

Crop Quality Report 2009



U.S. WHEAT
ASSOCIATES

The world's most reliable choice.

PLANTING AND HARVEST DATES

WHEAT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HRW Planting												
HRW Harvest												
HRS Planting												
HRS Harvest												
HW Planting												
HW Harvest												
Durum Planting												
Durum Harvest												
SW Planting												
SW Harvest												
SRW Planting												
SRW Harvest												



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TABLE OF CONTENTS

Crop Quality Report Overview.	4
US Production, Supply and Demand	5
What the Tests Mean.	6
Hard Red Winter	9
Hard Red Spring	16
Hard White	23
Durum.	27
Soft White.	31
Soft Red Winter.	36
Analysis Methods.	40
Wheat Grades and Grade Requirements	42



2009 CROP QUALITY REPORT OVERVIEW



Greetings!

U.S. Wheat Associates is pleased to present this 2009 Crop Quality Report at a time when market conditions have aligned to create the best landed-cost value for U.S. wheat that buyers have seen in several years. Considering price in relation to quality, performance, and service, this is a year with exceptional opportunities to buy, commit to future purchases, and take ownership positions in U.S. wheat.

To help you do that, this report includes data for all classes of U.S. wheat, compiled from crop quality surveys conducted during and after this year's harvest. This information and the services of our professional staff will help you specify your needs in your purchase contracts.

As you do, please also consider the value that accrues to your enterprise from working with the world's most reliable choice. When wheat stocks were tight, the U.S. kept its doors open and we will do so again when the time comes. With U.S. wheat, reliability is not just a word—it is a fact.

It is a privilege for us to work with the world's most talented, dedicated wheat buyers, millers, bakers, and wheat food processors. So, on behalf of our producers, our 19 state wheat commission members, and the U.S. Department of Agriculture's Foreign Agricultural Service who fund our work, thank you for choosing U.S. wheat—and please never hesitate to ask for our help.

Sincerely,

Alan Tracy, President
U.S. Wheat Associates

SUMMARY OF CLASSES

	Hard Red Winter		Hard Red Spring		Durum*		Soft White		Soft Red Winter	
	2009	5-Year Avg	2009	5-Year Avg	2009	5-Year Avg	2009	5-Year Avg	2009	5-Year Avg
Test Weight (lb/bu)	60.6	59.9	61.6	60.7	61.4	60.5	59.8	59.8	57.6	59.5
(kg/hl)	79.7	78.8	81.0	79.9	80.0	78.8	78.7	78.7	75.8	78.3
Grade	1 HRW	2 HRW	1 NS	1 NS	1 HAD	1 HAD	2 SW	2 SW	3 SRW	2 SRW
Dockage (%)	0.5	0.7	0.6	0.8	1.4	1.5	0.7	0.7	0.8	0.9
Wheat Moisture (%)	11.3	11.2	12.7	12.0	11.8	12.0	9.3	9.2	12.8	13.1
Wheat Protein (%) **	12.1	12.5	13.2	14.4	13.5	14.4	10.3	10.4	10.0	10.0
Wheat Ash (%) **	1.55	1.55	1.53	1.60	1.42	1.57	1.37	1.39	1.56	1.54
1000 Kernel Weight (g)	30.1	28.9	33.4	30.8	42.4	35.5	33.1	34.4	30.8	33.5
Wheat Falling Number (sec)	410	406	374	398	398	362	324	339	325	341
Flour/Semolina Extraction (%)	70.7	69.6	68.7	68.9	65.5	64.1	70.5	69.1	67.2	69.4
Flour/Semolina Ash (%) **	0.46	0.51	0.50	0.48	0.62	0.69	0.46	0.40	0.45	0.43
Wet Gluten (%)	28.4	30.6	33.8	35.6	34.8	37.6	24.0	22.8	21.4	21.9
Farinograph:										
Peak Time (min)	5.4	5.9	6.5	9.2	n/a	n/a	1.7	1.7	1.5	1.6
Stability (min)	13.1	10.6	10.1	17.1	n/a	n/a	3.8	4.1	2.6	3.0
Absorption (%)	57.2	58.7	66.5	65.8	n/a	n/a	55.8	52.5	51.3	52.4
Alveograph W (10 ⁻⁴ joules)	239	273	387	433	146	98	125	110	90	94
Loaf Volume (cc)	813	842	916	1016	n/a	n/a	n/a	n/a	733	714
Production (mmt)	25.0	24.3	15.0	13.0	3.0	2.2	5.7	6.2	11.0	11.1

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

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

US Production by Class

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

	2009	2008	2007	2006	2005
Hard Red Winter	25.0	28.2	26.0	18.6	25.3
Hard Red Spring	15.0	13.9	12.2	11.8	12.7
Hard White	0.7	0.8	0.7	0.5	0.8
Durum	3.0	2.3	2.0	1.4	2.8
Soft White	5.7	6.1	5.3	6.4	7.3
Soft Red Winter	11.0	16.7	9.6	10.6	8.4
Total	60.4	68.0	55.8	49.3	57.3

Based on USDA crop estimates of September 30, 2009

US Supply and Demand

Estimated for 2009/2010 (year beginning June 1)
(million metric tons)

	HRW	HRS	Durum	White	SRW	TOTAL
Supply:						
Beginning Stocks	6.9	3.9	0.7	1.7	4.7	17.9
Production	25.0	15.0	3.0	6.5	11.0	60.4
Total Supply	32.0	19.9	4.8	8.5	16.1	81.3
Demand:						
Domestic Use	12.9	7.2	2.2	2.7	8.2	33.3
Exports	9.4	5.9	1.1	4.6	3.5	24.5
Total Demand	22.3	13.1	3.3	7.4	11.7	57.8
Ending Stocks	9.6	6.9	1.4	1.1	4.4	23.5
Stocks Five-year Average	5.3	3.4	0.7	1.6	2.9	13.8

Based on USDA Supply/Demand estimates of October 9, 2009.



WHAT THE TESTS MEAN

Wheat Grades reflect the physical quality and condition of a sample and thus may indicate the general suitability of a sample for milling. The U.S. grade of a sample is determined by measurement of such factors as test weight, damaged kernels, foreign material, shrunken and broken kernels, and wheat of contrasting classes. All numeric factors other than test weight are reported as a percentage by weight of the sample. Grade determining factors include:

- **Test Weight** is a measure of the density of the sample and may be an indicator of milling yield and the general condition of the sample, as problems that occur during the growing season or at harvest often reduce test weight.
- **Damaged Kernels** are kernels which may be undesirable for milling because of disease, insect activity, frost or sprout damage, etc.
- **Foreign Material** is any material other than wheat that remains after dockage is removed. Because foreign material may not be removed by normal cleaning equipment, it may have an adverse effect on milling quality.
- **Shrunken and Broken Kernels** are kernels which either were insufficiently filled during growing and have a shrunken or shriveled appearance or have been broken in handling. Such kernels may reduce milling yield.
- **Total Defects** is the sum of damaged kernels, foreign material and shrunken and broken kernels.
- **Vitreous Kernels** in hard red spring wheat are kernels which are uniformly dark and have no spots which appear chalky or soft. In durum, vitreous kernels have a glassy and translucent appearance without any spots that appear chalky.

Dockage is the percentage by weight of any material easily removed from a wheat sample using the Carter Dockage Tester. Dockage, because it can be easily removed, should not have any effect on milling quality but may have other economic effects for buyers. Grade factors are determined only after dockage is removed.

Moisture content is the percentage moisture by weight of a sample and is an important indicator of profitability in milling. Flour millers add water to adjust wheat moisture to a standard level before milling. Lower wheat moisture allows more water to be added, increasing the weight of grain to be milled at virtually no cost. Moisture content is also an indicator of grain storability as wheat and flour with low moisture are more stable during storage. Because moisture can be readily added to or physically removed from a sample, other analysis results are often mathematically converted to a standard moisture basis, such as 14%, 12% or dry matter, so results can be meaningfully compared.

Protein content is the percentage protein by weight in a sample. Protein can be quickly and easily measured and therefore is an important factor in determining the value of wheat since it relates to many processing properties, such as water absorption and gluten strength. Low protein is desired for products such as snacks or cakes. High protein is desired for products such as pan breads, buns and frozen yeast-raised products.

Ash content is the percentage of minerals by weight in wheat or flour. In wheat, ash is primarily concentrated in the bran and is an indication of the flour yield that can be expected during milling. In flour, ash content indicates milling performance by indirectly revealing the amount of bran contamination in flour. Ash in flour can impart a darker color to finished products. Products requiring particularly white flour call for low ash content while whole wheat flour has higher ash content.

1000 Kernel Weight is the weight in grams of one thousand kernels of wheat and may indicate grain size and expected milling yield.

Kernel Size is a measure of the percentage by weight of large, medium and small kernels in a sample. Large kernels or more uniform kernel size may help improve milling yield.

Single Kernel Characterization System (SKCS) measures 300 individual kernels from a sample for size (diameter), weight, hardness (based on the force needed to crush) and moisture. Detailed SKCS results (not reported in this booklet) include the distribution of these factors, which may be an indicator of the uniformity of the sample and may help millers experienced with the system optimize flour milling yields. Kernel characteristics are related to milling properties such as tempering, roll gap settings, and flour starch damage content.

Sedimentation value is a measure of the sediment that results when lactic acid is added to a sifted ground wheat sample and can be used as an indicator of gluten quality and thus the baking quality of wheat flour.

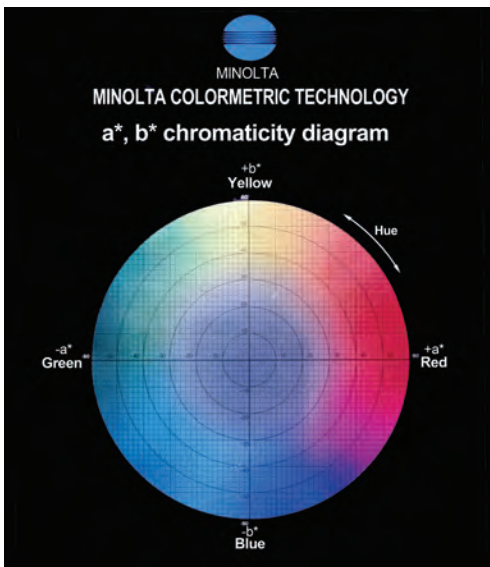
Falling Number indirectly indicates alpha-amylase activity, which results from sprout damage. High Falling Number values indicate low alpha-amylase activity. Sufficient alpha-amylase activity is required in flour for some products such as yeast-raised bread. However, excessive alpha-amylase in wheat cannot be removed and is difficult to blend to lower alpha-amylase content, and the resulting flour produces a sticky dough that can cause problems during processing and products with poor color and weak texture. Falling Number usually correlates closely with amylograph.

Extraction is the percentage by weight of flour obtained from a wheat sample. In a commercial flour mill the extraction rate is critically important to mill profitability. In a laboratory,

WHAT THE TESTS MEAN

milling with the Buhler Laboratory Mill is mainly done to obtain flour for other tests. The Buhler Laboratory Mill extraction rate is always significantly lower than the rate that can be obtained on a commercial mill, but may be useful for comparison between crop years.

Color is a numerical system to measure a sample's lightness (L^*) on a scale of 0 to 100 and "chromaticity" or hue on two scales each running from -60 to +60 for green-red (a^*) and blue-yellow (b^*). High L^* values indicate a bright color, and higher b^* values indicate more yellow. Flour color is influenced by the wheat's endosperm color and the ash content of the flour and often affects the color of the finished product.



Wet Gluten is a measure of the quantity of gluten in wheat or flour

samples as determined using the Glutomatic system. Gluten forms when water is added to the protein in wheat and is responsible for the elasticity and extensibility characteristics of flour dough.

Gluten Index is also determined by the Glutomatic system and is a measure of gluten strength regardless of the quantity of gluten present. Gluten index is used commercially to select durum samples with strong gluten characteristics. In bread wheat a variety of factors other than gluten quality can affect the results though very low gluten index may be an indication of protein damage from insect or disease activity.

Amylograph measures flour starch pasting properties that are important to some end products such as sheeted Asian noodles. Amylograph also measures enzyme (alpha-amylase) activity which results from sprout damage. Amylograph results usually correlate very closely with Falling Number results.

Starch Damage, the percentage by weight of damaged starch in a flour sample, is a measure of the physical damage done to starch granules during milling. Bread (hard) wheat flour typically has higher starch damage than soft wheat flour. Highly damaged starch readily absorbs more water which affects dough mixing and other processing properties. Because starch damage depends on how the sample was

milled, starch damage is important for interpreting other results reported.

Farinograph generates a curve that indicates the power being used over time as flour and water are mixed into dough. The results describe the mixing properties of the dough and include:

- **Peak Time** is the time interval from the first addition of water to the maximum consistency immediately prior to the first indication of weakening. Long peak times indicate strong gluten and dough properties while short peak times may indicate weak gluten.
- **Stability** is the interval between the point where the top of the curve first intersects the 500-BU line (called the "arrival time") and the point where the top of the curve departs the 500-BU line ("departure time"). Long stability times also indicate strong gluten and dough properties, useful in such products as yeast-raised breads while short stability times indicate weaker gluten useful in many confectionary products.
- **Absorption** is the amount of water (as a percent by weight of 14 percent moisture wheat flour) required to center the curve peak on the 500-BU line. High water absorption provides economic advantages for producing more dough pieces than flour with lower water absorption.
- **Classification** rates the curves produced by the farinograph ("farinograms") on a scale of 1 to 8, with higher values indicating stronger gluten and dough mixing properties for hard red spring wheat flour.



FARINOGRAPH

WHAT THE TESTS MEAN

Alveograph generates a curve indicating the air pressure necessary to inflate a piece of dough like a bubble to the point of rupture and indicates the gluten strength and extensibility of dough. Values reported include:

- **P** (“overpressure”), measured in millimeters to the maximum height of the curve, reflects the maximum pressure while blowing the bubble of dough and indicates dough resistance to extension.
- **L** (length), the length of the curve measured in millimeters, reflects the size of the bubble and indicates dough extensibility.
- **W** (the area under the curve) reflects the amount of energy needed to inflate the dough to the point of rupture and indicates dough strength.

The alveograph is well suited for measuring the dough characteristics of weaker gluten wheat. Flour with low P value (indicating weak gluten) and long L value (high extensibility) is preferred for cakes and confectionery products. Flour with high P values (strong gluten) is preferred for breads.

Extensograph generates a force-time curve for a piece of dough stretched until it breaks. Results include:

- **Resistance**, measured at the maximum curve height in Brabender units (B.U.), reflects the maximum force applied and indicates the resistance of the dough to extension.
- **Extensibility**, measured as the total length of the curve at the base line in centimeters, reflects how far the dough was stretched.

- **Area** is the area under the curve reported in square centimeters.

These factors help describe the gluten strength and dough extensibility characteristics of flour for a wide range of end products. The extensograph can also evaluate the effects of fermentation time and additives on dough performance.

Mixograph, similar to the farinograph but quicker and using a smaller amount of flour sample, generates a graph that records the force needed to mix flour or semolina and water into dough. The graph is classified on a scale of 1 to 8, with higher values indicating stronger gluten characteristics for durum milled fractions.

Solvent Retention Capacity (or SRC) is the weight of solvent held by flour after centrifugation, and expressed as a percent of the flour weight on a 14 percent moisture basis. The different solvents used relate flour functionality to specific flour components and thus can be useful for predicting commercial baking performance, especially for soft wheat flours.

Baking Absorption is the water required for optimum dough mixing performance, expressed as a percent of flour weight on a 14 percent moisture basis.

Crumb Grain and Texture is determined on a scale of 1 to 10 by visual comparison to a standard using a constant illumination source. Higher scores are preferred.

Loaf Volume is the volume of the test loaf after baking. Higher loaf volumes indicate better baking performance for pan breads.

Specks are visually counted in a semolina sample and reported as the number in 10 square inches. Specks, which can detract from pasta appearance and desirability, are small particles of bran or other material that escaped the wheat cleaning and semolina purifying process and thus depend on the milling process as well as the characteristics of the durum.

Sugar Snap Cookie, Sponge Cake, Chinese Southern-Type Steamed Bread, Spaghetti, and the Hard White noodle and steamed bread tests all use standardized methods to prepare specific end products to evaluate the suitability of the sample for that product or similar products. Details on many of these tests can be found in the Analysis Methods.



ALVEOGRAPH

Photos courtesy of Wheat Marketing Center

MIDWESTERN HARVEST SURVEY

Weather and Harvest: Planting conditions for the 2009 hard red winter (HRW) crop were variable with generally drier conditions in southern areas (Texas and Oklahoma) and near normal moisture from Kansas and Colorado to Montana. Planting finished in most areas during the average date range.

Plant emergence and development were near normal except in Texas and Oklahoma where extreme dryness persisted into spring. In April an area from south central Kansas through Oklahoma into Texas suffered varying freeze damage. Drought stricken areas began receiving rain in May, too late in the south to make a significant difference in production. Cool, wet weather in eastern Colorado, western Kansas, eastern Wyoming, and across southern Nebraska persisted from late May into June, which favored crop development but delayed harvest. Except for a few areas (mainly in the Texas Panhandle) there was very little disease or insect damage.

Survey Methods: Sample collection and analysis were conducted by the USDA ARS Hard Red Winter Wheat Quality Lab, Manhattan, Kansas, and Plains Grains, Inc. A total of 468 samples were collected from grain elevators when local harvest was at least 30% complete in Texas, Oklahoma, Colorado, Kansas, Nebraska, South Dakota, Wyoming and Montana. The area sampled represents about 80% of HRW production. Official grade and non-grade factors were determined on each sample. Milling, dough and bake tests were run on 108 composites from 36 production areas and three protein ranges, <11.5%, 11.5% - 12.5%, and >12.5%. Results were mathematically aggregated to represent Gulf-tributary, PNW-tributary, and overall results. Because some areas are included in both Gulf and PNW results, composite averages may be more or less than both port areas. Analytical methods are described in the Analysis Methods section.

Wheat and Grade Data: Sixty-six percent of samples graded US #1 with a higher percentage of PNW samples grading #1 than Gulf. The crop is very clean with average dockage of 0.5%, well below last year's 0.6% and the five-year average of 0.7%. Total defects of 1.3% are also below the five-year average of 1.7% and last year's average. Foreign material, shrunken and broken, and wheat ash are similar to the five-year averages.

Kernel characteristics, including test weight, thousand kernel weight and kernel diameter, are very good, which is consistent with the adequate moisture, cool temperatures and little heat stress that prevailed as the crop matured. Test weight of 60.6 lbs/bu. (79.7 kg/hl), thousand kernel weight of 30.1 g, and kernel diameter of 2.64 mm are all significantly above the five-year averages. Above-average kernel characteristics prevailed across the entire production region, with PNW values somewhat higher than Gulf values.

The growing conditions that favored large kernel size and high test weight tended to reduce protein content, which overall is a half a percent below the five-year average. The distribution of protein is similar in both the PNW and Gulf-tributary areas

with approximately 35% of samples in the < 11.5% protein category, 45% in the 11.5% – 12.5% category and 20% in the > 12.5% category. Average falling number is 406 seconds, similar to the five-year average and indicative of sound wheat.

Flour and Baking Data: The Buhler laboratory mill flour yield average is 70.7%, above the five-year average of 69.6%, and the PNW average of 72.2% is well above the five-year average, results consistent with the outstanding kernel characteristics. Flour protein content of 10.6% reflects a slightly elevated loss of protein in milling compared with previous years.

“Gluten strength” (considering alveograph, extensograph and farinograph data combined) is good, though farinograph peak time was unacceptably short in some samples. Average W value of 239 is below 2008 and significantly below the five-year average of 273. Farinograph water absorption of 57.2% may be a concern as it is well below the 2008 value of 60.0% and the five-year average of 58.7%. Farinograph peak and stability times of 5.4 and 13.1 minutes, respectively, are better than the 2008 averages and the stability time is better than the five-year average. In contrast, loaf volume averages 813 cc, comparable to the 2008 crop but significantly below the five-year average of 842 cc. Samples that exceeded 850 cc generally had wheat protein which exceeded 12.5%.

Summary: The 2009 HRW crop can be characterized as very clean and sound with above average milling properties, but with below average protein content and with end-product qualities consistent with the lower protein values.

CALIFORNIA HARVEST SURVEY

California experienced a fairly cool growing season with virtually no rainfall in March and April which may have contributed to the low presence of disease again this year.

HRW was again the predominant wheat class grown in California in 2009. California red wheats are harvested in the months of June and July. With strong domestic demand for new crop wheat, export buyers are encouraged to express their interest in purchasing California wheat in early spring.

EXPORT CARGO SURVEY

The export cargo data represent 471 individual subplot samples provided by USDA's Federal Grain Inspection Service for marketing years 2009 and 2008. Of 124 2009-crop samples collected in August and September, 91 are from Gulf and 33 from PNW ports. Of the 347 2008-crop samples, 282 are from Gulf and 65 from PNW ports. Grade data are the official grades on the individual subplots. Milling and baking analyses were conducted by CII Laboratory Services, Kansas City, MO.



