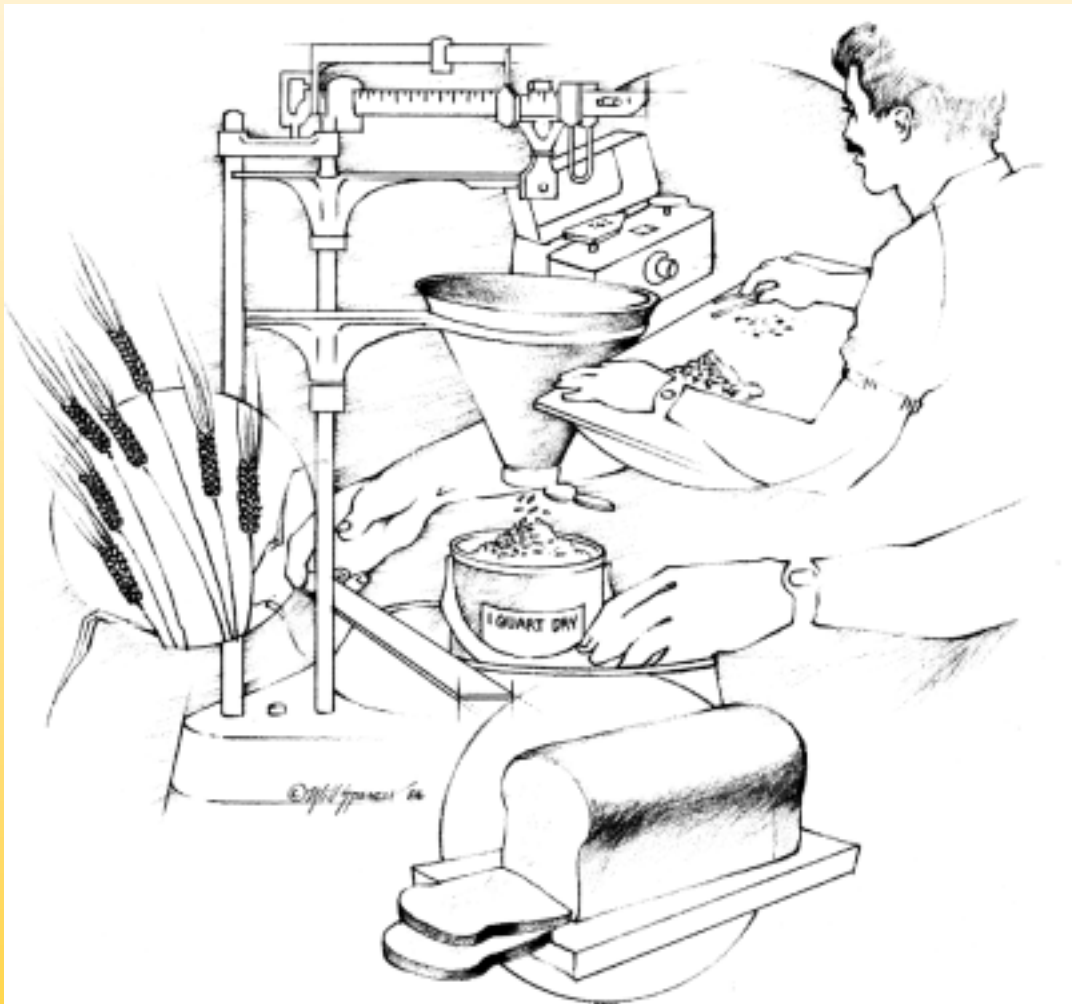




*California Wheat Commission*

# HARD RED WINTER 2003



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## CROP QUALITY REPORT 2003

# 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.

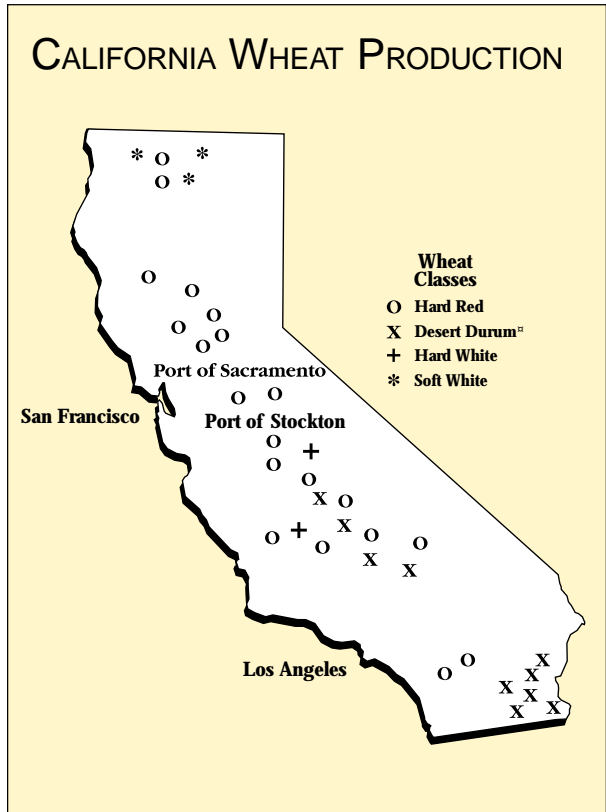
Much of the wheat is planted during the months of October - December as part of a rotation program with other crops. Harvest usually begins in June. This harvest schedule makes new crop California wheat very competitive during the months of June - September.

California growers have a strong domestic milling and feed market. Export buyers must indicate an interest early in the season to assure availability.

**General Characteristics.** California hard red 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 also contains significantly less impurities than its counterparts elsewhere.

**2003 Crop Conditions.** Wheat stripe rust disease in California's central valley severely reduced wheat yields this season, especially in Northern California. A combination of mild winter temperatures and early sowing (particularly of wheat for forage) resulted in early infections. Cool conditions that persisted much longer into spring than usual allowed stripe rust to reach high levels. While not all varieties were affected, many of the traditional varieties were. The affected wheat was directed away from the milling industry. The remaining two thirds of the wheat crop graded US No. 1 on average and had excellent end-use qualities. Growers will be taking a very proactive stance against stripe rust in coming years.

**Data in this report.** Samples for this report are collected from the California State Inspection Stations, 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 California State Inspection Service under the auspices of 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)
2003	614
