





Greetings!

On behalf of U.S. Wheat Associates and the entire U.S. wheat industry, I am pleased to present this Crop Quality Report featuring data for all six classes of U.S. wheat harvested in 2011.

This year weather challenged our farmers, including drought in the Southern Plains that hampered hard red winter production and excessive rainfall in the Northern Plains that delayed planting and harvest for hard red spring and durum wheat. Despite these challenges, America's farmers produced wheat with quality that exceeds last year's crop.

All the world's major wheat suppliers returned to marketplace competition this year and in some cases may offer their export supplies at less expensive prices. We believe that careful consideration of this data, the undisputed history of reliability and USW's dedication to service reveal that U.S. wheat often provides the greatest value for our customers. We look forward to sharing this information with the world's wheat buyers, millers, bakers and food processors.

On behalf of our producers, our 19 state wheat commission members and the U.S. Department of Agriculture's Foreign Agricultural Service, thank you for choosing U.S. wheat.

Sincerely,

Alan Tracy, President
U.S. Wheat Associates



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

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Arkansas Wheat Promotion Board

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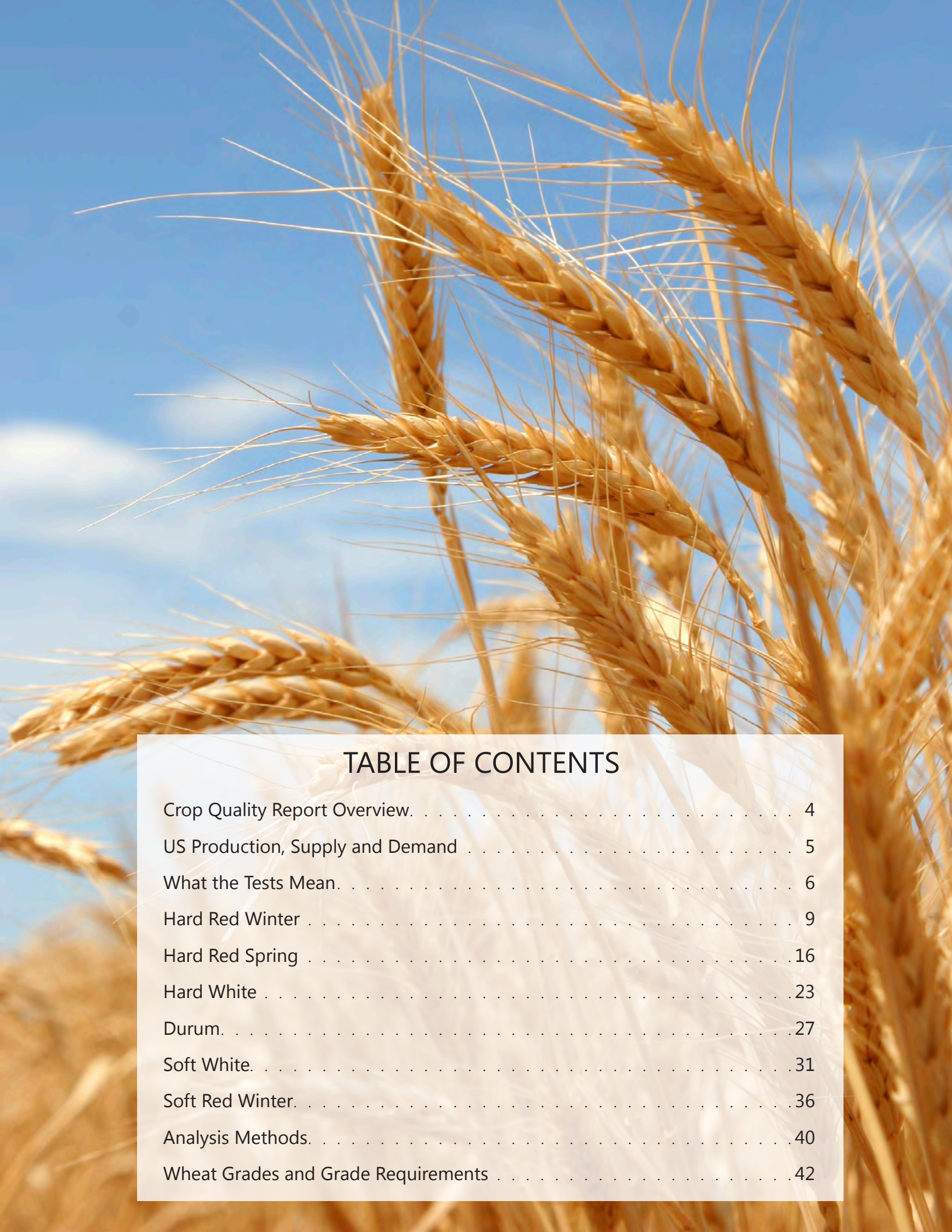


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2011 CROP QUALITY REPORT OVERVIEW

SUMMARY OF CLASSES

	Hard Red Winter ¹		Hard Red Spring		Northern Durum ²		Desert Durum [®]		Soft White		Soft Red Winter	
	2011	5-Year Avg	2011	5-Year Avg	2011	5-Year Avg	2011	5-Year Avg	2011	5-Year Avg	2011	5-Year Avg
Test Weight (lb/bu)	60.8	60.4	60.4	61.1	59.9	60.3	62.9	62.6	60.9	59.7	58.8	58.9
(kg/hl)	80.0	79.5	79.4	80.4	78.0	78.5	81.8	81.5	80.1	78.6	77.4	77.5
Grade	1 HRW	1 HRW	1 DNS	1 NS	2 HAD	1 HAD	1 HAD	1 HAD	1 SW	2 SW	2 SRW	2 SRW
Dockage (%)	0.5	0.6	0.6	0.6	1.4	1.5	0.4	0.2	0.7	0.7	0.6	0.9
Wheat Moisture (%)	10.8	11.2	11.9	12.1	11.6	11.6	6.3	6.7	9.7	9.3	12.9	12.9
Wheat Protein (%) ³	12.3	12.3	14.8	14.1	13.6	14.4	13.6	13.4	9.2	10.4	10.2	10.1
Wheat Ash (%) ³	1.54	1.55	1.72	1.57	1.71	1.54	1.78	1.70	1.35	1.39	1.53	1.53
1000 Kernel Weight (g)	30.3	29.6	26.5	31.6	36.6	36.9	50.6	51.4	36.0	34.0	31.9	33.0
Wheat Falling Number (sec)	403	413	368	401	372	361	0	0	306	330	328	329
Flour/Semolina Extraction (%)	70.4	70.3	68.5	68.8	64.5	64.4	62.8	63.4	75.4	70.3	71.4	68.9
Flour/Semolina Ash (%) ³	0.43	0.50	0.55	0.50	0.66	0.68	0.86	0.85	0.51	0.44	0.44	0.43
Wet Gluten (%)	28.3	29.5	36.7	35.5	35.6	37.7	31.5	33.3	19.8	23.1	23.6	22.2
Farinograph:												
Peak Time (min)	5.0	5.3	7.7	8.4	n/a	n/a	n/a	n/a	1.5	1.6	1.9	1.6
Stability (min)	14.7	11.0	12.0	16.1	n/a	n/a	n/a	n/a	2.6	4.1	3.0	2.9
Absorption (%)	57.1	57.9	65.0	66.1	n/a	n/a	n/a	n/a	53.0	53.6	52.7	52.0
Alveograph W (10 ⁻⁴ joules)	246	246	324	423	105	115	181	181	92	111	85	91
Loaf Volume (cc)	804	831	975	974	n/a	n/a	n/a	n/a	n/a	n/a	740	721
Production (mmt)	21.2	25.1	11.0	11.8	0.9	1.8	0.6	0.6	7.9	6.1	12.5	10.9
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¹HRW data does not include California

² Durum extraction and ash values are for semolina.

³Protein - 12% moisture basis; ash - 14% moisture basis



US Production by Class

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

	2011	2010	2009	2008	2007
Hard Red Winter	21.2	27.7	25.0	28.2	26.0
Hard Red Spring	11.0	15.8	14.9	13.9	12.2
Hard White	0.6	0.7	0.8	0.7	0.5
Durum	1.4	3.0	3.0	2.3	2.0
Soft White	7.9	6.9	5.7	6.1	5.3
Soft Red Winter	12.5	6.5	11.0	16.7	9.6
Total	54.6	60.5	60.4	68.0	55.8

Based on USDA crop estimates of September 30, 2011.

US Supply and Demand

Estimated for 2010/2011 (year beginning June 1)
(million metric tons)

	HRW	HRS	Durum	White	SRW	TOTAL
Beginning Stocks	10.5	5.0	1.0	2.3	4.7	23.5
Production	21.2	11.0	1.4	8.5	12.5	54.6
Imports	0.0	1.1	1.2	0.2	0.7	3.3
Total Supply	31.8	17.1	3.6	11.1	17.8	81.4
Domestic Use	11.9	6.9	2.3	3.2	7.8	32.1
Exports	11.7	6.0	0.5	4.9	3.4	26.5
Total Demand	23.7	12.9	2.9	8.1	11.2	58.6
Ending Stocks	8.1	4.3	0.8	3.0	6.6	22.8
Stocks Five-year Average	6.3	3.8	0.7	1.6	3.7	16.1

Based on USDA Supply/Demand estimates of October 12, 2011.

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												



California-Arizona Planting Dates
California-Arizona Harvest Dates



Other States Planting Dates
Other States Harvest Dates

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. (See table on page 42.) 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.

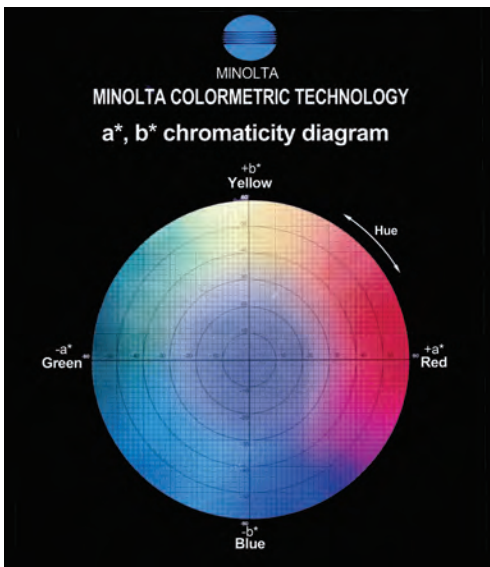
Falling Number indirectly indicates alpha-amylase activity, which results from sprout damage. High Falling Number values indicate low alpha-amylase activity. Sufficient alpha-amylase activity is required in flour for some products such as yeast-raised bread. However, excessive alpha-amylase in wheat 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, milling with the Buhler Laboratory Mill is mainly done to

WHAT THE TESTS MEAN

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 particle size and the ash content of the flour and often affects the color of the finished product. Durum semolina color is heavily influenced by particle size.

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.



Photo courtesy of Wheat Marketing Center

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” or resistance), 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 and, with adaptive hydration and mix time, of stronger wheats including durum. Requirements differ depending on intended flour use. For example, low P value (indicating weak gluten) and long L value (high extensibility) are preferred for cakes and confectionery products; P/L close to 1 and high W values (strong gluten) are preferred for pan breads; and low P and long L values are favored for durum for pasta semolina.

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



Photo courtesy of Wheat Marketing Center

MIDWEST AND PNW HARVEST SURVEY

Weather and Harvest: The 2011 Hard Red Winter (HRW) wheat crop is one of contrasts. The southern Great Plains, particularly Texas, southwest Oklahoma, and southwest Kansas, were particularly hard hit by drought, with total precipitation less than 5% of normal over large areas. Most moisture came in the fall at planting time, allowing the crop to get started, but moisture stress was an issue throughout the remainder of the growing season in the south. In sharp contrast, wheat planted from central Kansas northward to the Pacific Northwest (PNW) had early season conditions ranging from fair in Colorado and Kansas to better than average in Montana. By late May areas of northern Colorado and northern Kansas received beneficial moisture while areas of the northern Plains and PNW received excessive moisture. By mid-July the excessive moisture in the northern areas gave way to heat and high winds which stressed the crop.

Survey Methods: Sample collection and analysis were conducted by the USDA ARS Hard Winter Wheat Quality Lab, American Institute of Baking; and Plains Grains, Inc. A total of 473 samples were collected from grain elevators when the local harvest was at least 30% complete in Texas, Oklahoma, Colorado, Kansas, Nebraska, South Dakota, North Dakota, Wyoming, Montana, Washington and Oregon. The area sampled represents approximately 80% of HRW production. Official grade and non-grade factors were determined on each individual and composite sample. Milling, dough functionality and bake tests were run on 101 composites based on 46 production areas and three protein ranges of <11.5%, 11.5% - 12.5%, and >12.5%. Results were aggregated into Gulf-tributary (about 70% of production), PNW-tributary (30%), and Overall averages. The analytical methods are described in the Analysis Methods section of this booklet.

Wheat and Grade Data: Seventy-two percent of individual samples graded US #1 and 97% graded US #2 or better. Average dockage is 0.5%. Damaged kernels, shrunken and broken kernels, and total defects are all equal to or below the five-year averages while foreign material increased slightly over the five-year average. Kernel characteristics, including test weight, thousand kernel weight and kernel diameter (all above the five-year averages), are very good considering the adverse growing conditions of moisture stress (both high and low) and late season heat stress in the PNW.

Growing conditions favored protein accumulation. Overall protein content of 12.3% is above the five-year average and significantly higher than the 2010 value of 11.8%. Forty percent of the crop exceeds 12.5% protein. While the highest protein values were found the south where precipitation was limited, northern areas exceeded the 2010 protein levels even with excessive precipitation. Moisture content of 10.8% is significantly lower than the five-year average of 11.2%, and the falling number of 403 seconds indicates a sound crop.

Flour and Baking Data: The Buhler Laboratory Mill flour yield of 70.4%, while below the 2010 overall average of 70.9%, is slightly above the five-year average of 70.3%. Flour protein averages 10.5%, below the five-year average but above 2010. Farinograph peak time of 5.0 minutes is slightly below the five-year average but well above the 2010 average. Farinograph stability significantly exceeds the five-year average by over 3 minutes at 14.7 minutes. Farinograph absorption also exceeds the five-year average and the 2010 average. The average W value is slightly higher than the five-year average. Loaf volume averages 804 cc, comparable to the 2010 crop but below the five-year average of 831 cc.

Summary: The 2011 HRW crop can be characterized as sound with low dockage, very good kernel characteristics, and very high protein content. It has good milling properties with flour extraction equal to the five-year average and slightly above average flour protein content. Dough properties include very good stability, average peak time equal to the five-year average and average W value that compares to the five-year average.

CALIFORNIA HARVEST SURVEY

California's wheat growing regions are defined by climate, value of alternative crops, and distinct differences in variety selection. HRW acreage increased again this year in response to strong prices. The growing season was cool and wet, and yields were high and proteins variable, but overall quality was superior to last year. Disease pressure was present in susceptible varieties. Harvest takes place in June and July. With the strong demand for new crop wheat in the domestic market place, export buyers are encouraged to express their interest in purchasing California wheat in early spring.

Survey methods: Grade information is provided by FGIS. Milling and end-use quality analysis was conducted by the California Wheat Commission laboratory.

EXPORT CARGO SURVEY

The export cargo data represent 499 individual subplot samples provided by USDA's Federal Grain Inspection Service for marketing years 2011 and 2010. Of 121 2011-crop samples collected in July and August, 96 are from Gulf and 25 from PNW ports. Of the 378 2010-crop samples, 304 are from Gulf and 74 from PNW ports. Grade data are the official grades on the individual sublots. Milling and baking analyses were conducted by CII Laboratory Services, Kansas City, MO.



HARD RED WINTER | MIDWESTERN HARVEST DATA



Hard Red Winter	Composite Average					
	2011 By Protein				2010	5-Year
	Low	Med	High	Overall	Overall	Average
Wheat Grade Data:						
Test Weight (lb/bu)	60.5	61.3	60.3	60.8	61.0	60.4
(kg/hl)	79.5	80.6	79.3	80.0	80.2	79.5
Damaged Kernels (%)	0.2	0.2	0.2	0.2	0.3	0.3
Foreign Material (%)	0.1	0.2	0.2	0.1	0.2	0.1
Shrunken & Broken (%)	1.2	1.1	1.1	1.1	1.1	1.2
Total Defects (%)	1.5	1.5	1.5	1.5	1.6	1.6
Grade	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW
Wheat Non-Grade Data:						
Dockage (%)	0.5	0.5	0.5	0.5	0.6	0.6
Moisture (%)	10.8	10.9	10.9	10.8	11.2	11.2
Protein (%) 12%/0% moisture basis	11.0/12.5	11.9/13.5	13.1/14.9	12.3/14.0	11.8/13.4	12.3/14.0
Ash (%) 14%/0% moisture basis	1.49/1.72	1.52/1.77	1.61/1.88	1.54/1.79	1.55/1.80	1.55/1.80
1000 Kernel Weight (g)	32.1	31.0	29.4	30.3	29.4	29.6
Kernel Size (%) lg/md/sm	65/34/1	62/37/1	52/46/2	57/41/2	62/37/1	58/40/1
Single Kernel: Hardness	60.0	66.9	67.8	66.8	69.7	69.3
Weight (mg)	32.1	31.0	29.4	30.3	29.4	29.4
Diameter (mm)	2.64	2.64	2.57	2.60	2.61	2.38
Sedimentation (cc)	48.4	56.4	60.6	56.9	54.0	49.5
Falling Number (sec)	393	397	415	403	406	413
DON (ppm)	< 0.5	< 0.5	< 0.5	< 0.5		
Flour Data:						
Lab Mill Extraction (%)	70.5	70.7	70.1	70.4	70.9	70.3
Color: L*	92.8	92.5	92.3	92.5	92.6	92.0
a*	-2.9	-2.5	-2.4	-2.6	-1.8	-1.9
b*	10.4	10.3	10.4	10.4	10.4	10.0
Protein (%) 14%/0% moisture basis	9.4/10.9	10.6/12.3	11.7/13.7	11.0/12.8	10.1/11.7	10.9/12.6
Ash (%) 14%/0% moisture basis	0.42/0.49	0.43/0.50	0.44/0.51	0.43/0.50	0.42/0.49	0.50/0.57
Wet Gluten (%)	22.6	28.2	31.2	28.3	27.2	29.5
Gluten Index	97.7	96.4	94.1	95.4	97.7	94.8
Falling Number (sec)	416	355	431	400	N/A	413
Amylograph Viscosity 65 g (BU)	640	669	671	665	695	912
Starch Damage (%)	5.7	5.8	5.5	5.7	5.8	6.3
Dough Properties:						
Farinograph:						
Peak Time (min)	3.4	4.9	5.8	5.0	4.3	5.3
Stability (min)	12.2	14.2	16.2	14.7	12.0	11.0
Absorption (%)	55.4	57.1	57.8	57.1	56.3	57.9
Alveograph: P (mm)	69	77	75	75	75	76
L (mm)	90	94	97	93	85	98
P/L Ratio	0.78	0.86	0.80	0.83	0.90	0.77
W (10 ⁻⁴ joules)	215	253	257	246	232	246
Extensograph: Resistance (BU)	356/564	367/607	363/581	365/587	343/561	329/491
(45/135 min) Extensibility (cm)	14.3/12.8	14.4/13.6	14.9/13.7	14.6/13.4	14.7/13.7	14.9/14.2
Area (sq cm)	90/116	94/137	97/136	95/131	91/131	89/121
Baking Evaluation:						
Crumb Grain (scale 1-10)	4.2	5.3	5.1	5.0	5.8	5.9
Crumb Texture (scale 1-10)	5.7	6.1	6.6	6.3	6.7	6.8
Loaf Volume (cc)	724	802	839	804	813	831
% of Area Production:	27	30	43	100	100	