HARD RED WINTER | MIDWESTERN HARVEST DATA



Hard Red Winter	Composite Average					
	2009 By Protein*				2008 Overall	5-Year Average
	Low	Med	High	Overall		
Wheat Grade Data:						
Test Weight (lb/bu)	61.1	60.7	60.0	60.6	60.3	59.9
(kg/hl)	80.4	79.9	78.9	79.7	79.3	78.8
Damaged Kernels (%)	0.1	0.1	0.3	0.2	0.3	0.4
Foreign Material (%)	0.1	0.1	0.1	0.1	0.1	0.1
Shrunken & Broken (%)	0.9	1.1	1.2	1.0	1.1	1.2
Total Defects (%)	1.1	1.3	1.5	1.3	1.5	1.7
Grade	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	2 HRW
Wheat Non-Grade Data:						
Dockage (%)	0.5	0.5	0.5	0.5	0.6	0.7
Moisture (%)	11.3	11.3	11.2	11.3	11.0	11.2
Protein (%) 12%/0% moisture basis	11.0/12.5	11.9/13.5	13.3/15.1	12.1/13.8	12.2/13.9	12.5/14.2
Ash (%) 14%/0% moisture basis	1.55/1.80	1.56/1.81	1.62/1.88	1.55/1.80	1.56/1.81	1.55/1.80
1000 Kernel Weight (g)	31.4	30.1	29.0	30.1	30.1	28.9
Kernel Size (%) lg/md/sm	71/28/1	63/36/1	58/40/2	63/36/1	57/40/1	56/43/1
Single Kernel: Hardness	67.7	71.5	73.7	70.6	67.3	67.6
Weight (mg)	31.4	30.1	29.0	30.1	30.1	29.3
Diameter (mm)	2.69	2.64	2.60	2.64	2.29	2.24
Sedimentation (cc)	47.3	54.7	64.0	56.8	54.4	44.6
Falling Number (sec)	404	411	401	410	440	406
Flour Data:						
Lab Mill Extraction (%)	71.8	71.4	69.2	70.7	74.0	69.6
Color: L*	92.8	92.7	92.5	92.7	90.5	91.9
a*	-1.7	-1.7	-1.6	-1.7	-1.4	-2.5
b*	9.9	10.1	9.7	9.9	9.7	9.5
Protein (%) 14%/0% moisture basis	9.4/11.0	10.4/12.1	11.8/13.7	10.6/12.4	11.0/12.8	11.2/13.0
Ash (%) 14%/0% moisture basis	0.46/0.53	0.46/0.54	0.45/0.53	0.46/0.53	0.57/.65	0.51/0.59
Wet Gluten (%)	24.1	27.7	31.5	28.4	29.1	30.6
Gluten Index	97.7	97.5	95.8	96.9	91.7	93.5
Falling Number (sec)	#N/A	#N/A	#N/A	#N/A	438	406
Amylograph Viscosity 65 g (BU)	>1000	>1000	>1000	>1000	1049	749
Starch Damage (%)	6.0	6.0	5.8	6.0	6.4	7.1
Dough Properties:						
Farinograph:						
Peak Time (min)	3.1	5.2	6.8	5.4	4.9	5.9
Stability (min)	10.4	13.0	15.9	13.1	9.4	10.6
Absorption (%)	56.2	57.2	58.0	57.2	60.0	58.7
Alveograph: P (mm)	67	69	68	68	90	81
L (mm)	91	97	104	101	85	104
P/L Ratio	0.75	0.73	0.67	0.69	1.23	0.78
W (10 ⁻⁴ joules)	208	231	253	239	245	273
Extensograph: Resistance (BU)	319/501	325/492	332/519	329/512	316/399	
(45/135 min) Extensibility (cm)	14.6/13.3	15.4/14.3	16.2/15.6	15.4/14.5	14.7/14.4	
Area (sq cm)	85/112	93/123	104/151	94/132	81/99	
Baking Evaluation:						
Crumb Grain (scale 1-10)	5.2	5.6	6.4	5.9	6.0	5.5
Crumb Texture (scale 1-10)	6.3	6.6	6.7	6.7	8.0	6.8
Loaf Volume (cc)	749	802	882	813	802	842
% of Area Production:	35	45	20	100	100	

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

Gulf Exportable Average						PNW Exportable Average					
2009 By Protein*				2008 Overall	5-Year Average	2009 By Protein*				2008 Overall	5-Year Average
Low	Med	High	Overall			Low	Med	High	Overall		
60.9	60.4	59.8	60.2	60.1	59.7	61.8	61.9	60.9	61.6	61.3	60.7
80.1	79.5	78.7	79.2	79.1	78.5	81.3	81.3	80.2	81.0	80.6	79.8
0.1	0.1	0.3	0.2	0.4	0.5	0.1	0.1	0.4	0.1	0.1	0.2
0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1
0.9	1.1	1.2	1.0	1.0	1.2	0.7	1.0	1.2	0.9	1.2	1.4
1.1	1.3	1.5	1.3	1.5	1.8	0.7	1.1	1.6	1.0	1.4	1.6
1 HRW	1 HRW	2 HRW	1 HRW	1 HRW	2 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW
0.5	0.5	0.6	0.5	0.6	0.7	0.5	0.4	0.4	0.4	0.5	0.7
11.4	11.3	11.2	11.3	11.0	11.3	11.7	11.7	11.6	11.5	11.1	10.6
11.0/12.4	11.9/13.5	13.3/15.2	12.2/13.8	12.3/14.0	12.5/14.3	10.9/12.4	11.9/13.5	13.2/15.0	11.9/13.5	12.0/13.6	12.4/14.1
1.57/1.83	1.59/1.85	1.63/1.89	1.59/1.85	1.59/1.85	1.56/1.81	1.49/1.73	1.48/1.73	1.63/1.90	1.49/1.73	1.43/1.66	1.51/1.76
31.4	30.2	29.0	30.1	30.3	29.0	32.6	31.6	31.7	32.1	29.5	28.7
71/28/1	64/35/1	58/40/2	63/36/2	57/39/1	56/41/2	75/25/1	66/33/1	68/31/1	69/31/1	54/43/2	51/47/1
67.5	70.5	73.8	70.1	66.9	67.2	66.4	71.3	67.1	67.7	69.0	70.1
31.4	30.2	29.0	30.1	30.3	29.3	32.6	31.6	31.7	32.1	29.5	29.1
2.69	2.65	2.60	2.64	2.30	2.25	2.72	2.68	2.67	2.69	2.20	2.20
46.5	52.9	63.9	55.6	53.9	44.6	48.9	56.9	66.2	58.5	55.1	45.3
406	411	401	411	439	418	395	408	399	402	445	411
71.7	71.2	69.1	70.3	74.5	69.8	72.1	72.1	72.4	72.2	73.6	69.5
92.8	92.7	92.4	92.6	90.5	91.9	92.9	92.8	92.6	92.8	90.6	92.2
-1.7	-1.7	-1.6	-1.7	-1.5	-2.5	-1.7	-1.7	-1.4	-1.6	-1.4	-2.5
9.9	10.1	9.7	9.9	9.7	9.5	10.0	9.9	9.0	9.7	9.5	9.6
9.4/11.0	10.4/12.1	11.9/13.8	10.7/12.4	11.0/12.8	11.2/13.0	9.3/10.8	10.4/12.1	11.8/13.7	10.4/12.1	10.8/12.6	11.3/13.1
0.46/0.54	0.47/0.55	0.46/0.53	0.47/0.54	0.57/0.66	0.51/0.60	0.43/0.50	0.43/0.50	0.43/0.50	0.43/0.50	0.55/0.64	0.49/0.57
23.9	27.5	31.7	28.4	29.1	30.6	24.4	28.5	30.1	28.3	28.6	30.9
98.1	97.3	95.7	96.9	91.6	93.5	97.4	97.5	97.3	97.4	94.0	93.3
#N/A	#N/A	#N/A	#N/A	436	418	#N/A	#N/A	#N/A	#N/A	437	411
>1000	>1000	>1000	>1000	1044	750	>1000	>1000	>1000	>1000	1062	740
5.9	5.9	5.8	5.9		7.4	6.0	6.1	5.7	5.9		7.2
3.1	5.2	6.9	5.5	4.8	5.9	2.6	5.3	6.4	5.1	4.7	6.1
10.4	12.9	15.8	13.3	9.1	10.4	10.0	12.4	15.0	12.2	9.5	11.2
56.0	57.1	58.1	57.1	59.9	58.6	56.5	57.7	57.4	57.2	60.2	59.1
66	68	68	67	83	80	70	73	64	70	107	86
90	97	104	101	89	106	91	90	104	98	72	98
0.75	0.72	0.67	0.67	1.01	0.75	0.79	0.83	0.63	0.74	1.69	0.88
203	222	249	231	238	272	220	239	243	243	261	277
319/507	317/482	330/512	326/513	301/379		324/481	341/491	338/501	338/500	332/425	
14.6/13.3	15.6/14.5	16.3/15.8	15.6/14.6	14.8/14.6		14.7/13.3	15.3/14.4	16.1/16.1	15.3/14.5	14.7/14.3	
85/113	92/123	104/151	95/134	79/96		88/108	95/123	105/154	96/128	86/104	
5.1	5.6	6.5	6.0	6.4	5.9	5.3	5.7	6.7	5.6	4.7	5.1
6.2	6.6	6.7	6.6	8.0	6.9	6.3	6.6	6.8	6.8	7.5	6.7
749	801	883	815	802	843	728	791	872	795	784	837
35	44	21	100	100		38	43	19	100	100	

HARD RED WINTER | CALIFORNIA AND EXPORT DATA

Hard Red Winter	California Harvest Data				Export Cargo Data			
	Medium Protein Average		High Protein Average		Gulf		PNW	
	2009	2008	2009	2008	2009	2008	2009	2008
Wheat Grade Data:								
Test Weight (lb/bu)	62.8	63.8	62.2	63.6	60.7	60.4	62.2	61.7
(kg/hl)	82.5	83.9	81.8	83.6	79.8	79.4	81.8	81.2
Damaged Kernels (%)	0.2	0.0	0.0	0.0	1.3	1.3	0.1	0.2
Foreign Material (%)	0.1	0.1	0.1	0.0	0.3	0.3	0.1	0.1
Shrunken & Broken (%)	0.5	0.5	0.6	0.4	1.4	1.5	1.8	1.6
Total Defects (%)	0.8	0.5	0.7	0.5	3.0	3.1	2.0	1.9
Grade	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	2 HRW	1 HRW	1 HRW
Wheat Non-Grade Data:								
Dockage (%)	0.8	0.7	0.8	0.8	0.7	0.7	0.3	0.3
Moisture (%)	8.6	8.0	8.8	7.9	11.2	11.5	10.2	10.6
Protein (%) 12%/0% moisture basis	11.8/13.5	12.0/13.6	13.1/14.9	13.3/15.1	11.9/13.5	12.0/13.6	11.9/13.6	11.9/13.5
Ash (%) 14%/0% moisture basis	1.44/1.67	1.45/1.68	1.50/1.75	1.46/1.69	1.55/1.80	1.56/1.82	1.40/1.62	1.44/1.67
1000 Kernel Weight (g)	40.8	45.1	40.1	44.0	28.5	28.7	28.1	28.2
Kernel Size (%) lg/md/sm					67/32/2	66/32/2	57/41/2	61/37/2
Single Kernel: Hardness					70.0	69.9	76.2	75.2
Weight (mg)					28.3	28.9	28.6	29.1
Diameter (mm)					2.32	2.35	2.29	2.32
Sedimentation (cc)					28.9	27.4	36.3	34.5
Falling Number (sec)					404	415	404	417
Flour Data:								
Lab Mill Extraction (%)	73.2	73.6	73.2	75.2	69.8	72.4	70.0	72.5
Color: L*					92.9	92.7	93.3	92.9
a*					-3.1	-3.1	-3.2	-3.2
b*					8.2	8.8	8.2	8.9
Protein (%) 14%/0% moisture basis	10.3/12.0	10.6/12.4	11.5/13.4	12.0/14.0	10.5/12.2	10.7/12.4	10.6/12.4	10.8/12.5
Ash (%) 14%/0% moisture basis	0.43/0.51	0.44/0.52	0.44/0.51	0.42/0.49	0.50/0.58	0.50/0.58	0.47/0.55	0.49/0.57
Wet Gluten (%)	27.8	27.3	31.5	32.2	28.3	28.0	28.8	28.5
Gluten Index					96.9	94.8	96.5	94.2
Falling Number (sec)	444	400	445	434	460	448	448	438
Amylograph Viscosity 65 g (BU)					702	667	711	651
Starch Damage (%)								
Dough Properties:								
Farinograph:								
Peak Time (min)	5.9	6.6	6.4	8.0	6.2	5.8	6.7	5.8
Stability (min)	15.6	16.5	15.9	17.2	12.4	10.9	15.1	10.3
Absorption (%)	61.2	60.5	61.3	62.5	58.3	57.5	59.3	58.8
Alveograph: P (mm)								
L (mm)					112	101	125	114
P/L Ratio					79	80	75	77
W (10 ⁻⁴ joules)					1.42	1.26	1.66	1.47
Extensograph: Resistance (BU)					309	285	341	311
(45/135 min) Extensibility (cm)								
Area (sq cm)								
Baking Evaluation:								
Crumb Grain (scale 1-10)					6.0	6.6	6.2	6.7
Crumb Texture (scale 1-10)					6.3	6.9	6.5	6.9
Loaf Volume (cc)	859	849	922	941	772	824	748	837
Number of Samples					91	282	33	65

NINE STATES SURVEYED

California • Colorado • Kansas

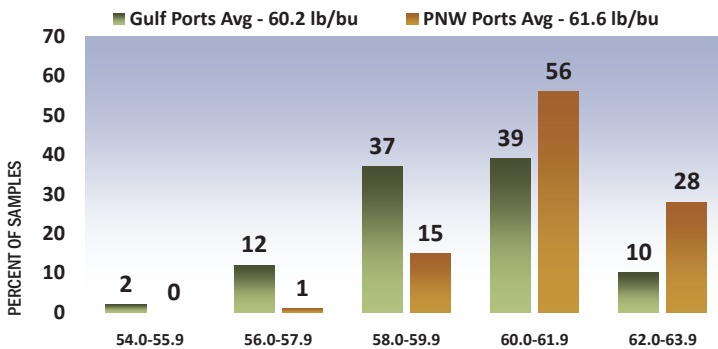
Montana • Nebraska • Oklahoma

South Dakota • Texas • Wyoming



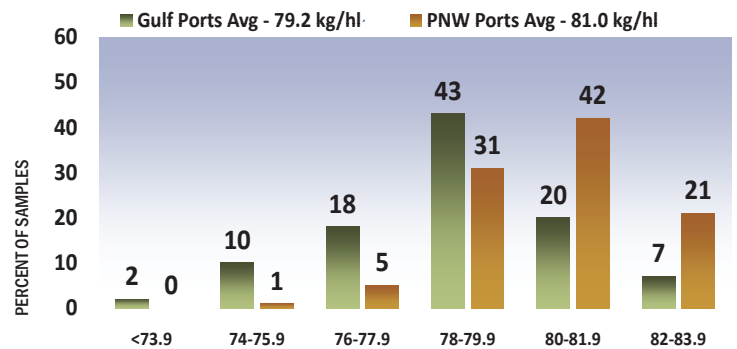
TEST WEIGHT

Pounds/Bushel



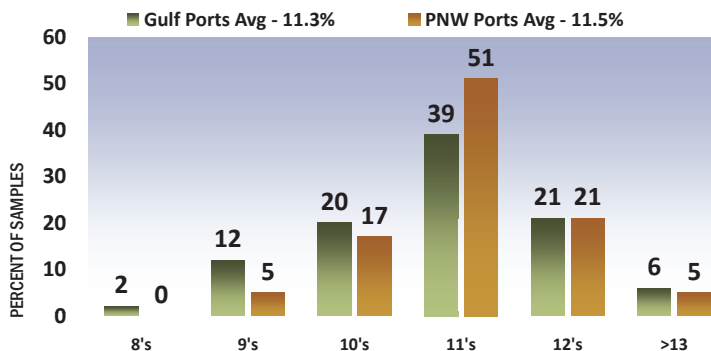
HECTOLITER WEIGHT

Kilograms/Hectoliter



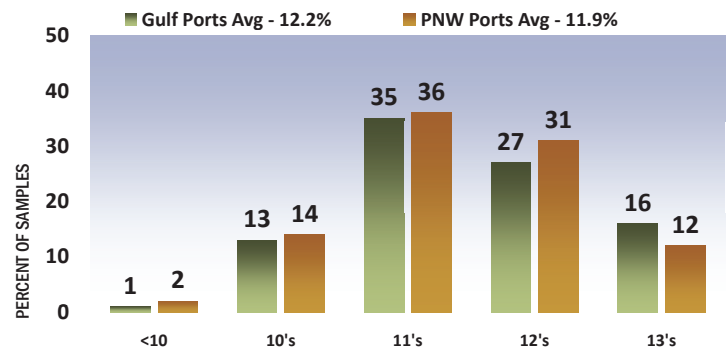
WHEAT MOISTURE

Percent



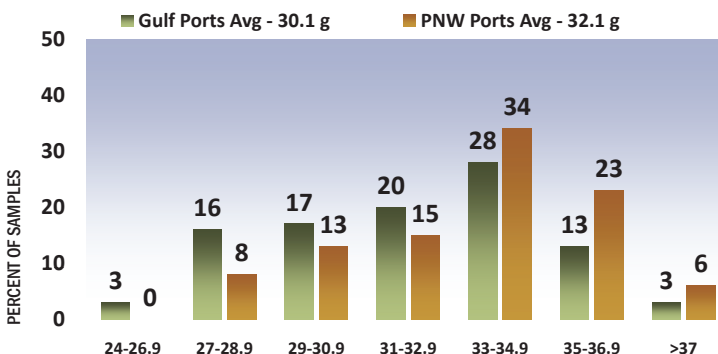
PROTEIN (12% MB)

Percent



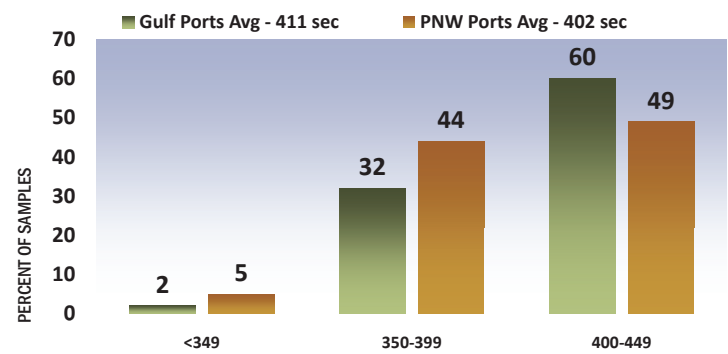
1000 KERNEL WEIGHT

Grams



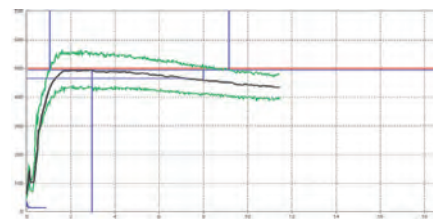
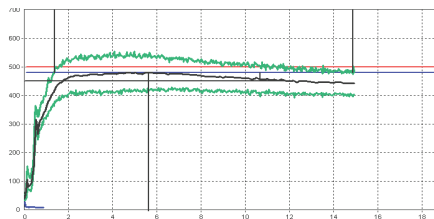
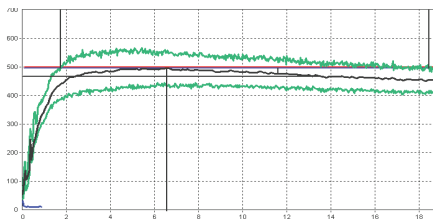
FALLING NUMBER

Seconds

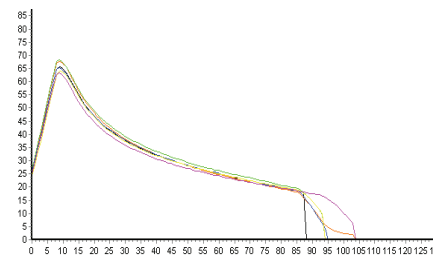
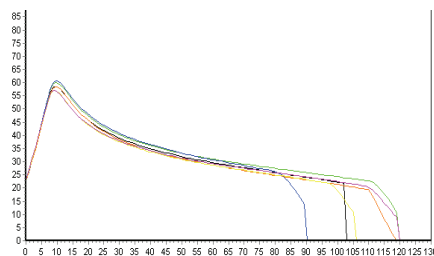
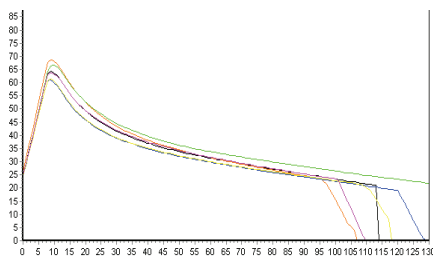


