/md/sm	76/23/1	78/21/1	77/23/0	57/42/1	52/48/0	48/50/2	52/47/1
Single Kernel: Hardness	63.1	53.4	59.4	72.3	70.2	74.9	79.5
Weight (mg)	35.9	35.9	34.8	28.2	26.5	27.5	25.2
Diameter (mm)	2.53	2.41	2.41	2.21	2.12	2.22	2.06
Sedimentation (cc)	16.5	25.7	42.4	10.5	12.1	20.6	31.9
Falling Number (sec)	364	406	345	412	429	441	389
Flour Data:							
Extraction Rate (%)	68.4	68.5	66.4	67.5	66.9	67.6	66.8
Color: L*	91.7	92.2	92.1	91.7	91.5	91.4	91.7
a*	-2.2	-2.0	-2.0	-2.2	-2.1	-2.0	-1.5
b*	7.7	7.0	7.1	8.0	8.3	8.1	6.8
Protein (%) 14%/0% moisture basis	8.9/10.3	10.9/12.7	12.8/14.9	10.3/12.0	11.4/13.3	12.7/14.8	12.2/14.2
Ash (%) 14%/0% moisture basis	0.42/0.49	0.38/0.44	0.37/0.43	0.42/0.49	0.43/0.50	0.41/0.48	0.39/0.45
Wet Gluten (%)	20.8	27.1	35.9	31.9	37.1	39.5	34.6
Gluten Index	99.6	99.5	95.3	89.4	80.0	83.2	99.3
Falling Number (sec)	383	424	362	430	441	459	403
Amylograph Viscosity 65 g (BU)	615	620	735	745	615	620	780
Starch Damage (%)	6.5	5.0	4.5	6.5	6.0	5.4	6.4
Dough Properties:							
Farinograph:							
Peak Time (min)	2.1	8.1	19.0	5.2	8.2	8.7	21.9
Stability (min)	27.1	33.2	22.8	14.3	17.2	22.9	33.8
Absorption (%)	57.6	57.4	62.6	61.7	63.5	63.0	62.5
Alveograph: P (mm)	94	81	97	97	119	93	117
L (mm)	85	134	126	98	92	146	103
W (10^{-4} joules)	289	403	448	306	360	420	456
Extensigraph: Resistance (BU)	409/635	594/1108	586/1010	444/571	392/724	541/777	761/1015
(45/135 min) Extension (cm)	18.5/19.3	13.4/10.5	15.7/9.8	17.5/15.3	17.8/14.0	17.8/14.3	15.5/9.8
Area (sq cm)	102/153	102/133	120/111	98/109	87/127	117/131	143/112
Baking Evaluation:							
Bake Absorption (%)	60.5	60.2	65.5	64.9	66.4	64.5	63.6
Crumb Grain and Texture	7.0	7.5	7.0	6.0	6.3	7.3	6.3
Loaf Volume (cc)	801	927	974	793	854	881	862

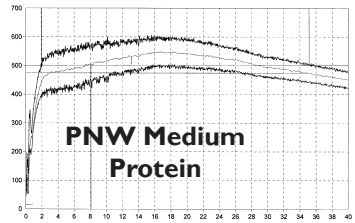
* Low: Less than 11.5%; Med: 11.5 - 12.5%; High: Greater than 12.5%.