2002	612
2001	724
2000	743
1999	785
1998	621
1997	762
1996	1,032

# Hard Red Winter (Mixed Varieties)

WHEAT Protein <sup>1</sup>	Low Protein (10.9% & Below)		Intermediate Protein (11.0% - 12.4%)		High Protein (12.5% & Above)	
	2002	2003	2002	2003	2002	2003
Dry Basis	11.1	11.4	13.4	13.3	15.0	15.1
As - Is	10.1	10.3	12.2	12.1	13.7	13.7
12% MB	9.8	10.0	11.8	11.7	13.2	13.3
Moisture	8.9	9.3	8.7	9.3	8.5	9.1
<b>Test Weight</b>						
lb/bu	63.5	62.7	63.2	61.7	63.1	60.3
kg/hl <sup>4</sup>	83.5	82.4	83.1	81.1	82.9	79.4
1000 Kernel Weight (gr)	41.6	37.7	40.6	39.6	41.2	39.0
SKCS Hardness Score	71	71	74	75	74	72
<b>Kernel Size Distribution</b>						
Large (7W)	87	83	86	85	84	82
Medium (10W)	13	17	14	15	16	18
Small (12W)	0	0	0	0	0	0

## MILLING

Test Mill Yield <sup>2</sup> (%)	71.2	69.7	71.0	69.6	71.9	69.5
Wheat Protein (Dry-Basis)	11.1	11.4	13.4	13.3	15.0	15.1
Flour Protein <sup>1</sup> (Dry-Basis)	9.9	10.2	12.2	12.1	13.8	13.7
Wheat Ash (Dry-Basis)	1.76	1.71	1.79	1.68	1.77	1.77
Flour Ash (Dry-Basis)	0.63	0.56	0.63	0.56	0.60	0.57

## FLOUR

Flour Protein <sup>1</sup> (14% MB)	8.5	8.8	10.5	10.4	11.9	11.8
Flour Ash (14% MB)	0.54	0.48	0.54	0.48	0.52	0.49
Wet Gluten (14% MB)	23.5	22.5	29.0	28.1	32.1	31.7
Falling Number (sec.)	266	382	332	397	357	408

## FARINOGRAM

Arrival Time (min.)	1.4	1.5	2.1	2.0	3.1	3.0
Mixing Peak (min.)	2.8	3.7	6.0	4.7	6.7	5.7
Mixing Tolerance (min.)	7.8	6.8	13.3	9.0	11.9	9.9
Absorption (%)	61.2	61.7	63.0	64.5	63.7	64.6

