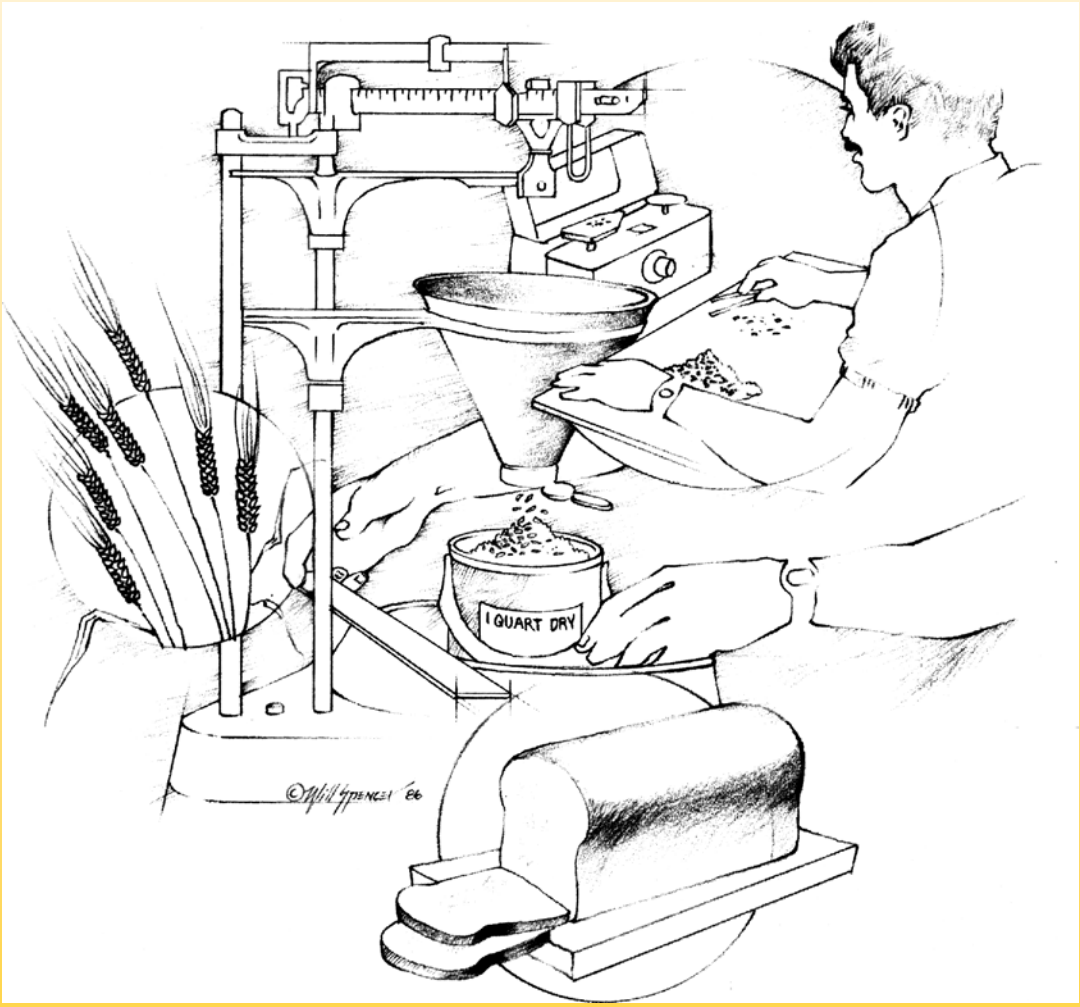
California Wheat Commission

Hard Red Wheat 2008
Hard White Wheat 2008



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CROP QUALITY REPORT 2008

California Wheat

California's wheat growing regions are defined by climate, value of alternative crops, and the distinct differences in variety selection. This system has led to an implied "identity preserved" program in California.

Over the past few years, Hard White (HW) wheat has become more prevalent in the varietal mix. Therefore, HW quality data is included in this hard wheat report. This trend of increased HW production is expected to continue in the upcoming years.

California hard wheats are 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.

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. California wheat usually contains significantly less impurities than its counterparts elsewhere.

2008 Crop Conditions. Hard Red Wheat accounted for over 70% of the non-Durum acreage planted in California this year, and HRW acreage increased more than 30% over the previous year. The red varieties Cal Rojo and Joaquin were the most prevalent milling wheat varieties grown in the state in 2008, while Blanca Grande, Blanca Fuerte, and Blanca Royale shared the most acreage of Hard White wheat. High wheat prices encouraged more plantings of wheat this year, although high inputs tempered that enthusiasm. There was higher than normal rainfall in the state through February, although there was virtually no rain after that time period. Yields per acre were higher in 2008.

