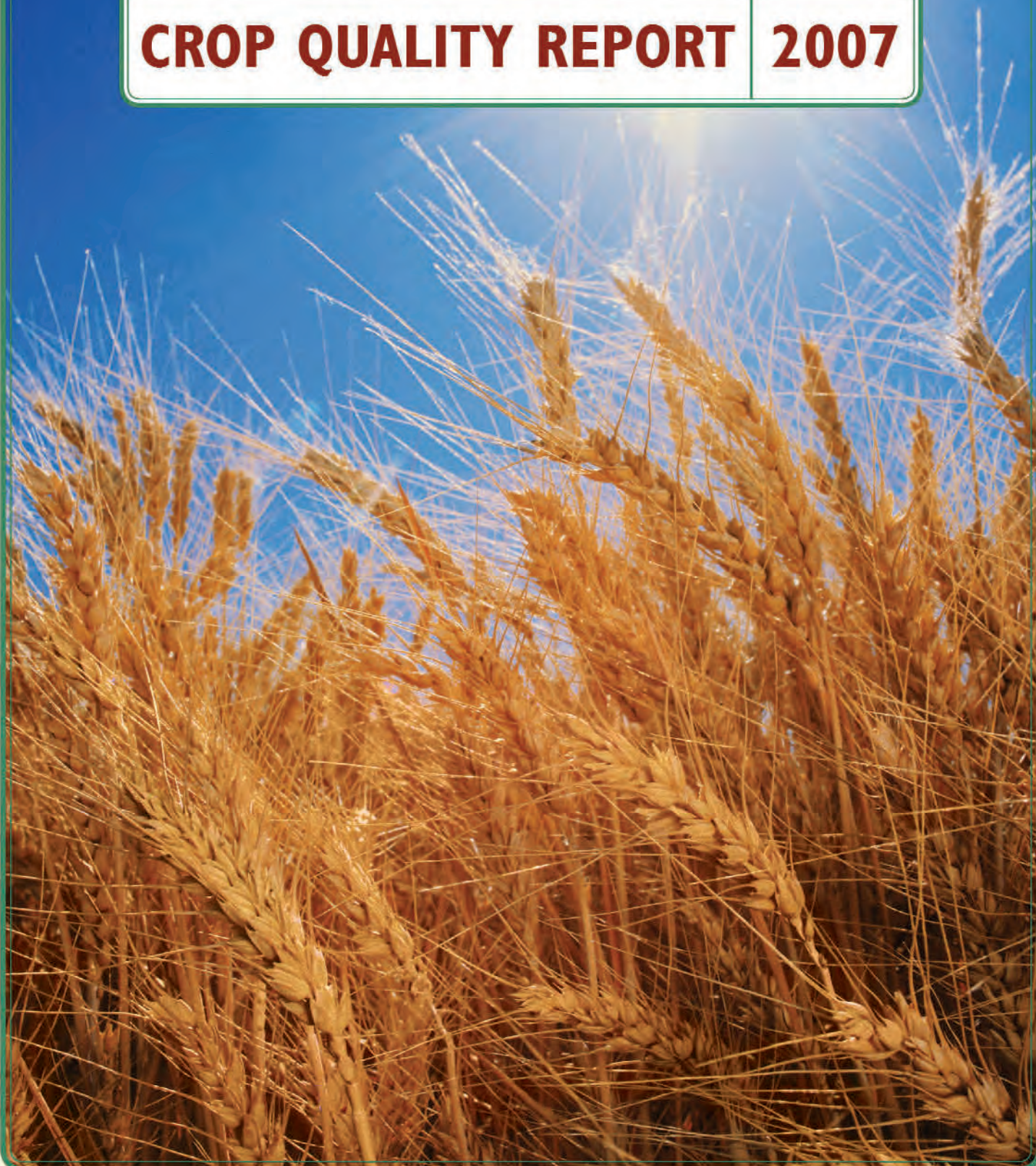


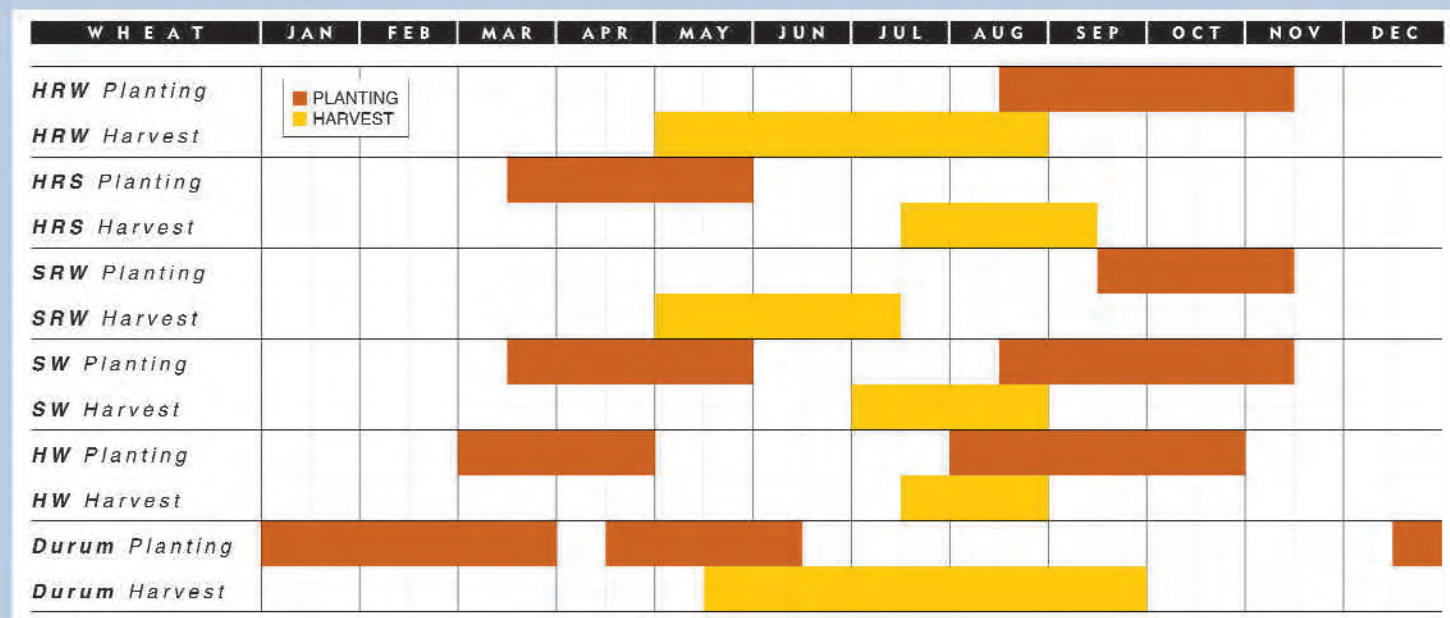


U.S. WHEAT
ASSOCIATES

CROP QUALITY REPORT 2007



Planting and harvest dates



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

Arizona Grain Research and Promotion Council
 Arkansas Wheat Promotion Board
 California Wheat Commission
 Colorado Wheat Administrative Committee
 Idaho Wheat Commission
 Kansas Wheat Commission
 Maryland Grain Producers Utilization Board
 Minnesota Wheat Research and Promotion Council
 Montana Wheat and Barley Committee

Nebraska Wheat Board
 North Dakota Wheat Commission
 Oklahoma Wheat Commission
 Oregon Wheat Commission
 South Dakota Wheat Commission
 Texas Wheat Producers Board
 Virginia Small Grains Board
 Washington Wheat Commission
 Wyoming Wheat Marketing Commission

TABLE OF CONTENTS

Hard Red Winter	2
Pacific Northwest Soft White	8
Hard Red Spring	12
Soft Red Winter	18
Durum	22
Hard White	26
US Supply and Demand	29
Analysis Methods	30
Wheat Grades and Grade Requirements	32

SUMMARY OF CLASSES

	Hard Red Winter		Hard Red Spring		Soft Red Winter		Soft White		Durum*	
	2007	5-Year Avg	2007	5-Year Avg	2007	5-Year Avg	2007	5-Year Avg	2007	5-Year Avg
Test Weight (lb/bu)	59.7	59.7	61.1	60.4	60.0	59.3	60.0	59.9	59.9	60.7
(kg/hl)	78.5	78.6	80.3	79.4	78.9	78.0	78.9	78.8	78.0	79.0
Grade	2 HRW	2 HRW	1 DNS	1 DNS	1 SRW	2 SRW	1 SW	2 SW	2 HAD	1 HAD
Dockage (%)	0.7	0.6	0.4	1.0	1.0	0.8	0.6	0.7	1.6	1.5
Wheat Moisture (%)	11.4	11.3	11.9	12.0	13.1	13.0	9.3	9.1	11.8	11.8
Wheat Protein (%) **	11.6	12.8	14.3	14.6	10.3	10.0	10.2	10.3	15.1	14.1
Wheat Ash (%) **	1.54	1.50	1.64	1.62	1.55	1.56	1.36	1.39	1.67	1.56
1000 Kernel Weight (g)	29.5	28.5	30.4	29.5	33.3	32.9	35.5	34.1	33.8	35.9
Wheat Falling Number (sec)	417	402	432	382	343	348	331	348	367	360
Flour/Semolina Extraction (%)	68.3	69.5	67.7	69.0	71.0	68.9	68.8	67.9	63.8	64.4
Flour/Semolina Ash (%) **	0.54	0.50	0.45	0.47	0.46	0.43	0.41	0.39	0.76	0.68
Wet Gluten (%)	29.1	31.2	36.5	35.7	23.1	21.7	20.6	22.9	39.2	36.6
Farinograph:										
Peak Time (min)	5.1	6.4	12.3	11.7	2.0	1.5	1.5	1.6	n/a	n/a
Stability (min)	7.9	11.4	26.6	20.6	3.4	3.0	4.0	3.7	n/a	n/a
Absorption (%)	57.2	59.6	65.6	65.5	52.5	52.6	53.6	52.3	n/a	n/a
Alveograph W (10 ⁻⁴ joules)	195	314	426	418	107	89	41	43	113	71
Loaf Volume (cc)	855	853	960	1064	749	725	n/a	n/a	n/a	n/a
Production (mmt)	26.2	24.1	12.2	13.1	9.7	9.9	5.4	6.7	2.0	2.2

* 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: A majority of the United States hard red winter wheat (HRW) is grown in the Great Plains states of Texas, 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.

Growing conditions were much improved from the previous year. Although there were some areas in the northern part of the US that were stressed by dry conditions, much of the area had adequate precipitation in the form of heavy snowfall and rain. The spring months brought excessive amounts of moisture, several late freezes, diseases and insect damage, especially in the central and eastern parts of Oklahoma, and Kansas. These areas received excessive rain and many acres had to be abandoned because of flooding.

Survey Methods: The states surveyed were divided into 36 geographic areas for purposes of summarizing and reporting data. A total of 386 individual samples were collected from the 36 areas. Quality information is based on testing by the USDA Hard Winter Wheat Quality Lab, Kansas State University Wheat Quality Lab, and Kansas Grain Inspection Services. Wheat grade and non-grade parameters were tested for each individual sample. Then, samples were composited into three protein ranges (below 11.5, 11.5-12.5, and above 12.5) for each area. Wheat grade data for the composite samples were determined by averaging individual samples. Composite samples were tested for wheat non-grade, flour, dough, and baking data.

Wheat and Grade Data: The average grade of the 2007 crop is #2 HRW. The overall test weight of 59.7 lb/bu is 0.8 lb/bu below last year's exceptional quality, but about equal to the five-year average. Single kernel hardness, size and weight are also lower than last year's average and the 5-year average. Large portions of the crop was adversely affected by prolonged and repeated rains during peak harvest season. However, even with the wet harvest conditions, sprout damage and low falling numbers are not a problem.

Protein content is well below last year's unusually high average and is 1.2 percentage points below the five-year average. Whereas last year, many regions didn't have any low protein (less than 11.5%), this year some regions did not have wheat in the high protein (greater than 12.5%) range.

Milling and Flour Use: As expected with the lower protein content, the flour functionality results are lower than last year and the five-year averages. The overall wet gluten average is 4.8 percentage points below last year and 2.1 below the five-year average. Farinograph stability and mix time as well as the alveograph W values are well below last year's high values and the five-year average, but the results of the baking test reveal the flour still has the strength to make a good loaf of bread with loaf volume exceeding the five-year average.

Millers and bakers are finding it difficult to transition from the high protein crop of last year to the below-average protein crop this year. This challenge is even more difficult with the low carry-over stocks of 2006 wheat to blend through the transition period.

In summary, the early spring freeze and the wet harvest conditions had a significant impact on the quality and quantity of HRW available this year. Flour performance is sufficient for most product applications, but at lower protein levels.

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.

HRW was again the predominant wheat class grown in California in 2007, and acreage increased more than 20% over the previous year. This year saw an emergence of several new HRW varieties. Disease pressure this year was low, perhaps due in part to much less rainfall for the state. Test weights, kernel size, and flour yields were higher than 2006; wheat ash was lower.

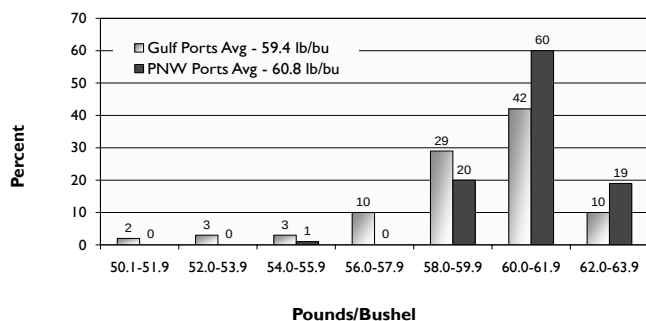
California HRW is predominately exported through the Port of Stockton, located on an inland waterway in Northern California. This grain handling facility is owned and operated by a California company. Wheat that goes into this facility is locally grown and trucked in, often directly from the field that it was harvested from. Exports by containerized shipments have increased over the past two years. Several ports throughout California handle containers.

California HRW is 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.

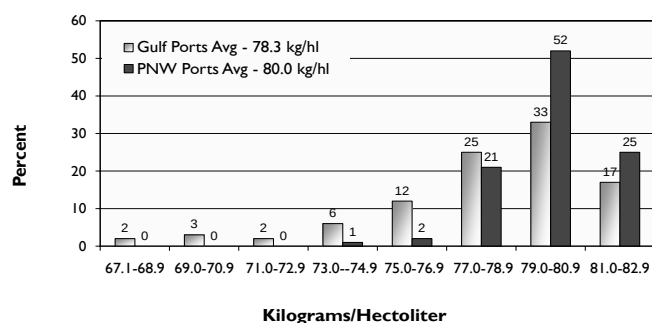
Export Cargo Survey

The export cargo data show the results of analysis of 471 individual subplot samples for marketing years 2007 and 2006. Of the 99 2007-crop samples collected in August and September, 73 are from Gulf ports and 26 from PNW ports. Of the 372 2006-crop samples, 254 were drawn at Gulf ports and 118 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, Kansas City, MO.

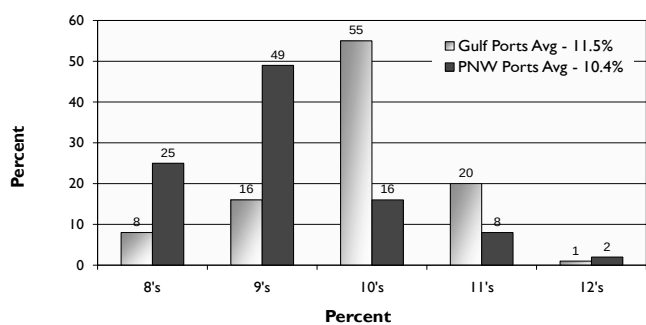
Test Weight



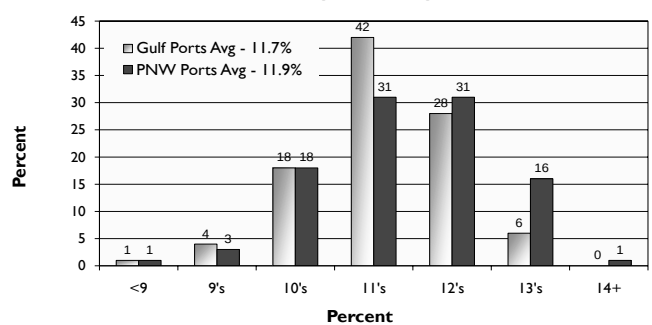
Hectoliter Weight



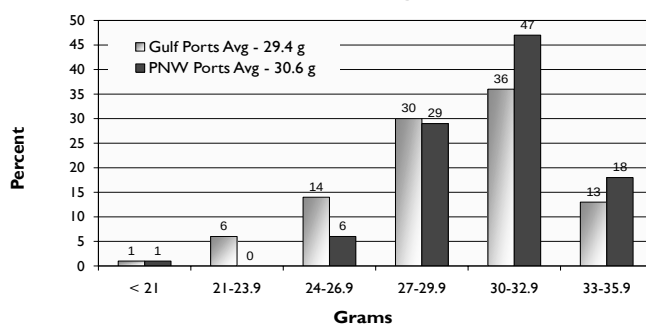
Wheat Moisture



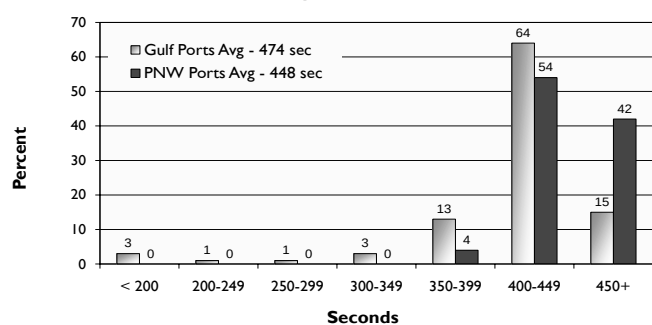
Protein (12% mb)



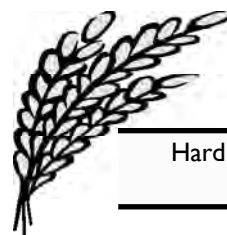
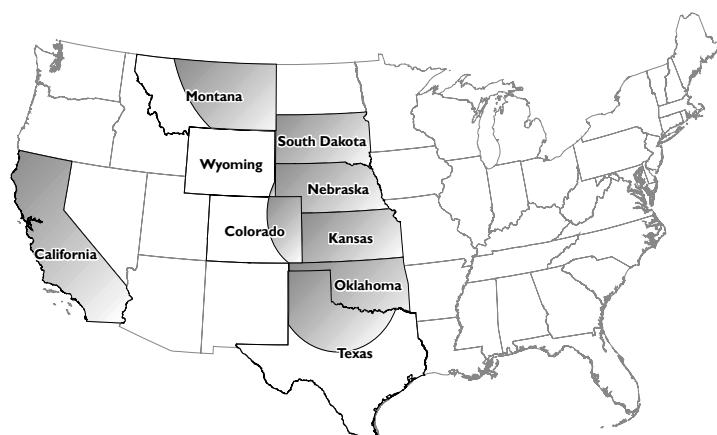
1000 Kernel Weight



Falling Number



Note: Charts include Great Plains HRW Only.



