



## Table of Contents

	PAGE
• TAB 1 - OPENING BUSINESS	
○ Agenda	1
○ Roll Call Form	3
○ Minutes of December 7, 2017 Meeting	4
• TAB 2 – COMMISSIONER REPORTS	
○ Commissioner Roster	10
• TAB 3- UC RESEARCH/ UC TESTING REPORTS	
○ Jorge Dubcovsky Report	11
○ Mark Lundy Report	23
• TAB 4 - ADMINISTRATIVE ISSUES	
○ Referendum Results	33
○ Referendum History	34
○ Handler Audit Policy	35
○ Audit Services Proposal	38
○ Executive Director Report	48
○ Strategic Plan	50
○ Lab Manager Report	57
• TAB 5 - FY 17/18 FINANCIAL REPORTS	
○ FY 17/18 YTD Income/Expense Report as of 3/31/18	58
○ Cash Flow Statement as of 3/31/18	60
○ Assessment Collection History	61
○ Lab Services for Research (Non-billed) FY 17/18	62
○ CDs and Money Market Accounts with Rates	63
○ Vacation Accrual Report	64
• TAB 6 - FY 18/19 BUDGET PROPOSAL	
○ Research Funding Approved 4/24/17	65
○ Assessment Projections	66
○ Assessment Increase Option	67
○ FY 18/19 Budget Proposal	68
○ FY 18/19 Budget Detail	70
○ CWC Reserve Policy	75
• TAB 7	
○ California Historical Wheat Production	76
○ California Historical Wheat Harvested/Non-Harvested Percentages	77



## Board Meeting Notice

*Sent and posted March 30, 2018*

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### Via Teleconference Call

**DATE:** Wednesday, April 18, 2018  
**TIME:** 10:00 A.M. – 3:00 P.M.  
**ACCESS NUMBER:** +1 408 638 0968 (US Toll) or +1 646 558 8656 (US Toll)  
**PASSCODE/ Meeting ID:** 466 870 1284  
**Or Join with the link:** <https://zoom.us/j/4668701284>  
**LOCATION:** Yolo County Farm Bureau  
69 W Kentucky Ave.  
Woodland, CA 95695

*Board Members wishing to participate in the meeting VIA TELECONFERENCE CALL must notify Crystal Sandoval via email to ([csandoval@californiawheat.org](mailto:csandoval@californiawheat.org)) or by Fax to (530) 661-1332 at least 24 hours prior to the listed meeting. **Failure to do so will disqualify you from participation.***

## AGENDA

- 10:00 a.m. I. Call to Order  
A. Roll Call/Establish Quorum
- 10:05 a.m. II. Introduction of Guests
- 10:10 a.m. III. Public Comment
- 10:15 a.m. IV. Approval of Agenda
- 10:20 a.m. V. Approval of Previous Board Meeting Minutes  
A. December 7, 2017
- 10:25 a.m. VI. Commissioner Reports
- 10:55 a.m. VII. UC Research and UC Testing Report  
A. Jorge Dubcovsky  
B. Mark Lundy
- 11:35 a.m. VIII. Administrative Issues / Discussion Items  
A. 2018 Elections and Appointments / Nominating Committee  
B. Handler Audits Recommendation  
C. Confirmation of Outside Auditor  
D. Staff Reports
- 12:05 p.m. ADJOURN FOR LUNCH

- 1:00 p.m. IX. FY 17/18 Financial Reports
- A. FY 17/18 YTD Income/Expense Report as of March 31, 2018
  - B. Cash Flow Statement through March 31, 2018
  - C. Assessment Collection History
  - D. Lab Income including value of non-billed services
  - E. Vacation Accrual

- 1:30 p.m. X. FY 18/19 Budget Proposal
- A. Research Funding Proposal
  - B. FY 18/19 Budget Proposal Options

Closed Session (If Needed)

Closed session, if necessary, pursuant to California Government Code 11126(a) regarding the appointment, employment, evaluation of performance, or dismissal of an employee. Closed Session, if necessary, regarding pending litigation pursuant to Government Code Section 11126(e).

Return to open session and announce action taken in closed session, if any.

- 2:10 p.m. XI. Approve FY 18/19 Assessment Rate

- 2:15 p.m. XII. Approve FY 18/19 Budget

- 2:20 p.m. XIII. CAWG Report

- 2:40 p.m. XIV. Public Comments

XV. Closed Session

Closed session, if necessary, pursuant to California Government Code 11126(a) regarding the appointment, employment, evaluation of performance, or dismissal of an employee. Closed Session, if necessary, regarding pending litigation pursuant to Government Code Section 11126(e).

Return to open session and announce action taken in closed session, if any.

- 2:50 p.m. XVI. Future Meetings

- A. Set Next Board Meeting Date Thursday, August 30, 2018 - Proposed

- B. UC Davis Field Day - May 17, 2018

- 3:00 p.m. ADJOURN MEETING

*All agenda items are subject to discussion and possible action.* All interested parties are invited to attend the meeting. Time will be allowed for members of the public to make comments on each agenda item (up to 2 minutes). To make a request for more information, or to make a request regarding a disability related modification or accommodations for the meeting, please contact Crystal Sandoval at 530-661-1292, or 1240 Commerce Ave., Ste. A, Woodland, CA 95776, or via email at [csandoval@californiawheat.org](mailto:csandoval@californiawheat.org). Requests for disability related modification or accommodation for the meeting should be made at least 48 hours prior to the meeting time. This notice and agenda is available on the Internet at [www.californiawheat.org](http://www.californiawheat.org).

ROLL CALL

DISTRICT	1:	Commissioner: Alternate:	<u>John Walker</u> <u>Bryce Crawford</u>
DISTRICT	2:	Commissioner: Alternate:	<u>Bill Cruickshank</u> <u>Larry Hunn</u>
DISTRICT	3:	Commissioner: Alternate:	
DISTRICT	4:	Commissioner: Alternate:	<u>Dennis Pelucca</u> <u>Augie Scoto</u>
DISTRICT	5:	Commissioner: Alternate:	<u>Nathanael Siemens</u>
DISTRICT	6:	Commissioner: Alternate:	<u>Scott Schmidt</u>
DISTRICT	7:	Commissioner: Alternate:	<u>Mike Carlisle</u> <u>Jordan Parsons</u>
DISTRICT	8:	Commissioner: Alternate:	<u>Jim Parsons</u> <u>Kirk Elholm</u>
DISTRICT	9:	Commissioner: Alternate:	<u>Ron Rubin</u> <u>Roy Motter</u>
HANDLER	1:	Commissioner: Alternate:	<u>Mark Mezger</u>
HANDLER	2:	Commissioner: Alternate:	<u>Michael Edgar</u>
AT LARGE	1:	Commissioner: Alternate:	<u>Lee Jackson</u>
PUBLIC:		Commissioner: Alternate:	<u>Steve Windh</u> <u>Damon Sidles</u>



Approved by the Board \_\_\_\_\_

**CALIFORNIA WHEAT COMMISSION**  
**Ontario Airport Hotel & Conference Center**  
**700 N Haven Ave.**  
**Ontario, CA 91764**

**MINUTES OF December 7, 2017**

Opening Business

The meeting was held at the Ontario Airport Hotel & Conference Center in Ontario CA.

Call to Order

Chairman Steve Windh called the meeting of the California Wheat Commission to order at 9:36 AM on Thursday, December 7, 2017, in Ontario, California.

Roll Call

Members present for all or part of the meeting included:

District 2:	Bill Cruickshank
District 4:	Dennis Pelucca
District 5:	Nathanael Siemens
District 6:	Scott Schmidt
District 7:	Mike Carlisle
District 8:	Jim Parsons Kirk Elholm (Alternate)
District 9:	Ron Rubin Roy Motter (Alternate)
Handler 2:	Michael Edgar (Alternate)
At Large 1:	Lee Jackson Jim Parsons (Alternate)
Public:	Steve Windh Damon Sidles

A quorum was present. All voting members attending this meeting were present for each motion.

Introduction of Guests

Guests present for all or part of the meeting included: Kacie Fritz, CDFA Marketing Branch; Jorge Dubcovsky, UC Davis; Nelson Selmer and Glen Weaver, Ardent Mills; Tim Aschbrenner, Grain Craft; Nick Matteis, Executive Director, California Association of Wheat Growers.

## Approval of Agenda

- #1 MOTION WAS MADE BY BILL CRUICKSHANK AND SECONDED BY RON RUBIN TO APPROVE THE AGENDA. MOTION CARRIED UNANIMOUSLY WITH NO ABSTENTIONS.**

## Approval of Previous Meeting Minutes

- #2 MOTION WAS MADE BY RON RUBIN AND SECONDED BY MIKE CASRLISLE TO APPROVE THE MINUTES OF THE AUGUST 30, 2017 COMMISSION MEETING. MOTION CARRIED UNANIMOUSLY WITH NO ABSTENTIONS.**
- #3 MOTION WAS MADE BY BILL CRUICKSHANK AND SECONDED BY JIM PARSONS TO ACCEPT COMMITTEE MEETING MINUTES.  
Research Committee – August 17, 2017  
Audit Committee – August 25, 2017  
MOTION CARRIED UNANIMOUSLY WITH NO ABSTENTIONS.**

## Commissioner Reports

Dennis Pelucca – Pelucca reported that planting in his district is mixed of 1404 and HRW. There have been some drought concerns. Also planted 40 acres of DD.