2011 Protein Range: Low, less than 11.5%; Med, 11.5 - 12.5%; High, 12.5% or greater

Gulf Exportable Average						PNW Exportable Average					
2011 By Protein				2010 Overall	5-Year Average	2011 By Protein				2010 Overall	5-Year Average
Low	Med	High	Overall			Low	Med	High	Overall		
59.9	61.4	60.6	60.7	61.0	60.2	61.7	61.2	59.5	61.0	61.1	61.4
78.9	80.7	79.7	79.8	80.2	79.2	81.1	80.5	78.3	80.2	80.3	80.7
0.2	0.2	0.2	0.2	0.3	0.3	0.1	0.2	0.4	0.2	0.4	0.2
0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.2	0.2	0.1	0.1
1.2	0.9	1.0	1.0	1.1	1.2	1.4	1.5	1.4	1.4	1.1	1.2
1.4	1.2	1.4	1.3	1.6	1.6	1.6	2.1	1.9	1.9	1.6	1.4
2 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	2 HRW	1 HRW	1 HRW	1 HRW
0.4	0.4	0.4	0.4	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6
10.8	11.0	10.7	10.8	11.1	11.2	10.9	10.6	11.4	10.9	11.3	10.9
11.1/12.6	12.0/13.6	13.2/15.0	12.5/14.2	11.9/13.5	12.4/14.1	10.8/12.3	11.8/13.4	12.9/14.7	11.7/13.3	11.4/12.9	12.0/13.6
1.51/1.75	1.51/1.76	1.56/1.81	1.54/1.79	1.57/1.82	1.57/1.82	1.43/1.66	1.53/1.78	1.75/2.03	1.54/1.79	1.48/1.72	1.48/1.72
32.6	31.5	28.8	30.2	29.2	29.5	30.9	29.7	30.7	30.4	30.1	30.2
69/30/1	64/35/1	50/48/2	57/41/2	60/38/2	58/39/2	56/42/2	57/41/2	57/41/2	57/41/2	63/36/1	58/41/1
56.4	66.7	70.7	67.0	70.8	69.2	68.5	67.2	60.9	66.3	65.9	68.7
32.6	31.5	28.8	30.2	29.2	29.4	30.9	29.7	30.7	30.4	30.1	29.9
2.66	2.66	2.55	2.60	2.61	2.39	2.59	2.58	2.61	2.59	2.60	2.37
46.8	56.1	62.0	57.6	52.1	49.0	52.0	57.0	57.4	55.1	56.1	49.7
391	390	406	399	404	424	397	415	435	412	382	414
< 0.5	< 0.5	< 0.5	< 0.5			< 0.5	< 0.5	< 0.5	< 0.5		
70.3	70.4	69.7	70.0	70.5	70.3	71.1	71.4	70.9	71.1	71.9	70.6
92.7	92.4	92.3	92.4	92.5	92.0	92.9	92.8	92.4	92.8	92.8	92.3
-2.8	-2.4	-2.3	-2.5	-1.8	-1.9	-2.9	-2.8	-2.6	-2.8	-1.9	-1.9
10.2	10.1	10.4	10.3	10.6	10.0	10.9	10.9	10.3	10.7	10.2	9.8
9.4/10.9	10.6/12.4	11.8/13.8	11.3/13.1	10.2/11.8	10.9/12.7	9.4/10.9	10.5/12.2	11.6/13.5	10.3/12.0	9.9/11.5	10.7/12.5
0.43/0.50	0.44/0.51	0.45/0.53	0.44/0.51	0.42/0.49	0.50/0.58	0.40/0.47	0.41/0.48	0.41/0.48	0.41/0.48	0.40/0.47	0.47/0.55
22.3	28.5	31.8	29.2	27.5	29.7	23.1	27.6	29.9	26.4	26.1	28.7
98.4	96.1	93.2	95.0	97.4	94.6	96.2	97.3	96.2	96.6	98.6	95.9
420	416	439	429	404	424	405	412	414	410	382	414
647	671	687	675	726	921	623	664	636	642	586	882
5.4	5.8	5.5	5.6	5.7	6.3	6.3	5.8	5.4	5.9	5.9	6.1
3.5	5.0	6.3	5.4	4.7	5.4	3.2	4.7	4.8	4.1	3.0	5.1
12.3	14.5	16.9	15.4	12.0	10.9	12.0	13.7	14.4	13.2	11.8	11.2
55.1	57.4	58.3	57.5	56.4	57.8	56.1	56.5	56.7	56.4	56.0	57.8
67	79	78	76	75	74	73	72	67	71	75	80
92	91	92	92	84	100	86	102	108	97	90	94
0.73	0.91	0.87	0.86	0.91	0.75	0.88	0.73	0.63	0.76	0.86	0.85
209	249	255	245	229	242	227	260	261	248	244	252
339/533	365/606	363/567	359/572	337/554	361/494	396/636	373/610	363/612	380/621	362/585	408/541
14.4/13.1	14.1/13.4	14.8/13.7	14.5/13.5	14.7/13.7	15.7/15.1	14.0/12.1	15.2/14.0	15.0/13.7	14.7/13.2	14.8/13.5	16.1/14.8
87/116	88/133	95/132	92/129	90/130	94/120	96/116	106/146	102/145	101/134	97/133	107/126
4.0	5.4	5.4	5.2	6.0	6.1	4.6	5.0	4.5	4.7	5.2	5.6
5.5	6.0	6.6	6.2	6.8	6.9	6.2	6.4	6.5	6.3	6.6	6.8
713	809	853	816	817	831	751	786	804	777	801	825
18	28	54	100	100		39	38	23	100	100	

2011 Protein Range: Low, less than 11.5%; Med, 11.5 - 12.5%; High, 12.5% or greater

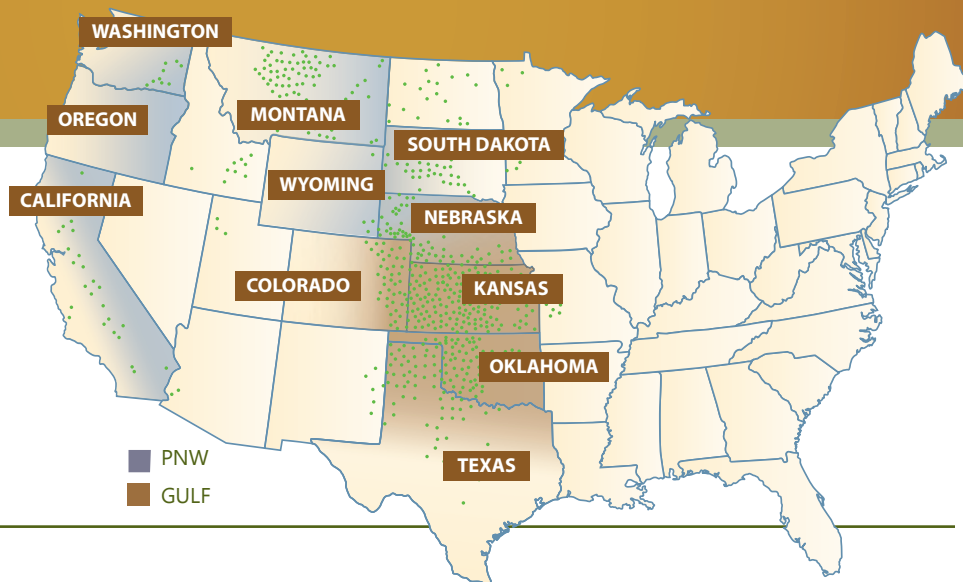
HARD RED WINTER | CALIFORNIA AND EXPORT DATA

Hard Red Winter	California Harvest Data				Export Cargo Data			
	Medium Protein		High Protein		Gulf		PNW	
	2011	2010	2011	2010	2011	2010	2011	2010
Wheat Grade Data:								
Test Weight (lb/bu)	62.3	63.7	62.3	63.5	61.1	61.2	61.8	62.0
(kg/hl)	81.9	83.7	81.9	83.4	80.4	80.4	81.3	81.5
Damaged Kernels (%)	0.1	0.0	0.1	0.3	1.4	1.0	0.3	0.2
Foreign Material (%)	0.1	0.3	0.1	0.2	0.2	0.2	0.1	0.1
Shrunken & Broken (%)	0.4	0.4	0.7	0.5	1.4	1.5	1.3	1.3
Total Defects (%)	0.6	0.7	0.9	0.9	3.0	2.7	1.6	1.6
Grade	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW	1 HRW
Wheat Non-Grade Data:								
Dockage (%)	0.7	1.0	0.9	0.9	0.6	0.7	0.4	0.3
Moisture (%)	8.9	8.6	8.9	8.4	11.4	11.2	11.1	11.1
Protein (%) 12%/0% moisture basis	11.8/13.4	11.7/13.3	13.2/15.0	13.5/15.3	12.1/13.7	11.8/13.4	11.8/13.4	11.6/13.2
Ash (%) 14%/0% moisture basis	1.43/1.67	1.39/1.61	1.50/1.74	1.45/1.69	1.57/1.83	1.52/1.77	1.49/1.73	1.41/1.63
1000 Kernel Weight (g)	44.1	47.5	44.7	46.7	27.8	28.1	29.7	29.4
Kernel Size (%) lg/md/sm	92/8/0	95/5/0	90/10/0	93/7/0	62/36/2	66/32/2	65/34/2	67/32/1
Single Kernel: Hardness						72.8		70.5
Weight (mg)	60.5	67.2	59.0	64.7		30.1		31.1
Diameter (mm)	2.72		2.70			2.55		2.52
Sedimentation (cc)					28.7	27.0	31.3	33.8
Falling Number (sec)					401	422	389	376
DON (ppm)						0.1		0.1
Flour Data:								
Lab Mill Extraction (%)	73.5	71.8	73.7	72.7	71.7	69.8	73.2	71.0
Color: L*					92.1	92.4	91.8	92.6
a*					-3.0	-2.9	-3.0	-2.9
b*					8.3	8.3	8.5	8.4
Protein (%) 14%/0% moisture basis	10.5/12.3	11.0/12.8	11.9/13.8	12.2/14.2	10.7/12.5	10.3/12.0	10.8/12.6	10.4/12.1
Ash (%) 14%/0% moisture basis	0.45/0.52	0.41/0.47	0.46/0.54	0.41/0.48	0.54/0.63	0.52/0.61	0.51/0.60	0.50/0.58
Wet Gluten (%)	27.3	29.2	30.9	34.2	27.8	26.7	28.6	27.0
Gluten Index					97.7	97.8	98.2	98.2
Falling Number (sec)	407	409	397	417	445	449	430	417
Amylograph Viscosity 65 g (BU)					684	711	652	625
Starch Damage (%)								
Dough Properties:								
Farinograph:								
Peak Time (min)	6.3	6.8	7.5	9.4	6.0	5.8	6.3	6.2
Stability (min)	14.3	14.3	15.4	15.4	9.7	9.8	9.5	10.4
Absorption (%)	63.5	63.7	64.2	64.8	59.5	59.6	59.0	60.3
Alveograph: P (mm)					91	102	91	105
L (mm)					78	69	82	73
P/L Ratio					1.17	1.48	1.11	1.44
W (10 ⁻⁴ joules)					234	243	257	266
Extensograph: Resistance (BU)								
(45/135 min) Extensibility (cm)								
Area (sq cm)								
Baking Evaluation:								
Crumb Grain (scale 1-10)	7		8		6.3	6.2	6.6	6.3
Crumb Texture (scale 1-10)	8		8		6.7	6.4	6.4	6.7
Loaf Volume (cc)	891	874	926	959	892	811	891	806
Number of Samples					96	304	25	74

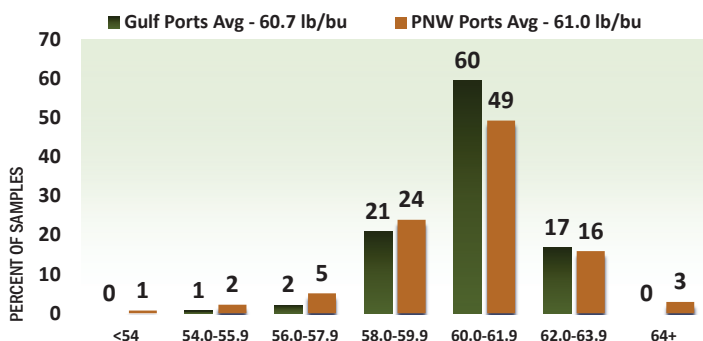
2011 Protein Range: Low, less than 11.5%; Med, 11.5 - 12.5%; High, 12.5% or greater

ELEVEN STATES SURVEYED

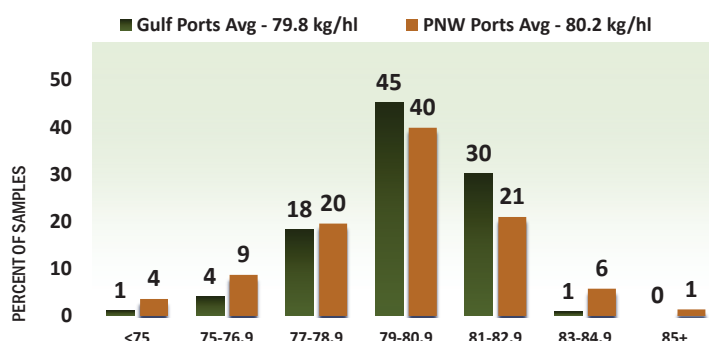
California • Colorado • Kansas
 Montana • Nebraska • Oklahoma
 Oregon • South Dakota • Texas
 Washington • Wyoming



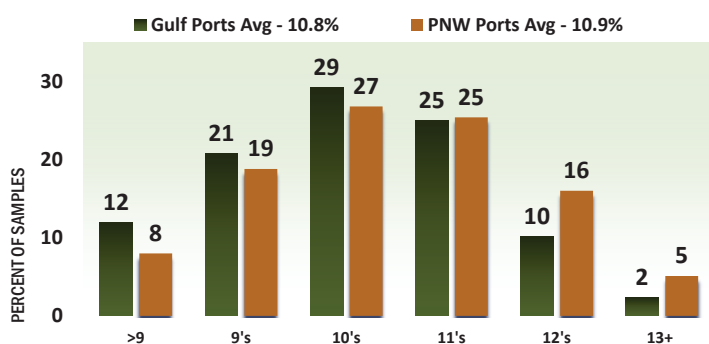
TEST WEIGHT | Pounds/Bushel



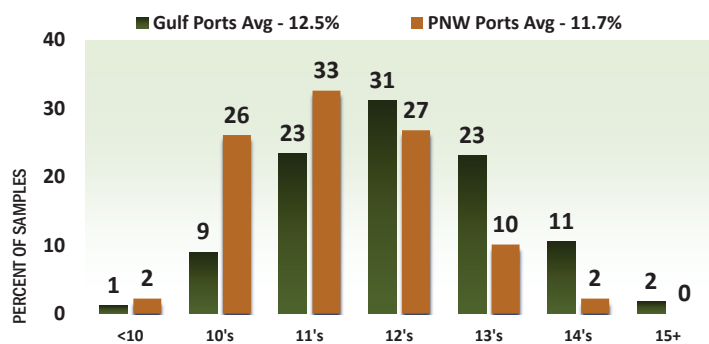
HECTOLITER WEIGHT | Kilograms/Hectoliter



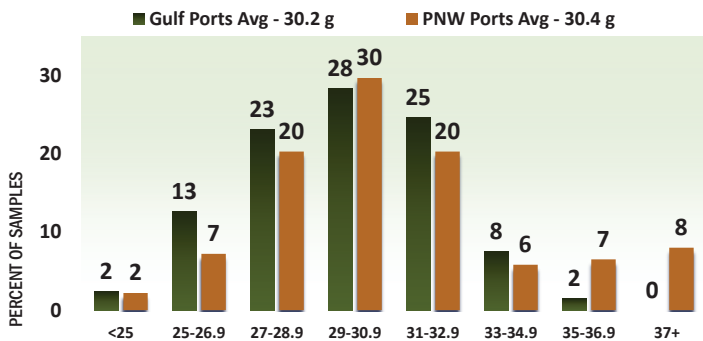
WHEAT MOISTURE | Percent



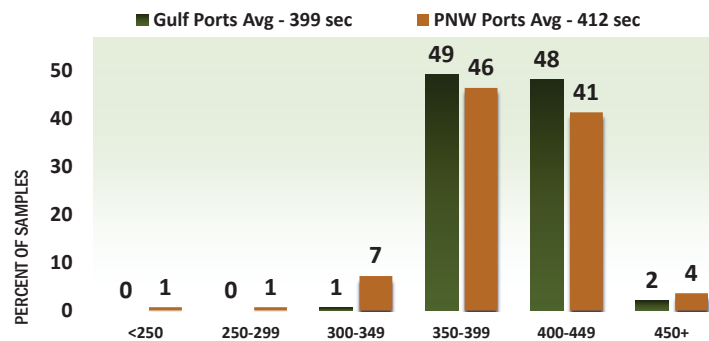
PROTEIN (12% MB) | Percent



1000 KERNEL WEIGHT | Grams

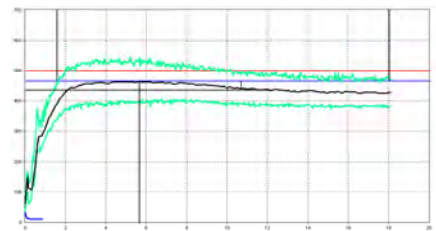
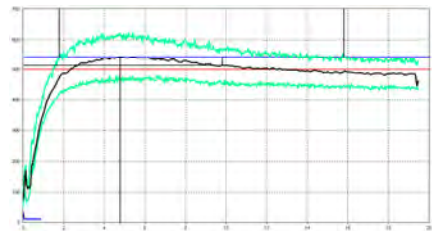
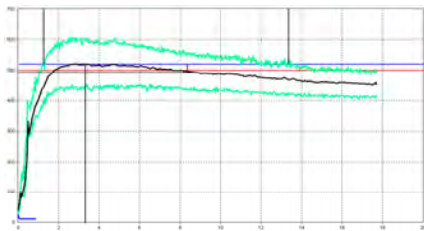


FALLING NUMBER | Seconds

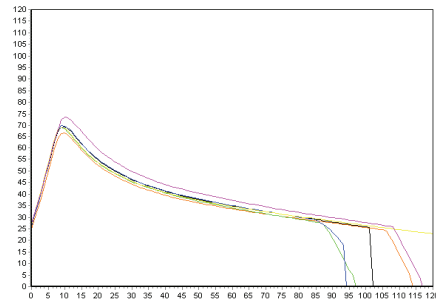
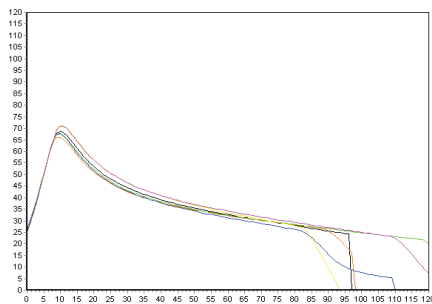
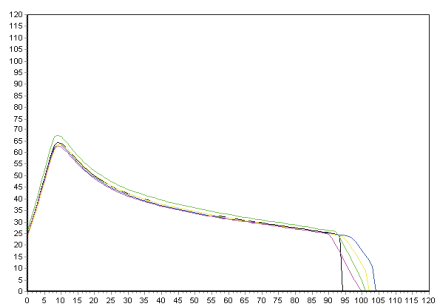


HARD RED WINTER | PHYSICAL DOUGH PROPERTIES

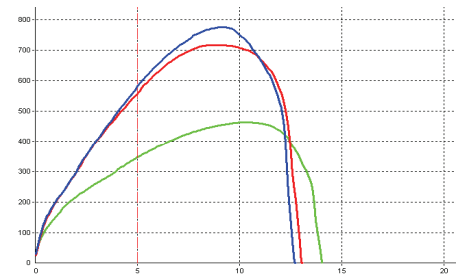
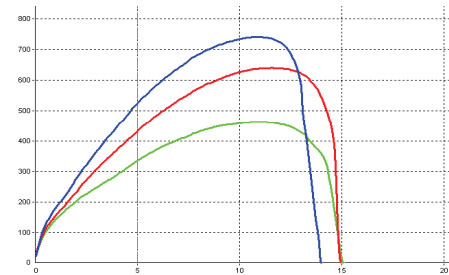
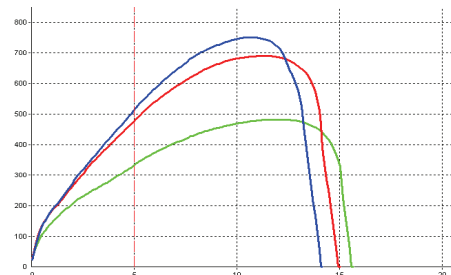
FARINOGRAMS*



ALVEOGRAMS



EXTENSOGRAMS



LOW PROTEIN

MEDIUM PROTEIN

HIGH PROTEIN

*Representing 2011 Composite Average



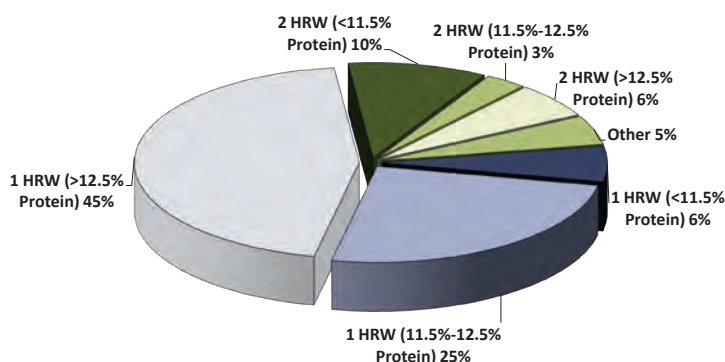
Hard Red Winter Production

for the major growing region (million metric tons)

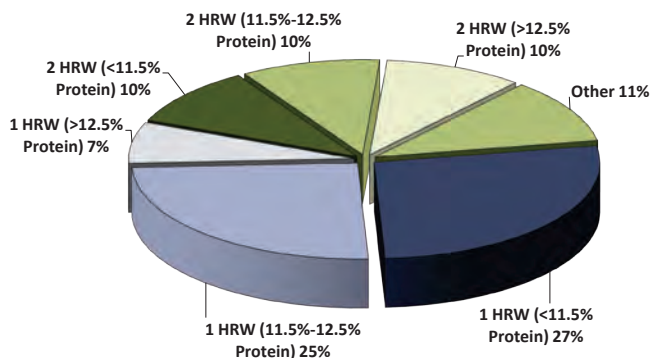
	2011	2010	2009	2008	2007
California	0.8	0.7	0.6	0.8	0.5
Colorado	2.1	2.8	2.5	1.4	2.3
Idaho	0.4	0.4	0.4	0.5	0.5
Kansas	7.4	9.6	9.9	9.4	7.5
Montana	2.4	2.5	2.4	2.5	2.2
Nebraska	1.8	1.7	2.1	2.0	2.3
Oklahoma	1.9	3.3	2.1	4.4	2.6
Oregon	0.1	0.1	0.0	0.0	0.1
South Dakota	1.8	1.7	1.7	2.8	2.5
Texas	1.3	3.4	1.6	2.6	3.7
Washington	0.5	0.5	0.5	0.4	0.7
Wyoming	0.1	0.1	0.1	0.1	0.1
Twelve-State Total	20.6	26.8	23.9	27.0	24.8
Total HRW Production	21.2	27.7	25.0	28.2	26.0

Based on USDA crop estimates of September 30, 2011.