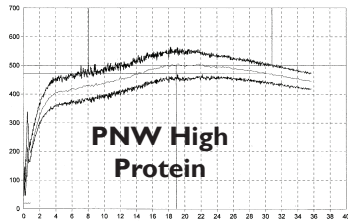
Harvest Data

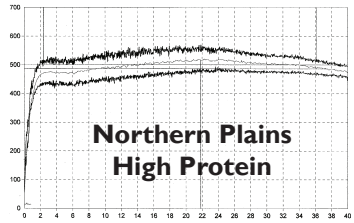
Hard White	Pacific Northwest			Southern Plains			Northern Plains
	Low*	Medium	High	Low	Medium	High	High
Chinese Raw Noodle-Making Quality:							
Color at 0/24 hour: L*	85.1/74.3	83.5/70.6	82.4/69.3	84.4/74.0	82.6/71.6	81.2/70.1	85.3/75.3
a*	-0.5/-0.1	-0.2/0.2	-0.1/0.4	-0.4/-0.0	-0.2/0.5	0.1/0.9	0.8/1.9
b*	16.0/21.0	18.9/22.3	19.4/23.8	17.1/24.0	19.9/26.6	20.3/26.2	14.8/22.1
Change in L* (0-24 hr)	10.8	12.9	13.1	10.4	11.0	11.2	10.0
Cooking Yield (%)	131	126	120	136	120	118	119
Sensory Color Stability Score	7.0	6.5	6.0	7.8	6.5	6.2	8.3
Instrumental Texture:							
Firmness (g)	969	1010	1125	1005	1130	1153	1022
Springiness (%)	97.1	96.6	95.4	96.7	95.9	97.2	95.9
Cohesiveness	0.68	0.68	0.65	0.67	0.67	0.68	0.66
Chewiness (g)	640	666	700	651	723	757	650
Chinese Wet Noodle-Making Quality:							
Uncooked Color at 0/24 hour: L*	81.9/71.0	80.8/67.4	79.7/66.6	81.8/71.2	81.0/69.9	79.3/69.3	82.6/74.3
a*	-1.9/-0.8	-1.8/-0.9	-1.8/-1.0	-1.6/-0.8	-1.4/-0.6	-1.4/-0.6	-0.7/-0.2
b*	19.2/21.9	19.3/20.8	21.2/22.2	19.6/23.1	20.7/24.2	22.5/25.2	19.3/23.2
Change in L* (0-24 hr)	11.0	13.4	13.1	10.6	11.1	10.0	8.3
Parboiled Color at 0/24 hour: L*	77.8/78.0	78.0/77.7	77.9/77.9	79.2/79.1	77.3/76.4	77.8/77.5	79.2/80.5
a*	-3.3/-3.2	-3.0/-2.9	-3.0/-3.1	-3.1/-3.1	-1.7/-2.1	-2.9/-2.9	-2.5/-2.6
b*	29.1/27.6	26.9/25.9	27.7/26.5	28.7/27.3	26.7/25.4	28.4/27.2	27.1/25.5
Cooking Yield (1.5 min, %)	66	62	65	73	72	67	70
Uncooked Color Stability Score	6.8	6.5	7.0	7.5	7.2	7.0	8.0
Parboiled Color Stability Score	6.5	6.0	6.5	7.0	7.0	6.8	6.5
Instrumental Texture:							
Firmness (g)	742	706	765	737	807	845	783
Springiness (%)	97.3	95.0	96.0	97.1	96.5	97.3	97.6
Cohesiveness	0.64	0.64	0.66	0.66	0.66	0.66	0.66
Chewiness (g)	464	430	484	472	514	543	503
Chinese Northern-Type Steamed Bread Evaluation:							
Specific Volume (ml/g)	2.55	2.05	2.80	2.55	2.09	2.77	2.09
Total Score	70.5	66.8	70.5	71.0	72.3	69.3	61.3
Taiwan-Type Steamed Bread Evaluation:							
Specific Volume (ml/g)	2.97	3.24	3.80	2.57	3.17	3.12	2.60
Total Score	70.3	74.0	74.8	65.8	67.8	72.3	70.5

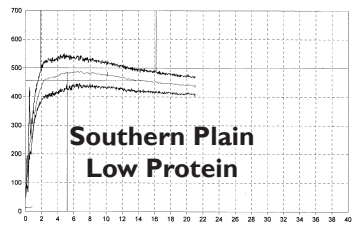
* Low: Less than 11.5%; Med: 11.5 - 12.5%; High: Greater than 12.5%.

