

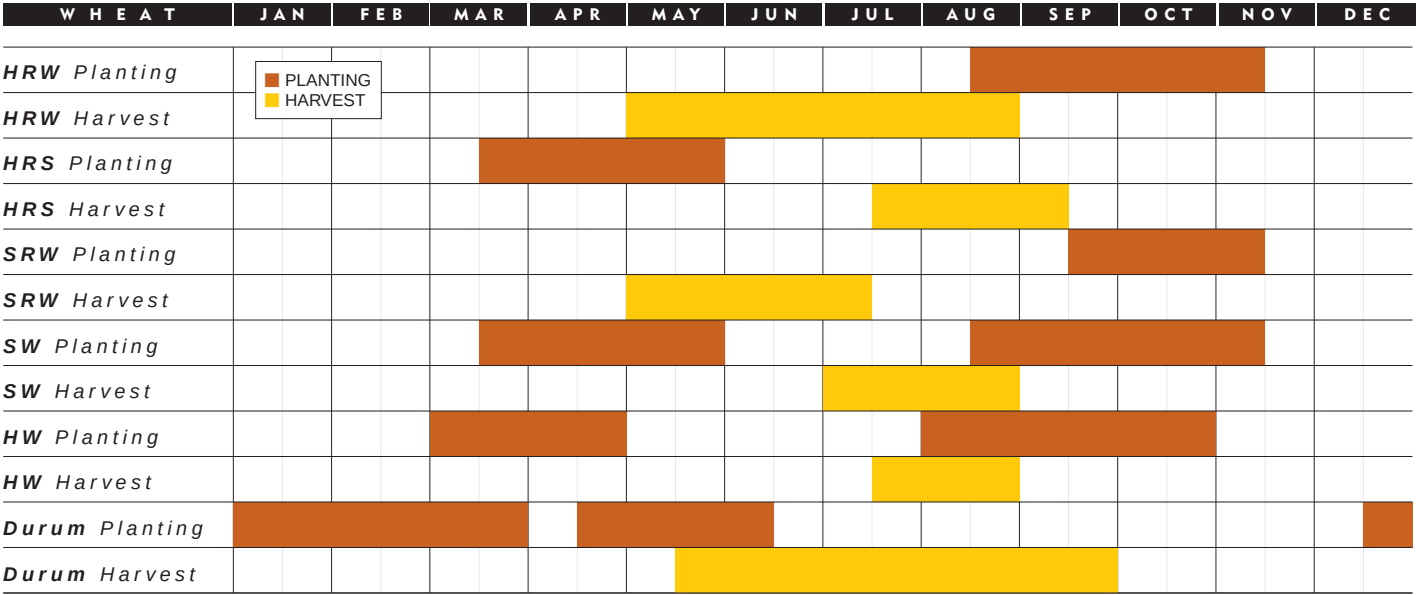
2006

U.S. WHEAT
ASSOCIATES

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:

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- Colorado Wheat Administrative Committee
- Idaho Wheat Commission
- Kansas Wheat Commission
- Minnesota Wheat Research and Promotion Council
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- 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*	
	2006	5-Year Avg	2006	5-Year Avg	2006	5-Year Avg	2006	5-Year Avg	2006	5-Year Avg
Test Weight (lb/bu)	60.5	59.8	60.4	60.3	59.8	59.1	60.2	59.9	59.9	60.4
(kg/hl)	79.6	78.6	79.5	79.3	78.7	77.8	79.2	78.8	78.0	78.7
Grade	1 HRW	2 HRW	1 DNS	1 DNS	2 SRW	2 SRW	1 SW	2 SW	2 HAD	1 HAD
Dockage (%)	0.5	0.7	0.7	1.1	0.8	0.7	0.7	0.7	2.3	1.3
Wheat Moisture (%)	11.0	11.4	11.5	12.0	12.8	13.1	8.9	9.1	11.3	11.7
Wheat Protein (%) **	13.7	12.3	15.2	14.4	9.9	10.1	10.5	10.4	15.1	13.9
Wheat Ash (%) **	1.53	1.55	1.56	1.65	1.46	1.57	1.45	1.40	1.53	1.62
1000 Kernel Weight (g)	28.6	28.4	28.3	29.7	33.7	32.9	34.1	33.7	33.2	36.6
Wheat Falling Number (sec)	392	407	431	374	318	355	335	354	385	354
Flour/Semolina Extraction (%)	67.7	69.6	68.5	69.1	68.0	69.8	70.3	67.9	65.1	64.2
Flour/Semolina Ash (%) **	0.49	0.48	0.50	0.45	0.40	0.44	0.42	0.38	0.72	0.69
Wet Gluten (%)	33.9	29.2	37.8	35.3	21.8	22.2	25.0	23.4	39.5	36.2
Farinograph:										
Peak Time (min)	6.9	6.0	10.3	11.6	1.7	1.6	1.6	1.7	n/a	n/a
Stability (min)	12.6	10.9	22.6	19.8	3.0	3.0	4.3	3.5	n/a	n/a
Absorption (%)	58.5	59.3	66.9	64.8	52.5	52.6	53.8	51.5	n/a	n/a
Alveograph W (10 ⁻⁴ joules)	318	297	484	395	92	91	117	118	102	74
Loaf Volume (cc)	871	845	1066	1064	687	730	n/a	n/a	n/a	n/a
Production (mmt)	18.6	23.7	11.8	12.5	10.6	9.5	6.4	6.9	1.5	2.3

* 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, from Texas in the south through Oklahoma, Kansas, Colorado, Nebraska, South Dakota and Montana. Growing conditions, varieties and management practices vary throughout the region and can influence the quality of the crop.

A majority of the region suffered from drought conditions with record high temperatures, high winds, and little or no moisture from September to April. Drought conditions were the worst in the south, and the only Great Plains HRW state to receive adequate rainfall throughout the growing season was Montana. Production losses were significant in Texas, Oklahoma, Kansas, Colorado and South Dakota. Nebraska was just slightly lower than the 10-year average, while Montana produced a crop that was 82% above their 10-year average.

Survey Methods: A total of 343 individual samples were collected from elevators in the nine HRW states surveyed. Quality analysis was performed by CII Laboratory Services, Kansas City, Missouri. The states were divided into 34 reporting areas, referred to as "grainsheds," and all data was initially compiled by grainshed. Wheat grade, wheat non-grade, flour, farinograph and alveograph parameters were tested for each individual sample. Up to four composite samples were then tested for each grainshed, one overall composite and three composites based on protein (below 11.5%, 11.5%-12.5% and above 12.5%). Composite samples were tested for wheat non-grade, flour, dough and baking data. 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: Overall average test weight is higher than last year by 0.7 lb/bu (0.8 kg/hl) and the five-year average by 0.8 lb/bu (1.0 kg/hl). As a result of the high test weight, the average grade is #1 HRW, higher than last year and the five-year average. Average kernel size and weight are both slightly lower than last year and the five-year average.

Overall average wheat protein of 13.7% is 1.5 percentage points higher than last year and the five-year average and is the highest average protein reported in at least 20 years. There was so little low protein wheat, that no low protein results are reported this year for Gulf-tributary samples. The average falling number value and distribution indicate a sound crop.

Milling and Flour Use: Despite the favorable test weight values, average flour extraction rate on the Buhler Laboratory Mill is 1.4 percentage points lower than last year, which apparently reflects the effects of drought. (Lab mill results provide a good basis for comparison from year to

year, but are always much lower than commercial extraction rates.)

As might be expected from the high protein values, overall farinograph peak and stability values are higher than last year and the five-year average, while farinograph absorption is unchanged from last year.

Millers have indicated a smooth transition to grinding this year's crop. Higher protein levels throughout much of the production region are resulting in a stronger-than-average flour.

Summary: The key factor affecting the 2006 crop was drought, which significantly reduced overall HRW production. Most of that production is high protein, and there is a reduced amount of lower-protein wheat available for blending. 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 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.

Untimely spring rains increased the disease pressure in various HRW-producing areas. As a result, the crop quality was more variable than in past years. Test weights, kernel size and protein quantity varied from area to area. This was considered a very unusual year in California's crop history.

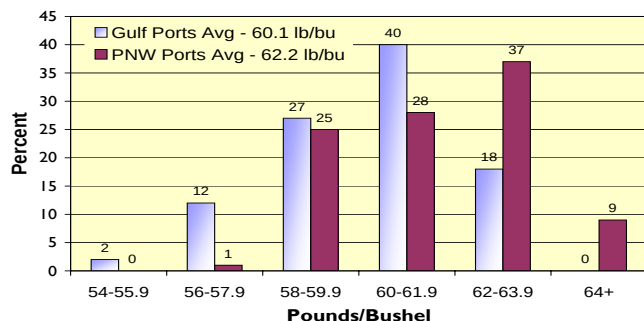
California wheat is predominately exported through the Port of Stockton, located on an inland waterway in Northern California. This grain handling facility is owned and operated by a California company. Wheat that goes into this facility is locally grown and trucked in, often directly from the field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

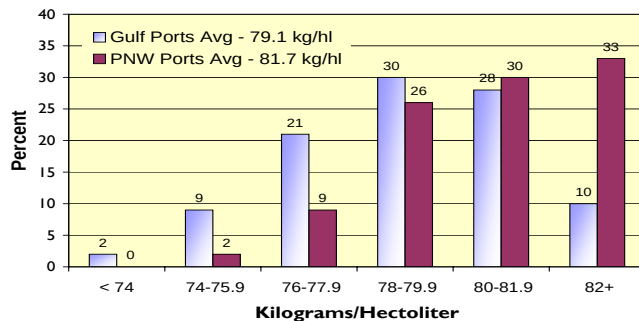
Export Cargo Survey

The export cargo data show the results of analysis of 456 individual subplot samples for marketing years 2006 and 2005. Of the 82 2006-crop samples collected in August and September, 56 are from Gulf ports and 26 from PNW ports. Of the 374 2005-crop samples, 262 were drawn at Gulf ports and 112 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.

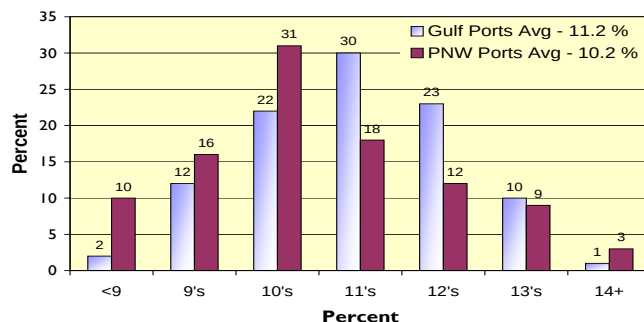
Test Weight



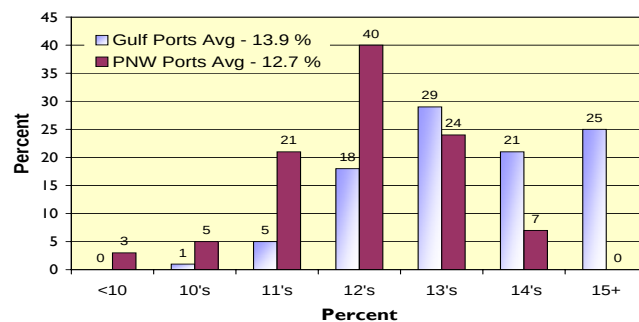
Hectoliter Weight



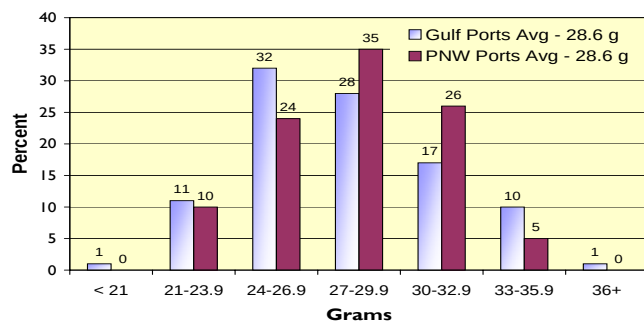
Wheat Moisture



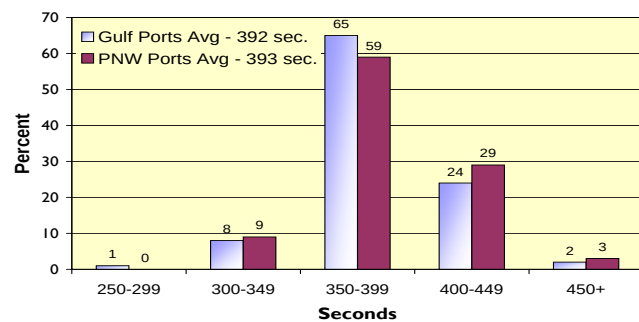
Protein (12% mb)



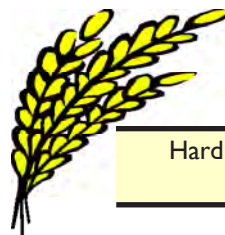
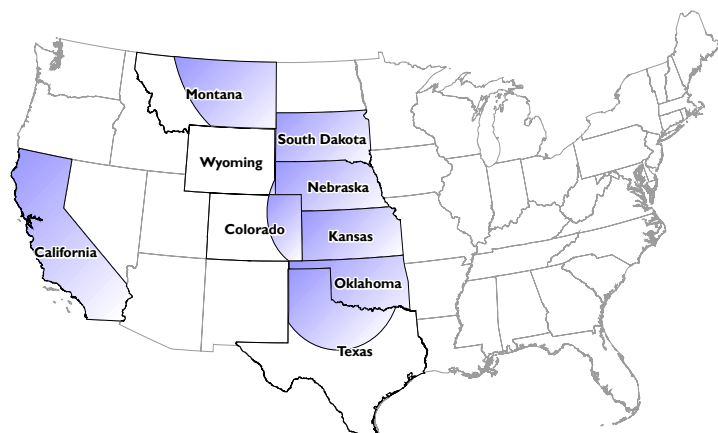
1000 Kernel Weight



Falling Number



Note: Charts include Great Plains HRW Only.

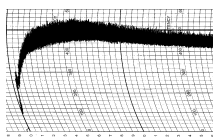


Hard red winter survey results are from nine states.