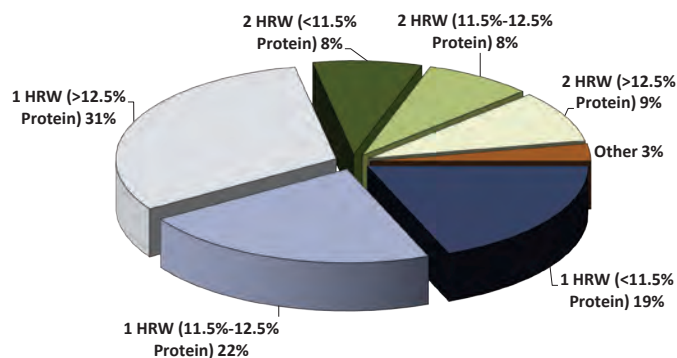
GULF EXPORTABLE



PNW EXPORTABLE



OVERALL



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, hearth breads, hard rolls, flatbreads, croissants and general-purpose flour.

HARVEST SURVEY

Weather and Harvest: Planting of HRS began in late April, about three weeks later than normal due to a late snow melt and cool, wet spring. Excessive moisture in western and central parts of the four-state region into June resulted in significant acreage being left unplanted. Cool, wet conditions also delayed planting in Washington and Oregon (PNW).

The early moisture allowed for good plant growth, but limited root development and promoted disease pressures. Extreme heat in the second half of the season adversely affected yields and kernel development and accelerated crop maturity. Growing conditions in the PNW were nearly ideal with timely moisture and cool temperatures throughout the season.

Harvest began in early August, about ten days later than normal in the four-state region due to the delayed planting. Favorable conditions in late August allowed progress to accelerate to near normal, reaching more than 90% complete by late September without rain delays. The PNW harvest was initially delayed but also completed by late September.

Samples and Methods: Sample collection and analysis were conducted by the HRS Wheat Quality Lab, Department of Plant Sciences, North Dakota State University, Fargo, ND. A total of 757 samples were collected from fields, at bin sites on farm or at elevators during harvest in Minnesota (120), Montana (140), North Dakota (389), South Dakota (86), Washington and Oregon (22). The samples represent approximately 90% of the HRS crop in the six states. Samples were segregated by export region (East, about 55% of production, and West, 45%) and composited by protein range: less than 13.5%, 13.5%-14.5%, and greater than 14.5%. Methods are described in the Analysis Methods section.

Wheat and Grade Data: The 2011 HRS crop is one-third smaller than 2010, but averages #1 Dark Northern Spring (DNS), with improved vitreous kernel counts and notably higher protein content of 14.8%. Sharply reduced planted area in the four-state region and a 20% drop in yields led to the smaller crop. PNW HRS had more favorable conditions with a year-on-year gain in production and record yields.

Nearly three-fourths of the crop grades #1, down from over 90% last year but still above average. Hot temperatures during grain fill and a higher incidence of disease led to lighter test weights and higher levels of shrunk and broken kernels in some areas. Average test weight is 60.4 pounds per bushel (79.4 kg/hl), compared to 61.6 lb/bu (81.0 kg/hl) in 2010. Approximately 80% of East and 85% of West samples are over the 58 lb/bu (76.4 kg/hl) required for a #1 grade. Likewise 1000 kernel weight averages only 28.6 grams compared to 32.4 in 2010, with a notable difference between West (31.8 g) and East (26.0 g).

Total defects at 1.9% are higher than 2010 and the five-year average. Shrunk and broken of 1.7% account for most of

the defects; damaged kernels at 0.2% are only marginally above the five-year average. There are pockets of higher damage and DON values, but these factors can be managed in contract specifications. DON averages 0.8 ppm, up from less than 0.5 ppm last year. DON averages 0.6 ppm in the West and 1 ppm in the East, and generally declines from east to west. The low average moisture of 11.9% and sound falling number values reflect the favorable harvest conditions.

Protein is significantly higher in 2011, a positive change from the two previous years. Average protein of 14.8% is up from 13.7% in 2010 and the five-year average of 14.2%. Nearly one-half of the crop exceeds 15% protein, compared to only 19% last year. Protein is quite balanced between East and West, although some western areas are lower than normal.

Flour and Baking Data: Milling data, based on the Buhler laboratory mill, reflects the smaller kernel size and increased kernel ash in the 2011 crop. Average extractions are 68.5%, down from 70.0% in 2010, but similar to the five-year average. Flour ash is 0.55%, slightly higher than 2010 and the five-year average. Wet gluten at 36.7% is up from 33.8% last year.

Dough strength is improved, as indicated by longer Farinograph peak and stability times, but is still weaker than traditional HRS. The overall stability average is 12.0 minutes, up from 9.9 minutes in 2010, but below the five-year average of 16.1 minutes. Unlike recent years, stability time is longer in the East (12.5 min) than West (11.5 min), but both regions have slightly stronger dough properties than 2010. Stability times improve with higher protein content in the West but are steady across protein ranges in the East. Farinograph absorption averages 65.0% for the crop, equal to last year but below the five-year average. Absorption is higher in the East.

Dough quality, as measured by the Extensograph and Alveograph, is weaker but more extensible compared with

SIX STATES SURVEYED

Minnesota • Montana • North Dakota • Oregon
South Dakota • Washington



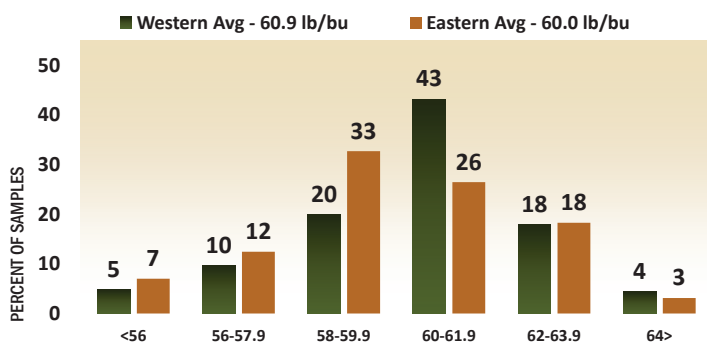
last year and the five-year average. The crop averages 18.2 centimeters on the 135 minute test, up from 15.5 cm last year, and slightly above the five-year average. Resistance values are lower, averaging 475 B.U. compared with 676 B.U. in 2010. The average Alveograph W-value is 324, down from 395 in 2010. The West region has a more significant year-to-year decline. The crop average P/L ratio is 0.66 compared to 0.97 last year. The ratios improve in the lower protein segments.

Baking quality of the 2011 crop is very good. Average loaf volume is 975 cubic centimeters, up from 947 last year, and similar to the five-year average. Volumes increased across both regions and also with protein levels.

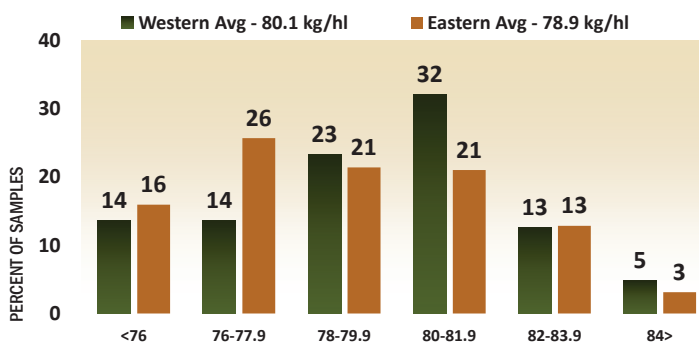
Summary: Strong features of the 2011 HRS crop are notably higher protein, above average grades and improved bake qualities. Adverse changes buyers may notice are smaller kernel size and a lower 1000 kernel weight. Adjustments may be needed in tempering times and milling. Elevated DON levels make a DON contract specification important. The smaller crop size may adjust some grain flow dynamics, but buyers should be pleased with the improved dough strength and loaf volumes over 2010. As always, quality differences exist across the region, and good communication between buyer and seller and diligent contract specifications are the best ways to ensure buyers receive the wheat quality they need.

Continued on next page

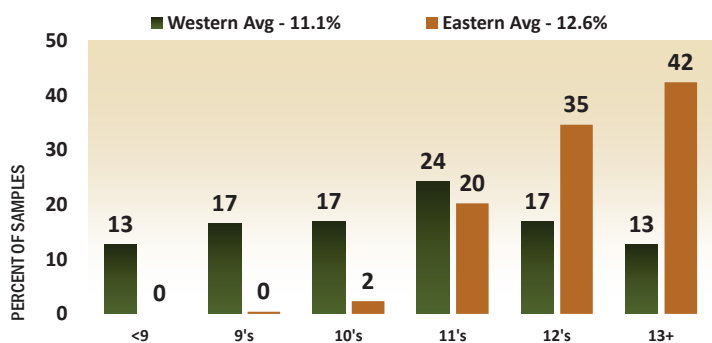
TEST WEIGHT | Pounds/Bushel



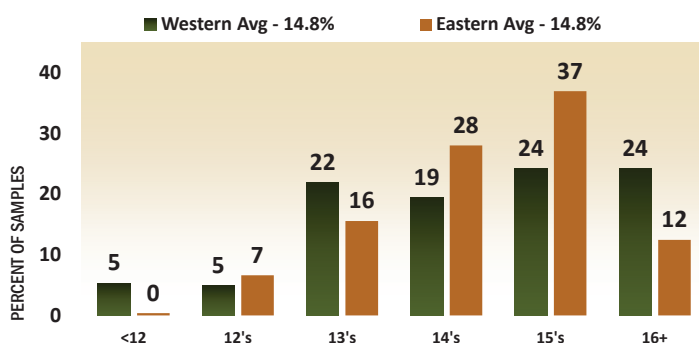
HECTOLITER WEIGHT | Kilograms/Hectoliter



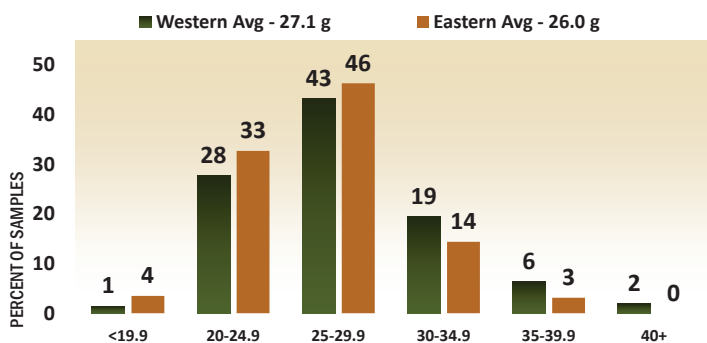
WHEAT MOISTURE | Percent



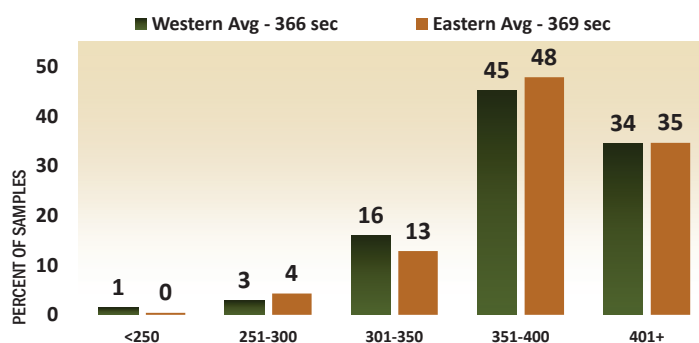
PROTEIN (12% MB) | Percent



1000 KERNEL WEIGHT | Grams



FALLING NUMBER | Seconds



HARD RED SPRING | HARVEST DATA

EXPORT CARGO SURVEY

The export cargo data represents 416 individual subplot samples provided by USDA's Federal Grain Inspection Service for crop years 2010 (collected from October 2010 through June 2011) and 2009. Of 164 2010-crop samples, 91 were from PNW, 38 from Lakes, and 35 from Gulf ports. Grade data are the official grades on the individual sublots. Milling and baking analyses were conducted by North Dakota State University.



Hard Red Spring	Composite Average					
	2011 By Protein				2010 Overall	5-year Average
	Low	Med	High	Overall		
Wheat Grade Data:						
Test Weight (lb/bu)	61.9	61.1	59.7	60.4	61.6	61.1
(kg/hl)	81.5	80.4	78.5	79.4	81.0	80.4
Damaged Kernels (%)	0.1	0.2	0.3	0.2	0.1	0.1
Foreign Material (%)	0.0	0.0	0.0	0.0	0.0	0.0
Shrunken & Broken (%)	1.1	1.6	2.0	1.7	1.1	1.3
Total Defects (%)	1.2	1.8	2.3	1.9	1.2	1.4
Vitreous Kernels (%)	75.5	81.0	82.3	80.9	66.3	73.4
Grade	1 DNS	1 DNS	1 DNS	1 DNS	1 NS	1 NS
Wheat Non-Grade Data:						
Dockage (%)	0.6	0.6	0.7	0.6	0.7	0.6
Moisture (%)	11.5	11.8	12.1	11.9	12.4	12.1
Protein (%) 12%/0% moisture basis	12.7/14.4	14.0/15.9	15.6/17.7	14.8/16.8	13.7/15.6	14.1/16.1
Ash (%) 14%/0% moisture basis	1.54/1.79	1.66/1.93	1.79/2.08	1.72/2.00	1.57/1.83	1.57/1.82
1000 Kernel Weight (g)	30.7	28.6	24.5	26.5	32.4	31.6
Kernel Size (%) lg/md/sm	41/55/3	32/62/5	23/70/7	28/66/6	51/47/2	47/48/5
Single Kernel: Hardness	87.2	86.2	86.0	86.2	75.0	77.6
Weight (mg)	31.9	31.4	30.1	30.7	34.2	33.6
Diameter (mm)	2.31	2.32	2.26	2.28	2.83	2.61
Sedimentation (cc)	52.7	58.1	63.4	60.4	58.5	57.9
Falling Number (sec)	365	364	370	368	387	401
DON (ppm)	< 0.5	0.8	1.0	0.8	< 0.5	
Flour Data:						
Lab Mill Extraction (%)	69.2	69.4	67.9	68.5	70.0	68.8
Color: L*	91.0	90.4	90.7	90.7	90.6	90.7
a*	-1.0	-0.9	-0.9	-0.9	-1.0	-1.2
b*	8.8	9.1	8.9	8.9	9.5	9.6
Protein (%) 14%/0% moisture basis	11.5/13.5	12.8/14.9	14.3/16.6	13.5/15.7	12.6/14.7	13.1/15.3
Ash (%) 14%/0% moisture basis	0.51/0.59	0.53/0.62	0.58/0.67	0.55/0.64	0.53/0.62	0.50/0.58
Wet Gluten (%)	30.1	34.3	39.4	36.7	33.8	35.5
Gluten Index	95.8	90.5	82.4	86.4	97.2	92.2
Falling Number (sec)	399	392	385	389	393	401
Amylograph Viscosity: 65g (BU)	698	626	520	573	579	675
100g (BU)	2548	2134	1760	1976	2499	2581
Starch Damage (%)	8.5	8.2	8.0	8.2	8.3	7.6
Dough Properties:						
Farinograph:						
Peak Time (min)	6.2	7.6	8.2	7.7	5.7	8.4
Stability (min)	10.1	11.6	12.7	12.0	9.9	16.1
Absorption (%)	63.5	64.5	65.5	65.0	65.0	66.1
Classification	4.5	5.0	5.4	5.2	4.8	6.1
Alveograph: P (mm)	92	84	80	83	104	110
L (mm)	105	128	130	125	108	111
P/L Ratio	0.88	0.66	0.62	0.66	0.97	0.99
W (10 ⁻⁴ joules)	327	346	316	324	395	423
Extensograph: Resistance (BU)	431/541	410/527	348/438	376/475	458/676	452/570
(45/135 min) Extensibility (cm)	16.2/15.6	18.0/17.8	18.2/19.0	17.8/18.2	16.2/15.5	18.5/17.6
Area (sq cm)	92/114	97/121	87/110	90/113	96/133	109/129
Baking Evaluation:						
Absorption (%)	62.0	63.2	64.4	63.7	63.5	64.6
Crumb Grain and Texture	8.5	8.5	8.7	8.6	8.4	8.4
Loaf Volume (cc)	892	952	1006	975	947	974
% Area Production:	17	22	61	100		