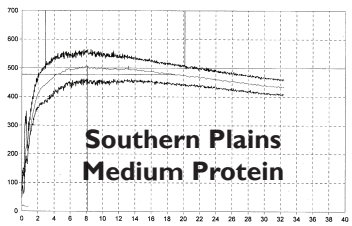
Composite Average Farinograms

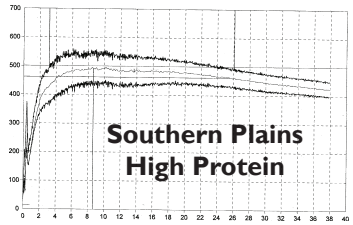












US Production by Class

Crop Year (Beginning June 1)
(million metric tons)

	2005	2004	2003	2002	2001
Hard Red Winter	25.16	23.30	29.15	16.88	20.87
Soft Red Winter	8.41	10.35	10.35	8.74	10.88
Hard Red Spring	12.70	14.30	13.60	9.57	12.94
Soft White	7.30	7.33	6.99	6.42	6.31
Hard White	0.90	1.10	0.27	0.33	0.26
Durum	2.72	2.45	2.63	2.18	2.27
Total	57.11	58.74	63.82	43.71	53.00

Estimates are based on USDA crop estimates of September 30, 2005

US Supply and Demand

Estimated for 2005/2006 (year beginning June 1)
(million metric tons)

	HRW	HRS	SRW	White	Durum	TOTAL
Supply:						
Beginning Stocks	5.3	4.3	2.4	1.7	1.0	14.7
Production	25.2	12.7	8.4	8.1	2.7	57.1
Total Supply	30.5	17.4	11.4	10.2	4.5	74.0
Demand:						
Domestic Use	13.9	6.7	6.7	3.0	2.0	32.3
Exports	11.6	7.5	2.3	4.8	1.1	27.2
Total Demand	25.4	14.2	9.1	7.8	3.1	59.5
Ending Stocks	5.0	3.2	2.3	2.4	1.4	14.4

Based on USDA Supply/Demand estimates of October 12, 2005.

(continued from page 26)

Summary: This year, the US HW production remained steady when compared to the last two years. No sprouting problem was noticed this year. The full analyses indicated that HW had good quality for milling, dough rheology, and end product performance in baking, Chinese noodles, and steamed breads.

Analysis Methods

The harvest samples and cargo samples for each class were evaluated using the same methods as described below. All flour, semolina and end-use tests utilize flour or semolina produced as documented below under the methods labeled "Extraction."

Wheat and Grade Data

Grade: Official U.S. Standards for Grain.
Dockage: Official USDA procedure using the Carter Dockage Tester.
Moisture: HRS, Durum,- Motomco Moisture Meter and AACC 44-15A. HRW, SRW - AACC 44-15A.
Ground Wheat Moisture: AACC 44-15A for all classes.
Whole Kernel Moisture (for tempering before milling): SW, HW - Official US Standards for grain method using Grain Analysis Computer.
Test Weight: AACC 55-10; test weight is mathematically converted to hectoliter weight: for durum - kg/hl = lb/bu x 1.292 + 0.630, for other wheats - kg/hl = lb/bu x 1.292 + 1.419.
Protein: AACC 46-30 (Combustion Nitrogen Analysis technique).
Single Kernel Characterization: Perten method using Perten SKCS 4100.
Sedimentation: HRS, HRW (Plains), SRW, SW, HW - AACC 56-61A; Durum - AACC 56-70.
1000 Kernel Weight: HRS, Durum, HRW, SRW - based on a 10-gram sample of clean wheat counted by an electronic counter. SW, HW - based on three 100-kernel sample weight expressed on a 14% moisture basis.
Ash: AACC 08-01 expressed on a 14% moisture basis.
Falling Number: AACC 56-81B. An average value is a simple mean of sample results.
Vitreous Kernels: HRS & durum only - Percentage by weight of vitreous kernels hand-picked from a 50-gram sample of clean wheat.
Kernel Size Distribution: Cereal Foods World (Cereal Science Today) 5:(3), 71 (1960). Wheat is sifted with a RoTap sifter using a Tyler No. 7 screen (2.82 mm) and a Tyler No. 9 screen (2.00 mm). Kernels retained on the No. 7 screen are classified as "Large." Kernels passing through the No. 7 screen and retained on the No. 9 screen are "Medium." Kernels passing through the No. 9 screen are "Small."