Nathanael Siemens – Holding off on planting. Had issues finding Patwin 515HP, more likely going with Patron. Also, currently working on grain campaign and putting together a field day in spring. Will send an email with information.

Scott Schmidt – Fresno county, planted a little of durum, has a better cash flow. Get paid thirty days after harvest. Until price changes, we will see little wheat.

Jim Parsons – In Tulare county informed that most he has seen planted will be chopped for silage. Harvest 4,000 acres in Kings County, all dryland. Water is the main problem. Parsons also mentioned that NAWG is sponsoring a five to six-minute documentary on wheat. The cost is \$35,000 and is asking the states for donations.

Ron Rubin – stated he is planting wheat, hoping for more acres than last year. Last year was under 20,000 acres. Rubin mentioned that there is limited marketability domestically and the mills have changed their quality that they would accept. He added that there would have to be a world shortage for CA to plant more wheat.

Mike Carlisle – Agrees with Jim. Dryland going in dry, a little bit of wheat planted going in for green chop.

Roy Motter – Planting more wheat than last year but not much with these prices.

Bill Cruickshank – Sacramento Valley, growers planted around the 15<sup>th</sup> of November, it's in pretty good shape. Acreage is similar to the last couple of years, predominantly used for the rotational crop.

Kirk Elholm – reported that he has mostly seen in Kern County and not much is going for the green chop. Didn't see any wheat planted in Los Angeles County where usually is grown. Elholm added that the west side, the dryland issue is probably nonexistent until they have more rain. Lastly, he added that until the water issue changes there will not be much wheat planted.

Michael Edgar – Reported forage seed sales in CA are ahead from last year, triticale and continues to grow.

Damon Sidles – Didn't have much to report. Sidles added that he was looking forward to seeing what the other milling companies presenting had to say.

Tim Aschbrenner – from grain craft said that they have a mill in LA that uses CA red and white wheat. They are interested in quality and end users, we have been participating in the collaborator program.

Steve Windh – reported on year-end accomplishments of staff and the commission, what challenges we have seen. We continue to show good continuity accomplishing our charter mission of research for CA wheat trying to expand markets in an inconvenient situation. Windh added we had success with South America led by Claudia Carter. This meeting is focusing and that is why we moved it to an Ontario location was to get a better insight from the user community of CA wheat, specifically the grain millers. This came up in the collaborator meeting where good, inspired discussion took place. Windh added that most wheat grown in CA, is grown in irrigated land and has two predominant purposes, one is forage market and one is the grain market. Windh also mentioned that everyone is aware that wheat is not a high margin crop, that it's a rotational crop that carries a significantly lower value from primary crops. Therefore, the forage option seems more attractive. Windh also talked about the problem CA us having with dual grain which can be used for both forage and grain. Unfortunately, it has poor milling characteristics and overall CA crop in being put in jeopardy. The commission task is to move forward with an IP program.

#### Staff Reports

Claudia Carter reported on her activities from September to December. Carter also informed the board that some handlers had contacted her to let her know that some mills were rejecting CA wheat. Carter wanted to learn and understand the issue and scheduled visits with mills located in LA area. After her visits, Carter learned that mills have seen a poor-quality wheat in the last few years. The two major problems that the mills reported were a decline in instability which relates to dough strength. The second issue was kernels were shrunken and broken, compared to the big plump kernels that mills were used to in the 1990's. Carter brought this issue to the collaborator program. Carter also added that according to the wheat variety survey we learned that 25% of the wheat grown in the state was WB Patron, at this point, there are so many speculations. Lastly, Carter added that she accompanied the Ecuadorian mill visited San Joaquin Valley during their visit to California. Possibly interested in purchasing IP wheat.

Isabel Rivera informed the board that the commission is up for referendum in 2018. A newsletter will be sent out by Carter at the end of December. Rivera also added that CDFA will send out ballots in mid-January 2018 and ballot deadline will be in the middle of February, not yet confirmed by CDFA. Rivera also reported that roof coating was completed total amount of \$9,046.59, AC unit was replaced in the lab, and carpet stretching. Lastly, she informed the board that she will be working on the variety survey until she leaves for maternity leave.

#### USW Associates

Bill Cruickshank gave a summary of the fall meeting for USW. He reported that there was an extensive discussion on the farm bill and FMD funding. There were also conversations on food aid and how that benefits the industry. Another topic that was discussed was the freight imbalances for wheat versus other commodities. Lastly, he mentioned that next meeting will be in early February.

#### Market Development/Outreach

Tim Aschbrenner, director of flour quality from Grain Craft presented to the board and gave some background about his company. He mentioned that Grain Craft has fifteen mills across the country. They mill hard red winter, hard red spring, soft red wheat, and soft whites. Aschbrenner also added that they have a mill in California and they do mill some California wheat but not as they used to due to the reduction in acres and the quality issue as well. He also reiterated that what is important to them is the end-use quality. This issue is not only here in California but also in the mid-west. Aschbrenner added

that some breeders are developing varieties that are not good end-use quality and the big part of the quality picture comes from the environment. If the environment is not cooperating and the second portion comes from genetics. He also continued to say that some of the issues that have contributed have been touched upon on feed grown for forage varieties end up in the milling markets. Carter reported that Patron variety did not bake well. Aschbrenner also mentioned that in past California had good test weights, big kernels, and good absorption. This year we saw shrunken kernels and gluten quality dropped and we also saw some good samples. These show some inconsistency. Aschbrenner also mentioned that they are working with breeders to provide a list of preferred varieties to the wheat growers. Lastly, he mentioned another issue affecting general requirements for shipping and loaders regarding sanitary transport. There was an issue in South East with peanuts and grain craft had to do a major recall. There was some contamination in trucks and rail carts. Now they are testing for peanuts and tree nuts when they get a truckload of California wheat. There was a continued discussion on US wheat quality and forage varieties and how does a grower make their planting decisions.

Nelson Selmer, a plant manager from Ardent Mills San Bernardino gave a presentation about their history and their facilities. Selmer also mentioned that in May of 2014 Ardent Mills was formed, it was a combination of ConAgra, Horizon, and Cargill. Carter asked Selmer what protein content does Ardent look for their products. Selmer replied that tortilla takes low protein and depending on the quality of the wheat. Selmer also explained that harvest starts for winter wheat down in Texas and moves all the way down into Canada as climate warms up. He also added that teams are sent out during harvest to the fields to collect samples and sent to Ardent Mills lab in Denver. Samples are ground, sample baked for quality purposes. This procedure is not done with CA wheat. Selmer also said that they get a lot of different varieties of wheat that they blend and mill to give the customer what they need. Price, protein, and bake quality are the determining factor. Selmer also explained how all the machinery in the mill operates. Selmer also discussed the issue of contamination from peanut and all the measures that are taken to eliminate contamination.

### Wheat Breeding Update

Jorge Dubcovsky - reported that commercial seed is available for the new HWS white variety **Patwin-515HP** and the HRS variety **Yurok**. **Patwin-515HP** produces more protein (~5-8% increase) and a slightly better yield than Patwin-515 (Fig. 1-2), with excellent disease resistance and breadmaking quality. **Yurok** represents an improvement over our previous variety Lassik. It will be replaced in two years by the new release **UC-Central Red**, which has improved yield and breadmaking quality. For the Desert Durum<sup>®</sup> class, we recommend either our low cadmium variety **Miwok**, or the high yielding variety **Desert King** (or the higher protein version **Desert King-HP**).

*Also talked about resistant starch varieties exclusive releases:* These varieties have mutations in the *Starch Branching Enzyme* genes that result in a 10-fold increase in resistant starch. Limagrain has five patents in the USA covering this gene and is interested in an exclusive license of these varieties. They will pay royalties and research fees to the UCD Wheat Breeding program and they will respect the three years California Advantage in the production of seed. PVP applications have been submitted and the final negotiations are pending.

**UC-Lassik-RS (UC1836):** HRS UCD variety Lassik with five *sbellab* mutations.

**UC-Patwin-RS (UC1837):** HWS UCD variety Patwin-515HP with five *sbellab* mutations. **UC-Desert King-RS (UC1848):** Durum UCD variety Desert King with four *sbellab* mutations, two genes for increased yellow pigment, a gene for reduced cadmium and the high protein gene.

Carter asked Dubcovsky if Limagrain had a plan on how they are going to market during the three years of advantage they have in California. Dubcovsky mentioned that agreement is not final and would need to wait until next year when foundation seed is available. Next Dubcovsky talked about public releases, **UC-Desert Gold (UC1850)**. Same as Desert King with the gene for low cadmium and two genes for increased yellow pigment. It has the same yield as Desert King and



highly significant increase in yellow pigment (16%,  $P < 0.0001$ ) and no differences in grain size, test weight, grain protein content or semolina extraction compared with Desert King. **UC-Central Red** (UC1817). HRS with higher grain yield than Yurok, less lodging, and improved breadmaking quality. Its yield is similar to Cal Rojo, Redwing and Summit 515. It will replace Yurok in 2019.

### **Traditional breeding**

We made crosses among our best lines and newly introduced materials with valuable traits, we advance our F<sub>2</sub>-F<sub>6</sub> populations and tested hundreds of lines for yield in observation, preliminary, advanced and elite yield trials. The program has a strong pipeline of very high yielding materials.

