



# California Crop Quality Report

**2020 Hard Red Wheat / Hard White Wheat**

# California Wheat

California's wheat growing regions are defined by climate, value of alternative crops, and distinct differences in variety selection.

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.

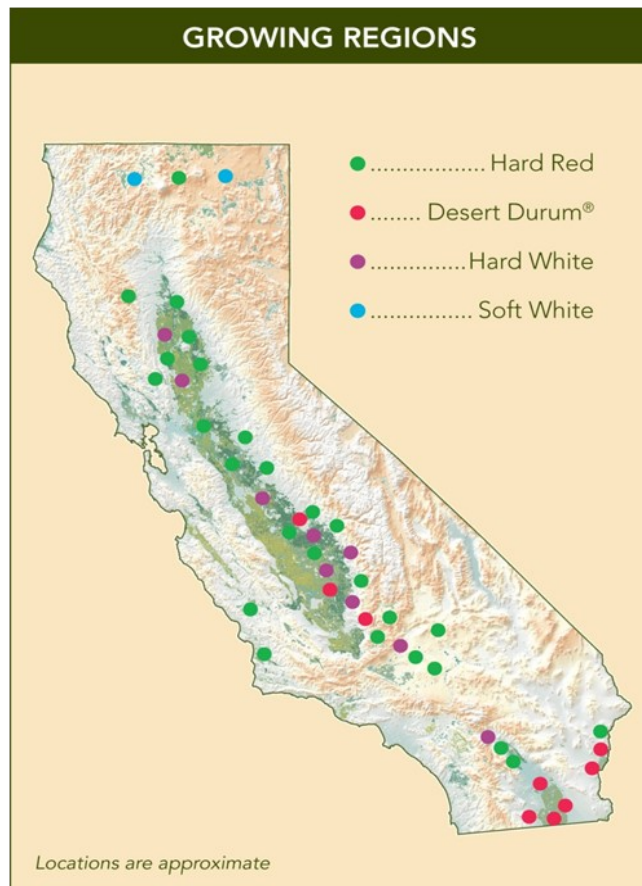
## 2020 Crop Conditions

Most of California had below average rainfall in 2019-20, with the exception of the southern growing regions of the San Joaquin Valley. In the northern San Joaquin Valley and the Sacramento Valley annual rainfall was between 60% and 80% of normal, and both areas experienced an unusually long 6-week period without rainfall between the end of January and early March. Rainfall in the remainder of the spring was at or above average in most locations. Yields in the San Joaquin Valley were normal to above-average in many locations, while yields of rainfed crops in the Sacramento Valley were generally lower than average. Overall, disease incidence was below average for the season. However, stripe rust was observed on wheat and triticale varieties in the central and southern parts of the San Joaquin Valley. This included infection observed on varieties previously classified as resistant to stripe rust.

## Data for 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. Averages are reported for each growing region: Sacramento and San Joaquin Valleys.

**Crop Quality values cannot be used to compare varieties since they are harvested from different fields. Weather, soil, and cultural practices can influence the quality of all varieties between years and of particular lots of any one variety.**



<b>PRODUCTION HISTORY*</b>		
<b>YEAR</b>	<b>METRIC TONS</b> (1,000 MT's)	<b>SHORT TONS</b> (1,000 ST's)
2020	208	230
2019	239	263
2018	231	255
2017	270	299
2016	361	398
2015	336	370
2014	392	432