Flour Data

Extraction: Samples were cleaned and tempered according to AACC Method 26-10A. All samples within each class other than California HRW were milled with identical mill settings on a Buhler laboratory mill as described in the following procedures: SW - AACC 26-31; HW - AACC 26-31A; HRW (Midwestern), SRW, and HRS - AACC 26-21A. California HRW was milled on a Brabender Quadrumat Senior mill using the Brabender procedure. All extraction rates were calculated against total products on an "as is" moisture basis.
Ash: AACC 08-01, reported on a 14% moisture basis.
Color: HRW and SRW - Minolta Method using Minolta Chroma Meter CR-110 (for HRW and SRW) or CR-310 (for HRS, SW, and HW) with Granular-Materials Attachment CR-A50. CIE 1976 L*a*b* color system: L* indicates white-black, a* - red-green, and b* - yellow-blue.
Protein: AACC 46-30 (Combustion Nitrogen Analysis technique).
Wet Gluten and Gluten Index: HRS, SRW, HW, HRW (Plains) - AACC 38-12A; SW - AACC 38-12A (water reduced from 4.8 to 4.2 ml); HRW (CA) - Glutomatic Method (ICC 137).
Falling Number: AACC 56-81B. An average value is a simple mean of sample results.
Farinograph: AACC 54-21 with 50-gram bowl. Absorption except HRW (CA) is reported on 14% moisture basis. HRW (CA) reports "as is" absorption. Classification (HRS only) incorporates peak time, mixing tolerance, and general curve characteristics to assign rating based on a scale of 1-8. Higher numbers indicate stronger protein flours.
Alveograph: Durum - AACC 54-30A modified. Other classes - AACC 54-30A.
Amylograph: HRS (100g) - AACC 22-10. HRS (65g), SRW, SW, HRW, HW - AACC 22-10 modified to use 65g flour (14% moisture basis) and 450ml distilled water with paddle (HRS) or pins (other classes).
Extensigraph: AACC 54-10, modified 45 min. and 135 min. rest, HRS, HRW, HW; 45 min. rest only, SW.
Starch Damage: HRW, HRS, SRW, Durum - AACC Method 76-30A. SW, HW - Iodine Absorption by Chopin SDMatic instrument.
Solvent Retention Capacity (SRC): AACC Method 56-11.

Semolina Data (Durum only)

Extraction: Great Plains samples were milled using a modified Buhler laboratory mill with identical settings and equipped with Miag laboratory purifiers, as described by Vasiljevic and Banasik 1980: Quality Testing Methods for Durum Wheat and its Products, pp. 64-72, Dept. of Cereal Chemistry and Technology, NDSU, Fargo, ND. Roll gaps have been modified to (in mm): B1-0.762; B2-0.305; B3-0.254; R1-0.102; B4-0.076; B5-0.038. Extraction rates were calculated against total products on an "as is" moisture basis. Procedure is derived from AACC 26-41 based on research showing improved correlation between laboratory and commercially milled semolina quality. Pacific Southwest samples were milled on a Modified Chopin CD2 mill.
Ash: AACC 08-01 on 14.0% moisture basis.
Color: Minolta Method using Minolta Chroma Meter CR-310.
Protein: AACC 46-30 (Combustion Nitrogen Analysis technique).
Wet Gluten and Gluten Index: AACC 38-12 Glutomatic procedure.
Specks: Sample is pressed under 3x4 inch glass plate, and number of specks within one-inch square marked on plate are counted. Average of three determinations is expressed as specks per 10 square inches.
Mixogram: Ten grams of semolina are mixed in a 10-gram mixograph bowl with 5.8 ml of distilled water to give maximum dough consistency. An overall empirical classification incorporating peak height and general curve characteristics is assigned based on comparison with eight reference mixograms. The higher the number, the stronger the curve type.