HARD RED WINTER | PHYSICAL DOUGH PROPERTIES

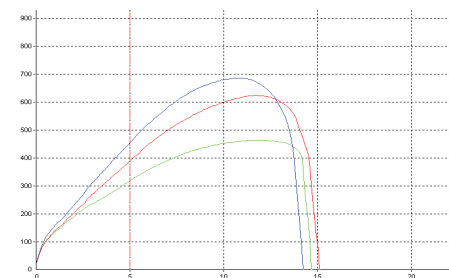
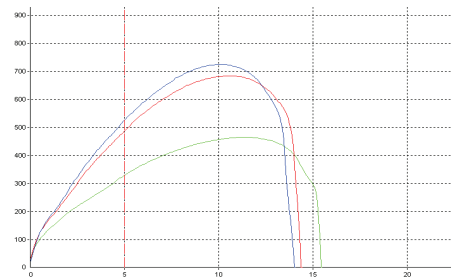
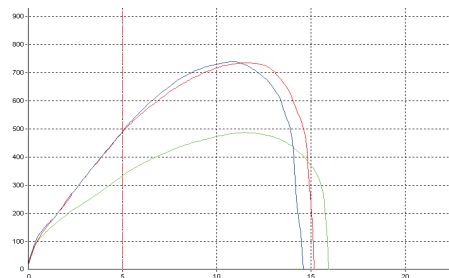
FARINOGRAMS*



ALVEOGRAMS



EXTENSOGRAMS



HIGH PROTEIN

MEDIUM PROTEIN

LOW PROTEIN

*Representing 2009 Composite Average



Hard Red Winter Production

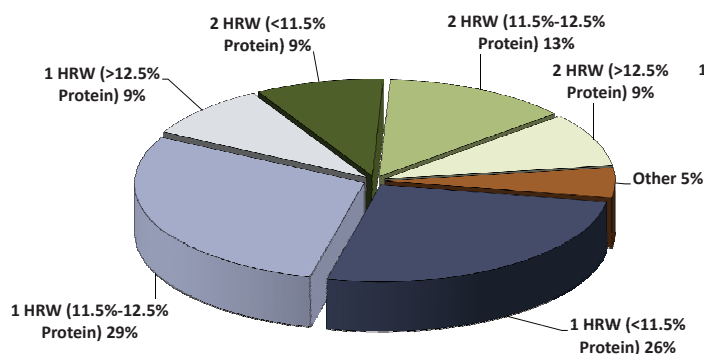
for the major growing region (million metric tons)

	2009	2008	2007	2006	2005
California	0.5	0.8	0.4	0.3	0.5
Colorado	2.5	1.4	2.4	1.0	1.3
Kansas	9.9	9.4	7.5	7.8	9.9
Montana	2.4	2.5	2.2	2.2	2.5
Nebraska	2.1	2.0	2.3	1.6	1.8
Oklahoma	2.1	4.4	2.6	2.2	3.4
South Dakota	1.7	2.8	2.6	1.1	1.8
Texas	1.6	2.6	3.7	0.9	2.4
Wyoming	0.1	0.1	0.1	0.1	0.1
Nine-State Total	22.9	26.0	23.7	17.2	23.9
Total HRW Production	25.0	28.2	26.0	18.6	25.3

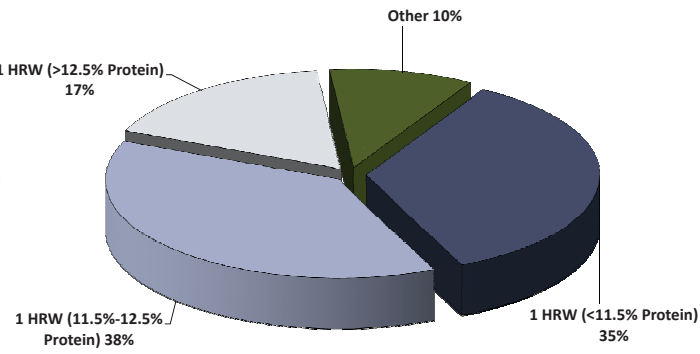
Based on USDA crop estimates of September 30, 2009.

PROTEIN DISTRIBUTION

GULF EXPORTABLE



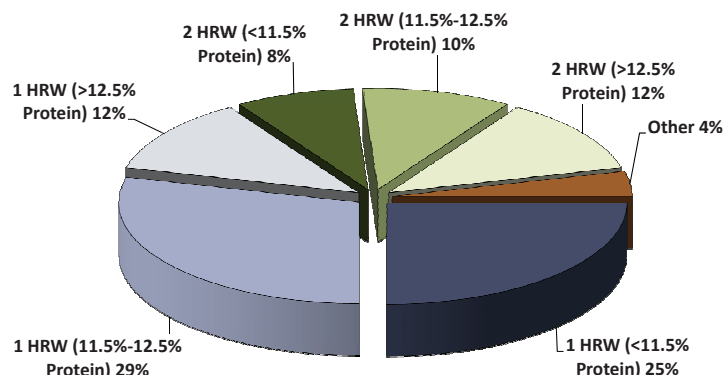
PNW EXPORTABLE



ABOUT HARD RED WINTER WHEAT

U.S. hard red winter wheat has 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.

OVERALL



HARVEST SURVEY

Weather and Harvest: Planting of the 2009 hard red spring wheat (HRS) crop was significantly delayed and planted area reduced by heavy late snows, a cool spring and areas of flooding. Planting began in mid-April, remained about three weeks behind normal throughout May, and was not completed in northern areas until mid-June. However, the wet spring provided much improved subsoil and topsoil moisture in western areas compared to 2008. Warmer temperatures and continued precipitation in late June and early July boosted crop development and supported outstanding yield prospects in many areas. Unusually cool temperatures in the second half of the growing season sustained the crop in drier areas, limited disease in wetter areas and provided for very balanced, excellent crop ratings across the region. The cool growing season delayed crop maturity. Harvest started in early August, two to three weeks behind normal, and remained behind normal throughout August with continuing cool weather. Above normal temperatures accelerated harvest in the latter half of September, and most areas completed harvest by the end of 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 739 samples were collected from fields, at bin sites on farm or at elevators during harvest in Minnesota (118), Montana (158), North Dakota (376) and South Dakota (87). The samples represent approximately 95% of the HRS crop 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 2009 crop averages Grade #1 Northern Spring, and the volume produced is about eight percent larger than 2008. The crop boasts outstanding kernel size and weight with near zero damaged kernels. Nearly 90% of the crop grades #1 with an average test weight of 61.6 lb/bu (81 kg/hl) and average total damage of 0.1%. Improved growing conditions across western areas this year produced consistently high test weights region wide. The more favorable conditions for kernel fill and development reduced shrunken and broken kernels and produced a high average thousand kernel weight of 33.4 grams.

The average protein content is well below normal due to the above-average yields in most areas and cool summer temperatures. The overall average is 13.2%, about 1.1 percentage points below last year and the five-year average. Average protein of 13.7% in the PNW exportable region is somewhat higher compared with 12.9% in the Gulf/Great Lakes region, but overall only 35% of the crop is greater than 14% protein in 2009, compared with 63% in 2008. The lower protein is creating historically wide protein price spreads, with buyers who require higher protein levels facing added

premiums while those who can use a protein content below traditional HRS levels finding tremendous value.

The crop has slightly higher average moisture content of 12.7% compared to 12% last year as a result of the delayed crop maturity and prolonged harvest. Falling number values are quite high, however, averaging 374 seconds compared to 379 last year, and 86% of the 2009 crop is above 350 seconds.

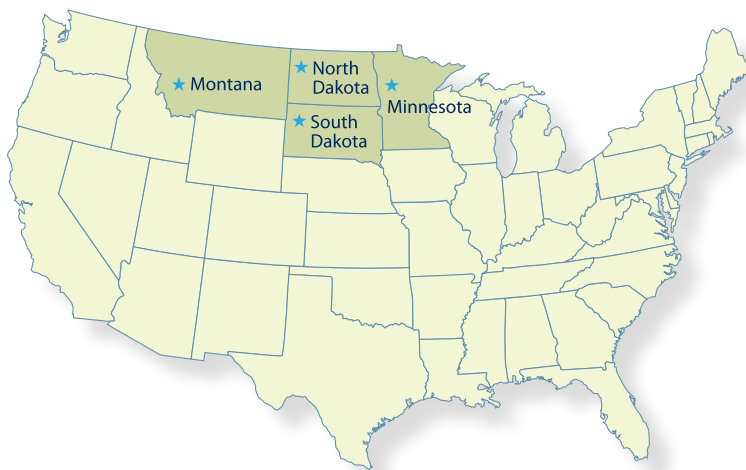
Flour and Baking Data: Buhler laboratory mill flour extraction averages 68.7%, down about one-half percentage point from last year, but similar to the five-year average. Flour ash averages 0.5%, similar to last year, but the PNW values are notably lower than 2008 whereas the Gulf/Great Lakes region has slightly higher flour ash.

Dough handling properties are good given the lower protein content of the crop. The average farinograph absorption of 66.5% is similar to last year and above the five-year average. The average absorption for the PNW region is 67.8%, about 1 point higher than last year while the Gulf/Great Lakes region averages 65.5%, about 1 point below last year. Farinograph stability values suggest that dough strength is weaker than traditionally expected. The average is 10.1 minutes, compared to 11.1 last year and a five-year average of 17.1 minutes. The unusually cool summer temperatures which limited crop stress and the very high crop yields contributed to the weaker dough properties. There is less variance in dough stability from east to west and across protein ranges this year. The average farinograph stability is 10.6 minutes in the PNW and 9.7 minutes in the Gulf/Great Lakes. PNW buyers will likely notice a more appreciable drop in dough strength compared to the 2008 crop and five-year averages.

The average Alveograph W-value is 387, lower than both last year and the five-year average. W-values are higher in the PNW region compared to the Gulf/Great Lakes, but have a

FOUR STATES SURVEYED

Minnesota • Montana • North Dakota • South Dakota



strong correlation with protein content. The average P/L ratio is 0.93, similar to 2008 but down from the five-year average. The Extensograph shows more extensible dough compared to 2008 but still slightly less than the five-year average. Resistance is down from both last year and the five-year average.

Baking crumb grain and texture scores are slightly lower than 2008 but still up from the five-year average. The Gulf/Great Lakes region has slightly higher scores than the PNW. Average loaf volume is 916 cc, lower than both last year and the five-year average, due to the reduced protein levels in the crop. Loaf volume increases with protein content across the region, however, and volumes are slightly larger in the PNW region.

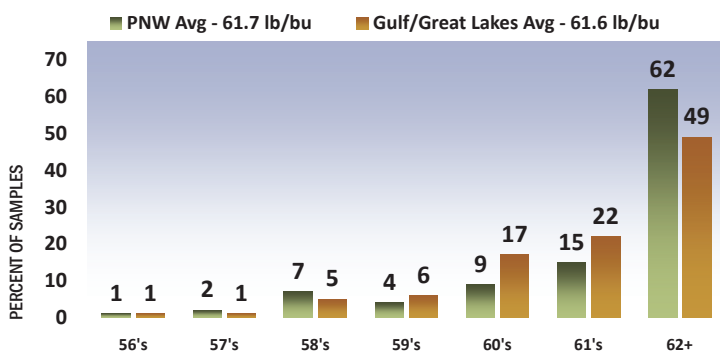
Summary: Buyers will certainly appreciate the larger supply, outstanding test weights and exceptional overall grade quality in the 2009 crop. The lower average protein will be the biggest challenge for buyers, especially those demanding high protein levels to meet their end-product needs. Higher than normal protein premiums are likely throughout the marketing year. On the other hand, buyers who can use lower protein levels will find tremendous value in this year's crop which is still producing high absorption rates and very good bake quality. As with most years, buyers are encouraged to work closely with their suppliers to establish contract specifications that will provide them with the wheat they need at the best value.

Continued on next page



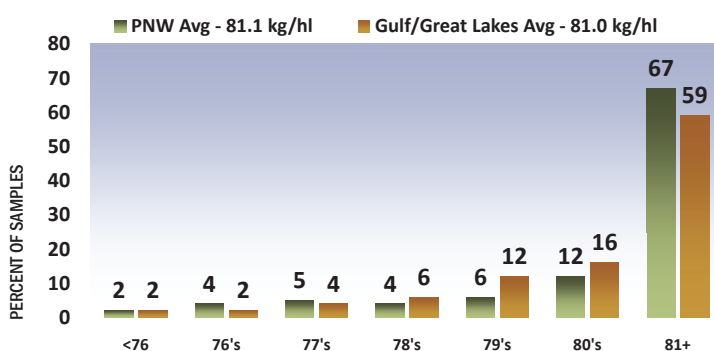
TEST WEIGHT

Pounds/Bushel



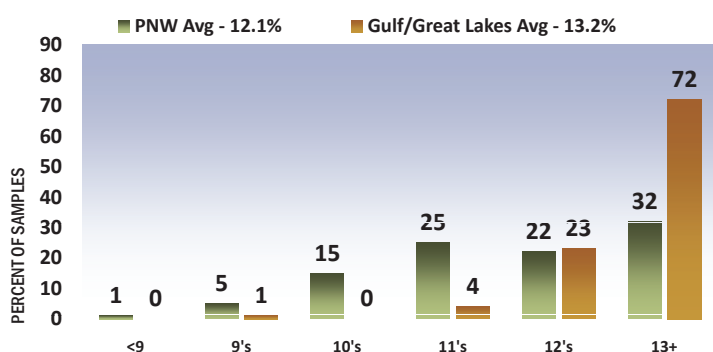
HECTOLITER WEIGHT

Kilograms/Hectoliter



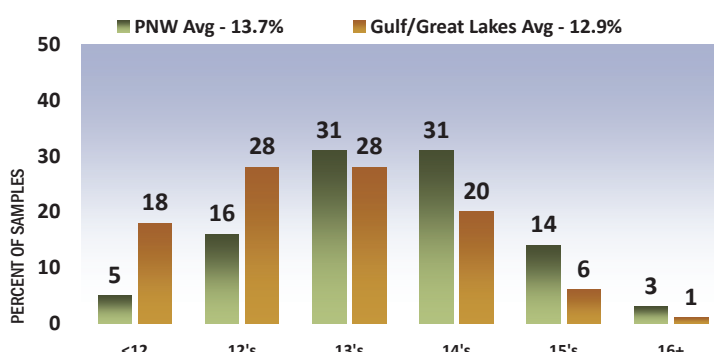
WHEAT MOISTURE

Percent



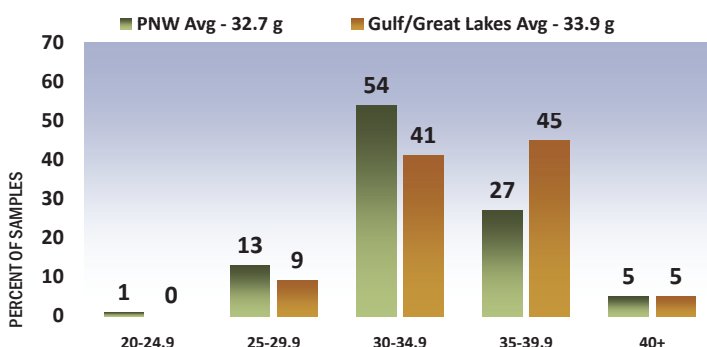
PROTEIN (12% MB)

Percent



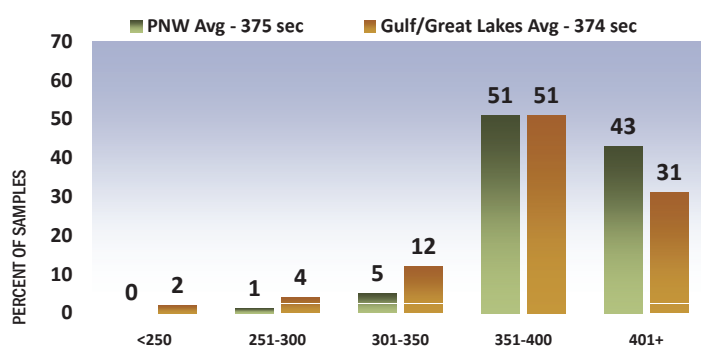
1000 KERNEL WEIGHT

Grams



FALLING NUMBER

Seconds



HARD RED SPRING | HARVEST DATA

EXPORT CARGO SURVEY

The export cargo data represents 360 individual subplot samples provided by USDA's Federal Grain Inspection Service for crop years 2008 (collected from October 2008 through July 2009) and 2007. Of 152 2008-crop samples, 105 were from PNW, 14 from Lakes, and 33 from Gulf ports. Grade data are the official grades on the individual subplots. Milling and baking analyses were conducted by North Dakota State University.



Hard Red Spring	Composite Average					
	2009 By Protein*				2008 Overall	5-year Average
	Low	Med	High	Overall		
Wheat Grade Data:						
Test Weight (lb/bu)	61.8	61.7	61.1	61.6	60.8	60.7
(kg/hl)	81.2	81.1	80.3	81.0	80.0	79.9
Damaged Kernels (%)	0.1	0.1	0.3	0.1	0.1	0.3
Foreign Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Shrunken & Broken (%)	0.8	0.8	0.8	0.8	1.4	1.4
Total Defects (%)	0.9	0.9	1.2	0.9	1.5	1.8
Vitreous Kernels (%)	62.5	78.6	81.3	70.9	67.2	74.4
Grade	1 NS	1 DNS	1 DNS	1 NS	1 NS	1 NS
Wheat Non-Grade Data:						
Dockage (%)	0.8	0.6	0.3	0.6	0.6	0.8
Moisture (%)	13.0	12.8	12.1	12.7	11.9	12.0
Protein (%) 12%/0% moisture basis	12.2/13.9	13.8/15.7	15.1/17.2	13.2/15.1	14.3/16.3	14.4/16.4
Ash (%) 14%/0% moisture basis	1.52/1.77	1.52/1.77	1.58/1.83	1.53/1.78	1.54/1.79	1.60/1.86
1000 Kernel Weight (g)	33.5	33.6	32.6	33.4	33.6	30.8
Kernel Size (%) lg/md/sm	62/37/1	59/40/1	53/44/2	59/39/2	46/50/4	48/45/7
Single Kernel: Hardness	79.9	77.6	73.5	78.0	76.4	79.5
Weight (mg)	35.5	35.7	34.9	35.4	34.5	32.8
Diameter (mm)	2.88	2.86	2.84	2.86	2.85	2.41
Sedimentation (cc)	49.6	67.4	65.7	58.0	55.0	58.4
Falling Number (sec)	371	366	393	374	379	398
Flour Data:						
Lab Mill Extraction (%)	69.0	68.8	67.9	68.7	69.2	68.9
Color: L*	90.4	90.3	90.0	90.3	90.3	91.0
a*	-1.1	-1.1	-0.9	-1.1	-1.1	-1.3
b*	9.6	9.8	9.7	9.7	9.9	9.5
Protein (%) 14%/0% moisture basis	11.3/13.2	12.8/14.9	14.2/16.5	12.3/14.3	13.3/15.5	13.3/15.5
Ash (%) 14%/0% moisture basis	0.50/0.58	0.49/0.57	0.50/0.58	0.50/0.58	0.51/0.60	0.48/0.56
Wet Gluten (%)	30.4	35.5	40.5	33.8	35.5	35.6
Gluten Index	97.8	91.9	85.2	93.7	91.7	90.2
Falling Number (sec)	391	388	448	401	390	412
Amylograph Viscosity: 65g (BU)	585	580	697	604	662	696
100g (BU)	2045	2020	2612	2144	2390	2513
Starch Damage (%)	7.8	7.5	6.6	7.5	7.4	7.6
Dough Properties:						
Farinograph:						
Peak Time (min)	5.6	7.5	7.5	6.5	6.9	9.2
Stability (min)	10.0	9.7	10.9	10.1	11.1	17.1
Absorption (%)	65.3	67.3	68.2	66.5	66.8	65.8
Classification	5.0	5.0	4.7	4.9	5.1	6.3
Alveograph: P (mm)	108	100	98	104	109	115
L (mm)	99	121	133	112	117	108
P/L Ratio	1.10	0.83	0.74	0.93	0.94	1.08
W (10 ⁻⁴ joules)	376	390	414	387	421	433
Extensograph: Resistance (BU)	401/489	367/380	322/339	376/428	432/595	485/576
(45/135 min) Extensibility (cm)	18.5/17.4	19.0/18.7	20.8/20.3	19.1/18.3	18.8/18.4	19.7/19.2
Area (sq cm)	99/112	95/97	94/95	97/104	108/143	122/139
Baking Evaluation:						
Absorption (%)	63.8	65.8	66.7	65.0	65.3	64.3
Crumb Grain and Texture	8.4	8.5	8.5	8.4	8.7	8.1
Loaf Volume (cc)	889	925	979	916	982	1016
% Area Production:	51	30	19	100		