## BAKING RESULTS

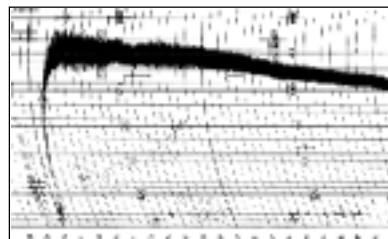
Bake Volume <sup>3</sup> (cc)	772	722	885	807	938	894
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1) Wheat and Flour Protein: Leco Combustion Nitrogen Analyzer Model FP 428

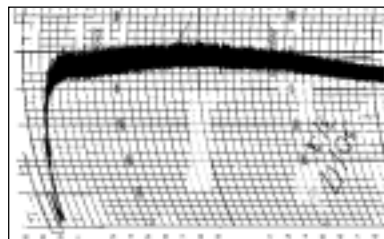
2) Test mill yield: Brabender Quadromat Senior Mill, modified in 1997.

3) Bake Volume = AACC Method 10-10B

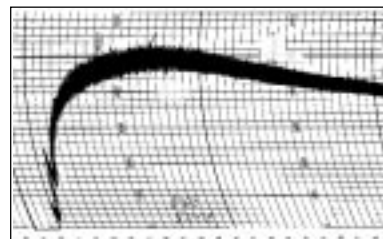
4) Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5,  $\{(1.292 \times (\text{lb/bu}) + 1.419)\}$ .



Low Protein



Intermediate Protein



High Protein

## 2003 Variety Specific Information

WHEAT	YECORA ROJO		BROOKS		EXPRESS	
	Intermediate <sup>5</sup> Protein	High <sup>6</sup> Protein	Intermediate Protein*	High Protein	Intermediate Protein	High Protein
<b>Protein<sup>1</sup></b>						
Dry Basis	13.6	15.6	13.6	14.9	13.3	14.9
As - Is	12.4	14.2	12.5	13.6	12.0	13.4
12% MB	12.0	13.7	12.0	13.1	11.7	13.1
Moisture	8.8	9.1	8.4	8.5	9.7	10.0
<b>Test Weight</b>						
lb/bu	60.9	58.8	54.7	52.7	62.2	60.6
kg/hl <sup>4</sup>	80.1	77.4	72.1	69.5	81.8	79.7
1000 Kernel Weight (gr)	36.9	35.3	27.3	26.8	40.0	39.7
SKCS Hardness Score	73	71	77	77	78	75
<b>Kernel Size Distribution</b>						
Large (7w)	76	68	57	52	89	88
Medium (10W)	23	30	41	45	11	12
Small (12W)	1	2	2	3	0	0
<b>MILLING</b>						
Test Mill Yield <sup>2</sup> (%)	66.5	66.0	63.1	62.9	67.3	68.0
Wheat Protein (Dry-Basis)	13.6	15.6	13.6	14.9	13.3	14.9
Flour Protein <sup>1</sup> (Dry-Basis)	12.4	14.2	12.2	13.1	12.2	13.6
Wheat Ash (Dry-Basis)	1.72	1.77	2.09	2.17	1.82	1.79
Flour Ash (Dry-Basis)	0.57	0.57	0.73	0.63	0.56	0.57
<b>FLOUR</b>						
Flour Protein <sup>1</sup> (14% MB)	10.7	12.2	10.5	11.3	10.5	11.7
Flour Ash (14% MB)	0.49	0.49	0.63	0.54	0.48	0.49
Wet Gluten (14% MB)	27.8	31.6	27.8	29.6	28.5	32.2
Falling Number (sec.)	422	385	445	446	421	424
<b>FARINOGRAM</b>						
Arrival Time (min.)	1.9	3.0	1.3	1.8	2.0	2.9
Mixing Peak (min.)	6.0	10.5	3.8	6.1	4.6	5.6
Mixing Tolerance (min.)	15.8	16.6	11.6	15.5	11.0	7.5
Absorption (%)	61.1	62.2	63.4	63.4	65.8	67.2
<b>BAKING RESULTS</b>						
Bake Volume <sup>3</sup> (cc)	831	913	833	858	818	894

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).

