Hard Red Wheat — Hard White Wheat

2012 Crop Quality Report

California WHEAT COMMISSION

California Wheat

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

California produces both Hard Red and Hard White wheat. Red and white wheat in California accounted for over 80% of all wheat acreage planted for harvest in 2012, with red wheat alone accounting for >65% of planted acreage. This report includes quality data for both Hard Red and Hard White varieties.

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, export buyers are encouraged to express their interest in purchasing California wheat in early spring. For Hard White wheat, buyers should consider communicating with grain handlers before planting time.

In normal growing conditions, California hard wheat varieties have low moisture and large and uniform kernel size. Because it is predominantly grown under irrigation, growers benefit from high yields and consistent quality.

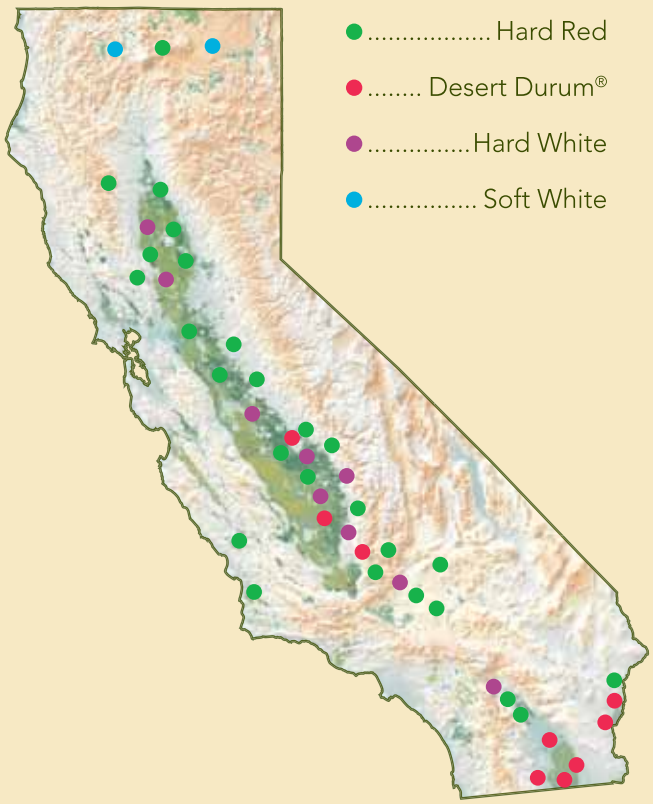
2012 Crop Conditions

After two wet years, California experienced a drier than normal growing season this year, mostly affecting emergence and viability of rain-fed wheat at planting. While yields of remaining fields were somewhat reduced, proteins and overall quality were excellent for both Hard Red and Hard White varieties. Disease pressure was present in susceptible varieties.

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 is conducted by the California Wheat Commission Laboratory.

GROWING REGIONS



Locations are approximate

PRODUCTION HISTORY*

YEAR	METRIC TONS (1,000 MT's)	SHORT TONS (1,000 ST's)
2012	718	791
2011	972	1071
2010	784	864
2009	718	792
2008	925	1020
2007	584	644
2006	395	435
2005	587	648

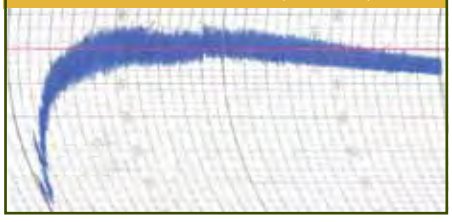
*Winter wheat - all classes excluding Durum

HARD RED WINTER (MIXED VARIETIES)

