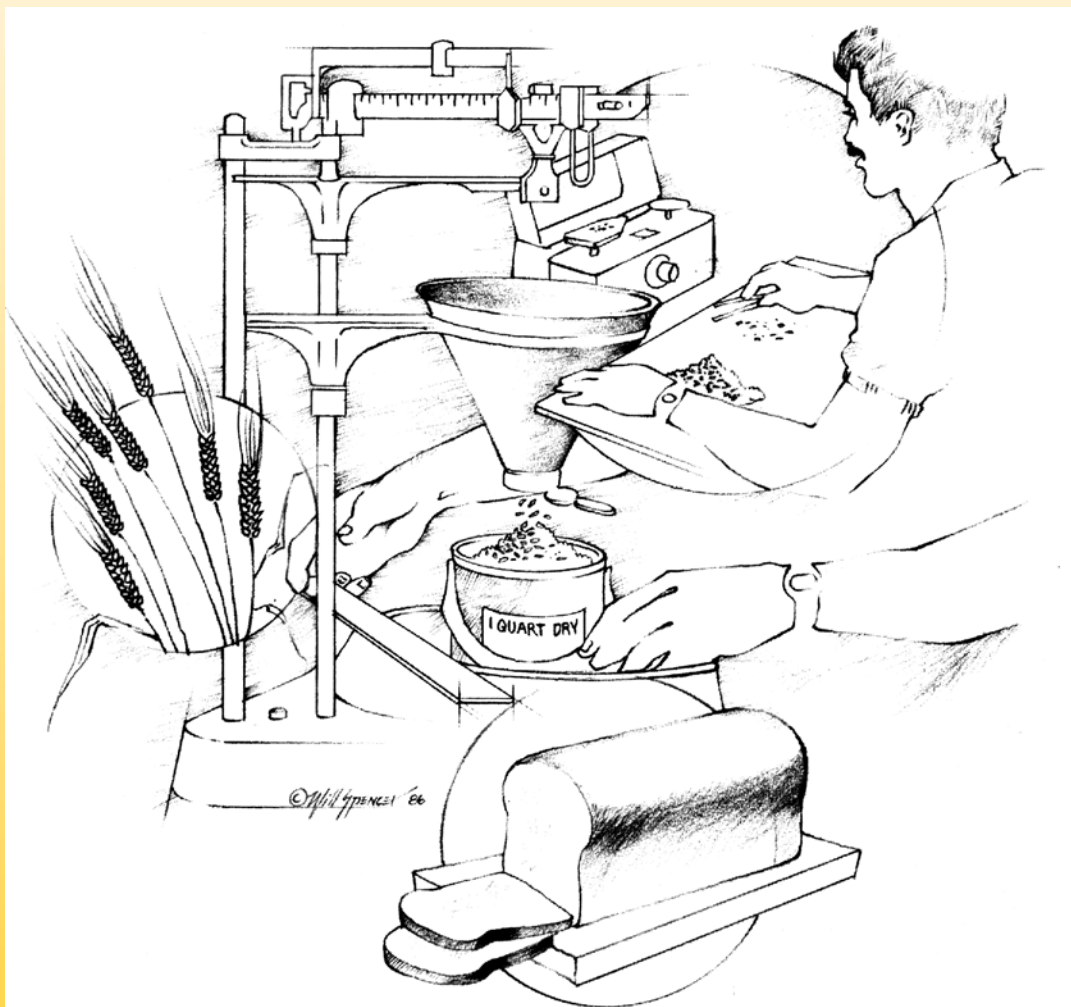




*California Wheat Commission*

*Hard Red Wheat 2006*  
*Hard White Wheat 2006*



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C R O P   Q U A L I T Y   R E P O R T   2 0 0 6

