



# 2014 Hard Red Wheat / Hard White Wheat Crop Quality Report

## California Wheat

California's wheat growing regions are defined by climate, value of alternative crops, and distinct differences in variety selection.

Five of the six wheat classes grown in the U.S. are produced in California, with Hard Red wheat accounting for nearly 80% of planted acres this year.

This report includes quality data for the most abundantly grown 2014 California Hard Red wheat milling varieties. A page is also devoted to the quality characteristics of the Hard White wheat varieties grown this year.

Most California hard wheat is planted from October to January and harvested in the months of June and July. With the strong demand for new crop wheat in the domestic marketplace, importers are encouraged to express their interest in purchasing California wheat in early spring. For Hard White wheat, buyers should consider communicating with grain handlers and contracting for acres before planting time.

California hard wheat varieties are known for their low moisture and large and uniform kernel size. Because wheat is predominantly grown under irrigation, growers achieve high yields and consistent quality.

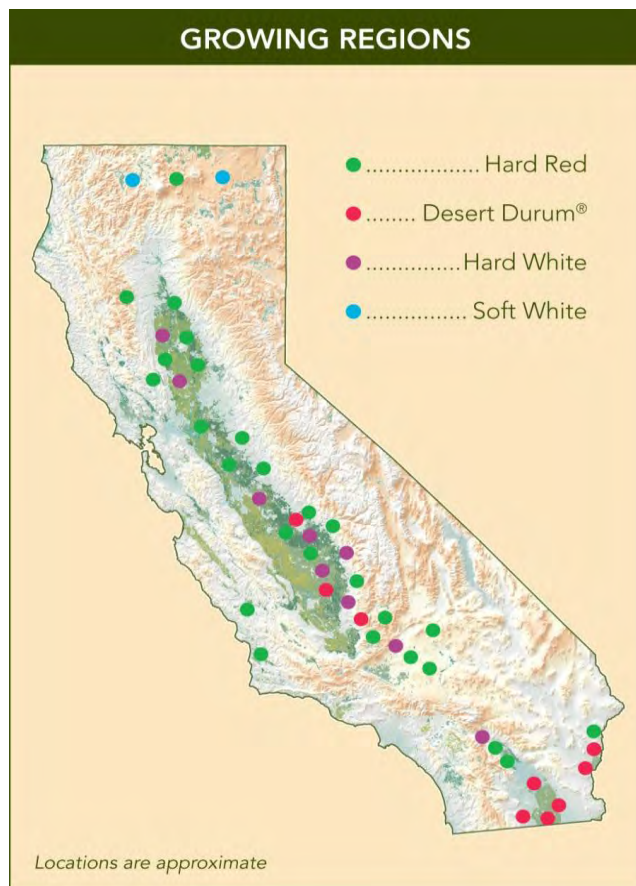
### 2014 Crop Conditions

Protein and overall crop quality are excellent. Grain yields were average. This was California's third successive year of drought, and 2014 was the driest year on record for many locations. With high prices for silage and hay, record wheat acreage was cut for non-grain purposes in 2014.

### Data in this Report

Samples for this year's report were collected from grain handlers and producers around the state. This program collects samples throughout the harvest season, resulting in a crop quality report that is highly representative of the crop. Grade information is provided by the Federal Grain Inspection Service.

Milling and end-use quality analysis was conducted by the California Wheat Commission Laboratory.



PRODUCTION HISTORY*		
YEAR	METRIC TONS (1,000 MT's)	SHORT TONS (1,000 ST's)
2014	392	432
2013	751	828
2012	718	791
2011	972	1071
2010	784	864
2009	718	792
2008	925	1020