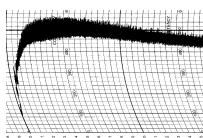
Composite Average Farinograms and Alveograms

Farinograms:

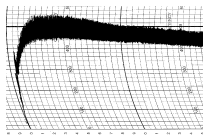
High
Protein:



Medium
Protein:

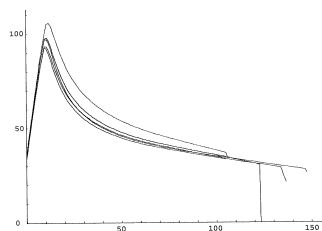


Low
Protein:

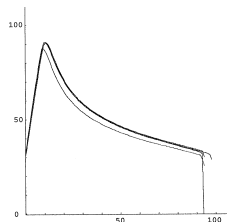


Alveograms:

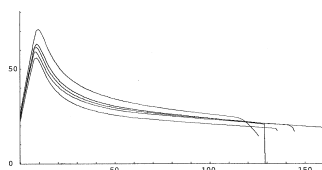
High Protein:



Medium Protein:



Low Protein:



Hard Red Winter

Composite Average

	2006 By Protein*				2005	5-Year
	Low	Med	High	Overall	Overall	Avg
Wheat Grade Data:						
Test Weight (lb/bu)	63.1	61.8	60.2	60.5	59.9	59.8
(kg/hl)	82.9	81.3	79.2	79.6	78.8	78.6
Damaged Kernels (%)	0.0	0.1	0.2	0.2	0.2	0.2
Foreign Material (%)	0.0	0.1	0.1	0.1	0.1	0.1
Shrunken & Broken (%)	1.0	0.9	1.1	1.1	1.2	1.2
Total Defects (%)	1.0	1.1	1.4	1.3	1.4	1.6
Grade	1 HRW	1 HRW	1 HRW	1 HRW	2 HRW	2 HRW
Wheat Non-Grade Data:						
Dockage (%)	0.4	0.5	0.5	0.5	0.8	0.7
Moisture (%)	10.3	10.6	11.0	11.0	11.1	11.4
Protein (%) 12%/0% moisture basis	10.9/12.4	12.0/13.6	14.0/15.9	13.7/15.6	12.2/13.8	12.3/14.0
Ash (%) 14%/0% moisture basis	1.45/1.69	1.46/1.70	1.53/1.78	1.53/1.78	1.55/1.81	1.55/1.80
1000 Kernel Weight (g)	28.9	30.4	29.1	28.6	28.7	28.4
Kernel Size (%) lg/md/sm	63/36/1	69/30/1	56/43/1	58/41/1	55/43/2	52/46/2
Single Kernel: Hardness	72.1	67.6	71.6	71.2	67.2	74.2
Weight (mg)	31.2	32.7	29.5	29.8	30.0	29.2
Diameter (mm)	2.36	2.42	2.26	2.26	2.30	2.30
Sedimentation (cc)	32.4	42.3	52.9	44.5	40.5	41.0
Falling Number (sec)	407	387	394	392	401	407
Flour Data:						
Lab Mill Extraction (%)	66.8	68.1	67.7	67.7	69.1	69.6
Color: L*	92.9	92.8	92.4	92.5	92.2	92.2
a*	-2.7	-2.7	-2.8	-2.7	-3.2	-3.3
b*	8.7	8.8	8.9	8.9	9.3	9.4
Protein (%) 14%/0% moisture basis	9.8/11.4	11.0/12.8	12.3/14.3	12.1/14.1	10.9/12.7	11.0/12.8
Ash (%) 14%/0% moisture basis	0.44/0.51	0.47/0.55	0.50/0.58	0.49/0.57	0.47/0.55	0.48/0.56
Wet Gluten (%)	25.3	30.2	35.0	33.9	29.9	29.2
Gluten Index	97.4	97.0	92.2	93.4	96.5	
Falling Number (sec)	402	436	456	437	412	425
Amylograph Viscosity 65 g (BU)	726	784	786	807	667	662
Starch Damage (%)	6.6	6.9	6.9	7.0	7.7	8.4
Dough Properties:						
Farinograph:						
Peak Time (min)	5.5	6.2	6.8	6.9	6.0	6.0
Stability (min)	11.9	11.6	12.1	12.6	10.5	10.9
Absorption (%)	55.8	57.6	59.0	58.5	58.5	59.3
Alveograph: P (mm)	85	90	90	86	84	95
L (mm)	86	106	116	117	102	93
P/L Ratio	1.05	0.87	0.80	0.75	0.82	1.02
W (10 ⁻⁴ joules)	257	316	329	318	287	297
Extensigraph: Resistance (BU)						
(45/135 min) Extension (cm)						
Area (sq cm)						
Baking Evaluation:						
Crumb Grain	7.0	6.7	6.7	6.8	6.5	6.8
Crumb Texture	7.3	6.9	7.0	7.1	6.8	7.3
Loaf Volume (cc)	792	857	884	871	840	845
% of Area Production:	6%	15%	79%	100%		

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

Harvest Data

Gulf Exportable Average [†]						PNW Exportable Average					
2006 By Protein*				2005	5-Year	2006 By Protein*				2005	5-Year
Low	Med	High	Overall	Overall	Avg	Low	Med	High	Overall	Overall	Avg
61.1	59.9	60.1	60.0	60.0	59.7	63.4	62.9	61.4	62.2	59.6	59.8
80.3	78.9	79.1	78.9	78.9	78.5	83.3	82.7	80.7	81.7	78.4	78.7
0.1	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.2	0.1	0.1	0.3
0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1
0.9	1.1	1.1	1.1	1.1	1.3	1.0	1.0	1.3	1.1	1.4	1.4
1.1	1.4	1.4	1.4	1.4	1.6	1.0	1.1	1.5	1.3	1.6	1.8
1 HRW	2 HRW	1 HRW	1 HRW	2 HRW		1 HRW	1 HRW	1 HRW	1 HRW	2 HRW	2 HRW
0.6	0.5	0.5	0.7	0.7		0.4	0.4	0.5	0.5	0.9	0.8
11.5	11.1	11.2	11.2	11.6		9.8	9.3	10.4	10.2	10.3	10.9
12.2/13.9	14.1/16.0	13.9/15.8	12.1/13.8	12.2/13.9		10.8/12.3	11.9/13.5	13.5/15.3	12.7/14.4	12.6/14.3	12.7/14.5
1.53/1.78	1.55/1.80	1.54/1.79	1.55/1.80	1.56/1.81		1.43/1.66	1.35/1.57	1.47/1.71	1.48/1.72	1.60/1.86	1.54/1.79
30.4	28.2	28.6	28.9	28.5		28.4	30.5	34.2	28.6	26.8	27.9
73/27/1	57/42/1	59/40/1	56/42/2	53/45/2		63/36/1	62/37/1	50/49/2	53/45/1	46/52/2	46/52/2
65.3	71.9	71.1	66.9	74.4		72.4	70.9	70.0	71.5	70.4	73.5
32.9	29.3	29.7	30.1	29.1		31.0	32.5	29.9	29.9	29.0	28.9
2.43	2.26	2.26	2.30	2.20		2.37	2.40	2.24	2.26	2.23	2.20
44.9	54.1	45.3	40.2	40.7		32.5	38.4	46.3	41.3	42.2	42.3
375	388	392	401	404		415	404	419	393	403	416
68.6	67.8	67.8	69.0	69.5		66.9	67.3	66.8	67.3	69.8	70.1
92.7	92.4	92.4	92.1	92.0		92.9	92.9	92.8	92.9	92.6	92.5
-2.6	-2.7	-2.7	-3.1	-3.3		-2.8	-2.9	-3.1	-3.0	-3.3	-3.3
8.5	8.9	8.9	9.2	9.4		8.7	9.2	8.9	9.0	9.8	9.5
11.1/12.9	12.4/14.4	12.2/14.2	10.8/12.6	10.9/12.7		9.8/11.4	10.8/12.6	11.8/13.7	11.3/13.1	11.5/13.4	11.4/13.3
0.50/0.58	0.50/0.58	0.50/0.58	0.47/0.55	0.49/0.57		0.43/0.50	0.43/0.50	0.45/0.52	0.44/0.51	0.49/0.57	0.48/0.56
30.7	35.4	34.7	29.5	29.0		24.6	29.5	33.4	30.3	32.7	30.5
96.7	91.7	92.6	96.8			97.5	97.6	94.1	96.4	94.7	
410	454	437	410	421		413	475	459	433	428	446
821	788	813	664	661		703	731	786	782	686	672
7.0	7.0	7.1	7.7	8.5		6.5	6.9	6.4	6.6	7.4	8.0
6.2	6.8	6.9	6.0	5.9		5.3	6.3	7.0	7.1	6.3	6.2
11.1	12.0	12.3	10.5	10.8		12.0	12.4	12.8	13.8	11.0	11.3
58.0	59.3	59.0	58.3	59.2		55.5	57.0	57.7	56.8	59.3	59.6
92	92	87	84	96		89	87	81	82	83	93
114	117	119	102	92		78	96	115	106	105	96
0.82	0.82	0.74	0.82	1.04		1.15	0.93	0.71	0.78	0.79	0.97
335	334	324	288	298		252	287	309	298	281	295
500/555	490/505	480/530	500/630	559/590			590/670	560/635	600/655	475/560	561/597
19.6/19.3	21.2/18.8	17.8/17.6	16.8/18.0	18.1/16.5			18.7/16.7	19.8/17.1	19.5/17.0	18.9/18.2	17.9/15.8
128/137	140/127	110/120	111/151	129/127			137/138	145/137	149/137	117/132	127/125
6.3	6.7	6.7	6.5	6.8		7.4	7.2	6.6	7.2	6.7	6.9
6.8	7.0	7.1	6.8	7.2		7.5	7.1	7.0	7.3	7.0	7.1
836	877	863	840	844		796	888	915	901	842	847
11%	86%	100%				17%	28%	55%	100%		

[†] Of the production surveyed, 80% is estimated to be Gulf-tributary.

California and Export Data

Hard Red Winter	California Harvest Data				Export Cargo Data			
	Medium Protein Average		High Protein Average		Gulf		PNW	
	2006	2005	2006	2005	2006	2005	2006	2005
Wheat Grade Data:								
Test Weight (lb/bu)	60.5	60.1	60.5	60.9	61.0	60.9	63.0	62.3
(kg/hl)	79.6	79.1	79.5	80.1	80.2	80.1	82.8	81.9
Damaged Kernels (%)	*	0.0	*	0.0	0.9	1.0	0.1	0.3
Foreign Material (%)	*	0.1	*	0.1	0.2	0.2	0.1	0.1
Shrunken & Broken (%)	*	0.3	*	0.3	1.4	1.6	1.3	1.5
Total Defects (%)	*	0.3	*	0.4	2.5	2.9	1.5	1.9
Grade	*	2 HRW	*	2 HRW	1 HRW	1 HRW	1 HRW	1 HRW
Wheat Non-Grade Data:								
Dockage (%)	*	0.7	*	1.0	0.6	0.7	0.3	0.3
Moisture (%)	8.5	9.8	8.2	9.2	11.3	11.2	9.7	10.1
Protein (%) 12%/0% moisture basis	11.8/13.4	11.7/13.3	13.2/15.0	13.4/15.3	12.4/14.1	12.1/13.7	12.1/13.7	12.1/13.8
Ash (%) 14%/0% moisture basis	1.57/1.83	1.46/1.70	1.63/1.90	1.48/1.72	1.53/1.78	1.52/1.77	1.44/1.67	1.45/1.69
1000 Kernel Weight (g)	35.7	41.7	35.9	41.5	27.7	26.7	28.5	28.1
Kernel Size (%) lg/md/sm					61/37/2	59/39/2	64/34/1	60/38/2
Single Kernel: Hardness						73.2		75.5
Weight (mg)						29.0		30.3
Diameter (mm)						2.35		2.39
Sedimentation (cc)					31.0	30.5	34.7	35.1
Falling Number (sec)					431	425	435	436
Flour Data:								
Lab Mill Extraction (%)	64.5	66.8	66.2	67.8	68.7	69.6	68.7	69.9
Color: L*					92.5	92.7	92.4	92.8
a*					-2.9	-3.0	-3.1	-3.0
b*					8.5	8.8	9.1	8.9
Protein (%) 14%/0% moisture basis	10.8/12.3	10.4/12.0	11.9/13.8	12.1/14.0	11.0/12.8	10.7/12.4	11.0/12.8	10.8/12.6
Ash (%) 14%/0% moisture basis	0.47/0.54	0.44/0.51	0.46/0.54	0.44/0.51	0.47/0.55	0.46/0.54	0.47/0.54	0.46/0.53
Wet Gluten (%)	26.1	26.8	29.9	31.5	30.1	28.7	31.1	29.7
Gluten Index					94.6	95.3	90.4	93.7
Falling Number (sec)	383	372	404	385	471	481	478	475
Amylograph Viscosity 65 g (BU)					708	628	754	640
Starch Damage (%)								
Dough Properties:								
Farinograph:								
Peak Time (min)	9.7	8.0	10.9	9.5	6.5	6.7	6.3	6.6
Stability (min)	21.2	13.7	24.1	13.1	12.3	12.2	10.3	11.5
Absorption (%)	59.1	62.8	59.7	64.7	57.3	58.0	59.1	59.5
Alveograph: P (mm)					87	97	97	108
L (mm)					102	96	87	90
P/L Ratio					0.85	1.01	1.12	1.20
W (10 ⁻⁴ joules)					301	309	301	328
Extensigraph: Resistance (BU)								
(45/135 min) Extension (cm)								
Area (sq cm)								
Baking Evaluation:								
Crumb Grain					6.4	6.5	6.5	6.6
Crumb Texture					7.1	6.9	7.0	6.9
Loaf Volume (cc)	866	833	891	933	924	858	924	829
Number of Samples					56	262	26	112

* Data not yet available.

Hard Red Winter Production

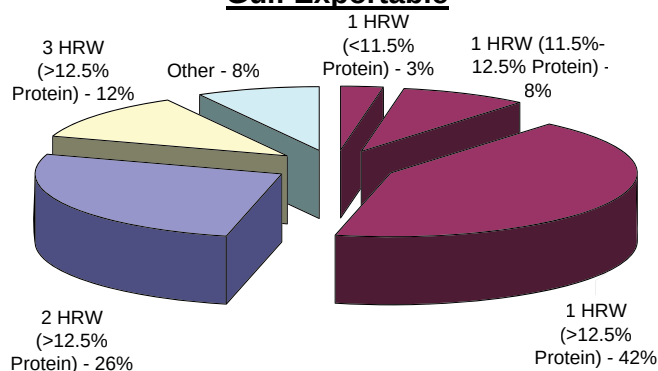
for the major growing region
(million metric tons)

	2006	2005	2004	2003	2002
California	0.33	0.52	0.67	0.65	0.59
Colorado	1.01	1.32	1.16	2.10	0.99
Kansas	7.77	9.93	8.13	12.93	7.29
Montana	2.20	2.52	1.76	1.78	0.58
Nebraska	1.65	1.83	1.63	2.28	1.37
Oklahoma	2.18	3.41	4.39	4.83	2.79
South Dakota	1.13	1.78	1.53	1.67	0.55
Texas	0.85	2.43	2.72	2.42	1.96
Wyoming	0.10	0.12	0.10	0.11	0.06
Nine-State Total	17.21	23.87	22.08	28.76	16.17
Total HRW Production	18.56	25.31	23.30	29.15	16.88

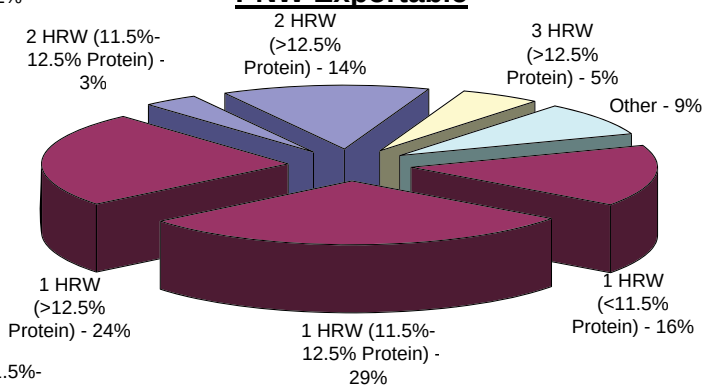
Based on USDA crop estimates of September 29, 2006.

Protein Distribution

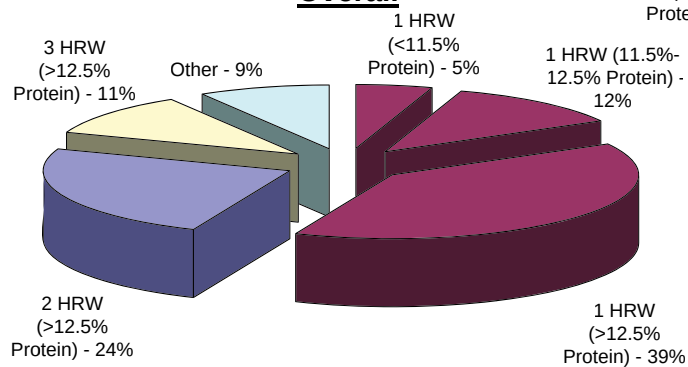
Gulf Exportable



PNW Exportable



Overall



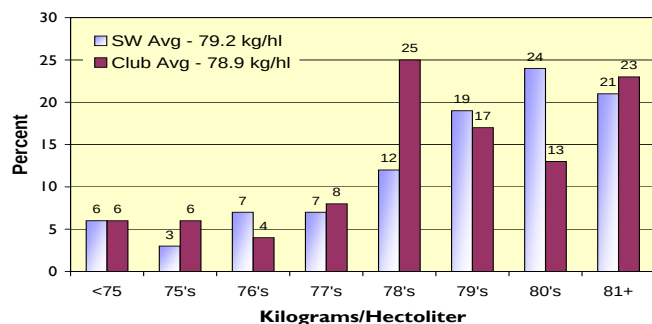
Pacific Northwest Soft White

Harvest Survey

Weather and Harvest: The Pacific Northwest (PNW) of Idaho, Oregon and Washington had rather dry conditions at planting, but most areas received much needed rain during the winter and early spring. These conditions resulted in a crop with good yield in dryland farming areas. Hot and dry conditions prevailed during the wheat harvest.

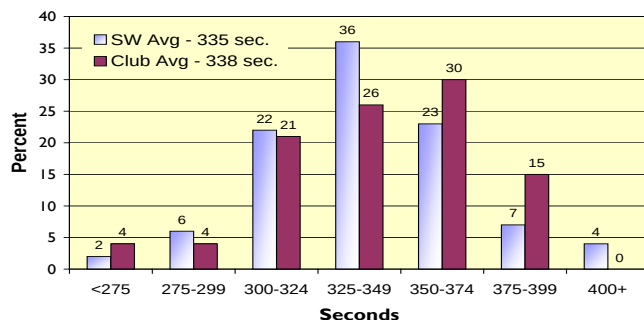
Wheat and Grade Data: The average test weight for the 2006 crop soft white (SW) at 60.2 lb/bu (79.2 kg/hl) was slightly above last year and the five-year average, and white club (WC) at 60.0 lb/bu (78.9 kg/hl) was slightly below last year and the five-year average. Other Federal Grain Inspection Service grading factors for SW and WC were similar to last year and the five-year averages. SW dockage decreased by 0.1 percentage point to 0.7% and WC decreased by 0.2 to 0.7% from last year. Wheat moisture contents of SW at 8.9% and WC at 8.4% were slightly higher than last year, but slightly lower than the five-year averages.