Baking, Noodle, Steamed Bread and Spaghetti Data

HRW & SRW: AACC Method 10-10B producing two loaves per batch using wet compressed yeast and ascorbic acid. After mixing, dough is divided into two equal portions, fermented for 160 min., proofed and baked in "pup loaf" pans. Loaf volume is measured immediately after baking by rapeseed displacement. California HRW only - AACC Method 10-10B producing two loaves per batch using wet compressed yeast, malt flour, 45 ppm ascorbic acid, and 120 min. fermentation. Loaf volume measured immediately after baking. SRW cookie spread ratio - AACC Method 10-50D.
HRS: AACC Method 10-09, modified: fungal amylase (15 SKB units/100 g flour) replacing malt dry powder; instant dry yeast (1%); 10 ppm bromate, where added oxidants are required; 2% added shortening. Doughs are mechanically punched, moulded, and baked in "Shogren-type" pans. Scoring based on a scale of 1-10. Higher numbers indicate preferred quality attributes.
SW: Cookie diameter - AACC Method 10-52. Sponge cake volume and score - Japanese standard method described by Nagao in Cereal Chemistry 53:977-988, 1976.
Finished Products Volume Measurement: SW (sponge cake, steamed bread), HW (bread, steamed bread) - Laser light using a Tex Vol Instrument (BVM-L370).
Durum: Pasta is made using the laboratory procedure described by Walsh, Ebeling, and Dick, Cereal Foods World: 16:(11) 385 (1971). Water (32.0% based on semolina weight) is added to semolina and mixed in a Hobart mixing bowl 3.5 min. Semolina-water mixture is extruded using a DeMaco laboratory pasta extruder. Spaghetti is dried using modified Buhler high-temperature drying cycle as described by Debbouz, Pitz, Moore, and D'Appolonia, Cereal Chemistry: 72 (1):128-131. Color scores are determined by the procedure described by Walsh, Macaroni Journal 52:(4) 20 (1970), using a Minolta Color Difference Meter (Model: CR 310). Higher values (scale 1-12) are preferred. Cooked weight, cooking loss and firmness are determined by AACC Method 16-50.
HW Baking: AACC Method 10-10B. 180 min fermentation.
HW Noodle: Two types of Chinese noodles were prepared from each of the HW flours: Chinese raw noodles and Chinese wet noodles. The Chinese raw noodle formula was: flour, 1000 g; salt, 12 g; and distilled water, 280 g. The Chinese wet noodle formula was: flour, 1000 g; salt, 20 g; K_2CO_3, 4.5 g; Na_2CO_3, 4.5 g; and water, 320 g. Noodle sheet color is measured by stacking three dough sheets and taking two readings from each side of two dough sheets (a total of eight readings) using a Minolta CR-310 Chroma Meter; the mean value is reported. For Chinese wet noodles, noodle sheet color was measured on both uncooked and parboiled (boiling for 1.5 min) sheets. Cooking Yield is % of weight gain after cooking for 5 min for Chinese raw noodles and for 1.5 min for Chinese wet noodles, rinsing in 27^0 C water and draining. Sensory Noodle Color Stability Score is a total score of noodle color rated at 2 hr and 24 hr against a control sample (an assigned score of 7) and is reported based on a scale of 1-10; higher scores indicate better color stability. The Instrumental Texture is determined on five strands of cooked noodles (2.5 x 1.2 mm for raw noodles, W x T; 1.7 x 1.6 mm for wet noodles, W x T) using a TA.XT2 Texture Analyzer. Firmness indicates noodle bite; springiness indicates the degree of recovery after first bite; cohesiveness is a measure of the extent to which noodle structure is disrupted during first bite; and chewiness is a product of firmness, cohesiveness and springiness (firmness x cohesiveness x springiness) and thus is a single parameter that incorporates the three textural parameters. Higher values of these textural parameters are generally more desirable for Chinese-style noodles.
Chinese Steamed Bread: Three types of Chinese steamed breads were prepared: Chinese southern-type from each of the SW and club wheat flours, and Chinese northern-type and Taiwan-type from each of the HW flours. The Chinese southern-type formula was: flour 500g, sugar 75g, shortening 20g, baking powder 6g, yeast 4g, water 195-215g, and nonfat dry milk powder 15g. The Chinese northern-type formula was: flour 400g, yeast 4g, and water 180-208g. The Taiwan-type formula was: flour 400g, yeast 4g, sugar 16g, shortening 16g, and water 170-180g. Yeast was dissolved in water before use. All steamed breads were prepared using straight dough methods (WMC protocol). The Total Score is the sum of process score (15% of the total) and product score (85%). Process score includes mixing, sheeting, rolling, cutting and fermentation scores. Product score comprises volume, external characteristics, internal characteristics, eating quality and flavor. Each property was rated compared with a control sample. The control flour was scored 70.