### **Marker assisted selection**

*Markers for yield:* We have now a molecular marker for larger grains *gw-A2* (6% increase) and two markers for increased grain number *Elf<sup>m</sup>1* and QSn.s.ucd-7AL. We initiated introgression into our top varieties.

*Markers for quality:* For pasta wheat, we are introgression alleles for improved yellow pigment and color stability in pasta, increased gluten strength (*Glu-D1<sub>2+12</sub>*), higher grain protein content (*Gpc-B1*), and low cadmium (*Cdu1*) in our top yielding lines.

*Markers for disease resistance:* We continued the introgression of genes *Yr5*, *Yr15*, and *Yr36* for resistance to stripe rust in our top breeding lines. We mapped and published two new stripe rust and two stem rust resistance genes.

### **Publications and Grants**

The UCD wheat group published 11 research articles in wheat in 2017 in the top peer-reviewed scientific journals and renewed the USDA-IWYP grant for its second year \$3,000,000 (20 collaborators, led by UC Davis). Dr. Dubcovsky renewed its HHMI appointment for the next seven years, which will provide \$500,000 a year for basic research in wheat.

Mark Lundy – Mark Lundy was not present at the meeting. Windh mentioned to the board that report was included in the board book and that Mark Lundy had also included valuable information that should be read. Carter added that it addressed the issue of overhead charges that will most likely be approved. That is why the commission had agreed to make a two-year contract with UCD to avoid overhead charges for the next two years. There was an extensive discussion on what the commission has benefited from funding Dubcovsky program and what impact would UCD breeding program have if the commission stopped funding their research.

### Financial Report

Carter reported that the Commission has received 71% of assessment income and projects that it will not reach the budgeted amount of \$700,000. Carter projects that the assessment income collection will be \$600,000. Crop Quality income was also higher than projected due to more samples being processed. Carter also added that in the beginning of the FY she forgot to add expenses for the referendum which would include printing cost and postage for a newsletter letting growers know of the upcoming referendum and what the commission has accomplished in the last five years. Also, the referendum account would include reimbursing CDFA for mailing out ballots which would include printing, processing, and postage. Carter lastly said that publications account would be overbudgeted. Expenses, in general, are in line with expectations at this point.

**#4 MOTION WAS MADE BY RON RUBIN AND SECONDED BY BILL CRUICKSHANK TO ACCEPT THE FINANCIAL STATEMENTS FY17/18 YTD INCOME/EXPENSE REPORT AS PRESENTED AND FOR STAFF STAY ON PLAN FOR THE REST OF THIS FY. MOTION CARRIED UNANIMOUSLY WITH NO ABSTENTIONS.**

Isabel Rivera reported on the Cash Flow Statement. Net cash decrease of (28,609.36) as of 11/30/17 and Bank accounts have a combined total of \$838,119.34 as of 11/30/17.

### CAWG Report

Nick Matteis, Executive Director of CAWG reported on several legislative issues. He also distributed a handout at the meeting. Matteis reported on prop 65 Glyphosate Labeling Requirements issue, he added it will be the law on July 7, 2018. Matteis also reported on state updates, 10 bills that Matteis focused on:

Clean Water Fund/Tax on Drinking Water – SB 623 (Morning) – this bill would establish the Safe and Affordable Drinking Water Fund and ensure that monies in the fund to provide emergency, interim and long-term assistance to community water systems where wells exceed the maximum contaminant levels for arsenic, hexavalent chromium, lead, manganese, MTBE, nitrate, and perchlorate.

AB 747 (Caballero) This bill was amended late last week authorizing Monterey County ordinance to impose a tax or assessment on the commercial application of fertilizers containing nitrogen within the county.

Long-Term Conservation – AB 1668 and SB 606 - The long-term water conservation legislation was a topic of debate and discussion all year long.

Labor AB 5 (Gonzalez Fletcher) this bill would create the opportunity to Work Act and would require an employer with 10 or more employees to offer additional hours of work to an existing nonexempt employee before hiring an additional employee or subcontractor, would require an employer to post a notice of employee rights and would require the employer to maintain certain documentation.

AB 1576 (Levine) This bill would amend the Gender Tax Repeal Act of 1995.

SB 772 (Leyva) – This bill would exempt any occupational safety and health standard and order from the standardized regulatory impact analysis requirement.

SB 562 (Lara) – This bill the Healthy California Act provides comprehensive universal single-payer health care coverage.

Tax Reform – SB 726 (Wiener) – Reinstates the estate tax.

Environmental Protection SB 49 (de Leon) – This bill would authorize a person acting in the public interest to bring an action to enforce certain standards and requirements implementing specified air, water, endangered species, and labor laws if specified conditions are satisfied.

SB 100 (de Leon)

### CLOSED SESSION

A closed session was not necessary.

Meeting Adjourned at 02:40 PM.

Respectfully submitted,

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Isabel Rivera, Operations Manager

Approved by the Board on \_\_\_\_\_, 2018

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Steven Windh, Chairman

California Wheat Commission				
Board Members and Term Dates				
District	Counties Included	Commissioner	Alternate	Current Term Expires
1	Del Norte, Humboldt, Lassen, Modoc, Plumas, Shasta, Sierra, Siskiyou, Trinity	Walker (2024)	Crawford (2024)	2018
2	Butte, Colusa, Glenn, Lake, Marin, Mendocino, Napa, Sonoma, Sutter, Tehama, Yolo, Yuba	Cruikshank (2025)	Hunn (2025)	2019
3	Amador, El Dorado, Placer, Nevada, Sacramento, Solano			2020
4	Alameda, Alpine, Calaveras, Contra Costa, Madera, Mariposa, Merced, Mono, San Joaquin, Stanislaus, Tuolumne	Pelucca (2027)	Scoto (2023)	2018
5	Monterey, San Benito, San Francisco San Luis Obispo, San Mateo, Santa Barbara, Santa Cruz, Santa Clara, Ventura	Siemens(2029)		2020
6	Fresno	Schmidt (2025)		2019
7	Inyo, Kings, Tulare	Carlisle (2027)	Parsons (2027)	2018
8	Kern, Los Angeles, Riverside, San Bernardino	Jim Parsons (2029)	Elholm (2029)	2020
9	Imperial, Orange, San Diego	Rubin (2028)	Motter (2028)	2019
Handler 1	Elected statewide by all handlers.	Mezger (2028)		2019
Handler 2		Edgar (2028)		2019
At-Large Member	Recommended by CWC; appointed by CDFA.	Jackson (2022)		3/1/2019
Public Member	Recommended by CWC; appointed by CDFA.	Windh (2018)	Sidles (2024)	8/30/2018

Terms of each office are limited to four full 3-year terms. Year in parentheses is the year the board member will be termed out in their current position.

## CALIFORNIA WHEAT COMMISSION

**July 1, 2017 to June 30, 2018**

**PROJECT TITLE:** Development of wheat varieties for California

**PROJECT LEADERS AND PRINCIPAL UC INVESTIGATORS:** Jorge Dubcovsky. Other investigators and collaborators in the project include: Oswaldo Chicaiza, Xiaoqin Zhang, Alicia del Blanco, Marcelo Soria, Mark Lundy, and Francisco Maciel.

### **CONCISE GENERAL SUMMARY OF 2017-2018 RESULTS:**

**Variety releases:** Breeder seed of UC1817 ‘UC-Central Red’, UC1836 ‘UC-Lassik-RS’, UC1837 ‘UC-Patwin-515RS’, UC1848 ‘UC-Desert King RS’ and UC1850 ‘UC-Desert Gold’ were delivered to the Foundation Seed Program to produce Foundation seed in 2018.

#### **Regional trials**

**Common wheat:** Six lines UC1815, UC1817, UC1836, UC1837, UC1838 and UC1839 were evaluated in the regional trial in 2017. The line UC1815 is being evaluated in the regional trial for third year. The lines UC1817, UC1836 and UC1837 were released as new varieties named ‘UC-Central Red’, ‘UC-Lassik-RS’ and ‘UC-Patwin-515RS’, respectively. The line UC1838 shows susceptibility to lodging that affected the grain yield and therefore was dropped from the regional trial and will be used as parent in the crossing block. The line UC1839 has low bread loaf volume therefore was dropped from the regional trial and was included in the backcross project to introduce the 7B\*OE gene to improve the loaf volume. Five new hard red spring wheat lines UC1879, UC1880, UC1882, UC1884 and UC1885; and two hard white spring wheat lines UC1881 and UC1883, were included in the 2018 regional trial based on their high yield performance and good breadmaking quality.

**Durum wheat:** Three durum wheat lines UC1848, UC1849, and UC1850 were evaluated in the 2017 regional trial. UC1848 was released as ‘UC-Desert King-RS’ based on its high fiber content. Line UC1850 showed improved alveograph values and semolina and pasta color scores relative to Desert King. It was released as ‘UC-Desert Gold’. Line UC1849 was dropped from the regional trial because it showed lower grain yield than the original variety Desert King. Four durum wheat lines UC1870, UC1871, UC1872 and UC1873 were included in the 2018 regional trial based on their high yield performance and excellent pasta quality.