Hectoliter Weight



Protein contents (12% mb) of 10.5% for SW and 10.1% for WC were higher than last year and the five-year averages. Wheat ash was higher than last year and the five-year averages for SW and WC. SW thousand kernel weight and kernel diameter values were slightly more than last year and the five-year averages, and WC values were similar to last year and the five-year averages. Falling number values (14% mb) were 335 seconds for SW and 338 seconds for WC, both of which were slightly lower than the five-year averages.

Falling Number



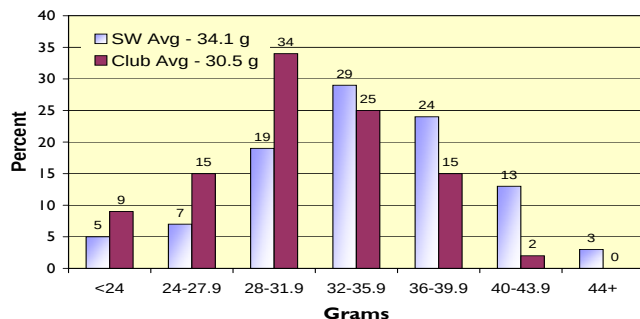
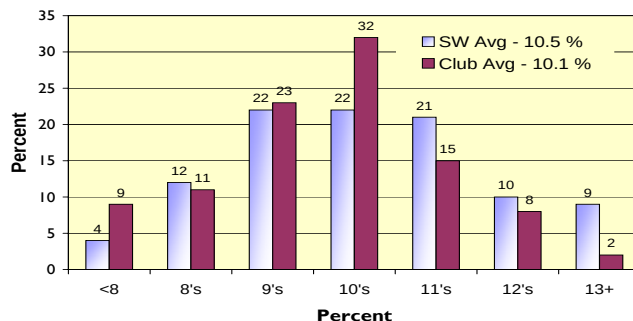
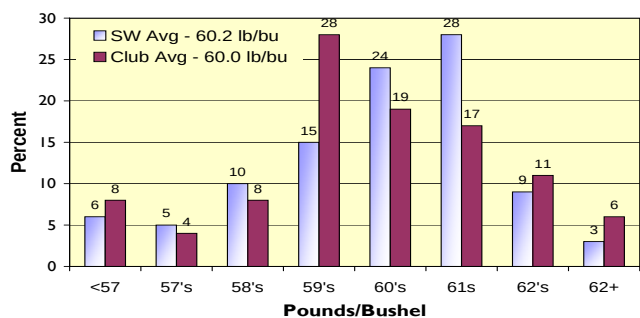
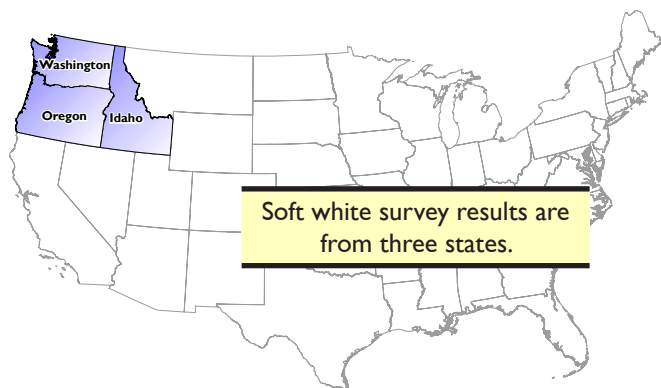
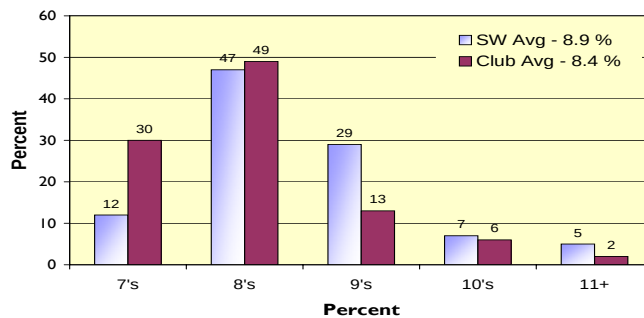
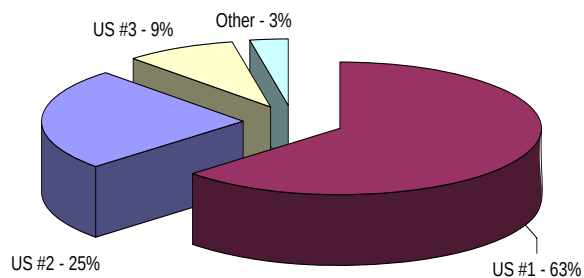
Flour, Dough and Baking Data: The 2006 crop Buhler Laboratory Mill flour extractions were significantly higher than last year and the five-year averages for SW at 70.3% and for WC at 71.3%. (Lab mill extraction rate provides a good basis for year-to-year comparison, but is always lower than commercial extraction rates.) Flour ash contents for both SW and WC were slightly higher than last year and the five-year averages as a result of higher flour extractions. Flour protein contents (14% mb) were 9.0% and 8.6% for SW and WC, respectively. Falling number values indicated sound flour samples for SW and WC, and amylograph peak viscosity values were higher than last year and the five-year averages. Starch damage values for SW and WC were similar to last year and higher than the five-year averages. Farinograph peak and stability times showed that SW had slightly weaker gluten properties than last year, but stronger than the five-year averages. Alveograph L values, which normally show longer times with higher protein content, for SW and WC displayed significantly shorter than last year and similar to the five-year averages. SW and WC extensigraph extensibility indicated similar values to last year and the five-year averages. Sponge cake volumes for SW and WC were larger than last year and similar to the five-year averages at 1171 and 1221 cc, respectively. SW cake score was similar to last year and the five-year average, but WC score was higher than last year and the five-year average. Cookie diameters for SW and WC were slightly smaller than 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 control flour. Specific volumes were lower for SW and slightly higher for WC than last year, but SW and WC had specific volumes lower than the five-year averages. Total scores were higher 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 (WMC), Portland, Oregon. Laboratory testing was conducted according to either American Association of Cereal Chemists International 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 USDA supported this program.

Export Cargo Survey

The PNW SW export cargo data show the results of analyses of individual subplot samples including 85 drawn from the 2004 crop and 64 from the 2005 crop (August 2005 through May 2006). Representative samples were selected from official Federal Grain Inspection Service samples. Grade data are the actual grades on the individual subplots. Milling and processing analyses were conducted by the Wheat Marketing Center, Portland, Oregon.

1000 Kernel Weight**Protein (12% mb)****Test Weight****Wheat Moisture****SW Grade Distribution****Pacific Northwest Soft White Wheat Production**

in major producing states
(million metric tons)

	2006		2005		2004		2003		2002	
	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB
Washington	2.91	0.18	3.13	0.17	3.10	0.24	3.00	0.31	2.86	0.28
Oregon	1.44	0.04	1.35	0.04	1.54	0.05	1.34	0.04	0.85	0.04
Idaho	1.09	0.02	1.92	0.04	1.53	0.06	1.58	0.04	1.57	0.04
Three-state Total	5.44	0.24	6.40	0.25	6.17	0.34	5.92	0.39	5.28	0.36
Three-state Total Soft White Wheat	5.68		6.65		6.51		6.31		5.64	
Total US Soft White Wheat	6.38		7.30		7.33		6.99		6.42	

Based on USDA crop estimates of September 29, 2006.

Pacific Northwest Harvest Data

Soft White	Soft White By Protein*					2005		5-Year Avg	
	Low	Med	High	All	Club Avg	SW	Club	SW	Club
Wheat Grade Data:									
Test Weight (lb/bu)	61.1	61.3	60.1	60.2	60.0	60.1	60.4	59.9	60.1
(kg/hl)	80.4	80.6	79.1	79.2	78.9	79.1	79.4	78.8	79.1
Damaged Kernels (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Foreign Material (%)	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Shrunken & Broken (%)	0.7	0.6	0.9	0.9	1.5	0.9	1.2	0.9	1.5
Total Defects (%)	0.7	0.7	1.0	1.0	1.7	1.0	1.5	1.1	1.7
Grade	I SW	I SW	I SW	I SW	I WC	I SW	I WC	2 SW	IWC
Wheat Non-Grade Data:									
Dockage (%)	0.4	0.7	0.6	0.7	0.7	0.6	0.9	0.7	0.8
Moisture (%)	9.2	9.2	8.8	8.9	8.4	8.8	8.2	9.1	8.5
Protein (%) 12%/0% moisture basis	8.6/9.8	10.1/11.5	12.1/13.8	10.5/11.9	10.1/11.5	9.9/11.2	9.4/10.7	10.4/11.8	9.9/11.2
Ash (%) 14%/0% moisture basis	1.40/1.63	1.42/1.65	1.55/1.80	1.45/1.69	1.36/1.58	1.39/1.62	1.32/1.53	1.40/1.63	1.29/1.50
1000 Kernel Weight (g)	36.9	35.7	33.3	34.1	30.5	33.3	30.5	33.7	30.4
Kernel Size (%) lg/md/sm	91/9/0	87/13/0	76/23/1	82/17/1	73/25/2	80/19/1	77/22/1	79/20/1	70/29/1
Single Kernel: Hardness	31.8	36.0	35.0	36.8	38.3	34.7	37.5	32.8	37.5
Weight (mg)	37.9	37.5	35.4	36.6	31.7	35.9	33.3	35.2	32.7
Diameter (mm)	2.51	2.49	2.42	2.47	2.25	2.42	2.27	2.44	2.25
Sedimentation (cc)	10.2	12.8	19.3	15.4	13.2	17.2	13.1	17.7	13.5
Falling Number (sec)	327	345	352	335	338	350	333	354	346
Flour Data:									
Lab Mill Extraction (%)	71.4	70.2	70.0	70.3	71.3	67.3	67.6	67.9	69.2
Color: L*	92.0	92.2	92.3	92.2	92.1	92.4	92.3	92.4	92.4
a*	-2.4	-2.3	-2.2	-2.3	-2.1	-2.5	-2.4	-2.5	-2.4
b*	7.8	7.7	7.7	7.7	7.2	8.1	7.4	7.3	7.0
Protein (%) 14%/0% moisture basis	7.0/8.1	8.3/9.7	10.1/11.7	9.0/10.5	8.6/10.0	8.2/9.5	7.6/8.8	8.7/10.1	8.3/9.7
Ash (%) 14%/0% moisture basis	0.41/0.48	0.41/0.48	0.44/0.51	0.42/0.49	0.43/0.50	0.40/0.47	0.39/0.45	0.38/0.44	0.39/0.45
Wet Gluten (%)	16.0	21.2	31.1	25.0	17.8	21.6	20.7	23.4	18.4
Gluten Index	57.0	73.3	62.8	65.6	11.0	46.5	49.8		
Falling Number (sec)	335	333	349	341	343	353	356	351	348
Amylograph Viscosity 65 g (BU)	570	560	540	552	620	462	530	545	570
Starch Damage (%)	4.8	4.5	4.3	4.4	4.0	4.1	4.0	3.9	3.4
Solvent Retention Capacity (%)									
Water/50% Sucrose	54/102	52/104	52/111	52/107	41/99	54/108	43/96	53/107	44/99
5% Lactic Acid/5% Sodium Carbonate	90/78	99/78	100/78	98/78	77/72	104/82	76/74	109/80	82/74
Dough Properties:									
Farinograph:									
Peak Time (min)	1.2	1.5	2.2	1.6	1.2	1.9	1.2	1.7	1.2
Stability (min)	1.2	3.6	4.8	4.3	1.8	4.8	1.9	3.5	1.5
Absorption (%)	53.0	53.6	55.0	53.8	52.9	52.7	51.5	51.5	50.4
Alveograph: P (mm)									
	42	42	42	42	30	39	24	43	28
L (mm)	61	104	140	119	77	138	93	114	79
P/L Ratio	0.69	0.40	0.30	0.35	0.39	0.28	0.26	0.37	0.35
W (10 ⁻⁴ joules)	76	112	129	117	52	125	47	118	48
Extensigraph: Resistance (BU)									
	204	245	214	224	105	241	110	251	112
(45 min) Extension (cm)	13.7	15.9	18.8	16.9	15.7	16.7	15.0	16.2	15.0
Area (sq cm)	43	58	60	56	26	60	26	60	26
Baking Evaluation:									
Sponge Cake: Volume (cc)									
	1193	1178	1158	1171	1221	1148	1164	1174	1192
Score	51	55	48	51	53	51	46	52	50
Cookie Diameter (cm)	8.3	8.1	7.9	8.0	8.5	8.2	8.7	8.3	8.6
Chinese Southern-Type Steamed Bread Evaluation:									
Specific Volume (ml/g)	2.41	2.59	2.58	2.56	2.60	2.62	2.57	2.66	2.71
Total Score	71.3	71.3	66.8	69.2	67.0	65.6	62.0	68.7	64.7
% of Area Production:	17	36	47	100	100	100	100	100	100

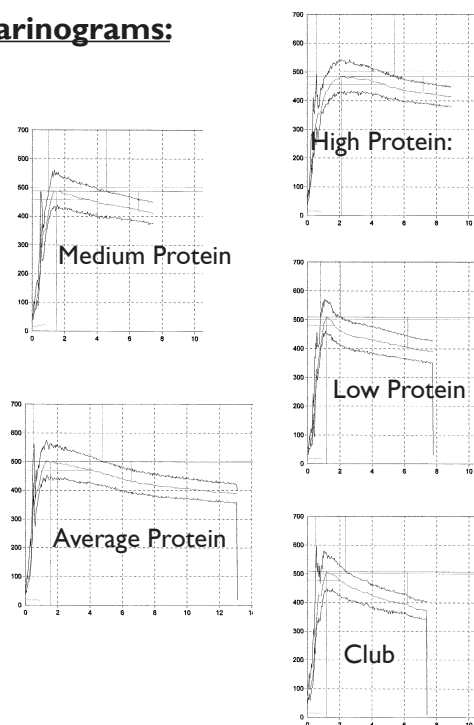
* Low: Less than 9.0%; Medium: 9.0 - 10.5%; High: Greater than 10.5%

Export Cargo Data

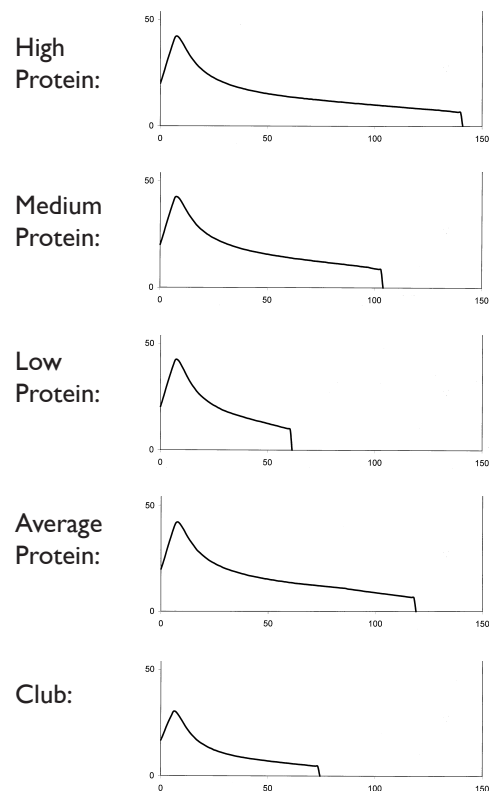
Soft White	2005	2004
Wheat Grade Data:		
Test Weight (lb/bu)	61.5	61.0
(kg/hl)	80.9	80.2
Damaged Kernels (%)	0.2	0.8
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	1.1	1.0
Total Defects (%)	1.4	1.9
Grade	1 SW	1 SW
Wheat Non-Grade Data:		
Dockage (%)	0.3	0.4
Moisture (%)	8.7	9.0
Protein (%) 12%/0% moisture basis	10.1/11.5	10.2/11.6
Ash (%) 14%/0% moisture basis	1.37/1.60	1.36/1.58
1000 Kernel Weight (g)	35.7	36.3
Kernel Size (%) lg/md/sm	80/20/1	81/18/1
Single Kernel: Hardness	41.2	36.7
Weight (mg)	35.1	35.5
Diameter (mm)	2.48	2.49
Sedimentation (cc)	16.1	19.8
Falling Number (sec)	378	317
Flour Data:		
Lab Mill Extraction (%)	70.5	67.9
Color: L*	92.3	92.4
a*	-2.4	-2.4
b*	8.0	7.5
Protein (%) 14%/0% moisture basis	8.5/9.8	8.4/9.8
Ash (%) 14%/0% moisture basis	0.42/0.49	0.38/0.44
Wet Gluten (%)	22.8	23.1
Gluten Index	43.9	49.1
Falling Number (sec)	397	329
Amylograph Viscosity 65 g (BU)	491	287
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Sodium Carbonate		
Dough Properties:		
Farinograph:		
Peak Time (min)	1.7	1.4
Stability (min)	3.8	2.8
Absorption (%)	53.5	50.7
Alveograph: P (mm)		
L (mm)	114	132
P/L Ratio	0.36	0.26
W (10 ⁻⁴ joules)	114	102
Extensigraph: Resistance (BU)		
(45 min) Extension (cm)		
Area (sq cm)		
Baking Evaluation:		
Sponge Cake: Volume (cc)		
Score	47	47
Cookie Diameter (cm)	8.1	8.4
Chinese Southern-Type Steamed Bread Evaluation		
Specific Volume (ml/g)		
Total Score		
Sample Count:	64	85

Composite Average Farinograms and Alveograms

Farinograms:



Alveograms:



Hard Red Spring

Harvest Survey

Weather and Harvest: The 2006 growing season was characterized by below-average precipitation and above-average temperatures. These conditions reduced production, but also sharply lowered disease pressures and helped produce one of the best crops in recent years for overall physical kernel quality and end-use performance. The crop averages No. 1 Dark Northern Spring, 15.2% protein, 60.4 lb/bu (79.5 kg/hl) test weight and only 0.1% damage. Dough and bake tests indicate strong dough mixing properties, high absorption and good dough handling properties, loaf volumes and bread quality. Production is down about 10% from 2005 and the five-year average with a more precipitous decline evident in southern and western parts of the region.