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

PNW Average						Gulf/Great Lakes Average					
2009 By Protein*				2008 Overall	5-year Average	2009 By Protein*				2008 Overall	5-year Average
Low	Med	High	Overall			Low	Med	High	Overall		
62.4	61.7	60.8	61.7	59.9	60.0	61.5	61.7	61.6	61.6	61.6	61.3
82.0	81.1	80.0	81.1	78.8	78.9	80.9	81.1	81.0	81.0	81.0	80.6
0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	1.0	0.2	0.2	0.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.1	0.9	0.9	1.0	2.1	1.8	0.7	0.7	0.7	0.7	0.8	1.2
1.1	0.9	0.9	1.0	2.2	1.9	0.8	0.9	1.7	0.9	1.0	1.7
78.0	87.0	91.0	85.0	80.7	87.4	56.0	71.0	61.0	60.6	56.3	64.6
1 DNS	1 DNS	1 DNS	1 DNS	1 DNS	1 DNS	1 NS	1 NS	1 NS	1 NS	1 NS	1 NS
0.5	0.6	0.3	0.5	0.8	0.8	0.9	0.6	0.4	0.8	0.4	0.7
12.2	12.2	11.8	12.1	11.1	11.2	13.3	13.3	12.7	13.2	12.5	12.6
12.3/13.9	13.8/15.7	15.2/17.3	13.7/15.5	14.9/16.9	14.9/17.0	12.2/13.9	13.9/15.8	14.9/16.9	12.9/14.7	13.9/15.8	14.1/16.0
1.45/1.69	1.46/1.70	1.54/1.79	1.48/1.72	1.51/1.76	1.58/1.84	1.55/1.80	1.57/1.82	1.67/1.94	1.57/1.82	1.55/1.81	1.62/1.88
33.1	32.5	32.4	32.7	32.7	29.3	33.7	34.6	32.9	33.9	34.3	32.0
54/44/2	53/45/2	50/48/2	52/46/2	30/64/6	36/54/10	65/34/1	64/35/1	60/37/3	64/35/1	59/39/1	58/38/4
81.7	78.3	73.8	78.1	76.1	80.1	79.2	77.1	73.0	78.0	76.7	79.2
34.6	35.3	34.8	34.9	32.7	31.6	35.8	36.1	35.0	35.8	35.9	33.8
2.83	2.82	2.81	2.82	2.76	2.33	2.90	2.89	2.89	2.89	2.92	2.48
63.0	69.0	67.0	66.2	60.2	61.4	44.0	66.0	63.0	52.0	50.7	56.2
375	356	395	375	372	406	370	376	389	374	385	393
68.3	69.1	67.8	68.4	68.8	68.4	69.3	68.6	68.2	69.0	69.6	69.2
90.5	90.3	90.2	90.4	90.3	91.1	90.3	90.3	89.7	90.2	90.3	91.0
-1.1	-1.1	-1.0	-1.1	-1.1	-1.2	-1.1	-1.0	-0.9	-1.0	-1.1	-1.3
9.8	10.0	9.8	9.9	9.8	9.3	9.5	9.7	9.7	9.6	9.9	9.6
11.5/13.4	12.9/15.0	14.5/16.8	12.9/15.0	14.0/16.2	13.9/16.1	11.3/13.1	12.7/14.8	13.7/15.9	11.9/13.8	12.8/14.9	12.9/15.0
0.46/0.53	0.45/0.52	0.48/0.56	0.46/0.53	0.51/0.59	0.48/0.56	0.52/0.60	0.53/0.62	0.54/0.63	0.53/0.62	0.51/0.60	0.49/0.56
31.9	35.0	41.2	35.8	37.4	36.7	29.8	36.0	39.0	32.4	33.9	34.7
96.4	95.0	87.6	93.3	90.7	91.6	98.4	89.1	80.2	94.0	92.4	89.4
401	405	464	421	393	428	387	372	414	386	388	400
690	700	765	716	660	782	540	470	555	523	664	633
2470	2480	2860	2591	2434	2806	1865	1600	2095	1817	2355	2298
7.9	7.4	6.6	7.3	7.3	7.5	7.8	7.5	6.7	7.6	7.5	7.7
7.0	8.0	8.5	7.8	8.1	11.9	5.0	7.0	5.5	5.6	6.0	7.2
10.0	10.5	11.5	10.6	13.4	21.2	10.0	9.0	9.5	9.7	9.3	14.1
66.7	67.9	68.9	67.8	66.8	66.1	64.7	66.7	66.7	65.5	66.8	65.6
5.0	5.0	5.0	5.0	5.6	6.6	5.0	5.0	4.0	4.9	4.7	6.1
120	110	103	111	113	121	103	90	88	98	105	110
90	111	140	112	123	109	103	130	117	112	113	107
1.33	0.99	0.73	0.99	0.93	1.13	1.00	0.69	0.75	0.88	0.94	1.05
387	419	462	420	473	471	371	364	315	363	378	404
423/491	389/404	335/364	385/423	489/719	529/651	392/488	346/358	296/288	369/431	386/494	453/522
17.4/17.3	18.9/20.3	22.0/21.2	19.3/19.5	18.9/18.8	19.8/19.4	18.9/17.5	19.1/17.2	18.2/18.5	18.9/17.5	18.7/18.2	19.6/18.9
97/114	98/111	102/105	99/110	122/175	134/160	100/111	92/84	76/74	95/100	97/117	113/123
65.2	66.4	67.4	66.3	65.3	64.6	63.2	65.2	65.2	64.0	65.3	64.1
8.0	8.5	8.5	8.3	8.8	8.2	8.5	8.5	8.5	8.5	8.7	8.1
868	935	988	927	996	1023	898	915	960	909	971	1012
36	34	30	100			62	27	11	100		

HARD RED SPRING | EXPORT CARGO DATA

Hard Red Spring	PNW Average		Great Lakes Average		Gulf Average	
	2008	2007	2008	2007	2008	2007
Wheat Grade Data:						
Test Weight (lb/bu)	61.6	61.4	62.6	61.8	61.9	61.1
(kg/hl)	81.0	80.7	82.3	81.3	81.3	80.4
Damaged Kernels (%)	0.5	0.2	1.2	1.2	1.1	1.6
Foreign Material (%)	0.1	0.1	0.1	0.1	0.1	0.2
Shrunken & Broken (%)	1.2	1.6	1.1	1.3	0.8	1.3
Total Defects (%)	1.8	2.0	2.4	2.6	2.1	3.0
Vitreous Kernels (%)	74.5	82.3	47.5	52.7	53.7	56.6
Grade	1 NS	1 DNS	1 NS	1 NS	1 NS	2 NS
Wheat Non-Grade Data:						
Dockage (%)	0.3	0.3	0.6	0.6	0.7	0.7
Moisture (%)	11.6	11.1	12.3	12.2	12.7	12.6
Protein (%) 12%/0% moisture basis	14.0/15.9	14.3/16.2	13.7/15.6	14.2/16.1	13.7/15.6	14.1/16.0
Ash (%) 14%/0% moisture basis	1.52/1.76	1.59/1.85	1.57/1.82	1.64/1.91	1.57/1.83	1.65/1.92
1000 Kernel Weight (g)	33.6	31.7	33.1	31.6	32.7	32.0
Kernel Size (%) lg/md/sm	52/48/3	21/60/23	59/40/2	40/52/10	59/42/2	34/50/18
Single Kernel: Hardness	76.8	79.8	79.6	80.9	79.1	79.7
Weight (mg)	31.5	29.5	31.1	29.5	31.5	29.5
Diameter (mm)	2.48	2.38	2.51	2.43	2.52	2.41
Sedimentation (cc)						
Falling Number (sec)	398	434	387	412	400	402
Flour Data:						
Lab Mill Extraction (%)	70.1	69.0	70.1	68.7	70.4	69.5
Color: L*	90.3	90.8	90.0	90.8	89.9	90.5
a*	-0.9	-1.1	-1.1	-1.3	-1.0	-1.1
b*	9.3	8.9	9.7	9.3	9.7	9.3
Protein (%) 14%/0% moisture basis	13.0/15.1	13.3/15.4	12.5/14.6	13.0/15.1	12.6/14.7	13.0/15.2
Ash (%) 14%/0% moisture basis	0.54/0.63	0.51/0.59	0.54/0.63	0.50/0.58	0.57/0.66	0.54/0.63
Wet Gluten (%)	34.9	35.2	33.5	34.4	34.0	34.6
Gluten Index	89.6	89.3	90.6	92.6	89.5	91.3
Falling Number (sec)	448	459	416	428	427	422
Amylograph Viscosity: 65g (BU)	623	800	592	690	638	617
100g (BU)						
Starch Damage (%)						
Dough Properties:						
Farinograph:						
Peak Time (min)	7.2	8.6	6.9	8.1	6.7	7.8
Stability (min)	11.0	18.7	12.5	17.1	11.5	15.2
Absorption (%)	67.2	65.2	66.1	65.2	67.4	64.5
Classification	5.1	6.5	5.6	6.3	5.2	6.0
Alveograph: P (mm)						
L (mm)	107	115	110	117	110	109
P/L Ratio	1.00	1.15	1.11	1.21	1.11	1.09
W (10 ⁻⁴ joules)	384	410	375	413	374	379
Extensograph: Resistance (BU)						
(45/135 min) Extensibility (cm)						
Area (sq cm)						
Baking Evaluation:						
Absorption (%)	64.7	65.2	63.8	65.5	64.2	64.2
Crumb Grain and Texture	8.9	9.2	9.0	9.0	8.8	8.9
Loaf Volume (cc)	968	953	928	945	954	939
Sample Count:	105	134	14	26	33	48

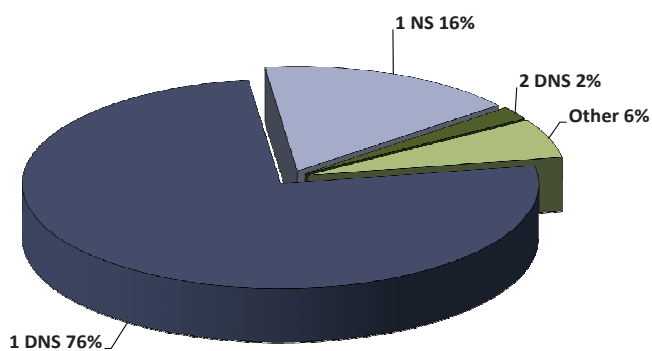
Hard Red Spring Production

for the major producing states (million metric tons)

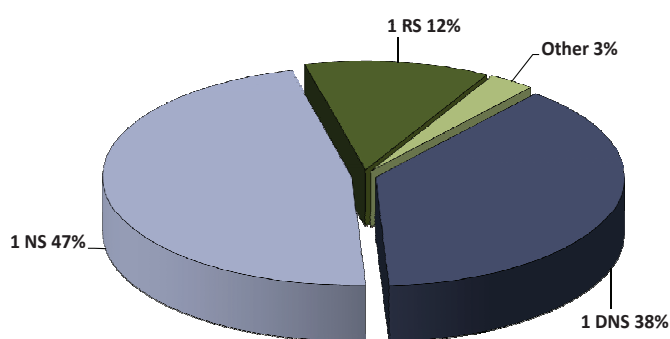
	2009	2008	2007	2006	2005
Minnesota	2.3	2.7	2.1	2.1	1.9
Montana	1.9	1.6	1.5	1.7	2.2
North Dakota	7.9	6.7	6.4	5.8	6.1
South Dakota	1.8	1.9	1.4	1.2	1.8
Four-State Total	13.9	12.9	11.4	10.8	12.1
Total HRS Production	15.0	13.9	12.2	11.8	12.7

Based on USDA crop estimates of September 30, 2009.

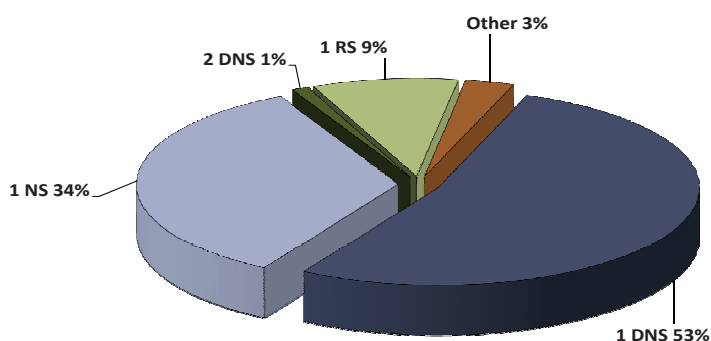
PNW



GULF/GREAT LAKES



OVERALL

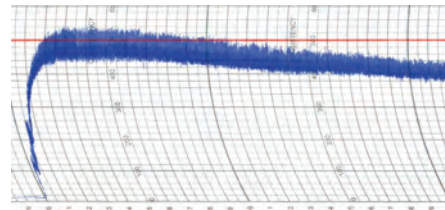
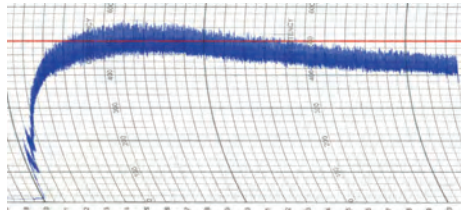
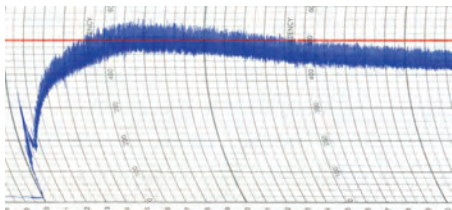


ABOUT HARD RED SPRING WHEAT

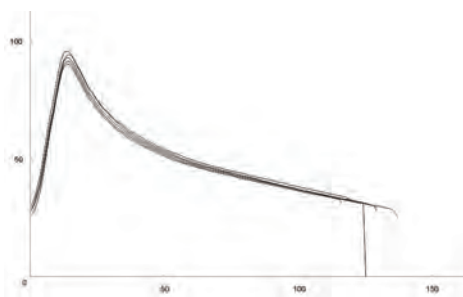
Highest protein content, hard endosperm, red bran, strong gluten, high water absorption. Used in pan breads, hearth breads, rolls, croissants, bagels, hamburger buns, pizza crust and for blending.



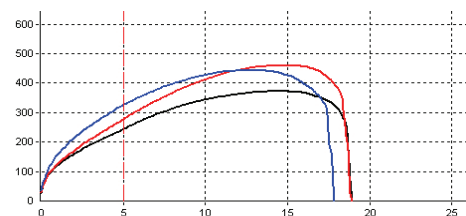
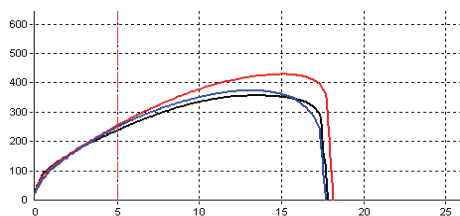
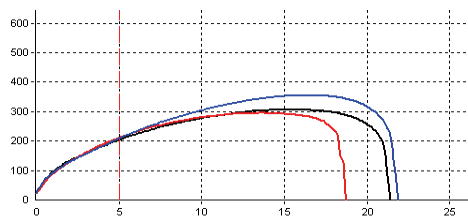
FARINOGRAMS*



ALVEOGRAMS



EXTENSOGRAMS



HIGH PROTEIN

MEDIUM PROTEIN

LOW PROTEIN

*Representing 2009 Composite Average



HARVEST SURVEY

Hard white wheat (HW) is primarily grown in the states of 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 the USDA report (Sept 30, 2009), the total 2009 HW production is estimated at 707,500 metric tons (MT), a slight decrease from last year's 790,000 MT.

Survey Methods: HW samples were collected from four regions: Pacific Northwest (PNW), California, Southern Plains, and Northern Plains. Samples from the PNW were collected by USDA's National Agricultural Statistics Service and submitted from the University of Idaho Wheat Breeding Program. Samples from the three other regions were sent directly to the Wheat Marketing Center by 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 the Wheat Marketing Center (WMC), Portland, Oregon.

HW samples were made into six composite samples, based on four regions (PNW, California, Southern Plains, and Northern Plains) and four 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 AACC International Approved Methods (11th 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 WMC during the US Wheat Associates' Asian Products Collaborative Program.

Wheat and Grade Data: All samples graded US No. 1 with test weights from 60.8 to 63.9 lb/bu (80.0 to 84.0 kg/hl). Wheat moisture content was in the range of 8.0-11.4%; PNW and California composites had lower wheat moisture than the Southern Plains and Northern Plains. The California composite had the highest thousand-kernel weight. Falling numbers were 343 seconds or above, indicating sound grain.

Flour, Dough and Baking Data: Buhler laboratory mill straight grade flour extractions ranged from 72.0 to 73.7% and flour ash contents varied from 0.51 to 0.53%. These suggest that this year's HW has good milling performance.

Flour wet gluten contents were from 27.5% to 40.3%, which were generally related to the flour protein contents. Amylograph peak viscosities were between 473 and 652 BU. Starch damage values were in the range of 7.1 to 9.2%, higher than previous years. Lactic acid SRC values showed good gluten strength for bread baking.

Farinograph absorption ranged from 61.3 to 67.3%, higher than in previous years, possibly related to higher starch

damage levels. Farinograph stability times were 8.0-8.5 minutes for samples from the Southern Plains, and 11.0 minutes or longer for samples from three other regions, showing typically strong dough characteristics of HW wheat. HW usually has similar farinograph water absorption to HRW, but the stability time is much longer indicating more tolerance to overmixing. The ranges of alveograph values were: 96-128 mm for P values; 85-169 mm for L values; and 241-651 for W values. Extensograph data at 135-minute resting showed that maximum resistance was in the range of 501-1,075 BU, and extensibility was from 11.0-17.9 cm.

Most samples showed good baking performance with the bake absorption in the range of 64.7-69.5%, loaf volume from 766 to 963 cc, and the crumb grain and texture scores of 6.0-7.5 points

Noodle Evaluation: HW flours and a control flour were evaluated for both Chinese raw noodles (white salted) and Chinese wet noodles (yellow alkaline). Chinese raw noodle color stability was acceptable for the low and medium protein composite samples from the PNW and the Southern Plains, but was duller for the medium protein composite from California, the high protein composite from the PNW, and the very high protein composite from the Northern Plains. The boiled noodle texture was generally acceptable for the medium protein composites from California and the Southern Plains, the high protein composite from PNW, and the very high protein composite from the Northern Plains. Generally noodle texture is associated with the flour protein content with the higher protein giving harder noodle bite, but the noodle color acceptability has a negative relationship with the flour protein content.

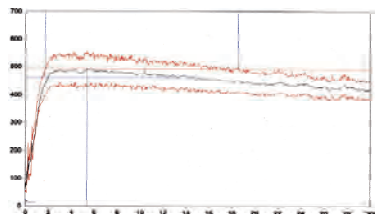
Chinese wet noodle color stability was acceptable for PNW and Southern Plains composite samples. California and Northern Plains samples showed greater discoloration of uncooked noodles during 24-hour storage. The texture of cooked Chinese wet noodles was acceptable for the medium protein composites from California and the Southern Plains, and the very high protein composite from the Northern Plains. Other composites had much lower firmness values than the control sample.

Steamed Bread Evaluation: 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 high protein composite from the PNW because of smaller specific volume and duller color.

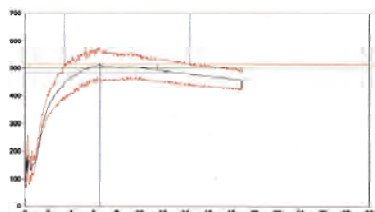
Summary: This year, the US HW production was reduced slightly from last year. This year's samples showed very good quality performance in milling, dough rheological properties, and end-products including pan breads, Asian noodles, and steamed breads.