# 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.

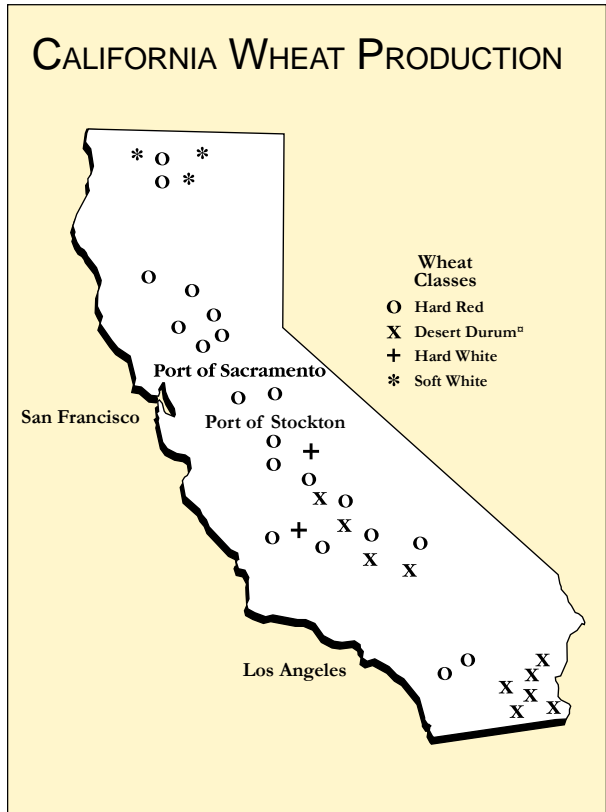
Over the past few years, Hard White (HW) wheat has become more prevalent in the varietal mix. Therefore, HW quality data is included in this hard wheat report. This trend of increased HW production is expected to continue in the upcoming years.

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.

**2006 Crop Conditions.** An extended rainy season caused localized drown-out problems, delayed field work, and untimely weed control in 2006. Significant freeze injury also occurred when a period of freezing temperatures in mid-February followed very mild conditions in January. Wheat stripe rust caused an estimated 15% yield loss in California in 2006. Although stripe rust was the most severe disease, the long rainy season was favorable for the development of other diseases as well. These conditions meant extra effort had to be taken to sort the qualities requested by buyers.

**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

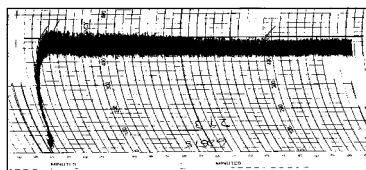
(Winter wheat -- all classes, excluding Durum)

YEAR	METRIC TONS (1,000 MT'S)
2006	395
2005	568
2004	740
2003	614
2002	612
2001	724
2000	743
1999	785

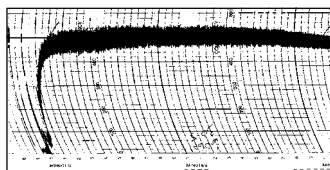
# Hard Red Winter (Mixed Varieties)

WHEAT	Low Protein (10.9% & Below)		Intermediate Protein (11.0% - 12.4%)		High Protein (12.5% & Above)	
	2005	2006	2005	2006	2005	2006
<b>Protein<sup>1</sup></b>						
Dry Basis	11.7	11.5	13.3	13.4	15.3	15.0
As - Is	10.6	10.5	12.0	12.3	13.9	13.8
12% MB	10.3	10.1	11.7	11.8	13.4	13.2
Moisture	9.4	8.8	9.8	8.5	9.2	8.2
<b>Test Weight</b>						
lb/bu	61.4	60.6	60.1	60.5	60.9	60.5
kg/hl <sup>4</sup>	80.8	79.7	79.1	79.6	80.1	79.5
1000 Kernel Weight (gr)	42.6	34.8	41.7	35.7	41.5	35.9
SKCS Hardness Score	64	74.4	67	71.4	68	67.7
<b>Kernel Size Distribution</b>						
Large (7W)	90	78	90	78	88	77
Medium (10W)	10	21	10	21	11	22
Small (12W)	0	1	0	1	0	1
<b>MILLING</b>						
Test Mill Yield <sup>2</sup> (%)	66.5	62.5	66.5	64.5	67.8	66.2
Wheat Protein (Dry-Basis)	11.7	11.5	13.3	13.4	15.3	15.0
Flour Protein <sup>1</sup> (Dry-Basis)	10.4	10.5	12.0	12.3	14.0	13.8
Wheat Ash (Dry-Basis)	1.55	1.83	1.70	1.83	1.72	1.90
Flour Ash (Dry-Basis)	0.55	0.55	0.51	0.54	0.51	0.54
<b>FLOUR</b>						
Flour Protein <sup>1</sup> (14% MB)	9.0	9.0	10.4	10.6	12.1	11.9
Flour Ash (14% MB)	0.47	0.48	0.44	0.46	0.44	0.46
Wet Gluten (14% MB)	23.2	21.3	26.8	26.1	31.5	29.9
Falling Number (sec.)	362	372	372	383	385	404
<b>FARINOGRAM</b>						
Arrival Time (min.)	1.5	1.9	2.4	2.5	4.1	3.4
Mixing Peak (min.)	3.4	4.6	8.0	9.7	9.5	10.9
Mixing Tolerance (min.)	10.6	14.2	13.7	21.2	13.1	24.1
Absorption (%)	61.3	58.0	62.8	59.1	64.7	59.7
<b>BAKING RESULTS</b>						
Bake Volume <sup>3</sup> (cc)	768	792	865	866	933	929