**\*All common wheat (excluding Durum).**

## HARD RED WHEAT GRADE HARVEST DATA

	2020	2019	2018	2017	2016
Test Weight: lb/bu	62.9	62.5	62.6	62.8	63.8
kg/hl	82.7	82.2	82.3	82.6	83.8
Moisture (%)	9.2	8.6	9.6	8.7	8.5
Damaged (%)	0.0	0.1	0.1	0.1	0.2
Foreign Material* (%)	0.1	0.1	0.1	0.1	0.5
Shrunken/Broken* (%)	0.5	0.7	0.8	0.8	0.8
Total Defects (%)	0.6	0.8	1.0	1.0	1.2
Dockage* (%)	0.9	1.1	1.1	1.0	1.2
Total Screenings (%)	1.5	1.9	2.0	1.9	2.5
Net Wheat (%)	89.5	89.7	88.6	88.5	89.2
CTW (%)	106.5	106.8	105.5	105.3	106.2
MWVI (%)	93.9	93.6	94.8	94.9	94.2

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

### HARD RED WHEAT

**Cal Rojo (HRS)** is a widely adapted, high yielding variety for both the San Joaquin and Sacramento Valleys. It is mid-early maturing and receives good scores for grain, milling, and baking quality.

**Summit 515 (HRS)** 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.

**WB-9229 (HRS)** 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.

**WB-Joaquin Oro (HRS)** 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.

**SY-Sienna (HRS)** is a Hard Red Spring Wheat developed by Syngenta Seeds, Inc. It has a high yield potential, good protein and test weight. It is a semi-dwarf, plant height similar to Redwing expressing very good straw strength, medium to late maturity, awed, white chaff and strap head type. It has a good general foliar disease package which includes resistance reaction to current stripe rust races. SY Sienna has performed well in Syngenta's trials and in the Variety Testing Program for several years.

**AP-Octane (HRS)** is AP Octane is a hard red spring wheat bred and developed by Syngenta Participation AG. AP Octane was selected for height, maturity, appearance, kernel color, kernel soundness, disease reaction, and end use quality. AP Octane is primarily adapted to Sacramento and San Joaquin Valleys. Stripe Rust: AP Octane has shown above average tolerance to current races of stripe rust.

**WB-9699 (HRS)** is a hard red spring variety adapted to the Southern San Joaquin and Sacramento Valley with excellent grain yield potential and stripe rust resistance. It has excellent standability. It has been found to have adequate milling and baking quality aspects and end use quality according to wheat quality lab testing done previously.

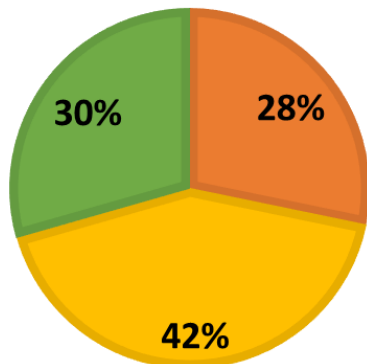
# KERNEL QUALITY DATA

State and Region	Protein (12% moisture) %	Ash %	Moisture %	Falling Number SEC	Test Weight lbs/bu Kg/hL	SKCS Hardness Score	1000 Kernel Weight g	Kernel Size Distribution			Micro Sed CC	
								Large %	Medium %	Small %		
<b>HARD RED WINTER WHEAT</b>												
Sacramento Valley	11.8	1.46	9.0	340	64.0 84.0	65.3	42.8	88	12	0	50	
San Joaquin Valley	12.4	1.56	7.5	355	63.3 83.2	63.4	43.1	89	11	0	48	
State Avg. 2020	12.1	1.51	8.3	348	63.7 83.6	64.4	43.0	88	12	0	49	

<b>HARD WHITE WHEAT</b>												
Sacramento Valley	11.0	1.56	8.9	354	64.7 84.9	74.8	40.0	86	14	0	49	
State Avg. 2020	11.0	1.56	8.9	354	64.7 84.9	74.8	40.0	86	14	0	49	