FARINOGRAMS

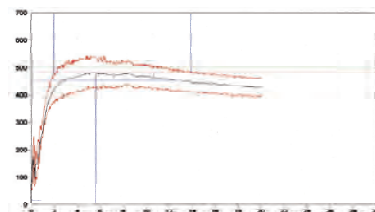
PNW MEDIUM



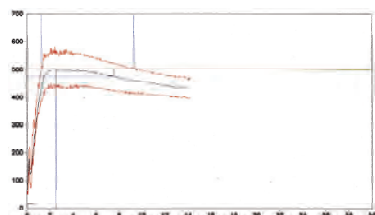
PNW HIGH



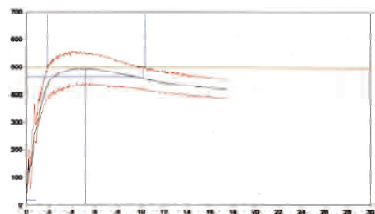
CALIFORNIA MEDIUM



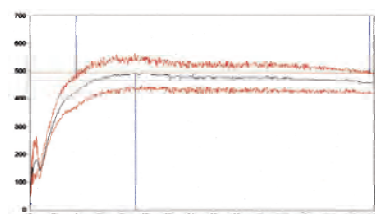
SOUTHERN PLAINS LOW



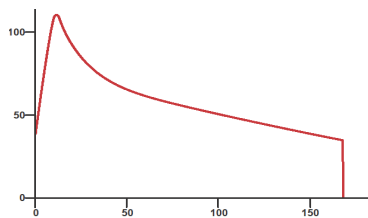
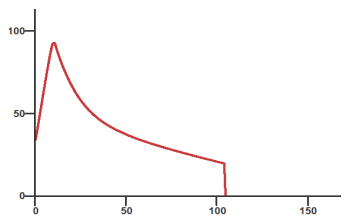
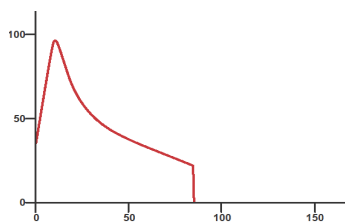
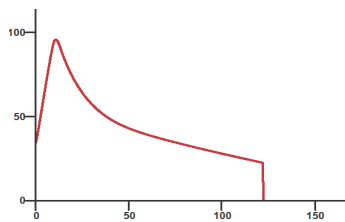
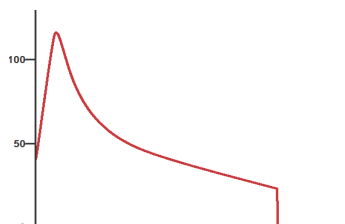
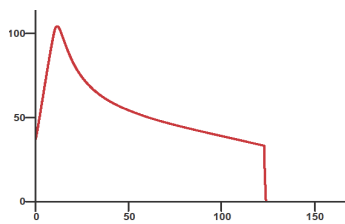
SOUTHERN PLAINS MEDIUM



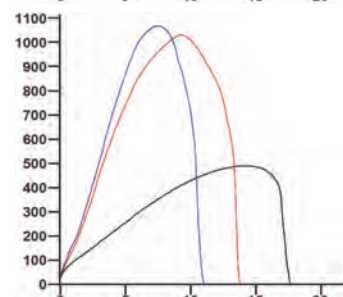
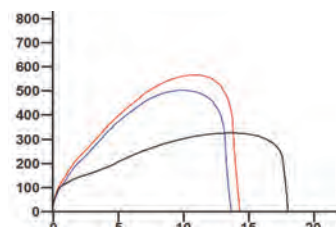
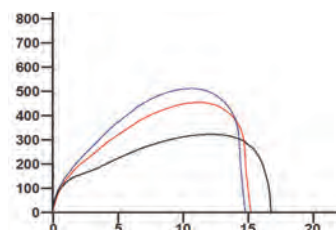
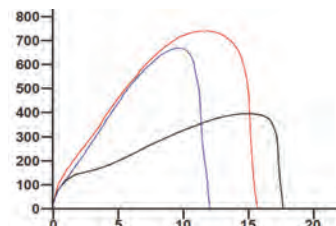
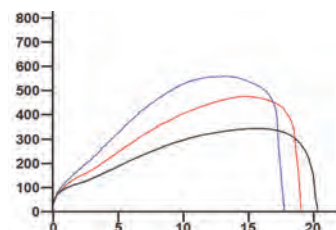
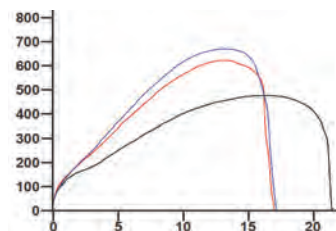
NORTHERN PLAINS VERY HIGH



ALVEOGRAMS



EXTENSOGRAMS



Hard White	Pacific Northwest		California	Southern Plains		Northern Plains
	Medium*	High	Medium	Low	Medium	Very High
Wheat Grade Data:						
Test Weight (lb/bu)	61.8	61.5	63.9	60.8	61.7	62.0
(kg/hl)	81.3	80.9	84.0	80.0	81.1	81.5
Damaged Kernels (%)	0.0	0.0	0.0	0.5	0.6	0.0
Foreign Material (%)	0.0	0.0	0.0	0.0	0.2	0.0
Shrunken & Broken (%)	0.4	0.2	0.2	1.1	0.9	0.1
Total Defects (%)	0.4	0.2	0.2	1.6	1.7	0.1
Grade	1 HW	1 HW	1 HW	1 HW	1 HW	1 HW
Wheat Non-Grade Data:						
Dockage (%)	0.4	0.4	0.0	1.1	0.5	0.0
Moisture (%)	9.4	9.5	8.0	10.2	11.2	11.4
Protein (%) 12%/0% moisture basis	11.5/13.1	13.5/15.3	12.2/13.9	11.1/12.6	11.8/13.4	15.3/17.4
Ash (%) 14%/0% moisture basis	1.55/1.80	1.45/1.69	1.49/1.73	1.64/1.91	1.53/1.78	1.43/1.66
1000 Kernel Weight (g)	36.4	33.9	37.4	33.8	35.2	31.1
Kernel Size (%) lg/md/sm	91/9/0	87/13/0	90/10/0	80/19/1	82/17/1	57/43/0
Single Kernel: Hardness	63.9	76.0	72.0	59.3	58.6	74.1
Weight (mg)	39.8	36.9	39.3	35.4	34.9	30.7
Diameter (mm)	2.81	2.86	2.93	2.79	2.77	2.65
Sedimentation (cc)	38.4	57.6	31.0	28.0	30.4	69.3
Falling Number (sec)	343	383	467	373	400	408
Flour Data:						
Lab Mill Extraction (%)	72.6	73.0	73.7	72.2	72.0	72.4
Color: L*	92.1	92.5	91.4	92.2	92.2	91.7
a*	-2.1	-2.4	-1.9	-2.2	-2.1	-1.8
b*	7.5	9.2	7.8	7.9	7.5	7.2
Protein (%) 14%/0% moisture basis	10.9/12.7	12.6/14.7	11.6/13.5	9.9/11.5	10.6/12.3	14.5/16.9
Ash (%) 14%/0% moisture basis	0.53/0.62	0.51/0.59	0.52/0.60	0.51/0.59	0.51/0.59	0.51/0.59
Wet Gluten (%)	28.1	37.1	31.4	27.5	29.7	40.3
Gluten Index	95.4	75.8	82.2	90.2	75.5	89.8
Falling Number (sec)	335	391	470	432	405	454
Amylograph Viscosity 65 g (BU)	557	600	652	473	483	597
Starch Damage (%)	9.2	8.5	8.6	8.4	8.1	7.1
Solvent Retention Capacity (%)						
Water/50% Sucrose	76/142	71/143	69/129	66/123	64/117	66/139
5% Lactic Acid/5% Na ₂ CO ₃	154/107	148/103	135/107	125/96	119/90	179/91
Dough Properties:						
Farinograph:						
Peak Time (min)	5.4	6.5	5.6	2.5	5.2	9.2
Stability (min)	16.8	11.0	11.9	8.0	8.5	25.6
Absorption (%)	62.8	67.3	63.6	61.3	61.9	65.6
Alveograph: P (mm)	115	128	106	96	102	122
L (mm)	124	131	123	85	105	169
P/L Ratio	0.93	0.98	0.86	1.13	0.97	0.72
W (10-4 joules)	451	436	357	241	292	651
Extensograph: Resistance (BU)	477/670	342/556	396/667	322/511	326/501	490/1075
(45/135 min) Extensibility (cm)	21.4/17.1	20.3/17.9	17.8/12.0	16.7/14.9	18.1/13.7	17.8/11.0
Area (sq cm)	133/139	89/126	85/90	73/99	79/88	104/132
Baking Evaluation:						
Bake Absorption (%)	65.1	69.5	66.1	64.7	64.7	67.7
Crumb Grain and Texture	7.0	6.0	6.0	6.3	6.5	7.5
Loaf Volume (cc)	819	882	833	766	799	963

* 2009 Protein Ranges: Low, Less than 11.5%; Medium, 11.5 - 12.5%; High, 12.6% - 13.5%; Very High, Greater than 13.5%.

Hard White	Pacific Northwest		California	Southern Plains		Northern Plains
	Medium*	High	Medium	Low	Medium	Very High
Chinese Raw Noodle-Making Quality:						
Color at 0/24 hour: L*	84.9/76.9	82.5/71.8	83.9/71.7	86.6/78.5	86.2/78.6	82.5/69.0
a*	0.0/0.6	-0.2/0.6	0.3/0.9	0.0/0.5	0.1/0.6	0.9/2.0
b*	14.9/19.2	18.1/24.7	15.6/20.5	13.7/19.7	13.7/19.2	16.0/21.8
Change in L* (0-24 hr)	8.0	10.7	12.2	8.1	7.6	13.5
Cooking Yield (5 min, %)	124	115	117	123	119	108
Sensory Color Stability Score	7.7	6.0	5.8	8.0	7.7	5.3
Instrumental Texture:						
Firmness (g)	942	1091	1116	1015	1110	1312
Springiness (%)	95.7	95.7	95.7	95.5	95.3	96.2
Cohesiveness	0.67	0.67	0.66	0.63	0.63	0.65
Chewiness (g)	599	696	704	612	668	820
Chinese Wet Noodle-Making Quality:						
Uncooked Color at 0/24 hour: L*	84.5/77.3	81.0/73.6	80.1/68.4	85.8/80.2	80.4/73.0	78.1/66.6
a*	-1.4/-0.6	-1.4/-0.6	-1.1/0.3	-1.7/-0.8	-1.1/0.0	-0.6/0.8
b*	16.1/17.7	20.4/21.0	17.1/19.0	16.7/17.6	18.1/18.6	19.5/21.2
Change in L* (0-24 hr)	7.2	7.4	11.7	5.6	7.4	11.5
Parboiled Color at 0/24 hour: L*	77.3/77.3	76.2/76.0	75.5/75.7	78.6/78.4	77.4/78.0	76.0/76.0
a*	-2.5/-2.7	-2.2/-2.7	-1.1/-1.5	-2.8/-2.8	-1.6/-1.9	-0.7/-1.3
b*	29.8/29.6	30.2/30.6	25.8/25.0	31.1/30.4	28.5/27.4	26.0/25.4
Cooking Yield (1.5 min, %)	57	62	58	61	65	63
Uncooked Color Stability Score	8.0	7.5	5.2	8.0	7.5	6.2
Parboiled Color Stability Score	7.5	7.2	5.8	7.5	7.0	6.2
Instrumental Texture:						
Firmness (g)	508	615	734	554	690	941
Springiness (%)	95.6	96.3	95.3	96.0	95.5	95.4
Cohesiveness	0.65	0.64	0.64	0.66	0.64	0.63
Chewiness (g)	317	385	446	350	420	571
Asian-Type Steamed Bread Evaluation:						
Specific Volume (ml/g)	2.7	2.3	2.9	2.7	2.8	2.4
Total Score	68.0	65.3	66.8	68.8	71.5	70.3

* 2009 Protein Range: Low, Less than 11.5%; Medium, 11.5 - 12.5%; High, 12.6% - 13.5%; Very High, Greater than 13.5%.

ABOUT HARD WHITE WHEAT

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.



NORTHERN GREAT PLAINS

Weather and Harvest: Planting got off to a later than normal start in mid-May due to heavy winter snowfall and spring rains and flooding. Drier conditions in late May allowed for quicker planting progress and planting was mostly finished by the second week of June. Moisture levels were much improved over one year ago, but the cool conditions slowed emergence. Cool wet conditions continued throughout the summer, which promoted yield potential, but delayed crop development and maturity. Moisture remained adequate and disease pressure was minimal.

Harvest was three to four weeks behind normal due to the late planting and slow development. Cool, humid weather caused slow harvest progress until conditions turned warmer and drier in late September, allowing the majority of harvest to be completed by early October.

Survey Methods: A total of 216 samples were collected from the primary durum growing area of North Dakota (161) and Montana (55). State offices of the National Agricultural Statistics Service collected samples directly from producers at local elevators, in the field or from farm bins. These samples represent the grain at the point of origin before any conditioning or market blending, and represent the entire harvested crop, not just the crop being marketed at harvest time. Analysis was conducted by the Durum Quality Lab, North Dakota State University, Fargo, North Dakota.

Wheat and Grade Data: The 2009 northern durum crop has very low levels of damaged kernels and lower than average total defects. Test weights are higher than last year and the overall grade is No. 1 Hard Amber Durum, the same as last year. Production is nearly 50 percent larger than last year as a cooler than normal growing season and improved subsoil moisture provided optimal conditions in most areas and produced average yields that tied the previous record high.

Average test weight for the crop is an outstanding 61.4 lb/bu (80.1 kg/hl). Nearly 85% of the crop is greater than 60 lb/bu (78.2 kg/hl), compared to 59% last year. Paralleling the improved test weight profile, thousand kernel weight averages 42.4 g, well above last year's 35 g. Protein levels are lower in the 2009 crop due to a cooler growing season and higher yields. Average protein is 13.5%, down from 14.8% last year and the five-year average of 14.4%. The distribution of protein

shows that 63% of the crop is above the typical industry demand of 13%.

The vitreous kernel count average of 83% is equal to last year. Both are below the five-year average of 90%, but for entirely different reasons. Lower vitreous kernel counts are often associated with high yields and lower protein contents like those of the 2009 crop, while the 2008 crop suffered from harvest rains that also reduced falling numbers. This year's very healthy crop has an average falling number of 398 seconds, higher than last year and the five-year average.

Semolina and Processing Data: Milling performance of the crop, based on a Buhler laboratory mill, reveal higher total extractions and semolina extractions and lower ash levels. Total extraction is 72.7% and semolina extraction is 65.5%, both of which are 4 to 5 percentage points higher than 2008. The gluten index values are up notably to 58.6%, compared to 41.4% last year; likely a shift in varieties is contributing in part to the higher gluten index crop. Semolina mixing properties are also stronger in this year's crop and the color is improved over last year. Cooked firmness is down from last year and cooking loss is up slightly, likely due to the lower overall protein in the crop and lack of stress during the growing season.

Summary: The 2009 durum crop is of good quality with average grade of No. 1 Hard Amber Durum. Buyers will find a lot to appreciate in the larger, higher quality crop. While protein is lower and some areas of reduced vitreous kernel counts exist, the crop as a whole is very sound with few kernel defects. Millers should find higher mill yields with the improved kernel weights and end-users should find improved color scores and good processing performance. Diligent contract specifications are still encouraged to ensure buyers receive the wheat that best meets their needs.

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.

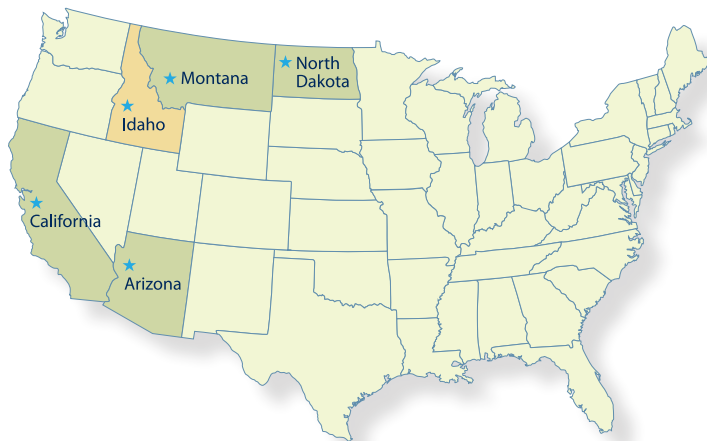
Desert Durum® is usually delivered "identity preserved" to U.S. domestic and export markets. The identity preservation system allows buyers to purchase grain of varieties having intrinsic quality parameters specific to their needs. Annual production requirements can be contracted ahead with experienced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

ABOUT DURUM WHEAT

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

Desert Durum® acreage planted in Arizona and southern California this harvest season was at its second highest level in the last ten years. Grain yields were in the expected average range. The new crop grain again exhibited consistently large kernel size and low moisture, traits that contribute to achieving high extraction rates. Overall, the quality characteristics were similar to last year. In summary, the 2009 Desert Durum® crop will deliver the valuable milling, semolina and pasta quality traits that customers have come to expect.

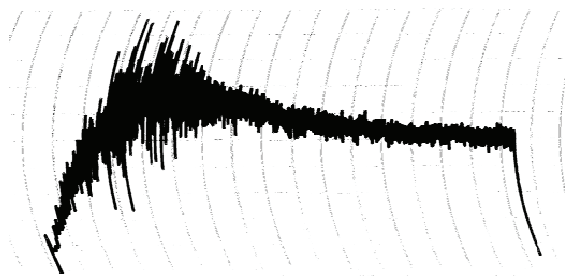
Idaho: Idaho is gaining popularity as a durum-growing area because of its high desert environment and abundance of irrigation water. Durum grown in Idaho is noted for its mellow gluten, which is very good in fresh pasta. Quality data on Idaho's durum crop is available from the Idaho Wheat Commission.



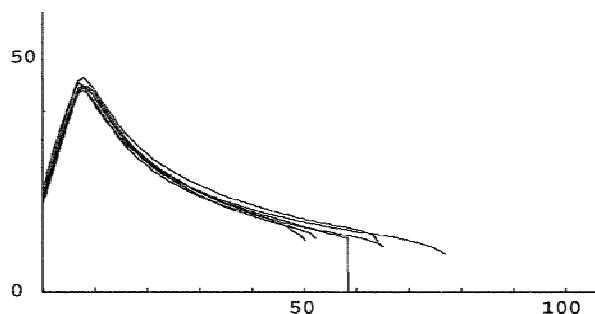
FOUR OF FIVE STATES SURVEYED

Arizona • California • Montana • North Dakota

GREAT PLAINS DURUM REGIONAL AVERAGE



MIXOGRAM
(SCORE = 5.5)

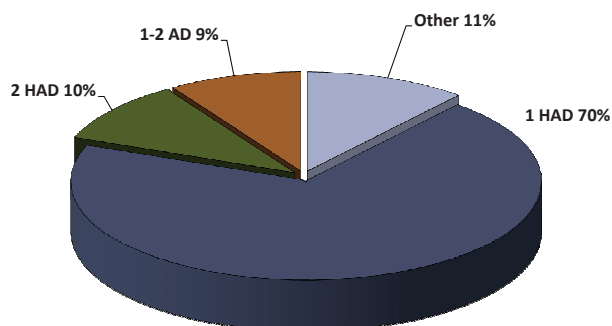


ALVEOGRAM

EXPORT CARGO SURVEY

The durum export cargo represents 17 individual subplot samples provided by USDA's Federal Grain Inspection Service for crop year 2008 (collected from October 2008 through June 2009) and 44 samples for 2007. Grade data are the actual official grades on the individual subplots. Processing analysis was conducted by North Dakota State University.

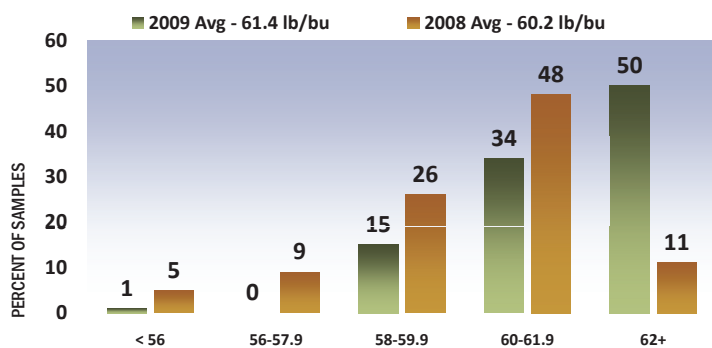
GREAT PLAINS DURUM GRADE DISTRIBUTION



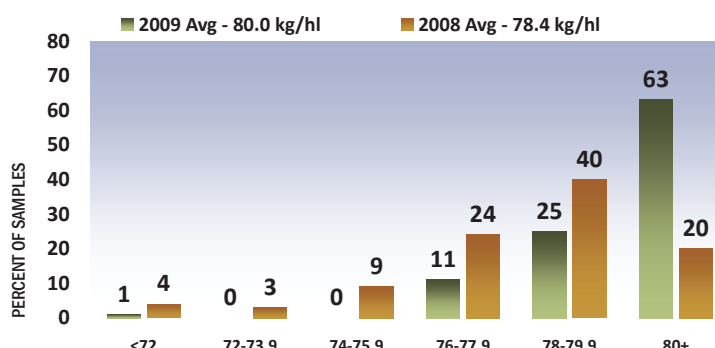
Durum	Harvest Data					Export Cargo Data			
	Northern			Pacific Southwest		Northern		Pacific Southwest	
	2009	2008	5-Year Avg	2009	2008	2008	2007	2008	2007
Wheat Grade Data:									
Test Weight (lb/bu)	61.4	60.2	60.5	62.7	62.9	60.9	61.0	62.9	62.9
(kg/hl)	80.0	78.4	78.8	81.7	81.9	79.3	79.4	81.8	81.9
Damaged Kernels (%)	0.3	0.3	0.4	0.3	0.1	1.3	1.2	0.7	0.4
Foreign Material (%)	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.1
Shrunken and Broken (%)	0.7	1.3	1.3	0.4	0.4	1.6	1.7	0.7	0.6
Total Defects (%)	1.1	1.6	1.7	0.7	0.5	3.1	3.0	1.7	1.2
Contrasting Classes (%)	0.3	0.0	0.1	0.0	0.0	0.9	0.9	0.2	0.1
Vitreous Kernels (%)	83.0	83.0	90.0	95.4	94.1	80.0	85.8	92.8	93.1
Grade	1 HAD	1 HAD	1 HAD	1 HAD	1 HAD	2 HAD	1 HAD	1 HAD	1 HAD
Wheat Non-Grade Data:									
Dockage (%)	1.4	1.1	1.5	0.2	0.2	0.6	0.5	0.6	0.5
Moisture (%)	11.8	11.7	12.0	6.8	6.8	11.3	11.9	7.4	7.9
Protein (%) 12%/0% moisture basis	13.5/15.4	14.8/16.8	14.4/16.3	13.3/15.1	13.5/15.4	15.1/17.2	14.7/16.7	13.4/15.2	13.4/15.2
Ash (%) 14%/0% moisture basis	1.42/1.65	1.50/1.74	1.57/1.83	1.70/1.97	1.66/1.93	1.59/1.85	1.65/1.92	1.67/1.95	1.65/1.91
1000 Kernel Weight (g)	42.4	35.0	35.5	54.7	51.8	35.3	34.7	49.3	47.0
Kernel Size (%) lg/md/sm	55/42/3	34/58/8	40/52/8	93/7/0	94/6/0	35/57/7	26/63/10	80/18/2	78/20/2
Falling Number (sec)	398	322	362			353	419	931	689
Sedimentation (cc)	50	49	50						
Semolina Data:									
Lab Mill Extraction (%)	72.7	67.1	70.3	77.6	72.6	71.8	71.5	73.8	71.8
Semolina Extraction (%)	65.5	61.1	64.1	62.8	62.2	65.4	64.7	67.4	65.0
Ash (%) 14%/0% moisture basis	0.62/0.72	0.64/0.74	0.69/0.80	0.88/1.03	0.83/0.96	0.66/0.76	0.71/0.82	0.65/0.75	0.67/0.78
Specks (no/10 sq in)	26	22	21	6	6	33	25	27	24
Protein (%) 14%/0% moisture basis	12.2/14.2	13.9/16.2	13.4/15.6	12.0/13.9	12.6/14.7	13.7/15.9	13.8/16.0	11.7/13.6	11.9/13.8
Wet Gluten (%)	34.8	39.5	37.6	35.0	35.5				
Gluten Index	58.9	41.4	45.3			56.4	50.1	87.9	86.1
Mixograph Classification	5.5	5.2	5.7			5.7	5.4	7.3	7.1
Alveograph: P (mm)	54.0	53.0	47.4	82.5	79.7				
L (mm)	104.0	65.0	75.6	54.9	70.1				
P/L Ratio	0.53	0.81	0.65	1.50	1.14				
W (10-4 joules)	146	109	98	166	176				
Color: L*	85.8	85.2	85.0			85.0	84.7	85.3	84.8
a*	-3.1	-2.9	-2.8			-2.7	-2.4	-2.4	-2.5
b*	28.1	29.2	27.5	25.2	26.2	26.9	27.0	25.0	27.2
Spaghetti Processing Data:									
Color Score	9.5	8.7	9.0	8.5	9.0	8.8	8.5	8.9	9.1
Cooked Weight (gm)	31.6	31.6	31.3	29.9	30.1	32.1	32.6	31.5	31.6
Cooking Loss (%)	6.1	5.5	5.7	7.8	7.3	5.3	5.6	5.9	6.1
Cooked Firmness (g cm)	5.0	5.7	5.6	7.4	7.2	5.3	6.0	4.9	5.2
Sample Count:						9	21	8	23



