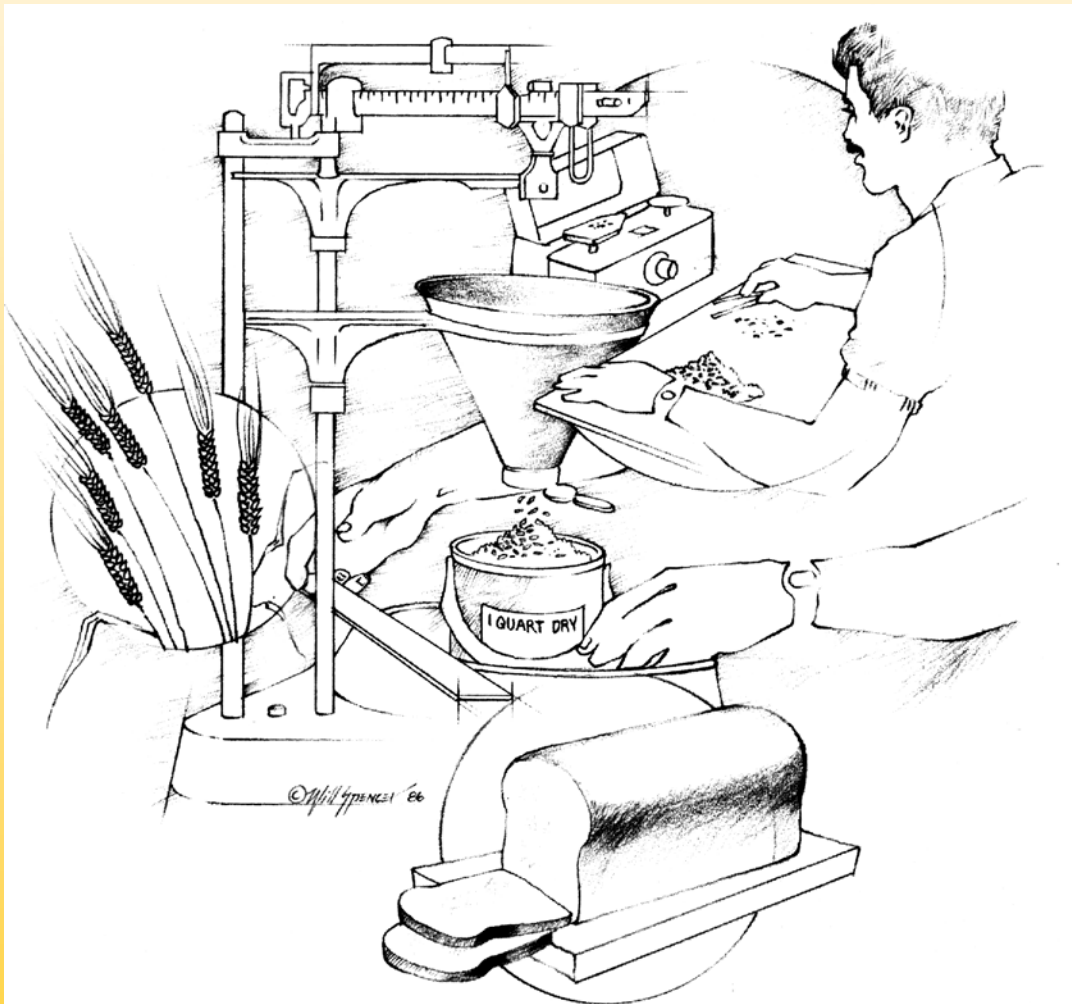




California Wheat Commission

Hard Red Wheat 2009
Hard White Wheat 2009



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CROP QUALITY REPORT 2009

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.