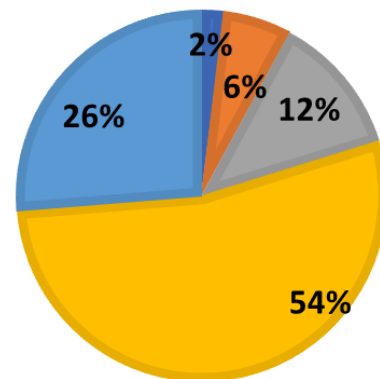
PROTEIN (12% MOISTURE)  
STATE DISTRIBUTION

■ >12.5% ■ 11.0-12.4% ■ <10.9%



TEST WEIGHT (Lbs/bu)  
STATE DISTRIBUTION

■ <58 ■ 58-59.9 ■ 60-61.9 ■ 62-63.9 ■ >64



# FLOUR QUALITY DATA

State and Region	Lab Mill Yield %	Protein (14% moisture) %	Ash %	Gluten Index	Wet Gluten %	SRC GPI	Water/ 50% Sucrose	5% Lactic Acid/ 5% Na <sub>2</sub> CO <sub>3</sub>	Falling Number SEC
<b>HARD RED WINTER WHEAT</b>									
Sacramento Valley	68.5	10.7	0.44	97.0	26.7	0.68	63/104	126/79	380
San Joaquin Valley	69.0	11.0	0.46	94.0	29.0	0.68	64/104	125/80	411
State Avg. 2020	68.8	10.9	0.45	95.5	27.9	0.68	64/104	126/80	396

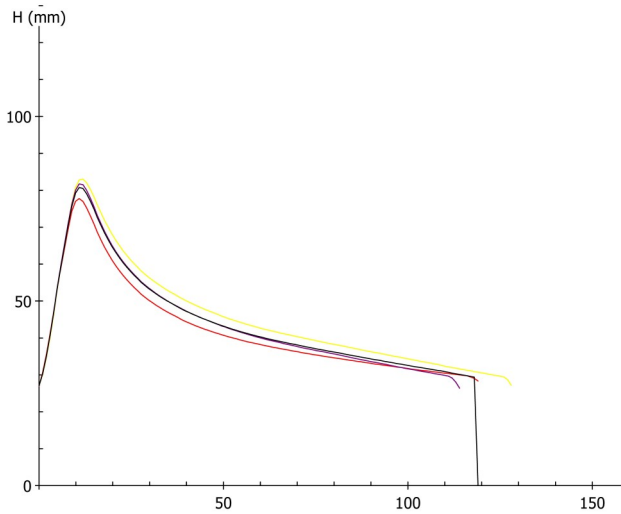
<b>HARD WHITE WHEAT</b>									
Sacramento Valley	67.7	10.5	0.47	93.0	29.0	0.62	65/101	117/88	407
State Avg. 2020	67.7	10.5	0.47	93.0	29.0	0.62	65/101	117/88	407

# PHYSICAL DOUGH QUALITY

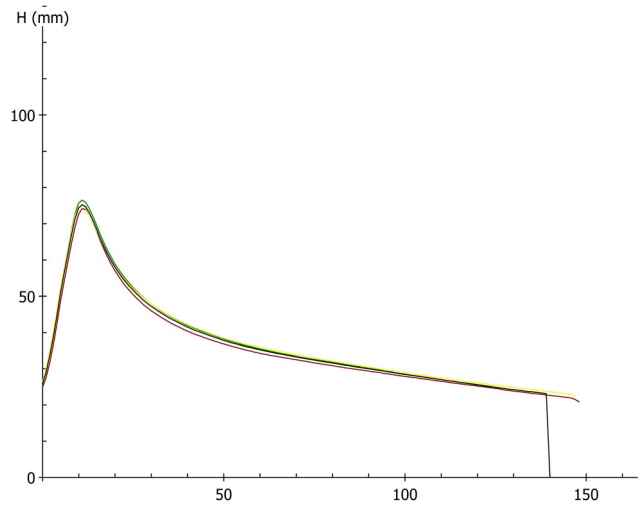
State and Region	Farinograph Development				Alveograph			W Joules X 10 <sup>-4</sup>
	Absorption %	Time MIN	Stability MIN	MTI B.U.	P MM	L MM	P/L Ratio	
<b>HARD RED WINTER WHEAT</b>								
Sacramento Valley	59.1	5.4	11.7	26	87	118	0.77	333
San Joaquin Valley	60.2	5.2	11.3	25	93	116	0.86	342
State Avg. 2020	59.7	5.3	11.5	25	90	117	0.82	338
<b>HARD WHITE WHEAT</b>								
Sacramento Valley	61.3	5.1	9.1	33	84	141	0.61	333
State Avg. 2020	61.3	5.1	9.1	33	84	141	0.61	333