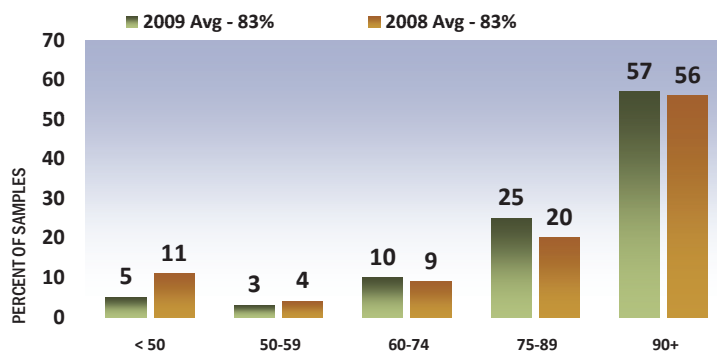
TEST WEIGHT | Pounds/Bushel



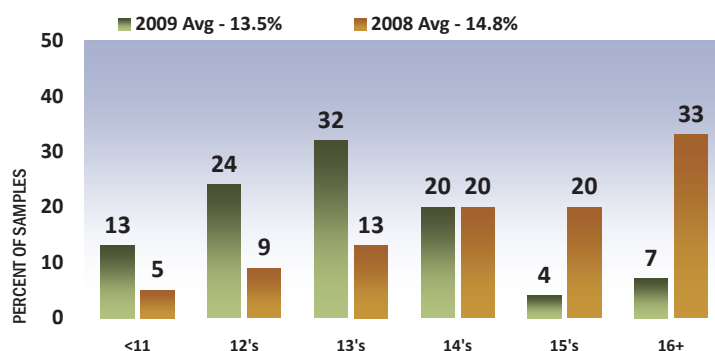
HECTOLITER WEIGHT | Kilograms/Hectoliter



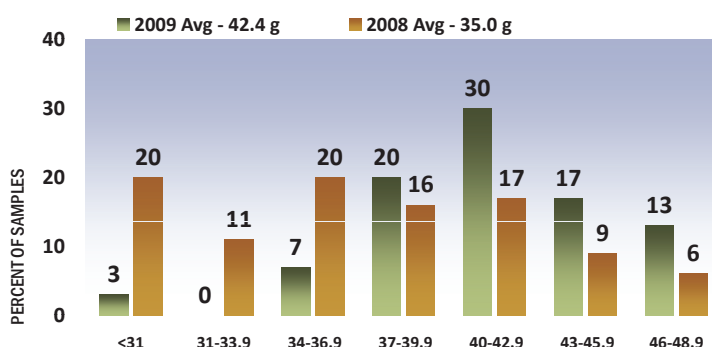
VITREOUS KERNELS | Percent



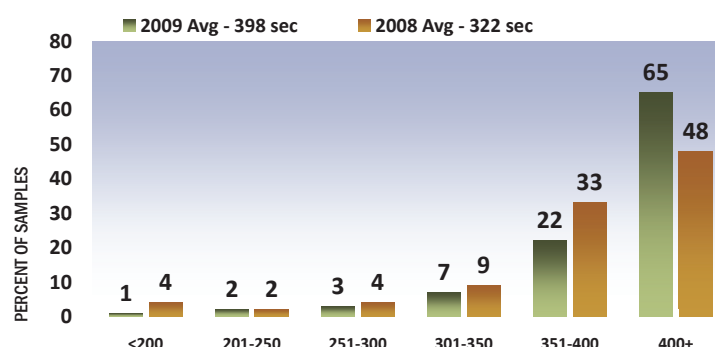
PROTEIN (12% MB) | Percent



1000 KERNEL WEIGHT | Grams



FALLING NUMBER | Seconds



Durum Production

for the major producing states (million metric tons)

	2009	2008	2007	2006	2005
Arizona	0.3	0.4	0.2	0.2	0.2
California	0.5	0.4	0.2	0.2	0.2
Idaho	0.0	0.0	0.0	NA	NA
Montana	0.5	0.3	0.3	0.2	0.4
North Dakota	1.7	1.1	1.2	0.9	1.9
Total Durum Production	3.0	2.3	2.0	1.4	2.8

Based on USDA crop estimates of September 30, 2009.

HARVEST SURVEY

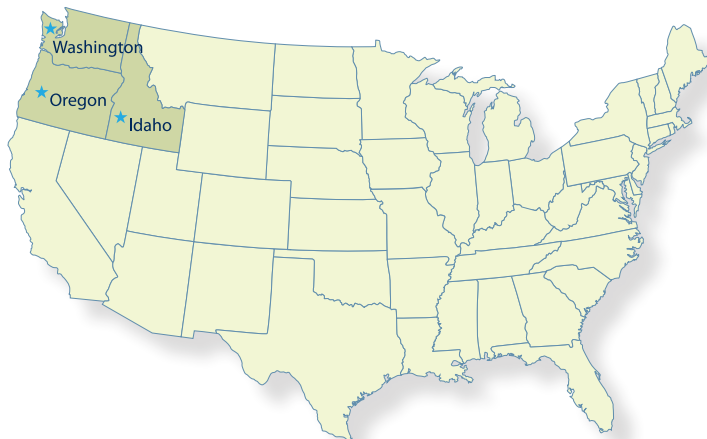
Weather and Harvest: The Pacific Northwest (PNW) had dry conditions at planting. Most of the wheat production area received adequate rainfall during the winter and early spring. Generally cool temperatures prevailed during the early growing season with some limited periods of high temperatures. Dry conditions prevailed during the wheat harvest with some localized rain showers. These weather conditions contributed a crop with below average to average yield in dryland farming areas in Idaho, Oregon, and Washington.

Survey and Analysis Methods: Wheat quality testing and data analyses were conducted by the Wheat Marketing Center (WMC), Portland, Oregon. Laboratory testing was conducted according to either American Association of Cereal Chemists Approved Methods (11th Edition) or WMC Standard Methods. Survey samples were collected from producers under the management of USDA's National Agricultural Statistics Service 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.

Wheat and Grade Data: The average test weight for the 2009 soft white (SW) at 59.8 lb/bu (78.7 kg/hl) and for white club (WC) at 60.2 lb/bu (79.2 kg/hl) are both above last year's averages. Other grade factors for SW and WC are similar to last year and the five-year averages. SW dockage remained the same at 0.7% and WC decreased by 0.2 to 0.8% from last year. Wheat moisture contents of SW at 9.3% and WC at 8.7% are similar to last year and the five-year averages.

Soft white wheat protein content (12% mb) of 10.3% and WC protein of 10.2% are both lower than last year and the five-year averages. Wheat ash contents are similar to last year and the five-year averages for SW and WC. SW thousand kernel weights and kernel diameter values are similar to last year. WC thousand kernel weight is heavier and kernel diameter is larger than last year and five-year averages. Falling number values are 324 seconds for SW and 310 seconds for WC, both of which are similar to last year but slightly less than the five-year average.

Flour, Dough and Baking Data: The 2009 crop Buhler Laboratory Mill flour extractions for SW at 70.5% and for WC at 71.3% are lower than last year, but higher than the five-year averages. Flour ash contents for both SW and WC are higher than last year and five-year averages. Flour protein contents (14% mb) are 8.9 and 9.0% for SW and WC, respectively. Falling number values indicate sound flour samples for SW and WC, though amylograph peak viscosity values are lower than last year and five-year averages. Starch damage values



THREE STATES SURVEYED

Idaho • Oregon • Washington

for SW and WC are higher than last year and the five-year averages. Farinograph peak and stability times show that SW has slightly weaker gluten properties with higher water absorptions than last year and the five-year averages. WC has similar gluten properties to the last year, but slightly stronger with higher water absorption than the five-year average. Alveograph L values generally show longer times with higher protein contents. SW and WC display shorter L values than last year and the five-year averages. This year's SW and WC extensograph extensibility indicate lower values than last year and the five-year averages. Sponge cake volume for SW of 1147 cc is significantly lower with a lower score than last year and the five-year averages. The volume for WC of 1177 cc is also less than last year and the five-year average. Cookie diameters for SW and WC are smaller than last year and the five-year averages. SW and WC cookie spread factors are less than last year.

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

EXPORT CARGO SURVEY

The PNW SW export cargo data show the results of analyses of individual subplot samples including 62 drawn from the 2007 crop and 53 from the 2008 crop (August 2008 through May 2009). Representative samples were selected from official Federal Grain Inspection Service samples. Grade data were the actual grades on the individual sublots. Milling and processing analyses were conducted by the Wheat Marketing Center, Portland, Oregon.

PNW SOFT WHITE | OVERVIEW

Pacific Northwest Soft White Wheat Production

in major producing states (million metric tons)

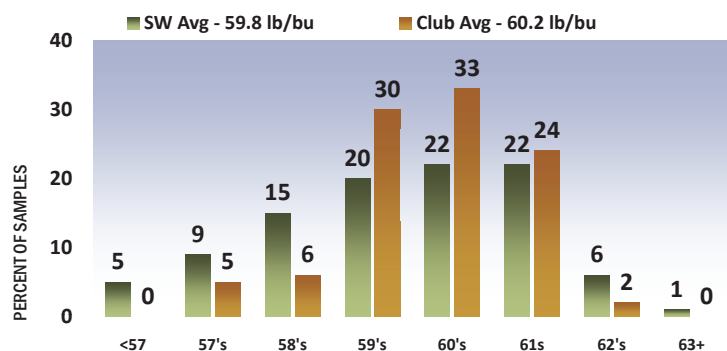
	2009		2008		2007		2006		2005	
	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB
Washington	2.3	0.2	2.4	0.1	2.2	0.3	2.9	0.2	3.1	0.2
Oregon	1.2	0.0	1.3	0.0	1.1	0.0	1.4	0.0	1.4	0.0
Idaho	1.3	0.0	1.4	0.0	1.2	0.1	1.1	0.0	1.9	0.0
Three-state Total	4.9	0.2	5.1	0.2	4.5	0.4	5.4	0.2	6.4	0.2
Three-state Total Soft White Wheat	5.1		5.3		4.8		5.7		6.6	
Total US Soft White Wheat	5.7		6.1		5.3		6.4		7.3	

Based on USDA crop estimates of September 30, 2009.



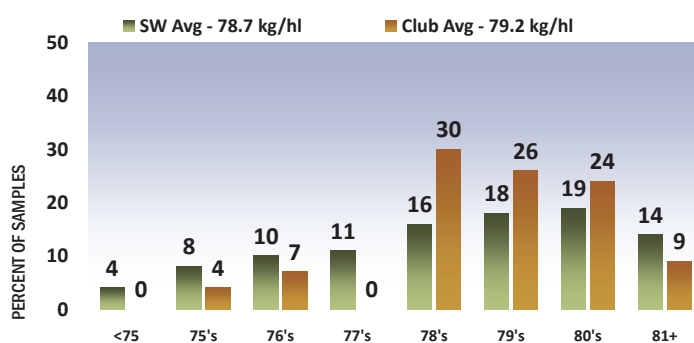
TEST WEIGHT

Pounds/Bushel



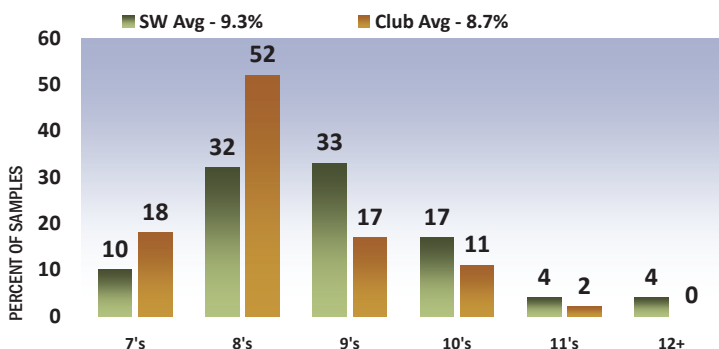
HECTOLITER WEIGHT

Kilograms/Hectoliter



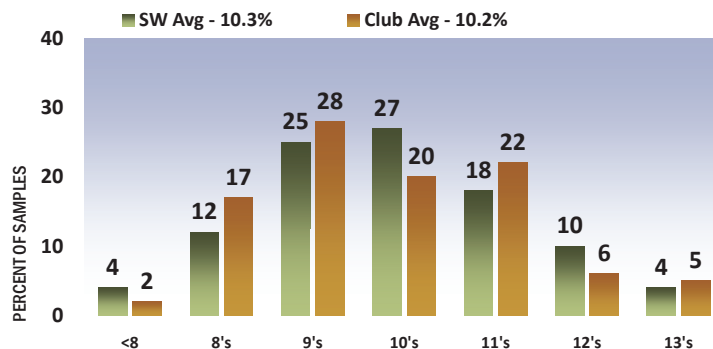
WHEAT MOISTURE

Percent



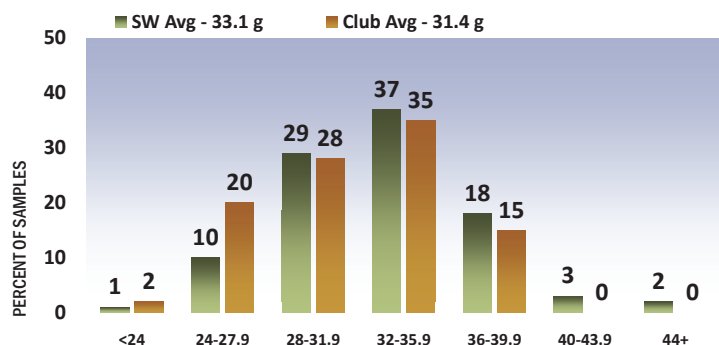
PROTEIN (12% MB)

Percent



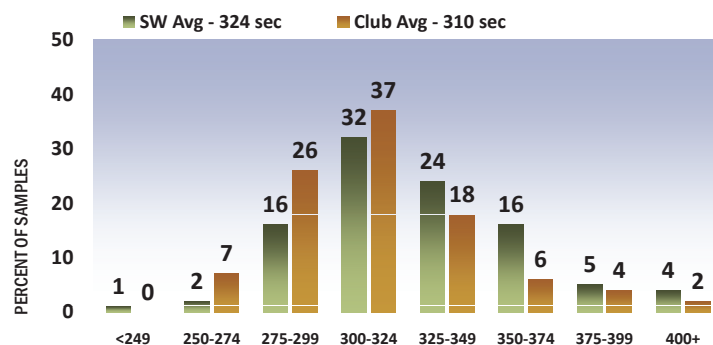
1000 KERNEL WEIGHT

Grams



FALLING NUMBER

Seconds

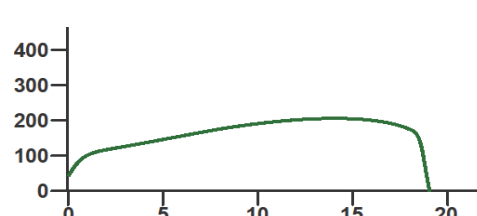
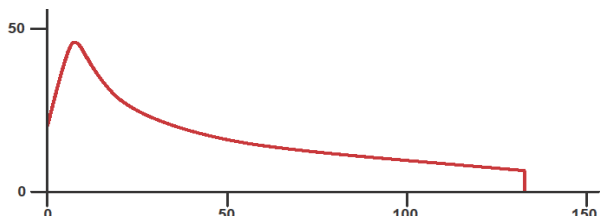
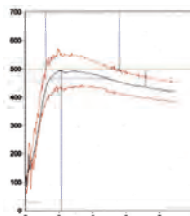


FARINOGRAMS

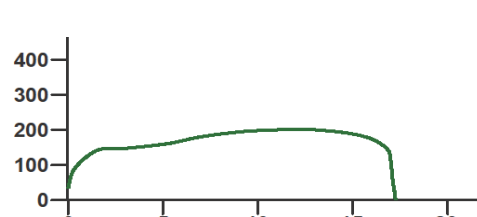
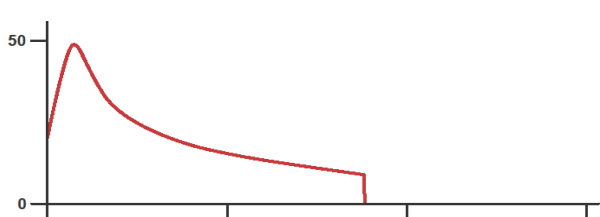
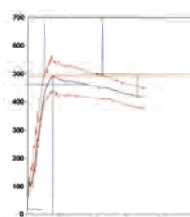
ALVEOGRAMS

EXTENSOGRAMS

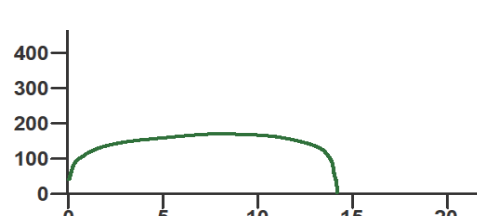
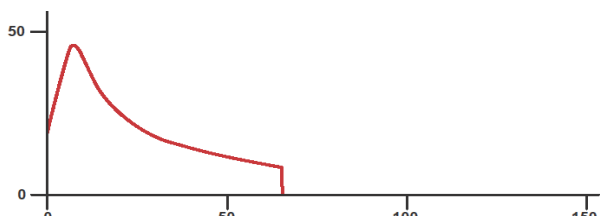
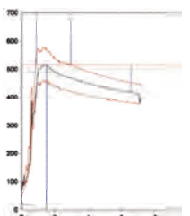
HIGH PROTEIN



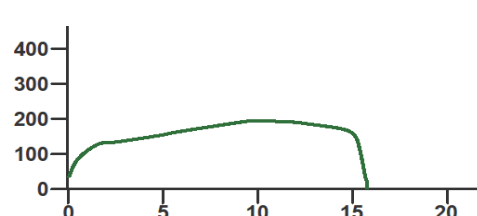
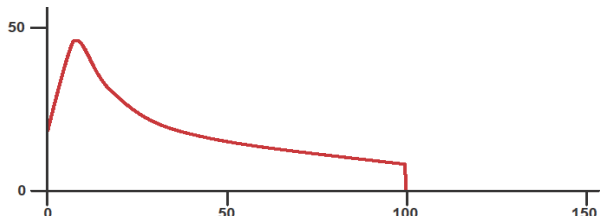
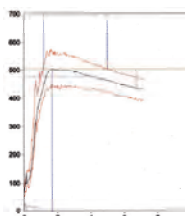
MEDIUM PROTEIN



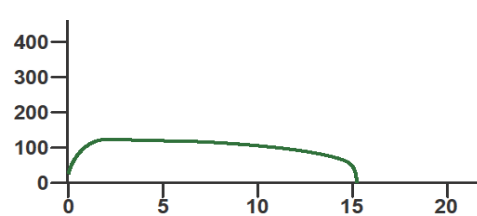
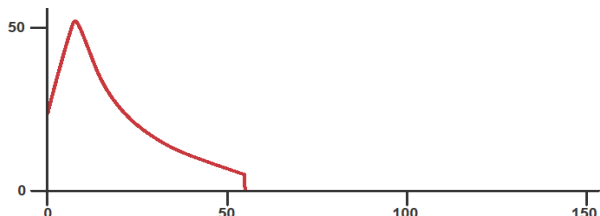
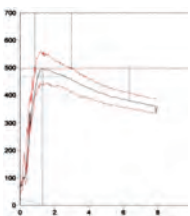
LOW PROTEIN