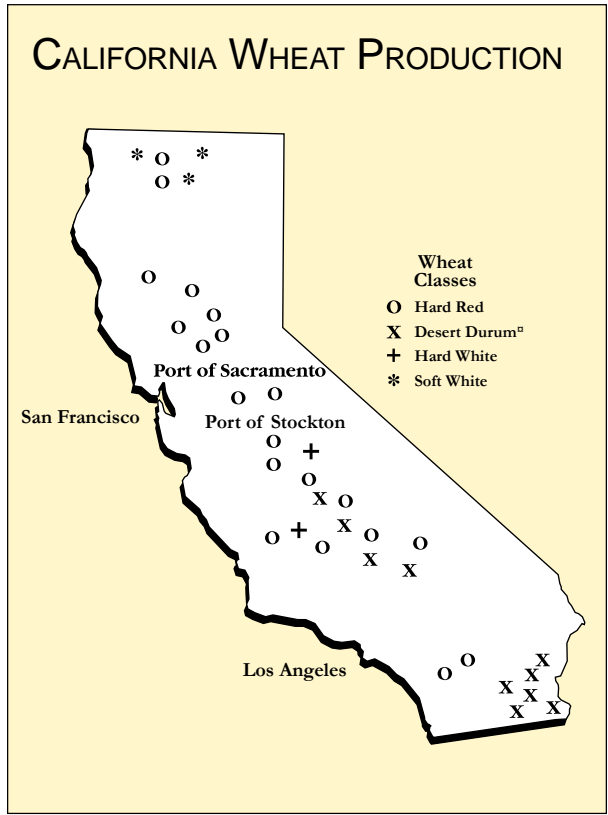
Over the past few years, Hard White (HW) wheat has become more prevalent in the varietal mix. Therefore, HW quality data is included in this hard wheat report. This trend of increased HW production is expected to continue in the upcoming years.

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.

2009 Crop Conditions. Hard Red wheat was again the most predominant wheat class grown in California in 2009. The ratio this year between hard red wheat and white wheat (both soft and hard) in California was approximately 75% red to 25% white. Cal Rojo and Joaquin remained the most prevalent red milling wheat varieties grown in the state while Blanca Royale topped the list of white varieties planted. California experienced a fairly cool growing season with virtually no rainfall in the months of March and April which may have contributed to the low presence of disease again this year.

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.



PRODUCTION HISTORY

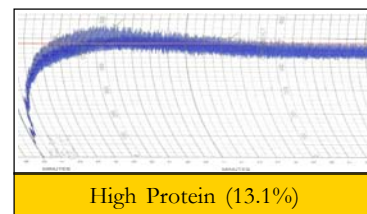
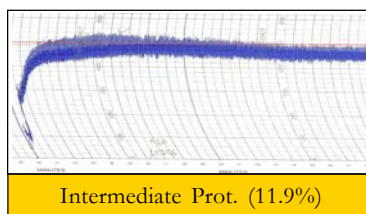
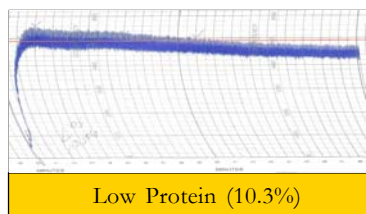
(Winter wheat -- all classes, excluding Durum)

YEAR	METRIC TONS (1,000 MT'S)
2009	686
2008	925
2007	523
2006	395
2005	568
2004	740
2003	614
2002	612

Hard Red Winter (Mixed Varieties)

WHEAT	Low Protein (10.9% & Below)		Intermediate Protein (11.0% - 12.4%)		High Protein (12.5% & Above)	
	2009	2008	2009	2008	2009	2009
Protein¹						
Dry Basis	11.7	11.6	13.5	13.6	14.9	15.1
As - Is	10.6	10.6	12.3	12.5	13.6	13.9
12% MB	10.3	10.2	11.9	12.0	13.1	13.3
Moisture	9.8	8.8	8.6	8.0	8.8	7.9
Test Weight						
lb/bu	62.7	63.2	62.8	63.9	62.2	63.6
kg/hl	82.5	83.1	82.5	83.9	81.8	83.6
1000 Kernel Weight (gr)	39.2	45.6	40.8	45.1	40.1	44.0
SKCS Hardness Score	72	60	71	65	68	69
Kernel Size Distribution						
Large (7W)	87	92	89	92	85	92
Medium (10W)	13	8	11	8	15	8
Small (12W)	0	0	0	0	0	0
MILLING						
Test Mill Yield ² (%)	70.3	72.3	73.3	73.6	73.2	75.2
Wheat Protein (Dry-Basis)	11.7	11.6	13.5	13.6	14.9	15.1
Flour Protein ¹ (Dry-Basis)	10.4	10.4	12.0	12.4	13.4	13.8
Wheat Ash (Dry-Basis)	1.69	1.68	1.67	1.68	1.75	1.69
Flour Ash (Dry-Basis)	0.54	0.54	0.51	0.52	0.51	0.49
FLOUR						
Flour Protein ¹ (14% MB)	9.0	8.9	10.3	10.7	11.5	12.0
Flour Ash (14% MB)	0.46	0.46	0.43	0.44	0.44	0.42
Wet Gluten (14% MB)	23.0	20.9	27.8	27.3	31.5	32.2
Falling Number (sec.)	430	397	444	400	445	434
FARINOGRAM						
Arrival Time (min.)	1.3	1.1	1.7	1.8	2.4	3.0
Mixing Peak (min.)	3.5	2.4	5.9	6.6	6.4	8.0
Mixing Tolerance (min.)	10.3	12.2	15.6	16.5	15.9	17.2
Absorption (%)	60.5	57.8	61.2	60.5	61.3	62.6
BAKING RESULTS						
Bake Volume ³ (cc)	790	726	859	849	922	941