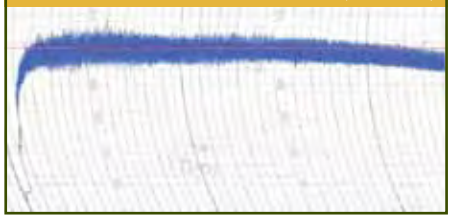
	High Protein (12.5% & Above)		Intermediate Protein (11.0% - 12.4%)		Low Protein (10.9% & Below)	
WHEAT	**2012**	**2011**	**2012**	**2011**	**2012**	**2011**
Protein[1]						
Dry Basis	14.9	15.0	13.5	13.4	11.7	11.7
As - Is	13.7	13.7	12.4	12.3	10.7	10.6
12% MB	13.1	13.2	11.9	11.8	10.3	10.3
Moisture	8.1	8.9	8.1	8.9	8.4	8.8
Test Weight						
lb/bu	62.6	62.3	63.0	62.3	62.9	62.8
kg/hl[4]	82.2	81.9	82.8	81.9	82.7	82.5
1000 Kernel Weight (gr)	41.1	44.7	41.2	44.1	41.8	44.8
SKCS Hardness Score	66	59	66	60	69	58
Kernel Size Distribution						
Large (7W)	87	90	88	92	90	94
Medium (10W)	13	10	12	8	10	6
Small (12W)	0	0	0	0	0	0
MILLING						
Test Mill Yield[2] (%)	73.3	73.7	73.3	73.9	71.5	72.7
Wheat Protein (Dry-Basis)	14.9	15.0	13.5	13.4	11.7	11.7
Flour Protein[1] (Dry-Basis)	13.7	13.8	12.3	12.3	10.6	10.6
Wheat Ash (Dry-Basis)	1.79	1.74	1.78	1.67	1.80	1.65
Flour Ash (Dry-Basis)	0.52	0.54	0.52	0.52	0.56	0.54
FLOUR						
Flour Protein[1] (14% MB)	11.8	11.9	10.6	10.5	9.1	9.1
Flour Ash (14% MB)	0.44	0.46	0.45	0.45	0.48	0.47
Wet Gluten (14% MB)	31.1	30.9	27.1	27.3	22.2	22.8
Falling Number (sec.)	416	397	419	402	387	387
FARINOGRAM						
Arrival Time (min.)	3.6	2.9	2.7	2.1	1.5	1.6
Mixing Peak (min.)	9.1	7.5	8.1	6.3	4.0	4.0
Mixing Tolerance (min.)	17.0	15.4	17.2	14.3	10.8	10.8
Absorption (%)	63.4	64.2	62.4	63.5	62.3	62.2
BAKING RESULTS						
Bake Volume[3] (cc)	963	926	928	891	812	823

[1] Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model TruSpec; [2] Test mill yield: Brabender Quadromat Senior Mill, modified in 1997; [3] Bake Volume = AACC Method 10-10B; [4] Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5, {(1.292 x (lb/bu) + 1.419}

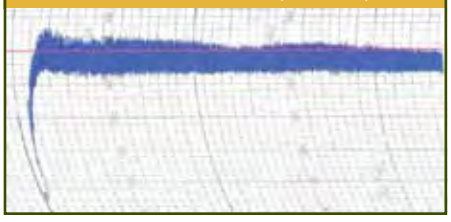
HIGH PROTEIN (13.1%)



INTERMEDIATE PROTEIN (11.9%)



LOW PROTEIN (10.3%)



2012 HARD RED VARIETY SPECIFIC INFORMATION

WHEAT	CAL ROJO			JOAQUIN		REDWING		
	High[5] Protein	Int.[6] Protein	Low[7] Protein	High Protein	Int. Protein	High Protein	Int. Protein	Low Protein
Protein[1]								
Dry Basis	15.0	13.6	11.9	15.2	13.5	14.5	13.3	11.6
As - Is	13.7	12.5	10.9	14.0	12.5	13.4	12.2	10.6
12% MB	13.2	12.0	10.5	13.3	11.9	12.8	11.7	10.2
Moisture	8.2	8.1	8.6	7.9	7.8	7.7	8.3	8.2
Test Weight								
lb/bu	61.7	62.4	63.5	63.9	63.9	62.3	62.5	62.5
kg/hl[4]	81.1	82.1	83.4	83.9	63.9	81.9	82.2	82.2
1000 Kernel Weight (gr)	41.7	41.3	46.7	42.8	42.8	39.6	40.1	40.7
SKCS Hardness Score	61	62	55	68	68	73	71	74
Kernel Size Distribution								
Large (7W)	84	85	92	91	92	90	90	90
Medium (10W)	16	15	8	9	8	10	10	10
Small (12W)	0	0	0	0	0	0	0	0
MILLING								
Test Mill Yield[2] (%)	72.8	73.1	73.8	77.3	76.5	71.6	72.1	70.7
Wheat Protein (Dry-Basis)	15.0	13.6	11.9	15.2	13.5	14.5	13.3	11.6
Flour Protein[1] (Dry-Basis)	13.8	12.5	10.9	14.0	12.4	13.4	12.0	10.3
Wheat Ash (Dry-Basis)	1.79	1.78	1.81	1.72	1.76	1.82	1.77	1.80
Flour Ash (Dry-Basis)	0.54	0.56	0.55	0.46	0.48	0.53	0.53	0.57
FLOUR								
Flour Protein[1] (14% MB)	11.8	10.7	9.4	12.0	10.6	11.5	10.4	8.9
Flour Ash (14% MB)	0.46	0.48	0.48	0.40	0.41	0.46	0.45	0.49
Wet Gluten (14% MB)	30.7	27.0	22.6	33.1	27.8	29.8	26.5	21.8
Falling Number (sec.)	415	421	397	400	426	432	418	384
FARINOGRAM								
Arrival Time (min.)	3.9	2.7	1.9	4.2	3.4	2.3	2.2	1.4
Mixing Peak (min.)	9.4	7.9	5.0	9.3	11.1	8.6	6.2	3.6
Mixing Tolerance (min.)	17.3	18.7	13.9	14.9	16.3	21.4	18.0	9.0
Absorption (%)	62.3	60.7	60.1	64.1	63.2	64.5	64.0	63.0
BAKING RESULTS								
Bake Volume[3] (cc)	963	925	879	974	953	954	906	772