**Quality Collaborators Program:** One hard red spring wheat line UC1838 and two durum lines UC1849 and UC1850 were sent to the collaborators testing program. UC1850 showed better grain yield than UC1849 and is being released as ‘UC-Desert Gold’. Three common wheat lines UC1817 ‘UC-Central Red’, UC1879 Yecora Rojo-515 and UC1881; and one durum line UC1870 were included in the 2018 collaborative testing program.

**Yield trials:** 405 lines of common wheat and 180 lines of durum wheat were evaluated in elite, advanced, and preliminary yield trials in 2017. Grain samples from the best 86 lines of common wheat and 46 lines of durum wheat were sent to the CWC Quality Laboratory for quality analysis. The best seven lines of common wheat were included in the 2018 regional trial, 13 lines are evaluated in the elite yield trial and 63 lines are evaluated in the advance yield trial. The best

four lines of durum wheat were included in the 2018 regional trial, 12 lines are evaluated in the elite yield trial in 2018.

**Observation plots:** 546 lines of common wheat and 204 lines of durum wheat were evaluated in observation plots in 2017. After selection for agronomic characteristics, yield performance and grain protein content, 256 lines of common wheat and 116 lines of durum wheat were select and are being evaluated in preliminary yield trials in 2018.

**Addition of new hybrids and segregating populations:** 91 crosses were made among common wheat and 55 crosses among durum wheat in the winter of 2017. The F<sub>1</sub> generation was planted at Tulelake during the summer of 2017. The F<sub>2</sub> to F<sub>6</sub> segregating generations had 410 populations of common wheat and 243 populations of durum wheat that were planted and evaluated in the field in 2017. After selection for agronomic characteristics, disease resistance, and grain appearance, 512 segregating populations of common wheat and 257 segregating populations of durum wheat, are being evaluated in 2018.

**Marker assisted selection summary:**

*Markers for yield:* We advanced the introgressions of *Tagw-A2*, a mutation associated with a 6% increase in grain weight and of *Elf3A<sup>m1</sup>*, a gene transferred from diploid wheat associated to an increased number of spikelets per spike. We also identified and validated two new QTL for increased number of spikelets per spike on chromosome arms 7AS and 7AL.

*Markers for quality:* For the pasta wheat, we used markers to accelerate the introgression of genes associated with low cadmium (*Cdu1*) improved yellow pigment (*PSY1*) and color stability in pasta (*LPX1.1*), increased gluten strength (*Glu-D1<sub>2+12</sub>*), and higher grain protein content (*GPC-B1*). For bread wheat, we used molecular markers to accelerate the introgression of a low molecular weight glutenin allele for improved gluten strength and elasticity and the 7BxOE allele for strong gluten. We combined mutations in the D genome for the *SBEIIa* and *SBEIIb* genes to develop a common wheat carrying six *SBEII* mutations.

*Markers for disease resistance:* We used molecular markers to introgress *Yr5*, *Yr15*, *Yr36* and *Yr78* in several of our breeding lines.

**Publications and Grants:** We published nine research articles in wheat in 2017 in peer-reviewed scientific journals and made 12 scientific presentations. We obtained \$32,000 for breeding equipment and renewed the HHMI grant for seven years (2017-2024) with a research support of approximately \$600,000 per year.

## COMPREHENSIVE ANNUAL RESEARCH REPORT

### OBJECTIVES AND EXPERIMENTS

**OBJECTIVES:** This annual report is organized from the most advanced material evaluated in the regional trials, followed by the material evaluated in the elite, advanced and preliminary yield trials, observation plots, short rows screening nurseries, segregating generations and new hybrid combinations.

### VARIETY RELEASES

**Foundation seed:** Breeder seed of the three new high-resistant starch (RS) varieties were delivered to the Foundation Seed Program and Foundation in October 2017 and will be allocated to seed dealers in 2018. We submitted PVP Applications for three high-RS varieties: HWS UC-Patwin-RS (UC1837, PVP Application No. 201800058), UC-Lassik-RS (UC1836, PVP Application No. 201800070), and UC-Desert King-RS (UC1848, PVP Application No 201800069).

**Variety release candidates:** Breeder seed of UC1817 ‘Central Red’ and UC1850 ‘Desert Gold’ were delivered to the Foundation Seed Program to produce Foundation seed in 2018. PVP applications for the two future varieties are in progress. We completed the development of a stripe-rust resistant version of Yecora Rojo, designated as Yecora Rojo-515 (including *Yr5*, *Yr15*, *Yr17* and *Yr36* resistance genes) and initiated production of breeder Seed. This line was included in the Regional trials as UC1879.

### REGIONAL YIELD TRIALS

**Common wheat:** Six lines UC1815, UC1817, UC1836, UC1837, UC1838 and UC1839 were evaluated in the regional trial in 2017. Lines UC1817, UC1836 and UC1837 are being released as new varieties named ‘UC-Central Red’, ‘UC-Lassik-RS’ and ‘UC-Patwin-515RS’, respectively. Line UC1838 showed susceptibility to lodging and was dropped from the regional trial. This line will be incorporated as parent in the crossing block. Line UC1839 showed low bread loaf volume and was dropped from the regional trials. This line was included in a marker assisted backcross project to introduce the 7B\*OE gene to improve gluten strength and loaf volume. Five new hard red spring wheat lines UC1879, UC1880, UC1882, UC1884 and UC1885; and two hard white spring wheat lines UC1881 and UC1883, were include in the 2018 regional trial based on their high yield performance and good breadmaking quality.

**Durum wheat:** Three durum wheat lines UC1848, UC1849, and UC1850 were evaluated in the 2017 regional trial. UC1848 was released as ‘UC-Desert King-RS’ based on its high fiber content. Line UC1850 showed improved alveograph values and semolina and pasta color scores that the original variety Desert King. This line is being released as ‘UC-Desert Gold’. Line UC1849 was dropped from the regional trial because it showed lower grain yield than the original variety Desert King. Four durum wheat lines UC1870, UC1871, UC1872 and UC1873, were included in the 2018 regional trial based on their high yield performance and excellent pasta quality.

**Quality Collaborators Program:** One HRS line UC1838 and two durum lines UC1849 and UC1850 were send to the 2017 collaborators testing program. UC1838 received good

breadmaking scores from all the millers. However, UC1838 will not be released as a variety because of its susceptibility to lodging. UC1849 and UC1850 both showed good pasta quality. UC1850 showed better grain yield than UC1849 and it was selected for release as a new variety called 'UC-Desert Gold'. Three common wheat lines UC1817 'UC-Central Red', UC1879 UC-Yecora Rojo-515 and UC1881; and one durum line UC1870 were included in the 2018 collaborative testing program.

### **ELITE YIELD TRIALS**

The elite yield trial of common wheat included 20 breeding lines and 5 control varieties. This trial was planted at Davis, Colusa and Kings. The elite yield trial of durum wheat included 22 breeding lines and 3 control varieties. It was planted at Davis, Kings and Imperial Valley. The trial at Colusa and Kings were conducted by Dr. Mark Lundy and the trial at Imperial Valley was conducted by Francisco Maciel. During the growing cycle, notes of heading date, disease severity (stripe rust, leaf rust, and septoria), plant height, lodging, and shattering were scored at each location. The variables grain yield, test weight, 1000 kernel weight, and grain protein content were measured after harvest. Seventeen breeding lines of common wheat and eleven lines of durum wheat were selected. Samples of grain from each location were sent to the CWC laboratory for complete quality analyses. Based on the agronomic data, disease scores, grain yield and quality data, five hard red spring wheat lines (17010/7, 17010/8, 17010/16, 17010/23 and 17010/25), one hard white spring wheat line (17010/17) were included in the 2018 regional trial.

### **ADVANCED YIELD TRIALS**

**Common wheat:** 87 breeding lines and 6 control varieties were evaluated in the 2017 advanced yield trials at Davis. After selecting for agronomic characteristics, disease resistance, yield performance, protein content, and grain appearance, 29 lines were selected and were sent to the CWC laboratory for complete quality analyses. Finally, two lines were selected and included in the 2018 elite trial and 27 lines are being tested in the 2018 advanced yield trial.

**Durum wheat:** 73 breeding lines and 3 control varieties were evaluated at Davis and Imperial Valley. After selecting for agronomic characteristics, disease resistance, yield performance, protein content, and grain appearance; 20 lines were selected and sent to the CWC laboratory for complete quality analyses. Three lines (17217/5, 17218/4, 17218/20) were selected and included in the 2018 regional and elite trials; and nine lines were included in the 2018 elite trial.

### **PRELIMINARY YIELD TRIALS**

**Common wheat:** 256 breeding lines and 5 control varieties were evaluated in preliminary yield trials. After selection for agronomic characteristics, disease resistance, yield performance, grain protein content, and grain appearance; the best 37 lines were selected and were sent to the CWC laboratory for complete quality analyses. All 37 lines were selected and were included in the 2018 advanced yield trial.

**Durum wheat:** 72 breeding lines and 3 control varieties of durum wheat were evaluated in preliminary yield trials. Based on agronomic characteristics, disease resistance, yield performance, grain protein

content, and grain appearance, the best nine lines were selected and sent to the CWC laboratory for complete quality analysis. Finally, one line was selected and included in the 2018 regional and elite yield trials and three lines were selected and included in the 2018 elite yield trials.

## OBSERVATION PLOTS

**Common wheat:** 546 breeding lines of common wheat were evaluated in observation plots, after selection for agronomic characteristics, disease reaction, grain yield, grain appearance, and grain protein content, 272 lines were advanced to the 2018 preliminary yield trials.