Data in this report. Samples for this year's report were collected from grain handlers and producers. This program collects data 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.

California Wheat Production

Production History

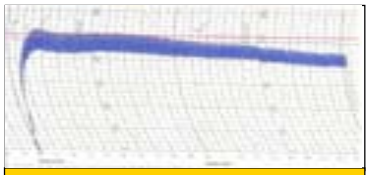
(Winter wheat -- all classes, excluding Durum)

YEAR	METRIC TONS (1,000 MT'S)
2008	925
2007	523
2006	395
2005	568
2004	740
2003	614
2002	612
2001	724

Hard Red Winter (Mixed Varieties)

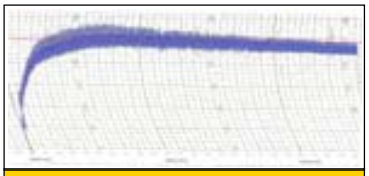
WHEAT	Low Protein (10.9% & Below) 2008	2007	Intermediate Protein (11.0% - 12.4%) 2008	2007	High Protein (12.5% & Above) 2008	2007
Protein[1]						
Dry Basis	11.6	11.6	13.6	13.5	15.1	15.4
As - Is	10.6	10.6	12.5	12.3	13.9	14.1
12% MB	10.2	10.2	12.0	11.8	13.3	13.6
Moisture	8.8	7.8	8.0	8.5	7.9	8.4
Test Weight						
lb/bu	63.2	63.9	63.9	64.0	63.6	64.0
kg/hl	83.1	83.9	83.9	84.1	83.6	84.1
1000 Kernel Weight (gr)	45.6	43.9	45.1	42.3	44.0	41.9
SKCS Hardness Score	60	64	65	70	69	70
Kernel Size Distribution						
Large (7W)	92	94	92	91	92	89
Medium (10W)	8	6	8	9	8	11
Small (12W)	0	0	0	0	0	0
MILLING						
Test Mill Yield[2] (%)	72.3	73.1	73.6	72.9	75.2	73.4
Wheat Protein (Dry-Basis)	11.6	11.6	13.6	13.5	15.1	15.4
Flour Protein[1] (Dry-Basis)	10.4	10.4	12.4	12.3	13.8	14.3
Wheat Ash (Dry-Basis)	1.68	1.66	1.68	1.66	1.69	1.73
Flour Ash (Dry-Basis)	0.54	0.52	0.52	0.53	0.49	0.52
FLOUR						
Flour Protein[1] (14% MB)	8.9	8.9	10.7	10.6	12.0	12.3
Flour Ash (14% MB)	0.46	0.45	0.44	0.45	0.42	0.45
Wet Gluten (14% MB)	20.9	21.4	27.3	26.4	32.2	31.8
Falling Number (sec.)	397	422	400	410	434	407
FARINOGRAM						
Arrival Time (min.)	1.1	1.2	1.8	1.9	3.0	2.9
Mixing Peak (min.)	2.4	2.4	6.6	4.9	8.0	6.9
Mixing Tolerance (min.)	12.2	10.4	16.5	13.7	17.2	15.2
Absorption (%)	57.8	58.2	60.5	60.3	62.6	62.4
BAKING RESULTS						
Bake Volume[3] (cc)	726	743	849	816	941	911

Wheat samples were collected by handlers. 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}.



Low Protein (10.0%)

Intermediate Prot. (12.0%)



High Protein (13.4%)

2008 Hard Red Variety Specific Information

	CAL ROJO			DASH 12	
WHEAT	High[6] Protein	Intermediate[5] Protein	Low[7] Protein	High Protein*	Intermediate Protein*
Protein[1]					
Dry Basis	15.3	13.5	11.7	14.7	13.6
As Is	13.8	12.4	10.7	13.4	12.4
12% MB	13.5	11.9	10.3	12.9	12.0
Moisture	9.5	8.2	8.9	8.9	9.0
Test Weight					
lb/bu	62.9	63.1	63.2	61.6	65.7
kg/hl[4]	82.7	83.0	83.1	81.0	86.3
1000 Kernel Weight (gr)	47.7	45.5	47.0	35.6	36.6
SKCS Hardness Score	53.5	57.1	55.7	76.0	74
Kernel Size Distribution					
Large (7w)	93	91	94	81	82
Medium (10W)	7	9	6	19	17
Small (12W)	0	0	0	0	1
MILLING					
Test Mill Yield[2] (%)	72.4	73.0	72.5	69.8	68
Wheat Protein (Dry Basis)	15.3	13.5	11.7	14.7	13.6
Flour Protein[1] (Dry Basis)	13.8	12.2	10.49	13.57	12.41
Wheat Ash (Dry Basis)	1.76	1.59	1.63	1.65	1.92
Flour Ash (Dry Basis)	0.55	0.52	0.53	0.55	0.53
FLOUR					
Flour Protein[1] (14% MB)	11.9	10.5	9.0	11.7	10.7
Flour Ash (14% MB)	0.48	0.45	0.46	0.48	0.46
Wet Gluten (14% MB)	29.1	25.0	20.7	31.5	26.7
Falling Number (sec.)	405	413	395	365	415
FARINOGRAM					
Arrival Time (min.)	2.3	1.4	1.0	2.9	2.0
Mixing Peak (min.)	6.2	6.3	2.4	6.5	4.0
Mixing Tolerance (min.)	12.8	16.9	12.7	15.4	13.0
Absorption (%)	58.1	57.6	57.0	62.0	60.8
BAKING RESULTS					
Bake Volume[3] (cc)	857	810	732	933	885