\*Winter wheat - all classes excluding Durum

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2014 HARD RED WINTER (MIXED VARIETIES)						
	High Protein		Intermediate Protein		Low Protein	
	(12.5 & Above)		(11.0-12.4%)		(10.9% & Below)	
WHEAT	2014	2013	2014	2013	2014	2013
Protein (12% MB)	13.0	13.3	11.6	11.7	9.6	9.9
Protein (Dry Basis)	14.8	15.1	13.1	13.3	10.9	11.2
Protein (As-Is)	13.5	13.9	12.0	12.1	10.0	10.2
Ash (14% MB)	1.52	1.73	1.49	1.64	1.50	1.57
Ash (Dry Basis)	1.77	1.87	1.73	1.79	1.74	1.72
Ash (As-Is)	1.62	1.61	1.59	1.54	1.60	1.48
Moisture	8.4	7.7	8.5	8.4	8.3	8.7
<b>Test Weight</b>						
lb/bu	62.2	63.1	62.8	62.9	64.0	63.3
kg/hl	81.8	82.9	82.6	82.7	84.1	83.2
SKCS Hardness Score	74	69	75	67	72	67
1000 Kernel Weight (g)	36.7	40.4	38.6	39.2	38.7	39.5
<b>Kernel Size Distribution</b>						
Large	80	87	84	84	88	88
Medium	19	13	16	16	12	12
Small	1	0	0	0	0	0
<b>FLOUR</b>						
Lab Mill Yield (%)	69.6	72.5	68.7	70.7	68.3	69.4
Protein (14% MB)	11.5	11.8	10.2	10.3	8.5	8.5
Protein (Dry Basis)	13.1	13.7	11.4	12.0	9.3	9.9
Ash (14% MB)	0.39	0.43	0.41	0.44	0.42	0.46
Ash (Dry Basis)	0.46	0.50	0.48	0.51	0.49	0.53
Gluten Index*	92.4	-	95.2	-	98.4	-
Wet Gluten (14% MB)	34.1	33.5	29.1	28.3	21.8	21.6
Falling Number (sec)	378	431	366	414	362	404
<b>FARINOGRAPH</b>						
Arrival Time (min)	5.8	4.3	5.0	2.8	2.6	1.4
Mixing Peak (min)	15.2	11.3	11.8	7.3	4.8	3.0
Mixing Tolerance (min)	18.5	19.6	23.7	18.0	13.6	11.8
Absorption (%)	64.9	63.9	62.8	60.4	61.5	59.5
<b>BAKING RESULTS</b>						
Bread Volume (cc)	946	985	876	919	785	810
Crumb Grain & Texture	8	9	7	8	5	6

Wheat samples were collected by handlers. Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model TruSpec. Lab mill yield: Brabender Quadromat Sr. Mill, modified in 1997. Bread Volume: AACC Method 10-10B. Test weight conversion from lb/bu to kg/hl according to FGIS PN-97-5, (1.292 x lb/bu) + 1.419. \*Gluten Index not performed on 2013 samples.

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## 2014 HARD RED VARIETY SPECIFIC INFORMATION

WHEAT	CAL ROJO		JOAQUIN		WB-JOAQUIN ORO
	High Protein	Int. Protein	High Protein	Int. Protein	High Protein
Protein (12% MB)	13.4	11.1	12.3	11.5	13.5
Protein (Dry Basis)	15.2	12.6	14.0	13.1	15.4
Protein (As-Is)	14.0	11.5	12.9	12.1	14.2
Ash (14% MB)	1.51	1.47	1.65	1.61	1.53
Ash (Dry Basis)	1.64	1.61	1.79	1.74	1.66
Ash (As-Is)	1.62	1.57	1.78	1.74	1.65
Moisture	8.0	8.4	7.6	7.5	7.5
<b>Test Weight</b>					
lb/bu	61.2	62.9	62.2	62.2	65.0
kg/hl	80.5	82.7	81.7	81.8	85.4
SKCS Hardness Score	63	64	72	71	67
1000 Kernel Weight (g)	38.1	40.0	34.9	37.8	41.7
<b>Kernel Size Distribution</b>					
Large	77	86	79	84	92
Medium	23	14	20	16	7
Small	1	0	1	0	0
<b>FLOUR</b>					
Lab Mill Yield (%)	71.0	69.9	72.8	72.5	73.2
Protein (14% MB)	12.0	10.1	11.2	10.1	11.7
Protein (Dry Basis)	13.7	11.2	12.6	11.2	13.3
Ash (14% MB)	0.41	0.45	0.37	0.39	0.33
Ash (Dry Basis)	0.49	0.52	0.43	0.45	0.39
Gluten Index	95.5	97.1	99.1	98.3	90.5
Wet Gluten (14% MB)	32.4	25.5	31.5	30.0	37.6
Falling Number (sec)	398	372	386	394	374
<b>FARINOGRAPH</b>					
Arrival Time (min)	3.3	1.9	2.5	2.5	6.2
Mixing Peak (min)	10.4	10.6	11.3	7.4	13.0
Mixing Tolerance (min)	17.2	25.4	21.2	21.3	14.5
Absorption (%)	59.2	58.3	62.1	61.5	68.2
<b>BAKING RESULTS</b>					
Bread Volume (cc)	948	853	910	865	995
Crumb Grain & Texture	8	7	8	7	9