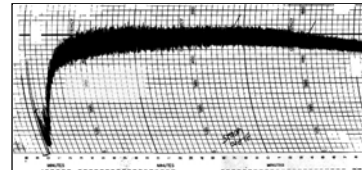
Wheat samples were collected by handlers. 1) Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model FP 428; 2) Test mill yield: Brabender Quadromat Senior Mill, modified in 1997; 3) Bake Volume = AACC Method 10-10B; 4) Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5,  $\{(1.292 \times (\text{lb/bu}) + 1.419)\}$ .



Low Protein (9.8%)



Intermediate Prot. (11.4%)



High Protein (13.5%)

# 2006 Hard Red Variety Specific Information

	SUMMIT		JOAQUIN	
	Intermediate <sup>5</sup> Protein	High <sup>6</sup> Protein	Intermediate Protein*	High Protein*
<b>WHEAT Protein<sup>1</sup></b>				
Dry Basis	13.4	15.2	13.3	15.7
As - Is	12.3	14.0	12.3	14.4
12% MB	11.8	13.4	11.7	13.8
Moisture	8.4	8.0	8.0	8.2
<b>Test Weight</b>				
lb/bu	59.9	60.2	62.9	62.2
kg/hl <sup>4</sup>	78.8	79.2	82.6	81.8
1000 Kernel Weight (gr)	35.0	35.5	37.7	46.8
SKCS Hardness Score	73.4	73.9	78.5	64.0
<b>Kernel Size Distribution</b>				
Large (7w)	77	78	86	93
Medium (10W)	22	21	14	7
Small (12W)	1	1	0	0
<b>MILLING</b>				
Test Mill Yield <sup>2</sup> (%)	63.8	66.1	66.9	68.2
Wheat Protein (Dry-Basis)	13.4	15.2	13.3	15.7
Flour Protein <sup>1</sup> (Dry-Basis)	12.2	14.0	13.4	14.7
Wheat Ash (Dry-Basis)	1.79	1.92	1.76	1.99
Flour Ash (Dry-Basis)	0.53	0.55	0.57	0.52
<b>FLOUR</b>				
Flour Protein <sup>1</sup> (14% MB)	10.5	12.0	11.54	12.7
Flour Ash (14% MB)	0.46	0.47	0.49	0.45
Wet Gluten (14% MB)	25.7	30.7	29.6	34.8
Falling Number (sec.)	373	383	380	395
<b>FARINOGRAM</b>				
Arrival Time (min.)	2.4	3.6	7.4	8.0
Mixing Peak (min.)	8.7	11.4	23.5	18.0
Mixing Tolerance (min.)	20.1	23.5	26.1	16.5
Absorption (%)	59.6	60.9	61.5	68.0
<b>BAKING RESULTS</b>				
Bake Volume <sup>3</sup> (cc)	861	941	925	990

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 FP 428.

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)