AVERAGE PROTEIN



CLUB



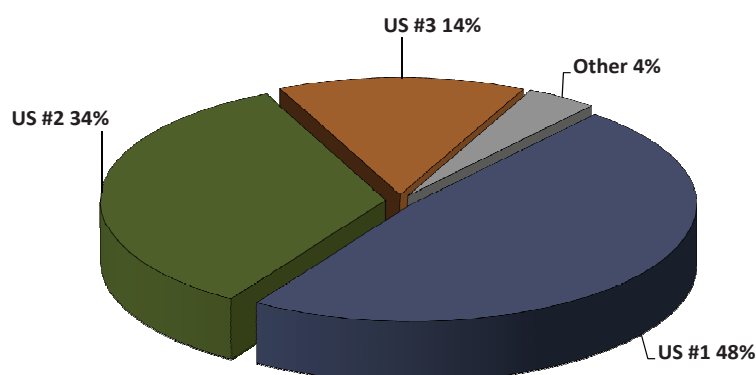
PNW SOFT WHITE | HARVEST DATA

Soft White	2009					2008		5-Year Average	
	Soft White By Protein*				Club Average				
	Low	Med	High	All		SW	Club	SW	Club
Wheat Grade Data:									
Test Weight (lb/bu)	60.0	60.3	59.2	59.8	60.2	58.9	58.8	59.8	59.9
(kg/hl)	78.9	79.3	77.9	78.7	79.2	77.5	77.4	78.7	78.8
Damaged Kernels (%)	0.1	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.1
Foreign Material (%)	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Shrunken & Broken (%)	0.5	0.7	0.9	0.8	1.0	0.9	1.6	0.9	1.4
Total Defects (%)	0.6	0.9	1.1	0.9	1.1	1.1	2.0	1.1	1.6
Grade	1 SW	1 SW	2 SW	2 SW	1 WC	2 SW	1 WC	2 SW	1 WC
Wheat Non-Grade Data:									
Dockage (%)	0.5	0.6	0.8	0.7	0.8	0.7	1.0	0.7	0.8
Moisture (%)	9.2	9.4	9.3	9.3	8.7	9.6	9.5	9.2	8.8
Protein (%) 12%/0% moisture basis	8.3/9.4	9.8/11.1	11.7/13.3	10.3/11.7	10.2/11.6	11.2/12.7	11.4/13.0	10.4/11.8	10.3/11.7
Ash (%) 14%/0% moisture basis	1.32/1.53	1.35/1.57	1.41/1.64	1.37/1.59	1.29/1.50	1.38/1.60	1.29/1.50	1.39/1.62	1.30/1.51
1000 Kernel Weight (g)	34.9	34.1	31.5	33.1	31.4	33.0	29.6	34.4	30.7
Kernel Size (%) lg/md/sm	87/12/1	79/20/1	72/27/1	77/22/1	72/27/1	75/24/1	66/33/1	81/18/1	74/25/1
Single Kernel: Hardness	31.8	31.2	28.5	30.2	29.1	32.5	34.2	34.1	36.5
Weight (mg)	40.2	38.1	36.3	37.7	36.3	36.8	33.7	36.2	33.6
Diameter (mm)	2.86	2.77	2.71	2.76	2.68	2.73	2.58	2.56	2.39
Sedimentation (cc)	13.4	18.5	22.7	19.5	13.7	19.6	25.3	17.3	16.1
Falling Number (sec)	307	322	342	324	310	321	303	339	333
Flour Data:									
Lab Mill Extraction (%)	71.5	70.5	70.2	70.5	71.3	71.1	74.1	69.1	70.4
Color: L*	92.6	92.3	92.4	92.4	92.1	92.3	92.3	92.3	92.3
a*	-2.5	-2.4	-2.3	-2.4	-2.3	-2.5	-2.3	-2.5	-2.3
b*	8.2	7.8	7.8	7.8	7.2	7.8	7.6	7.7	7.3
Protein (%) 14%/0% moisture basis	7.1/8.3	8.3/9.7	10.2/11.9	8.9/10.3	9.0/10.5	9.3/10.8	9.8/11.4	8.8/10.2	8.7/10.1
Ash (%) 14%/0% moisture basis	0.46/0.53	0.45/0.52	0.46/0.53	0.46/0.53	0.47/0.55	0.39/0.45	0.41/0.48	0.40/0.46	0.40/0.47
Wet Gluten (%)	15.4	22.4	28.8	24.0	15.0	24.0	24.8	22.8	19.9
Gluten Index	74.1	64.7	63.7	65.8	56.9	63.7	1.6	52.4	16.5
Falling Number (sec)	351	315	357	339	382	340	336	345	343
Amylograph Viscosity 65 g (BU)	410	402	452	425	417	600	581	536	568
Starch Damage (%)	6.8	6.6	5.2	6.1	6.2	3.8	3.2	4.2	3.6
Solvent Retention Capacity (%)									
Water/50% Sucrose	61/113	60/119	59/118	60/118	57/113	53/107	49/94	54/107	46/97
5% Lactic Acid/5% Na2CO3	96/92	101/93	101/93	100/93	86/88	110/77	85/72	107/81	82/75
Dough Properties:									
Farinograph: Peak Time (min)	1.5	1.5	2.2	1.7	1.3	1.9	1.3	1.7	1.3
Stability (min)	2.1	3.5	4.4	3.8	2.1	4.6	2.0	4.1	1.8
Absorption (%)	54.6	55.5	56.2	55.8	56.0	52.0	51.6	52.5	51.4
Alveograph: P (mm)	53	54	52	52	58	34	24	39	26
L (mm)	66	89	133	100	56	139	93	121	85
P/L Ratio	0.80	0.61	0.39	0.52	1.04	0.24	0.26	0.33	0.30
W (10-4 joules)	93	119	151	125	81	103	44	110	45
Extensograph: Resistance (BU)	170	202	207	196	123	229	105	239	106
(45 min) Extensibility (cm)	14.2	17.4	19.1	15.8	15.3	17.7	16.9	16.7	15.6
Area (sq cm)	37	52	56	45	28	60	25	59	25
Baking Evaluation:									
Sponge Cake: Volume (cc)	1185	1156	1125	1147	1177	1213	1213	1200	1226
Score	57	52	42	49	52	53	48	51	50
Cookie: Diameter (cm)	8.1	8.0	8.0	8.0	8.2	8.3	8.4	8.2	8.6
Spread Factor (width/height)	8.0	7.7	7.7	7.7	8.8	8.5	9.8	8.3	9.9
Chinese Southern-Type Steamed Bread Evaluation:									
Specific Volume (ml/g)	2.0	2.0	2.2	2.0	2.2	2.6	2.7	2.6	2.7
Total Score	62.9	64.4	67.7	65.6	66.5	68.1	65.3	68.0	65.0
% of Area Production:	16	41	43	100	100	100	100	100	100

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

Soft White	2008	2007
Wheat Grade Data:		
Test Weight (lb/bu)	60.6	61.5
(kg/hl)	79.8	80.9
Damaged Kernels (%)	0.2	0.1
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	1.0	1.0
Total Defects (%)	1.3	1.2
Grade	1 SW	1 SW
Wheat Non-Grade Data:		
Dockage (%)	0.3	0.3
Moisture (%)	9.4	9.1
Protein (%) 12%/0% moisture basis	10.8/12.2	10.3/11.7
Ash (%) 14%/0% moisture basis	1.42/1.65	1.33/1.55
1000 Kernel Weight (g)	38.5	37.1
Kernel Size (%) lg/md/sm	76/23/1	79/20/1
Single Kernel: Hardness	35.0	38.5
Weight (mg)	35.3	35.6
Diameter (mm)	2.45	2.47
Sedimentation (cc)	17.9	15.7
Falling Number (sec)	332	355
Flour Data:		
Lab Mill Extraction (%)	70.1	68.3
Color: L*	92.4	92.6
a*	-2.4	-2.2
b*	7.9	8.0
Protein (%) 14%/0% moisture basis	9.0/10.5	8.6/10.0
Ash (%) 14%/0% moisture basis	0.42/0.48	0.41/0.48
Wet Gluten (%)	23.9	22.8
Gluten Index	71.6	69.3
Falling Number (sec)	353	375
Amylograph Viscosity 65 g (BU)	505	553
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	3.4
Absorption (%)	52.1	52.1
Alveograph: P (mm)	37	38
L (mm)	144	112
P/L Ratio	0.26	0.34
W (10-4 joules)	106	97
Extensograph: Resistance (BU)		
(45 min) Extensibility (cm)		
Area (sq cm)		
Baking Evaluation:		
Sponge Cake: Volume (cc)	1176	1175
Score	52	43
Cookie: Diameter (cm)	8.3	8.1
Spread Factor (width/height)		
Chinese Southern-Type Steamed Bread Evaluation:		
Specific Volume (ml/g)		
Total Score		
Sample Count:	53	62

SW GRADE DISTRIBUTION



ABOUT SOFT WHITE WHEAT

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. Can also be used for blending.

HARVEST SURVEY

Weather and Harvest: Soft red winter wheat (SRW) is grown over a wide area of the eastern United States. Planted area was down sharply in the fall of 2008 compared with the previous year as a result of large carry-over stocks and declining prices and together with lower yields resulted in a 34% reduction in production in 2009 compared with 2008. Planting conditions were favorable and remained favorable throughout the winter months, but cool wet weather during flowering in the spring resulted in widespread occurrence of fusarium and delayed the start of harvest in Arkansas, usually the first state sampled. Harvesting continued to be delayed by cool, wet weather through June in the southern states. The weather turned drier and warmer in early July, allowing the remaining harvest to progress more rapidly with completion around July 15.

Survey Methods: Sample collection and analysis were conducted by CII Laboratory Services, Kansas City, Missouri. For 2009, 295 samples were collected from elevators in 18 reporting areas in Arkansas, Illinois, Indiana, Maryland, Missouri, Ohio, North Carolina, Virginia and Kentucky. Samples were collected at two different times reflecting early and late harvest, though six areas completed harvest too quickly for a second sampling. Test weight, moisture, protein, thousand kernel weight, wheat ash and falling number were determined on individual samples, while the remaining tests were determined on 30 composite samples. The results were weighted by five-year average production for the 18 reporting areas and combined into "Composite Average," "East Coast" and "Gulf Ports" values. East Coast-tributary states include Maryland, North Carolina and Virginia, while the others are considered Gulf tributary. The Analysis Methods section of this booklet identifies the test methods used.

Wheat and Grade Data: The difficult growing conditions are reflected in the unusually low average grade of #3 SRW, mainly from low test weights. Average test weight of 57.6 lb/bu (75.8 kg/hl) is 1.6 lb/bu (2.1 kg/hl) below 2008 and lower than

the five-year average. Only about 32% of Gulf SRW samples were 58 lb/bu or higher. Average grade and test weight in the East Coast states are higher than Gulf values and not much different from the five-year averages. However, both Gulf and East Coast areas have elevated damage, most likely scab damage from the increased incidence of fusarium. Protein content and quality (as indicated by sedimentation) are somewhat below average in the Gulf states but above average in the East Coast states. DON values are also well above average. Despite the rainy harvest weather the average falling number values are all above 300.

Flour and Baking Data: Buhler laboratory mill flour extraction is 2 percentage points lower than the five-year average which reflects the crop's lower test weight and poorer kernel characteristics. Farinograph peak and stability times are below average for the Gulf but similar to past values for the East Coast. The alveograph W value is also below the five-year average in Gulf samples, but above in the East Coast ones. Loaf volume is above last year and the five-year average.

Summary: The 2009 SRW crop was affected by cool, wet weather which resulted in increased disease and damage, reduced test weight, higher incidence of DON and reduced milling quality. East Coast values are somewhat better than Gulf values. However, overall protein content is about average and some processing characteristics are favorable. Buyers will need to craft specifications carefully to be sure that they receive qualities that meet their needs either for traditional soft wheat products or blending with stronger wheat.

EXPORT CARGO SURVEY

The export cargo data represent 156 individual subplot samples for marketing years 2009 and 2008 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.

ABOUT SOFT RED WINTER WHEAT

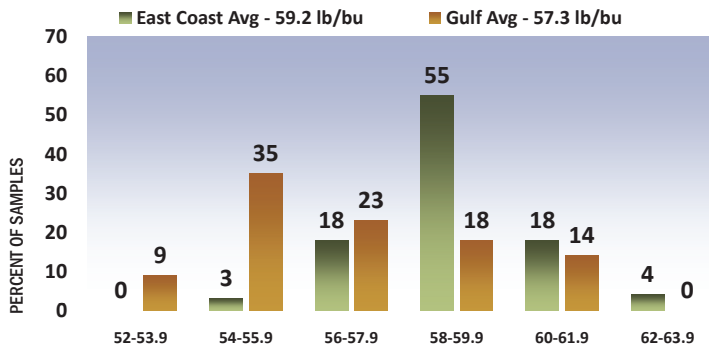
Low protein content, soft endosperm, red bran, weak gluten. Used in pastries, cakes, cookies, crackers, pretzels, and flat breads. Can also be used for blending.

NINE OF SIXTEEN STATES SURVEYED

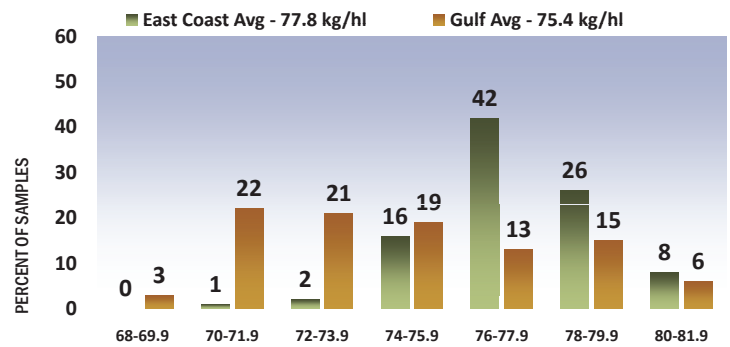
Arkansas • Illinois • Indiana • Kentucky • Maryland
Missouri • North Carolina • Ohio • Virginia



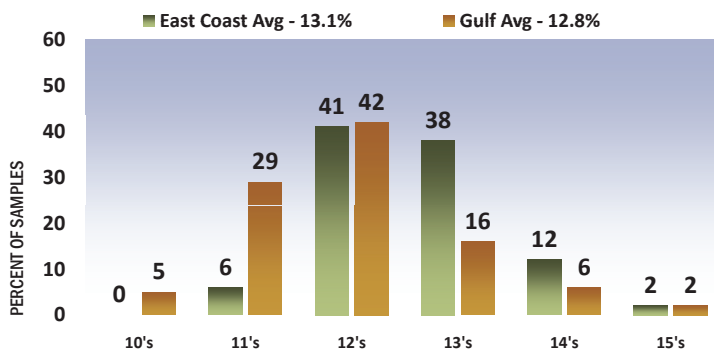
TEST WEIGHT | Pounds/Bushel



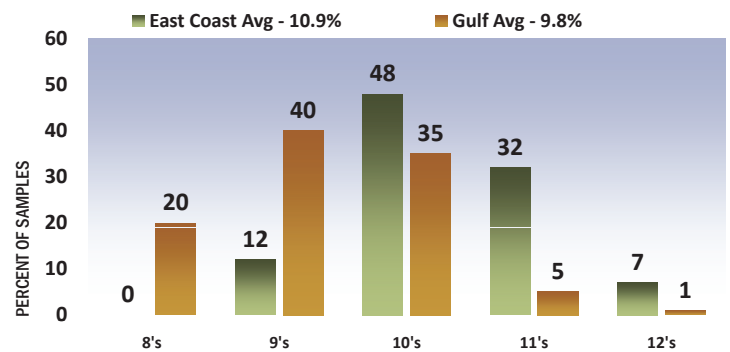
HECTOLITER WEIGHT | Kilograms/Hectoliter



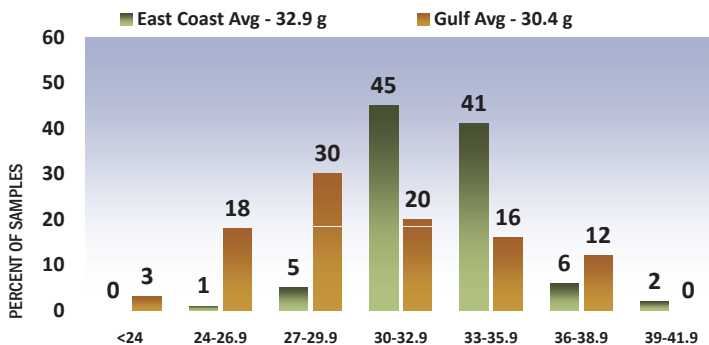
WHEAT MOISTURE | Percent



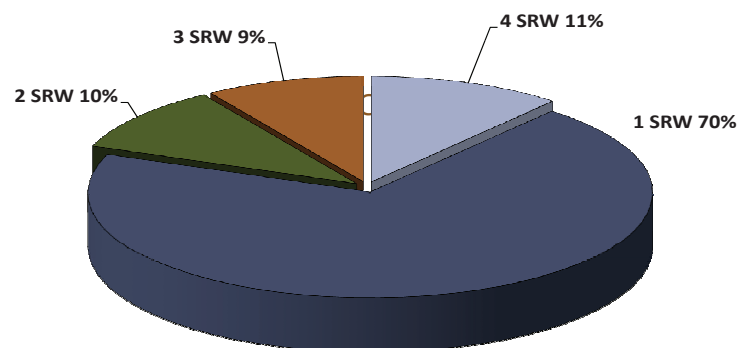
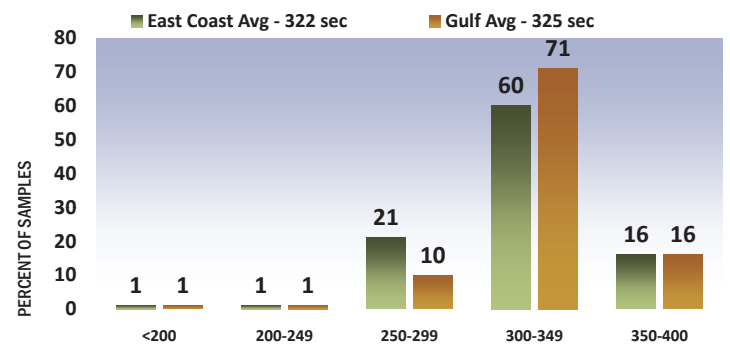
PROTEIN (12% MB) | Percent



1000 KERNEL WEIGHT | Grams



FALLING NUMBER | Seconds



*Based on 30 composite samples.