**Durum wheat:** 204 breeding lines of durum wheat were evaluated in observation plots, after selection for agronomic characteristics, disease reaction, grain yield, grain appearance, and grain protein content; the best 30 lines were included in the 2018 advanced yield trial, and 116 lines were included in the 2018 preliminary yield trials.

**New introductions:** 769 breeding lines of common wheat and 145 breeding lines of durum wheat from the wheat program of CIMMYT were planted as screening rows in Davis in 2017. After selection for agronomic characteristics, disease resistance, grain appearance and grain protein content, 79 lines of common wheat and 11 lines of durum wheat were advanced to the 2018 observation plots. 544 breeding lines of common wheat and 164 breeding lines of durum wheat from the wheat program of CIMMYT were cleared through quarantine during the winter 2017 and planted in the field as screening rows in 2018.

## NEW HYBRIDS AND SEGREGATING POPULATIONS

**New Hybrids:** 91 new crosses were made among common wheat lines and 55 among durum wheat lines. The F<sub>1</sub> seeds were planted at Tulelake during the summer of 2017. The F<sub>2</sub> segregating populations will be planted in the field at Davis in 2018.

**Segregating generations:** The F<sub>2</sub>-F<sub>5</sub> segregating generations were handled as selected bulk populations. The best individual plants from each population were selected and one spike from each selected plant was harvested. The selected spikes were threshed in bulk and a sample of 500 seeds from each population was planted as selected bulk population in the next generation. In the F<sub>5</sub> generation, the selected spikes were threshed individually and after selecting for grain appearance the seed was used to plant as head-rows in the F<sub>6</sub> generation. In the F<sub>6</sub> generation, the selection was made among and within families. If the selected rows were phenotypically homogenous they were harvested in bulk, otherwise three spikes from each row were harvested to have one more cycle of head-row selection.

**Common wheat:** The F<sub>2</sub> included 85 populations. The best individual plants from each population were selected and one spike from each selected plant was harvest. The selected spikes were threshed in bulk and a sample of 500 seeds from each population was planted as selected F<sub>3</sub> bulk generation. F<sub>3</sub> included 51 F<sub>3</sub> populations. After selection, 51 populations were advanced to the F<sub>4</sub> in 2018. The F<sub>4</sub> included 45 segregating populations. After selection, 45 populations were advanced to F<sub>5</sub> in 2018. The F<sub>5</sub> included 82 segregating populations. After selection, 82 populations were advanced to the F<sub>6</sub> generation in 2018. The F<sub>6</sub> included 73 families. After the field selection, the grain of each line was evaluated for its appearance and 71 families were advanced to observation plots in 2018.



**Durum wheat:** The F<sub>2</sub> included 77 populations. The F<sub>3</sub> included 52 F<sub>3</sub> segregating populations. After selection, 52 segregating populations were advanced to the F<sub>4</sub> in 2018. The F<sub>4</sub> included 37 segregating populations. After selection, 37 populations were advanced to F<sub>5</sub> in 2017. The F<sub>5</sub> included 36 segregating populations. After selection, 36 populations were advanced to F<sub>6</sub> in 2018. The F<sub>6</sub> included 41 families. After the field selection, the grain of each line was evaluated for its appearance. All 41 families were advanced to observation plots.

## MARKER ASSISTED SELECTION

### Mas backcrossing for yield potential

**Improved grain size mutant *gw-A2* and increased grain number *Elf-A<sup>m3</sup>*:** We planted replicated experiments in 2016 and 2017 that confirmed the positive effect of the *gw-A2* mutant on grain weight in durum wheat. However, these changes did not increase total grain yield. We performed full quality analyses the two years and found that, surprisingly, the *gw-A2* mutation was associated with a significant increase in grain protein concentration both in 2016 (absolute increase 0.43%, relative increase 3%,  $P < 0.027$ ) and in 2017 (absolute increase 0.63%, relative increase 5%,  $P < 0.0015$ ). Based on these encouraging results, we measured iron and zinc concentration in the grain in 2017. We found that the *gw-A2* mutation was associated with a significant increase in both zinc (6.23% increase,  $P = 0.0033$ ) and iron (11.23%,  $P = 0.0004$ ). This is an important result because there are large segments of human population that experience deficiencies in these two basic nutrients.

We are introgressing the *gw-A2* mutation into our elite wheat varieties. In the common wheat, 16 homozygous BC<sub>6</sub>F<sub>3</sub> lines in Patwin-515HP and 12 homozygous BC<sub>4</sub>F<sub>3</sub> in Yurok were completed and were transferred to the breeding program for evaluation in the field. More than 200 BC<sub>6</sub>F<sub>2</sub> plants in UC1767 are being screened in the greenhouse for homozygous. In the durum wheats, we have completed the introgression of *gw-A2* into UC1771, Desert Gold-HP (10 homozygous) and Desert Gold-HP7BxOE (7 homozygous). These lines with their respective isogenic controls without *gw-A2* have been transferred to the breeding program for testing in the field. We have initiated backcrossing program in the small seed lines 15210/11 and 15210/12 (BC<sub>1</sub>).

We are also combining the *gw-A2* mutation for increased grain size with the *Elf-A<sup>m3</sup>* for increased number of spikelets and grain number per spike. These two genes are in BC<sub>4</sub>F<sub>4</sub> in Kronos and BC<sub>2</sub>F<sub>2</sub> in Patwin, Lassik and Kingbird.

**Improved spike fertility:** We are also introgressing the *FT1* allele from the variety Hope (Hope7B) that is associated with earlier flowering and increased spike fertility. We have completed the development of BC<sub>4</sub>F<sub>2</sub> homozygous lines in the varieties UC1767, Lassik, Yurok and UC1771. We need to do one more additional backcross to combine the *FT1* allele from Hope with the low cadmium allele in UC1771.

We are also exploring the effect of two genes on chromosomes 2AS and 2BS that generate branched wheat spikes in durum wheat to see if we can increase grain yield. These two genes have been backcrossed twice (BC<sub>2</sub>) to Patwin-515HP and once (BC<sub>1</sub>) into common wheat UC1767 and durum UC1771 and Desert Gold.

**Improved tillering:** We continued the introgression of a gene identified in Montana State University (*QTn.mst-6B*) that confers increased tillering capacity under good environmental conditions. We have produced BC<sub>2</sub> to Patwin-515HP and BC<sub>1</sub>F<sub>2</sub> for Yurok.

## MAS backcrossing for disease resistance

**Stripe rust:** During 2017,

- 1) We completed a high-density map of *Yr29*, an adult plant resistance gene that confer partial resistance to a broad range of stripe rust races.
- 2) We demonstrated that the adult plant resistance genes *Yr48* and *Yr34* are both alleles of the same gene, and are likely the result of the translocation of an alien wheat segment into common wheat.
- 3) We deposited a new germplasm for resistance gene *Yr78*. We used three backcrosses followed by selection of homozygous plants using molecular markers to introgress the gene in the standard susceptible line Avocet.
- 4) We are combining different partial resistance genes to test their combined effects.
- 5) We completed the development of Yecora Rojo carrying stripe rust resistance-genes *Yr5*, *Yr15*, *Yr17* and *Yr36*, and initiated production of breeder seed. This line will be a good replacement for Yecora Rojo in the intermountain region.
- 6) We are testing a new version of UC1767 with *Yr5* and *Yr15*.
- 7) We continued the introgression of *Yr5* and *Yr15* in the Syngenta variety PR1404.
- 8) In collaboration with Dr. T. Fahima of Haifa University, we completed the cloning and validation of *Yr15*, which will facilitate the more precise manipulation of this gene in our breeding program. We demonstrated that transgenic wheat lines carrying *Yr15* were immune to stripe rust.

**Stem rust Ug99:** Ug99 is a race of *Puccinia graminis* f. sp. *tritici* (stem rust pathogen) from Uganda that is virulent to most US wheat varieties. This race is rapidly expanding through Africa and Asia. In 2017, we completed the positional cloning of two stem rust resistance genes that are effective against Ug99. Both genes, *Sr13* and *Sr21* are more effective under high temperatures. The results from these studies were published in PNAS and PLOS Genetics. We also completed the mapping of *SrTm5* (a new allele of *Sr22*) and discovered the new stem rust resistance gene *Sr60*. We completed a high-density map of *SrTm4* and we are trying to identify and validate a potential candidate gene.

## Marker assisted backcrossing for quality genes

**Low cadmium locus *Cdu1*:** Leaf samples from 145 lines of durum wheat from the screening nursery from CIMMYT were sent to the USDA laboratory in Pullman, WA to select for the low cadmium allele in *Cdu1*. Fifty-seven homozygous lines were identified as carriers of the low cadmium allele. From those, we selected eight lines that are being evaluated in observation plots in 2018. We continued advancing the *Cdu1* allele for low cadmium in our top durum lines. We completed the introgression of the low cadmium allele in our top yielding line UC1771, increased seeds and entered it into the Regional testing as the new low-cadmium line UC1870. We also completed introgression in UC1770 and advanced backcrossing in 15210/5 (BC<sub>4</sub>F<sub>2</sub>), 15210/11 (BC<sub>5</sub>) and 15210/12 (BC<sub>5</sub>).