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, $\{(1.292 \times (\text{lb/bu}) + 1.419)\}$.



2009 Hard Red Variety Specific Information

WHEAT Protein ¹	CAL ROJO			DASH 12	
	High ⁶ Protein	Intermediate ⁵ Protein	Low ⁷ Protein	High Protein*	Low Protein*
Dry Basis	15.0	13.4	11.6	14.9	11.9
As Is	13.6	12.2	10.5	13.2	10.7
12% MB	13.2	11.8	10.2	13.2	10.5
Moisture	9.3	9.1	9.8	11.7	10.7
Test Weight					
lb/bu	61.8	62.8	62.5	60.0	62.7
kg/hl ⁴	81.3	82.5	82.2	78.9	82.4
1000 Kernel Weight (gr)	39.6	40.6	40.0	32.5	37.8
SKCS Hardness Score	65.0	64.4	65.0	83.0	76
Kernel Size Distribution					
Large (7w)	81	86	86	80	82
Medium (10W)	18	14	14	20	18
Small (12W)	0	0	0	0	0
MILLING					
Test Mill Yield ² (%)	72.6	73.0	70.9	71.8	69.2
Wheat Protein (Dry Basis)	15.0	13.4	11.6	14.9	11.9
Flour Protein ¹ (Dry Basis)	13.4	12.0	10.3	13.9	10.9
Wheat Ash (Dry Basis)	1.79	1.71	1.73	1.87	1.75
Flour Ash (Dry Basis)	0.53	0.51	0.53	0.52	0.58
FLOUR					
Flour Protein ¹ (14% MB)	11.6	10.3	8.9	11.9	9.4
Flour Ash (14% MB)	0.46	0.44	0.46	0.45	0.50
Wet Gluten (14% MB)	31.8	28.0	22.8	33.3	23.1
Falling Number (sec.)	448	439	433	445	459
FARINOGRAM					
Arrival Time (min.)	2.3	1.9	1.3	2.3	1.2
Mixing Peak (min.)	6.1	5.5	4.6	9.5	2.7
Mixing Tolerance (min.)	14.3	12.7	10.8	18.0	6.3
Absorption (%)	60.3	59.2	58.7	64.2	59.2
BAKING RESULTS					
Bake Volume ³ (cc)	908	843	779	980	812

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, $(1.292 \times \text{lb/bu}) + 1.419$.

5) Intermediate Protein: (11.0-12.4%).

6) High Protein: (12.5% & Above).

7) Low Protein (10.9% & Below)