## 2020 AVERAGE ALVEOGRAM

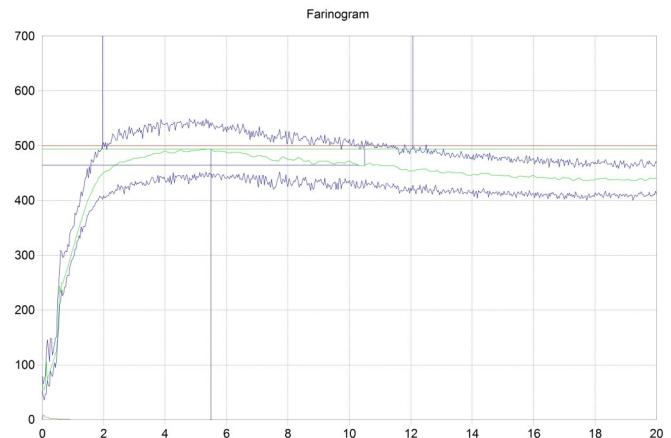
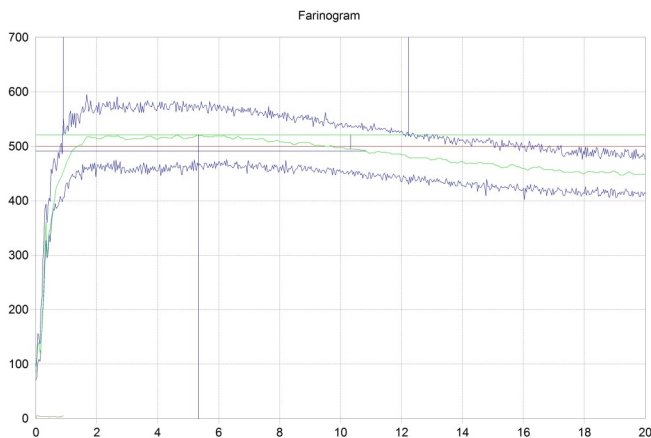
### HARD RED WINTER