**High protein gene *Gpc-B1*:** We completed the introgression of this gene into the new Yecora Rojo 515. We are also introgressing this gene into 2<sup>nd</sup> Nature varieties Mohave and Mead. We

completed the third backcross generation. We will do one more cycle of backcrossing and then we will select BC<sub>4</sub>F<sub>2</sub> homozygous and send seed to the company. We completed the introgression of this gene in the Arizona Plant Breeders variety Tiburon and 335. Finally, we continued the introgression into several breeding lines with insufficient levels of grain protein content including BC<sub>4</sub> in UC1770, BC<sub>2</sub> in UC1816 and BC<sub>4</sub> in Digalu.

**HMW glutenins:** We completed the introgression of the *Glu-D1*<sub>(2+12)</sub> allele into the durum line UC1849 in combination with new alleles for increased yellow pigment and the low cadmium allele. However, the yield of this line was lower than the yield of UC1850 without the *Glu-D1*<sub>(2+12)</sub>. UC1850 was selected for release as UC-Desert Gold. We continued the introgression of this allele in our high yielding breeding line 15210/5 (BC<sub>1</sub>) and UC1770 (BC<sub>4</sub>).

We generated Kronos mutants that lack all high molecular weight glutenins. We are now crossing this mutant with transgenic lines including synthetic HMW glutenins with no epitopes for allergenicity. In the progeny, we will select a line homozygous for the transgenic HMW glutenin without epitopes, and for the absence of endogenous HMW glutenins. We will test the different gene combinations for pasta quality and allergenicity. We accepted a new PhD student from China Ya-Zhou, who will work on this project for two years.

For the 7BxOE *Glu-B1* allele that has an extra copy of the HMW-glutenin gene and increases gluten strength, we completed the introgression in UC1745 (BC<sub>4</sub>F<sub>3</sub>) and UC1767 (BC<sub>5</sub>F<sub>2</sub>). We initiated introgression into high yielding line 16010/32 (BC<sub>1</sub>).

**LMW glutenin alleles:** In 2017, we completed the introgression of the LMW glutenin allele *Glu-B3i<sub>Man</sub>* and *Glu-A3* associated with high gluten strength into the top breeding line UC1767 that had very high yield potential but weak gluten due to a deletion in *GluA3* and a weak allele in *Glu-B3*. We combined these strong gluten alleles with resistance genes *Yr5*, *Yr15*, and *Yr17* for stripe rust. The completed lines were transferred to the breeding program for yield testing.

**Increased yellow pigment:** In 2017, we continued the introgression of the two genes we identified for increase grain yellow pigment into our tetraploid lines 15210/5 (BC<sub>3</sub>F<sub>2</sub>) and UC1690 (BC<sub>5</sub>). We initiated a collaboration to introgress this gene into APB621 (F<sub>1</sub>)

**Increased resistant starch (RS):** We completed the PVP applications of the UC high-RS varieties

- HWS UC-Patwin-RS (UC1837, PVP Application No. 201800058)
- UC-Lassik-RS (UC1836, PVP Application No. 201800070)
- UC-Desert King-RS (UC1848, PVP Application No 201800069).

We advanced the introgression of the combined *sbeII* mutations into our top lines UC1767 (BC<sub>4</sub>F<sub>2</sub>), UC1745 (BC<sub>3</sub>F<sub>2</sub>), UC1771 (BC<sub>3</sub>F<sub>2</sub>), UC1690 (BC<sub>3</sub>F<sub>2</sub>) and Kronos low cadmium *Yr36* (BC<sub>2</sub>). We initiated the introgression of the *SBEIIab* mutations in Central Red (UC1817, F<sub>1</sub>).

In collaboration with Brittany Hazard, we combined *SbeIIa* and *SbeIIb* mutations in phase in the D genome. These combined mutations will be introgressed into our hexaploid high-RS lines with five *sbeII* mutations to developed versions with six *sbeII* mutations. We will use the resulting isogenic lines to study of the effects of the 5 vs 6 mutations on agronomic traits and amount of dietary fiber.

We completed a study of the effect of the *SBEII* mutations in Kronos on transitory starch metabolism in the leaves and on reserve starch degradability during seed germination. The *sbeII*

mutations increased amylose and resistant starch in the grain endosperm, but were also associated with reduced starch content in the kernel and with reduced grain yield in the field. We observed a significantly higher amylose content (555%) and impaired night starch degradation in leaves of the *SBEII* mutants relative to the controls. Microscopy analyses confirmed that the chloroplasts of mutant plants carried large starch granules at the end of night, as well as altered surface morphology of starch granules. In the control Kronos without the *sbeII* mutations, the starch granules were absent or were very small at the end of the night. This inability to use properly the starch accumulated during the day was associated with a reduction on aerial biomass. The *sbeII*-mutant showed significantly lower aerial biomass than the control in field, greenhouse and growth chamber experiments.

In summary, this study identified several negative pleiotropic effects of the *SBEII* mutations on vegetative growth. The negative impact of these mutations on grain yield suggest that consumers will have to pay higher prices for these products to compensate for their lower agronomic performance. A simple solution would be to alter the reserve starch composition in the seeds without altering the transient starch in the leaves, which can be easily achieved by expressing an *SBEII* RNA interference construct under a grain promoter (Regina et al. 2006). Unfortunately, this approach is currently unavailable due to current public fears of transgenic approaches and the associated high regulatory costs. This is a good example of the hidden costs of current fears to the use of transgenic approaches. One alternative around the use of transgenics would be to explore the possibility to use mutations to have one *SBEII* isoform expressed only in the leaves and the other in the grain (as in maize). This will allow us to knock out the genes affecting starch in the endosperm without negatively affecting the utilization of transitory starch in the leaves. It would be worth studying the regulatory regions of the *SBEII* genes to see if there are specific elements that control their expression in the grain and the leaves.

**Reduced gluten intolerance:** A reduced level of gliadins is expected to reduce gluten allergenicity at the population level. We have identified deletions of the alpha gliadins on chromosome 6A, 6B and 6D and we are combining them to generate double and triple mutants to study their effect on quality and allergenicity. We are backcrossing these mutations into tetraploid lines Kronos and Desert King, and hexaploid lines UC1745 and Patwin.

## PUBLICATIONS AND REPORTS 2017

In 2017, we published nine peer-reviewed publications in wheat (six of them on top tier scientific journals) and made 12 presentations in scientific meetings and symposia. Publications from the lab were referred in other peer review journals more than 1,500 times in 2017, documenting their worldwide impact.

### Peer-reviewed publications 2017 (9)

1. Salcedo, A., W. Rutter, S. Wang, A. Akhunova, S. Bolus, S. Chao, N. Anderson, M. Fernandez De Soto, M. Rouse, L. Szabo, R.L. Bowden, **J. Dubcovsky**, E. Akhunov. 2017. Variation in the *AvrSr35* gene determines *Sr35* resistance against wheat stem rust race Ug99. *Science*. 358: 1604–1606.
2. Zhang, W., S. Chen, Z. Abate, J. Nirmala, M. Rouse, and **J. Dubcovsky**. 2017. Identification and characterization of *Sr13*, a tetraploid wheat gene that confers resistance to the Ug99 stem rust race group. *Proc. Natl. Acad. Sci. U.S.A.* 114: E9483–E9492.

3. Lan, C., I. Lowe Hale, S. Herrera, B. R. Basnet, M. Randhawa, J.H. Espino, **J. Dubcovsky**, R.P. Singh. 2017. Characterization and mapping of leaf rust and stripe rust resistance loci in hexaploid wheat lines UC1110 and PI610750 under Mexican environments. *Frontiers in Plant Sciences* 8: 1450.
4. Uauy, C., B.B.H. Wulff, and **J. Dubcovsky**. 2017. Combining traditional mutagenesis with new high-throughput sequencing and genome editing to reveal hidden variation in polyploid wheat. *Annu. Rev. Genet.* 51: 435–454.
5. Dong, Z, J. Zhang, J. M. Hegarty, W. Zhang, S. Chao, X. Chen, Y. Zhou, and **J. Dubcovsky**. 2017. Validation and characterization of a QTL for adult plant resistance to stripe rust on wheat chromosome arm 6BS (*Yr78*). *Theor. Appl. Genet.* 130: 2127–2137.
6. Dibbernardi, M. H. Li, G. Chuck, J. Farris, and **J. Dubcovsky**. 2017. miR172 plays a critical role in wheat grain threshability. *Development.* 144: 1966-1975.
7. Pearce, S., H. Lin, C. Li and **J. Dubcovsky**. 2017. Night-break experiments shed light on the *PPDI*-mediated photoperiodic response in wheat. *Plant Physiology.* 174: 1139-1150.
8. Krasileva, K.V., H. Vasquez-Gross, T. Howell1, P. Bailey, F. Paraiso, L. Clissold, J. Simmonds, R. H. Ramirez-Gonzalez, X. Wang, P. Borrill, C. Fosker, S. Ayling, A. Phillips, C. Uauy, **J. Dubcovsky**. 2017. Uncovering hidden variation in polyploid wheat. *Proc. Natl. Acad. Sci. U.S.A.* 114: E913–E921.
9. Schönhofen, A., X. Zhang, and **J. Dubcovsky**. 2017. Combined mutations in five wheat *Starch Branching Enzyme II* genes increase resistant starch but affect grain yield and bread-making quality. *Journal of Cereal Science.* 75: 165-174.