2011 Protein Range: Low, less than 13.5%; Med, 13.5 - 14.5%; High, 14.5% or greater

Western Regional Average						Eastern Regional Average					
2011 By Protein				2010	5-year	2011 By Protein				2010	5-year
Low	Med	High	Overall	Overall	Average	Low	Med	High	Overall	Overall	Average
61.9	61.5	60.3	60.9	61.3	60.3	62.0	60.8	59.2	60.0	61.9	61.7
81.4	80.9	79.3	80.1	80.6	79.4	81.5	80.0	77.9	78.9	81.4	81.2
0.0	0.0	0.3	0.2	0.0	0.0	0.2	0.3	0.3	0.3	0.1	0.2
0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
1.2	1.9	2.0	1.8	1.4	1.7	1.0	1.3	2.0	1.7	0.9	0.9
1.2	1.9	2.3	2.0	1.4	1.8	1.3	1.6	2.3	2.0	1.0	1.1
86.0	92.0	80.0	83.7	73.7	85.9	64.0	73.0	84.0	78.6	61.2	63.9
1 DNS	1 DNS	1 DNS	1 DNS	1 NS	1 DNS	1 NS	1 NS	1 DNS	1 DNS	1 NS	1 NS
0.5	0.5	0.8	0.7	0.5	0.6	0.6	0.6	0.6	0.6	0.9	0.6
10.4	10.7	11.4	11.1	12.8	11.5	12.7	12.6	12.6	12.6	12.2	12.6
12.6/14.3	14.0/15.9	15.8/18.0	14.8/16.8	13.8/15.7	14.7/16.7	12.9/14.7	14.0/15.9	15.5/17.6	14.8/16.8	13.7/15.6	13.8/15.7
1.46/1.70	1.56/1.81	1.73/2.01	1.64/1.91	1.50/1.74	1.54/1.79	1.62/1.88	1.74/2.02	1.83/2.13	1.78/2.07	1.62/1.88	1.59/1.84
30.5	28.5	25.4	27.1	32.4	30.1	31.0	28.7	23.9	26.0	32.4	32.7
36/61/3	29/65/6	23/70/7	27/67/6	47/50/3	35/57/8	47/49/4	35/60/5	23/70/7	29/65/6	54/44/2	57/40/3
84.8	85.8	82.4	83.6	75.0	77.4	89.9	86.5	88.7	88.4	75.0	77.8
33.3	31.1	30.9	31.4	32.5	32.0	30.4	31.7	29.5	30.1	35.4	34.8
2.35	2.28	2.28	2.29	2.73	2.51	2.27	2.36	2.24	2.27	2.90	2.68
48.8	61.2	67.3	62.3	57.3	61.1	56.9	55.9	60.5	58.9	59.3	55.4
362	361	370	366	366	398	368	367	370	369	401	402
0.0	0.2	1.0	0.6	< 0.5		0.7	1.2	1.1	1.0	< 0.5	
68.0	68.1	66.1	66.9	69.0	68.3	70.6	70.4	69.2	69.7	70.7	69.3
91.0	90.7	91.0	90.9	90.7	90.7	91.0	90.2	90.5	90.5	90.5	90.7
-1.1	-1.0	-1.0	-1.0	-1.2	-1.2	-0.9	-0.8	-0.9	-0.9	-0.9	-1.2
8.9	9.0	8.9	8.9	9.7	9.6	8.6	9.1	8.9	8.9	9.2	9.6
11.4/13.3	12.7/14.8	14.3/16.6	13.4/15.6	12.6/14.7	13.7/15.9	11.7/13.6	12.8/14.9	14.3/16.6	13.6/15.8	12.6/14.7	12.7/14.8
0.47/0.54	0.47/0.54	0.52/0.60	0.50/0.58	0.49/0.57	0.49/0.57	0.55/0.64	0.57/0.66	0.62/0.72	0.60/0.70	0.56/0.65	0.51/0.59
30.1	34.1	40.0	36.8	34.0	37.0	30.1	34.4	39.0	36.6	33.6	34.3
94.4	88.5	80.1	84.8	96.2	91.3	97.4	91.9	84.0	87.8	97.9	93.0
411	417	391	401	390	398	386	373	380	379	395	402
799	734	590	662	584	739	587	547	467	503	575	626
2742	2594	1935	2236	2430	2798	2334	1798	1629	1770	2547	2417
8.2	7.6	7.5	7.6	7.9	7.3	8.9	8.7	8.5	8.6	8.5	7.8
6.0	7.0	8.5	7.7	6.5	10.1	6.5	8.0	8.0	7.8	5.2	7.0
7.5	11.0	13.0	11.5	10.6	18.7	13.0	12.0	12.5	12.5	9.5	14.0
63.1	63.8	65.1	64.4	64.6	66.5	63.9	64.9	65.9	65.4	65.2	65.9
4.0	5.0	6.0	5.4	5.0	6.3	5.0	5.0	5.0	5.0	4.6	5.9
89	83	76	80	105	112	95	85	83	85	104	108
109	134	139	132	111	114	100	123	123	120	106	109
0.82	0.62	0.55	0.61	0.95	0.98	0.95	0.69	0.67	0.71	0.98	0.99
321	349	310	320	409	449	333	343	320	327	386	402
403/486	411/545	345/436	370/469	499/762	481/614	463/602	409/515	351/440	380/480	430/615	430/536
15.6/15.8	18.2/16.8	19.1/19.5	18.2/18.1	15.9/15.1	18.4/17.1	16.8/15.5	17.9/18.5	17.6/18.8	17.5/18.2	16.4/15.7	18.6/18.4
84/111	100/121	91/113	92/114	102/145	116/144	101/117	96/122	84/107	89/112	92/125	103/118
61.6	63.0	64.5	63.6	63.1	65.0	62.4	63.4	64.4	63.9	63.7	64.4
8.5	8.5	9.0	8.8	8.3	8.4	8.5	8.5	8.5	8.5	8.4	8.4
860	928	998	955	940	991	928	970	1013	990	952	962
20	21	59	100			14	23	63	100	100	

2011 Protein Range: Low, less than 13.5%; Med, 13.5 - 14.5%; High, 14.5% or greater

HARD RED SPRING | EXPORT CARGO DATA

Hard Red Spring	PNW Average		Great Lakes Average		Gulf Average	
	2010	2009	2010	2009	2010	2009
Wheat Grade Data:						
Test Weight (lb/bu)	61.5	62.5	62.3	62.8	61.8	62.0
(kg/hl)	80.8	82.1	81.9	82.5	81.2	81.6
Damaged Kernels (%)	0.3	0.3	1.3	1.2	1.0	1.1
Foreign Material (%)	0.1	0.1	0.1	0.1	0.2	0.1
Shrunken & Broken (%)	1.1	0.9	0.9	0.7	0.8	0.7
Total Defects (%)	1.6	1.3	2.4	1.9	1.9	2.0
Vitreous Kernels (%)	67.6	73.9	45.4	50.7	51.6	54.4
Grade	1 NS	1 NS	1 NS	1 NS	1 NS	1 NS
Wheat Non-Grade Data:						
Dockage (%)	0.3	0.3	0.6	0.5	0.7	0.6
Moisture (%)	11.9	11.8	12.0	13.0	12.8	13.1
Protein (%) 12%/0% moisture basis	13.6/15.5	13.5/15.3	13.0/14.8	12.7/14.4	13.0/14.8	13.1/14.9
Ash (%) 14%/0% moisture basis	1.53/1.77	1.48/1.73	1.51/1.76	1.48/1.72	1.55/1.80	1.53/1.78
1000 Kernel Weight (g)	32.3	34.7	32.0	33.4	32.3	34.9
Kernel Size (%) lg/md/sm	50/47/3	58/40/2	55/43/2	58/40/2	53/45/3	63/35/2
Single Kernel: Hardness	79.5	75.8	82.3	73.0	81.7	72.4
Weight (mg)	31.9	32.5	31.9	32.0	31.9	32.1
Diameter (mm)	2.71	2.51	2.76	2.49	2.75	2.49
Sedimentation (cc)						
Falling Number (sec)	381	399	387	391	409	394
DON (ppm)	0.0	0.2	0.0	0.1	0.2	0.2
Flour Data:						
Lab Mill Extraction (%)	69.6	71.2	70.5	72.9	70.3	72.1
Color: L*	90.8	90.1	90.7	89.8	90.7	89.9
a*	-1.0	-0.9	-1.0	-0.8	-1.0	-0.9
b*	8.8	8.8	8.9	8.9	8.8	8.9
Protein (%) 14%/0% moisture basis	12.5/14.6	12.7/14.7	11.9/13.9	11.9/13.8	11.9/13.8	12.3/14.3
Ash (%) 14%/0% moisture basis	0.53/0.62	0.54/0.63	0.53/0.61	0.57/0.67	0.56/0.65	0.57/0.67
Wet Gluten (%)	33.5	35.0	31.8	31.0	31.8	33.4
Gluten Index	91.2	91.8	93.6	95.9	92.2	92.3
Falling Number (sec)	415	435	408	411	428	419
Amylograph Viscosity: 65g (BU)	530	581	558	461	625	503
100g (BU)						
Starch Damage (%)						
Dough Properties:						
Farinograph:						
Peak Time (min)	6.1	7.1	4.9	6.3	5.2	6.6
Stability (min)	10.8	10.8	10.3	10.6	10.6	10.6
Absorption (%)	64.6	67.7	64.3	68.0	63.8	67.5
Classification	4.8	4.9	4.7	4.9	4.8	4.9
Alveograph: P (mm)	105	120	109	138	105	123
L (mm)	111	101	104	75	100	90
P/L Ratio	0.94	1.19	1.05	1.84	1.05	1.37
W (10 ⁻⁴ joules)	397	397	400	377	368	371
Extensograph: Resistance (BU)						
(45/135 min) Extensibility (cm)						
Area (sq cm)						
Baking Evaluation:						
Absorption (%)	63.3	66.6	63.3	66.5	62.5	66.4
Crumb Grain and Texture	8.4	8.4	8.2	8.3	8.2	8.3
Loaf Volume (cc)	925	905	899	851	881	889
Sample Count:	91	180	38	21	35	51

Hard Red Spring Production

for the major producing states (million metric tons)

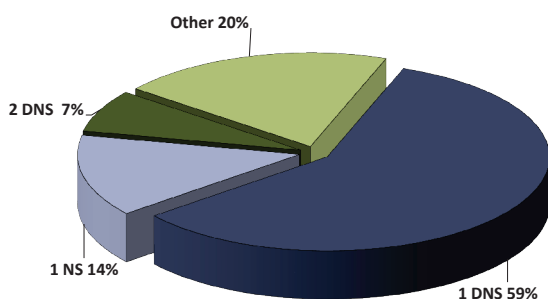
	2011	2010	2009	2008	2007
Idaho	0.6	0.7	0.6	0.5	0.4
Minnesota	1.9	2.3	2.2	2.7	2.1
Montana	2.1	2.8	1.9	1.6	1.5
North Dakota	4.7	7.8	7.9	6.7	6.4
Oregon	0.1	0.1	0.1	0.1	0.1
South Dakota	1.0	1.6	1.8	1.9	1.4
Washington	0.5	0.4	0.4	0.3	0.3
Seven-State Total	11.0	15.8	14.9	13.8	12.2
Total HRS Production	11.0	15.8	14.9	13.9	12.2

Based on USDA crop estimates of September 30, 2011.

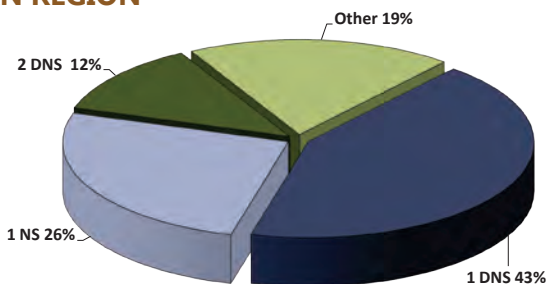
ABOUT HARD RED SPRING WHEAT

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.

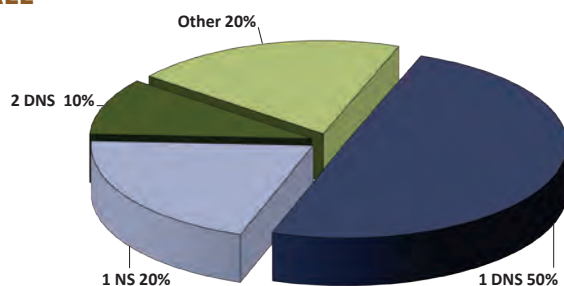
WESTERN REGION



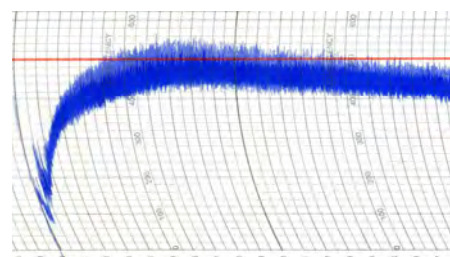
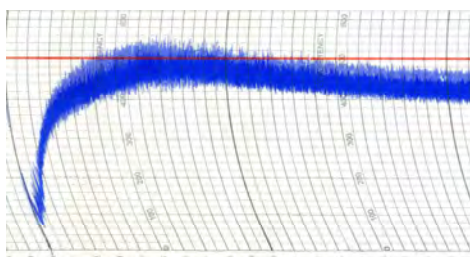
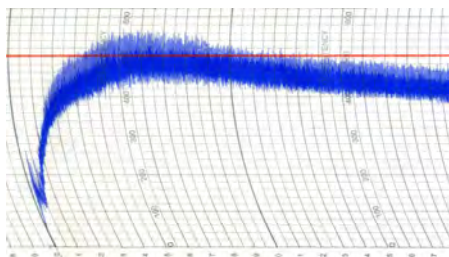
EASTERN REGION



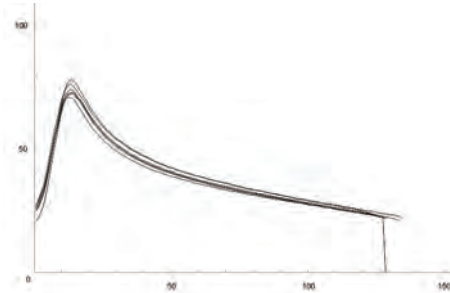
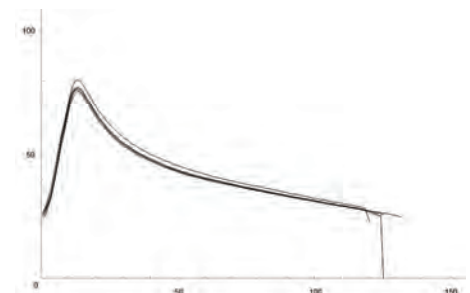
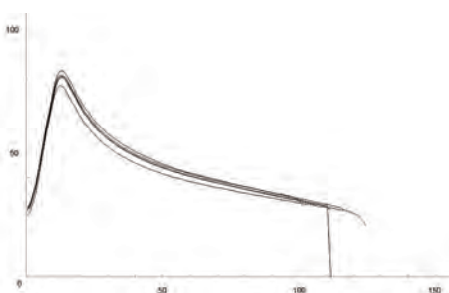
OVERALL



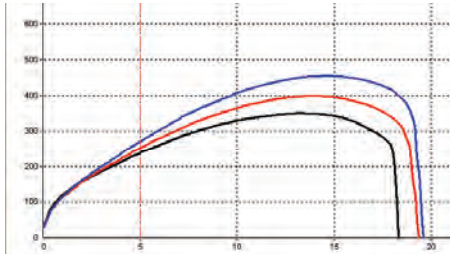
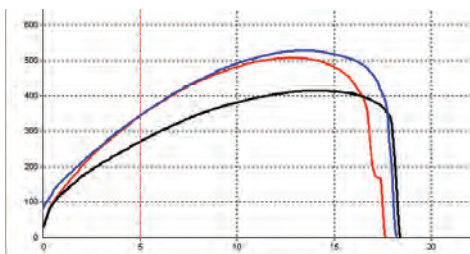
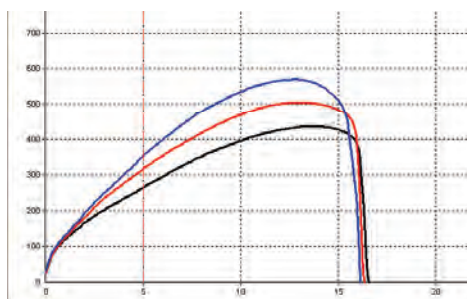
FARINOGRAMS*



ALVEOGRAMS



EXTENSOGRAMS



LOW PROTEIN

MEDIUM PROTEIN

HIGH PROTEIN

*Representing 2011 Composite Average



HARVEST SURVEY

Hard white wheat (HW) was primarily grown in the states of Idaho, California, Kansas, Colorado, Nebraska, and Washington this year. Other states such as Montana, North Dakota, South Dakota, and Oregon also had limited production. According to the U.S. Wheat Associates (USW) production estimate, HW 2011 production was 701,800 metric tons (MT), down from last year's 748,800 MT.

Survey Methods: HW samples were collected from three regions: Pacific Northwest (PNW), California, and Southern Plains. Samples from the PNW were collected by the USDA's National Agricultural Statistics Service. Samples from the Southern Plains were collected by Plains Grains, Inc., and samples from California were collected by California Wheat Commission. These samples represented diverse growing conditions across the country. Wheat grading was conducted by the Federal Grain Inspection Service (FGIS). All other tests were conducted by the Wheat Marketing Center (WMC), Portland, Oregon.

HW samples were made into six composites based on the three regions and four protein levels (less than 11.5%, 11.5 – 12.5%, 12.6 – 13.5%, and higher than 13.5%). Wheat and flour analyses were according to the AACC International Approved Methods (11th Edition). Chinese raw and wet noodle and steamed bread evaluations were conducted according to the protocols established by Asian noodle and steamed bread makers and flour millers at WMC during USW's Asian Products Collaborative Program.

Wheat and Grade Data: All samples graded US No. 1 with test weights from 60.5 to 64.8 lb/bu (79.6 to 85.1 kg/hl). Wheat moisture content ranged from 8.1-12.3%. Similar to historic data, PNW and California composites had lower wheat moisture than the Southern Plains. The PNW low-protein and California high-protein composites had the highest thousand-kernel weights and kernel diameters. Falling number values were more than 300 seconds except for the California high-protein composite which had 285 seconds.

Flour, Dough and Baking Data: Buhler Laboratory Mill straight grade flour extractions ranged from 71.9 to 74.6%, whiteness (L*) values from 91.6 to 92.7, and flour ash contents from 0.47 to 0.53% (14% mb). These data suggested that this year's HW had good milling performance.

Flour wet gluten contents varied from 22.0% to 33.8% depending on flour protein content. Amylograph peak viscosities were between 391 and 1178 BU, which showed varied starch pasting properties. Starch damage values were in the range of 4.0 to 6.4%. Lactic acid SRC values were 128% or higher, indicating good gluten strength for bread baking.

Farinograph absorption ranged from 55.3 to 63.5%, and stability times were 5.5-35.3 minutes. Composites other than Southern Plains low-protein had stability times of 12 minutes or longer, exhibiting the typically medium to strong dough characteristics of HW. 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: 69-97 mm for P values, 84-264 mm for L values, and 235-455 erg/gm for W values. Extensograph data at 135-minute resting showed that maximum resistance was in the range of 629-1419 BU, and extensibility was from 8.7-18.5 cm.

All samples showed very good baking performance relative to their protein content, with bake absorptions in the range of 60.5-68.7%, loaf volume from 873 to 1104 cc, and crumb grain and texture scores of 6.5-8.0 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 was acceptable for the low and medium protein composite samples, but was duller for the high protein and the very high protein composites. PNW low- and medium-protein composites had softer boiled noodle bite than other samples which had acceptable noodle hardness. The Southern Plains composites showed much harder noodle texture than other composites.

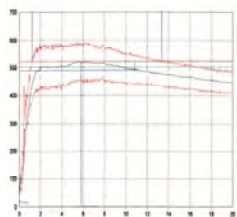
Chinese parboiled wet noodle color was acceptable for the three PNW composites and the Southern Plains low-protein composite. The other two composites had lower color stability scores. Similar to the boiled Chinese raw noodle texture, the texture of cooked Chinese wet noodles was acceptable for all samples except for the PNW low- and medium-protein composites, both of which had much softer hardness.

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 low-protein composite from the PNW, which had a lower score.

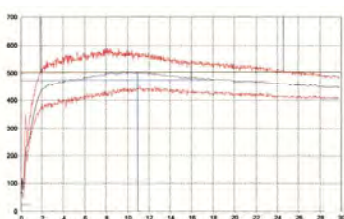
Summary: This year, the US HW production was estimated at 701,800 metric tons, lower than that of last year. Quality analyses indicated that this year's samples showed very good quality performance in milling, dough rheological properties, and end-products including pan breads and steamed breads. For Asian noodle applications, it is recommended to use 60-65% extraction patent flour to reduce ash content and improve the noodle color while maintaining acceptable noodle texture.