For protein ranges not indicated, please contact the California Wheat Commission.
* 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.
5) Intermediate Protein: (11.0-12.4%).
6) High Protein: (12.5% & Above).
7) Low Protein (10.9% & Below)

2008 Hard Red Variety Specific Information

EXPRESSO		JOAQUIN		SOLANO		
High Protein*	Intermediate Protein*	High Protein	Intermediate Protein*	High Protein*	Intermediate Protein*	**WHEAT**
						Protein[1]
15.5	13.2	15.1	13.7	15.3	13.9	Dry Basis
14.2	12.0	13.9	12.7	13.9	12.6	As Is
13.7	11.6	13.3	12.1	13.4	12.2	12% MB
8.4	9.0	7.8	7.5	8.9	9.3	Moisture
						Test Weight
62.5	63.6	63.8	64.3	61.5	64.6	lb/bu
82.1	83.6	83.8	84.5	80.8	84.9	kg/hl[4]
37.3	39.5	44.5	47.4	35.3	40.4	1000 Kernel Weight (gr)
76	80	69	65	75	74	SKCS Hardness Score
						Kernel Size Distribution
83	90	93	95	74	90	Large (7W)
17	10	7	5	26	10	Medium (10W)
0	0	0	0	0	0	Small (12W)
						MILLING
69.8	69.7	75.7	75.9	71.1	70.5	Test Mill Yield[2] (%)
15.5	13.2	15.1	13.7	15.3	13.9	Wheat Protein (Dry Basis)
14.3	12.0	14.0	12.6	14.2	12.0	Flour Protein[1] (Dry Basis)
1.89	1.71	1.68	1.73	1.65	1.74	Wheat Ash (Dry Basis)
0.53	0.54	0.49	0.50	0.59	0.52	Flour Ash (Dry Basis)
						FLOUR
12.3	10.3	12.0	10.8	12.2	10.3	Flour Protein[1] (14% MB)
0.46	0.46	0.42	0.43	0.50	0.44	Flour Ash (14% MB)
31.6	26.2	32.3	29.4	31.8	29.2	Wet Gluten (14% MB)
296	360	444	408	423	347	Falling Number (sec.)
						FARINOGRAM
2.6	1.4	3.0	2.0	2.8	2.2	Arrival Time (min.)
5.4	4.6	8.3	7.5	7.8	6.3	Mixing Peak (min.)
11.6	13.9	17.8	17.4	13.3	13.6	Mixing Tolerance (min.)
64.0	62.5	62.6	61.8	64.8	64.2	Absorption (%)
						BAKING RESULTS
934	842	945	874	948	893	Bake Volume[3] (cc)

Hard Red Wheat Grade Data

	HARVEST DATA			EXPORT CARGO AVERAGE	
	2008	2007	2006	07/08*	06/07*
Test Weight					
lb/bu	63.5	62.3	59.8	*	*
kg/hl[2]	82.0	83.0	78.7	*	*
Moisture (%)	8.7	9.4	9.1	*	*
Damage (%)	0.0	0.0	0.0	*	*
*Foreign Material (%)	0.1	0.2	0.2	*	*
*Shrunken/Broken (%)	0.5	0.6	1.1	*	*
Total Defects (%)	0.6	0.8	1.3	*	*
*Dockage (%)	0.7	0.7	1.0	*	*
Total Screenings (%)	1.3	1.5	2.3	*	*
Moisture (%)	8.7	9.4	9.1	*	*
Net Wheat (%)[3]	89.4	89.2	88.8	*	*
CTW (%)[4]	106.4	106.2	105.7	*	*
MWVI (%)[5]	94.0	94.2	94.6	*	*

*Data not available. Cargo data represents information obtained from official export inspection certificates. Export year = June 1-July 30. 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.