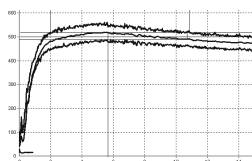
Hard red winter survey results
are from nine states.

Midwestern

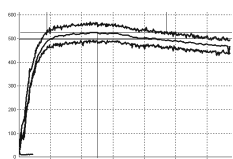
Composite Average Farinograms and Alveograms

Farinograms:

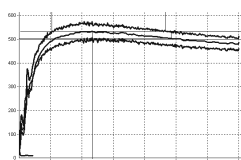
High
Protein:



Medium
Protein:

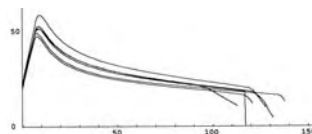


Low
Protein:

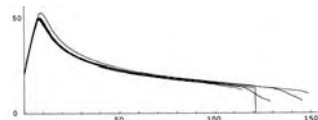


Alveograms:

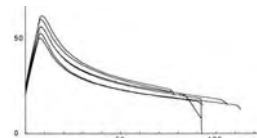
High Protein:



Medium Protein:



Low Protein:



Hard Red Winter

Composite Average

	2007 By Protein*				2006	5-Year
	Low	Med	High	Overall	Overall	Avg
Wheat Grade Data:						
Test Weight (lb/bu)	60.2	59.5	58.5	59.7	60.5	59.7
(kg/hl)	79.2	78.3	77.0	78.5	79.6	78.6
Damaged Kernels (%)	0.4	0.6	0.5	0.5	0.2	0.4
Foreign Material (%)	0.1	0.1	0.2	0.1	0.1	0.1
Shrunken & Broken (%)	1.3	1.7	2.2	1.6	1.1	1.2
Total Defects (%)	1.8	2.4	3.0	2.2	1.3	1.6
Grade	1 HRW	2 HRW	2 HRW	2 HRW	1 HRW	2 HRW
Wheat Non-Grade Data:						
Dockage (%)	0.7	0.7	0.9	0.7	0.5	0.6
Moisture (%)	11.2	11.5	11.1	11.4	11.0	11.3
Protein (%) 12%/0% moisture basis	10.7/12.2	11.9/13.6	13.1/14.9	11.6/13.3	13.7/15.6	12.8/14.5
Ash (%) 14%/0% moisture basis	1.49/1.73	1.57/1.83	1.60/1.86	1.54/1.80	1.53/1.78	1.50/1.74
1000 Kernel Weight (g)	30.8	28.9	27.2	29.5	28.6	28.5
Kernel Size (%) lg/md/sm	61/37/2	52/45/2	42/54/4	51/47/2	58/41/1	55/44/1
Single Kernel: Hardness	65.5	67.0	70.0	67.6	71.2	70.3
Weight (mg)	29.4	28.1	26.3	27.6	29.8	29.6
Diameter (mm)	2.20	2.10	2.00	2.12	2.26	2.27
Sedimentation (cc)	34.9	38.2	40.0	37.7	44.5	43.2
Falling Number (sec)	406	420	434	417	392	402
Flour Data:						
Lab Mill Extraction (%)	68.7	68.5	67.8	68.3	67.7	69.5
Color: L*	92.2	91.9	91.7	91.9	92.5	92.4
a*	-2.0	-1.8	-1.8	-1.9	-2.7	-3.2
b*	11.0	11.0	11.0	11.0	8.9	8.9
Protein (%) 14%/0% moisture basis	9.6/11.5	10.7/12.4	11.6/13.5	10.7/12.4	12.1/14.1	11.4/13.3
Ash (%) 14%/0% moisture basis	0.55/0.64	0.55/0.64	0.55/0.65	0.54/0.63	0.49/0.57	0.50/0.58
Wet Gluten (%)	25.8	29.0	32.8	29.1	33.9	31.2
Gluten Index	96.3	95.2	92.5	94.3	93.4	93.8
Falling Number (sec)	421	407	426	421	437	423
Amylograph Viscosity 65 g (BU)					807	653
Starch Damage (%)					7.0	8.0
Dough Properties:						
Farinograph:						
Peak Time (min)	4.7	5.0	6.4	5.1	6.9	6.4
Stability (min)	7.4	7.5	9.5	7.9	12.6	11.4
Absorption (%)	56.0	57.0	57.9	57.2	58.5	59.6
Alveograph: P (mm)	63	61	60	60	86	93
L (mm)	90	109	122	104	117	103
P/L Ratio	0.70	0.60	0.50	0.60	0.75	0.90
W (10 ⁻⁴ joules)	177	198	215	195	318	314
Extensograph: Resistance (BU)						
(45/135 min) Extension (cm)						
Area (sq cm)						
Baking Evaluation:						
Crumb Grain (scale 1-6)	2.9	3.1	3.1	3.0	6.8	6.7
Crumb Texture (scale 1-6)	3.3	3.6	3.9	3.4	7.1	7.3
Loaf Volume (cc)	803	869	923	855	871	853
% of Area Production:	35	46	19	100		

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

Harvest Data

Gulf Exportable Average						PNW Exportable Average					
2007 By Protein*				2006	5-Year	2007 By Protein*				2006	5-Year
Low	Med	High	Overall	Overall	Avg	Low	Med	High	Overall	Overall	Avg
60.2	59.4	58.3	59.4	60.1	59.6	60.7	61.1	60.5	60.8	62.2	60.2
79.2	78.1	76.7	78.3	79.1	78.4	79.9	80.3	79.6	80.0	81.7	79.2
0.4	0.6	0.6	0.5	0.2	0.4	0.1	0.1	0.1	0.1	0.1	0.3
0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1
1.3	1.7	2.2	1.6	1.1	1.1	1.6	1.6	1.8	1.7	1.1	1.4
1.8	2.4	3.1	2.3	1.4	1.6	1.7	1.8	2.0	1.8	1.3	1.7
1 HRW	2 HRW	2 HRW	2 HRW	1 HRW	2 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW
0.7	0.7	0.9	0.8	0.5	0.6	0.9	0.6	0.8	0.8	0.5	0.7
11.6	11.5	11.2	11.5	11.2	11.5	10.1	10.7	10.3	10.4	10.2	10.6
10.7/12.2	12.0/13.6	13.1/14.9	11.7/13.3	13.9/15.8	12.7/14.4	10.7/12.2	11.9/13.5	13.2/15.0	11.9/13.5	12.7/14.4	12.9/14.6
1.49/1.73	1.57/1.83	1.62/1.88	1.55/1.80	1.54/1.79	1.60/1.86	1.49/1.74	1.53/1.78	1.55/1.80	1.52/1.77	1.48/1.72	1.50/1.74
30.8	28.9	27.3	29.4	28.6	28.5	31.8	30.6	29.4	30.6	28.6	28.0
61/38/2	52/45/2	42/54/4	53/44/3	59/40/1	56/43/1	61/38/1	58/41/2	53/45/2	49/50/1	53/45/1	48/50/1
65.6	66.8	67.5	66.9	71.1	70.2	66.0	67.2	70.1	69.6	71.5	72.0
29.4	28.0	26.1	27.6	29.7	29.6	29.7	30.1	29.1	28.1	29.9	29.3
2.20	2.14	2.04	2.12	2.26	2.28	2.19	2.21	2.18	2.12	2.26	2.23
35.0	38.2	40.1	37.9	45.3	43.2	34.0	37.6	39.7	37.2	41.3	43.9
405	418	427	474	392	400	442	447	456	448	393	404
68.8	68.5	67.9	68.6	67.8	69.5	67.8	69.4	68.7	67.9	67.3	69.6
92.1	91.9	91.6	91.9	92.4	92.4	92.6	92.3	92.0	92.3	92.9	92.6
-1.9	-1.8	-1.8	-1.8	-2.7	-3.2	-1.9	-1.7	-1.6	-1.8	-3.0	-3.2
11.1	11.0	11.0	11.0	8.9	8.9	10.7	10.6	10.7	10.7	9.0	9.1
9.6/11.2	10.6/12.3	11.6/13.5	10.5/12.2	12.2/14.2	11.4/13.3	9.6/11.2	10.9/12.7	11.8/13.7	11.3/13.0	11.3/13.1	11.5/13.4
0.55/0.64	0.55/0.64	0.55/0.64	0.55/0.64	0.50/0.58	0.50/0.58	0.53/0.61	0.53/0.62	0.53/0.62	0.53/0.61	0.44/0.51	0.50/0.58
25.9	28.9	32.5	28.9	34.7	31.1	26.0	30.1	34.0	30.4	30.3	31.6
96.3	95.2	93.3	94.7	92.6	93.8	95.3	93.8	90.3	92.9	96.4	93.2
419	406	419	417	437	420	437	410	437	441	433	435
				813	651					782	656
				7.1	8.1					6.6	7.7
4.7	5.0	6.3	5.0	6.9	6.4	4.9	5.4	6.5	5.7	7.1	6.6
7.4	7.4	9.2	7.8	12.3	11.3	8.6	8.1	9.7	8.8	13.8	11.9
56.0	57.0	57.7	56.7	59.0	59.6	56.2	57.4	58.4	58.5	56.8	59.6
63	60	58	59	87	94	67	60	65	66	82	91
90	108	123	105	119	103	81	116	117	102	106	103
0.74	0.59	0.49	0.58	0.74	0.90	0.89	0.54	0.56	0.66	0.78	0.88
177	197	206	190	324	316	179	214	238	214	298	308
				480/530	527/620					600/655	569/634
				17.8/17.6	17.5/16.9					19.5/17.0	18.5/16.8
				110/120	120/137					149/137	135/138
2.9	3.0	3.2	3.2	6.7	6.7	3.1	3.6	2.8	3.3	7.2	6.9
3.3	3.6	3.8	3.5	7.1	7.3	3.4	3.7	3.9	3.5	7.3	7.2
804	866	923	859	863	853	774	864	891	847	901	851
40	48	12	100			26	42	32	100		

California and Export Data

Hard Red Winter	California Harvest Data				Export Cargo Data			
	Medium Protein Average		High Protein Average		Gulf		PNW	
	2007	2006	2007	2006	2007	2006	2007	2006
Wheat Grade Data:								
Test Weight (lb/bu)	64.0	60.5	64.0	60.5	60.6	60.9	62.9	62.7
(kg/hl)	84.1	79.6	84.1	79.5	79.7	80.1	82.7	82.5
Damaged Kernels (%)	0.0	0.1	0.0	0.0	1.0	1.1	0.1	0.1
Foreign Material (%)	0.2	0.2	0.3	0.1	0.2	0.3	0.1	0.1
Shrunken & Broken (%)	0.7	1.2	0.6	1.2	1.5	1.4	1.3	1.4
Total Defects (%)	0.9	1.5	0.9	1.3	2.6	2.8	1.5	1.6
Grade	I HRW	I HRW	I HRW	I HRW	I HRW	I HRW	I HRW	I HRW
Wheat Non-Grade Data:								
Dockage (%)	0.6	0.9	0.8	1.3	0.7	0.7	0.3	0.3
Moisture (%)	8.5	8.5	8.4	8.2	12.0	11.4	9.9	9.5
Protein (%) 12%/0% moisture basis	11.8/13.5	11.8/13.4	13.6/15.4	13.2/15.0	11.8/13.4	12.7/14.5	11.7/13.3	12.3/14.0
Ash (%) 14%/0% moisture basis	1.42/1.66	1.57/1.83	1.49/1.73	1.63/1.90	1.52/1.77	1.53/1.78	1.36/1.59	1.43/1.66
1000 Kernel Weight (g)	42.3	35.7	41.9	35.9	28.5	27.4	29.8	28.0
Kernel Size (%) lg/md/sm					65/33/1	62/36/2	64/35/1	62/36/2
Single Kernel: Hardness					72.3	73.3	76.8	76.3
Weight (mg)					30.0	29.6	31.2	30.5
Diameter (mm)					2.37	2.37	2.42	2.42
Sedimentation (cc)					31.6	31.8	34.7	33.5
Falling Number (sec)					376	445	412	455
Flour Data:								
Lab Mill Extraction (%)	72.9	64.5	73.5	66.2	71.9	69.3	72.8	70.4
Color: L*					92.7	92.5	92.8	92.5
a*					-3.0	-2.9	-3.0	-3.0
b*					8.8	8.5	8.8	8.9
Protein (%) 14%/0% moisture basis	10.6/12.3	10.6/12.3	12.3/14.3	11.9/13.8	10.5/12.2	11.4/13.3	10.6/12.4	11.2/13.0
Ash (%) 14%/0% moisture basis	0.45/0.53	0.47/0.54	0.45/0.52	0.46/0.54	0.50/0.58	0.49/0.57	0.49/0.57	0.47/0.55
Wet Gluten (%)	26.4	26.1	31.8	29.9	28.0	31.0	28.3	31.3
Gluten Index					96.8	92.2	94.2	87.5
Falling Number (sec)	410	383	407	404	395	502	429	499
Amylograph Viscosity 65 g (BU)					522	687	617	722
Starch Damage (%)								
Dough Properties:								
Farinograph:								
Peak Time (min)	4.9	9.7	7.0	10.9	5.8	6.8	5.9	6.3
Stability (min)	13.7	21.2	15.2	24.1	10.4	13.1	9.0	10.9
Absorption (%)	60.3	59.1	62.4	59.7	57.6	58.8	60.5	59.4
Alveograph: P (mm)					94	105	120	107
L (mm)					90	91	77	86
P/L Ratio					1.05	1.15	1.56	1.24
W (10 ⁻⁴ joules)					283	331	318	317
Extensograph: Resistance (BU)								
(45/135 min) Extension (cm)								
Area (sq cm)								
Baking Evaluation:								
Crumb Grain (scale 1-6)					6.5	6.6	6.3	6.8
Crumb Texture (scale 1-6)					6.7	7.0	6.6	7.0
Loaf Volume (cc)	816	866	911	891	865	904	855	902
Number of Samples					73	254	26	118

Hard Red Winter Production

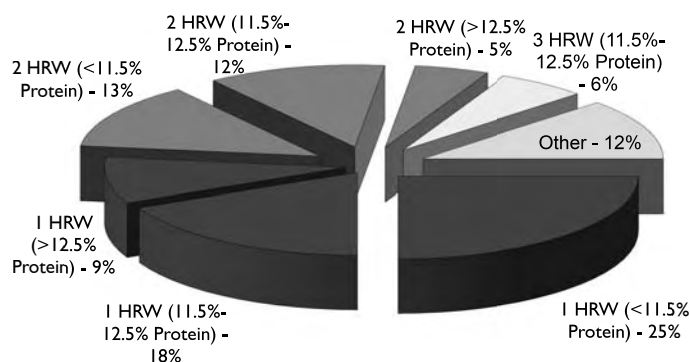
for the major growing region
(million metric tons)

	2007	2006	2005	2004	2003
California	0.43	0.33	0.52	0.67	0.65
Colorado	2.38	1.01	1.32	1.16	2.10
Kansas	7.49	7.77	9.93	8.13	12.93
Montana	2.22	2.20	2.52	1.76	1.78
Nebraska	2.27	1.65	1.83	1.63	2.28
Oklahoma	2.59	2.18	3.41	4.39	4.83
South Dakota	2.59	1.13	1.78	1.53	1.67
Texas	3.67	0.85	2.43	2.72	2.42
Wyoming	0.09	0.10	0.12	0.10	0.11
Nine-State Total	23.73	17.21	23.87	22.08	28.76
Total HRW Production	26.17	18.56	25.31	23.30	29.15

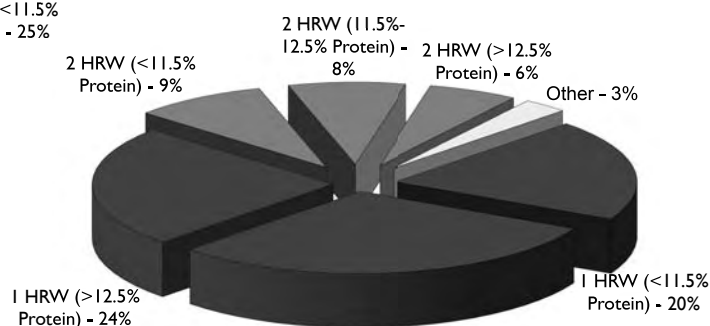
Based on USDA crop estimates of September 28, 2007.