For protein ranges not indicated, please contact the California Wheat Commission. [1] Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model TruSpec. [2] Test mill yield: Brabender Quadromat Senior Mill, modified in 1997. [3] Bake Volume = AACC Method 10-10B. [4] Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5, (1.292 x lb/bu) + 1.419. [5] High Protein: (12.5% & Above). [6] Intermediate Protein: (11.0-12.4%). [7] Low Protein (10.9% & Below).

2012 HARD RED VARIETY SPECIFIC INFORMATION

SUMMIT 515			TRIPLE IV	WB-ROCKLAND		
High Protein	Int. Protein	Low Protein	High Protein	High Protein	Int. Protein	**WHEAT**
						Protein[1]
14.6	13.4	12.1	15.2	14.6	13.9	Dry Basis
13.5	12.3	11.0	13.9	13.4	12.7	As - Is
12.9	11.8	10.6	13.4	12.9	12.2	12% MB
7.8	8.3	9.1	8.6	8.7	8.6	Moisture
						Test Weight
63.6	63.8	64.0	61.9	64.6	64.4	lb/bu
83.6	83.9	84.1	81.3	84.9	84.6	kg/hl[4]
37.4	39.5	38.1	38.2	40.6	43.6	1000 Kernel Weight (gr)
73	65	71	75	72	70	SKCS Hardness Score
						Kernel Size Distribution
87	89	86	77	91	94	Large (7W)
13	11	14	23	9	6	Medium (10W)
0	0	0	0	0	0	Small (12W)
						MILLING
71.5	72.2	71.5	69.4	71.5	70.4	Test Mill Yield[2] (%)
14.6	13.4	12.1	15.2	14.6	13.9	Wheat Protein (Dry-Basis)
13.3	12.1	11.6	13.8	13.6	12.3	Flour Protein[1] (Dry-Basis)
1.81	1.78	1.81	1.89	1.77	1.81	Wheat Ash (Dry-Basis)
0.48	0.48	0.51	0.58	0.52	0.52	Flour Ash (Dry-Basis)
						FLOUR
11.5	10.4	9.9	11.9	11.7	10.6	Flour Protein[1] (14% MB)
0.42	0.41	0.44	0.50	0.45	0.45	Flour Ash (14% MB)
30.2	26.2	23.6	29.9	32.0	30.4	Wet Gluten (14% MB)
414	402	388	447	414	412	Falling Number (sec.)
						FARINOGRAM
2.8	2.3	1.3	3.6	3.3	3.4	Arrival Time (min.)
6.8	5.5	4.1	8.0	10.9	12.5	Mixing Peak (min.)
11.9	11.2	14.5	14.9	19.0	19.3	Mixing Tolerance (min.)
63.9	63.8	63.0	64.4	65.9	65.1	Absorption (%)
						BAKING RESULTS
963	933	900	929	982	915	Bake Volume[3] (cc)

For protein ranges not indicated, please contact the California Wheat Commission. [1] Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model TruSpec. [2] Test mill yield: Brabender Quadromat Senior Mill, modified in 1997. [3] Bake Volume = AACC Method 10-10B. [4] Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5, (1.292 x lb/bu) + 1.419. [5] High Protein: (12.5% & Above). [6] Intermediate Protein: (11.0-12.4%). [7] Low Protein (10.9% & Below).