FARINOGRAMS

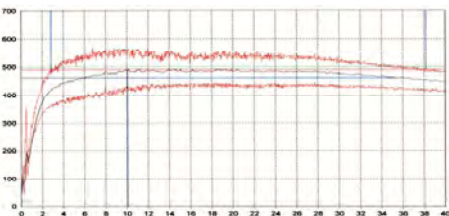
PNW LOW



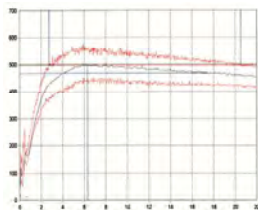
PNW MEDIUM



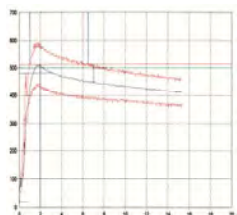
PNW VERY HIGH



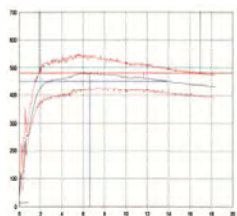
CALIFORNIA HIGH



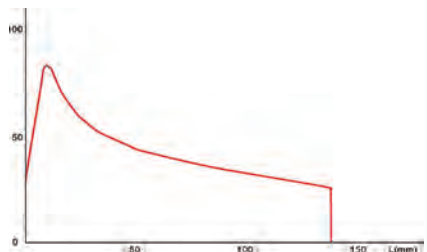
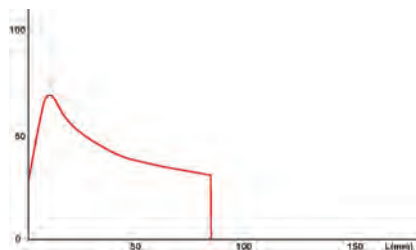
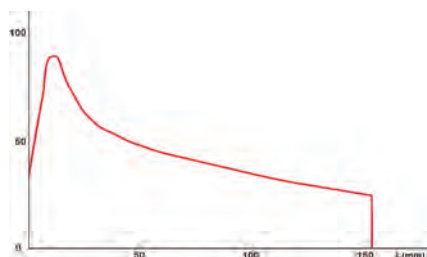
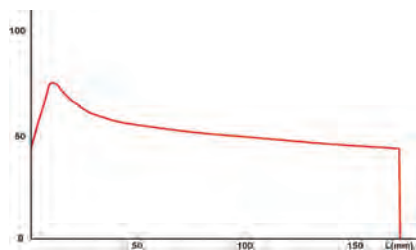
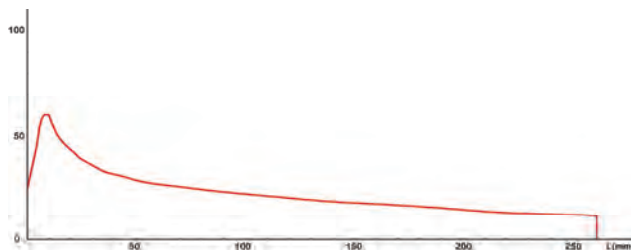
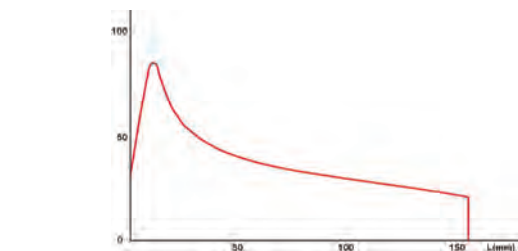
SOUTHERN PLAINS LOW



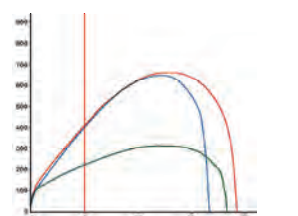
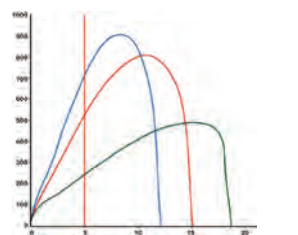
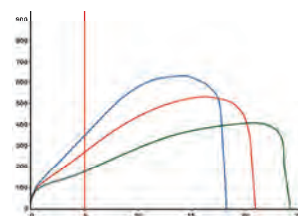
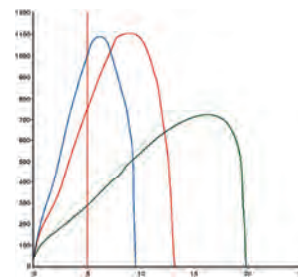
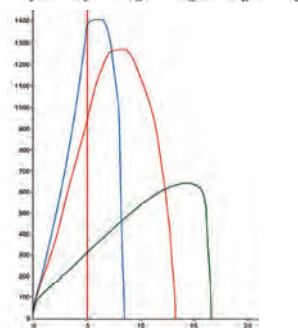
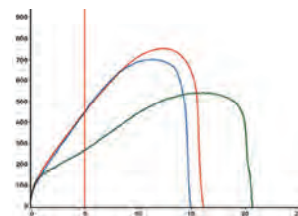
SOUTHERN PLAINS MEDIUM



ALVEOGRAMS



EXTENSOGRAMS



Hard White	Pacific Northwest			California	Southern Plains	
	Low	Medium	Very High	High	Low	Medium
Wheat Grade Data:						
Test Weight (lb/bu)	64.4	62.8	61.0	64.8	62.3	60.5
(kg/hl)	84.6	82.6	80.2	85.1	81.9	79.6
Damaged Kernels (%)	0.1	0.0	0.0	0.0	0.0	0.0
Foreign Material (%)	0.0	0.0	0.0	0.0	0.1	0.1
Shrunken & Broken (%)	0.4	0.4	1.1	0.1	1.0	0.9
Total Defects (%)	0.5	0.4	1.1	0.1	1.1	1.0
Grade	1 HW	1 HW	1 HW	1 HW	1 HW	1 HW
Wheat Non-Grade Data:						
Dockage (%)	0.4	0.6	0.5	0.1	1.0	1.2
Moisture (%)	9.9	9.5	8.1	9.2	10.9	12.3
Protein (%) 12%/0% moisture basis	10.6/12.0	11.9/13.5	13.6/15.5	13.4/15.2	9.9/11.3	12.4/14.1
Ash (%) 14%/0% moisture basis	1.48/1.72	1.55/1.80	1.50/1.74	1.47/1.71	1.69/1.97	1.63/1.90
1000 Kernel Weight (g)	41.7	34.2	30.6	41.4	32.2	30.7
Kernel Size (%) lg/md/sm	93/7/0	84/16/0	76/23/1	97/3/0	69/30/1	55/44/1
Single Kernel: Hardness	71.1	66.1	72.8	53.1	69.6	74.5
Weight (mg)	45.1	39.1	34.0	45.8	28.3	27.9
Diameter (mm)	3.02	2.90	2.73	3.10	2.70	2.64
Sedimentation (cc)	36.4	56.6	70.4	63.6	29.7	39.2
Falling Number (sec)	302	317	369	285	337	356
Flour Data:						
Lab Mill Extraction (%)	73.1	72.4	73.1	71.9	73.9	74.6
Color: L*	92.0	92.7	91.8	92.0	92.1	91.6
a*	-2.2	-2.3	-2.3	-1.7	-2.4	-2.1
b*	8.0	7.6	8.7	5.7	7.6	7.7
Protein (%) 14%/0% moisture basis	10.3/12.0	11.1/12.9	13.1/15.2	12.2/14.2	8.7/10.1	10.8/12.6
Ash (%) 14%/0% moisture basis	0.49/0.57	0.49/0.57	0.47/0.55	0.51/0.59	0.53/0.62	0.51/0.59
Wet Gluten (%)	24.3	28.0	33.8	32.6	22.0	28.8
Gluten Index	99.1	99.4	99.1	93.3	99.3	91.1
Falling Number (sec)	340	364	400	349	417	375
Amylograph Viscosity 65 g (BU)	610	1178	946	391	454	468
Starch Damage (%)	6.4	4.2	4.0	4.6	4.4	5.2
Solvent Retention Capacity (%)						
Water/50% Sucrose	66/99	66/112	69/125	72/111	60/89	59/90
5% Lactic Acid/5% Na ₂ CO ₃	147/90	162/94	184/91	162/99	128/78	146/75
Dough Properties:						
Farinograph:						
Peak Time (min)	5.9	11.0	10.1	6.4	2.0	6.7
Stability (min)	12.1	22.7	35.3	17.8	5.5	15.1
Absorption (%)	57.9	58.2	59.8	63.5	55.3	59.0
Alveograph: P (mm)	94	69	81	97	76	90
L (mm)	155	264	174	153	84	138
P/L Ratio	0.61	0.26	0.47	0.63	0.90	0.65
W (10-4 joules)	385	444	455	439	235	384
Extensograph: Resistance (BU)	543/700	642/1419	723/1094	406/629	313/649	490/908
(45/135 min) Extensibility (cm)	20.8/15.0	16.9/8.7	20.0/9.7	24.3/18.5	18.6/16.9	18.9/12.2
Area (sq cm)	142/131	124/130	166/122	122/146	80/137	112/133
Baking Evaluation:						
Bake Absorption (%)	63.4	63.8	65.2	68.7	60.5	64.3
Crumb Grain and Texture	6.8	7.0	7.3	6.5	8.0	7.3
Loaf Volume (cc)	876	1025	1104	921	873	929

2011 Protein Range: Low, less than 11.5%; Medium, 11.5 to 12.5%; High, 12.6 to 13.5%; Very High, greater than 13.5%.

Hard White	Pacific Northwest			California	Southern Plains	
	Low	Medium	Very High	High	Low	Medium
Chinese Raw Noodle-Making Quality:						
Color at 0/24 hour: L*	84.2/72.6	82.9/70.6	81.6/69.4	80.2/66.3	83.9/74.4	81.7/70.5
a*	0.2/0.9	0.1/1.0	0.3/1.5	1.0/1.6	0.0/0.6	0.8/1.8
b*	18.6/22.4	19.8/24.5	21.1/25.8	17.2/18.5	15.2/22.0	15.1/22.4
Change in L* (0-24 hr)	11.6	12.3	12.2	13.9	9.5	11.2
Cooking Yield (5 min, %)	112	106	107	104	111	107
Sensory Color Stability Score	6.7	6.2	6.0	5.5	7.8	6.3
Instrumental Texture:						
Firmness (g)	943	964	1095	1081	1201	1309
Springiness (%)	95.1	96.0	95.4	95.3	94.1	95.3
Cohesiveness	0.68	0.69	0.68	0.69	0.66	0.66
Chewiness (g)	607	641	708	714	749	828
Chinese Wet Noodle-Making Quality:						
Uncooked Color at 0/24 hour: L*	82.6/71.0	79.8/68.1	79.5/66.8	75.0/64.1	81.6/73.2	78.5/69.0
a*	-1.5/-0.3	-1.8/-0.7	-1.4/-0.6	-1.0/0.2	-1.2/-0.6	-0.7/0.3
b*	17.5/20.8	21.6/23.0	21.9/24.4	19.4/20.6	19.8/26.2	20.3/25.3
Change in L* (0-24 hr)	11.7	11.7	12.7	10.9	8.4	9.5
Parboiled Color at 0/24 hour: L*	76.3/76.8	77.0/76.8	75.9/75.9	74.3/74.5	77.1/77.3	74.8/74.5
a*	-2.6/-2.8	-2.8/-3.0	-2.2/-2.6	-1.3/-1.8	-2.7/-2.9	-1.5/-1.8
b*	29.4/28.4	29.9/28.4	30.2/29.0	24.4/23.4	30.0/28.8	28.5/27.4
Cooking Yield (1.5 min, %)	62	59	62	62	62	56
Uncooked Color Stability Score	6.8	6.0	5.5	5.0	8.0	6.0
Parboiled Color Stability Score	7.0	6.8	6.7	5.8	6.5	6.0
Instrumental Texture:						
Firmness (g)	554	673	758	671	831	898
Springiness (%)	96.3	96.1	97.0	96.3	95.2	96.0
Cohesiveness	0.66	0.68	0.66	0.68	0.64	0.65
Chewiness (g)	351	437	487	439	503	558
Asian-Type Steamed Bread Evaluation:						
Specific Volume (ml/g)	2.2	2.6	3.2	2.8	2.3	2.8
Total Score	65.3	69.6	68.0	69.5	72.0	67.5

2011 Protein Range: Low, less than 11.5%; Medium, 11.5 to 12.5%; High, 12.6 to 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 started significantly later than normal in mid-May and remained behind the average pace due to extremely wet conditions and flooding. Planting did not finish until the third week of June, and a significant portion of the acreage did not get planted. Growing conditions were favorable early in the growing season, though the wet conditions caused some disease pressure. The last half of the growing season became hot and dry which adversely affected kernel fill and yield potential.

Harvest began in late August, well behind average, though warm, dry conditions in September allowed harvest to catch up to average. Good harvest weather prevailed and most of the harvest was complete by the beginning of October.

Survey Methods: A total of 193 samples were collected from the primary durum growing areas of North Dakota (141) and Montana (52). State offices of the National Agricultural Statistics Service collected samples directly from producers in the field, from farm bins or at local elevators. 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: Excessive moisture and flooding prevailed in much of the durum producing region, leaving nearly one million acres unplanted and resulting in yields well below the record levels of the last two years. Because of significantly lower acreage and smaller yields, the 2011 northern durum crop is about two-thirds smaller than 2010.

Overall, the crop grades #2 HAD with an average test weight of 59.9 pounds per bushel (78.0 kg/hl), just below the minimum 60 pounds per bushel (78.2 kg/hl) for a #1 grade. Nearly three-fourths of the crop grades #2 HAD or higher with 44% grading #1 HAD. Test weights are slightly below both last year and the five-year average. Average thousand kernel weight is lower than last year at 36.6 grams, but very similar to the five-year average of 36.9 g. Protein is higher than last year with an average of 13.6% and about three-fourths of the crop is above the typical minimum industry demand of 13%. Total defects are slightly higher this year due to more shrunken and broken kernels, and DON values are higher where disease pressures were greater. These factors can be managed with

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.

contract specifications. Average falling number is higher at 372 seconds indicating a sound crop.

Vitreous kernel counts are higher this year with an average of 88% vitreous, up from 82% last year. The vast majority of the crop, 94%, is above the HAD minimum of 75% and over half of the crop is over the 90% level.

Semolina and Processing Data: Milling performance, based on the Buhler Laboratory Mill, indicates total and semolina extraction levels lower than last year, but near the five-year average. Average total extraction is 70.4% and semolina extraction is 64.5% compared to the five-year averages of 70.7% and 64.4%, respectively. Average semolina ash of 0.66% is lower than both last year and the five-year average.

Semolina mixing properties are similar to last year, and the average gluten index value of 55.5 is slightly higher than last year and 3 points higher than the five-year average. The higher vitreous kernel counts and sound crop resulted in lower speck counts and better pasta color compared to last year. Cooked firmness values are higher, likely due to slightly higher protein and lack of sprout damage.

Summary: The 2011 crop has good quality, with some improvements in pasta quality compared to last year. Customers will enjoy a strong grading, sound crop with improved kernel and pasta color. The spread in quality parameters is narrower than the 2010 crop, but diligent contract specifications are still encouraged to ensure buyers receive the quality durum they need, especially with smaller than normal production this year which constrains supply.

DESERT DURUM®

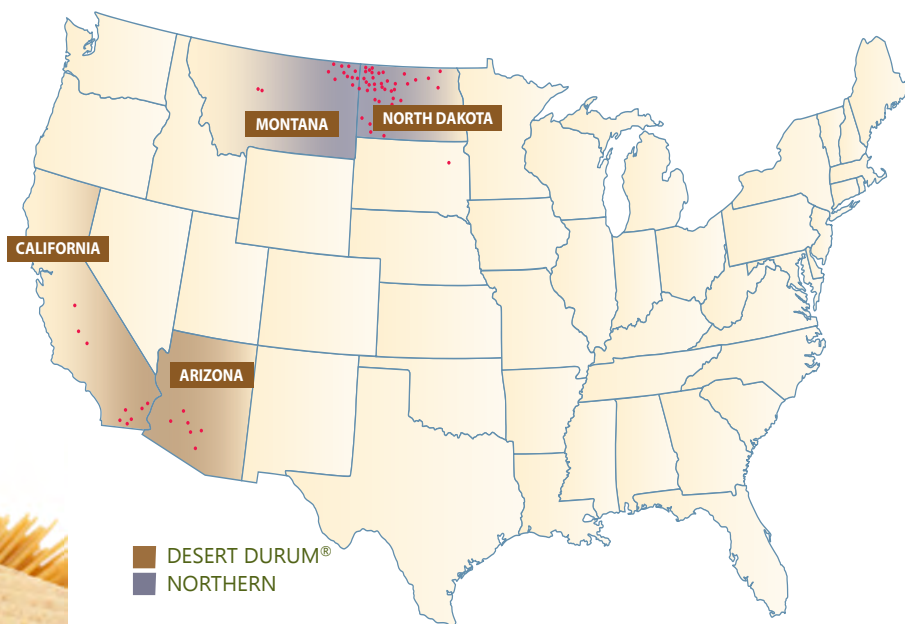
Desert Durum®, a trademark of the Arizona Grain Research and Promotion Council and the California Wheat Commission, applies only to durum wheat produced in the states of Arizona and California.

Desert Durum® is usually delivered “identity preserved” to U.S. domestic and export markets. The identity preservation system allows buyers to purchase grain 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 grain by varietal identity for season-long shipment on the buyers’ preferred schedules.

Total Desert Durum® acreage harvested in Arizona and southern California for the 2011 harvest was similar to 2010. Grain yields were normal. The new crop again exhibited consistently large kernel size and low moisture, traits that contribute to achieving high extraction rates. Overall, grain quality characteristics met expectations. In summary, the 2011 Desert Durum® crop will deliver the valuable milling, semolina, and pasta quality traits that customers have come to expect.

EXPORT CARGO SURVEY

The durum export cargo data represents 34 individual subplot samples provided by USDA's Federal Grain Inspection Service for crop year 2010 (collected from October 2010 through June 2011) and 54 samples for 2009. Grade data are the actual official grades on the individual sublots. Processing analysis was conducted by North Dakota State University.