# 2006 Hard Red Variety Specific Information

DASH 12		SOLANO		CAL ROJO		WHEAT Protein <sup>1</sup> Dry Basis
Low <sup>7</sup> Protein	Intermediate Protein	Intermediate Protein	High Protein*	Intermediate Protein	High Protein	
11.5	13.4	13.5	14.9	13.4	14.7	As-Is
10.5	12.0	12.2	13.4	12.4	13.5	12% MB
10.2	11.8	11.9	13.1	11.8	12.9	Moisture
9.1	10.4	9.8	9.7	8.0	8.2	<b>Test Weight</b>
60.1	60.4	61.5	61.5	61.6	60.5	lb/bu
79.1	79.5	80.8	80.9	81.0	79.5	kg/hl <sup>4</sup>
33.4	34.3	32.8	30.6	39.7	36.5	1000 Kernel Weight (gr)
77.7	75.3	77.8	81.5	58.4	55.3	SKCS Hardness Score
						<b>Kernel Size Distribution</b>
75	75	75	69	83	76	Large (7W)
24	24	25	31	17	24	Medium (10W)
1	1	0	0	0	0	Small (12W)
						<b>MILLING</b>
61.7	62.5	64.2	63.2	67.2	66.9	Test Mill Yield <sup>2</sup> (%)
11.5	13.4	13.5	14.9	13.4	14.7	Wheat Protein (Dry-Basis)
10.5	12.1	12.4	13.6	12.4	13.5	Flour Protein <sup>1</sup> (Dry-Basis)
1.86	1.96	1.91	1.93	1.87	1.85	Wheat Ash (Dry-Basis)
0.58	0.62	0.57	0.54	0.52	0.52	Flour Ash (Dry-Basis)
						<b>FLOUR</b>
9.0	10.4	10.7	11.7	10.7	11.6	Flour Protein <sup>1</sup> (14% MB)
0.50	0.53	0.49	0.47	0.45	0.45	Flour Ash (14% MB)
20.6	25.3	26.7	26.5	26.8	28.9	Wet Gluten (14% MB)
382	388	407	385	403	441	Falling Number (sec.)
						<b>FARINOGRAM</b>
1.2	2.3	2.8	1.5	1.9	3.1	Arrival Time (min.)
2.7	11.2	11.5	8.8	9.2	9.9	Mixing Peak (min.)
12.3	25.1	23.2	40.3	22.6	22.3	Mixing Tolerance (min.)
57.4	59.2	59.1	57.5	56.7	57.4	Absorption (%)
						<b>BAKING RESULTS</b>
782	885	893	860	851	920	Bake Volume <sup>3</sup> (cc)



# Hard Red Wheat Grade Data

	HARVEST DATA			EXPORT CARGO AVERAGE	
	2004	2005	2006	04/05 <sup>1</sup>	05/06 <sup>1</sup>
Test Weight					
lb/bu	62.6	60.7	59.8	63.2	62.5
kg/hl <sup>2</sup>	82.3	79.8	78.7	83.0	82.1
Moisture (%)	9.8	10.1	9.1	10.0	10.1
Damage (%)	0.0	0.0	0.0	0.0	0.4
*Foreign Material (%)	0.0	0.1	0.2	0.1	0.2
*Shrunken/Broken (%)	0.6	0.4	1.1	0.8	0.6
Total Defects (%)	0.6	0.5	1.4	0.9	1.2
*Dockage (%)	0.6	0.8	1.0	0.4	0.4
Total Screenings (%)	1.2	1.3	2.3	1.3	1.2
Moisture (%)	9.8	10.1	9.1	10.0	10.1
Net Wheat (%) <sup>3</sup>	89.1	88.7	88.8	88.8	88.8
CTW (%) <sup>4</sup>	106.1	105.6	105.7	105.9	105.7
MWVI (%) <sup>5</sup>	94.3	94.7	94.6	94.4	94.6

<sup>1</sup> Limited samples. 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. <sup>2</sup>Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5,  $(1.292 \times \text{lb/bu}) + 1.419$ . <sup>3</sup>Net Wheat =  $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / 100\%$ . <sup>4</sup> Clean, Tempered Wheat (CTW%) =  $(100\% - (\text{FM} + \text{SHBN} + \text{Dockage})) \times (100\% - \text{Moisture}) / (100\% - 16\%(\text{temper moisture}))$ . <sup>5</sup> Millable Wheat Value Index (MWVI) =  $100\% / \text{CTW}$ .

## Varietal Descriptions

**Summit** - (HRW) Based on its grain yield, quality, and overall agronomic performance, Summit has been the predominant wheat variety in the Sacramento Valley, and is also grown in the San Joaquin Valley. Summit has good gluten qualities and good flour yield and flour water absorption.

**Joaquin** - (HRW) Joaquin is a stripe rust resistant variety that is adapted to the San Joaquin Valley. In the University of California Extension Field Trials, Joaquin had the highest overall three-year yield average of any wheat variety tested in the San Joaquin Valley. Joaquin has high percent protein and test weight, with very good mixing and baking properties.

**Cal Rojo** - (HRW) Cal Rojo is a new, widely adapted, high yielding variety for both the San Joaquin and Sacramento Valley. It has topped University of California yield trials, shown good tolerance to stripe rust in those trials and in commercial seed production, and received high scores for grain quality, milling, and baking. Cal Rojo is mid-early maturing, short-statured, and has excellent straw strength and standability.

