



2015 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 United States are produced in California, with Hard Red wheat accounting for nearly 70% of planted acres this year.

Consistent with prior years, the 2015 crop had high protein, low moisture, high flour extraction, and strong baking performance — all of which make California wheat very good for blending.

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.

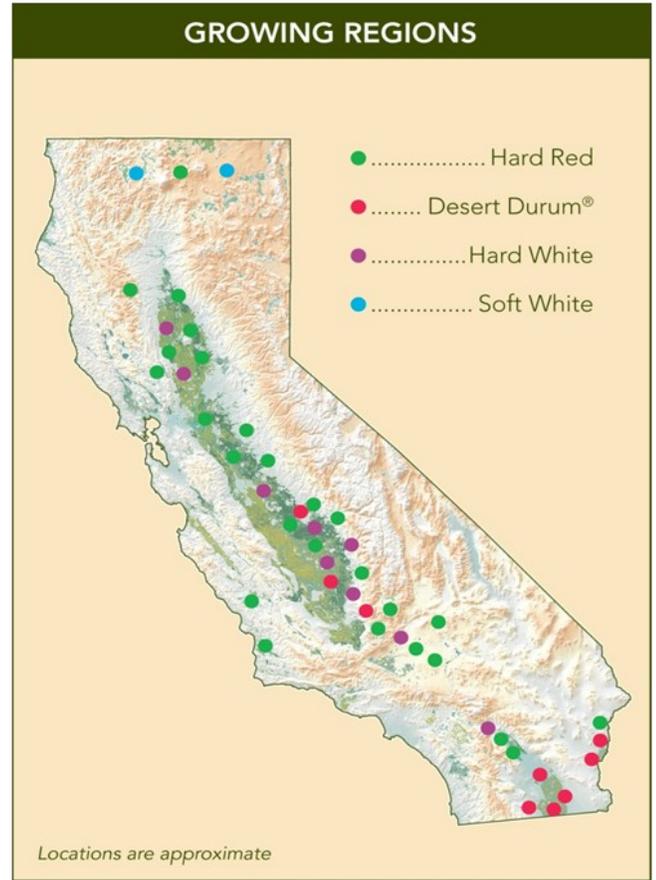
2015 Crop Conditions

California experienced a fourth consecutive year of drought. The record warm winter resulted in the lowest snow pack in 500 years. A high percentage of wheat was again cut for non grain purposes in 2015.

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)
2015	336	370
2014	392	432
2013	751	828
2012	706	778
2011	1054	1162
2010	762	840
2009	743	819

*All common wheat (excluding Durum).

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2015 HARD RED WINTER (COMPOSITE AVERAGE)

	High Protein (12.5 & Above)		Intermediate Protein (11.0-12.4%)		Low Protein (10.9 & Below)	
	2015	2014	2015	2014	2015	2014
WHEAT						
Protein (12% MB)	13.2	13.0	11.9	11.6	10.3	9.6
Protein (Dry Basis)	15.0	14.8	13.5	13.1	11.7	10.9
Protein (As-Is)	13.7	13.5	12.3	12.0	10.5	10.0
Ash (14% MB)	1.41	1.52	1.42	1.49	1.44	1.50
Ash (Dry Basis)	1.64	1.77	1.65	1.73	1.67	1.74
Ash (As-Is)	1.51	1.62	1.50	1.59	1.51	1.60
Moisture	8.2	8.4	9.0	8.5	9.9	8.3
Falling Number (sec)	399	378	374	366	328	362
Test Weight						
lb/bu	63.2	62.2	63.9	62.8	62.6	64.0
kg/hl	83.0	81.8	84.0	82.6	82.3	84.1
SKCS Hardness Score	68	74	73	75	74	72
1000 Kernel Weight (g)	39.8	36.7	41.4	38.6	41.2	38.7
Kernel Size Distribution						
Large	84	80	88	84	89	88
Medium	15	19	12	16	11	12
Small	1	1	0	0	0	0
FLOUR						
Lab Mill Yield (%)	69.6	69.6	69.7	68.7	68.0	68.3
Protein (14% MB)	11.8	11.5	10.6	10.2	9.2	8.5
Protein (Dry Basis)	13.6	13.1	12.3	11.4	10.6	9.3
Ash (14% MB)	0.37	0.39	0.38	0.41	0.43	0.42
Ash (Dry Basis)	0.43	0.46	0.45	0.48	0.50	0.49
Gluten Index	91.9	92.4	97.3	95.2	98.8	98.4
Wet Gluten (14% MB)	32.7	34.1	29.0	29.1	23.2	21.8
FARINOGRAPH						
Peak Time (min)	17.9	15.2	12.8	11.8	4.6	4.8
Stability (min)	22.9	18.5	21.9	23.7	18.6	13.6
Absorption (%)	65.4	64.9	64.5	62.8	63.7	61.5
BAKING RESULTS						
Baking Absorption*	66	—	65	—	66	—
Bread Volume (cc)	960	946	915	876	845	785
Crumb Grain & Texture	9	8	8	7	7	5

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: AACCI Method 10-10B. Falling number test performed with FOSS Alphatec. Test weight conversion from lb/bu to kg/hl according to FGIS PN-97-5, (1.292 x lb/bu) + 1.419. *Baking absorption test was added this year.