### HARD WHITE WHEAT



## 2020 AVERAGE FARINOGRAM

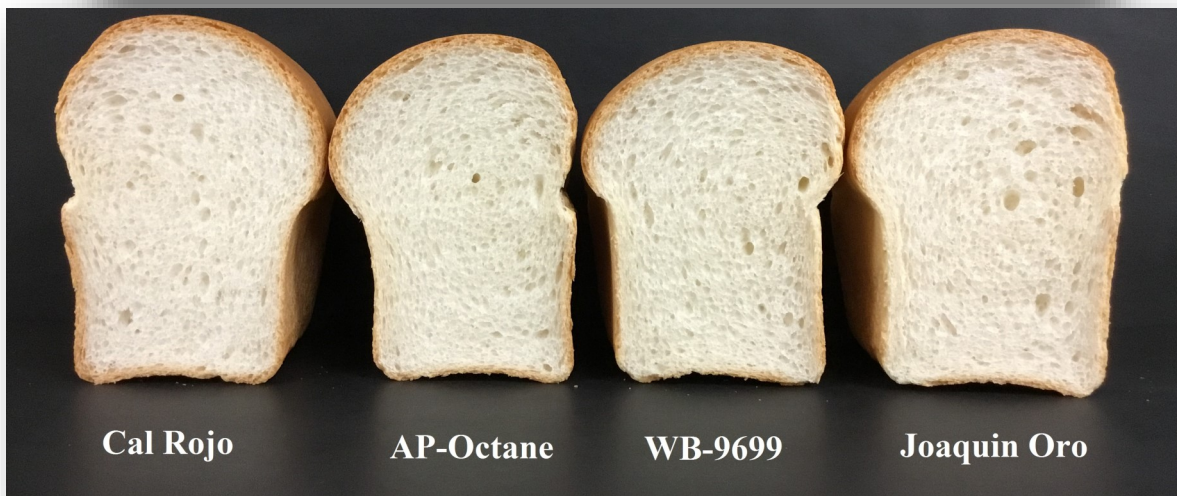




# BAKING QUALITY DATA

State and Region	Baking Absorption %	Loaf Volume CC	Dough Handling (1-10)	Crumb Color (1-10)	Crumb Grain (1-10)	Crumb Texture (1-10)	Bread Symmetry (1-10)
<b>HARD RED WINTER WHEAT</b>							
Sacramento Valley	60.1	948	7.0	8.3	7.0	7.0	8.1
San Joaquin Valley	61.2	940	7.1	8.2	6.8	6.9	7.9
State Avg. 2020	60.7	944	7.1	8.3	6.9	7.0	8.0
<b>HARD WHITE WHEAT</b>							
Sacramento Valley	63.0	913	6.3	7.3	6.7	6.7	7.7
State Avg. 2020	63.0	913	6.3	7.3	6.7	6.7	7.7

## BREAD PHOTOS



## 2020 HARD RED VARIETY SPECIFIC INFORMATION

WHEAT	Summit 515		WB-9229		SY-Sienna	
	Sacramento Valley	San Joaquin Valley	Sacramento Valley	San Joaquin Valley	Sacramento Valley	San Joaquin Valley
Protein (12% MB)	12.0	13.0	12.1	12.2	13.0	11.6
Ash (12% MB)	1.42	1.58	1.48	1.55	1.57	1.61
Moisture (%)	8.7	7.5	9.0	7.7	8.9	7.1
Falling Number (sec)	317	344	354	371	322	377
Micro Sedimentation (cc)	55	50	56	51	62	41
PPO (abs @475nm)	1.40	1.35	1.38	1.63	1.12	1.32
<b>Test Weight</b>						
lb/bu	64.0	62.6	64.6	65.8	64.3	65.0
kg/hl	84.0	82.2	84.9	86.4	84.5	85.0
SKCS Hardness Score	65	64	70	72	60	55
1000 Kernel Weight (g)	43.2	42.3	41.1	40.3	52.8	47.0
<b>Kernel Size Distribution</b>						
Large/Medium/Small	90/10/0	87/13/0	87/13/0	85/15/0	98/2/0	95/5/0
<b>FLOUR</b>						
Lab Mill Yield (%)	68.0	68.7	68.2	69.0	69.4	69.1
Protein (14% MB)	10.8	11.3	10.9	10.4	11.6	10.7
Ash (14% MB)	0.42	0.47	0.46	0.45	0.40	0.47
Gluten Index	94.0	87.3	97.7	99.4	95.0	99.0
Wet Gluten (14% MB)	28.4	31.0	27.5	25.4	33.2	26.0
SRC*: GPI	0.68	0.67	0.69	0.67	0.79	0.70
Water/ 50% Sucrose	63/106	64/105	65/108	66/110	61/100	61/98
5%LacticAcid/5%NA <sub>2</sub> CO <sub>3</sub>	126/79	124/79	131/83	130/85	137/75	123/76
<b>ALVEOGRAPH</b>						
P (mm)	81	82	94	108	88	95
L (mm)	133	140	126	107	137	96
P/L ratio	0.62	0.59	0.76	1.08	0.64	1.00
W (10 <sup>-4</sup> Joules)	328	342	375	375	390	322
<b>MIXOGRAPH</b>						
Absorption (%)	56.0	61.0	61.0	62.2	60.0	58.3
Peak Time (min)	3.0	2.9	3.8	3.7	3.2	4.6
Work (%Torque*min)	117.0	116.0	145.0	139.0	134.0	168.0
Peak Height (mu)	48	50	46	46	52	52
M.T. Score (1-8)	3.0	3.0	3.6	3.7	3.0	4.0
<b>FARINOGRAPH</b>						
Absorption (%)	60.0	61.0	61.0	62.2	60.0	58.3
Peak Time (min)	4.7	5.4	6.0	4.2	6.1	5.5
Stability (min)	9.2	9.1	13.4	11.9	9.4	11.5
M.T.I.	28.6	28.7	25.0	20.0	31.0	27.0
<b>BAKING RESULTS</b>						
Baking Absorption (%)	60.5	61.1	61.3	62.3	60.3	60.0
Bread Volume (cc)	932	941	964	920	988	965
Crumb Grain & Texture	5.5	6.5	8.0	7.5	8.0	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; Test weight conversion from lb/bu to kg/hl according to FGIS PN-97-5,  $\{(1.292 \times (\text{lb/bu}) + 1.419)\}$ .