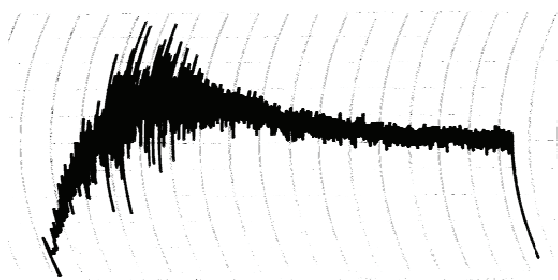


FOUR STATES SURVEYED

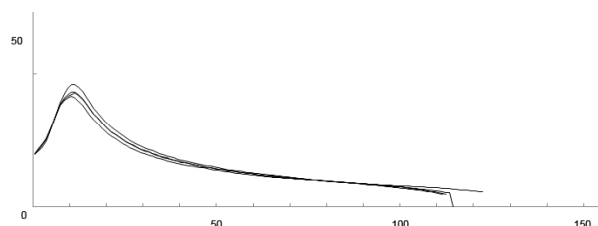
Arizona • California • Montana • North Dakota



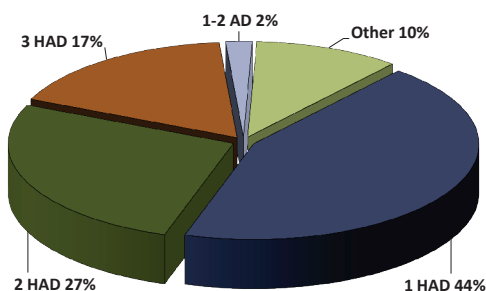
GREAT PLAINS DURUM REGIONAL AVERAGE



MIXOGRAM
(SCORE = 5.4)



ALVEOGRAM



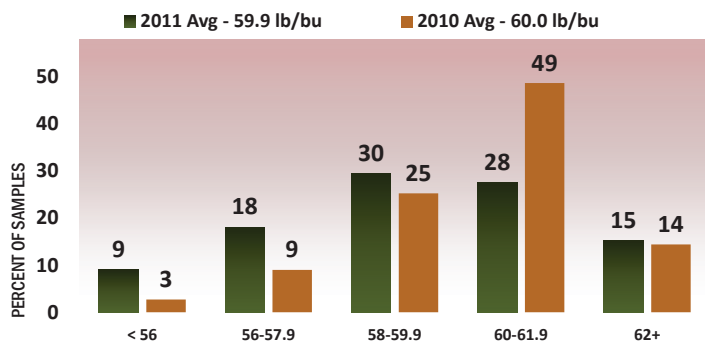
GREAT PLAINS DURUM GRADE DISTRIBUTION

Durum	Harvest Data						Export Cargo Data			
	Northern Durum			Desert Durum®			Northern Durum		Desert Durum®	
	2011	2010	5-Year Avg	2011	2010	5-Year Avg	2010	2009	2010	2009
Wheat Grade Data:										
Test Weight (lb/bu)	59.9	60.0	60.3	62.9	63.3	62.6	60.3	62.1	62.8	62.5
(kg/hl)	78.0	78.1	78.5	81.8	82.4	81.5	78.5	80.8	81.8	81.4
Damaged Kernels (%)	0.4	1.3	0.5	0.3	0.3	0.3	3.9	1.1	0.4	0.7
Foreign Material (%)	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2
Shrunken and Broken (%)	1.4	0.8	1.2	0.5	0.5	0.4	1.3	1.0	0.7	0.7
Total Defects (%)	1.8	2.0	1.7	0.8	0.8	0.7	5.4	2.3	1.3	1.6
Contrasting Classes (%)	0.0	0.7	0.3	0.0	0.0	0.0	1.1	1.0	0.2	0.3
Vitreous Kernels (%)	88.0	82.0	86.6	97.2	97.2	95.8	64.9	81.3	94.7	94.6
Grade	2 HAD	1 HAD	1 HAD	1 HAD	1 HAD	1 HAD	3 AD	1 HAD	1 HAD	1 HAD
Wheat Non-Grade Data:										
Dockage (%)	1.4	0.9	1.5	0.4	0.4	0.2	0.6	0.5	0.5	0.6
Moisture (%)	11.6	11.5	11.6	6.3	6.5	6.7	12.1	11.5	7.0	7.4
Protein (%) 12%/0% moisture basis	13.6/15.5	13.4/15.3	14.4/16.3	13.6/15.5	13.0/14.8	13.4/15.3	13.3/15.1	13.3/15.1	12.9/14.7	13.1/14.9
Ash (%) 14%/0% moisture basis	1.71/1.99	1.56/1.83	1.54/1.79	1.78/2.06	1.68/1.95	1.70/1.98	1.54/1.79	1.49/1.73	1.57/1.82	1.57/1.83
1000 Kernel Weight (g)	36.6	40.3	36.9	50.6	49.8	51.4	39.1	41.6	47.0	48.2
Kernel Size (%) lg/md/sm	36/57/7	43/54/3	37/56/7	90/10/0	93/7/0	93/7/0	48/48/4	52/45/3	75/23/2	75/23/2
Falling Number (sec)	372	335	361				273	385	1050	876
Sedimentation (cc)	43	43	50							
DON (ppm)	1.0	0.3	0.2				0.5	0.0	0.0	0.0
Semolina Data:										
Lab Mill Extraction (%)	70.4	73.4	70.7	73.8	75.1	75.8	72.2	73.0	69.9	67.0
Semolina Extraction (%)	64.5	66.3	64.4	62.8	61.8	63.4	65.0	66.0	63.8	61.7
Ash (%) 14%/0% moisture basis	0.66/0.77	0.67/0.78	0.68/0.79	0.86/1.00	0.84/0.97	0.85/1.00	0.70/0.82	0.62/0.72	0.70/0.81	0.66/0.77
Specks (no/10 sq in)	31	41	27	5	6	7	35	29	28	25
Protein (%) 14%/0% moisture basis	12.4/14.4	12.4/14.4	13.3/15.5	12.6/14.6	12.0/14.0	12.3/14.3	12.2/14.1	12.0/13.9	11.7/13.6	11.6/13.5
Wet Gluten (%)	35.6	35.3	37.7	31.5	30.7	33.3				
Gluten Index	55.5	55.2	52.0				53.9	58.9	89.0	88.5
Mixograph Classification	5.4	5.4	5.5				6.1	5.5	7.5	7.7
Alveograph: P (mm)	42.4	42.0	49.9	81.1	83.4	82.9				
L (mm)	99.1	102.0	86.0	64.1	62.8	58.8				
P/L Ratio	0.44	0.43	0.58	1.31	1.37	1.41				
W (10-4 joules)	105	105	115	181	172	181				
Color: L*	84.6	84.5	85.1	88.1			84.8	85.3	85.4	85.5
a*	-2.7	-2.5	-2.8	2.0			-2.7	-2.8	-2.5	-2.6
b*	29.7	27.6	28.3	25.9	26.4	26.0	26.4	26.9	25.5	25.5
Spaghetti Processing Data:										
Color Score	9.3	8.3	8.9	8.7	8.8	8.7	8.2	9.1	8.9	9.3
Cooked Weight (gm)	32.1	31.4	31.6	29.7	30.4	30.1	31.8	32.3	31.4	33.0
Cooking Loss (%)	6.4	6.4	5.8	7.2	8.0	7.4	6.4	6.0	6.1	5.9
Cooked Firmness (g cm)	5.3	4.5	5.3	7.7	7.5	7.5	4.6	4.7	5.1	4.7
Sample Count:							23	41	11	13



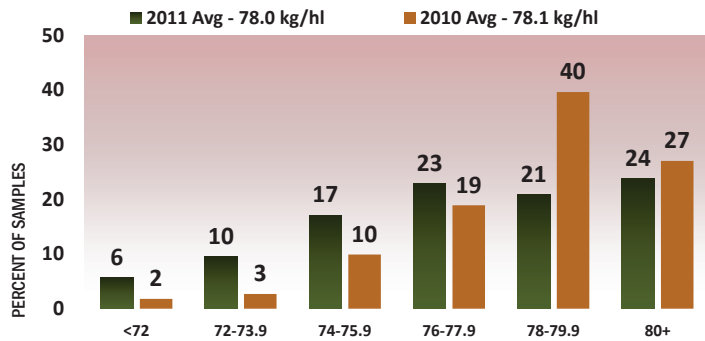
TEST WEIGHT

Pounds/Bushel



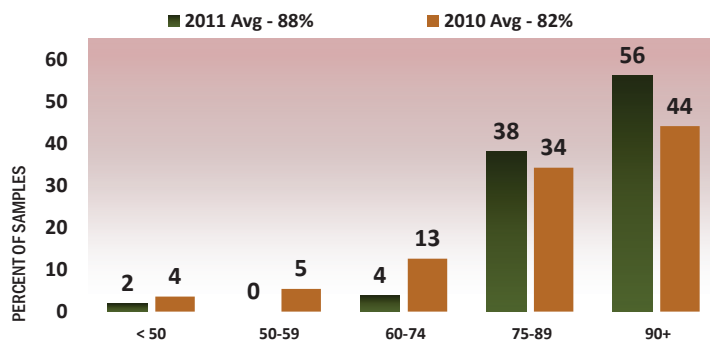
HECTOLITER WEIGHT

Kilograms/Hectoliter



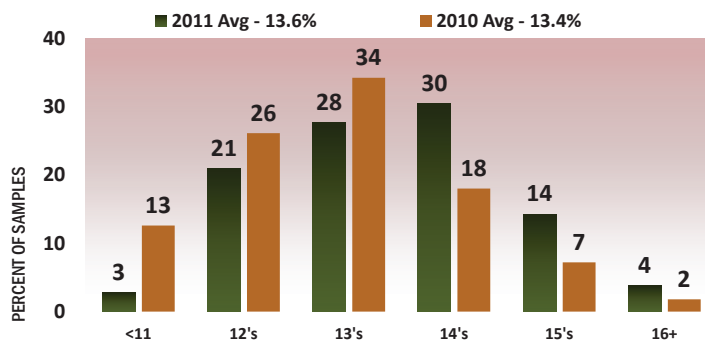
VITREOUS KERNELS

Percent



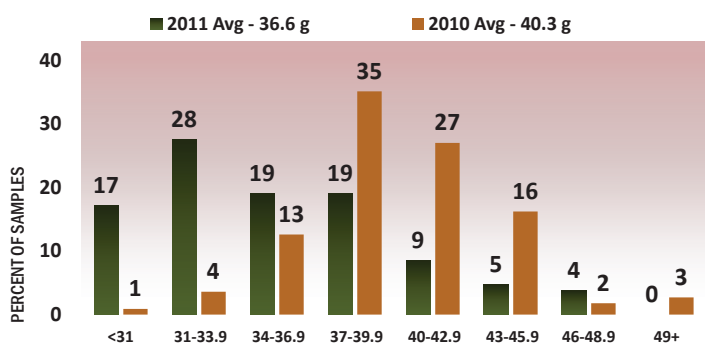
PROTEIN (12% MB)

Percent



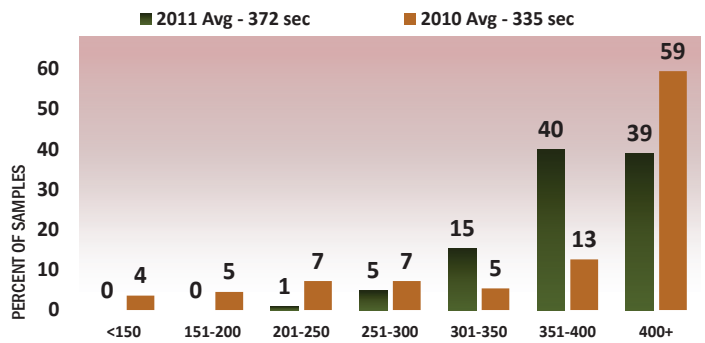
1000 KERNEL WEIGHT

Grams



FALLING NUMBER

Seconds



Durum Production

for the major producing states (million metric tons)

	2011	2010	2009	2008	2007
Arizona	0.2	0.2	0.3	0.4	0.2
California	0.3	0.3	0.5	0.4	0.2
Montana	0.3	0.5	0.5	0.3	0.3
North Dakota	0.5	1.9	1.7	1.1	1.2
Total Durum Production	1.4	3.0	3.0	2.3	2.0

Based on USDA crop estimates of September 30, 2011.

HARVEST SURVEY

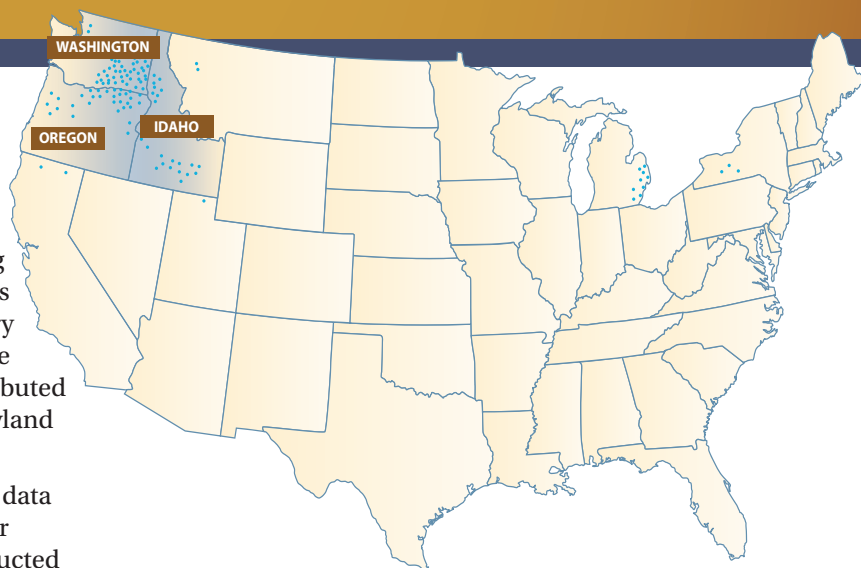
Weather and Harvest: The Pacific Northwest (PNW) had enough soil moisture at planting, and most of the wheat production area received adequate rainfall during the winter and early spring. Generally cool temperatures prevailed during the early to middle growing season. Dry conditions prevailed during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

Survey and Analysis Methods: Wheat quality tests 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 the National Agricultural Statistics Services, USDA, and represent a statistical sampling of the crop. USDA's Federal Grain Inspection Service (FGIS) graded and tested wheat protein content on wheat samples. The wheat commissions of Idaho, Oregon, and Washington, U.S. Wheat Associates, Inc., and USDA supported this program.

Wheat and Grade Data: The 2011 soft white (SW) crop average test weight was 60.9 lb/bu (80.1 kg/hl), above last year's average of 59.6 lb/bu (78.5 kg/hl), while the white club (WC) test weight of 59.9 lb/bu (78.8 kg/hl) was nearly the same as last year's 60.0 lb/bu (78.9 kg/hl). Other grade factors for SW and WC were similar to last year and the five-year averages. SW dockage remained the same at 0.7% and WC decreased to 1.0% from 1.1% last year. Average SW wheat moisture increased to 9.7% from 9.4% last year, while WC moisture decreased to 9.2% from 9.4% last year.

SW protein content (12% mb) of 9.2% was lower than last year and the five-year averages, and WC protein of 8.7% was much lower than last year's 10.3% and the five-year average of 10.5%. Wheat ash was lower than last year and the five-year averages for SW and WC. Thousand kernel weights and kernel diameters for both SW and WC were higher than last year and the five-year averages. Falling numbers (14% mb) were 306 seconds for SW and 284 seconds for WC, both lower than last year and the five-year averages.

Flour, Dough and Baking Data: The 2011 crop Buhler Laboratory Mill flour extractions for SW of 75.4% and WC of 77.1% were higher than last year and the five-year averages. Flour protein contents (14% mb) were 8.4 and 8.0% for SW and WC, respectively. Flour ash contents (14% mb) for both SW and WC were the same as last year, but greater than the five-year averages. Flour falling number values were 333 seconds for SW and 312 seconds for WC. Amylograph peak viscosity values were 424 BU for SW and 458 BU for WC, lower than last year and the five-year averages. Starch damage



THREE STATES SURVEYED

Idaho • Oregon • Washington

values for SW and WC were slightly higher than last year, but lower than the five-year averages.

Farinograph peak and stability times showed that both SW and WC had weaker gluten properties with slightly higher water absorptions than last year, but lower than the five-year averages. SW showed similar Alveograph L value to last year, but shorter than five-year average. WC displayed lower L values than last year and the five-year averages. Extensograph extensibility for SW and WC were lower than last year and the five-year averages.

Sponge cake volume for SW of 1226 cc was slightly greater with higher scores than last year and the five-year averages. The volume for WC of 1247 cc was also slightly greater than last year and the five-year averages. Cookie diameters for SW and WC were less than last year, but larger than the five-year averages. SW and WC cookie spread factors were lower than last year, but higher than the five year averages.

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

EXPORT CARGO SURVEY

The PNW SW export cargo data show the results of analyses of individual subplot samples including 66 drawn from the 2009 crop and 48 from the 2010 crop (August 2010 through May 2011). Representative samples were selected from official FGIS samples. Grade data were the actual grades on the individual subplots. Milling and processing analyses were conducted by WMC.

Pacific Northwest Soft White Wheat Production

in major producing states (million metric tons)

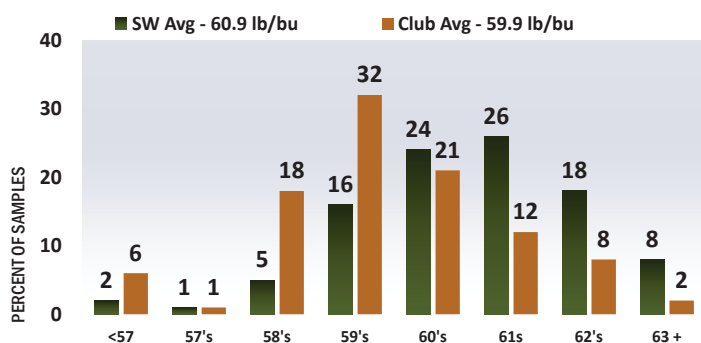
	2011		2010		2009		2008		2007	
	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB	SW	CLUB
Washington	3.1	0.4	2.8	0.3	2.3	0.2	2.4	0.1	2.2	0.3
Oregon	1.8	0.0	1.5	0.0	1.2	0.0	1.3	0.0	1.1	0.0
Idaho	1.8	0.1	1.6	0.1	1.3	0.0	1.4	0.0	1.2	0.1
Three-State Total	6.7	0.5	5.9	0.4	4.9	0.2	5.1	0.2	4.5	0.4
Three-State Total Soft White Wheat	7.2		6.3		5.1		5.3		4.8	
Total US Soft White Wheat	7.9		6.9		5.7		6.1		5.3	

Based on USDA crop estimates of September 30, 2011.



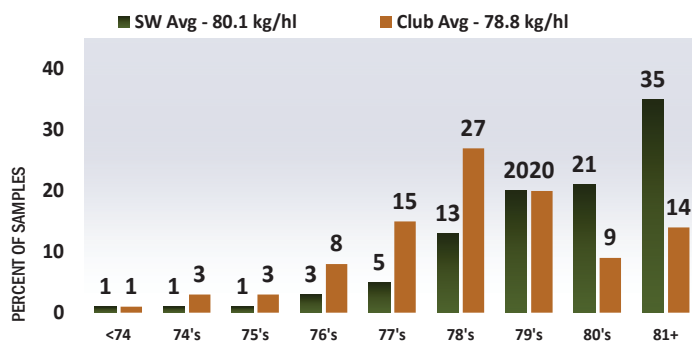
TEST WEIGHT

Pounds/Bushel



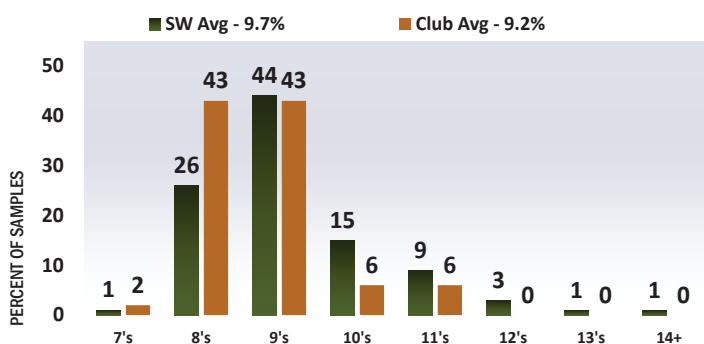
HECTOLITER WEIGHT

Kilograms/Hectoliter



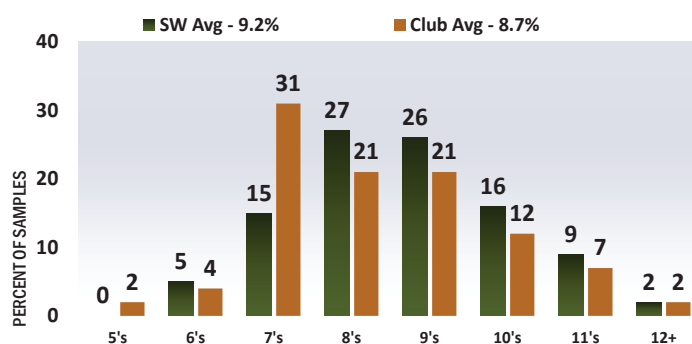
WHEAT MOISTURE

Percent



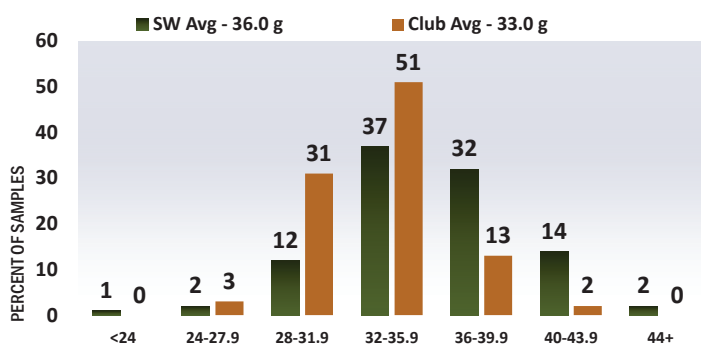
PROTEIN (12% MB)