Protein Distribution

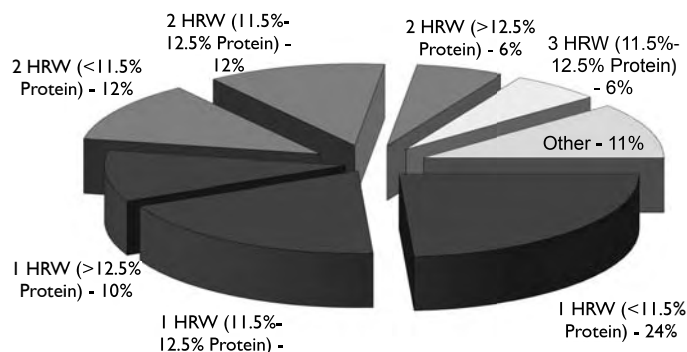
Gulf Exportable



PNW Exportable



Overall



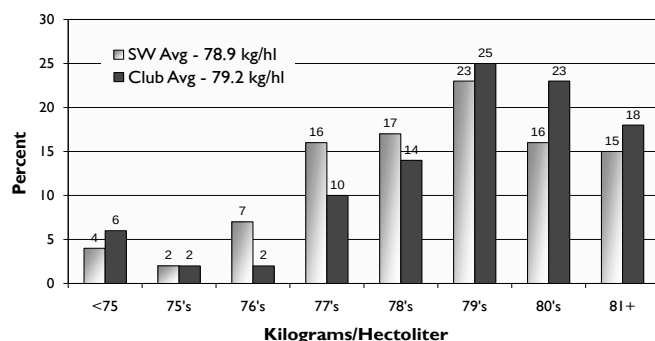
Pacific Northwest Soft White

Harvest Survey

Weather and Harvest: The Pacific Northwest (PNW) wheat planting conditions were rather dry. Most areas received much needed rain during the winter and early spring, which contributed to a crop with average yield in dryland farming areas in Idaho, Oregon, and Washington. Dry conditions prevailed during the wheat harvest in the PNW.

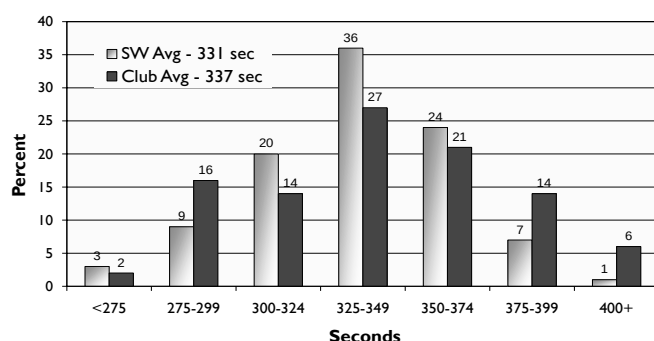
Wheat and Grade Data: The average 2007 soft white (SW) test weight at 60.0 lb/bu (78.9 kg/hl) was slightly below last year, while average white club (WC) test weight at 60.2 lb/bu (79.2 kg/hl) was slightly above last year. Other Federal Grain Inspection Service grading factors for SW and WC were similar to last year and the five-year averages. SW dockage decreased 0.1 percentage point to 0.6% and WC increased by 0.1 to 0.8% compared with last year. Average SW wheat moisture at 9.3% and WC at 8.9% were slightly higher than last year and the five-year averages.

Hectoliter Weight



SW protein content (12% mb) of 10.2% was lower than last year and the five-year averages, and WC protein (12% mb) of 10.5% was higher than last year and the five-year averages. Wheat ash was slightly lower than last year and the five-year averages for SW and WC. SW and WC thousand kernel weight and kernel diameter values were higher than last year and the five-year averages. Falling number values (14% mb) were 331 seconds for SW and 337 seconds for WC, both of which were slightly lower than the five-year averages.

Falling Number



Flour, Dough and Baking Data: The 2007 crop Buhler Laboratory Mill flour extractions were lower than last year, but higher than the five-year average for SW at 68.8% and

for WC at 70.0%. Flour ash contents for both SW and WC were slightly lower than last year, but slightly higher than the five-year average. Flour protein contents (14% mb) were 8.5% and 9.0% for SW and WC, respectively. Falling number values indicated sound flour samples for SW and WC, and amylograph peak viscosity value was similar to last year for SW at 558 BU and lower than last year for WC at 562 BU. Starch damage values for SW and WC were similar to last year and the five-year averages.

Farinograph peak and stability times showed that SW had similar gluten properties to last year and the five-year averages, and WC had slightly stronger gluten properties than last year and the five-year averages. Alveograph L values, which normally show longer times with higher protein content, for SW and WC displayed similar values to last year and the five-year averages. SW and WC extensograph extensibility indicated similar values to last year and the five-year averages.

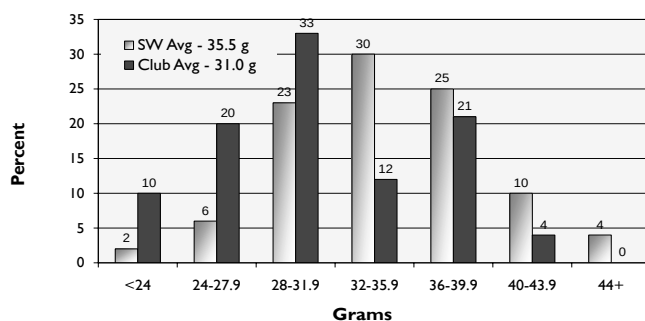
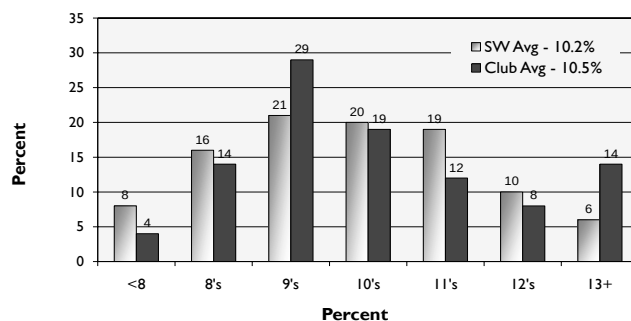
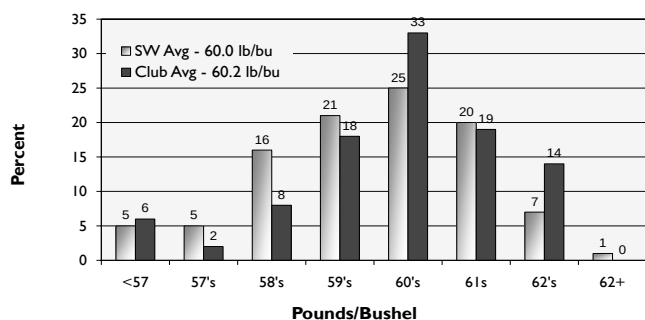
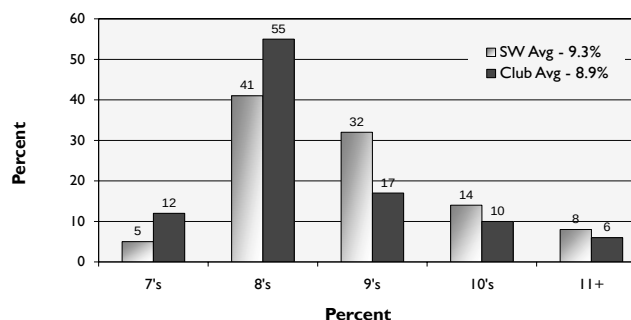
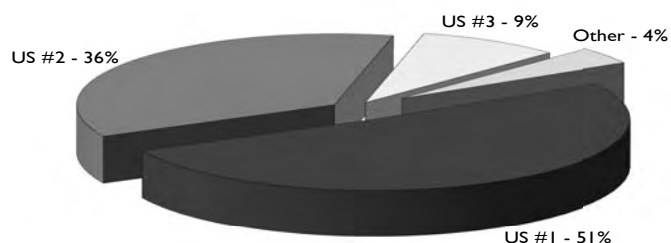
Sponge cake volumes for SW of 1200 cc and WC of 1263 cc were slightly larger than last year and the five-year averages. SW cake scores were lower than last year and the five-year averages, but WC cake score was the same as last year average and higher than five-year average. Cookie diameters for SW and WC were similar to last year and the five-year averages. SW and WC cookie spread factors were greater than last year.

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 higher for WC than last year and the five-year averages. Total scores were slightly lower than last year's average, but similar to the five-year average for SW, and similar to last year, but higher than the five-year average for WC.

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

Export Cargo Survey

The PNW SW export cargo data show the results of analyses of individual subplot samples including 98 drawn from the 2005 crop and 61 from the 2006 crop (August 2006 through May 2007). Representative samples were selected from official Federal Grain Inspection Service samples. Grade data are the actual grades on the individual sublots. Milling and processing analyses were conducted by the Wheat Marketing Center, Portland, Oregon.

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

in major producing states
(million metric tons)

	2007		2006		2005		2004		2003	
	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB
Washington	2.19	0.27	2.91	0.18	3.13	0.17	3.10	0.24	3.00	0.31
Oregon	1.13	0.02	1.44	0.04	1.35	0.04	1.54	0.05	1.34	0.04
Idaho	1.16	0.07	1.09	0.02	1.92	0.04	1.53	0.06	1.58	0.04
Three-state Total	4.48	0.36	5.44	0.24	6.40	0.25	6.17	0.34	5.92	0.39
Three-state Total Soft White Wheat	4.84		6.65		6.51		6.31		6.31	
Total US Soft White Wheat	5.43		7.30		7.33		6.99		6.42	

Based on USDA crop estimates of September 28, 2007.

Pacific Northwest Harvest Data

Soft White

Soft White	2007					2006		5-Year Avg	
	Soft White By Protein*				Club Avg				
	Low	Med	High	All		SW	Club	SW	Club
Wheat Grade Data:									
Test Weight (lb/bu)	60.0	60.4	59.6	60.0	60.2	60.2	60.0	59.9	60.2
(kg/hl)	78.9	79.5	78.4	78.9	79.2	79.2	78.9	78.8	79.2
Damaged Kernels (%)	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Foreign Material (%)	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Shrunken & Broken (%)	0.6	0.8	1.1	0.9	1.3	0.9	1.5	0.9	1.3
Total Defects (%)	1.2	0.9	1.2	1.1	1.4	1.0	1.6	1.1	1.4
Grade	1 SW	1 SW	2 SW	1 SW	1 WC	1 SW	1 WC	2 SW	1 WC
Wheat Non-Grade Data:									
Dockage (%)	0.6	0.6	0.6	0.6	0.8	0.7	0.7	0.7	0.8
Moisture (%)	9.7	9.2	9.1	9.3	8.9	8.9	8.4	9.1	8.5
Protein (%) 12%/0% moisture basis	8.1/9.2	9.8/11.1	11.8/13.4	10.2/11.6	10.5/11.9	10.5/11.9	10.1/11.5	10.3/11.7	10.0/11.4
Ash (%) 14%/0% moisture basis	1.31/1.52	1.34/1.56	1.40/1.63	1.36/1.58	1.28/1.49	1.45/1.69	1.36/1.58	1.39/1.62	1.29/1.50
1000 Kernel Weight (g)	36.1	35.9	32.7	35.5	31.0	34.1	30.5	34.1	30.6
Kernel Size (%) lg/md/sm	87/13/0	85/14/1	72/27/1	80/19/1	74/25/1	82/17/1	73/25/2	81/18/1	74/25/1
Single Kernel: Hardness	32.8	36.1	35.9	35.0	36.9	36.8	38.3	33.3	37.4
Weight (mg)	40.3	38.5	35.9	37.8	34.4	36.6	31.7	35.7	33.2
Diameter (mm)	2.75	2.73	2.63	2.69	2.56	2.47	2.25	2.49	2.32
Sedimentation (cc)	9.1	13.9	21.9	16.1	15.4	15.4	13.2	17.3	13.8
Falling Number (sec)	305	334	343	331	337	335	338	348	343
Flour Data:									
Lab Mill Extraction (%)	70.3	69.7	67.1	68.8	70.0	70.3	71.3	67.9	69.0
Color: L*	92.3	92.4	92.2	92.3	92.3	92.2	92.1	92.4	92.4
a*	-2.4	-2.3	-2.2	-2.3	-2.1	-2.3	-2.1	-2.5	-2.3
b*	8.4	8.2	7.9	8.1	7.9	7.7	7.2	7.5	7.2
Protein (%) 14%/0% moisture basis	6.8/7.9	8.1/9.4	9.8/11.4	8.5/9.9	9.0/10.5	9.0/10.5	8.6/10.0	8.6/10.0	8.4/9.8
Ash (%) 14%/0% moisture basis	0.44/0.51	0.40/0.47	0.41/0.48	0.41/0.48	0.42/0.49	0.42/0.49	0.43/0.50	0.39/0.45	0.40/0.47
Wet Gluten (%)	14.5	18.8	25.7	20.6	18.3	25.0	17.8	22.9	18.6
Gluten Index	16.4	58.2	62.1	49.4	3.5	65.6	11.0		
Falling Number (sec)	306	334	343	331	325	341	343	343	340
Amylograph Viscosity 65 g (BU)	499	533	612	558	562	552	620	538	564
Starch Damage (%)	5.3	4.7	4.4	4.7	3.8	4.4	4.0	4.0	3.6
Solvent Retention Capacity (%)									
Water/50% Sucrose	57/106	55/108	54/114	55/110	50/100	52/107	41/99	54/108	45/99
5% Lactic Acid/5% Na ₂ CO ₃	97/86	109/83	120/83	111/84	90/78	98/78	77/72	108/81	82/75
Dough Properties:									
Farinograph: Peak Time (min)	0.9	1.6	2.1	1.5	1.7	1.6	1.2	1.6	1.3
Stability (min)	2.0	4.3	4.3	4.0	2.3	4.3	1.8	3.7	1.7
Absorption (%)	52.8	53.5	54.3	53.6	52.1	53.8	52.9	52.3	51.1
Alveograph: P (mm)	36	41	39	41	27	42	30	43	27
L (mm)	67	89	141	110	77	119	77	110	79
P/L Ratio	0.54	0.46	0.28	0.37	0.35	0.35	0.39	0.41	0.36
W (10-4 joules)	67	92	121	104	43	117	52	114	47
Extensograph: Resistance (BU)	205	243	236	231	88	224	105	252	111
(45 min) Extension (cm)	13.7	14.8	19.0	16.3	15.7	16.9	15.7	16.0	15.0
Area (sq cm)	42	54	66	56	21	56	26	60	26
Baking Evaluation:									
Sponge Cake: Volume (cc)	1227	1165	1212	1200	1263	1171	1221	1185	1209
Score	52	44	45	46	53	51	53	51	50
Cookie: Diameter (cm)	8.5	8.1	8.0	8.1	8.5	8.0	8.5	8.2	8.6
Spread Factor (width/height)	9.9	7.7	7.4	8.1	10.0	6.7	8.9		
Chinese Southern-Type Steamed Bread Evaluation:									
Specific Volume (ml/g)	2.40	2.39	2.51	2.44	2.90	2.56	2.60	2.63	2.78
Total Score	67.7	67.9	68.9	68.3	67.2	69.2	67.0	68.0	65.0
% of Area Production:	25	33	42	100	100	100	100	100	100

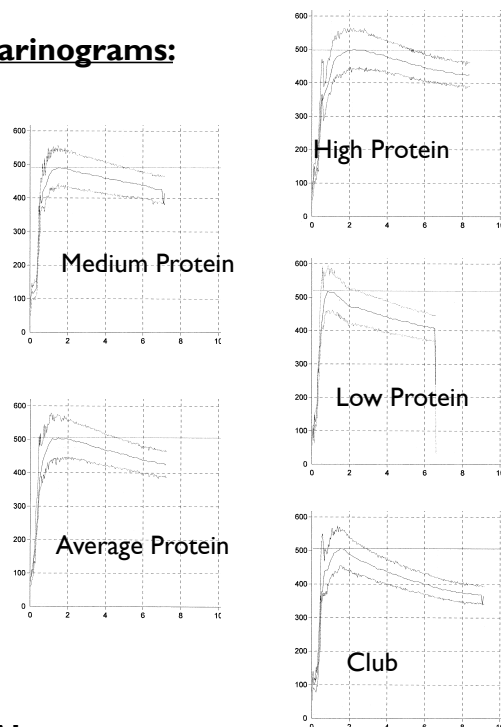
* Low: Less than 9.0%; Medium: 9.0 - 10.5%; High: Greater than 10.5%

Export Cargo Data

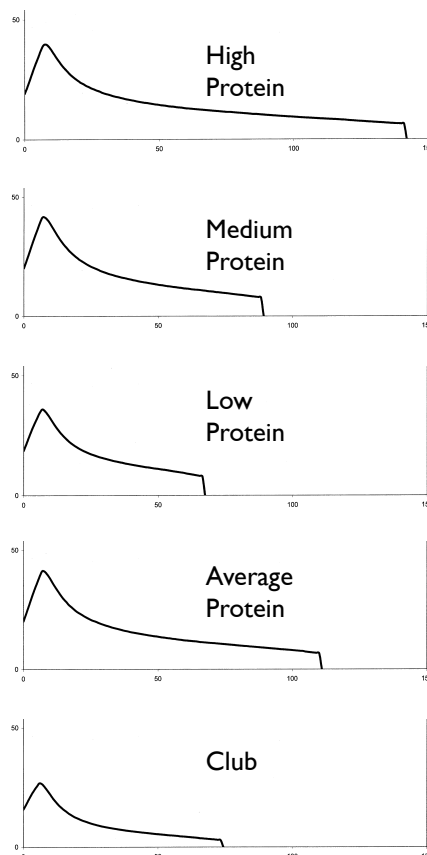
Soft White	2006	2005
Wheat Grade Data:		
Test Weight (lb/bu)	61.6	61.6
(kg/hl)	80.9	81.0
Damaged Kernels (%)	0.1	0.2
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	1.1	1.1
Total Defects (%)	1.3	1.3
Grade	1 SW	1 SW
Wheat Non-Grade Data:		
Dockage (%)	0.4	0.3
Moisture (%)	8.5	8.9
Protein (%) 12%/0% moisture basis	10.4/11.8	10.3/11.7
Ash (%) 14%/0% moisture basis	1.40/1.62	1.38/1.60
1000 Kernel Weight (g)	35.5	35.7
Kernel Size (%) lg/md/sm	80/19/1	79/20/1
Single Kernel: Hardness	42.4	42.7
Weight (mg)	34.9	35.4
Diameter (mm)	2.47	2.49
Sedimentation (cc)	13.7	16.3
Falling Number (sec)	364	373
Flour Data:		
Lab Mill Extraction (%)	70.4	70.7
Color: L*	92.3	92.3
a*	-2.1	-2.3
b*	8.0	8.1
Protein (%) 14%/0% moisture basis	8.7/10.1	8.7/10.1
Ash (%) 14%/0% moisture basis	0.44/0.51	0.43/0.50
Wet Gluten (%)	23.3	23.2
Gluten Index	66.2	48.0
Falling Number (sec)	383	393
Amylograph Viscosity 65 g (BU)	578	504
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Na ₂ CO ₃		
Dough Properties:		
Farinograph: Peak Time (min)	1.8	2.0
Stability (min)	3.8	4.2
Absorption (%)	54.3	54.2
Alveograph: P (mm)	46	44
L (mm)	96	109
P/L Ratio	0.48	0.41
W (10-4 joules)	112	122
Extensograph: Resistance (BU)		
(45 min) Extension (cm)		
Area (sq cm)		
Baking Evaluation:		
Sponge Cake: Volume (cc)	1218	1182
Score	44	45
Cookie: Diameter (cm)	7.9	8.0
Spread Factor (width/height)		
Chinese Southern-Type Steamed Bread Evaluation:		
Specific Volume (ml/g)		
Total Score		
Sample Count:	61	98

Composite Average Farinograms and Alveograms

Farinograms:



Alveograms:



Hard Red Spring

Harvest Survey

Weather and Harvest: The 2007 growing season was characterized by initial well above average moisture with excellent early season development and yield potential in most areas. Hotter, drier conditions in the second half of the season limited disease pressures, but extended hot temperatures reduced final yields in some areas. Production is about 4% higher than 2006's drought-reduced crop, despite 12% fewer planted acres, as yields were slightly above average and 15% to 20% above last year. Quality is quite high for most grade and non-grade factors with the exception of slightly below average protein. The crop has very strong dough mixing and good dough handling and bake properties. Milling extractions are slightly lower than average and absorption and loaf volumes are lower than 2006's exceptional quality crop.