Wheat Grades and Grade Requirements Table

Grading Factors	Grades U.S. Nos. 1	2	3	4	5
			Minimum limits:		
Test Weight (lbs/bu)					
Hard Red Spring or White Club	58.0	57.0	55.0	53.0	50.0
All other classes and subclasses	60.0	58.0	56.0	54.0	51.0
Test Weight (kg/hl)					
Hard Red Spring or White Club	76.4	75.1	72.5	69.9	66.0
Durum	78.2	75.6	73.0	70.4	66.5
All other classes and subclasses	78.9	76.4	73.8	71.2	67.3
			Maximum percent limits:		
Defects					
Damaged kernels:					
- Heat (part of total)	0.2	0.2	0.5	1.0	3.0
- Total	2.0	4.0	7.0	10.0	15.0
Foreign material	0.4	0.7	1.3	3.0	5.0
Shrunken and broken kernels	3.0	5.0	8.0	12.0	20.0
Total 1/	3.0	5.0	8.0	12.0	20.0
Wheat of Other Classes 2/					
Contrasting classes	1.0	2.0	3.0	10.0	10.0
Total 3/	3.0	5.0	10.0	10.0	10.0
Stones	0.1	0.1	0.1	0.1	0.1
			Maximum count limits:		
Other material (1000 gram sample)					
Animal filth	1	1	1	1	1
Castor beans	1	1	1	1	1
Crotalaria seeds	2	2	2	2	2
Glass	0	0	0	0	0
Stones	3	3	3	3	3
Unknown foreign substance	3	3	3	3	3
Total 4/	4	4	4	4	4
Insect-damaged kernels in 100 grams	31	31	31	31	31

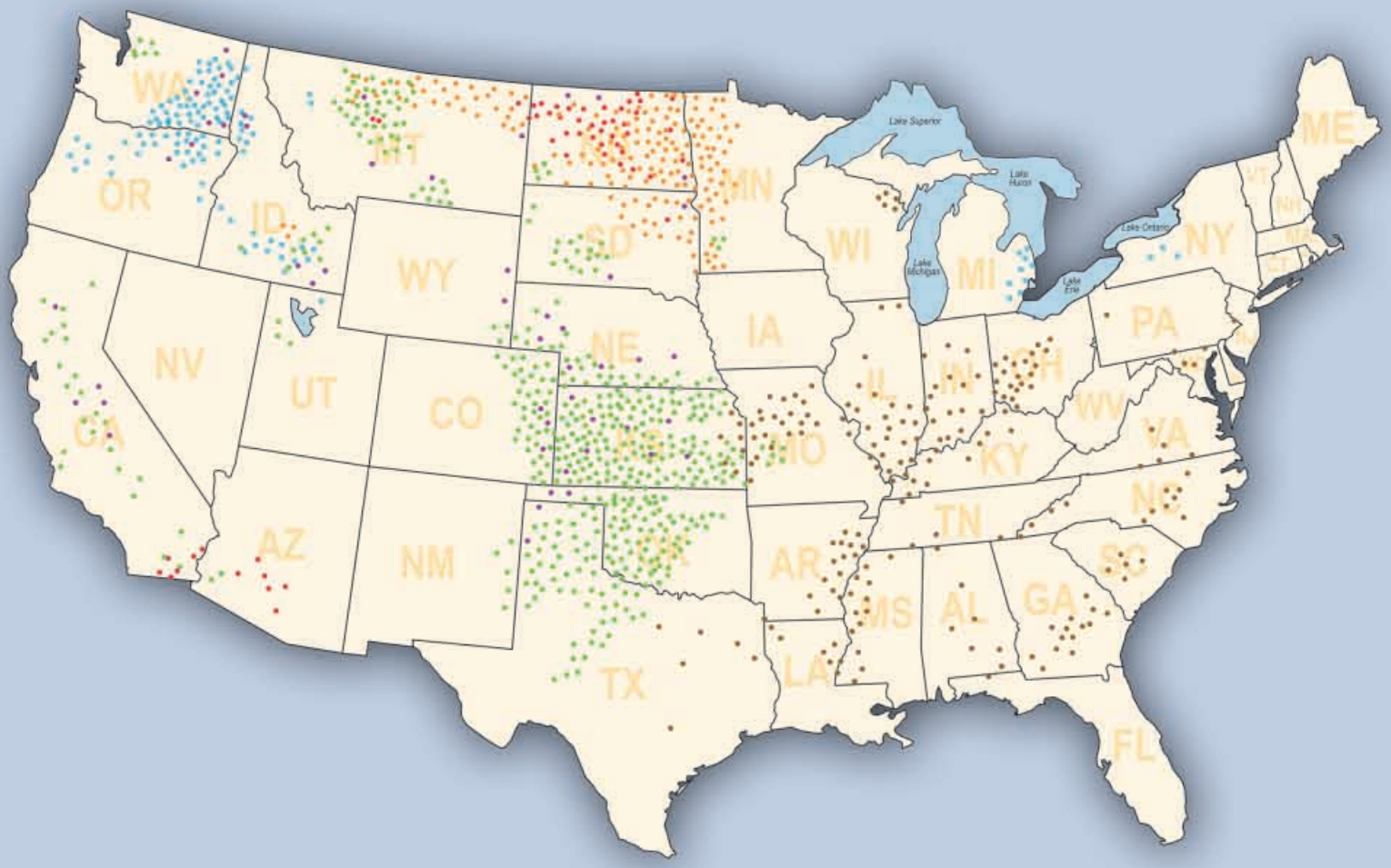
U.S. Sample grade:
Wheat that:
(a) Does not meet the requirements for U.S. Nos. 1, 2, 3, 4, 5; or
(b) Has a musty, sour or commercially objectionable foreign odor (except smut or garlic odor); or
(c) Is heating or of distinctly low quality.