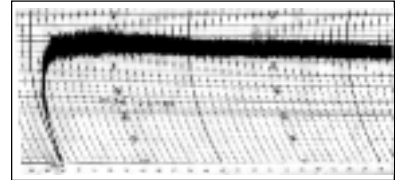
# 2003 Variety Specific Information

SUMMIT		STANDER		
Intermediate Protein	High Protein	Intermediate Protein	High Protein	
13.1	14.5	13.3	14.5	<b>WHEAT</b>
11.9	13.3	12.0	13.1	<b>Protein<sup>1</sup></b>
11.5	12.8	11.7	12.8	Dry Basis
9.0	8.5	9.6	9.8	As-Is
				12% MB
				Moisture
				<b>Test Weight</b>
63.5	63.2	61.8	61.4	lb/bu
83.5	83.1	81.3	80.7	kg/hl <sup>4</sup>
44.4	42.1	42.2	44.1	1000 Kernel Weight (gr)
75	71	68	64	SKCS Hardness Score
				<b>Kernel Size Distribution</b>
92	92	86	88	Large (7W)
8	8	14	12	Medium (10W)
0	0	0	0	Small (12W)
				<b>MILLING</b>
70.8	72.0	69.2	69.9	Test Mill Yield <sup>2</sup> (%)
13.1	14.5	13.3	14.5	Wheat Protein (Dry-Basis)
11.9	13.3	12.0	13.1	Flour Protein <sup>1</sup> (Dry-Basis)
1.64	1.62	1.71	1.77	Wheat Ash (Dry-Basis)
0.53	0.50	0.50	0.47	Flour Ash (Dry-Basis)
				<b>FLOUR</b>
10.2	11.4	10.3	11.3	Flour Protein <sup>1</sup> (14% MB)
0.46	0.43	0.43	0.40	Flour Ash (14% MB)
27.4	30.0	27.1	29.9	Wet Gluten (14% MB)
391	389	391	376	Falling Number (sec.)
				<b>FARINOGRAM</b>
1.9	3.4	2.0	3.0	Arrival Time (min.)
5.5	7.0	6.8	8.0	Mixing Peak (min.)
10.6	10.4	14.7	14.9	Mixing Tolerance (min.)
64.3	63.8	59.9	60.2	Absorption (%)
				<b>BAKING RESULTS</b>
806	887	798	864	Bake Volume <sup>3</sup> (cc)

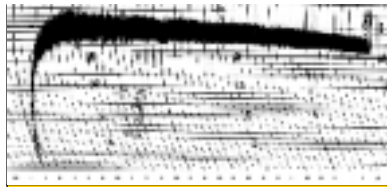


# Varietal Descriptions

**Brooks** - Originally released to compete for Yecora Rojo acreage, Brooks has found a home in the California milling industry. For the end-user, Brooks is a high protein wheat with good milling yield, long mixing tolerance, and good bake volume.



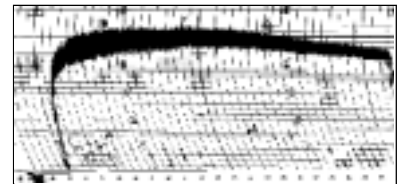
Brooks (12.98 %)



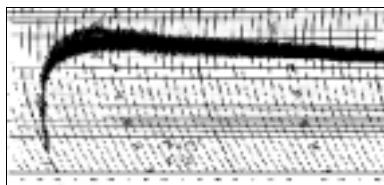
Express (11.89 %)

**Express** - Express is grown predominately in the Sacramento Valley of California. It is used by the domestic milling industry and has been exported on an identity preserved basis to Latin America and China. The average protein for Express is around 12% (12% mb). Express tends to have extremely high water absorption and a more mellow gluten as compared to Yecora Rojo or Brooks.

**Yecora Rojo** - Yecora Rojo has been produced in California since the early 1970's. Once established, the variety became California's premium bread wheat and is used as the standard for California wheat. It is produced mainly in California's San Joaquin Valley. Yecora Rojo has very strong gluten and is excellent for bread baking and whole wheat flour.



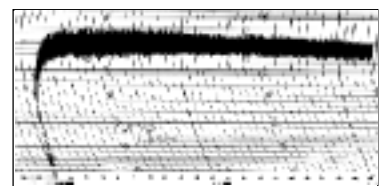
Yecora Rojo (12.90%)



Summit (11.53%)

**Summit**- Summit is becoming widely grown for grain production in the Sacramento Valley based on its grain yield and quality. Summit typically produces significantly higher grain protein than traditional common wheats in the area. Summit has strong gluten qualities and very good flour yield and flour water absorption. Summit has shown good resistance to stripe rust, which will encourage growers to plant increased acreage in the future.