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2015 HARD RED VARIETY SPECIFIC INFORMATION

WHEAT	CAL ROJO		JOAQUIN		WB-JOAQUIN ORO
	High Protein	Intermediate Protein	High Protein	Intermediate Protein	High Protein
Protein (12% MB)	12.7	11.5	13.2	12.1	14.2
Protein (Dry Basis)	14.4	13.1	15.1	13.8	16.2
Protein (As-Is)	13.0	11.8	14.0	12.8	15.1
Ash (14% MB)	1.30	1.40	1.40	1.41	1.44
Ash (Dry Basis)	1.51	1.62	1.62	1.64	1.68
Ash (As-Is)	1.37	1.47	1.51	1.52	1.57
Moisture	9.7	9.7	7.1	7.4	6.3
Falling Number (sec)	352	330	402	390	393
Test Weight					
lb/bu	62.6	62.1	64.6	65.1	63.4
kg/hl	82.3	81.7	84.8	85.5	83.3
SKCS Hardness Score	68	68	58	58	47
1000 Kernel Weight (g)	39.6	40.3	47.3	49.0	41.0
Kernel Size Distribution					
Large	79	83	96	96	90
Medium	20	17	4	4	10
Small	0	0	0	0	0
FLOUR					
Lab Mill Yield (%)	70.4	70.0	72.5	72.5	70.5
Protein (14% MB)	11.3	9.6	11.8	11.4	12.8
Protein (Dry Basis)	13.0	11.1	13.8	13.3	14.9
Ash (14% MB)	0.38	0.43	0.32	0.30	0.30
Ash (Dry Basis)	0.44	0.50	0.37	0.35	0.35
Gluten Index	99.6	98.6	91.4	93.8	74.9
Wet Gluten (14% MB)	27.2	25.3	34.7	32.8	39.6
FARINOGRAPH					
Peak Time (min)	9.9	5.8	16.2	14.7	15.9
Stability (min)	19.2	12.7	17.2	17.3	14.0
Absorption (%)	60.0	61.3	67.7	67.9	70.7
BAKING RESULTS					
Baking Absorption*	61	62	68	68	69
Bread Volume (cc)	960	901	946	937	1024
Crumb Grain & Texture	9	7	9	9	10

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. Falling number test performed with FOSS Alphatec. 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%.

*Baking absorption test was added this year.

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2015 HARD RED VARIETY SPECIFIC INFORMATION

WHEAT	SUMMIT 515		WB9112		WB9229	
	High Protein	Intermediate Protein	High Protein	Intermediate Protein	High Protein	Intermediate Protein
Protein (12% MB)	12.9	11.9	12.8	12.1	13.1	11.8
Protein (Dry Basis)	14.7	13.6	14.5	13.7	14.9	13.4
Protein (As-Is)	13.4	12.3	13.6	12.8	13.7	12.0
Ash (14% MB)	1.41	1.41	1.48	1.48	1.50	1.56
Ash (Dry Basis)	1.65	1.64	1.72	1.72	1.75	1.82
Ash (As-Is)	1.50	1.49	1.61	1.61	1.61	1.62
Moisture	8.9	9.3	6.4	6.4	8.1	10.7
Falling Number (sec)	326	318	478	471	472	409
Test Weight						
lb/bu	62.7	63.5	64.3	64.2	64.1	65.0
kg/hl	82.4	83.4	84.5	84.4	84.3	85.3
SKCS Hardness Score	71	76	72	71	79	88
1000 Kernel Weight (g)	39.5	39.2	38.0	39.4	38.3	38.5
Kernel Size Distribution						
Large	88	85	86	90	84	86
Medium	12	14	14	10	16	14
Small	0	1	1	0	1	0
FLOUR						
Lab Mill Yield (%)	65.8	67.9	70.6	70.3	69.5	67.3
Protein (14% MB)	11.4	10.7	11.6	11.3	11.8	10.3
Protein (Dry Basis)	13.1	12.3	13.6	13.2	13.7	11.9
Ash (14% MB)	0.40	0.35	0.34	0.36	0.45	0.49
Ash (Dry Basis)	0.46	0.41	0.39	0.41	0.53	0.57
Gluten Index	88.5	94.6	94.9	99.2	95.8	98.8
Wet Gluten (14% MB)	32.5	29.4	33.6	30.8	33.2	28.0
FARINOGRAPH						
Peak Time (min)	8.3	9.4	23.8	25.2	33.0	36.8
Stability (min)	20.2	19.9	24.4	29.9	29.6	30.5
Absorption (%)	64.2	64.0	67.0	65.6	67.0	66.3
BAKING RESULTS						
Baking Absorption*	64.9	65	67	67	68	67
Bread Volume (cc)	907	927	960	960	949	868
Crumb Grain & Texture	8	8	9	9	9	7

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. Falling number test performed with FOSS Alphatec. 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%.