Dash 12 (HRW) is a stripe rust resistant and Septoria tritici Leaf Blotch tolerant variety adapted to the Sacramento Valley and rain fed areas. Dash 12's mixing tolerance makes it a good blending wheat.

Expresso (HRW) is very similar to the former variety Express but has two added stripe rust resistance genes. The quality of Expresso is identical to Express, having high flour water absorption and good baking quality.

Joaquin (HRW) is adapted to the San Joaquin Valley and was the most widely planted variety in California in 2008. Joaquin has high percent protein and test weight with very good mixing and baking properties.

Solano (HRW) is a high protein variety adapted to the Sacramento Valley. It has become susceptible to new stripe rust races and will not be produced in the future.

Blanca Grande (HW) has become a benchmark for high end-use quality. It remains a top yielding variety in both the San Joaquin and Sacramento Valleys when not affected by stripe rust, to which it is susceptible.

Blanca Fuerte (HW) is a widely adapted, extremely high yielding variety for both the San Joaquin and Sacramento Valley. It is classified as "highly resistant" to stripe rust, and its grain is notable for its high test weight, high falling

2008 Hard White Wheat

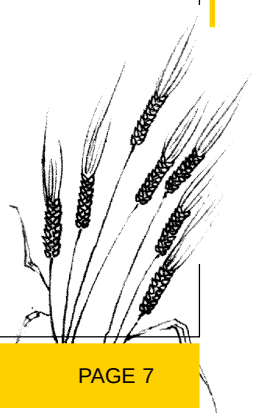
WHEAT	BLANCA FUERTE		BLANCA GRANDE		BLANCA ROYALE	
	High Protein	Intermediate Protein	High Protein*	Intermediate Protein	High Protein*	Intermediate Protein*
Protein						
Dry Basis	14.6	13.1	15.8	13.3	14.8	12.6
As - Is	13.3	12.0	14.6	12.1	13.6	11.5
12% MB	12.8	11.5	13.9	11.7	13.0	11.1
Moisture	8.4	8.5	7.2	9.4	8.2	8.4
Test Weight						
lb/bu	64.1	65.8	62.5	63.9	63.8	64.2
kg/hl[4]	84.2	86.4	82.2	84.0	83.8	84.4
1000 Kernel Weight (gr)	41.3	45.3	33.1	44.7	41.2	42
SKCS Hardness Score	70	69	69	64	68	66
Kernel Size Distribution						
Large (7w)	89	95	66	91	91	91
Medium (10W)	11	5	33	9	9	9
Small (12W)	0	0	1	0	0	0
MILLING						
Test Mill Yield[2] (%)	72.2	71.8	71.7	71.0	71.3	71.3
Wheat Protein (Dry Basis)	14.6	13.1	15.8	13.3	14.8	12.6
Flour Protein[1] (Dry Basis)	13.3	11.8	14.5	12.0	13.4	11.3
Wheat Ash (Dry Basis)	1.63	1.64	1.95	1.70	1.8	1.6
Flour Ash (Dry Basis)	0.54	0.55	0.63	0.49	0.54	0.59
FLOUR						
Flour Protein[1] (14% MB)	11.5	10.1	12.5	10.3	11.5	9.7
Flour Ash (14% MB)	0.47	0.47	0.54	0.42	0.46	0.51
Wet Gluten (14% MB)	27.6	23.9	32.8	25.2	28.5	22.5
Falling Number (sec.)	408	426	417	298	406	479
FARINOGRAM						
Arrival Time (min.)	1.9	1.2	3.0	1.5	1.5	1.0
Mixing Peak (min.)	9.8	2.7	11.5	4.8	7.2	1.8
Mixing Tolerance (min.)	25.3	16.3	19.0	15.9	23.2	12.0
Absorption (%)	59.8	59.6	60.8	61.5	58.6	57.6
BAKING RESULTS						
Bake Volume[3] (cc)	896	841	1000	834	822	760

* 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.

Variety Descriptions *continued...*

number, and low PPO. When fertilized adequately to produce desired levels of protein, it receives high scores for end use quality.

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.



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 for 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 classes of wheat: Hard Red Winter (HRW), Desert Durum®, Hard White, Soft White Wheat, and Hard Red Spring. While HRW and Durum are the predominately produced and exported classes, all wheat classes are surveyed and information is available at the Commission office. Every effort is extended to make sure that an accurate assessment of quality is made available to buyers. With greater amounts of wheat being sold by variety, varietal specific information is emphasized in Commission surveys.

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.

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.

Advanced varieties are evaluted by commercial mills through the California Wheat Collaborator program.

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