**Dash 12** - (HRW) Dash 12 is a stripe rust resistant and Septoria tritici Leaf Blotch tolerant variety adapted to the Sacramento Valley and rain fed areas. Dash 12 is similar to the variety Express in plant height and quality. Dash 12 has baking qualities similar to Express but has better mixing tolerance.

**Blanca Grande**- (HW) Blanca Grande has been the most widely grown wheat variety for grain production in the San Joaquin Valley in the past several years. It is also becoming more widely grown in the Sacramento Valley based on its grain yield and quality. It has continued to test well in a broad range of end-use applications, such as Asian noodles, bread, and tortillas.

# 2006 Hard White Wheat

## BLANCA GRANDE

WHEAT Protein	High Protein (12.5% & Above)		Intermediate Protein (11.0% - 12.4%)	
	2006	2005	2006	2005
Dry Basis	14.8	15.4	13.5	13.5
As - Is	13.6	14.0	12.3	12.2
12% MB	13.1	13.6	11.8	11.9
Moisture	8.3	9.2	8.6	9.7
<b>Test Weight</b>				
lb/bu	62.1	63.1	63.2	62.9
kg/hl <sup>4</sup>	81.6	83.0	83.0	82.6
1000 Kernel Weight (gr)	35.1	46.3	38.1	46.7
SKCS Hardness Score	69.4	56.8	69.0	57.2
<b>Kernel Size Distribution</b>				
Large (7w)	74	94	83	93
Medium (10W)	25	6	17	7
Small (12W)	1	0	0	0
<b>MILLING</b>				
Test Mill Yield <sup>2</sup> (%)	66.9	70.1	66.7	68.7
Wheat Protein (Dry-Basis)	14.8	15.4	13.5	13.5
Flour Protein <sup>1</sup> (Dry-Basis)	13.7	15.4	12.4	12.3
Wheat Ash (Dry-Basis)	1.83	1.69	1.82	1.72
Flour Ash (Dry-Basis)	0.47	0.48	0.50	0.47
<b>FLOUR</b>				
Flour Protein <sup>1</sup> (14% MB)	11.8	10.8	10.7	10.6
Flour Ash (14% MB)	0.40	0.41	0.43	0.41
Wet Gluten (14% MB)	26.1	32.1	25.9	27.1
Falling Number (sec.)	363	377	354	361
<b>FARINOGRAM</b>				
Arrival Time (min.)	12.5	8.7	4.5	4.1
Mixing Peak (min.)	18.6	13.9	14.3	10.3
Mixing Tolerance (min.)	15.9	16.0	24.9	15.7
Absorption (%)	62.5	67.0	60.8	64.7
<b>BAKING RESULTS</b>				
Bake Volume <sup>3</sup> (cc)	965	912	898	876

1) Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model FP 428. 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...*

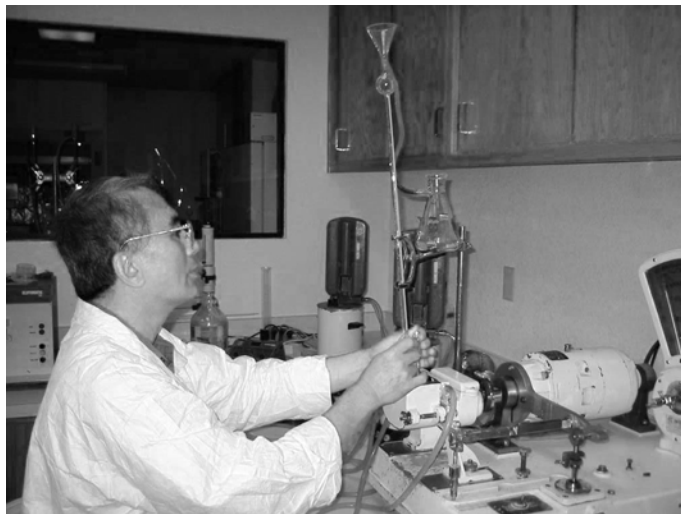
**Solano** - (HRW) Solano is adapted primarily to the Sacramento Valley. Solano is similar to the variety Express but is shorter and has higher yield. Solano has similar protein percent and water absorption to Express (high) but has better mixing and baking characteristics, particularly better loaf volume.



# Technical and Laboratory Services

**T**he 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](http://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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