Planting began a little later than normal due to cool, wet conditions, but progressed rapidly in May and finished on schedule. Except for dryness in the south central part of the region, good early moisture and temperatures boosted growth and enhanced initial yield prospects. Increasing temperatures and declining moisture were growing concerns in June, and crop maturity advanced ahead of normal. In July, much of the region experienced some of the hottest temperatures on record. Harvest began in mid-July, about two weeks ahead of normal, and advanced rapidly, reaching one-half complete by August 10 and finishing the first week in September, two to three weeks ahead of normal.

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 819 HRS samples were collected from growers and grain elevators at the time of harvest in Minnesota (116), Montana (191), North Dakota (383) and South Dakota (129). The samples represent approximately 95% 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 2006 HRS crop averages No. 1 DNS, 15.2% protein, 431 seconds falling number and only 11.5% moisture. These are all improvements over the 2005 values of No. 1 NS, 14.5% protein, 410 seconds falling number and 12.3% moisture. Fifty-four percent of the survey samples graded No. 1 DNS, up from 39% last year. Exceptionally low average damage of 0.1% was a key factor in the high grade, and reflected the lack of disease pressure during growing and good harvest weather. The 2005 crop had more disease pressure, and averaged 1.0% damage overall and 1.5% in the Gulf/Great Lakes-tributary region. Shrunken and broken kernels are also lower than a year ago, 1.7% compared to 2.0%, but the PNW-tributary area is showing slightly higher levels of shrunken and broken because of drought. Mostly ideal harvest conditions supported improved color, with an average vitreous kernel count of 83%, well above the 2005 average of 68%.

Test weight and thousand kernel weight show much higher values in the East compared with the West as a result of

more severe drought in the West. While the average test weight of 60.4 lb/bu (79.5 kg/hl) is up slightly from 2005 and the five-year average, the PNW average is only 58.8 lb/bu (77.4 kg/hl), sharply lower than the Gulf/Great Lakes average of 61.6 lb/bu (81.0 kg/hl). Average thousand kernel weight of 28.3 g is lower than 2005's 29.8 g. The PNW averages 25.3 g, much lower than the Gulf/Great Lakes region average of 30.6 g. The average protein of 15.2% is very high, 0.8 percentage points higher than the five-year average. Nearly one-half of the crop has greater than 15% protein compared to one-third last year. The highest proteins are found in the PNW, which average 16.1%, compared with 14.6% in the Gulf/Great Lakes region.

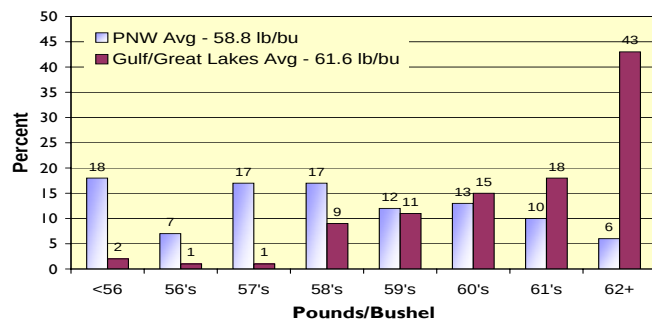
Flour and Baking Data: The 2006 crop exhibits the most uniformly strong dough mixing properties from east to west in recent years. The average peak and stability times are 10.3 and stability 22.6 minutes, respectively, compared to only 6.4 and 9.8 minutes last year. Farinograph absorption is 66.9%, more than two percentage points higher than 2005 and the five-year average. Alveograph tests reflect strong dough properties with an average VV-value of 484, compared to 361 in 2005 and 395 for a five-year average. Extensigraph tests also confirm more resistance than 2005. Buhler Laboratory Mill extraction rate is down about 1.5 percentage points from 2005 and 0.5 points from the five-year average. Extractions are down more noticeably in the PNW. (Lab mill extraction rate provides a good basis for year-to-year comparison, but is always lower than commercial extraction rates). Baking tests show excellent dough handling properties and improved crumb grain and texture scores over 2005. The average loaf volume is good at 1066 cc, comparable to 2005. Loaf volumes are noticeably higher than 2005 and the five-year average in the PNW, but slightly smaller in the Gulf/Great Lakes region.

Summary: Buyers will appreciate the many strong quality parameters in the 2006 crop. The high level of kernel soundness, high protein content, strong color and low moisture combined with the strong mixing properties and high absorption in the dough, will enhance performance value for millers, bakers and other end-users. Compared to 2005, customers will especially appreciate the more uniform functionality in the crop and the improved dough handling properties. Kernel weight and kernel size are two factors that have some variability from East to West, and some impact on lab mill extraction is evident. Buyers may wish to be more vigilant in contract specifications for these factors to ensure the HRS they purchase meets their individual needs for both quality and value.

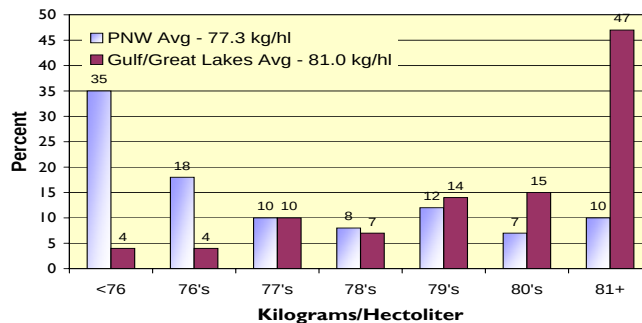
Export Cargo Survey

The export cargo survey shows the results of analysis of 174 individual subplot samples for crop year 2005 (collected from October through August) and 255 for crop year 2004. Of the 174 2005-crop samples, 114 were collected from PNW ports, 27 from the Lakes and 33 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.

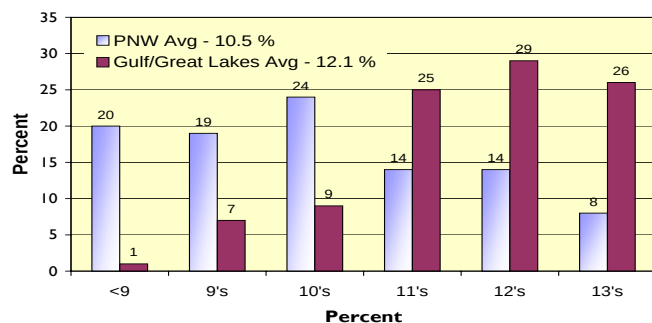
Test Weight



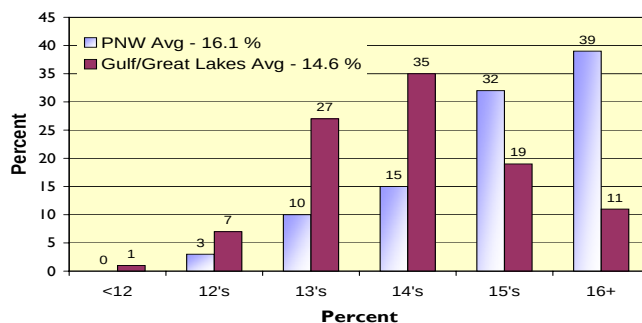
Hectoliter Weight



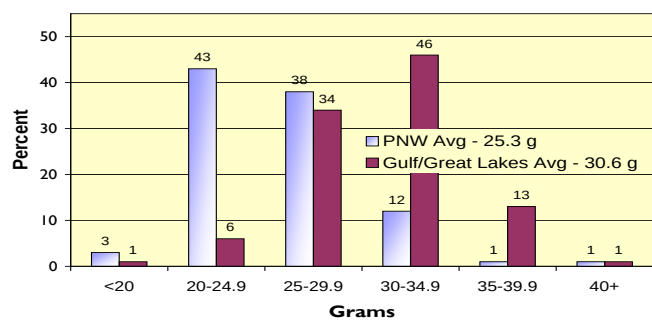
Wheat Moisture



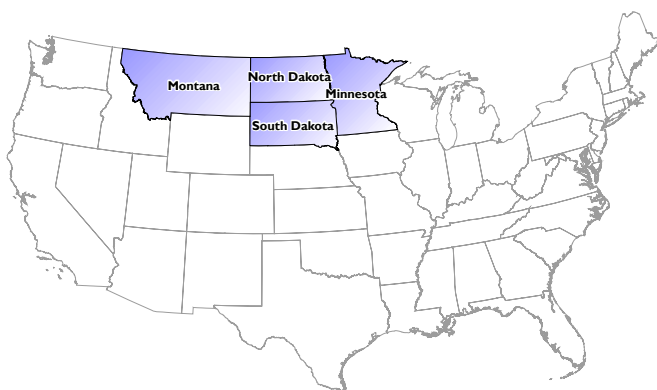
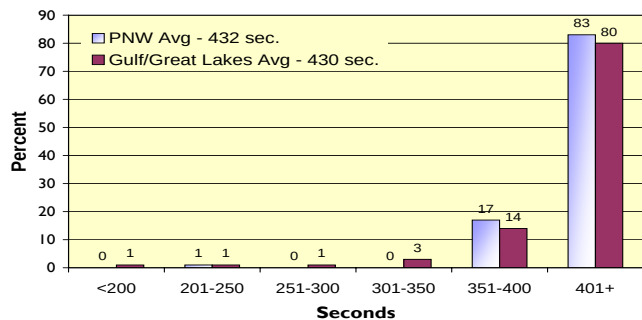
Protein (12% mb)



1000 Kernel Weight



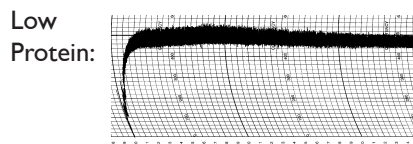
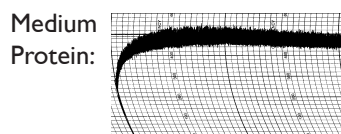
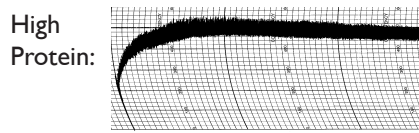
Falling Number



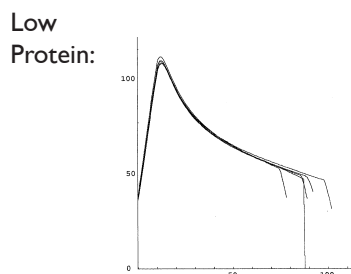
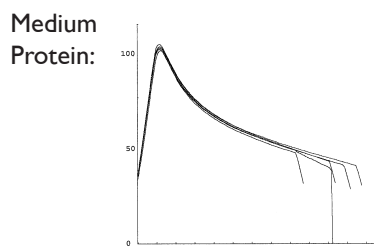
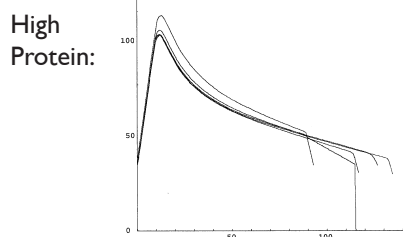
Hard red spring survey results are from four states.

Composite Average Farinograms and Alveograms

Farinograms:



Alveograms:



Hard Red Spring

Composite Average

	2006 By Protein*				2005	5-year
	Low	Med	High	Overall	Overall	Avg
Wheat Grade Data:						
Test Weight (lb/bu)	61.8	61.6	59.4	60.4	60.1	60.3
(kg/hl)	81.3	81.0	78.1	79.5	79.1	79.3
Damaged Kernels (%)	0.0	0.2	0.1	0.1	1.0	0.6
Foreign Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Shrunken & Broken (%)	1.2	1.3	2.0	1.7	2.0	1.4
Total Defects (%)	1.2	1.5	2.1	1.8	3.0	2.0
Vitreous Kernels (%)	66.1	77.2	91.7	83.2	68.0	74.6
Grade	1 NS	1 DNS	1 DNS	1 DNS	1 NS	1 DNS
Wheat Non-Grade Data:						
Dockage (%)	0.4	0.6	0.9	0.7	1.2	1.1
Moisture (%)	12.1	12.0	11.0	11.5	12.3	12.0
Protein (%) 12%/0% moisture basis	12.9/14.6	14.3/16.3	16.4/18.7	15.2/17.3	14.5/16.5	14.4/16.4
Ash (%) 14%/0% moisture basis	1.50/1.74	1.52/1.77	1.59/1.84	1.56/1.80	1.72/2.00	1.65/1.91
1000 Kernel Weight (g)	32.1	29.8	26.4	28.3	29.8	29.7
Kernel Size (%) lg/md/sm	45/52/3	42/53/5	24/65/11	32/60/8	48/42/10	52/40/8
Single Kernel: Hardness	79.0	81.3	79.2	79.7	82.1	82.3
Weight (mg)	34.3	32.6	29.9	31.4	31.7	31.2
Diameter (mm)	2.35	2.30	2.13	2.22	2.32	2.31
Sedimentation (cc)	49.7	61.2	63.0	60.0	57.3	57.2
Falling Number (sec)	417	427	438	431	410	374
Flour Data:						
Lab Mill Extraction (%)	69.4	69.5	67.8	68.5	70.2	69.1
Color: L*	91.3	91.0	90.8	91.0	91.1	90.9
a*	-1.5	-1.4	-1.3	-1.4	-1.2	-1.3
b*	9.6	9.5	9.5	9.5	9.2	9.3
Protein (%) 14%/0% moisture basis	11.9/13.8	13.1/15.3	15.2/17.7	14.0/16.3	13.3/15.5	13.2/15.4
Ash (%) 14%/0% moisture basis	0.47/0.54	0.49/0.57	0.52/0.61	0.50/0.59	0.53/0.61	0.45/0.53
Wet Gluten (%)	31.0	35.4	41.2	37.8	35.3	35.3
Gluten Index	94.4	90.4	80.0	85.3	87.2	
Falling Number (sec)	424	412	467	445	413	400
Amylograph Viscosity: 65g (BU)	815	698	854	807	733	659
100g (BU)	2976	2878	3152	3050	2571	2310
Starch Damage (%)	8.8	8.1	7.9	8.1	8.2	7.0
Dough Properties:						
Farinograph:						
Peak Time (min)	9.2	8.7	11.4	10.3	6.4	11.6
Stability (min)	19.5	17.9	25.7	22.6	9.8	19.8
Absorption (%)	64.8	66.0	68.0	66.9	64.6	64.8
Classification	7.8	7.2	8.0	7.8	5.2	6.5
Alveograph: P (mm)	122	114	117	117	102	103
L (mm)	97	111	122	114	106	109
P/L Ratio	1.26	1.02	0.96	1.03	0.96	0.96
W (10 ⁻⁴ joules)	440	457	512	484	361	395
Extensigraph: Resistance (BU)	476/652	478/556	473/510	475/548	435/453	532/596
(45/135 min) Extension (cm)	19.1/17.1	20.4/19.1	21.3/20.8	20.7/19.7	21.7/22.0	22.3/22.0
Area (sq cm)	112/138	126/137	129/137	125/137	122/127	147/165
Baking Evaluation:						
Absorption (%)	63.3	64.5	66.5	65.4	63.1	63.3
Crumb Grain and Texture	7.5	8.0	8.3	8.1	7.8	8.1
Loaf Volume (cc)	907	1033	1134	1066	1036	1064
% Area Production:	19	25	56	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					
2006 By Protein*				2005	5-year Avg	2006 By Protein*				2005	5-year Avg
Low	Med	High	Overall			Low	Med	High	Overall		
60.9	59.9	58.3	58.8	60.1	60.3	62.1	62.1	60.9	61.6	60.1	60.2
80.1	78.8	76.7	77.4	79.1	79.3	81.7	81.7	80.1	81.0	79.1	79.2
0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.2	0.2	1.5	0.7
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.5	1.3	2.6	2.3	1.8	1.7	1.1	1.3	1.1	1.2	2.2	1.3
1.5	1.3	2.6	2.3	2.1	2.0	1.1	1.6	1.3	1.4	3.7	2.0
89.0	92.0	97.0	95.6	76.6	86.0	60.0	73.0	84.0	74.0	61.9	65.0
1 DNS	1 DNS	1 DNS	1 DNS	1 DNS	1 DNS	1 NS	1 NS	1 DNS	1 NS	2 NS	1 NS
0.6	0.7	1.0	0.9	1.1	1.1	0.4	0.6	0.7	0.6	1.2	1.1
10.5	10.8	10.5	10.5	11.7	11.2	12.5	12.3	11.8	12.2	12.7	12.6
13.3/15.1	14.4/16.4	16.8/19.1	16.1/18.4	14.4/16.3	14.7/16.7	12.8/14.5	14.3/16.3	15.9/18.1	14.6/16.6	14.6/16.6	14.2/16.1
1.57/1.83	1.57/1.83	1.59/1.85	1.59/1.84	1.66/1.93	1.59/1.85	1.48/1.72	1.51/1.76	1.59/1.83	1.53/1.78	1.76/2.05	1.69/1.96
30.8	28.7	24.0	25.3	30.0	29.4	32.5	30.1	29.8	30.6	29.6	30.0
36/59/5	31/63/6	15/69/16	19/67/14	44/44/12	46/45/10	48/50/2	45/50/5	36/60/4	42/54/4	50/41/9	56/36/8
79.0	79.0	78.0	78.2	83.2	82.9	79.0	82.0	81.0	80.8	81.4	82.0
32.9	32.6	28.4	29.4	31.6	31.0	34.7	32.6	32.1	33.0	31.8	31.5
2.24	2.25	2.03	2.08	2.29	2.27	2.38	2.31	2.28	2.32	2.35	2.34
56.0	62.0	63.0	62.2	59.9	58.8	48.0	61.0	63.0	58.4	55.7	55.8
426	417	436	433	416	396	414	430	440	430	405	355
68.7	68.3	67.3	67.6	70.5	68.5	69.6	69.9	68.5	69.3	70.0	69.7
91.5	91.1	90.9	91.0	91.2	90.9	91.2	90.9	90.8	90.9	91.0	90.9
-1.4	-1.3	-1.3	-1.3	-1.2	-1.2	-1.6	-1.5	-1.3	-1.4	-1.3	-1.4
8.6	8.8	9.5	9.3	9.2	9.1	9.9	9.7	9.5	9.7	9.2	9.4
12.1/14.1	13.2/15.4	15.5/18.0	14.9/17.3	13.4/15.5	13.5/15.7	11.8/13.7	13.1/15.2	14.8/17.2	13.4/15.6	13.3/15.4	12.9/15.0
0.50/0.58	0.51/0.59	0.53/0.62	0.52/0.61	0.51/0.59	0.44/0.51	0.46/0.53	0.49/0.57	0.51/0.59	0.49/0.57	0.54/0.63	0.46/0.53
32.1	35.6	41.5	39.8	34.5	36.1	30.7	35.4	40.7	36.3	36.0	34.6
92.0	92.0	82.0	84.3	94.6		95.0	90.0	77.0	86.1	81.8	
461	446	472	462	428	423	414	402	460	428	402	381
720	1010	870	873	811	775	840	610	830	758	678	562
3000	3580	3300	3306	2915	2728	2970	2680	2940	2859	2325	1956
8.4	7.9	7.8	7.9	7.9	6.9	8.9	8.2	8.1	8.3	8.4	7.0
8.0	9.5	12.0	11.3	6.7	15.8	9.5	8.5	10.5	9.6	6.2	8.1
17.5	21.0	30.0	27.6	10.6	25.2	20.0	17.0	19.5	18.8	9.2	15.2
65.2	65.6	68.0	67.4	65.3	65.6	64.7	66.1	68.0	66.5	64.1	64.2
7.0	8.0	8.0	7.9	5.4	7.0	8.0	7.0	8.0	7.7	5.0	6.0
116	113	120	119	128	114	124	114	113	116	83	94
99	108	123	119	95	101	97	112	120	111	114	116
1.17	1.05	0.98	1.00	1.35	1.16	1.28	1.02	0.94	1.06	0.73	0.84
414	441	537	512	444	421	447	461	476	463	302	377
460/545	470/630	510/545	500/556	530/561	559/631	480/680	480/535	420/460	456/543	367/376	514/575
19.7/17.3	18.5/19.3	21.8/22.2	21.2/21.3	21.8/20.9	22.9/22.0	18.9/17.0	21.0/19.1	20.6/18.7	20.3/18.4	21.7/22.9	21.8/22.0
114/120	110/150	145/156	137/152	147/148	158/172	111/143	130/133	106/111	115/127	103/111	138/161
63.7	64.1	66.5	65.9	63.8	64.1	63.2	64.6	66.5	65.0	62.6	62.7
7.5	8.0	8.5	8.3	8.0	8.1	7.5	8.0	8.0	7.9	7.7	8.0
935	1060	1175	1136	1021	1060	900	1025	1075	1013	1065	1067
10	13	77	100	100	100	26	34	40	100	100	100

† Of the production surveyed, 43% is estimated to be PNW-tributary

Export Cargo Data

Hard Red Spring

PNW Average

Great Lakes Average

Gulf Average

2005 2004

2005 2004

2005 2004

Wheat Grade Data:

Test Weight (lb/bu)	61.1	61.3	61.1	61.5	60.6	61.4
(kg/hl)	80.4	80.6	80.3	80.9	79.7	80.8
Damaged Kernels (%)	0.9	0.6	2.0	1.8	2.3	1.2
Foreign Material (%)	0.1	0.1	0.2	0.1	0.2	0.1
Shrunken & Broken (%)	1.6	1.3	1.2	0.9	1.2	0.9
Total Defects (%)	2.6	2.0	3.3	2.9	3.7	2.3
Vitreous Kernels (%)	80.5	80.0	54.1	44.9	49.6	54.2
Grade	1 DNS	1 DNS	2 NS	1 NS	2NS	1 NS

Wheat Non-Grade Data:

Dockage (%)	0.3	0.3	0.5	0.5	0.7	0.5
Moisture (%)	11.5	11.5	12.4	13.0	12.7	13.0
Protein (%) 12%/0% moisture basis	13.9/15.8	13.9/15.8	14.0/15.9	13.5/15.3	13.8/15.7	13.6/15.5
Ash (%) 14%/0% moisture basis	1.62/1.88	1.55/1.81	1.67/1.94	1.57/1.82	1.69/1.96	1.59/1.85
1000 Kernel Weight (g)	32.1	33.4	31.4	33.3	31.6	33.0
Kernel Size (%) lg/md/sm	49/42/9	60/34/6	54/39/7	72/24/3	57/36/8	68/28/4
Single Kernel: Hardness	81.1	80.9	80.5	79.9	76.6	79.4
Weight (mg)	29.9	31.1	29.4	31.9	29.8	31.5
Diameter (mm)	2.41	2.45	2.43	2.53	2.42	2.50
Sedimentation (cc)						
Falling Number (sec)	428	386	372	328	413	382

Flour Data:

Lab Mill Extraction (%)	68.6	68.9	69.1	69.8	68.9	69.6
Color: L*	91.2	91.3	90.9	91.0	91.0	91.1
a*	-1.2	-1.2	-1.3	-1.3	-1.3	-1.4
b*	8.8	8.7	9.1	9.1	9.1	9.3
Protein (%) 14%/0% moisture basis	12.8/14.8	12.7/14.7	12.8/14.8	12.2/14.1	12.6/14.6	12.2/14.2
Ash (%) 14%/0% moisture basis	0.52/0.60	0.49/0.57	0.53/0.61	0.49/0.56	0.53/0.61	0.47/0.55
Wet Gluten (%)	34.1	33.6	34.1	31.3	33.8	32.2
Gluten Index	89.3	92.8	89.5	95.5	84.5	94.6
Falling Number (sec)	458	410	408	344	435	397
Amylograph Viscosity: 65g (BU)	698	574	525	374	649	529
100g (BU)						
Starch Damage (%)						

Dough Properties:

Farinograph:						
Peak Time (min)	7.4	6.5	7.4	4.9	6.8	5.8
Stability (min)	13.6	12.9	12.1	10.8	10.9	12.3
Absorption (%)	65.1	64.6	65.2	64.6	63.8	63.8
Classification	6.2	6.0	5.8	5.1	5.3	5.6
Alveograph: P (mm)	107	123	101	122	92	118
L (mm)	110	102	110	90	112	97
P/L Ratio	0.97	1.21	0.92	1.35	0.82	1.22
W (10 ⁻⁴ joules)	402	439	374	400	335	406
Extensigraph: Resistance (BU)						
(45/135 min) Extension (cm)						
Area (sq cm)						

Baking Evaluation:

Absorption (%)	63.6	63.3	63.7	63.1	62.8	62.3
Crumb Grain and Texture	8.2	8.2	8.2	8.1	8.1	8.1
Loaf Volume (cc)	993	988	1007	981	987	966
Sample Count:	114	143	27	73	33	39

Hard Red Spring

Hard Red Spring Production

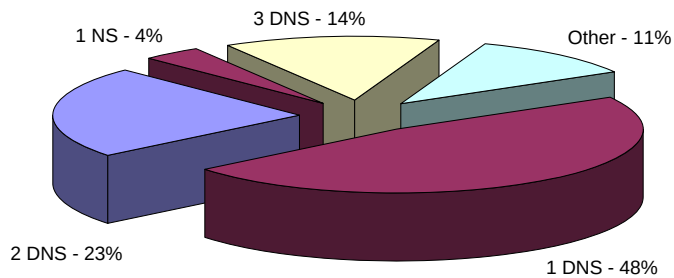
for the major producing states
(million metric tons)

	2006	2005	2004	2003	2002
Minnesota	2.11	1.93	2.41	2.84	1.67
Montana	1.72	2.20	2.38	1.63	2.05
North Dakota	5.78	6.11	6.64	6.88	4.50
South Dakota	1.16	1.84	1.96	1.53	0.65
Four-State Total	10.77	12.08	13.39	12.88	8.86
Total HRS Production	11.77	12.70	14.30	13.60	9.57

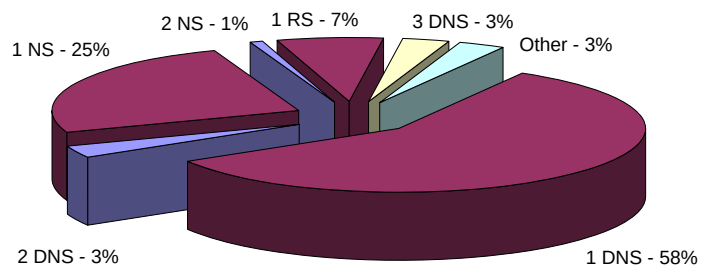
Based on USDA crop estimates of September 29, 2006.

Grade Distribution

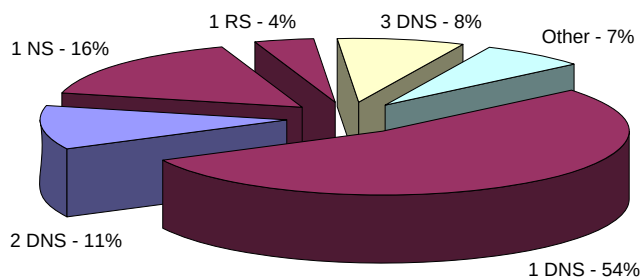
PNW



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 2005 proceeded normally with adequate soil moisture. Growing conditions during the rest of the year were generally favorable, and yields were consistently high across nearly all SRW states. Harvest was also completed under favorable conditions in all areas except the East Coast states of Maryland, Virginia and North Carolina, where an extended period of heavy rain reduced quality and falling number values.

Survey Methods: Sample collection and analysis were conducted by CII Laboratory Services, Kansas City, Missouri. For 2006, 348 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 at two different times reflecting early and late harvest conditions. Test weight, moisture, protein, thousand kernel weight, wheat ash and falling number were determined on the individual samples, while the remaining tests were determined on 36 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.

East Coast-tributary states include Maryland, North Carolina and Virginia, while the others are considered Gulf tributary.

Wheat and Grade Data: Survey samples' average test weight of 59.8 lb/bu (78.7 kg/hl) is well above last year and the five-year average of 59.1 lb/bu (77.8 kg/hl), but still results in an average grade of #2 SRW. Relatively high damaged kernel values and low falling numbers in the East reflect the difficult harvest conditions there, while very good values were recorded in other states which typically account for 80% of production. Wheat moisture content is slightly lower than the five-year average. Overall wheat protein and sedimentation values are higher than last year, but somewhat lower than the five-year average. However, Gulf protein values are about equal to the five-year average, while East Coast values are sharply lower. East Coast samples are unusually soft, as reported by single kernel hardness values.

Flour and Baking Data: The overall Buhler Laboratory Mill flour extraction is lower than last year and the five-year average by two percentage points, the result of greatly reduced values for Gulf-tributary states. Flour ash is also unusually low. Farinograph and alveograph values are similar to last year and the five-year averages. Bread-baking performance is slightly poorer compared with last year and the five-year average.

(continued on p. 21)

Soft Red Winter Production

in major producing states
(million metric tons)

	2006	2005	2004	2003	2002
Alabama	0.07	0.06	0.08	0.09	0.07
Arkansas	0.51	0.23	0.89	0.78	1.04
Georgia	0.16	0.20	0.23	0.29	0.22
Illinois	1.63	0.99	1.43	1.40	0.82
Indiana	0.86	0.67	0.74	0.81	0.45
Kentucky	0.61	0.54	0.54	0.57	0.45
Louisiana	0.15	0.13	0.22	0.15	0.23
Maryland	0.23	0.25	0.23	0.15	0.31
Michigan	0.79	0.61	0.59	0.65	0.43
Mississippi	0.12	0.09	0.19	0.17	0.20
Missouri	1.26	0.75	1.25	1.39	0.88
North Carolina	0.67	0.67	0.63	0.40	0.49
Ohio	1.78	1.60	1.50	1.85	1.37
South Carolina	0.17	0.23	0.22	0.20	0.17
Tennessee	0.33	0.23	0.37	0.37	0.38
Virginia	0.29	0.27	0.27	0.20	0.28
16-State Total	9.62	7.52	9.39	9.44	7.78
Total SRW Production	10.62	8.41	10.35	10.35	8.74

Based on USDA crop estimates of September 29, 2006.