## 2020 HARD RED VARIETY SPECIFIC INFORMATION

WHEAT	Cal Rojo		AP-Octane	WB-9699		Joaquin Oro
	Sacramento Valley	San Joaquin Valley	Sacramento Valley	Sacramento Valley	San Joaquin Valley	San Joaquin Valley
Protein (12% MB)	10.5	11.0	11.4	12.7	11.9	11.6
Ash (12% MB)	1.53	1.59	1.44	1.45	1.40	1.48
Moisture (%)	9.5	8.7	8.7	9.1	6.1	8.3
Falling Number (sec)	354	386	331	393	418	354
Micro Sedimentation (cc)	34	33	39	44	43	47
PPO (abs @475nm)	1.47	1.34	1.53	-	1.36	1.60
<b>Test Weight</b>						
lb/bu	62.0	62.1	66.0	64.5	64.5	64.5
kg/hl	81.5	82.0	86.4	84.7	84.7	84.7
SKCS Hardness Score	57	55	59	74	58	66
1000 Kernel Weight (g)	40.6	42.2	49.0	39.0	50.5	44.0
<b>Kernel Size Distribution</b>						
Large/Medium/Small	80/20/0	82/18/0	97/3/0	83/17/0	97/3/0	93/7/0
<b>FLOUR</b>						
Lab Mill Yield (%)	69.0	67.7	70.1	69.0	70.0	69.0
Protein (14% MB)	9.5	9.7	10.5	11.1	11.0	11.0
Ash (14% MB)	0.47	0.42	0.41	0.44	0.45	0.44
Gluten Index	99.7	99.5	98.0	97.4	94.0	96.0
Wet Gluten (14% MB)	20.6	21.0	25.0	27.3	30.3	30.3
SRC*: GPI	0.64	0.77	0.66	0.69	0.66	0.65
Water/ 50% Sucrose	56/98	57/97	61/102	66/105	66/100	66/106
5%LacticAcid/5%NA <sub>2</sub> CO <sub>3</sub>	110/73	129/71	117/76	131/85	119/80	123/82
<b>ALVEOGRAPH</b>						
P (mm)	73	65	80	113	106	103
L (mm)	94	87	121	77	81	117
P/L ratio	0.79	0.75	0.66	1.46	1.30	0.93
W (10 <sup>-4</sup> Joules)	240	216	309	330	296	392
<b>MIXOGRAPH</b>						
Absorption (%)	55.0	54.0	57.1	60.3	60.0	62.2
Peak Time (min)	4.0	4.9	4.1	4.1	4.0	3.9
Work (%Torque*min)	151.0	187.8	157.0	174.0	165.0	158.0
Peak Height (mu)	44	43	48	57	52	49
M.T. Score (1-8)	4.0	5.0	4.0	4.0	4.0	3.3
<b>FARINOGRAPH</b>						
Absorption (%)	55.0	53.7	57.1	60.3	59.8	62.2
Peak Time (min)	3.4	2.5	6.2	8.1	7.1	5.7
Stability (min)	10.7	12.0	9.4	17.4	17.9	13.3
M.T.I.	24.2	15.0	41.0	20.0	15.7	21.0
<b>BAKING RESULTS</b>						
Baking Absorption (%)	56.2	55.0	59.0	62.5	61.2	63.7
Bread Volume (cc)	900	920	980	990	952	925
Crumb Grain & Texture	7.0	6.5	8.0	8.5	7.5	7.0