SOFT RED WINTER | HARVEST DATA

Soft Red Winter	Composite Average			East Coast*			Gulf Ports*		
	2009	2008	5-Year Avg	2009	2008	5-Year Avg	2009	2008	5-Year Avg
Wheat Grade Data:									
Test Weight (lb/bu)	57.6	59.2	59.5	59.2	60.5	59.6	57.3	58.9	59.5
(kg/hl)	75.8	77.9	78.3	77.8	79.6	78.4	75.4	77.6	78.3
Damaged Kernels (%)	2.4	0.9	0.8	1.8	0.7	1.0	2.5	0.9	0.8
Foreign Material (%)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Shrunken & Broken (%)	0.7	0.5	0.6	0.6	0.4	0.5	0.8	0.5	0.6
Total Defects (%)	3.1	1.4	1.5	2.4	1.2	1.6	3.2	1.4	1.4
Grade	3 SRW	2 SRW	2 SRW	2 SRW	1 SRW	2 SRW	3 SRW	2 SRW	2 SRW
Wheat Non-Grade Data:									
Dockage (%)	0.8	0.9	0.9	1.1	0.9	0.7	0.8	0.9	0.9
Moisture (%)	12.8	13.0	13.1	13.1	12.6	13.1	12.8	13.1	13.1
Protein (%) 12%/0% moisture basis	10.0/11.4	9.8/11.1	10.0/11.3	10.9/12.4	9.9/11.3	10.0/11.4	9.8/11.1	9.8/11.1	10.0/11.3
Ash (%) 14%/0% moisture basis	1.56/1.82	1.55/1.80	1.54/1.79	1.55/1.80	1.48/1.72	1.48/1.72	1.57/1.82	1.56/1.81	1.55/1.80
1000 Kernel Weight (g)	30.8	35.3	33.5	32.9	36.8	34.6	30.4	35.1	33.2
Kernel Size (%) lg/md/sm	80/19/01	85/14/01	83/16/01	83/16/01	89/10/01	85/14/01	80/19/01	85/14/01	83/16/01
Single Kernel: Hardness	20.1	14.4	18.2	25.9	18.2	17.3	18.9	13.7	18.5
Weight (mg)	30.6	32.4	30.9	32.2	35.3	34.0	30.2	31.9	30.2
Diameter (mm)	2.26	2.26	2.16	2.35	2.39	2.34	2.25	2.24	2.12
Sedimentation (cc)	12.3	11.6	13.2	16.7	13.0	14.1	11.4	11.3	13.0
Falling Number (sec)	325	325	341	322	352	333	325	320	343
DON (ppm)	1.8	0.6	0.5	1.5	0.7	0.4	1.9	0.6	0.5
Flour Data:									
Lab Mill Extraction (%)	67.2	68.6	69.4	66.9	69.8	69.2	67.3	68.4	69.5
Color: L*	93.3	93.8	93.3	93.2	94.0	93.4	93.3	93.8	93.3
a*	-3.1	-3.0	-3.1	-3.0	-3.0	-3.1	-3.1	-3.0	-3.1
b*	8.3	8.2	8.2	7.9	8.2	8.1	8.4	8.2	8.2
Protein (%) 14%/0% moisture basis	8.2/9.5	8.2/9.5	8.3/9.7	8.8/10.3	8.3/9.7	8.4/9.8	8.0/9.3	8.2/9.5	8.4/9.8
Ash (%) 14%/0% moisture basis	0.45/0.52	0.43/0.50	0.43/0.50	0.44/0.51	0.42/0.49	0.42/0.50	0.45/0.52	0.43/0.50	0.43/0.51
Wet Gluten (%)	21.4	21.7	21.9	22.9	21.1	20.5	21.1	21.8	22.3
Gluten Index	69.4	71.8	83.2	74.7	79.3	88.8	68.3	70.4	81.9
Falling Number (sec)	314	325	341	310	352	333	315	320	343
Amylograph Viscosity 65 g (BU)	553	648	590	477	570	521	568	662	606
Starch Damage (%)	4.4	3.9	4.2	4.4	4.4	4.2	4.4	3.9	4.2
Solvent Retention Capacity (%)									
Water/50% Sucrose	59/115	52/106	54/108	59/118	54/110	55/111	58/110	52/107	54/105
5% Lactic Acid/5% Na ₂ CO ₃	117/87	105/78	109/79	122/89	106/79	112/80	114/87	106/78	107/77
Dough Properties:									
Farinograph:									
Peak Time (min)	1.5	1.3	1.6	1.8	1.7	1.7	1.4	1.2	1.6
Stability (min)	2.6	2.5	3.0	2.8	3.1	3.1	2.5	2.4	3.0
Absorption (%)	51.3	51.7	52.4	52.8	53.0	52.7	51.0	51.4	52.4
Alveograph: P (mm)	41	38	39	50	46	44	39	37	37
L (mm)	83	70	93	85	66	89	83	71	95
P/L Ratio	0.50	0.55	0.41	0.59	0.69	0.49	0.48	0.52	0.40
W (10-4 joules)	90	80	94	115	92	104	85	78	91
Baking Evaluation:									
Crumb Grain	5.2	5.4	5.4	5.8	5.4	5.5	5.1	5.4	5.3
Crumb Texture	5.2	5.3	5.6	5.6	5.7	5.6	5.1	5.2	5.6
Loaf Volume (cc)	733	705	714	737	690	712	732	708	715
Cookie Spread Ratio	9.0	9.2	8.6	8.1	8.3	8.4	9.2	9.3	8.6
% of Area Sampled:	100%			17%			83%		

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

Soft Red Winter	2009	2008
Wheat Grade Data:		
Test Weight (lb/bu)	58.6	59.4
(kg/hl)	77.2	78.2
Damaged Kernels (%)	3.1	1.3
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	0.8	0.7
Total Defects (%)	4.0	2.1
Grade	2 SRW	2 SRW
Wheat Non-Grade Data:		
Dockage (%)	0.7	0.8
Moisture (%)	12.5	12.7
Protein (%) 12%/0% moisture basis	10.1/11.4	10.0/11.4
Ash (%) 14%/0% moisture basis	1.58/1.84	1.53/1.78
1000 Kernel Weight (g)	30.6	31.5
Kernel Size (%) lg/md/sm	83/16/1	83/16/1
Single Kernel: Hardness	21.5	22.7
Weight (mg)	31.3	31.5
Diameter (mm)	2.30	2.31
Sedimentation (cc)	11.3	11.3
Falling Number (sec)	335	353
DON (ppm)	0.8	0.6
Flour Data:		
Lab Mill Extraction (%)	67.7	70.4
Color: L*	93.3	93.4
a*	-3.1	-3.2
b*	7.3	8.0
Protein (%) 14%/0% moisture basis	8.3/9.7	8.4/9.8
Ash (%) 14%/0% moisture basis	0.46/0.53	0.45/0.52
Wet Gluten (%)	21.3	22.0
Gluten Index	85.2	79.2
Falling Number (sec)	358	361
Amylograph Viscosity 65 g (BU)	525	681
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Na ₂ CO ₃		
Dough Properties:		
Farinograph:		
Peak Time (min)	1.2	1.5
Stability (min)	2.4	3.0
Absorption (%)	51.8	51.7
Alveograph: P (mm)		
L (mm)	79	81
P/L Ratio	0.62	0.55
W (10 ⁻⁴ joules)	112	105
Baking Evaluation:		
Crumb Grain	5.1	5.3
Crumb Texture	5.3	5.5
Loaf Volume (cc)	695	706
Cookie Spread Ratio	8.6	8.8
Sample Count:	41	115

Soft Red Winter Production

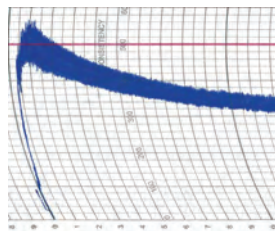
in major producing states (million metric tons)

	2009	2008	2007	2006	2005
Alabama	0.3	0.4	0.1	0.1	0.1
Arkansas	0.5	1.5	0.8	0.5	0.2
Georgia	0.3	0.6	0.3	0.2	0.2
Illinois	1.2	1.9	1.4	1.6	1.0
Indiana	0.8	1.1	0.6	0.9	0.7
Kentucky	0.6	0.9	0.3	0.6	0.5
Louisiana	0.3	0.6	0.3	0.1	0.1
Maryland	0.3	0.4	0.3	0.2	0.3
Michigan	0.6	0.8	0.6	0.8	0.6
Mississippi	0.2	0.8	0.5	0.1	0.1
Missouri	0.9	1.5	1.0	1.3	0.7
North Carolina	0.8	1.2	0.5	0.7	0.7
Ohio	1.9	2.0	1.3	1.8	1.6
South Carolina	0.2	0.3	0.1	0.2	0.2
Tennessee	0.5	0.9	0.3	0.3	0.2
Virginia	0.3	0.5	0.4	0.3	0.3
16-State Total	9.7	15.3	8.6	9.6	7.5
Total SRW Production	11.0	16.7	9.6	10.6	8.4

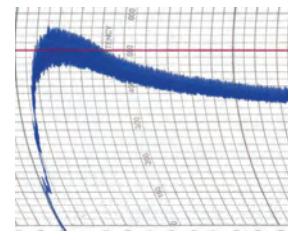
Based on USDA crop estimates of September 30, 2009.

FARINOGRAMS

GULF

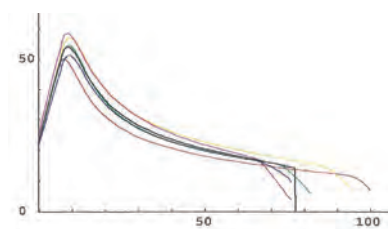


EAST COAST

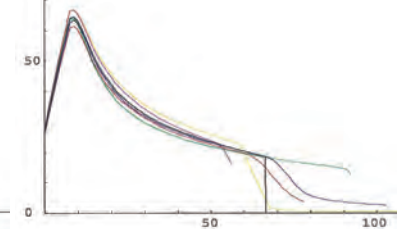


ALVEOGRAMS

GULF



EAST COAST



ANALYSIS METHODS

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

WHEAT AND GRADE DATA

Grade: Official U.S. Standards for Grain.

Dockage: Official USDA procedure using the Carter Dockage Tester.

Moisture: HRS, Durum - Motomco Moisture Meter and AACC 44-15A (Air Oven Method); SRW - AACC 44-15A; HRW - NIR Method; SW, HW - Official US Standards for grain method using Dickey-John Grain Analysis Computer 2100.

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: HRW - AACC 39-11 (NIR Method). SW, HW - Official USDA method using Foss Infratec Analyzer. All other classes - AACC 46-30 (Dumas Combustion Nitrogen Analysis method). Single Kernel Characterization: Perten method using Perten SKCS 4100.

Sedimentation: HRS, HRW (Midwestern), SRW, SW, HW - AACC 56-61A; Durum - AACC 56-70.

1000 Kernel Weight: HRS, Durum, SRW - based on a 10-gram sample of clean wheat counted by an electronic counter. SW, HW - based on three 100-kernel sample weight expressed on a 14% moisture basis. HRW - calculated from SKCS data by taking average kernel weight times 1000.

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 which do not pass through the No. 7 screen are classified as "Large." Kernels passing through the No. 7 screen but not the No. 9 screen are "Medium." Kernels passing through the No. 9 screen are "Small."

FLOUR DATA

Laboratory Milling Extraction: Samples were cleaned and tempered according to AACC 26-10A. All samples within each class other than California HRW were milled with standardized mill settings on a Buhler laboratory mill as described in the following procedures: SW - AACC 26-31; HW - AACC 26-31A; HRW (Midwestern), SRW, and HRS - AACC 26-21A. California HRW was milled on a Brabender® Quadrumat Senior mill using the Brabender® procedure. All extraction rates were calculated against total products on an "as is" moisture basis.

Ash: AACC 08-01, reported on a 14% moisture basis.

Color: Minolta Method using Minolta Chroma Meter CR-110 for HRW and SRW, CR-310 for HRS, or CR-410 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: HRW - AACC 39-11 (NIR Method). All other classes - AACC 46-30 (Dumas Combustion Nitrogen Analysis method).

Wet Gluten and Gluten Index: HRS, SRW, HW, HRW (Midwestern) - 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 (California) is reported on 14% moisture basis. HRW (California) 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. HRW, 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 for HRS, HRW, HW; 45 min. rest for SW.

Starch Damage: HRW - (SDmatic, similar to AACC 76-33.), HRS, SRW, Durum - AACC 76-30A. SW, HW - iodine absorption by Chopin SDMatic instrument.

Solvent Retention Capacity (SRC): AACC 56-11.

SEMOLINA DATA

Laboratory Milling Extraction: Midwestern 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 (Dumas Combustion Nitrogen Analysis method).

Wet Gluten and Gluten Index: AACC 38-12 Glutomatic procedure.

Specks: Sample is pressed under 3 inch x 4 inch glass plate,

and the specks within one-inch square marked on the plate are counted. Average of three determinations is expressed as specks per 10 square inches.

Mixograph: 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 classification number, the stronger the curve type.

BAKING, NOODLE, STEAMED BREAD AND SPAGHETTI DATA

HRW: AACC 10-10B (Pup Loaf Method). 100-g pin mixer with head speed of 100-125 rpm was used to mix 100 g flour at 14% mb with optimized water absorption and other ingredients (6% sugar, 3% shortening, 1.5% salt, 1.0% Instant dry yeast, 50 ppm ascorbic acid, and 0.25% mated barley flour) to optimum development. The dough was fermented for 60 min with two punches, then molded and panned, and proofed for 60 min before baking at 425 F for 18 min. Loaf volume is measured immediately after baking by rapeseed displacement. Crumb grain and texture were evaluated using a scale of 0 to 6 points, which in this booklet has been mathematically converted to a scale of 1-10. California HRW only - AACC 10-10B producing two loaves per batch using wet compressed yeast, malt flour, 45 ppm ascorbic acid, and 120 min. fermentation. Loaf volume is measured immediately after baking. Scoring of grain and texture for all is on a scale of 1-10 with higher numbers indicating preferred quality attributes.

SRW: AACC 10-10B (Pup Loaf Method) producing two loaves per batch using wet compressed yeast and ascorbic acid. After mixing, the dough is divided into two equal portions, fermented for 160 min., molded and panned in "pup loaf" pans before proofing and baking. Loaf volume is measured immediately after baking by rapeseed displacement.

SRW Cookie Spread Ratio - AACC 10-50D.

HRS: AACC 10-09 (Long Fermentation), modified: fungal amylase (15 SKB units/100 g flour) replacing malt dry powder; instant dry yeast (1%); 10 ppm bromate, where additional oxidants are required; 2% added shortening. Doughs are mechanically punched, moulded, and baked in "Shogren-type" pans. Scoring is based on a scale of 1-10 with higher numbers indicating preferred quality attributes.

SW: Cookie diameter - AACC 10-52. Sponge cake volume* and score - Japanese standard method described by Nagao in Cereal Chemistry 53:977-988, 1976.

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 16-50.

HW Baking: AACC 10-10B with 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 100%, salt 1.2%, and distilled water 28%. The Chinese wet noodle formula was: flour 100%, salt 2%, K_2CO_3 0.45%, Na_2CO_3 0.45%, and distilled water 32%. 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 270° 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. Noodle 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 Stable Micro Systems TA.XT2 Texture Analyzer. Firmness indicates noodle bite; springiness indicates the degree of recovery after first bite; cohesiveness is a measure of the extent to which noodle structure is disrupted during first bite; and chewiness is a product of firmness, cohesiveness and springiness (firmness x cohesiveness x springiness) and thus is a single parameter that incorporates the three textural parameters. Higher values of these textural parameters are generally more desirable for Chinese-style noodles.

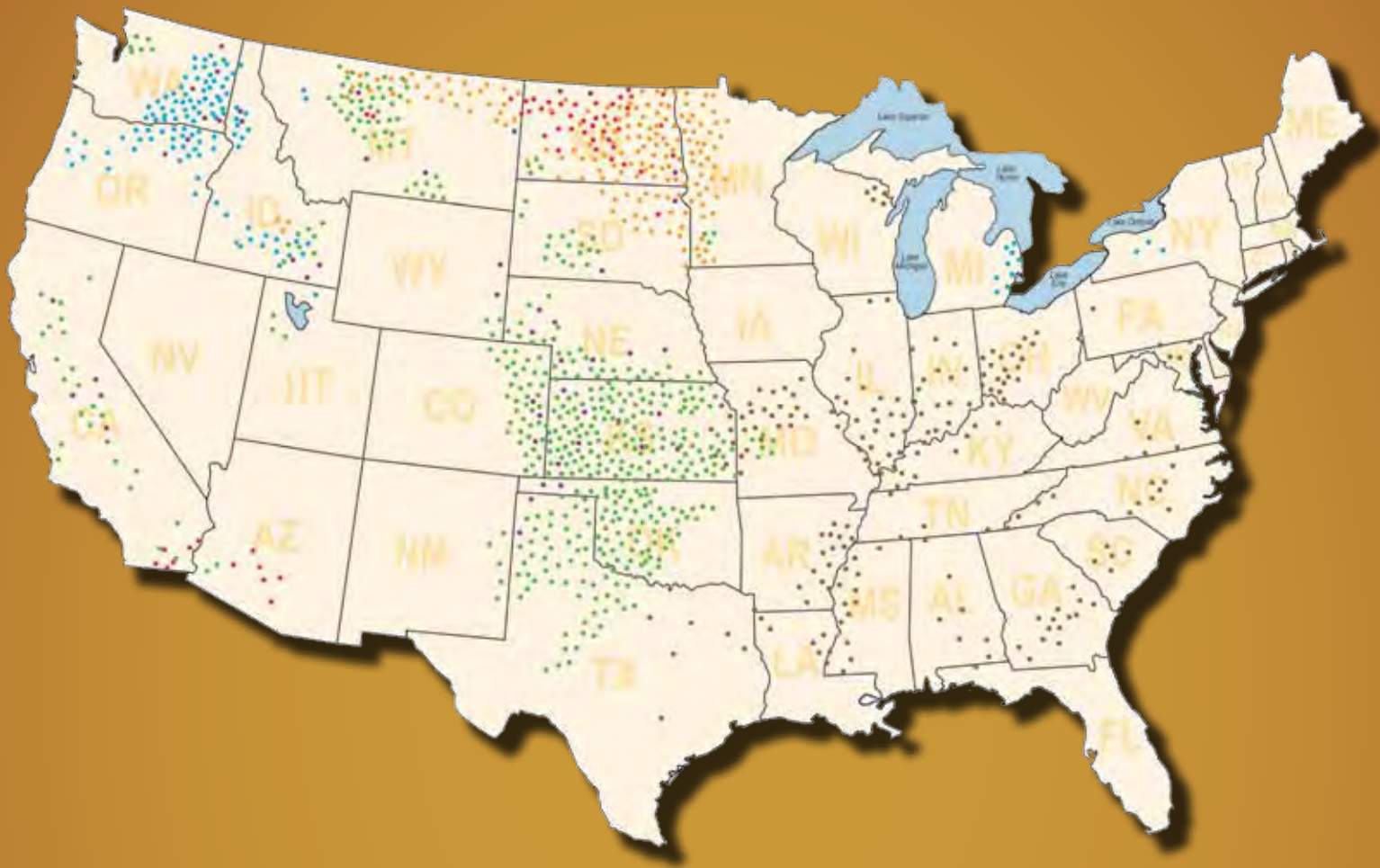
Chinese Steamed Bread: Two types of steamed breads were prepared: Chinese southern-type from each of the SW and club wheat flours and Asian steamed breads from each of the HW flours. The Chinese southern-type formula was: flour 100%, sugar 15%, shortening 4%, baking powder 1.2%, instant yeast 0.8%, nonfat dry milk powder 3% and water 39-43%. The Asian-type formula was: flour 100%, instant yeast 1.5%, sugar 12%, shortening 2%, and water 42.5-45%. Yeast was dissolved in water before use. All steamed breads were prepared using no-time 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.

* Finished Product Volume Measurement for SW sponge cake and steamed bread and HW bread and steamed bread: Laser light using a Tex Vol Instrument (BVM-L370).

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

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



HARD RED WINTER



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.



HARD RED SPRING



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.



SOFT RED WINTER



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.



DURUM



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



HARD WHITE



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.



SOFT WHITE



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.



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PROVIDING SERVICES TO: China			
CAIRO (Regional Office)	(202) 2380-3162	(202) 2380-3138	InfoCairo@uswheat.org
PROVIDING SERVICES TO: Algeria, Bahrain, Burundi, Cyprus, Djibouti, Egypt, Eritrea, Ethiopia, Iraq, Iran, Jordan, Kenya, Kuwait, Lebanon, Libya, Mauritania, Mauritius, Morocco, Oman, Rwanda, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tanzania, Tunisia, Turkey, United Arab Emirates, Uganda, Yemen			
CAPE TOWN (Regional Office)	(27 21) 418-3710	(27 21) 419-0400	InfoCapeTown@uswheat.org
PROVIDING SERVICES TO: Angola, Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Chad, Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Gambia, Guinea, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Sao Tome/Principe, Senegal, Sierra Leone, South Africa, St. Helena, Swaziland, Togo, Zaire, Zambia, Zimbabwe			
CASABLANCA	(212) 522 74-1459	(212) 522 74-1460	InfoCasablanca@uswheat.org
PROVIDING SERVICES TO: Algeria, Libya, Mauritania, Morocco, Tunis			
HONG KONG (Regional Office)	(852) 2890-2815	(852) 2576-2676	InfoHongKong@uswheat.org
PROVIDING SERVICES TO: China, Mongolia			
LAGOS	(234 1) 261-0657	(234 1) 261-0657	mtalabi@uswheat.org
PROVIDING SERVICES TO: Nigeria			
MANILA	(63 2) 818-4610	(63 2) 815-4026	InfoManila@uswheat.org
PROVIDING SERVICES TO: Philippines			
MEXICO CITY (Regional Office)	(5255) 5-202-2075	(5255) 2-623-1109	InfoMexico@uswheat.org
PROVIDING SERVICES TO: Anguilla, Antigua-Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, French Guiana, French West Indies, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Leeward-Windward Islands, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Puerto Rico, Saint Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad-Tobago, Turks & Caicos Islands, Venezuela, Virgin Islands (British)			
MOSCOW	(7 495) 956-9081	(7 495) 608-8124	InfoMoscow@uswheat.org
PROVIDING SERVICES TO: Azerbaijan, Armenia, Georgia, Kazakhstan, Kyrgyzstan, Moldavia, Russia, Tadjikistan, Turkmenistan, Ukraine, Uzbekistan			
ROTTERDAM (Regional Office)	(31 10) 413-9155	(31 10) 433-0438	InfoRotterdam@uswheat.org
PROVIDING SERVICES TO: Albania, Azerbaijan, Armenia, Austria, Belarus, Belgium, Bosnia, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Moldavia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tadjikistan, Turkmenistan, Ukraine, United Kingdom, Uzbekistan			
SANTIAGO (Regional Office)	(56 2) 235-7137	(56 2) 235-7371	InfoSantiago@uswheat.org
PROVIDING SERVICES TO: Bolivia, Brazil, Chile, Colombia, Ecuador, Peru			
SEOUL	(822) 720-7926	(822) 720-7925	InfoSeoul@uswheat.org
PROVIDING SERVICES TO: Korea			
SINGAPORE (Regional Office)	(65) 6737-4311	(65) 6733-9359	InfoSingapore@uswheat.org
PROVIDING SERVICES TO: Bangladesh, Burma, Cambodia, India, Indonesia, Malaysia, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam			
TAIPEI	(886 2) 2521-1144	(886 2) 2521-1568	InfoTaipei@uswheat.org
PROVIDING SERVICES TO: Taiwan			
TOKYO	(813) 3582-7911	(813) 3582-7915	InfoTokyo@uswheat.org
PROVIDING SERVICES TO: Japan			