Planting finished slightly ahead of average by the end of May. Early season moisture was plentiful in most parts of the region, with some areas receiving excessive rain. Plant populations were high and early season yield potential was well above average in most parts of the region. As the crop reached the critical flowering period in late June and early July, drier conditions helped to limit disease pressures, especially in areas with above-average moisture early.

Continued dry conditions accelerated crop development, but hot temperatures also reduced yield potential in many western areas, especially on later planted crops. Nevertheless the good early season moisture allowed most areas to reach average or better yields. Harvest began in late July, near normal, although behind the drought-accelerated 2006 season, and was complete by the second week in September.

Samples and Methods: Sample collection and analysis were conducted by the Hard Red Spring Wheat Quality Lab, Department of Plant Sciences, North Dakota State University, Fargo, ND. A total of 832 HRS samples were collected from growers and grain elevators during harvest in Minnesota (110), Montana (205), North Dakota (385) and South Dakota (132). The samples represent approximately 90% of the HRS harvested in the four states. Samples were segregated by export region and composited by protein range 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 2007 HRS crop averages No. 1 DNS with average protein of 14.3%, 61.1 lb/bu test weight (80.3 kg/hl), 11.9% moisture, 432 second falling number and only 0.2% damage. These results indicate a very sound crop. All these factors are similar to or improved over 2006 with the exception of protein content. Seventy-six percent of the samples are grade No. 1, up from 69% in 2006, and three-fourths of the crop is in the DNS subclass (75% or higher vitreous kernels), similar to 2006. Late season hot, dry conditions resulted in lighter test weights and higher shrunken and broken kernels in the PNW export region compared with the Gulf/Great Lakes. However, the PNW has higher average test weights and 1000 kernel weight and

lower shrunken and broken kernels compared to 2006.

Thousand kernel weights for the region are 30.4 grams, up from 28.3 in 2006 and the five-year average of 29.5 g. The average 1000 kernel weight for the PNW region in 2007 is 27.7 g versus 32.5 in the Gulf/Great Lakes. Damaged kernels average 0.2%, up slightly from 0.1% in 2006, but still lower than 0.5% for a five-year average, indicative of the zero to low impact of fusarium head blight this growing season.

Average protein of 14.3% is lower than 2006's 15.2% and the five-year average of 14.6%. Still, more than 70% of the crop is higher than 14% protein. As is historically the case, the PNW region average protein of 14.9% is higher than the 13.8% of the Gulf/Great Lakes region.

Flour and Baking Data: Average flour extraction on a Buhler laboratory mill is 67.7% down from both 2006 and the five-year average. Flour ash is lower than both 2006 and the five-year average. Considering the higher average test weights, kernel size and kernel weights in 2007, commercial milling may not see as large a drop in milling yields. Starch damage on the laboratory milled flour was only 6.6% compared to 8.1% in 2006 and the five-year average of 7.3%. Wet gluten and Amylograph viscosity values are lower compared to 2006, but higher than the five-year average.

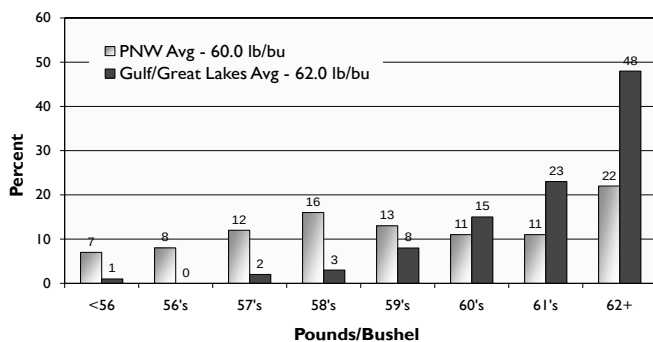
Farinograph dough mixing properties show a very strong crop. The average peak time for the region is 12.3 minutes, compared to 10.3 in 2006 and 11.7 for a five-year average. Stabilities average 26.6 minutes, compared to 22.6 and 20.6, respectively. Dough mixing properties are again stronger in the PNW region, but both areas show a notable improvement over 2006 and the five-year average. Average Farinograph absorption is lower than 2006 but similar to the five-year average at 65.6%. Paralleling the lower protein content in the crop and lower absorption, baking tests produce smaller loaf volumes. Baked bread properties are higher than 2006 and the five-year average.

Summary: The 2007 HRS crop should meet the needs of a wide range of buyers with solid grade parameters, a near average protein content and strong dough mixing properties. Some smaller kernels and lighter test weights will be found in portions of the crop from western areas, but the crop still shows marked improvement in those factors from the 2006 crop. Buyers are still encouraged to be vigilant in their contract specifications to ensure they get the quality of wheat they need, especially considering the sharply higher prices of the 2007 crop.

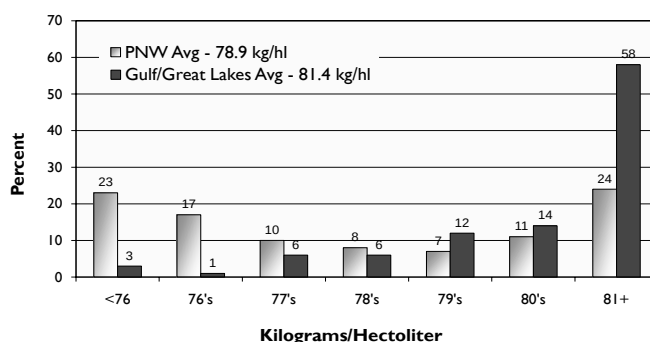
Export Cargo Survey

The export cargo survey shows the results of analysis of 173 individual subplot samples for crop year 2006 (collected from October through August) and 256 for crop year 2005. Of the 173 2006-crop samples, 125 were collected from PNW ports, 19 from the Lakes and 29 from Gulf ports. Representative samples were selected from official Federal Grain Inspection Service samples. Grade data are the official grades on the individual sublots. Milling and baking analyses were conducted by North Dakota State University.

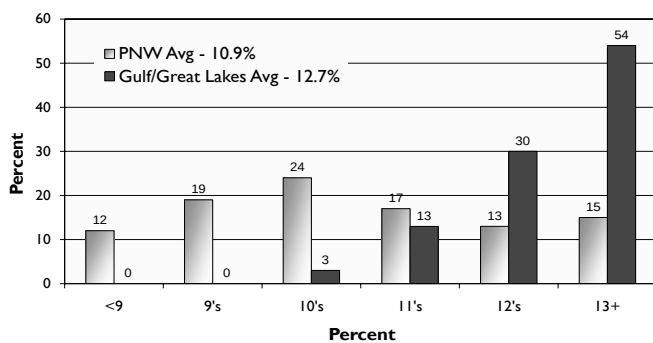
Test Weight



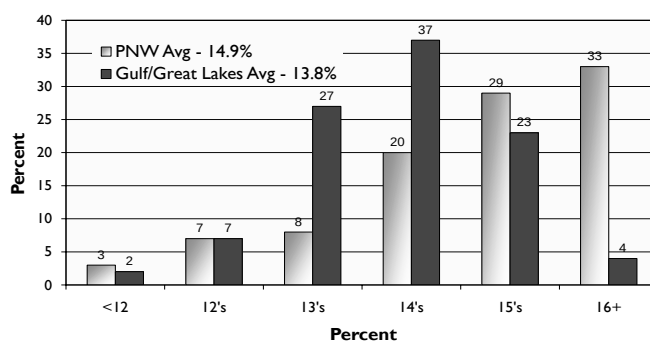
Hectoliter Weight



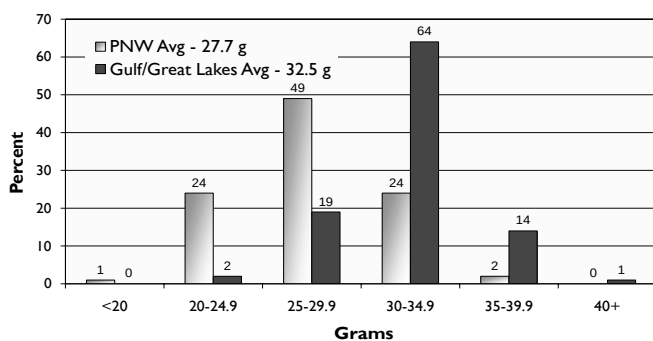
Wheat Moisture



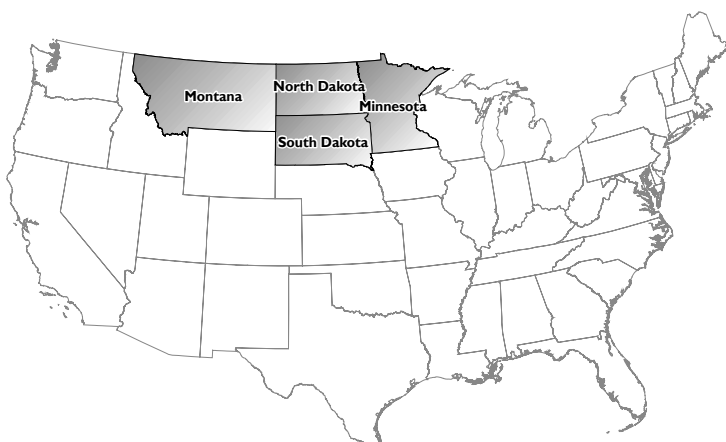
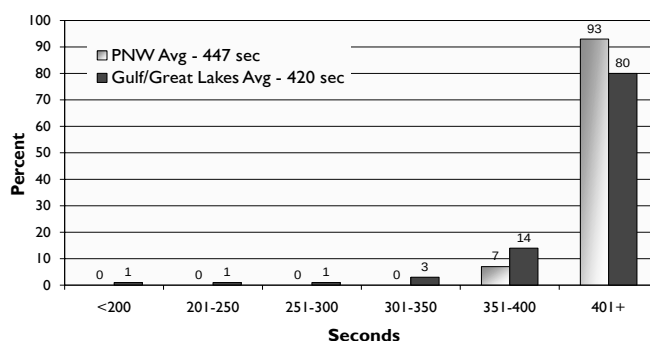
Protein (12% mb)



1000 Kernel Weight



Falling Number

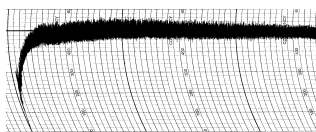


Hard red spring survey results
are from four states.

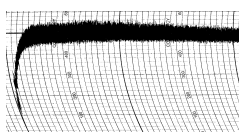
Composite Average Farinograms and Alveograms

Farinograms:

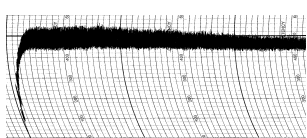
High
Protein:



Medium
Protein:

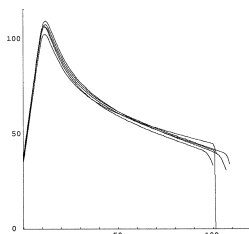


Low
Protein:

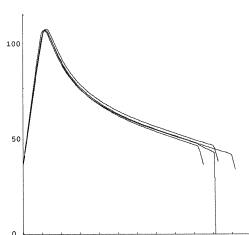


Alveograms:

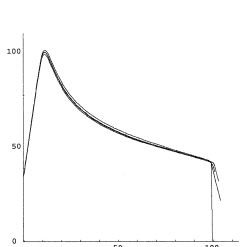
High
Protein:



Medium
Protein:



Low
Protein:



Hard Red Spring

Composite Average

Hard Red Spring	2007 By Protein*				2006	5-year
	Low	Med	High	Overall	Overall	Avg
Wheat Grade Data:						
Test Weight (lb/bu)	62.0	62.0	60.3	61.1	60.4	60.4
(kg/hl)	81.5	81.5	79.3	80.3	79.5	79.4
Damaged Kernels (%)	0.1	0.1	0.2	0.2	0.1	0.5
Foreign Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Shrunken & Broken (%)	1.4	1.0	1.4	1.3	1.7	1.4
Total Defects (%)	1.5	1.2	1.6	1.5	1.8	1.9
Vitreous Kernels (%)	74.6	69.9	86.3	79.4	83.2	76.2
Grade	1 NS	1 NS	1 DNS	1 DNS	1 DNS	1 DNS
Wheat Non-Grade Data:						
Dockage (%)	0.4	0.4	0.4	0.4	0.7	1.0
Moisture (%)	12.3	12.4	11.6	11.9	11.5	12.0
Protein (%) 12%/0% moisture basis	12.4/14.1	13.7/15.5	15.3/17.4	14.3/16.3	15.2/17.3	14.6/16.6
Ash (%) 14%/0% moisture basis	1.65/1.92	1.63/1.90	1.65/1.92	1.64/1.91	1.56/1.80	1.62/1.88
1000 Kernel Weight (g)	31.8	31.4	29.3	30.4	28.3	29.5
Kernel Size (%) lg/md/sm	57/36/6	58/35/6	42/47/11	49/42/9	32/60/8	48/44/8
Single Kernel: Hardness	77.5	78.5	79.6	78.9	79.7	83.1
Weight (mg)	33.4	32.9	31.6	32.3	31.4	31.6
Diameter (mm)	2.30	2.32	2.27	2.29	2.22	2.29
Sedimentation (cc)	44.1	58.1	62.7	58.0	60.0	59.2
Falling Number (sec)	404	417	450	432	431	382
Flour Data:						
Lab Mill Extraction (%)	67.2	68.1	67.7	67.7	68.5	69.0
Color: L*	91.2	91.4	91.2	91.3	90.9	91.1
a*	-1.6	-1.5	-1.3	-1.4	-1.4	-1.3
b*	9.9	9.5	9.3	9.5	9.5	9.3
Protein (%) 14%/0% moisture basis	11.4/13.3	12.8/14.9	14.5/16.8	13.4/15.6	14.1/16.3	13.4/15.5
Ash (%) 14%/0% moisture basis	0.46/0.53	0.44/0.51	0.45/0.53	0.45/0.52	0.50/0.59	0.47/0.55
Wet Gluten (%)	29.7	34.2	40.2	36.5	37.8	35.7
Gluten Index	98.4	97.8	89.2	93.4	85.3	88.7
Falling Number (sec)	432	431	460	447	445	407
Amylograph Viscosity: 65g (BU)	699	718	730	721	807	686
100g (BU)	2626	2830	2884	2821	3050	2403
Starch Damage (%)	7.1	7.1	6.2	6.6	8.1	7.3
Dough Properties:						
Farinograph:						
Peak Time (min)	8.6	9.2	15.3	12.3	10.3	11.7
Stability (min)	21.1	26.2	28.7	26.6	22.6	20.6
Absorption (%)	63.4	65.2	66.5	65.6	66.9	65.5
Classification	7.0	8.0	8.0	7.8	7.8	6.7
Alveograph: P (mm)	113	118	112	114	117	107
L (mm)	95	101	108	104	114	110
P/L Ratio	1.21	1.17	1.05	1.11	1.03	0.99
W (10 ⁻⁴ joules)	391	433	434	426	484	418
Extensograph: Resistance (BU)	593/746	522/649	498/602	522/642	475/548	505/565
(45/135 min) Extension (cm)	16.1/14.5	17.4/15.8	17.2/17.0	17.1/16.2	20.7/19.7	21.9/21.7
Area (sq cm)	123/136	117/130	110/132	114/132	125/138	139/154
Baking Evaluation:						
Absorption (%)	61.9	63.7	65.0	64.1	65.4	64.0
Crumb Grain and Texture	7.9	8.1	8.4	8.2	8.1	8.1
Loaf Volume (cc)	864	962	991	960	1066	1064
% Area Production:	18	29	53	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					
2007 By Protein*				2006	5-year Avg	2007 By Protein*				2006	5-year Avg
Low	Med	High	Overall			Low	Med	High	Overall		
62.2	60.8	59.4	60.0	58.8	59.9	61.9	62.3	61.6	62.0	61.6	60.7
81.8	80.0	78.2	78.9	77.4	78.8	81.4	81.9	81.0	81.4	81.0	79.8
0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.4	0.3	0.2	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
2.1	1.7	1.9	1.9	2.3	1.7	1.1	0.8	0.8	0.9	1.2	1.2
2.1	1.7	1.9	1.9	2.3	1.9	1.3	1.0	1.2	1.1	1.4	1.9
93.0	91.0	96.0	94.7	95.6	87.5	67.0	62.0	73.0	67.5	74.0	67.4
I DNS	I DNS	I DNS	I DNS	I DNS	I DNS	I NS	I NS	I NS	I NS	I NS	I NS
0.3	0.4	0.4	0.4	0.9	1.0	0.4	0.4	0.4	0.4	0.6	1.0
10.7	11.4	10.8	10.9	10.5	11.3	12.9	12.7	12.6	12.7	12.2	12.6
12.1/13.8	13.8/15.7	15.7/17.8	14.9/16.9	16.1/18.4	15.0/17.1	12.5/14.2	13.6/15.5	14.8/16.8	13.8/15.7	14.6/16.6	14.2/16.2
1.64/1.91	1.61/1.87	1.62/1.88	1.62/1.88	1.59/1.84	1.58/1.84	1.65/1.92	1.64/1.91	1.69/1.97	1.66/1.93	1.53/1.78	1.65/1.92
30.3	29.2	26.8	27.7	25.3	28.4	32.4	32.2	32.8	32.5	30.6	30.4
39/52/9	35/55/10	26/58/16	29/57/14	19/67/14	40/50/11	65/30/5	67/28/5	63/32/5	65/30/5	42/54/4	55/39/7
81.0	77.0	80.0	79.6	78.2	83.2	76.0	79.0	79.0	78.4	80.8	83.2
31.8	29.9	30.6	30.6	29.4	30.7	34.0	34.0	33.0	33.6	33.0	32.2
2.26	2.11	2.18	2.18	2.08	2.22	2.31	2.39	2.40	2.38	2.32	2.35
37.0	58.0	64.0	59.6	62.2	61.1	47.0	58.0	61.0	56.7	58.4	57.6
415	446	453	447	433	401	399	405	446	420	430	366
65.6	67.7	67.9	67.6	67.6	68.2	67.9	68.2	67.4	67.9	69.3	69.8
91.7	91.3	91.2	91.3	91.0	91.0	91.0	91.3	91.3	91.3	90.9	91.1
-1.5	-1.4	-1.3	-1.3	-1.3	-1.2	-1.7	-1.5	-1.4	-1.5	-1.4	-1.3
9.6	9.3	9.3	9.3	9.3	9.1	10.1	9.6	9.3	9.6	9.7	9.4
11.2/13.0	13.0/15.1	14.9/17.3	14.1/16.4	14.9/17.3	13.8/16.0	11.5/13.4	12.7/14.8	13.9/16.2	12.9/15.0	13.4/15.6	13.0/15.1
0.45/0.52	0.45/0.52	0.46/0.53	0.46/0.53	0.52/0.61	0.47/0.54	0.46/0.53	0.43/0.50	0.44/0.51	0.44/0.51	0.49/0.57	0.47/0.54
29.3	33.7	40.8	38.1	39.8	36.7	29.8	34.3	39.3	35.3	36.3	34.8
97.0	97.0	90.0	92.1	84.3		99.0	98.0	88.0	94.4	86.1	
437	450	482	471	462	429	430	424	430	428	428	387
940	900	840	863	873	799	600	650	580	612	758	593
3300	3250	3210	3228	3306	2810	2350	2670	2440	2509	2859	2061
7.1	6.8	6.0	6.3	7.9	7.2	7.1	7.2	6.5	6.9	8.3	7.4
10.0	12.5	19.5	17.1	11.3	15.4	8.0	8.0	9.5	8.6	9.6	8.5
22.5	28.0	34.0	31.5	27.6	25.9	20.5	25.5	21.5	22.8	18.8	16.3
63.5	65.0	66.6	65.9	67.4	66.0	63.3	65.2	66.4	65.3	66.5	65.1
7.0	8.0	8.0	7.9	7.9	7.1	7.0	8.0	8.0	7.8	7.7	6.4
121	115	109	112	119	115	110	119	117	116	116	101
84	102	112	107	119	108	99	101	102	101	111	112
1.44	1.13	0.97	1.06	1.00	1.10	1.11	1.18	1.15	1.15	1.06	0.93
378	422	443	431	512	449	396	437	422	422	463	395
597/801	555/717	525/679	539/701	500/556	540/610	591/723	509/623	461/498	509/597	456/543	481/537
14.8/12.4	16.8/16.3	16.6/17.8	16.4/16.9	21.2/21.3	22.3/21.6	16.7/15.3	17.6/15.6	18.0/15.8	17.6/15.6	20.3/18.4	21.5/21.7
115/121	121/147	111/156	113/150	137/152	151/165	126/142	115/124	108/100	115/119	115/127	129/147
62.0	63.5	65.0	64.4	65.9	64.5	61.8	63.7	65.0	63.8	65.0	63.6
7.5	8.5	8.0	8.0	8.3	8.2	8.0	8.0	9.0	8.4	7.9	8.0
825	925	985	955	1136	1072	880	975	1000	964	1013	1058
12.2	18.2	69.6	100	100	100	22.8	37.9	39.4	100	100	100

Export Cargo Data

Hard Red Spring

Hard Red Spring	PNW Average		Great Lakes Average		Gulf Average	
	2006	2005	2006	2005	2006	2005
Wheat Grade Data:						
Test Weight (lb/bu)	60.9	61.3	61.9	61.2	61.0	60.7
(kg/hl)	80.1	80.7	81.4	80.5	80.2	79.8
Damaged Kernels (%)	0.3	0.9	1.3	1.9	1.2	2.3
Foreign Material (%)	0.1	0.1	0.1	0.2	0.1	0.2
Shrunken & Broken (%)	1.8	1.5	1.1	1.1	1.4	1.2
Total Defects (%)	2.2	2.4	2.5	3.1	2.7	3.6
Vitreous Kernels (%)	83.1	80.4	59.1	55.2	62.3	50.4
Grade	1 DNS	1 DNS	1 NS	2 NS	1 NS	2 NS
Wheat Non-Grade Data:						
Dockage (%)	0.3	0.3	0.5	0.5	0.7	0.7
Moisture (%)	10.9	11.4	12.1	12.4	12.1	12.7
Protein (%) 12%/0% moisture basis	14.4/16.4	14.0/15.9	14.4/16.4	14.1/16.0	14.4/16.4	13.9/15.8
Ash (%) 14%/0% moisture basis	1.53/1.77	1.60/1.86	1.54/1.79	1.65/1.92	1.55/1.80	1.67/1.94
1000 Kernel Weight (g)	30.6	32.8	31.6	32.1	31.4	32.4
Kernel Size (%) lg/md/sm	40/51/9	47/45/8	52/46/5	49/44/7	47/46/7	52/41/7
Single Kernel: Hardness	81.1	81.2	82.3	80.6	80.2	78.1
Weight (mg)	28.9	30.5	29.5	29.7	29.6	29.9
Diameter (mm)	2.37	2.44	2.43	2.43	2.41	2.43
Sedimentation (cc)						
Falling Number (sec)	451	430	432	386	454	414
Flour Data:						
Lab Mill Extraction (%)	69.5	68.8	69.4	69.1	69.8	68.9
Color: L*	91.0	91.1	90.7	90.8	90.7	90.9
a*	-1.3	-1.3	-1.4	-1.3	-1.3	-1.3
b*	8.8	8.8	9.2	9.1	9.2	9.1
Protein (%) 14%/0% moisture basis	13.3/15.5	12.8/14.9	13.2/15.4	12.9/15.0	13.3/15.5	12.8/14.8
Ash (%) 14%/0% moisture basis	0.50/0.58	0.51/0.60	0.50/0.58	0.52/0.61	0.51/0.59	0.53/0.62
Wet Gluten (%)	33.9	34.1	33.6	34.3	33.8	34.0
Gluten Index	94.3	90.4	91.2	90.1	94.5	86.2
Falling Number (sec)	494	463	472	420	482	439
Amylograph Viscosity: 65g (BU)	823	718	767	549	749	646
100g (BU)						
Starch Damage (%)						
Dough Properties:						
Farinograph:						
Peak Time (min)	9.8	7.6	8.9	7.5	8.5	6.9
Stability (min)	21.5	14.7	17.0	12.9	17.4	12.0
Absorption (%)	64.5	65.0	64.3	65.3	64.0	64.4
Classification	7.1	6.4	6.2	5.9	6.5	5.5
Alveograph: P (mm)	107	107	96	103	101	98
L (mm)	115	111	120	110	114	110
P/L Ratio	0.93	0.97	0.80	0.94	0.89	0.89
W (10 ⁻⁴ joules)	436	408	407	384	401	355
Extensograph: Resistance (BU)						
(45/135 min) Extension (cm)						
Area (sq cm)						
Baking Evaluation:						
Absorption (%)	63.1	63.5	62.8	63.8	62.5	62.9
Crumb Grain and Texture	8.3	8.2	8.1	8.2	8.2	8.1
Loaf Volume (cc)	971	994	966	996	949	978
Sample Count:	125	171	19	39	29	46

Hard Red Spring Production

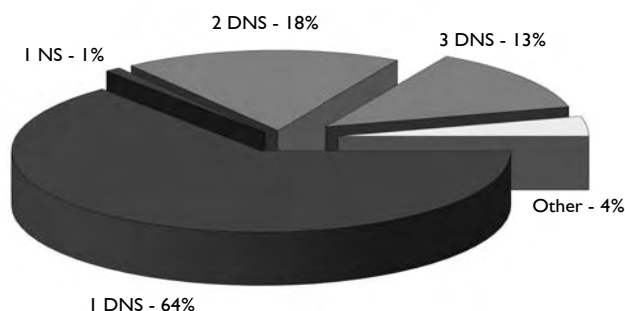
for the major producing states
(million metric tons)

	2007	2006	2005	2004	2003
Minnesota	2.11	2.11	1.93	2.41	2.84
Montana	1.49	1.72	2.20	2.38	1.63
North Dakota	6.37	5.78	6.11	6.64	6.88
South Dakota	1.42	1.16	1.84	1.96	1.53
Four-State Total	11.39	10.77	12.08	13.39	12.88
Total HRS Production	12.22	11.77	12.70	14.30	13.60

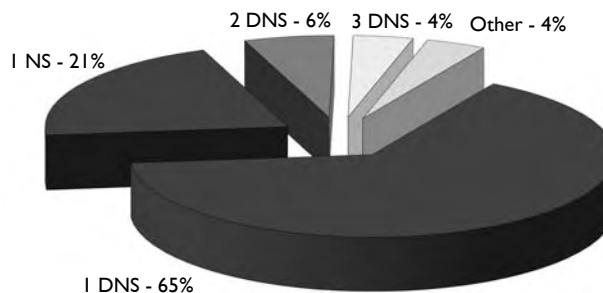
Based on USDA crop estimates of September 28, 2007.

Grade Distribution

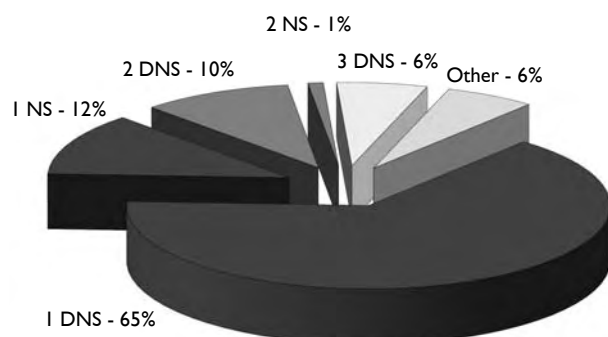
PNW



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. Planting conditions in fall 2006 were favorable except in some north eastern areas with excessive moisture, which reduced planted area. A historic April freeze affected many SRW states, resulting in increased abandonment and reduced yields. The rest of the growing season had favorable conditions with ample moisture followed by favorable harvest conditions in nearly all areas, which is reflected by very low damage and high falling number averages.

Survey Methods: Sample collection and analysis were conducted by CII Laboratory Services, Kansas City, Missouri. For 2007, 341 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: Average test weight of 60.0 lb/bu (78.9 kg/hl) is above last year and the five-year average of 59.3 lb/bu (78.0 kg/hl), resulting in an average grade of #1 SRW, an increase over last year's grade of #2. Extremely low damaged kernel values, low DON values, and good falling numbers in nearly all areas reflect the favorable growing and harvest conditions after the April freeze. Gulf wheat protein values are higher than last year and the five-year average, while East Coast protein is unchanged from last year and below the five-year average.

Flour and Baking Data: The overall Buhler Laboratory Mill flour extraction is higher than last year by three percentage points, though flour ash is also higher than last year and the five-year average. Farinograph peak and stability times are both longer than last year and the five-year averages, perhaps reflecting the unusually favorable growing conditions during kernel development. Alveograph W value is higher for Gulf samples but lower for East Coast samples than last year or the five-year average. Bread-baking performance is also better compared with last year and the five-year average.

(continued on p. 21)

Soft Red Winter Production

in major producing states
(million metric tons)

	2007	2006	2005	2004	2003
Alabama	0.09	0.07	0.06	0.08	0.09
Arkansas	0.78	0.51	0.23	0.89	0.78
Georgia	0.25	0.16	0.20	0.23	0.29
Illinois	1.35	1.63	0.99	1.43	1.40
Indiana	0.57	0.86	0.67	0.74	0.81
Kentucky	0.33	0.61	0.54	0.54	0.57
Louisiana	0.31	0.15	0.13	0.22	0.15
Maryland	0.31	0.23	0.25	0.23	0.15
Michigan	0.56	0.79	0.61	0.59	0.65
Mississippi	0.50	0.12	0.09	0.19	0.17
Missouri	0.97	1.26	0.75	1.25	1.39
North Carolina	0.54	0.67	0.67	0.63	0.40
Ohio	1.25	1.78	1.60	1.50	1.85
South Carolina	0.11	0.17	0.23	0.22	0.20
Tennessee	0.29	0.33	0.23	0.37	0.37
Virginia	0.36	0.29	0.27	0.27	0.20
16-State Total	8.60	9.62	7.52	9.39	9.44
Total SRW Production	9.74	10.62	8.41	10.35	10.35

Based on USDA crop estimates of September 28, 2007.

Harvest Data

Soft Red Winter	Composite Average			East Coast*			Gulf Ports*		
	2007	2006	5-Year Avg	2007	2006	5-Year Avg	2007	2006	5-Year Avg
Wheat Grade Data:									
Test Weight (lb/bu)	60.0	59.8	59.3	60.1	59.0	58.7	59.9	60.0	59.4
(kg/hl)	78.9	78.7	78.0	79.0	77.7	77.3	78.9	79.0	78.2
Damaged Kernels (%)	0.2	0.9	1.3	0.2	2.3	1.8	0.2	0.6	1.2
Foreign Material (%)	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1
Shrunken & Broken (%)	0.6	0.5	0.7	0.6	0.4	0.7	0.7	0.6	0.7
Total Defects (%)	0.9	1.5	2.0	0.8	2.8	2.5	0.9	1.1	1.9
Grade	1 SRW	2 SRW	2 SRW	1 SRW	2 SRW	2 SRW	2 SRW	1 SRW	2 SRW
Wheat Non-Grade Data:									
Dockage (%)	1.0	0.8	0.8	0.7	0.5	0.8	1.1	0.8	0.8
Moisture (%)	13.1	12.8	13.0	13.1	13.1	13.2	13.1	12.7	13.0
Protein (%) 12%/0% moisture basis	10.3/11.7	9.9/11.3	10.0/11.4	9.8/11.2	9.8/11.1	10.4/11.8	10.5/11.9	10.0/11.4	10.0/11.3
Ash (%) 14%/0% moisture basis	1.55/1.80	1.46/1.70	1.56/1.81	1.47/1.71	1.34/1.56	1.53/1.77	1.58/1.83	1.49/1.73	1.57/1.82
1000 Kernel Weight (g)	33.3	33.7	32.9	33.8	35.7	32.8	33.2	33.1	32.8
Kernel Size (%) lg/md/sm	81/18/1	85/14/1	83/16/1	81/18/1	90/10/0	81/18/1	81/18/1	84/15/1	83/16/1
Single Kernel: Hardness	22.2	18.9	20.9	21.8	8.7	19.1	22.3	21.6	21.4
Weight (mg)	31.7	33.9	31.3	32.1	35.8	33.2	31.5	33.4	30.7
Diameter (mm)	2.22	2.34	2.19	2.22	2.38	2.31	2.22	2.32	2.18
Sedimentation (cc)	14.1	14.7	14.0	13.9	14.8	15.8	14.2	14.7	13.7
Falling Number (sec)	343	318	348	339	264	337	344	333	351
DON (ppm)	0.3	0.5	NA	0.2	0.5	NA	0.4	0.5	NA
Flour Data:									
Lab Mill Extraction (%)	71.0	68.0	68.9	68.8	68.8	68.7	71.6	67.8	68.9
Color: L*	93.4	93.5	93.1	93.5	93.2	93.1	93.4	93.5	93.1
a*	-3.1	-3.0	-3.2	-3.1	-3.1	-3.3	-3.1	-3.0	-3.1
b*	8.6	8.0	8.0	8.6	7.6	7.8	8.5	8.1	8.0
Protein (%) 14%/0% moisture basis	8.8/10.2	8.2/9.5	8.3/9.7	8.4/9.8	8.3/9.7	8.6/10.0	8.9/10.4	8.2/9.5	8.3/9.7
Ash (%) 14%/0% moisture basis	0.46/0.53	0.40/0.47	0.43/0.50	0.45/0.53	0.39/0.45	0.43/0.50	0.46/0.54	0.40/0.47	0.43/0.50
Wet Gluten (%)	23.1	21.8	21.7	19.3	18.9	21.5	24.3	22.6	21.8
Gluten Index	78.8	83.6	88.5	83.1	91.7	93.9	77.5	81.5	87.1
Falling Number (sec)	352	307	339	342	260	327	356	319	342
Amylograph Viscosity 65 g (BU)	672	446	517	681	234	450	669	501	535
Starch Damage (%)	4.8	4.0	4.4	4.8	4.0	4.2	4.8	4.0	4.4
Solvent Retention Capacity (%)									
Water/50% Sucrose	53/108	54/108	55/109	54/111	56/113	56/113	53/107	53/103	55/105
5% Lactic Acid/5% Na ₂ CO ₃	107/79	108/75	111/80	109/80	113/78	116/82	106/78	104/73	107/78
Dough Properties:									
Farinograph:									
Peak Time (min)	2.0	1.7	1.5	1.9	1.6	1.8	2.0	1.7	1.5
Stability (min)	3.4	3.0	3.0	3.2	2.7	3.1	3.5	3.1	2.9
Absorption (%)	52.5	52.5	52.6	51.3	52.8	53.1	52.9	52.4	52.4
Alveograph: P (mm)	42	39	36	44	44	41	42	38	36
L (mm)	100	100	96	84	96	100	105	101	96
P/L Ratio	0.42	0.39	0.37	0.52	0.45	0.41	0.40	0.37	0.37
W (10 ⁻⁴ joules)	107	92	89	98	109	104	110	88	86
Baking Evaluation:									
Crumb Grain	5.5	5.0	5.5	5.4	5.3	5.6	5.5	4.9	5.4
Crumb Texture	5.8	5.3	5.8	5.2	5.6	5.9	6.0	5.2	5.7
Loaf Volume (cc)	749	687	725	719	699	731	759	684	715
Cookie Spread Ratio	8.5	8.4	8.4	8.6	8.5	8.2	8.5	8.3	8.4
% of Area Sampled:	100%			24%			76%		