2009 Hard Red Variety Specific Information

EXPRESSO		JOAQUIN		REDWING			WHEAT Protein ¹ Dry Basis
Intermediate Protein*	Low Protein*	High Protein	Intermediate Protein	High Protein*	Intermediate Protein	Low Protein	
13.5	11.4	14.7	13.6	14.7	13.4	11.7	As Is
12.1	10.2	13.6	12.6	13.4	12.2	10.6	12% MB
11.9	10.0	12.9	12.0	12.9	11.8	10.3	Moisture
9.9	10.4	7.6	7.4	8.8	8.9	9.4	Test Weight
63.5	64.3	63.7	63.7	60.6	61.9	62.9	lb/bu
83.5	84.5	83.8	83.7	79.7	81.4	82.6	kg/hl ⁴
33.8	37.2	44.5	44.0	31.8	38.7	39.5	1000 Kernel Weight (gr)
90	88	68	67	84	79	80	SKCS Hardness Score
							Kernel Size Distribution
78	89	94	93	76	88	92	Large (7W)
22	11	6	7	24	11	8	Medium (10W)
0	0	0	0	0	0	0	Small (12W)
							MILLING
68.2	68.8	75.9	76.2	68.8	71.4	70.1	Test Mill Yield ² (%)
13.5	11.4	14.7	13.6	14.7	13.4	11.7	Wheat Protein (Dry Basis)
11.8	10.2	13.3	12.0	13.1	12.0	10.4	Flour Protein ¹ (Dry Basis)
1.62	1.75	1.70	1.63	1.65	1.66	1.61	Wheat Ash (Dry Basis)
0.56	0.60	0.46	0.49	0.49	0.51	0.52	Flour Ash (Dry Basis)
							FLOUR
10.2	8.8	11.5	10.3	11.3	10.3	8.9	Flour Protein ¹ (14% MB)
0.48	0.52	0.44	0.42	0.42	0.44	0.44	Flour Ash (14% MB)
30.8	24.3	31.0	28.1	31.2	26.9	23.0	Wet Gluten (14% MB)
406	391	430	440	474	456	423	Falling Number (sec.)
							FARINOGRAM
1.9	1.6	2.7	1.7	1.7	1.6	1.3	Arrival Time (min.)
4.0	2.5	7.6	5.9	3.9	6.5	2.3	Mixing Peak (min.)
10.6	2.6	14.1	16.5	30.0	18.7	12.4	Mixing Tolerance (min.)
64.4	65.5	62.3	60.7	63.0	63.5	63.0	Absorption (%)
							BAKING RESULTS
880	830	954	880	893	857	793	Bake Volume ³ (cc)



Hard Red Wheat Grade Data

	HARVEST DATA			EXPORT CARGO AVERAGE	
	2009	2008	2007	08/09*	07/08*
Test Weight					
lb/bu	63.0	62.5	62.3	*	*
kg/hl ²	81.4	82.0	83.0	*	*
Moisture (%)	9.1	8.7	9.4	*	*
Damage (%)	0.1	0.0	0.0	*	*
*Foreign Material (%)	0.1	0.1	0.2	*	*
*Shrunken/Broken (%)	0.6	0.5	0.6	*	*
Total Defects (%)	0.8	0.6	0.8	*	*
*Dockage (%)	0.8	0.7	0.7	*	*
Total Screenings (%)	1.5	1.3	1.5	*	*
Moisture (%)	9.1	8.7	9.4	*	*
Net Wheat (%) ³	89.5	89.4	89.2	*	*
CTW (%) ⁴	106.5	106.4	106.2	*	*
MWVI (%) ⁵	93.9	94.0	94.2	*	*

* 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. ²Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5, $(1.292 \times \text{lb/bu}) + 1.419$. ³Net Wheat = $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / 100\%$. ⁴Clean, Tempered Wheat (CTW%) = $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / (100\% - 16\%(\text{temper moisture}))$. ⁵ 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 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 is a good wheat variety for blending.

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 has high percent protein and test weight with very good mixing and baking properties.

Redwing (HRW) is a new high-quality wheat for both the Sacramento and San Joaquin Valleys that has been the top yielding hard red variety in University trials. It shows high resistance to stripe rust and receives high scores for grain quality, milling and baking.

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 Grande 515, a variant of Blanca Grande with two effective genes for stripe rust resistance added by marker assisted selection, will be available for full-scale commercial grain production in 2010-2011.

Blanca Fuerte (HW) is a widely adapted, extremely high yielding variety for both the San Joaquin and Sacramento Valleys. It is classified as "highly resistant" to stripe rust, and its grain is notable for its high test weight, high falling number, and low PPO. When fertilized adequately to produce desired levels of protein, it receives high scores for end use quality.