### Presentations 2017 (12)

1. Schönhofen, A., X. Zhang and **J. Dubcovsky**. 2017. Grain Yield and Bread-Making Quality Are Affected By Mutations in *SBEII* Genes. *Plant and Animal Genome XXV*, San Diego, Jan. 14-18, 2017. Poster P0403
2. Salcedo, A., W. Rutter , S. Wang , A. Akhunova , L.J. Szabo, M.N. Rouse , R. L. Bowden, **J. Dubcovsky** and E. Akhunov. 2017. Microbes and Pathogens Identification of Avirulence Genes in the Wheat-*Puccinia graminis* (*Pgt*) Pathosystem by EMS Mutagenesis and Diversity Analyses. *Plant and Animal Genome XXV*, San Diego, Jan. 14-18, 2017. Poster P0515
3. Jordan, K., S. Wang, S. Chao , Y. Lun , E. Paux , P. Sourdille, **J. Dubcovsky**, J. Sherman, A. Akhunova, L. Talbert and E. Akhunov. 2017. Nested Association Mapping Population Resource for Studying the Genetic Basis of Trait Variation in Wheat. *Plant and Animal Genome XXV*, San Diego, Jan. 14-18, 2017. Poster P0827.
4. Donaire, G.M., L.S. Vanzetti1 , M. Helguera, C.T. Bainotti, L. Borrás, J. Hegarty, O. Chicaiza and **J. Dubcovsky**. 2017. Development of a Nested Association Mapping (NAM) Population in Wheat and QTL Mapping for Adaptation Traits, Yield and Grain Protein Content. *Plant and Animal Genome XXV*, San Diego, Jan. 14-18, 2017. Poster P0828.
5. Zhang, J., S. Gizaw, E. Bossolini, M. Maccaferri, J. Hegarty, A.H. Carter, S. Chao, E. Akhunov and **J. Dubcovsky**. 2017. Identification and Validation of QTL for Yield Components under Contrasting Water Treatments in a Collection of Spring Wheat from North America. *Plant and Animal Genome XXV*, San Diego, Jan. 14-18, 2017. Poster P0862.
6. Hegarty, J., Z. Dong, J. Zhang, W. Zhang, S. Chao, X. Chen and **J. Dubcovsky**. 2017. Validation and Characterization of Two QTL for Adult Plant Resistance to Stripe Rust on Wheat Chromosome Arms 6DS (*Yr77*) and 6BS (*Yr78*). *Plant and Animal Genome XXV*, San Diego, Jan. 14-18, 2017. Poster P0890.

7. Fahima, T., V. Klymiuk, D. Raats, Z.M. Frenkel, V. Bocharova, L. Huang, E. Yaniv, A.H. Schulman, **J. Dubcovsky** and A.B. Korol. 2017. Fine Mapping of the Stripe Rust Resistance Gene YrG303 Derived from Wild Emmer Wheat. Plant and Animal Genome XXV, San Diego, Jan. 14-18, 2017. Poster P0891.
8. Vasquez-Gross, H., K.V. Krasileva, T.R. Howell, P.C. Bailey, F. Paraiso, J. Simmonds, R.H. Ramirez-Gonzalez, X. Wang, C. Fosker, S. Ayling, A.L. Phillips, C. Uauy and **J. Dubcovsky**. 2017. Using the Wheat Tilling Resource to Find Mutations of Interest. Plant and Animal Genome XXV, San Diego, Jan. 14-18, 2017. Computer Demo 29
9. Salcedo, A., W. Rutter, S. Wang, S. Bolus, A. Akhunova, R.L. Bowden, M.N. Rouse, L.J. Szabo, **J. Dubcovsky** and E. Akhunov. 2017. Unraveling the Mechanisms of Stem Rust Resistance Conferred by the *Sr35* Gene against *Puccinia graminis* f. sp. *tritici* (*Pgt*). Plant and Animal Genome XXV, San Diego, Jan. 14-18, 2017. Workshop W703.
10. Jordan, K., S. Wang, S. Chao, Y. Lun, E. Paux, P. Sourdille, J. Sherman, A. Akhunova, R. King, A.L. Phillips, C. Uauy, **J. Dubcovsky**, L. Talbert and E. Akhunov. 2017. Genetic Architecture of Recombination Rate Variation in Wheat Revealed By Analyzing a Nested-Association Mapping Population and Reverse Genetic Screens. Plant and Animal Genome XXV, San Diego, Jan. 14-18, 2017. Workshop W964.
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12. Hegarty, J.M., Z. Dong, J. Zhang, W. Zhang, S. Chao, X. Chen, **J. Dubcovsky**. 2017. Validation and characterization of two QTL for adult plant resistance to stripe rust on wheat chromosome arms 6DS (*Yr77*) and 6BS (*Yr78*). Monogram Network Meeting, Bristol, UK, April 4-6, 2017.
13. Mo, J., H. Vasquez-Gross, L. A. de Haro, T. Howell, S. Pearce., **J. Dubcovsky**. 2017. Mapping by exome sequencing in wheat: a tall mutant case study. The Korean Society of Breeding Science Conference "Current and Future Challenges in Plant Breeding and Biotechnology", Daegu, South Korea, July 5-7, 2017.
14. Schönhofen, A., X. Zhang and **J. Dubcovsky**. 2017. Combined mutations in Starch Branching Enzyme II genes increase resistant starch but affect bread-making quality in common wheat. 2017 AACCC International Annual Meeting "Cereals 17", San Diego CA, October 8-11, 2017.

## GRANTS 2017

- California Wheat Commission (2017). \$195,000. Development of Wheat Varieties for California.
- CCIA (2017) \$76,000
- IWYP grant on grain yield (ends 2018) \$600,000. This is the third year of a grant to characterization yield components in wheat affecting grain size and number of grains per spike.
- USDA-IWYP (5 years) \$2,000,000 per year for 20 collaborating programs led by UC Davis. The objective of this grant is to identify genes affecting grain yield in wheat.
- HHMI-GBMF (2017) \$600,000. This was the first year of a new HHMI grant for 7 years to develop genomic tools for wheat and study wheat development.
- HHMI equipment grant (2017). \$32,000. For a Marvin seed analyzer and a GenoGrinder for DNA extractions.

## SERVICES PROVIDED 2017

1. Participation in the organization of the 2017 Field Day at UC Davis, California.
2. Talk presentation at the 2017 Quality Collaborators Meeting at UC Davis.
3. Seeds of advanced breeding lines with pyramided resistance genes were provided to private and public breeders as requested.
4. MAS backcrossing programs for stripe rust resistance genes and low cadmium were continued in collaboration with Arizona Plant Breeders, Syngenta, and 2<sup>nd</sup> Nature.

### **ACKNOWLEDGEMENTS**

I acknowledge here the major contributions that Dr. Oswaldo Chicaiza, and Alicia del Blanco made to the breeding program. We thank Mark Lundy and his team for the Regional and Elite data, Marcelo Soria for the database, and Xiaoqin Zhang for the MAS backcrossing program. In addition, I acknowledge the valuable data provided by the CWC quality laboratory, as well as the continuous support of the CWC and CCIA to the UC Davis wheat-breeding program.



Jorge Dubcovsky, Professor  
Dept. of Plant Sciences,  
University of California

## CALIFORNIA WHEAT COMMISSION

### ANNUAL RESEARCH REPORT

April 1, 2017 to March 31, 2018

#### **PROJECT TITLE:**

Evaluation of Small Grains in California 2017-2018 (UC Small Grain Variety Testing Program—Continuing Proposal)

**PRINCIPLE INVESTIGATOR:** Mark Lundy, CE Specialist, Grain Cropping Systems, UC Davis

**OTHER INVESTIGATORS:** Department of Plant Sciences UCD: N. George, M. Rodriguez, T. Nelsen, J. Dubcovsky, L. Jackson, O. Chicaiza, A. del Blanco, J. Jackson, F. Stewart. UC Cooperative Extension-UCANR: R. Wilson, D. Culp, S. Orloff, S. Wright, R. Hutmacher, R. Solorio, B. Marsh, F. Maciel, O. Bachi, and K. Bali

**LEVEL OF 2017-2018 FUNDING:** \$135,000

#### **OBJECTIVES AND EXPERIMENTS CONDUCTED BY LOCATION TO ACCOMPLISH OBJECTIVES:**

The overall objective of this research is to provide productivity information for new and existing small grain cultivars to growers in various regions of California as well as to public and private breeding programs. Small grain varieties and advanced breeding lines are evaluated for yield, agronomic characteristics, disease & pest reactions, and grain quality in representative environments throughout California. The resulting information is used to justify the release of advanced breeding lines from both public and private breeding programs and to identify where and under which conditions cultivars are best adapted. Specific project objectives in the 2016-17 season were as follows:

*Objective 1: Measure crop productivity, quality, disease resistance and agronomic characteristics for commercially available small grain varieties and advanced breeding lines across a range of environmental and management conditions that represent California agroecosystems.*

Commercially available and advanced breeding lines of common and durum wheat, triticale, and barley were grown in statewide multi-environment trials in the 2016-17 season. Fall-sown spring wheat (45 entries) and triticale (9 entries) were tested at nine locations; fall-sown winter wheat (41 entries) was tested at two locations; spring-sown spring wheat (48 entries) was tested at one location; durum wheat (28 entries) was tested at five locations; fall-sown spring barley (12 entries) was evaluated at four locations; and spring-sown spring barley (42 entries) was evaluated at one location. Trials were established at University of California Research and



Extension Centers and in fields of cooperating growers. Randomized complete block designs with four replications were used for all tests. Each plot was six to nine drill rows wide (5 to 8-inch row spacing) and 15 to 20 feet long, with a target planted area of 100 ft<sup>2</sup>.