1/ Includes damaged kernels (total), foreign material, and shrunken and broken kernels.
2/ Unclassed wheat of any grade may contain not more than 10.0% of wheat of other classes.
3/ Includes contrasting classes.
4/ Includes any combination of animal filth, castor beans, crotalaria seeds, glass, stones, or unknown foreign substance.

Conversion Factors

Wheat Equivalents:		**Metric Equivalents:**	
1 bushel =	60 pounds (27.2 kg)	1 pound =	0.4536 kg
36.74 bushels =	1 metric ton	1 metric ton (MT) =	2204.6 lbs
37.33 bushels =	1 long ton	1 short ton (2000 lbs) =	0.9072 MT, or 907.2 kg
33.33 bushels =	1 short ton	1 long ton (2240 lbs) =	1.0160 MT, or 1016.0 kg
3.67 bushels =	1 quintal	1 metric ton =	10 quintals
tons/ha =	0.06725 bu/acre	1 hectare =	2.47 acres
durum kg/hl =	lbs/bu x 1.292 + 0.630	1 acre =	0.40 hectare
other wheat kg/hl =	lbs/bu x 1.292 + 1.419	1 hundredweight =	100 pounds or 45.36 kg

U.S. wheat. . .the world's most reliable choice



Medium to high protein, medium hard endosperm, red bran, medium gluten content and mellow gluten. Used in pan breads, Asian noodles, hard rolls, flatbreads and general-purpose flour.

Highest protein content, hard endosperm, red bran, strong gluten, high water absorption. Used in pan breads, hearth breads, rolls, croissants, bagels, hamburger buns, pizza crust and for blending.

Low protein content, soft endosperm, red bran, weak gluten. Used in pastries, cakes, cookies, crackers, pretzels, and flat breads. Can also be used for blending.

Hardest of all wheats, high protein content, yellow endosperm, white bran. Used to make pasta, couscous, and some Mediterranean breads.

Medium to high protein content, hard endosperm, white bran. Used in Asian noodles, whole wheat or high extraction flour applications, pan breads and flat breads.

Low protein, low moisture wheat. Soft endosperm, white bran, weak gluten. Used in pastries, cakes, biscuits, crackers, flat breads, Asian-style noodles and snack foods.

- Hard Red Winter
- Hard Red Spring
- Soft Red Winter
- Durum
- Hard White
- Soft White

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