Percent



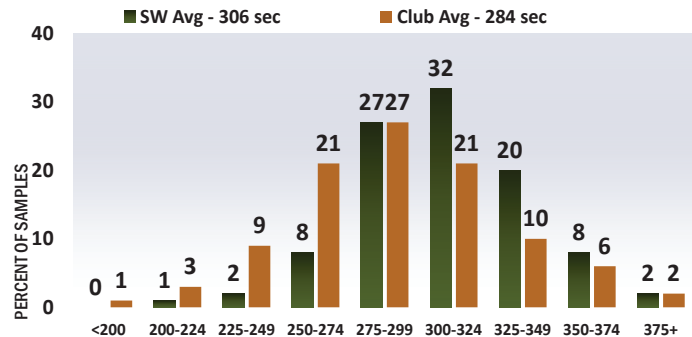
1000 KERNEL WEIGHT

Grams



FALLING NUMBER

Seconds

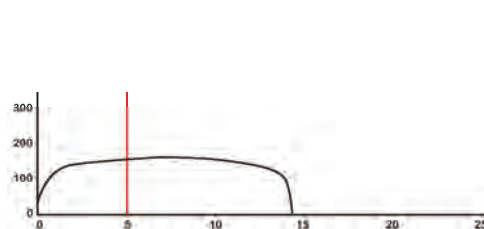
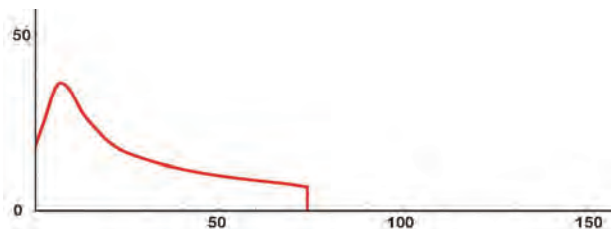
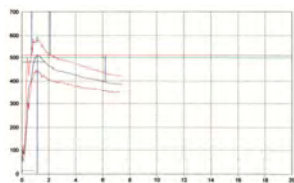


FARINOGRAMS

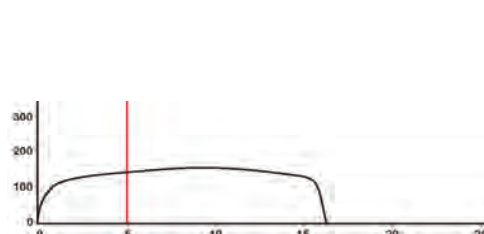
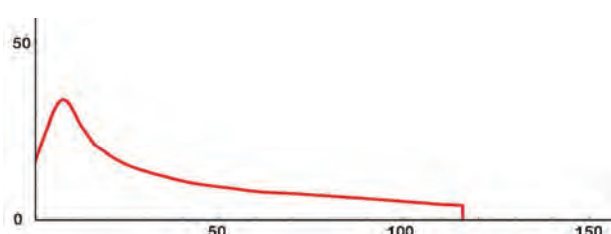
ALVEOGRAMS

EXTENSOGRAMS

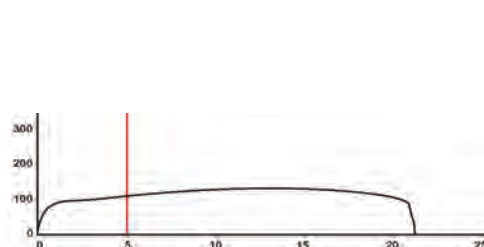
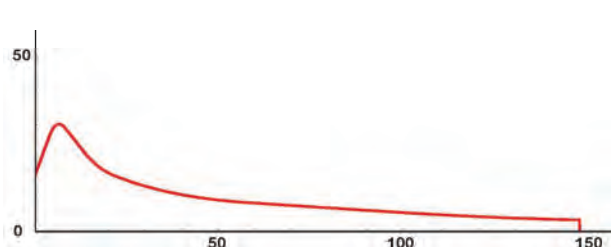
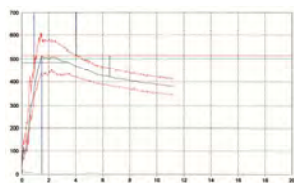
LOW PROTEIN



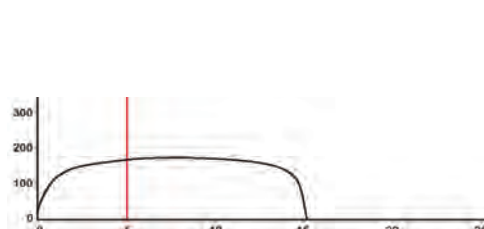
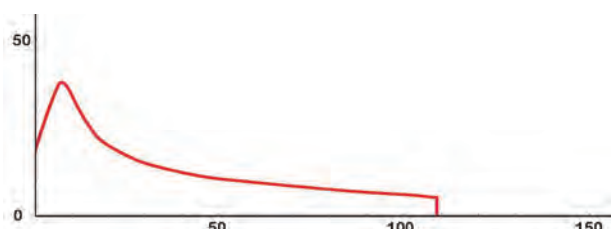
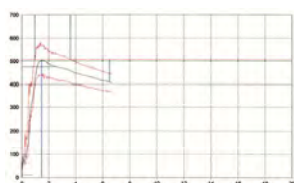
MEDIUM PROTEIN



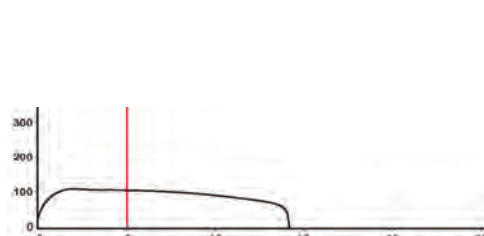
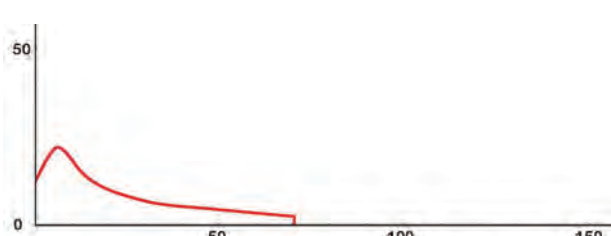
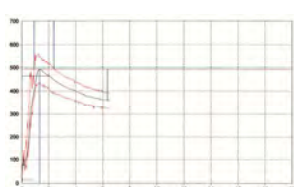
HIGH PROTEIN



AVERAGE PROTEIN



CLUB

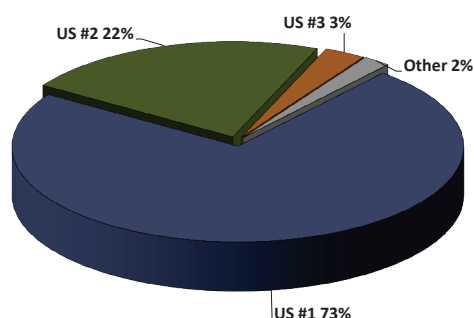


PNW SOFT WHITE | HARVEST DATA

Soft White	2011					2010		5-Year Average	
	Soft White By Protein				Club				
	Low	Med	High	Overall	Average	SW	Club	SW	Club
Wheat Grade Data:									
Test Weight (lb/bu)	60.7	61.3	60.6	60.9	59.9	59.6	60.0	59.7	59.8
(kg/hl)	79.8	80.6	79.7	80.1	78.8	78.5	78.9	78.6	78.7
Damaged Kernels (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Foreign Material (%)	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1
Shrunken & Broken (%)	0.5	0.6	0.7	0.6	0.9	0.8	1.0	0.9	1.3
Total Defects (%)	0.6	0.7	0.8	0.7	1.1	0.9	1.1	1.0	1.5
Grade	1 SW	1 SW	1 SW	1 SW	1 WC	2 SW	1 WC	2 SW	1 WC
Wheat Non-Grade Data:									
Dockage (%)	0.5	0.7	1.0	0.7	1.0	0.7	1.1	0.7	0.9
Moisture (%)	9.7	9.6	9.5	9.7	9.2	9.4	9.4	9.3	9.0
Protein (%) 12%/0% moisture basis	8.0/9.1	9.7/11.0	11.4/13.0	9.2/10.5	8.7/9.9	9.7/11.0	10.3/11.7	10.4/11.8	10.5/11.9
Ash (%) 14%/0% moisture basis	1.31/1.52	1.37/1.59	1.43/1.66	1.35/1.57	1.23/1.43	1.38/1.60	1.29/1.50	1.39/1.61	1.30/1.51
1000 Kernel Weight (g)	36.9	35.3	34.6	36.0	33.0	34.4	32.7	34.0	31.0
Kernel Size (%) lg/md/sm	90/9/1	85/14/1	80/19/1	87/12/1	81/18/1	81/18/1	78/21/1	79/20/1	73/26/1
Single Kernel: Hardness	33.2	37.9	39.5	35.9	34.7	35.8	36.0	34.1	34.9
Weight (mg)	39.9	38.2	37.6	38.9	35.2	37.3	34.7	37.2	34.2
Diameter (mm)	2.85	2.77	2.74	2.80	2.66	2.75	2.63	2.68	2.54
Sedimentation (cc)	11.1	13.1	17.2	12.9	10.1	16.0	10.7	17.3	15.7
Falling Number (sec)	301	308	315	306	284	337	338	330	325
Flour Data:									
Lab Mill Extraction (%)	75.7	75.2	74.7	75.4	77.1	71.0	71.7	70.3	71.7
Color: L*	92.4	91.5	91.6	91.9	92.3	91.8	91.9	92.2	92.1
a*	-2.6	-2.5	-2.4	-2.5	-2.6	-2.6	-2.4	-2.4	-2.2
b*	8.0	7.8	7.4	7.8	7.8	8.7	8.0	8.0	7.6
Protein (%) 14%/0% moisture basis	7.4/8.6	8.7/10.1	10.4/12.1	8.4/9.8	8.0/9.3	8.5/9.9	8.7/10.1	8.8/10.3	9.0/10.5
Ash (%) 14%/0% moisture basis	0.51/0.59	0.50/0.58	0.54/0.63	0.51/0.59	0.48/0.56	0.51/0.59	0.48/0.56	0.44/0.51	0.44/0.52
Wet Gluten (%)	15.4	22.1	27.2	19.8	10.4	21.7	18.7	23.1	18.9
Gluten Index	89.0	67.3	61.7	76.6	70.3	73.3	47.4	63.6	24.1
Falling Number (sec)	326	334	349	333	312	371	349	330	325
Amylograph Viscosity 65 g (BU)	427	407	453	424	458	508	554	528	547
Starch Damage (%)	4.6	3.9	4.0	4.2	3.5	3.7	3.3	4.5	4.1
Solvent Retention Capacity (%)									
Water/50% Sucrose	58/91	57/90	56/93	57/91	54/84	47/91	43/84	53/107	48/98
5% Lactic Acid/5% Na2CO3	98/86	106/84	109/83	103/85	86/78	92/70	73/61	102/80	82/74
Dough Properties:									
Farinograph: Peak Time (min)	1.2	1.5	1.5	1.5	1.4	1.5	2.0	1.6	1.5
Stability (min)	1.4	2.8	3.1	2.6	1.5	3.7	2.1	4.1	2.1
Absorption (%)	52.5	53.4	54.9	53.0	51.2	52.5	50.7	53.6	52.6
Alveograph: P (mm)	40	38	34	41	24	42	24	42	33
L (mm)	75	116	148	109	71	110	112	116	83
P/L Ratio	0.53	0.33	0.23	0.38	0.34	0.38	0.21	0.37	0.39
W (10-4 joules)	76	88	91	92	38	106	53	111	55
Extensograph: Resistance (BU)	161	152	129	171	108	206	89	217	102
(45 min) Extensibility (cm)	14.4	16.4	21.3	15.2	14.2	16.1	18.6	16.6	16.4
Area (sq cm)	36	39	42	40	22	49	26	53	25
Baking Evaluation:									
Sponge Cake: Volume (cc)	1266	1205	1157	1226	1247	1214	1229	1189	1221
Score	58	54	42	54	53	51	48	50	51
Cookie: Diameter (cm)	8.7	8.9	8.6	8.8	9.0	8.9	9.5	8.3	8.6
Spread Factor (width/height)	9.9	10.4	9.5	10.0	11.9	10.9	13.4	8.8	10.5
Pan Bread Bake Absorbtion (%) ¹	59.9								
Crumb Grain and Texture (1-10) ¹	4.0								
Loaf Volume (cc) ¹	646								
Chinese Southern-Type Steamed Bread Evaluation:									
Specific Volume (ml/g)	1.9	2.1	2.3	2.0	2.1	2.2	2.3	2.4	2.5
Total Score	67.3	67.8	68.5	67.7	67.5	67.8	66.3	67.8	66.5
% of Area Production:	47	36	17	100	100	100	100	100	100

Soft White	2010	2009
Wheat Grade Data:		
Test Weight (lb/bu)	61.2	61.5
(kg/hl)	80.5	80.8
Damaged Kernels (%)	0.2	0.1
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	1.0	0.8
Total Defects (%)	1.2	1.0
Grade	1 SW	1 SW
Wheat Non-Grade Data:		
Dockage (%)	0.4	0.3
Moisture (%)	9.2	9.1
Protein (%) 12%/0% moisture basis	9.9/11.2	10.2/11.5
Ash (%) 14%/0% moisture basis	1.35/1.57	1.30/1.51
1000 Kernel Weight (g)	37.1	36.2
Kernel Size (%) lg/md/sm	81/18/1	81/18/1
Single Kernel: Hardness	39.5	44.8
Weight (mg)	36.3	33.8
Diameter (mm)	2.71	2.43
Sedimentation (cc)	15.0	16.4
Falling Number (sec)	358	351
Flour Data:		
Lab Mill Extraction (%)	69.2	70.7
Color: L*	92.3	92.2
a*	-2.4	-2.4
b*	8.1	8.2
Protein (%) 14%/0% moisture basis	8.0/9.4	8.6/10.0
Ash (%) 14%/0% moisture basis	0.44/0.51	0.39/0.45
Wet Gluten (%)	21.5	21.2
Gluten Index	75.9	82.6
Falling Number (sec)	368	382
Amylograph Viscosity 65 g (BU)	474	488
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Na ₂ CO ₃		
Dough Properties:		
Farinograph: Peak Time (min)	1.5	1.5
Stability (min)	3.3	3.9
Absorption (%)	52.5	52.3
Alveograph: P (mm)	41	42
L (mm)	123	126
P/L Ratio	0.34	0.34
W (10-4 joules)	109	119
Extensograph: Resistance (BU)		
(45 min) Extensibility (cm)		
Area (sq cm)		
Baking Evaluation:		
Sponge Cake: Volume (cc)	1235	1186
Score	50	48
Cookie: Diameter (cm)	8.8	8.5
Spread Factor (width/height)		
Chinese Southern-Type Steamed Bread Evaluation:		
Specific Volume (ml/g)		
Total Score		
Sample Count:	48	66

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 eastern U.S. With favorable fall conditions planted area for the 2011/12 crop was up sharply from the depressed planting for 2010/11. By mid-May conditions were generally rated fair to excellent with adequate to excessive moisture. Portions of Arkansas and Missouri, however, were poor or very poor as unusually widespread spring flooding reduced quality and yield potential. Dry conditions in Maryland, Virginia, North Carolina and Kentucky allowed harvest to proceed more rapidly than normal, while delays caused by excessive moisture persisted into June in other states. By the last week of June, dry conditions finally prevailed and harvest proceeded very rapidly, finishing somewhat ahead of the average pace of the last five years.

Survey Methods: Sample collection and analysis were conducted by CII Laboratory Services, Kansas City, Missouri. For 2011, 377 samples were collected at two different times, reflecting early and late harvest, from elevators in 18 reporting areas. Test weight, moisture, protein, thousand kernel weight, wheat ash and falling number were determined on individual samples, while the remaining tests were on 36 composites. Results were weighted by five-year average production for the 18 reporting areas and combined into "Composite Average," "East Coast" and "Gulf" values. Gulf-tributary states include Arkansas, Illinois, Indiana, Kentucky, Missouri, and Ohio and account for about 82% of production in the states surveyed. East Coast-tributary states include Maryland, North Carolina and Virginia and represent the remaining 18%. The states surveyed account for 60%-70% of total SRW production. The Analysis Methods section identifies the test methods used.

Wheat and Grade Data: Despite late season dry conditions in the East Coast states and excessive moisture in many other areas, wheat and grade data are much improved over 2010 and similar to five-year averages. Overall average test weight of 58.8 lb/bu (77.4 kg/hl) is 0.9 lb/bu (0.8 kg/hl) above 2010

and similar to the five-year average. The East Coast average test weight is higher than the Gulf. Both Gulf and East Coast have damage lower than the five-year averages. The average total defects for Gulf is just 1.2% compared with 2.7% last year and the five-year average of 1.9%. Protein content of 10.2% (12% moisture basis) is similar to last year and the five-year average. Despite some higher DON values in parts of Ohio and Indiana, the composite average DON value of 1.1 ppm is equal to the five-year average, and the Gulf DON value of 1.2 ppm is just half the value reported for 2010. The composite falling number of 328 is equal to the five-year average, although the East Coast value is somewhat above and the Gulf value somewhat below the five-year averages.

Flour and Baking Data: Buhler Laboratory Mill flour extraction is well above 2010 and 2.5 percentage points above the five-year average. Farinograph peak and stability times and alveograph W values are all essentially equivalent to last year and the five-year averages, indicating good processing qualities. Composite average loaf volume is higher than last year and the five-year average.

Summary: Much of the SRW area had excessive moisture, with some fields abandoned because of flooding. However, the overall quality is similar to five-year averages and much improved in many factors over the 2010 crop. Test weight, protein, milling and farinograph quality are all similar to five-year averages, and DON is of less concern than it was last year. Buyers need to craft specifications carefully to receive qualities that meet their needs either for traditional soft wheat products or blending with stronger wheat.

EXPORT CARGO SURVEY

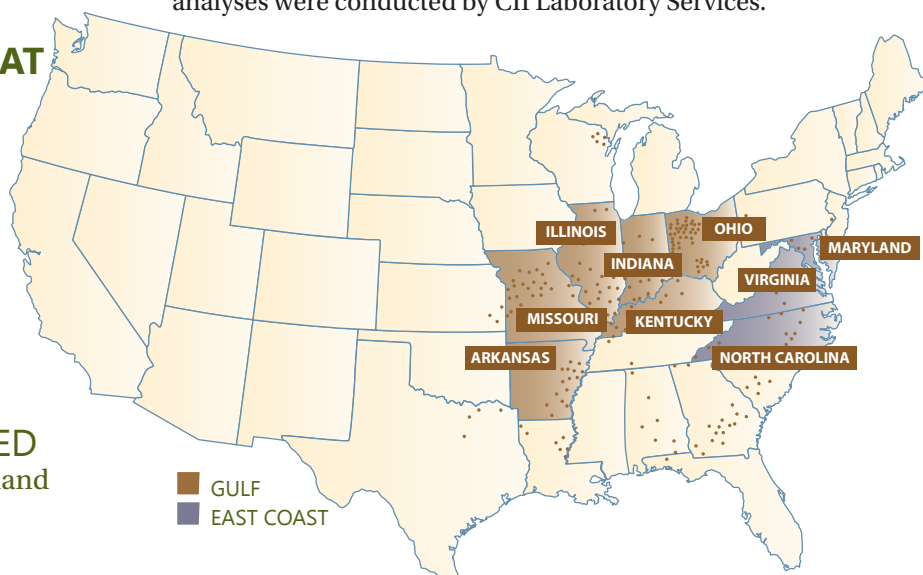
The export cargo data represents 136 individual subplot samples for crop years 2011 and 2010 from Gulf of Mexico and East Coast ports. Samples were selected from official Federal Grain Inspection Service samples, and grade data are the official grades on the individual subplots. Milling and baking analyses were conducted by CII Laboratory Services.

ABOUT SOFT RED WINTER WHEAT

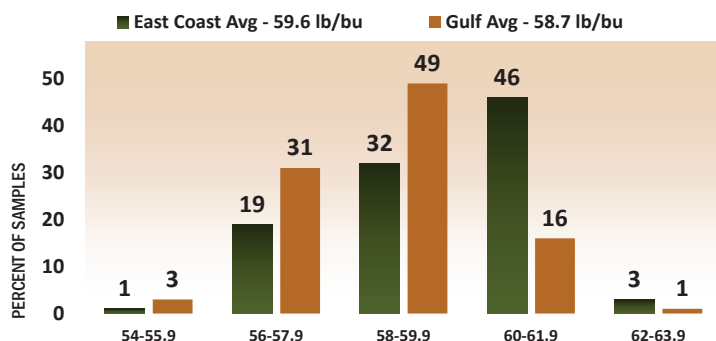
Low protein content, soft endosperm, red bran, weak gluten. Used in pastries, cakes, cookies, crackers, pretzels, and flat breads. Can also be used for blending.