For protein ranges not indicated, please contact the California Wheat Commission. Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model TruSpec. Test mill yield: Brabender Quadromat Senior Mill, modified in 1997. Bake Volume = AACC Method 10-108. Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5,  $(1.292 \times \text{lb/bu}) + 1.419$ . High Protein: (12.5% & Above). Intermediate Protein: (11.0-12.4%).



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## 2014 HARD RED VARIETY SPECIFIC INFORMATION

WHEAT	REDWING		SUMMIT 515		WB-ROCKLAND		WB-9229	
	High Protein	Int. Protein	High Protein	Int. Protein	High Protein	Int. Protein	High Protein	Int. Protein
Protein (12% MB)	12.1	11.5	12.7	11.5	13.6	11.8	12.7	11.5
Protein (Dry Basis)	13.8	13.0	14.5	13.1	15.4	13.4	14.4	13.1
Protein (As-Is)	12.7	12.0	13.3	12.0	14.0	12.2	13.1	12.0
Ash (14% MB)	1.39	1.43	1.50	1.45	1.52	1.53	1.46	1.52
Ash (Dry Basis)	1.61	1.66	1.74	1.69	1.77	1.78	1.70	1.77
Ash (As-Is)	1.49	1.53	1.60	1.54	1.60	1.63	1.55	1.62
Moisture	8.0	8.4	8.1	8.4	9.0	8.6	9.0	8.7
<b>Test Weight</b>								
lb/bu	62.6	62.6	63.4	63.8	63.1	65.8	63.8	63.5
kg/hl	82.3	82.3	83.4	83.9	83.0	86.4	83.9	83.5
SKCS Hardness Score	76	79	72	73	80	73	84	84
1000 Kernel Weight (g)	38.1	37.9	38.7	39.4	37.1	44.6	35.9	34.6
<b>Kernel Size Distribution</b>								
Large	86	87	89	89	78	93	80	72
Medium	14	13	10	10	21	6	20	27
Small	0	0	0	0	1	0	0	1
<b>FLOUR</b>								
Lab Mill Yield (%)	69.6	69.8	69.5	69.3	67.4	67.3	67.8	66.1
Protein (14% MB)	11.0	10.2	11.2	10.2	12.2	10.7	11.4	10.2
Protein (Dry Basis)	12.3	11.3	12.6	11.4	13.9	12.0	12.9	11.3
Ash (14% MB)	0.41	0.44	0.39	0.39	0.38	0.36	0.40	0.42
Ash (Dry Basis)	0.48	0.51	0.46	0.46	0.44	0.41	0.46	0.49
Gluten Index	89.0	92.4	83.6	89.1	87.6	92.0	97.4	98.4
Wet Gluten (14% MB)	31.5	29.8	34.3	30.8	38.6	32.1	33.2	28.7
Falling Number (sec)	322	343	343	333	376	327	377	387
<b>FARINOGRAPH</b>								
Arrival Time (min)	3.9	2.1	4.1	2.5	8.0	2.6	14.3	21.1
Mixing Peak (min)	23.3	6.8	8.4	7.0	14.6	10.8	25.3	31.1
Mixing Tolerance (min)	17.3	23.9	12.8	15.2	17.0	19.9	21.3	22.8
Absorption (%)	63.9	64.2	64.3	63.1	67.7	65.2	70.6	67.5
<b>BAKING RESULTS</b>								
Bread Volume (cc)	880	854	928	875	989	890	971	928
Crumb Grain & Texture	8	7	8	7	9	7	9	8

For protein ranges not indicated, please contact the California Wheat Commission. Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model TruSpec. Test mill yield: Brabender Quadromat Senior Mill, modified in 1997. Bake Volume = AACC Method 10-108. Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5, (1.292 x lb/bu) + 1.419. High Protein: (12.5% & Above). Intermediate Protein: (11.0-12.4%).