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

Export Cargo Data

Soft Red Winter

2007

2006

Wheat Grade Data:

Test Weight (lb/bu)	59.9	59.8
(kg/hl)	78.8	78.7
Damaged Kernels (%)	1.8	1.8
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	0.7	0.7
Total Defects (%)	2.7	2.6
Grade	2 SRW	2 SRW

Wheat Non-Grade Data:

Dockage (%)	0.7	0.7
Moisture (%)	12.7	12.6
Protein (%) 12%/0% moisture basis	10.8/12.3	10.1/11.4
Ash (%) 14%/0% moisture basis	1.56/1.81	1.53/1.78
1000 Kernel Weight (g)	31.2	31.6
Kernel Size (%) lg/md/sm	82/17/1	83/16/1
Single Kernel: Hardness	26.8	27.4
Weight (mg)	32.8	33.3
Diameter (mm)	2.35	2.38
Sedimentation (cc)	13.3	12.7
Falling Number (sec)	352	355
DON (ppm)	0.4	1.0

Flour Data:

Lab Mill Extraction (%)	72.3	70.7
Color: L*	93.4	93.4
a*	-3.0	-3.1
b*	8.2	8.2
Protein (%) 14%/0% moisture basis	9.1/10.5	8.5/9.9
Ash (%) 14%/0% moisture basis	0.45/0.52	0.43/0.50
Wet Gluten (%)	25.3	22.5
Gluten Index	70.9	72.8
Falling Number (sec)	357	366
Amylograph Viscosity 65 g (BU)	598	586
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Na ₂ CO ₃		

Dough Properties:

Farinograph:		
Peak Time (min)	1.7	1.5
Stability (min)	3.8	3.7
Absorption (%)	52.7	53.0
Alveograph: P (mm)	43	46
L (mm)	92	87
P/L Ratio	0.47	0.53
W (10 ⁻⁴ joules)	111	111

Baking Evaluation:

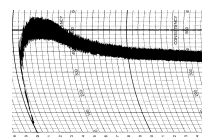
Crumb Grain	5.4	5.4
Crumb Texture	5.7	5.7
Loaf Volume (cc)	752	730
Cookie Spread Ratio	8.5	8.1

Sample Count:	40	96
---------------	----	----

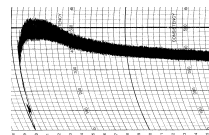
Farinograms and Alveograms

Farinograms:

Gulf

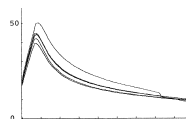


Atlantic

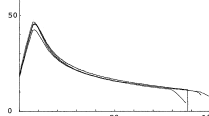


Alveograms:

Gulf

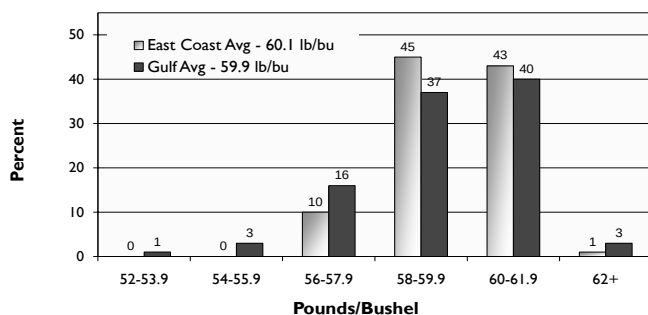


Atlantic

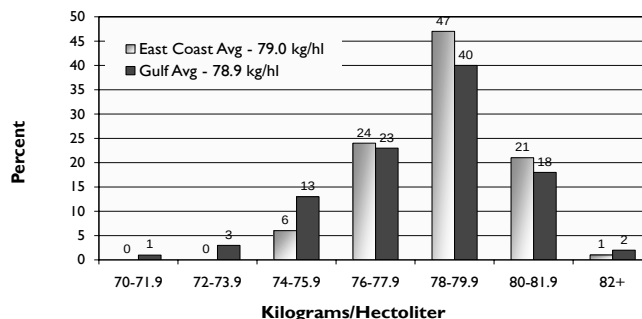


Of the sixteen-state soft red winter growing area, survey samples were collected in nine states.

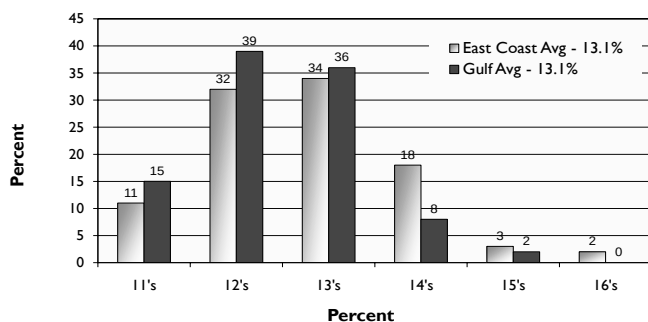
Test Weight



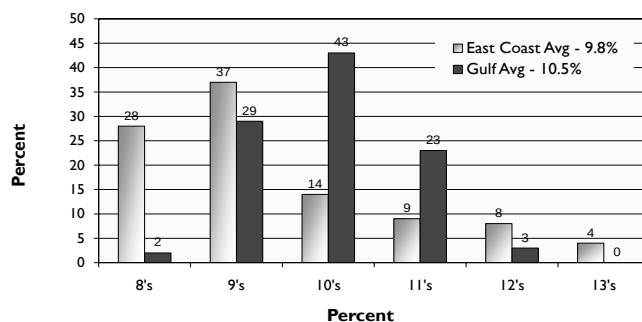
Hectoliter Weight



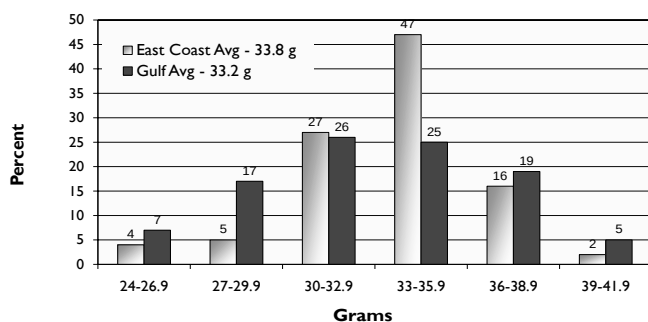
Wheat Moisture



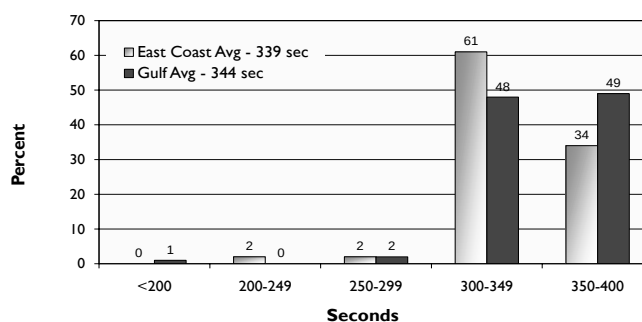
Protein (12% mb)



1 000 Kernel Weight



Falling Number



(continued from p. 18)

Summary: The 2007 crop has generally very good quality with good test weight, little damage and high falling numbers. Compared with the five-year averages, the 2007 SRW crop generally has somewhat higher protein, higher lab mill flour extraction (though with higher flour ash) and longer farinograph mixing times. Overall, the flour from this crop has very good soft wheat product functionality and good characteristics for blending into bread flour.

Export Cargo Survey

The export cargo data show the results of analysis of 136 individual subplot samples for marketing years 2007 and 2006 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 2007 northern US durum crop produced in North Dakota and Montana is 45% larger than the 2006 crop with a very high grade profile and good end-use quality. Planted area increased by 15%, and as a result of bountiful early season moisture average yields were nearly 30% higher than last year. Limited disease pressures during the growing season and a relatively dry harvest period secured a crop with sound kernel qualities and high vitreous kernel counts. End-use processing tests indicate very good quality semolina with high color scores but somewhat weaker gluten properties.

Weather and Harvest: Planting began in mid-April, near normal, but progress was slowed by cool, wet soils. More favorable conditions in early May allowed progress to accelerate, and planting was nearly 80% complete by May 20th. Frequent, heavy rains in late May slowed progress and extended the planting completion date into mid-June.

Initial growing season conditions were near ideal, as rainfall was well above average and temperatures were near normal. Yield potential was very promising through the first half of the season. Moisture patterns became drier and temperatures began to move progressively higher in July. The drier pattern limited any threat of disease pressures for the bulk of the region, but the prolonged period of very hot temperatures reduced yield potential.

Harvest began in early August, slightly ahead of normal and accelerated rapidly through August. Some rain in early September did slow harvest, but more than 95 percent of the crop was harvested by September 16, roughly one week to ten days ahead of normal.

Quality: Analysis is based on 218 samples (45 MT and 173 ND) collected directly from producers during harvest with each sample representing an individual field.

The crop averages No. 2 Hard Amber Durum, the same as in 2006. Average test weight of 59.9 lb/bu (78.0 kg/hl) was the only factor that prevented a No. 1 grade average. However 51% of the crop grades No. 1 HAD, compared to only 35% last year. Over one-half of the crop has test weight greater than 60.0 lb/bu (78.2 kg/hl), up slightly from 2006. Some western areas have lighter test weights due to an extended period of hot temperatures in late July, but the percent of the crop falling below the 58 lb/bu level (75.6 kg/hl) is only 8% in 2007 compared to 20% in 2006.

Drier conditions in the latter half of the growing season and favorable harvest conditions promoted a crop with low damaged kernels, low moisture, sound falling number values and strong vitreous kernel counts. Average damage is 0.4%, up slightly from 0.2 in 2006 but lower than 0.7% for a five-year average. The average falling number is 367 seconds, down slightly from last year, but nearly 90% of the crop has 350 seconds or higher. Vitreous kernel counts average 95% with more than three-fourths of the crop having greater than a 90% vitreous kernel count.

Average protein of 15.1% is similar to 2006 but higher than the five-year average of 14.1%. Samples are more concentrated in the mid protein levels in 2007, with 48% of the crop in the 13s and 14s range, compared to only

one-third in that range and more than one-third greater than 16 in 2006. Kernel ash values of 1.67% are higher than both 2006 and the five-year average of 1.53% and 1.56%, respectively, reflective of the more abundant crop moisture and growth early in the season followed by heat stress during grain fill.

Milling extractions based on a Buhler laboratory mill are lower for both total yield and semolina yield. The lighter than average 1000 kernel weights and lower distribution of large-sized kernels are likely contributing factors. Semolina ash values are slightly higher than last year and the five-year average at 0.76%. Semolina speck counts are up slightly from 2006 and the five-year average.

Gluten strength in the crop, as measured by the Gluten Index and the Mixograph, are both slightly lower than last year. The gluten index is 48% compared to 57% last year, but still slightly higher than the five-year average of 45. Semolina mixing strength as measured on the mixograph is a 5.4 (scale 1-8), down slightly from 5.8 in 2006. Color properties of the crop are very high at 9.1 (scale 1-12) although cooked firmness of the spaghetti is slightly weaker than last year.

Buyers will find the 2007 crop will more than meet their needs for making high quality pasta, couscous and other products due to the crop's overall level of kernel soundness, high protein content and strong color. As with most years, quality, notably test weight, does vary across the region. Prudent contract specifications are still the most effective way to ensure buyers get the quality they need, especially important given the sharply higher market values of 2007.

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 U.S. 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 who plant certified seed. Handlers then store by varietal identity for season-long shipment at the buyer's schedule.

Higher wheat prices contributed to somewhat more Desert Durum® production this past season. The new crop grain once again exhibited consistently large kernel size and low moisture, traits that contribute to achieving high extraction rates. Cooking firmness was very good this year. In summary, the 2007 Desert Durum® crop will deliver the valuable milling, semolina and pasta quality traits that customers have come to expect.

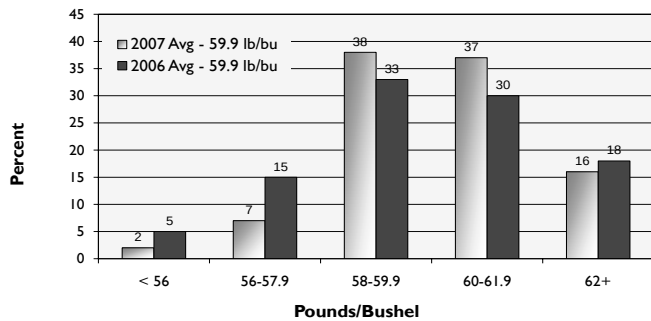
Idaho: Idaho is gaining popularity as a durum-growing area because of its high desert environment and abundance of irrigation water. Durum grown in Idaho is noted for its mellow gluten, which is very good in fresh pasta. Quality data on Idaho's durum crop is available from the Idaho Wheat Commission.

(continued on page 29)

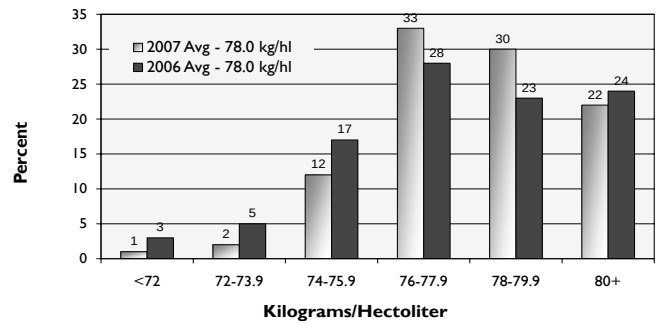
Harvest and Export Data

Durum	Harvest Data					Export Cargo Data			
	Great Plains			Pacific Southwest		Great Plains		Pacific Southwest	
	2007	2006	5- Year Avg.	2007	2006	2006	2005	2007	2006
Wheat Grade Data:									
Test Weight (lb/bu)	59.9	59.9	60.7	62.7	62.0	61.2	61.5	63.1	62.4
(kg/hl)	78.0	78.0	79.0	81.7	80.7	79.7	80.0	82.1	81.2
Damaged Kernels (%)	0.4	0.2	0.7	0.5	0.1	1.6	2.0	0.7	0.7
Foreign Material (%)	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2
Shrunken and Broken (%)	1.4	1.7	1.3	0.3	0.3	1.5	1.3	0.6	0.6
Total Defects (%)	1.8	2.0	2.1	0.9	0.5	3.2	3.4	1.5	1.5
Contrasting Classes (%)	0.2	0.1	0.1	0.0	0.0	0.6	0.7	0.2	0.3
Vitreous Kernels (%)	95.0	90.0	89.4	96.0	97.5	83.6	84.1	93.4	90.2
Grade	2 HAD	2 HAD	1 HAD	1 HAD	1 HAD	2 HAD	2 HAD	1 HAD	1 HAD
Wheat Non-Grade Data:									
Dockage (%)	1.6	2.3	1.5	0.3	0.2	0.5	0.5	0.6	0.6
Moisture (%)	11.8	11.3	11.8	6.6	6.6	11.8	12.5	7.5	8.0
Protein (%) 12%/0% moisture basis	15.1/17.1	15.1/17.1	14.1/16.0	13.8/15.7	13.6/15.4	14.3/16.3	13.3/15.1	13.4/15.2	13.0/14.8
Ash (%) 14%/0% moisture basis	1.67/1.95	1.53/1.78	1.56/1.81	1.71/1.99	1.74/2.02	1.60/1.86	1.61/1.87	1.64/1.91	1.62/1.89
1000 Kernel Weight (g)	33.8	33.2	35.9	50.8	49.7	34.8	36.4	46.4	46.3
Kernel Size (%) lg/md/sm	29/63/8	24/65/11	47/46/8	93/7/0	91/9/0	35/57/8	52/42/7	80/18/2	77/21/2
Falling Number (sec)	367	385	360			440	399	630	1116
Sedimentation (cc)	52	55	49						
Semolina Data:									
Lab Mill Extraction (%)	69.6	70.7	70.7	78.8	75.1	71.2	71.8	72.3	72.8
Semolina Extraction (%)	63.8	65.1	64.4	65.7	64.4	64.4	64.6	65.9	65.9
Ash (%) 14%/0% moisture basis	0.76/0.89	0.72/0.84	0.68/0.79	0.88/1.03	0.84/0.98	0.69/0.80	0.68/0.79	0.67/0.78	0.69/0.81
Specks (no/10 sq in)	23	21	20	10	7	25	26	26	23
Protein (%) 14%/0% moisture basis	13.9/16.2	14.3/16.6	13.2/15.3	12.6/14.7	12.4/14.4	13.2/15.4	12.3/14.3	11.5/13.4	11.8/13.7
Wet Gluten (%)	39.2	39.5	36.6	33.5	32.0		31.5		
Gluten Index	48.0	56.7	45.0			50.6	45.9	74.0	87.1
Mixograph Classification	5.4	5.8	5.9			5.7	5.3	6.5	7.3
Alveograph: P (mm)	49	52	49						
L (mm)	95	64	91						
P/L Ratio	0.52	0.81	0.54						
W (10 ⁻⁴ joules)	113	102	71	155	235				
Color: L*	85.6	84.5	84.7			85.2	84.7	85.6	84.7
a*	-2.6	-2.8	-2.8			-2.6	-2.7	-2.6	-2.6
b*	28.8	27.6	26.8	25.8	26.4	26.3	24.9	27.4	25.5
Spaghetti Processing Data:									
Color Score	9.1	9.0	9.1	8.1	9.2	8.9	8.9	9.2	9.3
Cooked Weight (gm)	32.2	31.3	31.0	30.1	30.0	32.1	31.9	32.4	31.8
Cooking Loss (%)	5.6	5.4	5.7	7.2	6.9	5.5	5.9	6.2	6.1
Cooked Firmness (g cm)	5.6	5.9	5.8	7.9	7.5	5.4	5.1	5.0	5.1
Sample Count:						18	40	6	27