**Stander** - Stander is unique among currently available varieties for its excellent tolerance to lodging. It has also shown good resistance to stripe rust and grain shatter. Initial results show Stander to be an easy milling wheat with high milling yields, very extensible gluten qualities, and excellent bread baking characteristics. Stander can be used alone or as an excellent blending wheat with higher absorption wheat.



Stander (12.83%)

# Grade Data

	HARVEST DATA			EXPORT CARGO AVERAGE	
	2001	2002	2003	01/02 <sup>1</sup>	02/03 <sup>1</sup>
Test Weight					
lb/bu	62.9	63.3	61.4	63.2	64.1
kg/hl**	82.7	83.2	80.7	83.1	84.2
Moisture (%)	8.4	9.2	9.4	8.9	9.5
Damage (%)	0.0	0.0	0.0	0.1	0.0
*Foreign Material (%)	0.1	0.0	0.1	0.1	0.1
*Shrunken/Broken (%)	0.5	0.6	0.7	0.7	0.7
Total Defects (%)	0.6	0.6	0.8	0.9	0.8
*Dockage (%)	0.6	0.6	0.7	0.5	0.4
Total Screenings (%)	1.2	1.2	1.5	1.3	1.2
Moisture (%)	8.4	9.2	9.4	8.9	9.5
Net Wheat (%)	90.5	89.7	89.2	89.9	89.4
CTW (%)	107.7	106.8	106.2	107.0	106.4
MWVI (%)	92.8	93.6	94.2	93.5	94.0

<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.

\*\*Test weight conversion from lb/bu to kg/hl according to FGIS-PN-97-5,  $\{(1.292 \times (\text{lb/bu}) + 1.419)\}$ .

## MILLABLE WHEAT VALUE INDEX (MWVI)

### Definitions:

Certificate Moisture (M)	=	M
Foreign Material (FM)	=	F
Shrunken & Broken (SHBN)	=	S
Dockage	=	D
Temper Moisture	=	T
Clean, Tempered Wheat	=	CTW
Millable Wheat Value Index	=	MWVI

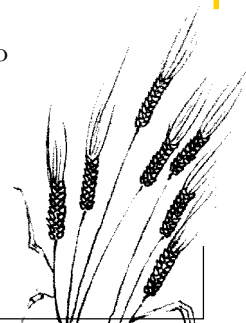
$$\text{Net Wheat} = \frac{[100\% - (F+S+D)] \times (100-M)}{(100\%)}$$

$$\text{CTW} = \frac{[100\% - (F+S+D)] \times (100\% - M)}{(100\% - T)}$$

$$\text{MWVI} = \frac{100\%}{\text{CTW}}$$

The presence of unmillable material and the content of moisture in wheat are important factors in purchasing decisions. The price of dry, dirty wheat can be converted to a price for wheat which has been cleaned and tempered, ready for milling. It is called the "Millable Wheat Value Index" or MWVI. The use of this simple index permits buyers to evaluate those factors in terms of the price they must pay for wheat.

The equation is a simple mathematical expression of what takes place when wheat is prepared for milling. Using the official U.S. Inspection Certification, the equation first removes screenings: Foreign material (F), Shrunken and Broken Kernels (S), and Dockage (D) from the dirty wheat, which is expressed as 100%. Once screenings are removed, moisture must be added up to the tempering level, usually about 16%. Mathematically, the certificate moisture (M) is removed to obtain dry matter and then temper moisture (T) is added. This provides the quantity of wheat to the first break roll in the mill or cleaned, tempered wheat (CTW). The Millable Wheat Value Index is obtained by dividing the CTW into 100%, the ratio of millable wheat to the quantity purchased. Multiplying the MWVI by the price which is paid for the wheat will assist the buyer to determine the real milling cost of the wheat he has bought.



# Technical and Laboratory Services

**I**n 1990, the California Wheat Commission built a wheat quality laboratory. Today, this 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 laboratory and its staff have gained respect in the domestic and international marketplace as a premiere source of technical information and assistance. The California Wheat Commission is available to work for customers in the area of quality assurance, problem solving, quality control training, and research.



## **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.
- Upon agreement by the seller and the buyer, the Commission will conduct *vessel surveys* either on-site or through quality testing in its laboratory.
- 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 four classes of wheat: Hard Red Winter (HRW), Desert Durum®, Hard White, and Soft White Wheat. 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, and cookies. Tortillas and middle-eastern flat breads are also fast-becoming an area of interest.

## **Private and Public Breeding Programs**

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.

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