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## HARD RED WHEAT GRADE HARVEST DATA

	2014	2013	2012	2011	2010
Test Weight: lb/bu	63.4	62.3	62.1	62.6	63.3
kg/hl	83.4	81.9	81.6	82.3	83.2
Moisture (%)	9.1	9.2	9.1	9.3	9.2
Damage (%)	0	0	0	0.1	0.1
Foreign Material* (%)	0.4	0.2	0.1	0.1	0.3
Shrunken/Broken* (%)	0.7	0.7	0.6	0.5	0.5
Total Defects (%)	1	1	0.7	0.7	0.9
Dockage* (%)	0.7	1	0.8	0.8	1
Total Screenings (%)	1.8	2	1.5	1.4	1.8
Net Wheat (%)	89.3	89	89.5	89.4	89.2
CTW (%)	105.3	105.9	106.5	106.4	106.1
MWVI (%)	95	94.4	93.9	93.9	94.2

Harvest year = Calendar year. \*Total Screenings are those factors represented on the grade certificate that are cleaned out in the flour mill. Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5,  $(1.292 \times \text{lb/bu}) + 1.419$ . Net Wheat =  $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / 100\%$ . Clean, Tempered Wheat (CTW%) =  $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / (100\% - 16\% \text{ (temper moisture)})$ . Millable Wheat Value Index (MWVI) =  $100\% / \text{CTW}$ .

## Varietal Descriptions

**Cal Rojo (HRW)** is a widely adapted, high yield yielding variety for both the San Joaquin and Sacramento Valleys. It is mid-early maturing and receives high scores for grain, milling, and baking quality.

**Joaquin (HRW)** is adapted to the San Joaquin Valley and has high protein and test weight with excellent milling and baking properties.

**WB-Joaquin Oro (HRW)** is adapted to the San Joaquin Valley and has high protein and test weight with excellent milling and baking properties, similar to the variety Joaquin. In addition, WB-Joaquin Oro carries two genes for stripe rust resistance, one of which is effective against all current races.

**Redwing (HRW)**, a high quality wheat for both Sacramento and San Joaquin Valleys, has been one of the top yielding hard red varieties in University trials. Redwing receives high scores for grain, milling, and baking qualities.

**Summit 515 (HRW)** is a variant of the variety Summit with two effective genes for stripe rust resistance added by marker assisted selection. Summit 515 has very high yield potential in both San Joaquin and Sacramento Valleys.

**WB-Rockland (HRW)** is a very high protein variety adapted to the Sacramento Valley. It has high falling numbers and very good milling and baking qualities.

**Blanca Grande 515 (HW)** is a variant of the variety Blanca Grande, with two effective genes for stripe rust resistance added by marker assisted selection. Blanca Grande 515 has excellent end-use quality and high yielding ability in both the San Joaquin and Sacramento Valley.

**WB-9229 (HRW)** is adapted to both the San Joaquin and the Sacramento Valleys. It has medium to high protein and test weight and has excellent milling and baking properties. It is moderately resistant to Septoria and is resistant to the current races of stripe rust.

**Patwin (HW)** is a high yielding variety with very high protein levels, and adapted to both Sacramento and San Joaquin Valleys. Patwin uniquely carries resistance to root knot nematodes and has high falling numbers. Patwin has excellent scores for milling and baking parameters.

**Patwin 515 (HW)** is a high yielding variety with very high protein levels, and adapted to both Sacramento and San Joaquin Valleys. Patwin 515 (HRW) is a variant of Patwin with the addition of stripe rust resistance genes *Yr5* and *Yr15*.

**WB-Perla (HW)** is adapted to the San Joaquin Valley and has excellent yield potential, outstanding protein content and very good milling and baking potential.