2009 Hard White Wheat

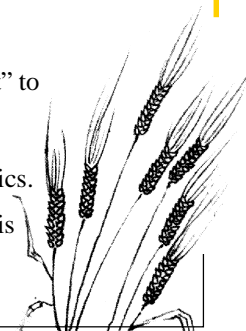
WHEAT	BLANCA FUERTE		BLANCA GRANDE		BLANCA ROYALE		PATWIN	
	Intermediate Protein*	Low Protein	High Protein	Intermediate Protein	High Protein	Intermediate Protein	High Protein*	Intermediate Protein*
Protein								
Dry Basis	13.3	10.9	14.8	13.4	15.2	13.6	14.2	13.2
As - Is	12.0	9.8	13.4	12.1	14.1	12.5	13.0	11.8
12% MB	11.7	9.6	13.0	11.8	13.4	11.9	12.5	11.6
Moisture	9.7	10.1	9.4	9.6	7.4	7.7	8.8	10.9
Test Weight								
lb/bu	64.7	65.7	62.7	63.5	62.8	63.6	62.1	62.6
kg/hl ⁴	85.0	86.3	82.4	83.5	82.5	83.6	81.7	82.3
1000 Kernel Weight (gr)	42.1	42.4	39.7	39.4	38.9	39.7	35.6	39.9
SKCS Hardness Score	74	76	65	70	68	68	84	84
Kernel Size Distribution								
Large (7w)	93	93	85	86	86	88	84	91
Medium (10W)	7	7	15	14	13	11	16	9
Small (12W)	0	0	0	0	0	0	0	0
MILLING								
Test Mill Yield ² (%)	70.1	71.2	73.3	72.5	72.6	71.8	69.4	68.7
Wheat Protein (Dry Basis)	13.3	10.9	14.8	13.4	15.2	13.6	14.2	13.2
Flour Protein ¹ (Dry Basis)	11.7	9.2	13.4	12.0	13.8	11.9	12.8	11.1
Wheat Ash (Dry Basis)	1.56	1.64	1.71	1.68	1.78	1.79	1.69	1.77
Flour Ash (Dry Basis)	0.50	0.52	0.49	0.50	0.50	0.52	0.53	0.52
FLOUR								
Flour Protein ¹ (14% MB)	10.1	7.9	11.5	10.3	11.9	10.3	11.0	9.5
Flour Ash (14% MB)	0.43	0.45	0.42	0.43	0.43	0.44	0.46	0.44
Wet Gluten (14% MB)	25.8	19.4	30.1	27.0	31.3	27.0	32.5	29.0
Falling Number (sec.)	452	464	407	399	438	450	442	428
FARINOGRAM								
Arrival Time (min.)	1.2	1.1	3.4	1.9	2.4	1.4	3.0	2.0
Mixing Peak (min.)	2.0	1.9	9.0	6.2	6.9	4.1	8.0	9.0
Mixing Tolerance (min.)	23.9	4.3	15.6	15.4	11.7	10.3	14.0	10.9
Absorption (%)	59.2	59.9	63.2	60.9	60.1	58.2	65.6	65.7
BAKING RESULTS								
Bake Volume ³ (cc)	809	719	954	878	921	846	900	875

* 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: $(1.292 \times \text{lb/bu}) + 1.419$.

Variety Descriptions *continued...*

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.

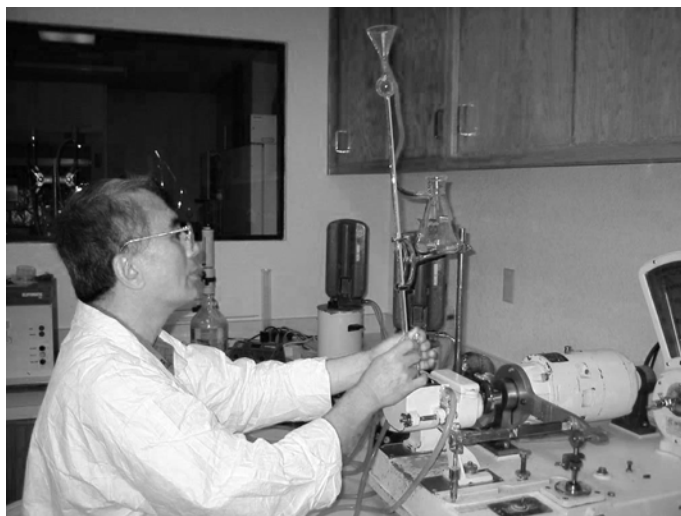
Patwin (HW) is a high yielding white variety characterized by very high levels of protein. This variety is adapted to both the Sacramento and San Joaquin valleys and is resistant to current races of stripe rust. It has received excellent scores for milling and baking parameters.



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 evaluated by commercial mills through the California Wheat Collaborator program.

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