Harvest Data

Soft Red Winter	Composite Average			East Coast*			Gulf Ports*		
	2006	2005	5-Year Avg	2006	2005	5-Year Avg	2006	2005	5-Year Avg
Wheat Grade Data:									
Test Weight (lb/bu)	59.8	60.3	59.1	59.0	60.3	58.8	60.0	60.3	59.2
(kg/hl)	78.7	79.3	77.8	77.7	79.4	77.4	79.0	79.3	77.9
Damaged Kernels (%)	0.9	0.2	1.2	2.3	0.6	1.4	0.6	0.2	1.2
Foreign Material (%)	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1
Shrunken & Broken (%)	0.5	0.8	0.7	0.4	0.5	0.7	0.6	0.8	0.7
Total Defects (%)	1.5	1.1	1.9	2.8	1.1	2.2	1.1	1.0	2.0
Grade	2 SRWV	1 SRW	2 SRW	2 SRW	1 SRW	2 SRW	1 SRW	1 SRW	2 SRW
Wheat Non-Grade Data:									
Dockage (%)	0.8	0.9	0.7	0.5	0.5	0.9	0.8	0.9	0.7
Moisture (%)	12.8	13.1	13.1	13.1	13.2	13.3	12.7	13.1	13.1
Protein (%) 12%/0% moisture basis	9.9/11.3	9.5/10.8	10.1/11.5	9.8/11.2	9.8/11.1	10.7/12.1	10.0/11.3	9.4/10.7	10.0/11.4
Ash (%) 14%/0% moisture basis	1.46/1.70	1.53/1.78	1.57/1.82	1.34/1.56	1.49/1.73	1.55/1.80	1.49/1.73	1.54/1.79	1.57/1.83
1000 Kernel Weight (g)	33.7	33.8	32.9	35.7	35.5	32.5	33.1	33.4	32.9
Kernel Size (%) lg/md/sm	85/14/1	84/15/1	82/17/1	90/10/0	87/12/1	80/19/1	84/15/1	84/15/1	82/17/1
Single Kernel: Hardness	18.9	18.4	22.1	8.7	22.4	22.4	21.6	17.4	22.0
Weight (mg)	33.9	24.6	31.0	35.8	35.0	32.7	33.4	22.1	30.5
Diameter (mm)	2.34	1.72	2.19	2.38	2.43	2.30	2.32	1.55	2.18
Sedimentation (cc)	14.7	12.8	14.3	14.8	14.3	16.8	14.7	12.5	13.8
Falling Number (sec)	318	360	355	264	356	355	333	362	356
DON (ppm)	0.5			0.5			0.5		
Flour Data:									
Lab Mill Extraction (%)	68.0	70.1	69.8	68.8	68.5	69.3	67.8	70.5	69.8
Color: L*	93.5	92.9	93.1	93.2	93.4	93.1	93.5	92.8	93.1
a*	-3.0	-3.0	-3.2	-3.1	-3.2	-3.3	-3.0	-2.9	-3.2
b*	8.0	8.2	8.0	7.6	8.2	8.0	8.1	8.2	8.0
Protein (%) 14%/0% moisture basis	8.2/9.6	7.9/9.2	8.5/9.9	8.3/9.6	8.1/9.4	8.9/10.4	8.2/9.6	7.9/9.2	8.4/9.8
Ash (%) 14%/0% moisture basis	0.40/0.47	0.43/0.50	0.44/0.51	0.39/0.46	0.43/0.50	0.44/0.51	0.40/0.47	0.43/0.50	0.44/0.51
Wet Gluten (%)	21.8	20.9	22.2	18.9	20.3	23.1	22.6	21.0	22.0
Gluten Index	83.6	91.7		91.7	95.4		81.5	90.9	
Falling Number (sec)	307	343	348	260	346	347	319	342	348
Amylograph Viscosity 65 g (BU)	446	674	532	234	596	509	501	693	538
Starch Damage (%)	4.0	4.3	4.4	4.0	4.1	4.3	4.0	4.3	4.5
Solvent Retention Capacity (%)									
Water/50% Sucrose	54/108	56/105		56/113	55/107		53/103	54/100	
5% Lactic Acid/5% Sodium Carbonate	108/75	112/77		113/78	115/79		104/73	107/76	
Dough Properties:									
Farinograph:									
Peak Time (min)	1.7	1.3	1.6	1.6	1.4	2.0	1.7	1.3	1.6
Stability (min)	3.0	2.9	3.0	2.7	3.3	3.3	3.1	2.8	3.0
Absorption (%)	52.5	52.3	52.6	52.8	53.1	53.4	52.4	52.1	52.4
Alveograph: P (mm)	39	39	36	44	46	40	38	37	35
L (mm)	100	90	99	96	86	106	101	91	98
P/L Ratio	0.39	0.43	0.36	0.45	0.54	0.38	0.37	0.41	0.36
W (10 ⁻⁴ joules)	92	98	91	109	115	108	88	94	87
Baking Evaluation:									
Crumb Grain	5.0	5.5	5.6	5.3	5.9	5.8	4.9	5.5	5.5
Crumb Texture	5.3	5.8	5.8	5.6	5.7	6.1	5.2	5.8	5.8
Loaf Volume (cc)	687	707	730	699	729	745	684	701	728
Cookie Spread Ratio	8.4	8.5	8.3	8.5	8.1	8.1	8.3	8.6	8.4
% of Area Sampled:	100%			21%			79%		

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

Export Cargo Data

Soft Red Winter

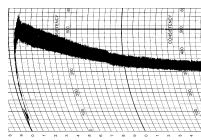
	2006	2005
Wheat Grade Data:		
Test Weight (lb/bu)	59.8	60.1
(kg/hl)	78.7	79.1
Damaged Kernels (%)	1.5	2.5
Foreign Material (%)	0.1	0.2
Shrunken & Broken (%)	0.7	0.8
Total Defects (%)	2.3	3.4
Grade	2 SRW	2 SRW
Wheat Non-Grade Data:		
Dockage (%)	0.7	0.8
Moisture (%)	12.7	12.5
Protein (%) 12%/0% moisture basis	10.2/11.5	9.9/11.2
Ash (%) 14%/0% moisture basis	1.56/1.81	1.59/1.84
1000 Kernel Weight (g)	31.6	31.2
Kernel Size (%) lg/md/sm	83/16/1	84/16/1
Single Kernel: Hardness	*	28.0
Weight (mg)	*	33.5
Diameter (mm)	*	2.38
Sedimentation (cc)	11.9	12.4
Falling Number (sec)	351	361
DON (ppm)	*	0.9
Flour Data:		
Lab Mill Extraction (%)	68.6	69.3
Color: L*	93.5	93.4
a*	-3.2	-3.0
b*	8.3	7.9
Protein (%) 14%/0% moisture basis	8.2/9.6	8.2/9.5
Ash (%) 14%/0% moisture basis	0.41/0.48	0.41/0.48
Wet Gluten (%)	22.2	21.7
Gluten Index	72.8	83.6
Falling Number (sec)	352	380
Amylograph Viscosity 65 g (BU)	591	648
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Sodium Carbonate		
Dough Properties:		
Farinograph:		
Peak Time (min)	1.4	1.4
Stability (min)	3.2	3.1
Absorption (%)	52.7	52.1
Alveograph: P (mm)		
	44	43
L (mm)	83	87
P/L Ratio	0.53	0.50
W (10 ⁻⁴ joules)	103	106
Baking Evaluation:		
Crumb Grain	5.3	5.1
Crumb Texture	5.7	5.2
Loaf Volume (cc)	733	710
Cookie Spread Ratio	8.6	8.3
Sample Count:	21	61

* Data not yet available.

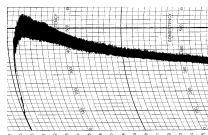
Farinograms and Alveograms

Farinograms:

Gulf

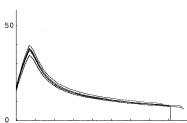


Atlantic

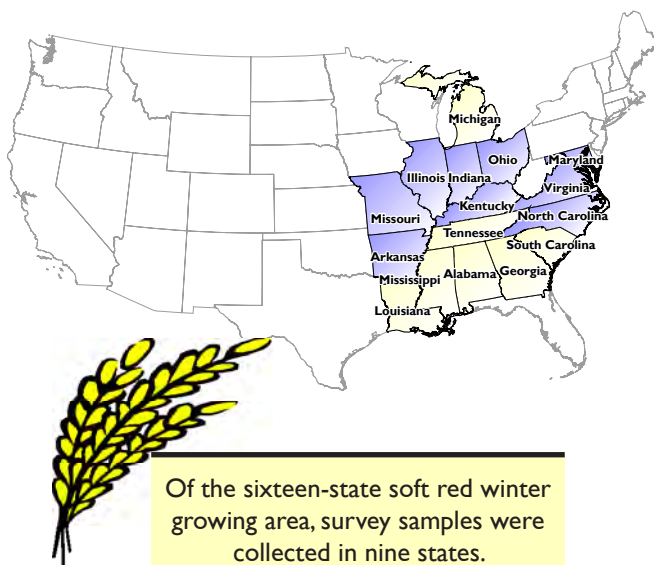
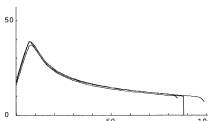


Alveograms:

Gulf

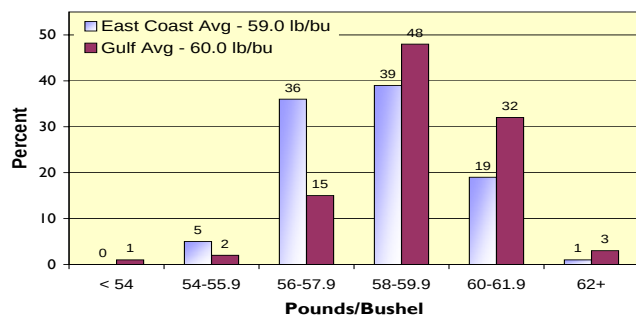


Atlantic

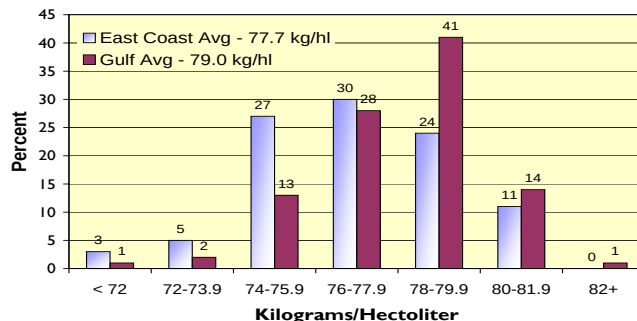


Of the sixteen-state soft red winter growing area, survey samples were collected in nine states.

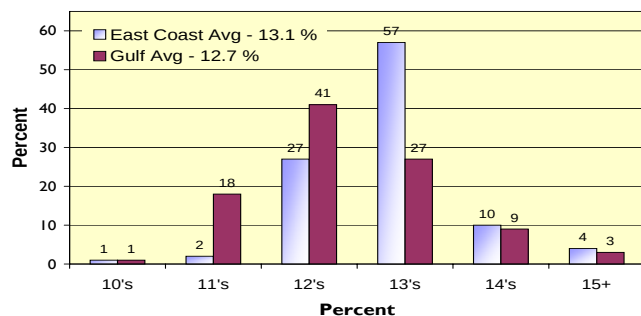
Test Weight



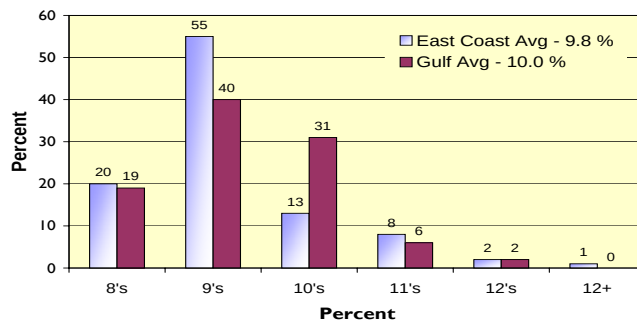
Hectoliter Weight



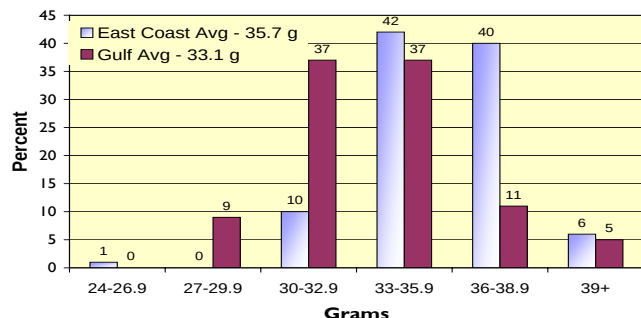
Wheat Moisture



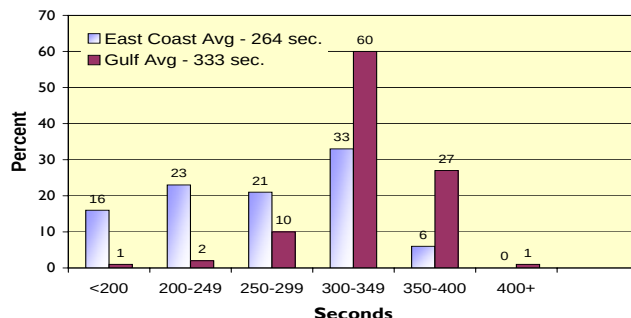
Protein (12% mb)



1000 Kernel Weight



Falling Number



(continued from p. 18)

Summary: The 2006 crop differs between Gulf-tributary and East Coast-tributary areas because of extended rain during harvest in the East. Generally good growing conditions resulted in good soft wheat quality in the Gulf states, while greater damage and lower falling numbers were found in the East. Compared with the five-year averages, the 2006 SRV crop generally has good test weight, lower protein, and lower lab mill flour extraction, but low flour ash. Overall, the flour from this crop has good soft wheat product functionality, but somewhat poorer characteristics for blending into bread flour.

Export Cargo Survey

The export cargo data show the results of analysis of 82 individual subplot samples for marketing years 2006 and 2005 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 subplots. Milling and baking analyses were conducted by CII Laboratory Services.

Durum

Northern Great Plains

The 2006 Northern US durum crop produced in Montana and North Dakota is characterized by low damage, low moisture and high protein, and produces an end-product with enhanced gluten strength and improved spaghetti-cooking quality. Some areas were in moderate to severe drought conditions much of the season, and the general dryness kept disease pressures low, supported key quality characteristics and provided near ideal harvest conditions. However, the dry season produced below average yields and, combined with a sharp drop in planted area, reduced regional production by nearly 55% from 2005.

Weather and Harvest: Planting began in late April. Initial progress was slower than average due to cool, wet conditions, but accelerated in May. Planting was complete by the first week in June, slightly ahead of average.

Early growing conditions were nearly ideal for most areas, with the exception of some southern areas stressed by below average rainfall and limited soil moisture. Disease was minimal, and crop yield prospects looked excellent. Unusually hot temperatures and a sharp decline in precipitation in July reduced previously promising yields in northern areas and advanced crop maturity. Quality prospects remained high, however, due to the lack of disease, although kernel size and weight were reduced in some southern and western areas.

Harvest began in late July in southern areas, slightly ahead of normal. The advanced crop maturity, below average yields, and near ideal harvest weather allowed rapid progress throughout August. The harvest was complete by mid-September, about two weeks ahead of normal.

Quality: The quality summary is based on analysis of 219 samples (175 from North Dakota and 44 from Montana) collected directly from producers and elevators during harvest. The crop averages No. 2 Hard Amber Durum with 68% No. 2 HAD or better, down slightly from 70% in 2005. Average test weight of 59.9 lb/bu (78.0 kg/hl) is just short of the 60 lb/bu (78.2 kg/hl) needed for the average grade to be No. 1. The 2006 value is about 1.0 lb/bu lower than 2005 and a half pound lower than the five-year average due to drought conditions in southern and western areas, though nearly one-half of the crop is 60 lb/bu (78.2 kg/hl) or higher. Other key factors such as damaged kernels and vitreous kernels (DHV) benefited from dry conditions. Average damage is only 0.2%, the lowest since 1999 and well below the five-year average of 1.2%. DHV averages 90%, roughly the same as 2005, but 70% of the crop has 90% DHV or higher, up from 56% in 2005.

Protein averages 15.1%, significantly above the 13.4% of 2005 and 13.9% five-year average. Other beneficial features are low moisture of 11.3% and high falling number of 385 seconds, indicating a sound crop. Thousand kernel weight of 33.2 g is noticeably lower than 2005 (35.5 g) and the five-year average (36.6 g). The lower values are found in southern and western areas where drought was more severe. As a result, average Buhler Laboratory Mill extraction rates are lower than 2005 but still similar to, or higher than, the

five-year averages. (Lab mill extraction rate provides a good basis for year-to-year comparison, but is always lower than commercial extraction rates.) Semolina ash values and speck counts are similar to 2005, but kernel ash is lower at 1.53%, down from 1.67%.

Pasta processing attributes, including gluten strength and cooked spaghetti properties, are better than 2005 and the five-year average. The gluten index is 56.7, up from the five-year average of 39.3 and 45.0 in 2005. Semolina mixing strength, measured by the mixograph, is rated as 6 (scale 1-8), equal to both last year and the five-year average. The spaghetti qualities of cooked weight, cooking loss and cooked firmness are all improved over 2005. A pasta color of 9 (scale 1-12) is lower than 2005's exceptional level, but similar to the five-year average and still considered high.