NINE OF SIXTEEN STATES SURVEYED

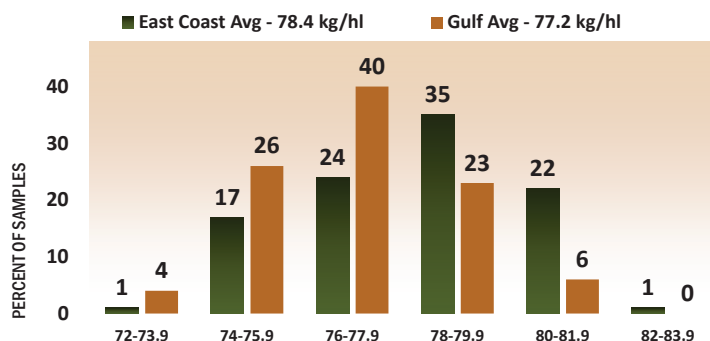
Arkansas • Illinois • Indiana • Kentucky • Maryland
Missouri • North Carolina • Ohio • Virginia



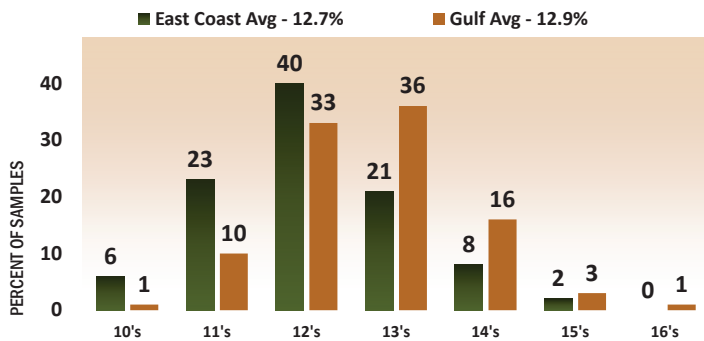
TEST WEIGHT | Pounds/Bushel



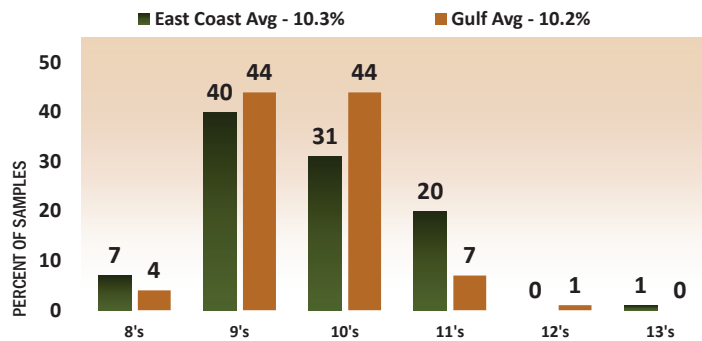
HECTOLITER WEIGHT | Kilograms/Hectoliter



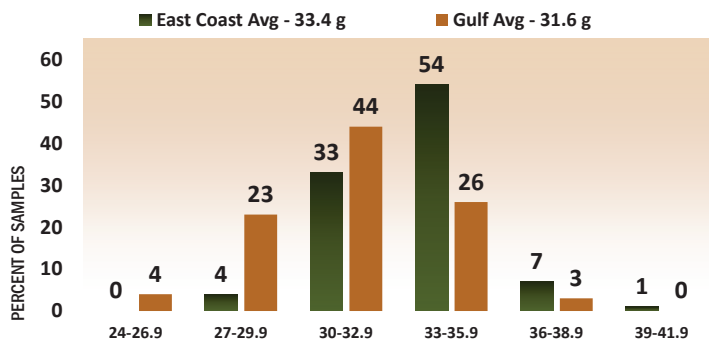
WHEAT MOISTURE | Percent



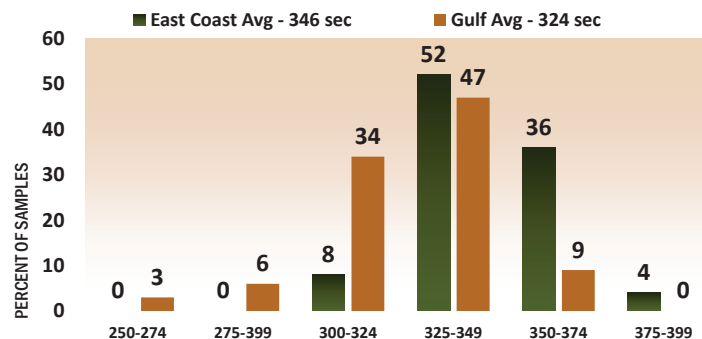
PROTEIN (12% MB) | Percent



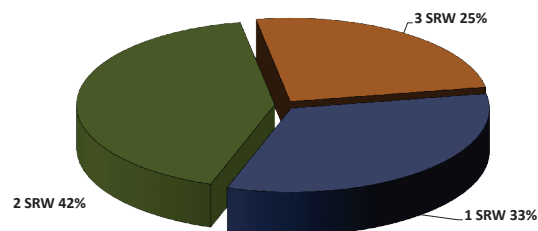
1000 KERNEL WEIGHT | Grams



FALLING NUMBER | Seconds



GRADE DISTRIBUTION*



*Based on 30 composite samples.

SOFT RED WINTER | HARVEST DATA

Soft Red Winter	Composite Average			East Coast*			Gulf Ports*		
	2011	2010	5-Year Avg	2011	2010	5-Year Avg	2011	2010	5-Year Avg
Wheat Grade Data:									
Test Weight (lb/bu)	58.8	57.9	58.9	59.6	59.7	59.7	58.7	57.5	58.7
(kg/hl)	77.4	76.2	77.5	78.4	78.5	78.5	77.2	75.7	77.3
Damaged Kernels (%)	0.7	1.7	1.2	1.1	1.5	1.3	0.6	1.7	1.2
Foreign Material (%)	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.5	0.1
Shrunken & Broken (%)	0.4	0.6	0.6	0.4	0.6	0.5	0.5	0.6	0.6
Total Defects (%)	1.3	2.6	1.9	1.6	2.2	1.9	1.2	2.7	1.9
Grade	2 SRW	3 SRW	2 SRW	2 SRW	2 SRW	2 SRW	2 SRW	3 SRW	2 SRW
Wheat Non-Grade Data:									
Dockage (%)	0.6	0.9	0.9	0.8	1.2	0.9	0.6	0.8	0.9
Moisture (%)	12.9	12.9	12.9	12.7	12.8	12.9	12.9	13.0	12.9
Protein (%) 12%/0% moisture basis	10.2/11.6	10.3/11.7	10.1/11.4	10.3/11.7	11.0/12.5	10.3/11.7	10.2/11.6	10.1/11.5	10.0/11.4
Ash (%) 14%/0% moisture basis	1.53/1.78	1.55/1.80	1.53/1.78	1.46/1.70	1.53/1.78	1.47/1.71	1.54/1.79	1.56/1.81	1.55/1.80
1000 Kernel Weight (g)	31.9	31.8	33.0	33.4	32.1	34.3	31.6	31.7	32.7
Kernel Size (%) lg/md/sm	82/17/01	80/19/01	82/17/01	83/16/01	77/22/01	84/15/01	82/17/01	81/18/01	82/17/01
Single Kernel: Hardness	28.9	20.6	19.2	28.2	24.7	19.8	29.0	19.6	19.2
Weight (mg)	32.3	30.6	31.8	33.2	30.9	33.3	32.2	30.5	31.5
Diameter (mm)	2.64	2.25	2.27	2.64	2.23	2.32	2.64	2.25	2.25
Sedimentation (cc)	11.9	11.9	12.9	13.1	16.2	14.9	11.6	11.0	12.5
Falling Number (sec)	328	333	329	346	334	322	324	333	331
DON (ppm)	1.1	2.0	1.1	0.5	0.4	0.6	1.2	2.4	1.2
Flour Data:									
Lab Mill Extraction (%)	71.4	70.0	68.9	71.2	68.2	68.5	71.4	70.3	69.1
Color: L*	93.4	93.1	93.4	93.5	93.0	93.4	93.4	93.1	93.4
a*	-3.1	-3.2	-3.1	-3.2	-3.1	-3.0	-3.1	-3.2	-3.1
b*	8.1	8.1	8.2	8.4	8.1	8.1	8.1	8.1	8.3
Protein (%) 14%/0% moisture basis	8.6/10.0	8.6/10.0	8.4/9.8	8.6/9.9	9.3/10.8	8.6/10.0	8.7/10.1	8.5/9.9	8.4/9.7
Ash (%) 14%/0% moisture basis	0.44/0.51	0.43/0.50	0.43/0.50	0.43/0.49	0.43/0.50	0.43/0.50	0.44/0.52	0.44/0.51	0.44/0.51
Wet Gluten (%)	23.6	23.3	22.2	23.5	25.3	21.5	23.7	22.8	22.5
Gluten Index	79.6	85.1	77.7	79.5	89.0	83.6	79.7	84.2	76.4
Falling Number (sec)	339	333	329	346	334	322	337	333	331
Amylograph Viscosity 65 g (BU)	614	717	607	687	673	527	598	727	626
Starch Damage (%)	4.3	4.4	4.3	4.3	4.7	4.4	4.3	4.3	4.3
Solvent Retention Capacity (%)									
Water/50% Sucrose	54/103	56/107	55/109	54/105	56/109	56/112	54/100	55/104	54/106
5% Lactic Acid/5% Na ₂ CO ₃	113/78	116/81	111/80	113/80	119/81	114/81	110/78	113/80	109/79
Dough Properties:									
Farinograph:									
Peak Time (min)	1.9	1.6	1.6	2.2	2.0	1.8	1.8	1.6	1.6
Stability (min)	3.0	2.9	2.9	2.7	3.3	3.0	3.0	2.9	2.9
Absorption (%)	52.7	51.8	52.0	53.5	52.3	52.4	52.6	51.7	51.9
Alveograph: P (mm)	36	35	39	37	38	44	36	34	38
L (mm)	92	88	88	95	106	88	92	83	89
P/L Ratio	0.39	0.40	0.44	0.38	0.36	0.51	0.39	0.41	0.43
W (10-4 joules)	85	83	91	83	103	103	86	79	88
Baking Evaluation:									
Crumb Grain	5.2	5.2	5.3	5.2	5.9	5.6	5.2	5.1	5.2
Crumb Texture	5.1	5.3	5.4	5.2	5.9	5.6	5.1	5.1	5.3
Loaf Volume (cc)	740	733	721	734	744	718	741	730	723
Cookie Spread Ratio	9.4	9.8	9.0	9.3	8.9	8.5	9.4	9.9	9.1
% of Area Sampled:	100%			18%			82%		

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

Soft Red Winter	2011	2010
Wheat Grade Data:		
Test Weight (lb/bu)	60.0	58.4
(kg/hl)	78.9	76.9
Damaged Kernels (%)	2.5	2.5
Foreign Material (%)	0.1	0.1
Shrunken & Broken (%)	0.8	0.9
Total Defects (%)	3.4	3.5
Grade	2 SRW	2 SRW
Wheat Non-Grade Data:		
Dockage (%)	1.0	0.9
Moisture (%)	12.3	12.4
Protein (%) 12%/0% moisture basis	10.5/12.0	10.2/11.5
Ash (%) 14%/0% moisture basis	1.52/1.77	1.54/1.79
1000 Kernel Weight (g)	30.1	29.5
Kernel Size (%) lg/md/sm	82/16/1	81/18/1
Single Kernel: Hardness		29.5
Weight (mg)		31.3
Diameter (mm)		2.57
Sedimentation (cc)	14.6	11.0
Falling Number (sec)	341	350
DON (ppm)	0.0	1.6
Flour Data:		
Lab Mill Extraction (%)	72.3	71.8
Color: L*	92.9	93.1
a*	-3.2	-2.7
b*	8.1	7.9
Protein (%) 14%/0% moisture basis	8.9/10.3	8.5/9.9
Ash (%) 14%/0% moisture basis	0.45/0.53	0.44/0.51
Wet Gluten (%)	23.5	21.8
Gluten Index	85.0	89.2
Falling Number (sec)	363	386
Amylograph Viscosity 65 g (BU)	604	726
Starch Damage (%)		
Solvent Retention Capacity (%)		
Water/50% Sucrose		
5% Lactic Acid/5% Na ₂ CO ₃		
Dough Properties:		
Farinograph:		
Peak Time (min)	1.7	1.4
Stability (min)	3.5	3.0
Absorption (%)	52.9	52.0
Alveograph: P (mm)		
L (mm)	41	41
	81	75
P/L Ratio	0.51	0.55
W (10 ⁻⁴ joules)	94	96
Baking Evaluation:		
Crumb Grain	5.4	5.2
Crumb Texture	5.8	5.4
Loaf Volume (cc)	733	712
Cookie Spread Ratio	7.6	9.4
Sample Count:	45	91

Soft Red Winter Production

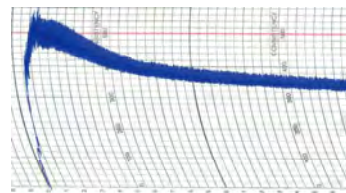
in major producing states (million metric tons)

	2011	2010	2009	2008	2007
Alabama	0.4	0.2	0.3	0.4	0.1
Arkansas	0.8	0.2	0.5	1.5	0.8
Georgia	0.3	0.1	0.3	0.6	0.3
Illinois	1.3	0.4	1.2	1.9	1.4
Indiana	0.7	0.4	0.8	1.1	0.6
Kentucky	0.8	0.4	0.6	0.9	0.3
Louisiana	0.4	0.1	0.3	0.6	0.3
Maryland	0.3	0.2	0.3	0.4	0.3
Michigan	0.9	0.6	0.7	0.8	0.6
Mississippi	0.6	0.1	0.2	0.8	0.5
Missouri	0.9	0.3	0.9	1.5	1.0
North Carolina	1.1	0.4	0.8	1.2	0.5
Ohio	1.3	1.2	1.9	2.0	1.3
South Carolina	0.3	0.1	0.2	0.3	0.1
Tennessee	0.6	0.3	0.5	0.9	0.3
Virginia	0.5	0.2	0.3	0.5	0.4
16-State Total	11.2	5.5	9.7	15.3	8.6
Total SRW Production	12.5	6.5	11.0	16.7	9.6

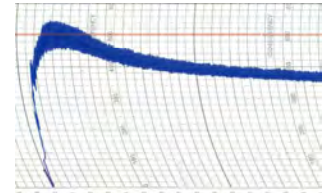
Based on USDA crop estimates of September 30, 2011.

FARINOGRAMS

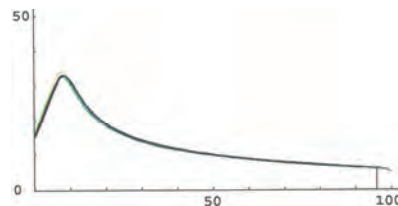
GULF



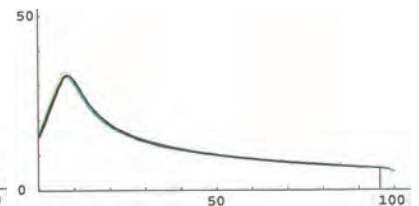
EAST COAST

**ALVEOGRAMS**

GULF



EAST COAST



ANALYSIS METHODS

The harvest and cargo samples for each class were evaluated using the same methods as described below. All flour, semolina and end-use tests use flour or semolina produced as described in the “Extraction” section.

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 and HW - AACC 26-21A both with bran dusting flour by Buhler MLU-303 and shorts sifting flour using 119 micron sieve; 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. (See farinogram reference at www.uswheat.org/fg)

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 - 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.

END-USE PRODUCT 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 dry 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. SW High Protein - AACC 10-10B with 180 min fermentation for bread.*

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 26°-27° C water and draining. Sensory Noodle Color Stability Score is a total score of noodle color rated at 2 hr and 24 hr against a control sample (an assigned score of 7) and is reported based on a scale of 1-10; higher scores indicate better color stability. 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.

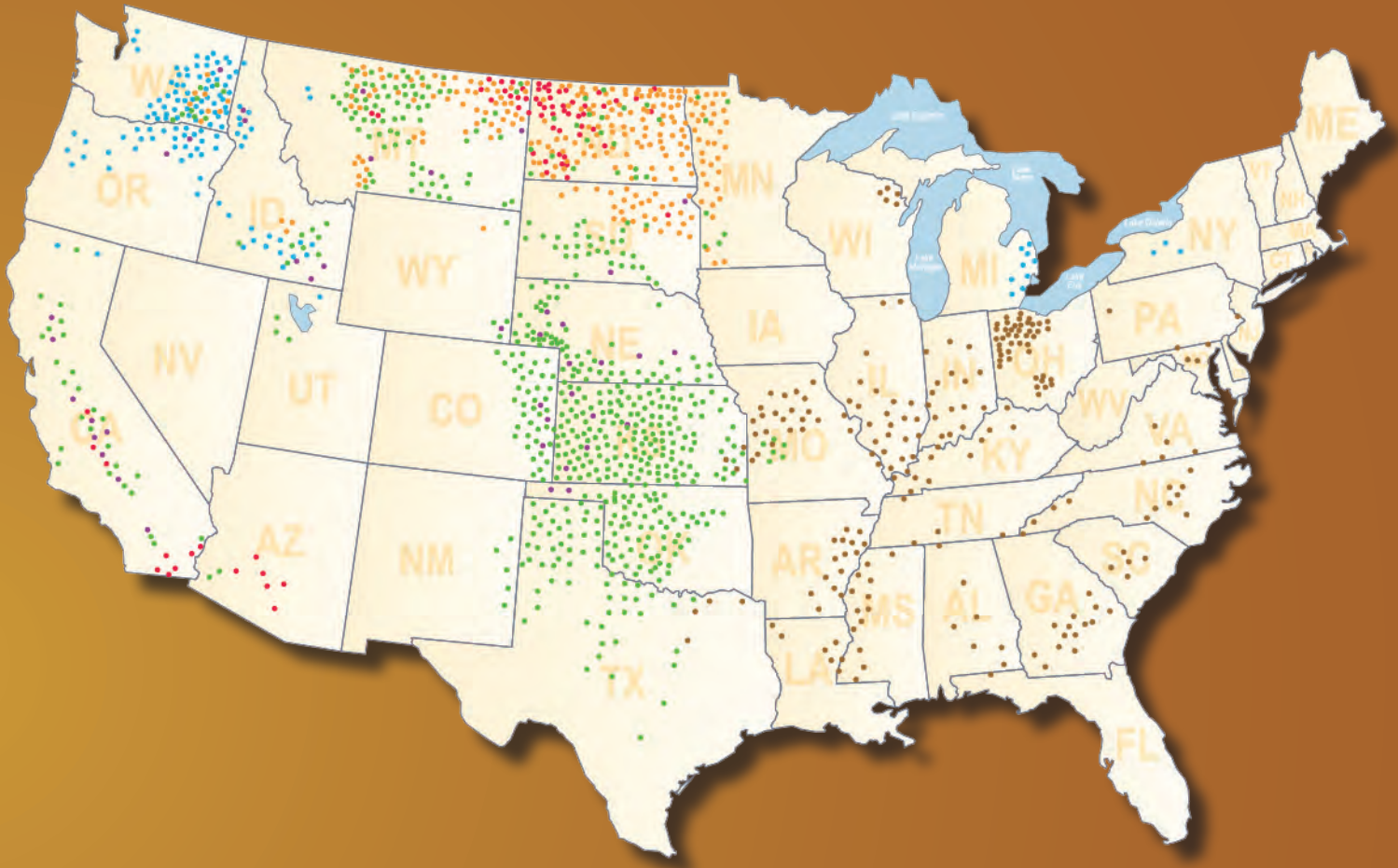
Chinese Steamed Bread: Two types of steamed breads were prepared: Chinese southern-type from each of the SW and club wheat flours and Asian steamed breads from each of the HW flours. The Chinese southern-type formula was: flour 100%, sugar 15%, shortening 4%, baking powder 1.2%, instant yeast 0.8%, nonfat 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 for SW sponge cake, steamed bread, and 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.

 **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.

 **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.

 **DURUM**



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



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