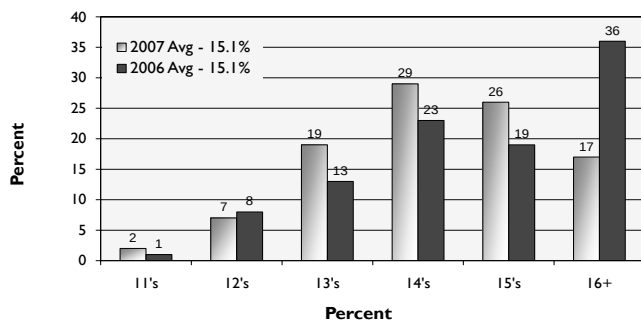
Test Weight



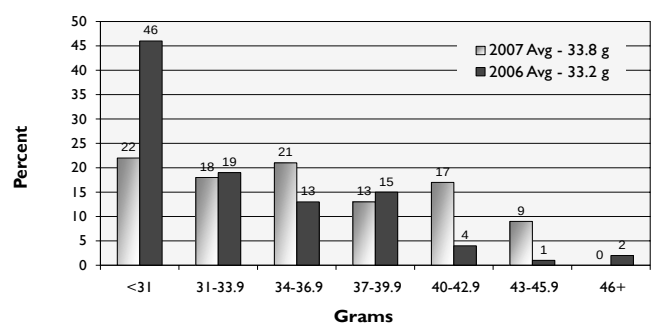
Hectoliter Weight



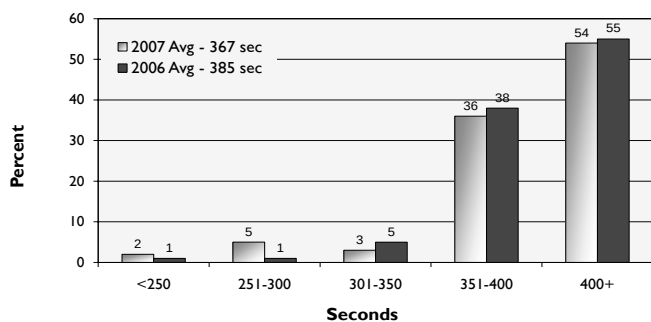
Protein (12% mb)



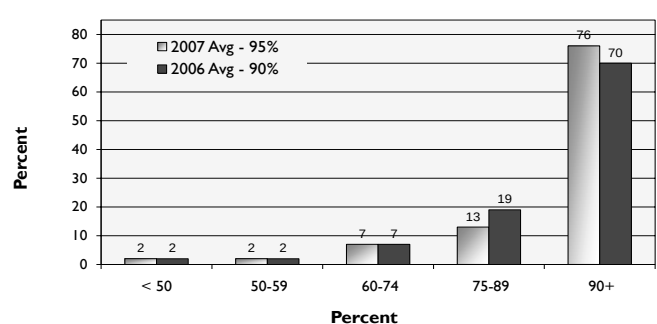
1000 Kernel Weight



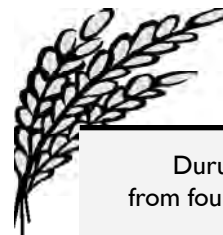
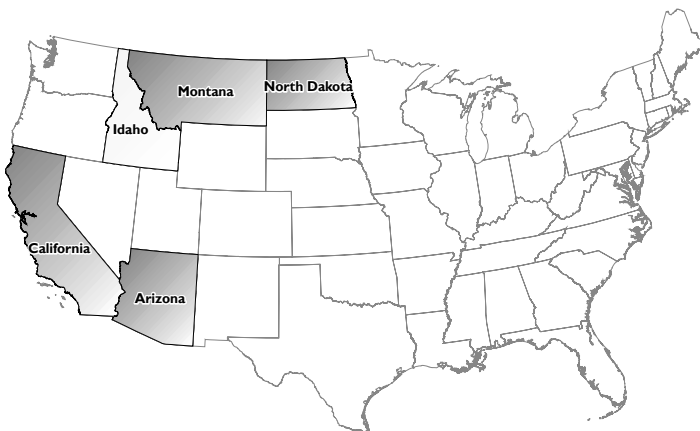
Falling Number



Vitreous Kernels



Note: Charts include Great Plains durum only.



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

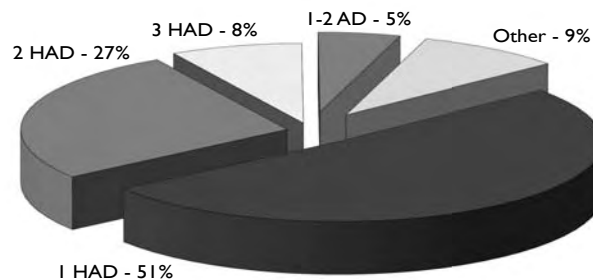
Durum Production

for the major producing states
(million metric tons)

	2007	2006	2005	2004	2003
Arizona	0.22	0.20	0.22	0.26	0.31
California	0.19	0.18	0.18	0.24	0.31
Idaho	0.03	0.04	0.05	NA	NA
Montana	0.31	0.18	0.45	0.49	0.39
North Dakota	1.19	0.86	1.86	1.44	1.59
Total Durum Production	1.95	1.46	2.75	2.45	2.63

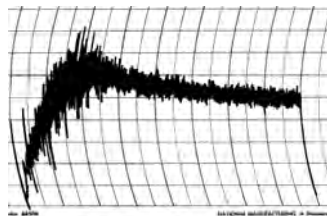
Based on USDA crop estimates of September 28, 2007.

Great Plains Durum Grade Distribution

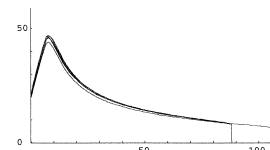


Great Plains Durum Mixogram and Alveogram

Regional Average Mixogram:
(score = 6)



Alveogram



Hard White

Harvest Survey

Hard white wheat (HW) is grown primarily in California, Kansas, Colorado, Idaho, Oklahoma, Nebraska, Washington, and Montana. Other states such as North Dakota, South Dakota, Wyoming, and Oregon have limited production. According to USDA's National Agricultural Statistics Service (NASS), total HW production in 2007 was about 736,000 MT, a substantial increase from last year's 439,000 MT.

Survey Methods: HW samples were collected from the Pacific Northwest (Idaho, Oregon, and Washington), California, Southern Plains (Colorado, Oklahoma, and Nebraska), and Northern Plains (Montana and South Dakota). Samples from the PNW were collected by NASS. Samples from California and the Northern Plains were sent directly by growers to the Wheat Marketing Center (WMC), Portland, Oregon. Some samples from the Southern Plains were collected by Plains Grains, Inc. (Stillwater, OK) and others were provided by wheat commissions or grain growers. These samples represented diverse growing conditions across the country. Wheat grading was conducted by the Federal Grain Inspection Service (FGIS), Portland, Oregon. All other tests were conducted by WMC.

HW samples were made into nine composites based on regions (Pacific Northwest, California, Southern Plains, and Northern 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 Methods (10th Edition). Chinese raw and wet noodle testing, and 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 nine samples were graded as US No. 1 with test weights from 61.1 to 65.7 lb/bu (80.4

to 86.3 kg/hl). Wheat moisture was in the range of 8.4–10.4%; PNW and California composites had lower wheat moisture content than the Southern Plains and the Northern Plains. PNW and California composites also had higher thousand-kernel weights and kernel diameters than the Plains composites. Falling number values were above 350 seconds, indicating sound grain.

Flour, Dough and Baking Data: Buhler laboratory mill straight grade flour extractions ranged from 67.6% to 71.2% and flour ash contents varied from 0.39% to 0.47%. These suggest that this year's HW had good milling performance.

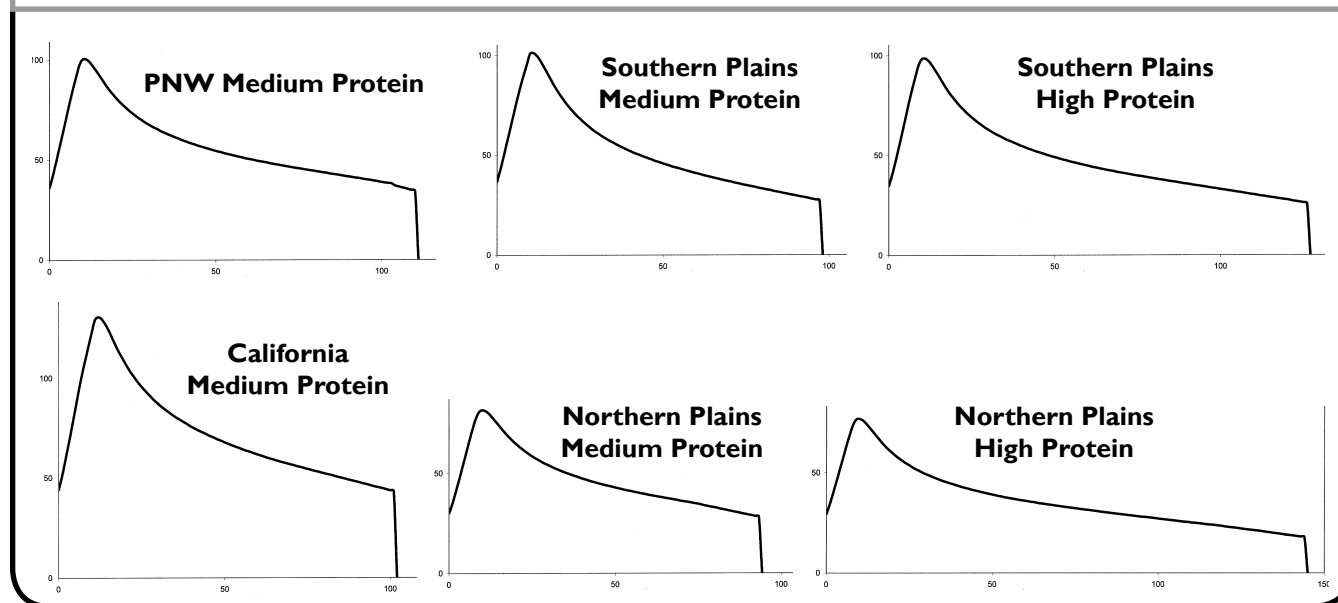
Flour wet gluten contents were from 26.1% to 37.3%, which were related to the flour protein contents. Amylograph peak viscosities were between 694 and 1065 BU, indicating good starch pasting characteristics suitable for Asian noodle products. Starch damage values were in the range of 5.0% to 7.2%, a typical range. Lactic acid SRC values showed positive correlations with the loaf volume.

Farinograph absorption ranged from 56.7% to 66.1%, and stability times were 10.9 minutes or longer for all samples, showing typical dough characteristics for HW. HW usually has similar flour water absorption to HRW, but the stability time is much longer, indicating more tolerance to over mixing. The ranges of alveograph values were: 76–129 mm for P values; 91–144 mm for L values; and 194–432 erg/gm for W values. Extensograph data at 135-minute resting showed that maximum resistance was in the range of 418–1171, and extensibility was from 8.6–16.2 cm depending on the protein content. Both alveograph and extensograph data were similar to HRW or HRS of similar protein ranges.

The bake absorption was in the range of 59.2%–69.4%; loaf volume ranged from 758 to 976 cc; and the crumb grain and texture was scored 6.5–8.0 points. Most samples showed good baking performance.

(continued on page 29)

Composite Average Alveograms



Harvest Data

Hard White	Pacific Northwest		California	Southern Plains				Northern Plains	
	Medium*	High	Medium	Low	Medium	High	Very High	Medium	High
Wheat Grade Data:									
Test Weight (lb/bu)	62.1	61.8	65.7	62.0	62.3	61.6	61.1	62.9	62.0
(kg/hl)	81.7	81.3	86.3	81.5	81.9	81.0	80.4	82.7	81.5
Damaged Kernels Total (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Foreign Material (%)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Shrunken & Broken (%)	0.8	0.7	0.2	0.7	1.1	0.6	0.7	0.6	0.8
Total Defects (%)	0.8	0.7	0.2	0.7	1.2	0.6	0.7	0.6	0.8
Grade	I HW	I HW	I HW	I HW	I HW	I HW	I HW	I HW	I HW
Wheat Non-Grade Data:									
Dockage (%)	0.2	0.4	0.0	0.0	0.0	0.0	0.2	0.1	0.1
Moisture (%)	9.6	8.4	8.9	10.0	9.8	10.1	10.3	10.4	9.9
Protein (%) 12%/0% moisture basis	12.0/13.6	13.4/15.2	12.5/14.2	11.1/12.6	12.1/13.7	13.3/15.1	14.2/16.1	11.5/13.1	13.5/15.3
Ash (%) 14%/0% moisture basis	1.54/1.79	1.47/1.71	1.44/1.67	1.42/1.65	1.51/1.76	1.42/1.65	1.52/1.77	1.51/1.76	1.54/1.79
1000 Kernel Weight (g)	39.0	33.5	42.7	33.4	29.3	30.9	30.0	28.1	27.7
Kernel Size (%) lg/md/sm	87/13/0	78/21/1	93/7/0	78/21/1	58/41/1	69/30/1	63/36/1	55/44/1	52/46/2
Single Kernel: Hardness	65.2	63.8	67.2	62.4	78.4	78.1	70.5	68.4	67.5
Weight (mg)	40.5	36.7	42.4	36.6	31.8	33.2	32.0	31.2	30.7
Diameter (mm)	2.82	2.76	2.89	2.76	2.62	2.71	2.62	2.58	2.55
Sedimentation (cc)	13.7	17.7	9.9	11.3	17.9	16.7	16.7	17.0	9.8
Falling Number (sec)	361	364	368	380	453	471	411	399	413
Flour Data:									
Lab Mill Extraction (%)	70.7	67.6	69.9	69.3	69.5	70.9	67.1	71.2	68.7
Color: L*	91.9	91.8	92.2	91.9	91.6	91.5	92.0	91.6	91.4
a*	-1.9	-1.9	-1.6	-2.0	-2.2	-2.0	-1.9	-2.1	-1.9
b*	7.7	7.6	6.3	8.2	9.1	8.8	7.7	9.0	8.1
Protein (%) 14%/0% moisture basis	10.8/12.6	12.4/14.4	11.7/13.6	9.6/11.2	10.7/12.4	11.8/13.7	12.0/14.0	9.7/11.3	11.9/13.8
Ash (%) 14%/0% moisture basis	0.45/0.52	0.42/0.49	0.39/0.45	0.39/0.45	0.47/0.55	0.43/0.50	0.45/0.52	0.39/0.45	0.41/0.48
Wet Gluten (%)	27.2	32.4	33.7	31.0	33.9	37.3	35.3	26.1	33.2
Gluten Index	98.4	96.9	91.2	69.9	85.7	85.6	88.8	97.3	78.3
Falling Number (sec)	351	370	397	380	431	434	404	385	378
Amylograph Viscosity 65 g (BU)	1065	976	694	781	973	841	714	922	849
Starch Damage (%)	6.4	5.6	7.2	6.3	7.1	6.2	6.1	5.0	5.9
Solvent Retention Capacity (%)									
Water/50% Sucrose	66/125	66/129	72/136	60/107	64/117	65/122	63/120	57/107	60/114
5% Lactic Acid/5% Na2CO3	159/93	175/89	172/101	148/83	136/90	160/88	155/88	151/75	160/81
Dough Properties:									
Farinograph:									
Peak Time (min)	9.5	7.4	10.7	2.5	4.9	6.7	6.2	2.0	7.9
Stability (min)	28.1	31.6	20.7	10.9	15.8	20.9	14.7	13.3	14.4
Absorption (%)	59.0	59.4	66.1	58.7	60.4	61.7	61.3	56.7	60.4
Alveograph: P (mm)	99	99	129	76	100	98	96	81	76
L (mm)	111	122	101	91	98	127	123	93	144
P/L Ratio	0.89	0.81	1.28	0.84	1.02	0.77	0.78	0.87	0.53
W (10 ⁻⁴ joules)	367	413	432	194	296	361	359	259	311
Extensograph: Resistance (BU)	481/913	544/1171	509/915	336/418	411/648	494/763	464/804	346/474	373/639
(45/135 min) Extension (cm)	13.9/8.6	13.5/9.0	18.0/12.3	16.8/13.9	17.7/13.7	16.8/14.6	17.1/12.8	17.5/16.2	17.5/15.0
Area (sq cm)	84/89	96/121	113/130	73/76	90/108	99/132	97/127	82/97	82/115
Baking Evaluation:									
Bake Absorption (%)	61.5	61.7	69.4	61.0	62.7	64.0	63.9	59.2	62.7
Crumb Grain and Texture	7.0	8.0	8.0	7.0	6.5	6.5	7.0	7.0	8.0
Loaf Volume (cc)	860	976	873	758	777	852	821	814	860

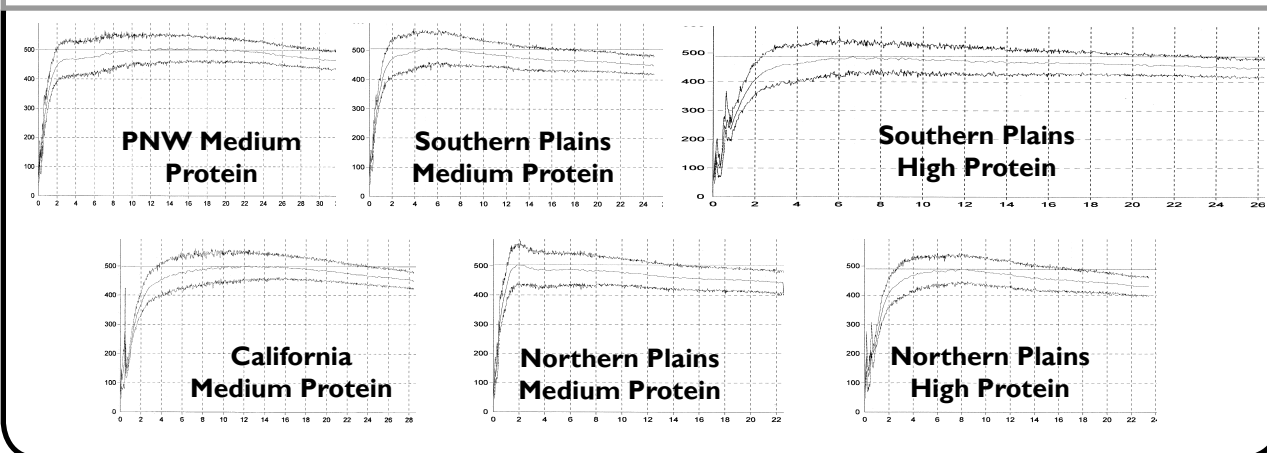
* Low: Less than 11.5%; Medium: 11.5 - 12.5%; High: 12.6% - 13.5%; Very High: Greater than 13.5%.