Buyers will be pleased with the overall kernel soundness, high protein and improved end-use performance in the 2006 crop. The factors which show the greatest variance from east to west this year are kernel size, test weight and 1000 kernel weight. Buyers are encouraged to be vigilant in their contract specifications for these factors to ensure they obtain the optimum value from the 2006 crop, which promises to provide appreciable gains in end-use performance.

Other Durum Production Areas

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.

Increased costs for fuel, water and fertilizer contributed to less planting of Desert Durum® in 2006, as did competition from other crops offering better returns to growers. Nevertheless, grain yields were in the expected average range. The new crop grain once again exhibited very consistent large kernel size and low moisture, traits that contribute to achieving high extraction rates. While the range of protein content was wider than typical, other quality traits such as gluten strength and color were at their normal high levels. In summary, the 2006 Desert Durum® crop will deliver the valuable milling, semolina and pasta quality traits that customers have come to expect.

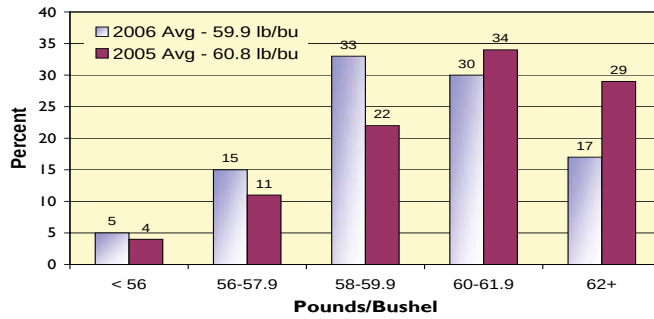
Idaho: Idaho is gaining popularity as a durum-growing area because of its high desert environment and abundance of irrigation water. Durum grown in Idaho is noted for its mellow gluten, which is very good in fresh pasta. Quality data on Idaho's durum crop is available from the Idaho Wheat Commission.

(continued on page 29)

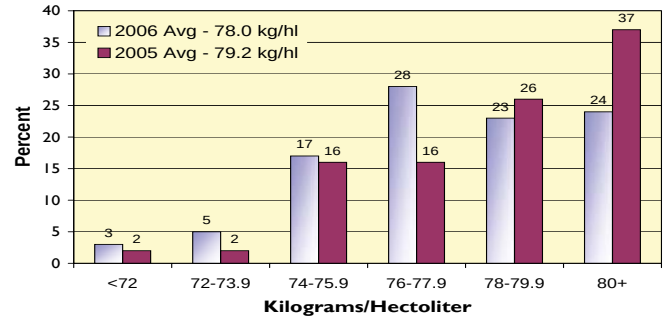
Harvest and Export Data

Durum	Harvest Data					Export Cargo Data			
	Great Plains			Pacific Southwest		Great Plains		Pacific Southwest	
	2006	2005	5- Year Avg	2006	2005	2005	2004	2005	2004
Wheat Grade Data:									
Test Weight (lb/bu)	59.9	60.8	60.4	62.0	62.2	61.4	61.0	62.7	62.5
(kg/hl)	78.0	79.2	78.7	80.7	81.0	80.0	79.4	81.6	81.4
Damaged Kernels (%)	0.2	0.8	1.2	0.1	0.2	2.1	2.4	0.6	0.8
Foreign Material (%)	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.1
Shrunken and Broken (%)	1.7	1.4	1.4	0.3	0.4	1.3	1.2	0.6	0.6
Total Defects (%)	2.0	2.2	2.7	0.5	0.7	3.6	3.9	1.4	1.5
Contrasting Classes (%)	0.1	0.0	0.1	0.0	0.0	0.7	0.9	0.2	0.3
Vitreous Kernels (%)	90.0	91.0	89.0	97.5	97.5	85.2	80.5	94.4	95.7
Grade	2 HAD	1 HAD	1 HAD	1 HAD	1 HAD	2 HAD	2 HAD	1 HAD	1 HAD
Wheat Non-Grade Data:									
Dockage (%)	2.3	1.5	1.3	0.2	0.3	0.5	0.5	0.6	0.6
Moisture (%)	11.3	12.5	11.7	6.6	7.1	12.6	12.7	8.0	7.6
Protein (%) 12%/0% moisture basis	15.1/17.1	13.4/15.2	13.9/15.8	13.6/15.4	14.3/16.2	13.2/15.0	13.3/15.1	13.4/15.2	13.8/15.7
Ash (%) 14%/0% moisture basis	1.53/1.78	1.67/1.94	1.62/1.88	1.74/2.02	1.73/2.00	1.59/1.85	1.53/1.78	1.62/1.88	1.62/1.88
1000 Kernel Weight (g)	33.2	35.5	36.6	49.7	48.9	36.7	38.3	46.6	49.4
Kernel Size (%) lg/md/sm	24/65/11	51/40/9	51/42/7	91/9/0	92/8/0	55/37/7	57/36/6	83/14/3	88/10/2
Falling Number (sec)	385	378	354			380	349	1001	1511
Sedimentation (cc)	55	45	47						
Semolina Data:									
Lab Mill Extraction (%)	70.7	73.1	70.8	75.1	78.0	72.2	72.0	74.4	73.7
Semolina Extraction (%)	65.1	66.4	64.2	64.4	65.9	64.9	64.8	67.1	66.4
Ash (%) 14%/0% moisture basis	0.72/0.84	0.71/0.83	0.69/0.80	0.84/0.98	0.84/0.98	0.68/0.79	0.65/0.76	0.68/0.79	0.69/0.80
Specks (no/10 sq in)	21	19	22	7	17	25	24	23	17
Protein (%) 14%/0% moisture basis	14.3/16.6	12.6/14.6	13.0/15.1	12.4/14.4	13.1/15.2	12.3/14.3	12.4/14.4	12.2/14.2	12.6/14.7
Wet Gluten (%)	39.5	35.0	36.2	32.0	34.8				
Gluten Index	56.7	45.0	39.3			42.5	40.8	81.5	80.8
Mixograph Classification	5.8	5.6	5.7			5.3	5.8	7.3	7.1
Alveograph: P (mm)	52	39	43						
L (mm)	64	64	90						
P/L Ratio	0.81	0.61	0.48						
W (10 ⁻⁴ joules)	102	69	74	235	170				
Color: L*	84.5	85.0	84.5			84.6	84.5	84.5	84.6
a*	-2.8	-2.9	-2.8			-2.6	-2.5	-2.6	-2.6
b*	27.6	26.1	27.1	26.4	26.1	24.9	23.6	24.9	26.2
Spaghetti Processing Data:									
Color Score	9.0	9.4	9.1	9.2	8.9	8.7	8.3	8.9	9.0
Cooked Weight (gm)	31.3	30.8	31.1	30.0	29.9	32.0	31.0	31.1	31.1
Cooking Loss (%)	5.4	6.1	5.8	6.9	7.6	5.9	6.1	6.2	6.0
Cooked Firmness (g cm)	5.9	5.6	5.8	7.5	7.6	4.9	5.2	5.5	5.8
Sample Count:						27	29	15	16

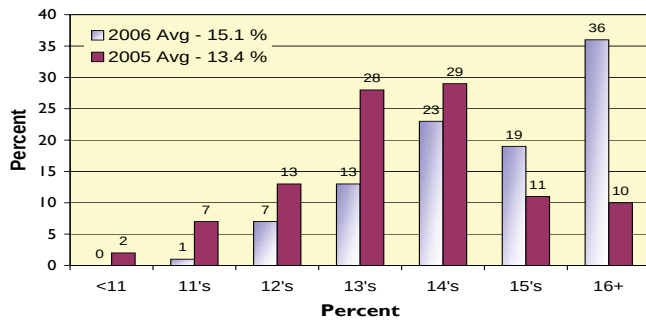
Test Weight



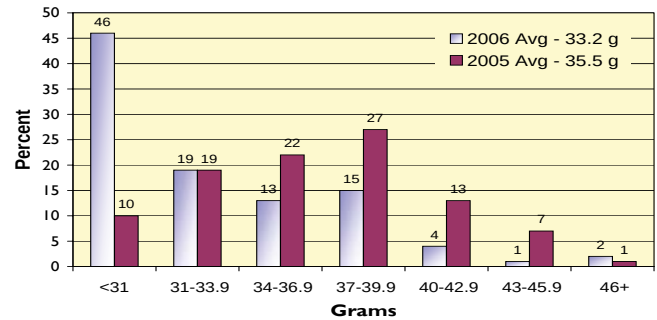
Hectoliter Weight



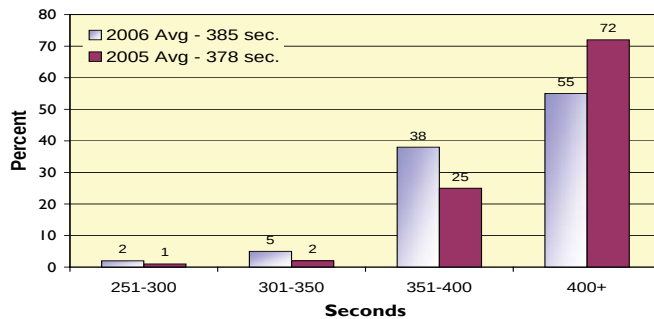
Protein (12% mb)



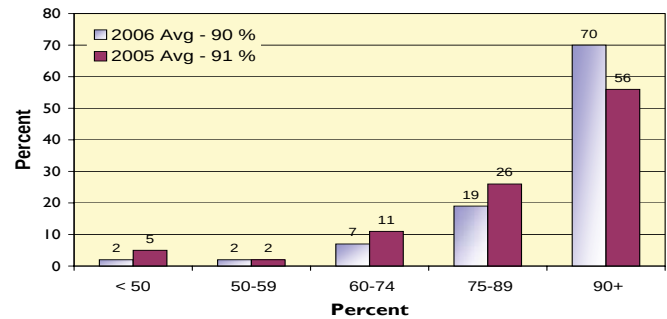
1000 Kernel Weight



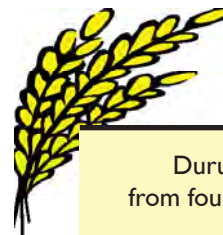
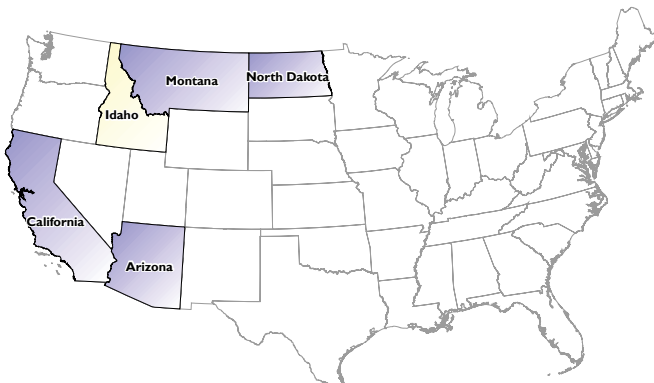
Falling Number



Vitreous Kernels



Note: Charts include Great Plains durum only.



Durum survey results are from four of the five states where durum is grown.

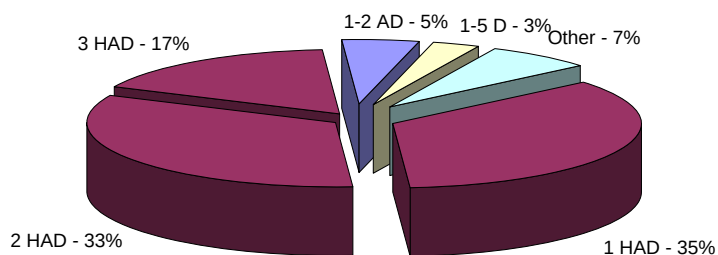
Durum Production

for the major producing states
(million metric tons)

	2006	2005	2004	2003	2002
Arizona	0.20	0.22	0.26	0.31	0.24
California	0.18	0.18	0.24	0.31	0.24
Idaho	0.04	0.05	NA	NA	NA
Montana	0.18	0.45	0.49	0.39	0.35
North Dakota	0.86	1.86	1.44	1.59	1.33
Total Durum Production	1.46	2.75	2.45	2.63	2.18

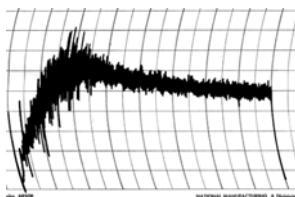
Based on USDA crop estimates of September 29, 2006.

Great Plains Durum Grade Distribution

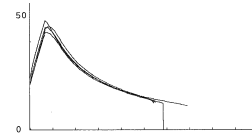


Great Plains Durum Mixogram and Alveogram

Regional Average Mixogram:
(score = 6)



Alveogram



Hard White

Harvest Survey

Hard white wheat (HW) was primarily grown in the states of Kansas, Colorado, California, Nebraska, Washington, Idaho and Montana. Dry growing conditions prevailed in the Southern Plains, while the weather in the Pacific Northwest (PNW) was favorable.

Survey Methods: Samples from the PNW were collected by USDA's National Agricultural Statistics Service. Growers in California and the Northern Plains sent samples directly to the Wheat Marketing Center (WMC), Portland, Oregon. Some samples from the Southern Plains were collected by CII Laboratory Services, Kansas City, Missouri, and others were from individual growers. The samples were graded by the Federal Grain Inspection Service (FGIS), Portland, Oregon. All other tests were conducted by WMC. HW samples were made into six composites based on regions (PNW, California, Northern Plains and Southern Plains) and protein levels (less than 11.5%, 11.5 – 12.5%, 12.6 – 13.5% and higher than 13.5%). Wheat and flour tests were done according to the American Association of Cereal Chemists International Approved 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 Asian noodle and steamed bread makers and flour millers at the WMC during US Wheat Associates' Asian Products Collaborative Program.

Wheat and Grade Data: All six samples graded US No. 1 with test weights from 60.0 to 64.8 lb/bu (78.9 to 85.1 kg/hl). Wheat moisture was in the range of 8.5-10.6%; PNW and California composites had lower moisture content than the Southern Plains and Northern Plains. PNW and California composites also had higher thousand-kernel weights and kernel diameters than the Plains composites. Falling numbers were above 300 seconds, except for PNW medium protein composite, which had a low falling number of 261 seconds.

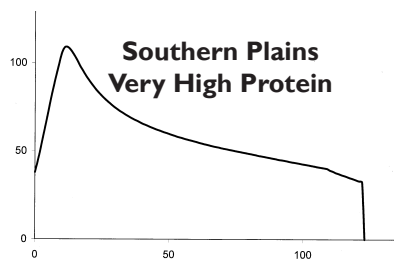
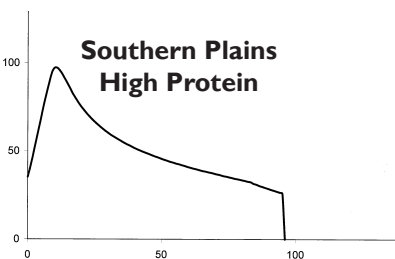
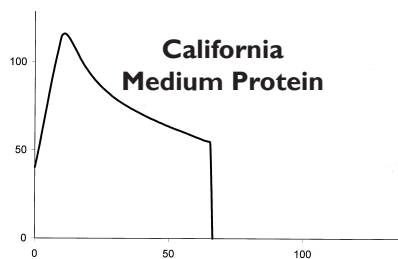
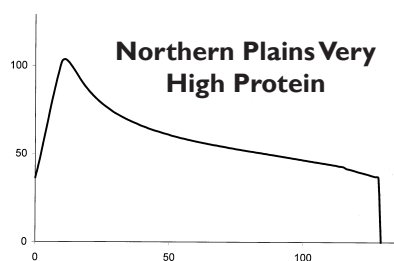
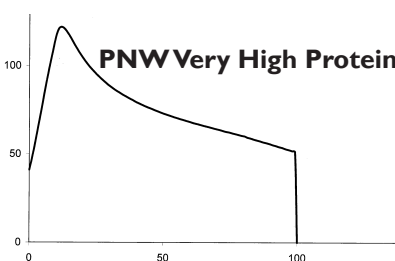
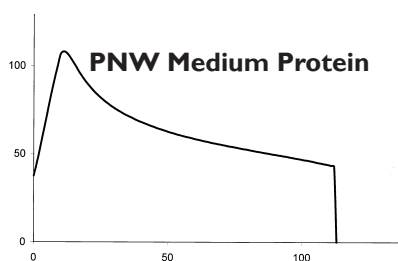
Flour, Dough and Baking Data: Buhler Laboratory Mill straight grade flour extractions ranged from 66.1% to 71.7%, and flour ash varied from 0.39% to 0.44%. All flour falling number values were 329 seconds or higher. Amylograph peak viscosities were between 530 and 800 BU. Starch damage values were in the range of 5.1% to 7.4%. Farinograph absorption ranged from 62.1% to 65.1%, and stability times were 14.5 minutes or longer for all samples. The ranges of alveograph values are: P - 96-121 mm, L - 65-128 mm and W - 289-448 10-4 joules. Extensigraph data indicated strong gluten properties. The bake absorption was in the range of 64.9%-69.3%, and loaf volume ranged from 858 to 1040 cc. All samples showed good baking performance.