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2014 HARD WHITE WHEAT						
	Blanca Grande 515		Patwin		Patwin 515	WB-Perla*
WHEAT	High Protein	Int. Protein	High Protein	Int. Protein	High Protein	Int. Protein
Protein (12% MB)	13.3	11.8	14.1	11.7	13.5	11.9
Protein (Dry Basis)	15.1	13.4	16.0	13.4	15.3	13.6
Protein (As-Is)	13.9	12.4	14.6	12.2	14.1	12.3
Ash (14% MB)	1.54	1.50	1.60	1.49	1.66	1.71
Ash (Dry Basis)	1.80	1.74	1.86	1.73	1.93	1.99
Ash (As-Is)	1.65	1.60	1.70	1.59	1.77	1.80
Moisture	8.2	7.8	8.6	8.3	8.1	9.3
<b>Test Weight</b>						
(lb/bu)	65.0	65.6	59.1	61.2	60.6	63.5
(kg/hl)	85.4	86.1	77.8	80.4	79.8	83.4
SKCS Hardness Score	63	60	85	87	83	82
1000 Kernel Weight (g)	39.7	41.1	31.1	32.9	29.5	41.1
<b>Kernel Size Distribution</b>						
Large	91	92	67	77	62	89
Medium	8	8	32	22	37	10
Small	0	0	1	1	1	1
<b>FLOUR</b>						
Lab Mill Yield (%)	72.2	71.6	67.5	67.0	68.5	70.0
Protein (14% MB)	11.5	10.4	13.1	10.8	11.8	10.6
Protein (Dry Basis)	13.3	12.1	15.3	12.6	13.8	12.3
Ash (14% MB)	0.30	0.30	0.48	0.47	0.52	0.43
Ash (Dry Basis)	0.40	0.39	0.56	0.55	0.60	0.50
Gluten Index	92.4	95.9	95.6	98.4	90.2	95.5
Wet Gluten (14% MB)	34.5	29.6	36.0	30.5	32.3	33.8
Falling Number (sec)	332	326	393	395	405	336
<b>FARINOGRAPH</b>						
Arrival Time (min)	5.4	2.3	6.1	2.7	2.9	2.6
Mixing Peak (min)	9.5	5.7	14.5	8.0	8.4	5.9
Mixing Tolerance (min)	15.0	14.8	23.1	27.8	17.3	26.5
Absorption (%)	64.9	62.2	65.9	64.4	61.2	67.0
<b>BAKING RESULTS</b>						
Bread Volume (cc)	972	886	970	888	915	900
Crumb Grain & Texture	9	7	8	7	7	7
Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model TruSpec.						
Lab mill yield: Brabender Quadromat Sr. Mill, modified in 1997; Bread Volume: AACCI Method 10-10B.						
Test weight conversion from lb/bu to kg/hl according to FGIS PN-97-5, (1.292 x lb/bu) + 1.419.						
*Limited samples available.						

## Technical and Laboratory Services



*CWC Laboratory Director, Claudia Carter*

The California Wheat Commission laboratory has the equipment necessary for evaluation of common and durum wheat milling quality, flour chemical analysis, physical dough testing, semolina analysis, bake and noodle production tests, and pasta analysis.

The Commission's staff is available to work with customers in the area of quality assurance, problem solving, quality control training, and research. The California Wheat Commission Lab Test Order Form is available on the Commission's website.

## Customer Assistance and Support

The Commission can answer technical questions about California's wheat quality, including recommendations for blending and appropriate end-use.

The Commission conducts specialized training programs in milling, baking, semolina, pasta, and quality control. These specific programs may be customized to meet the customer's needs.

## Crop and Export Survey

California produces five of the six classes of U.S. wheat: Hard Red Winter (HRW), Durum, Hard White, Soft White and Hard Red Spring. While HRW, Hard White, and Durum are the predominately produced and exported classes, information and contacts for all the above classes of wheat are available by contacting the Commission office. Every effort is made to provide an accurate assessment of quality to buyers. With greater amounts of wheat being sold by variety, varietal specific information is emphasized in Commission surveys.

## Varietal Development

Private and public breeding programs play an important role in the development of new varieties available to California wheat producers. The Commission analyzes hundreds of samples each year to support these programs and encourages the release of new varieties that will meet the customers' needs. New varieties are evaluated by commercial mills through the California Wheat Collaborator Program.

## Research

The Commission laboratory is available for flour, semolina, milling, end-product, and new-product research. Technical expertise is available in hearth breads, pasta, Asian food products, standard loaf bread, steamed bread, Asian noodles, cakes, cookies, tortillas, and Middle Eastern flat breads.



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