Harvest Data

Hard White	Pacific Northwest		California	Southern Plains				Northern Plains	
	Medium*	High	Medium	Low	Medium	High	Very High	Medium	High
Chinese Raw Noodle-Making Quality:									
Color at 0/24 hour: L*	84.4/73.7	83.5/72.0	84.7/75.7	86.1/78.1	84.0/75.8	82.9/73.5	82.9/73.5	85.0/77.1	83.3/73.7
a*	0.1/0.2	0.4/0.8	0.6/0.9	-0.3/-0.2	-0.2/0.2	0.3/0.8	0.3/0.9	-0.2/0.3	0.3/1.1
b*	17.5/22.3	18.9/24.0	15.2/20.3	17.2/23.5	20.5/27.6	20.1/26.7	19.4/26.1	19.6/25.5	19.5/25.0
Change in L* (0-24 hr)	10.7	11.5	9.0	7.9	8.2	9.4	9.5	7.9	9.7
Cooking Yield (%)	122	118	126	132	126	127	120	125	120
Sensory Color Stability Score	6.8	6.0	8.2	7.8	6.8	6.5	6.3	7.7	6.3
Instrumental Texture:									
Firmness (g)	937	961	900	937	1085	1053	1136	1035	1102
Springiness (%)	94.1	95.7	93.7	94.8	94.5	94.5	96.6	95.0	95.6
Cohesiveness	0.68	0.67	0.68	0.65	0.66	0.67	0.64	0.67	0.65
Chewiness (g)	601	618	572	577	676	663	696	654	685
Chinese Wet Noodle-Making Quality:									
Uncooked Color at 0/24 hour: L*	81.9/68.4	80.6/67.2	81.3/70.2	83.9/74.6	82.3/72.5	81.5/70.3	80.6/70.1	83.0/75.1	81.8/71.7
a*	-1.6/-0.8	-1.5/-0.8	-1.0/-0.8	-1.4/-1.0	-1.5/-0.9	-1.1/-0.4	-1.1/-0.3	-1.2/-0.9	-0.9/-0.3
b*	17.8/19.7	19.7/21.0	18.8/21.3	18.5/22.5	22.2/25.3	20.4/24.4	21.7/24.4	22.2/26.9	21.3/25.7
Change in L* (0-24 hr)	13.5	13.4	11.1	9.3	9.8	11.2	10.5	7.9	10.1
Parboiled Color at 0/24 hour: L*	78.0/77.9	77.2/77.6	78.4/79.1	79.4/80.2	79.4/79.9	78.1/78.8	78.0/78.7	79.8/80.6	78.0/79.0
a*	-2.5/-2.8	-2.4/-2.7	-2.2/-2.5	-3.0/-3.1	-3.0/-3.2	-2.4/-2.6	-2.1/-2.5	-2.4/-2.6	-1.7/-2.2
b*	27.1/25.4	27.4/25.9	26.4/25.2	28.9/27.6	30.8/29.3	29.0/27.7	28.8/27.6	28.9/27.5	28.0/26.7
Cooking Yield (1.5 min, %)	69	65	71	69	69	67	62	69	69
Uncooked Color Stability Score	7.0	7.0	7.5	7.5	8.0	7.5	7.5	8.5	8.0
Parboiled Color Stability Score	7.5	7.5	7.5	7.5	8.0	7.5	7.5	8.0	7.5
Instrumental Texture:									
Firmness (g)	671	611	650	663	751	761	859	799	819
Springiness (%)	95.2	95.3	95.3	96.2	95.1	95.5	95.0	93.8	95.1
Cohesiveness	0.67	0.68	0.69	0.67	0.67	0.67	0.64	0.65	0.65
Chewiness (g)	427	393	425	425	479	483	522	489	508
Steamed Bread Evaluation:									
Specific Volume (ml/g)	2.76	3.17	3.06	2.71	3.10	2.97	3.11	3.21	3.29
Total Score	70.9	68.7	69.8	64.8	70.2	70.5	71.0	69.8	70.2

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

Composite Average Farinograms



US Production by Class

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

	2007	2006	2005	2004	2003
Hard Red Winter	26.17	18.56	25.31	23.30	29.15
Soft Red Winter	9.74	10.62	8.41	10.35	10.35
Hard Red Spring	12.22	11.77	12.70	14.30	13.60
Soft White	5.43	7.30	7.33	6.99	6.42
Hard White	0.62	0.53	0.81	1.10	0.27
Durum	1.95	1.46	2.75	2.45	2.63
Total	56.26	49.32	57.29	58.74	63.82

Based on USDA crop estimates of September 28, 2007

US Supply and Demand

Estimated for 2007/2008 (year beginning June 1)
(million metric tons)

	HRW	HRS	SRW	White	Durum	TOTAL
Supply:						
Beginning Stocks	4.5	3.2	3.0	1.2	0.6	12.4
Production	26.2	12.2	9.7	6.2	2.0	56.3
Total Supply	30.7	16.3	13.0	7.6	3.5	71.0
Demand:						
Domestic Use	14.0	6.3	6.5	2.5	2.2	31.3
Exports	13.3	7.6	5.3	4.2	0.8	31.3
Total Demand	27.3	13.9	11.8	6.7	3.0	62.6
Ending Stocks	3.4	2.4	1.2	0.9	0.5	8.4

Based on USDA Supply/Demand estimates of October 12, 2007.

(continued from page 22)

Export Cargo Survey

The durum export cargo survey shows the results of analysis of 24 individual subplot samples for crop year 2006 (collected from October 2006 through June 2007) and 67 samples for 2005. 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)

Noodle Evaluation: HW flours and a control flour were evaluated for Chinese raw noodles (white salted) and Chinese wet noodles (yellow alkaline). Chinese raw noodle color was acceptable for the PNW medium, California medium, Southern Plains low and medium, and Northern Plains medium protein composites. Boiled noodle texture was generally acceptable for composites from the Southern Plains (medium, high, and very high protein) and Northern Plains (medium and high protein). These results suggested that noodle texture was generally associated

with flour protein content with higher protein giving harder noodle bite, but noodle color acceptability had a negative relationship to flour protein content.

Chinese wet noodle color was acceptable for all samples compared to the control. However, uncooked noodles from PNW medium and high protein composites had greater discoloration during 24-hour storage. Boiled Chinese wet noodle texture was acceptable for the Plains composites except for the Southern Plains low protein. The PNW medium and high, California medium, and Southern Plains low protein composites had slightly soft noodle texture.

Steamed Bread: HW flours were evaluated for Asian steamed breads in comparison with a control flour. Results showed that most samples were acceptable for steamed breads except for the Southern Plains low protein composite because its gluten was weak and the volume was low.

Summary: Quality analyses indicated that this year's hard white showed good quality performance in milling, dough rheological properties, and end-products in pan breads, 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 and 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: Minolta Method using Minolta Chroma Meter CR-110 (for HRW and SRW), CR-410 for HRS or CR-310 (for 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, HW - AACC 22-10 modified to use 65g flour (14% moisture basis) and 450ml distilled water with paddle (HRS) or pins (other classes).

Extensograph: AACC 54-10, modified 45 min. and 135 min. rest, HRS, HRW, HW; 45 min. rest only, SW.

Starch Damage: HRS, SRW, Durum - AACC Method 76-30A. SW, HW - Iodine Absorption by Chopin SDmatic instrument.

Solvent Retention Capacity (SRC): HW, 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 ammonium phosphate, 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. 100 g (14% mb) of flour and 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;

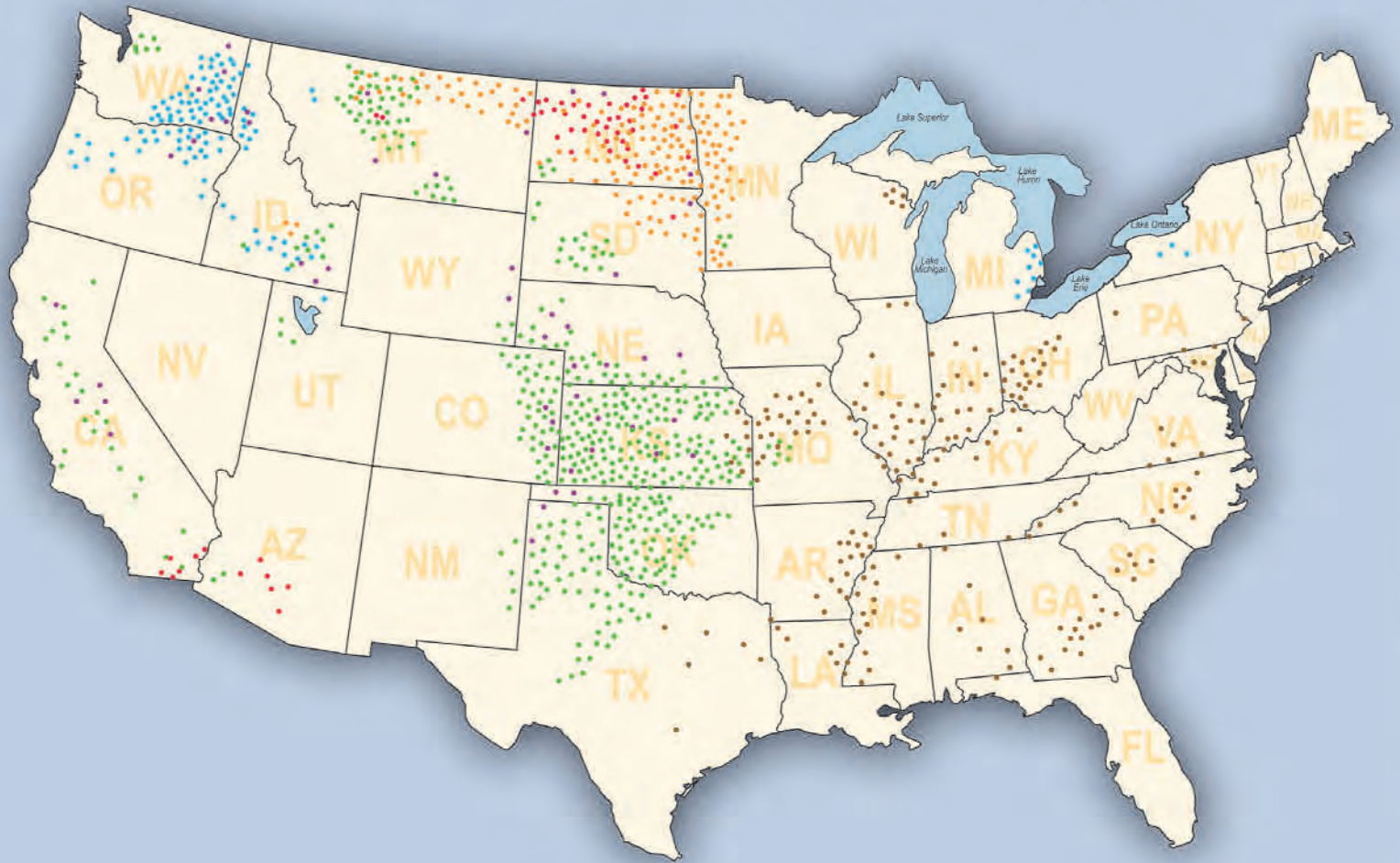
K_2CO_3 , 4.5 g; Na_2CO_3 , 4.5 g; and water, 320 g. Noodle sheet color is measured by stacking three dough sheets and taking two readings from each side of two dough sheets (a total of eight readings) using a Minolta CR-310 Chroma Meter; the mean value is reported. For Chinese wet noodles, noodle sheet 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.

Steamed Bread: Two types of steamed breads were prepared: Chinese southern-type from each of the SW and club wheat flours and Asian steamed breads 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 Asian-type formula was: flour 400g, yeast 6g, sugar 48g, shortening 8g and water 170-180g. Yeast was dissolved in water before use. All steamed breads were prepared using straight dough methods (WMC protocols). The Total 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



U.S. WHEAT ASSOCIATES

INFO@USWHEAT.ORG

WWW.USWHEAT.ORG

WORLD HEADQUARTERS
1620 I STREET, N.W. SUITE 801
WASHINGTON, D.C. 20006-4005
PH 202.463.0999 • FX 202.785.1052
INFO@USWHEAT.ORG

WEST COAST U.S. OFFICE
1200 NW NAITO PARKWAY, SUITE 600
PORTLAND, OR 97209
PH 503.223.8123 • FX 503.223.5026
INFOPORTLAND@USWHEAT.ORG

	PHONE	FAX	EMAIL
BEIJING Providing services to: China	(86 10) 6505-3866	(86 10) 6505-5138	InfoBeijing@uswheat.org
CAIRO (Regional Office) Providing services to: Bahrain, Burundi, Cyprus, Djibouti, Egypt, Eritrea, Ethiopia, Iraq, Iran, Jordan, Kenya, Kuwait, Lebanon, Mauritius, Oman, Rwanda, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tanzania, Turkey, United Arab Emirates, Uganda, Yemen	(202) 2380-3162	(202) 2380-3138	InfoCairo@uswheat.org
CAPE TOWN (Regional Office) Providing services to: Angola, Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Chad, Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea Conakry, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Sao Tome/Principe, Senegal, Sierra Leone, South Africa, St. Helena, Swaziland, Togo, Zaire, Zambia, Zimbabwe	(27 21) 418-3710	(27 21) 419-0400	InfoCapeTown@uswheat.org
CASABLANCA Providing services to: Algeria, Libya, Mauritania, Morocco, Tunisia	(212) 22 74-14-59	(212) 22 74-14-60	InfoCasablanca@uswheat.org
HONG KONG (Regional Office) Providing services to: China, Mongolia	(852) 2890-2815	(852) 2576-2676	InfoHongKong@uswheat.org
LAGOS Providing services to: Nigeria	(234 1) 261-0657	(234 1) 261-0657	mtalabi@uswheat.org
MANILA Providing services to: Philippines	(63 2) 818-4610	(63 2) 815-4026	InfoManila@uswheat.org
MEXICO CITY (Regional Office) Providing services to: Anguilla, Antigua, Bahamas, Barbados, Belize, Bermuda, Cayman islands, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, French Guiana, French West Indies, Granada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Leeward-Windward Islands, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Puerto Rico, St. Christopher, Saint Kitts and Nevis, St. Lucia, St. Vincent, Suriname, Trinidad-Tobago, Turks & Caicos Islands, Venezuela, Virgin Islands	(5255) 5-202-2075	(5255) 2-623-1109	InfoMexico@uswheat.org
MOSCOW Providing services to: CIS	(7 495) 956-9081	(7 495) 608-8124	InfoMoscow@uswheat.org
ROTTERDAM (Regional Office) Providing services to: Albania, Bosnia, Bulgaria, Croatia, European Union (27), Iceland, Israel, Libya, Macedonia, Malta, Mauritania, Morocco, Norway, Palestine Territories, Romania, Serbia and Montenegro, Switzerland, Tunisia	(31 10) 413-9155	(31 10) 433-0438	InfoRotterdam@uswheat.org
SANTIAGO (Regional Office) Providing services to: Bolivia, Brazil, Chile, Colombia, Ecuador, Peru	(56 2) 235-7137	(56 2) 235-7371	InfoSantiago@uswheat.org
SEOUL Providing services to: Korea	(822) 720-7926	(822) 720-7925	InfoSeoul@uswheat.org
SINGAPORE Providing services to: Bangladesh, Burma, Cambodia, India, Indonesia, Malaysia, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam	(65) 6737-4311	(65) 6733-9359	InfoSingapore@uswheat.org
TAIPEI Providing services to: Taiwan	(886 2) 2521-1144	(886 2) 2521-1568	InfoTaipei@uswheat.org
TOKYO Providing services to: Japan	(813) 3582-7911	(813) 3582-7915	InfoTokyo@uswheat.org
TUNIS (Technical Outreach Program) Providing services to: Algeria, Libya, Mauritania, Morocco, Tunisia	(216) 71 963-814	(216) 71 963-896	InfoTunis@uswheat.org

PA-CQR907