Noodle Evaluation: HW flours and a control flour were evaluated for both Chinese raw noodles (white salted) and Chinese wet noodles (yellow alkaline). Chinese raw noodle color was acceptable for composite samples from PNW and California; however, for both Northern Plains and Southern Plains composites, noodles were a bit too yellow. The boiled noodle texture was slightly soft for the PNW medium protein, California medium protein and Southern Plains high protein composites. Chinese wet noodle color was acceptable for all samples except for PNW medium protein and very high protein composites, which had a larger discoloration for the uncooked noodles during 24-hour storage. The texture of boiled Chinese wet noodles was acceptable for the Plains composites. PNW medium protein and very high protein composites and California medium 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 the HW flour alone is too strong for the Chinese northern-type steamed bread, each of the HW flours was blended with

(continued on page 29)

Composite Average Alveograms



Harvest Data

Hard White	Pacific Northwest		California	Southern Plains		Northern Plains
	Medium*	Very High	Medium	High	Very High	Very High
Wheat Grade Data:						
Test Weight (lb/bu)	63.6	63.7	64.8	62.2	60.0	61.4
(kg/hl)	83.6	83.7	85.1	81.8	78.9	80.7
Damaged Kernels Total (%)	0.0	0.0	0.0	0.5	0.0	0.0
Foreign Material (%)	0.0	0.0	0.0	0.1	0.0	0.0
Shrunken & Broken (%)	0.4	0.4	0.3	0.5	0.7	0.7
Total Defects (%)	0.4	0.4	0.3	1.1	0.7	0.7
Grade	I HW	I HW	I HW	I HW	I HW	I HW
Wheat Non-Grade Data:						
Dockage (%)	0.2	0.1	0.1	0.2	0.3	0.1
Moisture (%)	8.8	8.5	8.8	10.6	10.1	9.6
Protein (%) 12%/0% moisture basis	11.9/13.5	13.7/15.6	11.9/13.5	12.7/14.4	15.5/17.6	14.1/16.0
Ash (%) 14%/0% moisture basis	1.44/1.67	1.58/1.84	1.52/1.77	1.55/1.80	1.58/1.84	1.41/1.64
1000 Kernel Weight (g)	35.2	33.6	35.8	30.5	24.9	26.6
Kernel Size (%) lg/md/sm	85/15/0	81/19/0	85/15/0	64/36/0	36/63/1	48/51/1
Single Kernel: Hardness	70.0	75.9	71.0	73.2	71.3	75.3
Weight (mg)	36.7	34.7	38.1	31.0	27.6	27.4
Diameter (mm)	2.55	2.53	2.58	2.36	2.16	2.12
Sedimentation (cc)	17.1	17.1	11.0	13.9	29.3	33.1
Falling Number (sec)	261	381	335	358	377	444
Flour Data:						
Lab Mill Extraction (%)	68.8	69.8	71.7	68.4	66.1	70.6
Color: L*	92.0	91.7	92.1	91.6	91.3	91.4
a*	-2.0	-1.9	-1.7	-2.2	-2.0	-2.0
b*	6.8	7.4	5.7	8.5	7.8	8.1
Protein (%) 14%/0% moisture basis	10.2/11.9	11.9/13.8	10.5/12.2	11.0/12.8	13.7/15.9	12.3/14.3
Ash (%) 14%/0% moisture basis	0.39/0.45	0.43/0.50	0.41/0.48	0.44/0.51	0.43/0.50	0.42/0.49
Wet Gluten (%)	27.8	32.6	28.4	29.8	35.6	30.8
Gluten Index	97.8	96.0	98.9	87.4	82.0	99.5
Falling Number (sec)	329	389	381	364	417	418
Amylograph Viscosity 65 g (BU)	530	800	620	585	770	600
Starch Damage (%)	6.4	7.2	7.4	6.6	5.1	6.3
Dough Properties:						
Farinograph:						
Peak Time (min)	5.5	6.8	7.3	5.9	14.7	8.1
Stability (min)	31.2	41.7	32.5	14.5	23.8	34.5
Absorption (%)	62.3	63.8	65.1	62.3	64.1	62.1
Alveograph: P (mm)	107	121	115	96	108	102
L (mm)	112	100	65	96	122	128
P/L Ratio	0.96	1.21	1.77	1.00	0.89	0.80
W (10 ⁻⁴ joules)	422	445	297	289	426	448
Extensigraph: Resistance (BU)	550/747	604/1029	583/787	385/598	520/784	627/889
(45/135 min)	22.5/18.1	13.2/7.6	23.0/17.4	17.5/14.8	11.6/8.6	20.8/17.8
Area (sq cm)	156/163	100/83	171/172	85/109	80/72	163/190
Baking Evaluation:						
Bake Absorption (%)	65.3	66.0	69.3	64.9	65.3	65.9
Crumb Grain and Texture	7.8	7.3	6.5	6.5	7.8	7.8
Loaf Volume (cc)	953	1027	948	858	1040	965

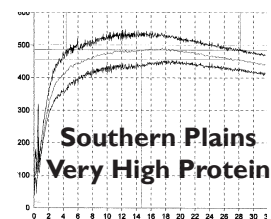
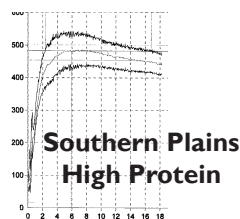
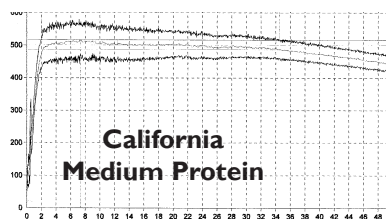
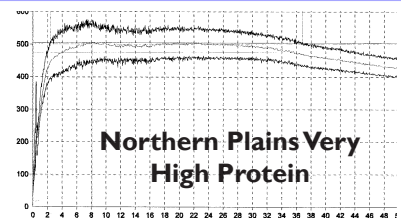
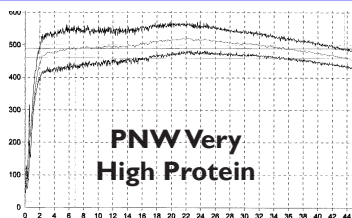
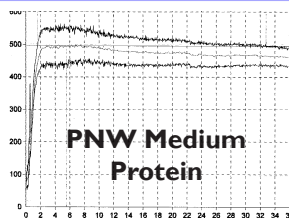
* Low: Less than 11.5%; Medium: 11.5 - 12.5%; High: 12.6% - 13.5%; Very High: Greater than 13.6%.

Harvest Data

Hard White	Pacific Northwest		California	Southern Plains		Northern Plains
	Medium*	Very High	Medium	High	Very High	Very High
Chinese Raw Noodle-Making Quality:						
Color at 0/24 hour: L*	84.8/74.4	84.3/73.1	85.5/75.7	83.7/74.6	80.2/70.7	83.1/72.2
a*	-0.3/0.2	0.1/0.5	0.2/0.8	-0.4/0.1	0.2/0.8	0.2/0.8
b*	17.7/22.3	18.0/23.0	14.4/19.6	20.5/26.5	21.3/25.5	19.4/24.7
Change in L* (0-24 hr)	10.4	11.2	9.9	9.1	9.5	11.0
Cooking Yield (%)	118	113	111	115	111	111
Sensory Color Stability Score	7.5	7.3	7.7	6.5	6.3	6.2
Instrumental Texture:						
Firmness (g)	867	1011	939	988	1076	1135
Springiness (%)	96.2	97.2	96.6	95.7	96.1	95.9
Cohesiveness	0.69	0.68	0.68	0.67	0.66	0.65
Chewiness (g)	572	663	620	631	687	704
Chinese Wet Noodle-Making Quality:						
Uncooked Color at 0/24 hour: L*	81.1/68.9	81.3/68.4	81.8/70.9	81.1/70.1	79.3/68.4	80.9/70.8
a*	-2.0/-1.1	-1.7/-0.8	-1.5/-0.9	-1.9/-1.1	-1.5/-0.6	-1.4/-0.8
b*	21.6/23.2	20.0/21.4	18.5/20.9	22.5/24.1	22.4/23.9	22.9/25.0
Change in L* (0-24 hr)	12.3	12.9	10.9	11.0	10.9	10.1
Parboiled Color at 0/24 hour: L*	78.1/79.1	78.2/78.8	78.4/79.1	78.3/79.4	77.7/78.4	78.8/79.8
a*	-3.1/-3.4	-2.6/-2.9	-2.7/-2.9	-3.2/-3.3	-2.7/-2.9	-2.8/-3.1
b*	28.8/27.5	28.2/26.8	25.9/24.6	29.2/28.2	27.4/26.5	28.2/27.5
Cooking Yield (1.5 min, %)	65	68	68	68	64	65
Uncooked Color Stability Score	8.3	7.5	8.0	7.8	7.5	8.2
Parboiled Color Stability Score	8.0	7.5	7.5	7.7	7.2	8.0
Instrumental Texture:						
Firmness (g)	610	618	564	704	747	853
Springiness (%)	95.3	94.6	96.6	94.5	95.1	95.5
Cohesiveness	0.68	0.67	0.70	0.67	0.65	0.65
Chewiness (g)	397	393	381	442	461	528
Chinese Northern-Type Steamed Bread Evaluation:						
Specific Volume (ml/g)	2.34	2.60	2.31	2.51	2.00	2.44
Total Score	70.3	77.0	72.5	72.8	64.5	72.5
Taiwan-Type Steamed Bread Evaluation:						
Specific Volume (ml/g)	2.41	2.63	2.55	3.22	3.33	3.12
Total Score	61.0	69.0	67.0	71.5	72.0	71.5

* Low: Less than 11.5%; Medium: 11.5 - 12.5%; High: 12.6% - 13.5%; Very High: Greater than 13.6%.

Composite Average Farinograms



US Production by Class

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

	2006	2005	2004	2003	2002
Hard Red Winter	18.56	25.31	23.30	29.15	16.88
Soft Red Winter	10.62	8.41	10.35	10.35	8.74
Hard Red Spring	11.77	12.70	14.30	13.60	9.57
Soft White	6.38	7.30	7.33	6.99	6.42
Hard White	0.53	0.81	1.10	0.27	0.33
Durum	1.46	2.75	2.45	2.63	2.18
Total	49.32	57.29	58.74	63.82	43.71

Based on USDA crop estimates of September 29, 2006

US Supply and Demand

Estimated for 2006/2007 (year beginning June 1)
(million metric tons)

	HRW	HRS	SRW	White	Durum	TOTAL
Supply:						
Beginning Stocks	5.9	3.6	2.9	2.1	1.1	15.5
Production	18.6	11.8	10.6	6.9	1.4	49.3
Total Supply	24.4	16.5	13.9	9.3	3.5	67.7
Demand:						
Domestic Use	12.9	6.0	7.5	2.6	2.2	31.2
Exports	8.2	7.2	3.8	5.2	0.8	25.2
Total Demand	21.0	13.3	11.3	7.8	3.0	56.3
Ending Stocks	3.4	3.3	2.6	1.5	0.5	11.4

Based on USDA Supply/Demand estimates of October 12, 2006.

(continued from page 22)

Export Cargo Survey

The durum export cargo survey shows the results of analysis of 42 individual subplot samples for crop year 2005 (collected from October 2005 through June 2006) and 45 samples for 2004. 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.

(continued from page 26)

the 2006 crop soft white composite (50/50). Results showed that samples were acceptable for Chinese northern-type steamed breads except for the Southern Plains very high protein composite, the protein content of which was too high. For Taiwan-type steamed breads, the PNW medium protein and California medium protein composites had performance inferior to the control flour, while the other samples were acceptable.

Summary: This year, the US HW production was lower than previous years, but the protein content was higher and end-use quality was better than before. No sprouting problem was noticed this year. The full analyses indicate that HW has good quality for milling, dough rheology and end-product performance in bread baking, Asian 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 US 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 - $\text{kg/hl} = \text{lb/bu} \times 1.292 + 0.630$, for other wheats - $\text{kg/hl} = \text{lb/bu} \times 1.292 + 1.419$.

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.

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.

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): SW, SRW - 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

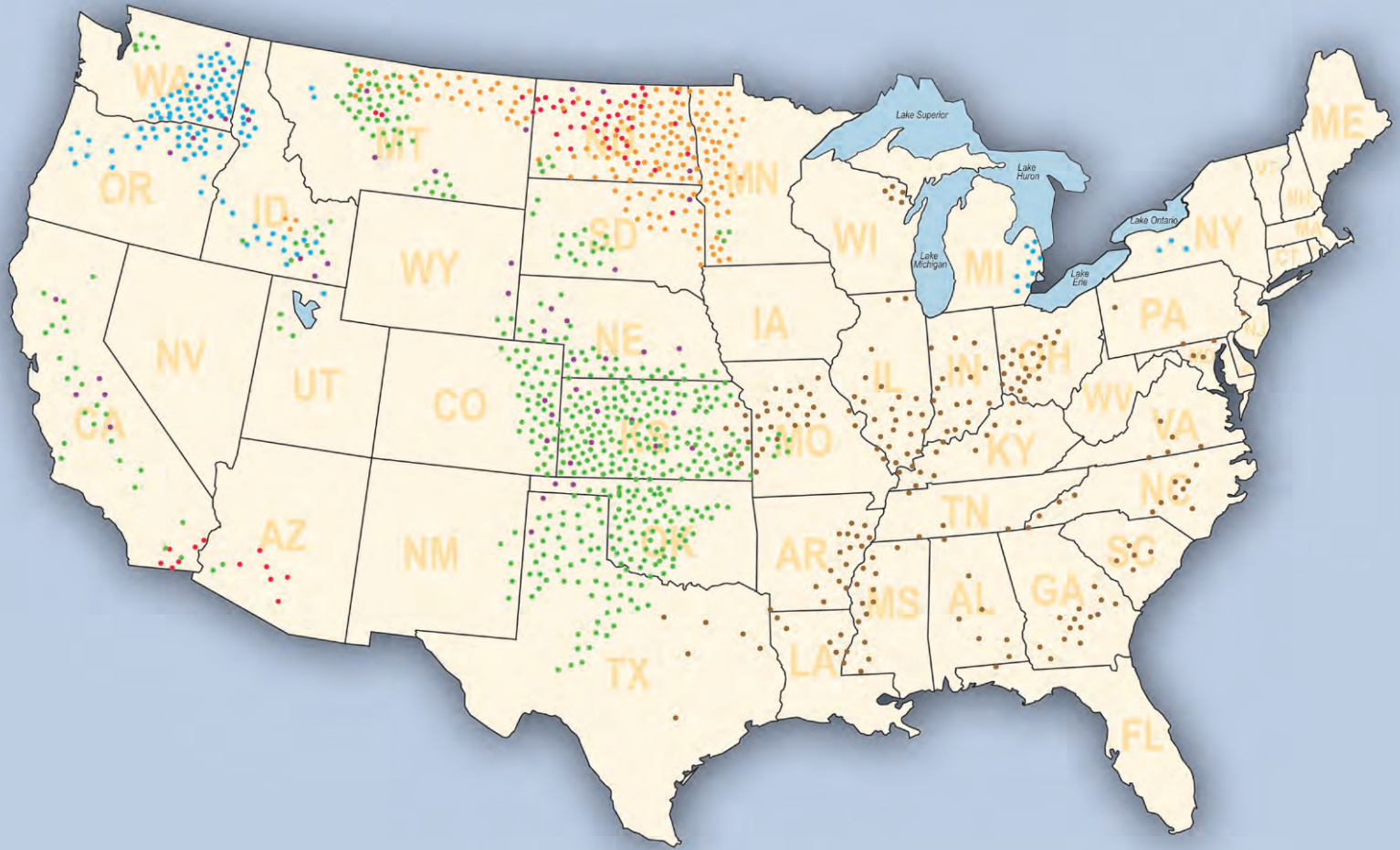
color is measured by stacking three dough sheets and taking two readings from each side of two dough sheets (a total of eight readings) using a Minolta CR-310 Chroma Meter; the mean value is reported. For Chinese wet noodles, noodle sheet color was measured on both uncooked and parboiled (boiling for 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° 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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