HARD RED WHEAT GRADE HARVEST DATA					
	2012	2011	2010	2009	2008
Test Weight: lb/bu	62.1	62.6	63.3	63.0	63.5
kg/hl[2]	81.6	82.3	83.2	82.8	83.5
Moisture (%)	9.1	9.3	9.2	9.1	8.7
Damage (%)	0.0	0.1	0.1	0.1	0.0
Foreign Material* (%)	0.1	0.1	0.3	0.1	0.1
Shrunken/Broken* (%)	0.6	0.5	0.5	0.6	0.5
Total Defects (%)	0.7	0.7	0.9	0.8	0.6
Dockage* (%)	0.8	0.8	1.0	0.8	0.7
Total Screenings (%)	1.5	1.4	1.8	1.5	1.3
Moisture (%)	9.1	9.3	9.2	9.1	8.7
Net Wheat[3] (%)	89.5	89.4	89.2	89.5	89.4
CTW[4] (%)	106.5	106.4	106.1	106.5	106.4
MWVI[5] (%)	93.9	93.9	94.2	93.9	94.0

Harvest year = Calendar year. *Total Screenings are those factors represented on the grade certificate that are cleaned out in the flour mill.
[2] Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5, (1.292 x lb/bu) + 1.419. [3] Net Wheat = (100%-(FM+SHBN+Dockage)) x (100%-Moisture)/100%. [4] Clean, Tempered Wheat (CTW%) = (100%- (FM +SHBN+Dockage)) x (100%-Moisture)/(100%-16%(temper moisture)).
[5] Millable Wheat Value Index (MWVI) = 100%/CTW.

Varietal Descriptions

Cal Rojo (HRW) is a widely adapted, high yielding variety for both the San Joaquin and Sacramento Valleys. It is mid-early maturing and receives high scores for grain quality, milling and baking. It continues to show resistance to stripe rust in University trials and general production although a few isolated infections call for diligent monitoring.

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

Redwing (HRW) is a high-quality wheat for both the Sacramento and San Joaquin Valleys that has been one of the top yielding hard red varieties in University trials. Redwing currently is moderately susceptible to races of stripe rust in the Sacramento Valley in 2012 but was resistant to races in the San Joaquin Valley. Redwing is a very good bread quality wheat with high scores for grain quality, milling and baking and good protein patterns.

Summit 515 (HRW) is a variant of the variety Summit with two effective genes for stripe rust resistance added by marker assisted selection. Thus, it is resistant to stripe rust while all other traits of Summit, including its very high yielding ability in both San Joaquin and Sacramento Valleys, remain in this variety.

Triple IV (HRW) is a very early awnless forage variety that has acceptable milling and baking properties. Often grown on dry land.

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. It is resistant to stripe rust and moderately resistant to Septoria.

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. Thus, it is resistant to stripe rust while all other traits of Blanca Grande, including its excellent end-use quality and high yielding ability in both the San Joaquin and Sacramento Valleys, remain in this variety.

Blanca Royale (HW) is grown primarily in the San Joaquin Valley. It is classified as "highly resistant" to stripe rust, and achieves higher protein but lower yields than Blanca Fuerte grown under the same conditions. It receives high scores for grain quality, milling and baking, and has been identified as being an outstanding wheat for noodle production due to its excellent noodle color and special starch characteristics.

Patwin (HW) is a high yielding white variety characterized by very high levels of protein. This variety is adapted to both the Sacramento and San Joaquin valleys and is resistant to current races of stripe rust. Patwin also carries resistance to root knot nematodes and has high falling numbers even in years with cool springs. Patwin has received excellent scores for milling and baking parameters.