*Baking absorption test was added this year.

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HARD RED WHEAT GRADE HARVEST DATA

	2015	2014	2013	2012	2011
Test Weight: lb/bu	63.7	63.4	62.3	62.1	62.6
kg/hl	83.7	83.4	81.9	81.6	82.3
Moisture (%)	8.6	9.1	9.2	9.1	9.3
Damaged (%)	0.2	0	0	0	0.1
Foreign Material* (%)	0.2	0.4	0.2	0.1	0.1
Shrunken/Broken* (%)	0.5	0.7	0.7	0.6	0.5
Total Defects (%)	0.9	1.1	0.9	0.7	0.7
Dockage* (%)	0.9	0.7	1	0.8	0.8
Total Screenings (%)	1.6	1.8	1.9	1.5	1.4
Net Wheat (%)	89.9	89.3	89.1	89.5	89.4
CTW (%)	107.1	106.3	106.0	106.6	106.5
MWVI (%)	93.4	94.1	94.3	93.8	93.9

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 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.

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 the San Joaquin and Sacramento Valleys.

WB9112 (HRW) is adapted to the San Joaquin Valley and has high protein and test weight with excellent milling and baking properties. It is very similar to the variety Joaquin and has resistance to stripe rust.

WB9229 (HRW) is adapted to both the San Joaquin and 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.

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 Valleys.

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

WB7618 (HW) is most adapted to the Sacramento Valley. WB7618 has excellent protein and excellent milling and baking properties. It has excellent standability, and is moderately resistant to both Septoria and the current races of stripe rust.

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2015 HARD WHITE VARIETY SPECIFIC INFORMATION

	Blanca Grande 515*	Patwin 515		WB7618	
WHEAT	High Protein	High Protein	Intermediate Protein	High Protein	Intermediate Protein
Protein (12% MB)	14.1	13.0	11.8	13.1	11.9
Protein (Dry Basis)	16.0	14.7	13.4	14.9	13.6
Protein (As-Is)	14.3	13.2	11.9	13.4	12.3
Ash (14% MB)	1.56	1.42	1.29	1.34	1.33
Ash (Dry Basis)	1.81	1.65	1.49	1.56	1.55
Ash (As-Is)	1.63	1.48	1.33	1.40	1.41
Moisture	10.3	10.5	10.9	9.9	9.3
Falling Number (sec)	318	350	334	365	362
Test Weight					
lb/bu	63.5	63.8	63.6	63.9	63.3
kg/hl	83.5	83.8	83.6	84.0	83.2
SKCS Hardness Score	80	83	84	80	79
1000 Kernel Weight (g)	38.6	39.4	40.7	38.4	37.6
Kernel Size Distribution					
Large	77	85	87	84	80
Medium	23	15	12	15	19
Small	0	0	1	1	1
FLOUR					
Lab Mill Yield (%)	66.9	67.9	68.3	67.4	64.9
Protein (14% MB)	12.6	11.1	10.3	11.6	10.4
Protein (Dry Basis)	14.7	12.9	11.8	13.4	12.1
Ash (14% MB)	0.33	0.40	0.41	0.30	0.34
Ash (Dry Basis)	0.38	0.46	0.47	0.35	0.39
Gluten Index	80.6	89.3	91.5	96.4	97.2
Wet Gluten (14% MB)	36.6	32.4	29.7	33.0	29.0
FARINOGRAPH					
Peak Time (min)	16.3	8.5	5.5	15.5	12.4
Stability (min)	13.8	20.7	13.4	34.0	35.0
Absorption (%)	67.4	66.1	66.3	67.9	65.9
BAKING RESULTS					
Baking Absorption**	67.9	66.6	66.7	68.0	66.9
Bread Volume (cc)	1000	935	886	993	925
Crumb Grain & Texture	10	8	7	10	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. Falling number test performed with FOSS Alphatec. 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%. *Limited samples available for testing. Call the California Wheat Commission for more information. **Baking absorption test was added this year.

Technical and Laboratory Services



*CWC Laboratory Director Claudia Carter and Laboratory Assistant Teng Vang
Photo credit: Matt Salvo, California Farm Bureau Federation*

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, product development, problem solving, quality control training, and research. California Wheat Commission's Lab Test Order Form of laboratory services is available on the California Wheat Commission website, please use when requesting services.

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 customers' 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 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, cookies, tortillas and Middle Eastern flat breads.



*CWC Laboratory Assistant Teng Vang
Photo credit: Matt Salvo, California Farm Bureau Federation*



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