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; Test weight conversion from lb/bu to kg/hl according to FGIS PN-97-5, {(1.292 x (lb/bu) + 1.419)}.



## 2020 HARD WHITE VARIETY SPECIFIC INFORMATION

		<b>Patwin 515 HP</b>
		<b>Sacramento Valley</b>
<b>WHEAT</b>		
Protein (12% MB)		11.0
Ash (14% MB)		1.57
Moisture (%)		8.9
Falling Number (sec)		355
Micro Sedimentation (cc)		49
PPO (abs @475nm)		1.28
<b>Test Weight</b>		
lb/bu		65.0
kg/hl		85.0
SKCS Hardness Score		75
1000 Kernel Weight (g)		40.0
<b>Kernel Size Distribution</b>		
Large/Medium/Small		85/15/0
<b>FLOUR</b>		
Lab Mill Yield (%)		68.0
Protein (14% MB)		10.6
Ash (14% MB)		0.48
Gluten Index		93.0
Wet Gluten (14% MB)		29.0
SRC*: GPI		0.62
Water/ 50% Sucrose		65/101
5% Lactic Acid/5% NA <sub>2</sub> CO <sub>3</sub>		117/88
<b>ALVEOGRAPH</b>		
P (mm)		84
L (mm)		141
P/L ratio		0.61
W (10 <sup>-4</sup> Joules)		333
<b>MIXOGRAPH</b>		
Absorption (%)		61.3
Peak Time (min)		3.3
Work (% Torque*min)		127.0
Peak Height (mu)		50
M.T. Score (1-8)		3
<b>FARINOGRAPH</b>		
Absorption (%)		61.3
Peak Time (min)		5.1
Stability (min)		9.1
M.T.I.		33.0
<b>BAKING RESULTS</b>		
Baking Absorption (%)		62.7
Bread Volume (cc)		913
Crumb Grain & Texture		7

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: AACC Method 10-10B; Test weight conversion from lb/bu to kg/hl according to FGIS PN-97-5,  $\{(1.292 \times (\text{lb/bu}) + 1.419)\}$ .

**HARD WHITE WHEAT**

**Patwin 515 HP (HWW)** is a Hard White Spring wheat variety created by the introduction of the high grain protein content gene into Patwin-515. Patwin-515HP has similar height and heading as Patwin-515 and Blanca Grande-515, slightly better yield, and significantly higher grain protein content. Patwin-515HP has outstanding breadmaking quality and is immune to stripe rust and tolerant to BYDV and septoria tritici blotch. It is the recommended for irrigated fields in the Sacramento, San Joaquin and Imperial Valleys.



## Technical and Laboratory Services



*CWC Lab Assistant and Baker, Alejandra Andrade.*

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. The lab order test form 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 Manager Teng Vang*

*Photo credit: Matt Salvo, California Farm Bureau Federation*



**California Wheat Commission**  
1240 Commerce Avenue, Suite A  
Woodland, CA 95776-5923

**Phone:** 530.661.1292  
**Fax:** 530.661.1332  
**Web:** [californiawheat.org](http://californiawheat.org)