2012 HARD WHITE WHEAT

WHEAT	BLANCA GRANDE 515 High Pro.	BLANCA GRANDE 515 Int. Pro.	BLANCA ROYALE High Pro.	BLANCA ROYALE Int. Pro.*	PATWIN High Pro.*	PATWIN Int. Pro.	WB-CRISTALLO High Pro.*	WB-CRISTALLO Int. Pro.	WB-PERLA High Pro.	WB-PERLA Int. Pro.
Protein[1]										
Dry Basis	15.1	13.4	15.8	14.0	14.8	13.6	14.5	13.1	14.8	13.0
As - Is	13.8	12.3	14.5	12.8	13.7	12.4	13.2	11.9	13.3	12.0
12% MB	13.3	11.8	13.9	12.4	13.0	12.0	12.8	11.5	13.0	11.5
Moisture	8.4	8.5	8.3	9.0	7.6	9.0	9.2	8.6	9.7	8.0
Test Weight										
lb/bu	64.6	65.3	65.2	63.9	59.5	61.5	62.8	63.7	63.3	64.9
kg/hl[4]	84.9	85.7	85.6	83.9	78.3	80.9	82.6	83.8	83.1	85.2
1000 Kernel Weight (gr)	40.2	40.0	40.7	37.1	32.0	36.6	51.4	38.0	40.2	40.2
SKCS Hardness Score	65	65	62	70	83	78	70	71	70	67
Kernel Size Distribution										
Large (7W)	86	89	92	84	66	80	80	83	90	92
Medium (10W)	14	11	8	15	33	20	20	17	10	8
Small (12W)	0	0	0	1	1	0	0	0	0	0
MILLING										
Test Mill Yield[2] (%)	74.0	74.2	72.7	75.2	67.3	70.0	71.7	71.6	73.5	72.7
Wheat Protein (Dry Basis)	15.1	13.4	15.8	14.0	14.8	13.6	14.5	13.1	14.8	13.0
Flour Protein[1] (Dry Basis)	13.8	12.2	14.0	12.6	13.5	12.7	13.4	11.9	13.7	12.0
Wheat Ash (Dry Basis)	1.78	1.83	1.89	1.95	1.84	1.81	1.76	1.72	1.95	1.83
Flour Ash (Dry Basis)	0.47	0.48	0.47	0.56	0.50	0.57	0.52	0.52	0.51	0.46
FLOUR										
Flour Protein[1] (14% MB)	11.9	10.5	12.1	10.8	11.6	10.9	11.5	10.3	11.8	10.3
Flour Ash (14% MB)	0.41	0.41	0.41	0.48	0.43	0.49	0.45	0.45	0.44	0.39
Wet Gluten (14% MB)	31.5	28.0	33.0	29.6	31.1	28.5	30.7	25.5	32.6	27.8
Falling Number (sec)	370	367	410	461	407	433	405	403	383	359
FARINOGRAM										
Arrival Time (min.)	4.3	3.0	4.0	2.8	2.5	2.0	4.3	2.6	3.1	2.5
Mixing Peak (min.)	9.6	6.8	8.5	6.3	5.5	5.4	11.0	9.1	9.1	7.2
Mixing Tolerance (min.)	16.3	13.9	14.8	11.0	19.8	15.3	15.3	19.2	13.9	13.4
Absorption (%)	65.4	64.1	65.9	61.2	64.4	64.2	63.5	62.8	66.7	62.7
BAKING RESULTS										
Bake Volume[3] (cc)	993	948	993	930	1010	934	998	934	983	898

* Limited samples were available for analysis. [1] Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model TruSpec. [2] Test mill yield: Brabender Quadromat Senior Mill, modified in 1997. [3] Bake Volume = AACC Method 10-10B. [4] Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5: (1.292 x lb/bu) + 1.419.

Varietal Descriptions, continued

WB-Cristallo (HW) is adapted to the Sacramento Valley and has above average percent protein with good milling and baking properties with good falling numbers for a white wheat.

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.

Note: Varietal Descriptions provided by breeders

Technical and Laboratory Services

The California Wheat Commission laboratory has the equipment necessary for evaluation of wheat and durum milling quality, chemical analysis of wheat and flour, 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 price list for laboratory services is available on the California Wheat Commission website at www.californiawheat.org.

Customer Assistance and Support

- The Commission is available to 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), Desert Durum®, Hard White, Soft White Wheat, 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 over 1,000 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.

CWC Laboratory Director Sam Huang testing wheat protein.

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, cookies, tortillas and Middle Eastern flat breads.

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