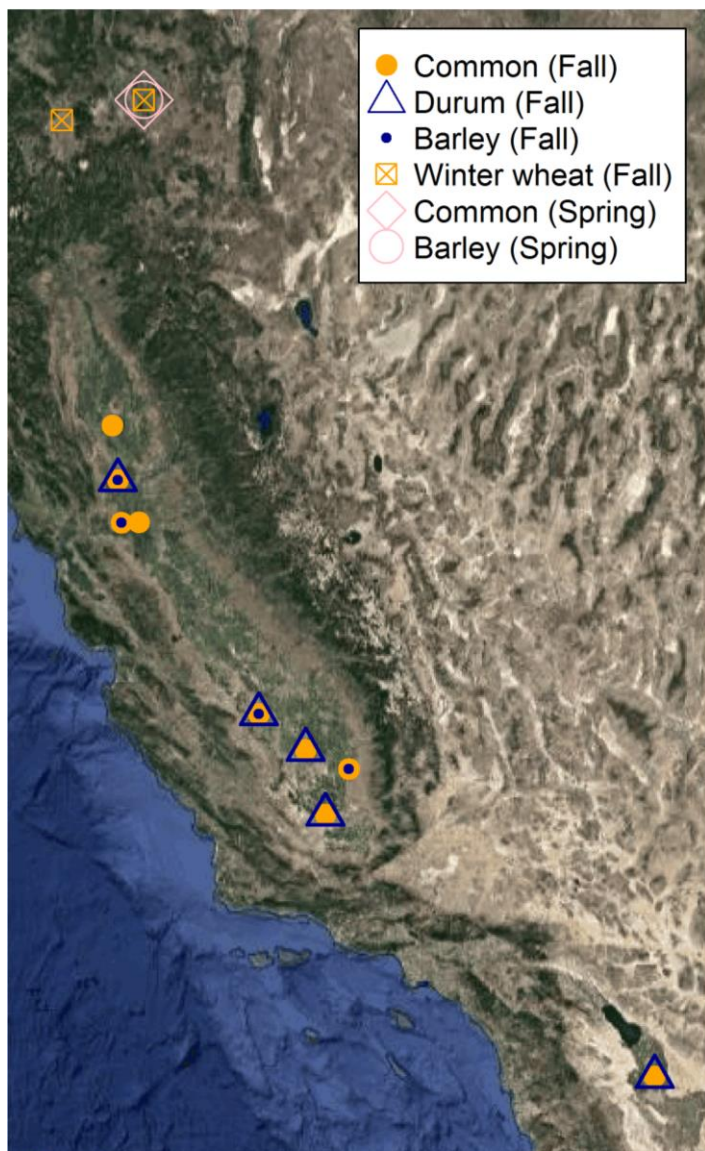


Figure 1. University of California small grain regional trial test locations in the 2016-17 season.

in northern parts of the state, are likely to have contributed to this. From 2014 to 2017, average grain yields of common wheat ranged from 4,500 lb/acre at the rainfed locations to 6,300 lb/acre in the Imperial Valley. Average grain yields for durum wheat were similar across sub-regions, ranging from 6200 lb/acre at the southern San Joaquin Valley to 7,000 lb/acre in the Sacramento Valley. Average yields of triticale ranged from 4,200 lb/acre at rainfed locations to 6,000 lbs/acre in the Imperial Valley. Average yields of Barley ranged from 2,700 lb/acre in the Southern San Joaquin to 5,200 in the Northern San Joaquin Valley. Stripe rust ratings were not notably higher than previous years, although powdery mildew and septoria, which had not been documented in the statewide tests in recent seasons, were observed. Stripe rust samples sent for race analysis identified race PSTv-37, which is virulent to Yr6, Yr7, Yr8, Yr9, Yr17, Yr27,

At all locations, comprehensive agronomic data were recorded for each variety at the plot level. In-season data regarding heading and maturity were taken at least twice weekly at the Davis and Imperial locations. At harvest, mean plant height, lodging, and shattering were recorded. Observations of diseases, and other disease-like symptoms, were made at all test locations. Stripe rust, leaf rust, septoria, and barley yellow dwarf virus were routinely rated at all trial locations. To facilitate the interpretation of trial results, climate data and physio-chemical soil properties were recorded at all test locations.

All the trial locations established in the 2016 season were successfully harvested in 2017. Grain was harvested with a Wintersteiger Seedmaster Universal 150 plot combine. The harvested grain from each location was used to estimate variety yields and also analyzed for protein and moisture content, two-hundred-seed-weight, and test weight. Grain samples from the test locations were also supplied to the California Wheat Commission for grain and flour quality analyses.

Yields in 2017 were high in comparison to previous seasons. Above average rainfall and temperatures, particularly

Yr43, Yr44, YrTr1 and YrExp2, but avirulent to Yr1, Yr5, Yr10, Yr15, Yr24, Yr32, YrSP and Yr76, the most predominant race in recent years and in 2017.

For more detailed information regarding Objective 1 please see the *Performance summaries* and *Disease & agronomic summaries* sections of the complete [UC Small Grains Annual Report](http://smallgrains.ucanr.edu/files/281262.pdf) (<http://smallgrains.ucanr.edu/files/281262.pdf>).

*Objective 2: In a subset of trial locations, directly manipulate crop water and nitrogen availability and measure variability in genotypic reactions to these varying management conditions.*

At the Davis and Fresno locations, duplicates of the common wheat trial were grown under conventional management, low nitrogen fertilization, and low irrigation treatments. Relative to the conventionally managed trial, the low water common wheat trial at Fresno received 5-inches less irrigation overall. This resulted in a reduction in median yields of approximately 1250 lbs/acre relative to the conventional management. Due to above average rainfall at Davis in 2016-17 no low-water treatment was available for that location. The conventionally managed common wheat at Davis and Fresno both received 200 lbs/acre of nitrogen, while the common wheat at Davis and Fresno grown under low nitrogen received no fertilizer. The median reduction in yields caused by the reduced nitrogen fertilization was approximately 3500 lbs/acre and 5000 lbs/acre at Davis and Fresno, respectively. Reduced irrigation and nitrogen fertilization also caused notable changes in grain and flour quality.

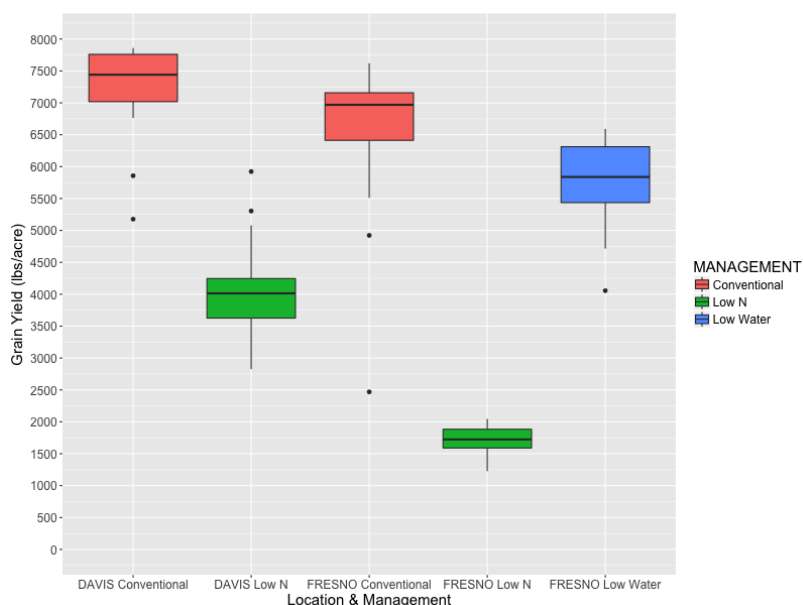


Figure 2. Overall effects of reduced water and reduced nitrogen at the Fresno location and reduced nitrogen availability at the Davis location on common wheat and triticale yield.

A reduction in nitrogen resulted in changes in variety rankings relative to the conventionally managed trial, and these rank changes were similar at both the Davis and Fresno locations. This result demonstrates the importance of management factors for dictating the relative variety performance and quality of small grains, and it emphasizes the need to continually develop a quantitative understanding of the effect of nitrogen and water management for applied small grain agronomy in California. Similar studies will therefore be continued in future seasons, as will the quantification of

nitrogen and water status of statewide test locations in future seasons to facilitate a better understanding of trial results.

For more information relating to Objective 2 please see *Nitrogen & Water* sections of the [UC Small Grains Annual Report](http://smallgrains.ucanr.edu/files/281262.pdf).

*Objective 3: Measure in-season changes and variety-specific differences in growth directly and via crop phenotyping platforms.*

Crop phenotype, in the form of canopy spectral reflectance data, was obtained throughout the growing season from all plots of the conventionally managed common wheat and durum wheat regional trials at Davis using both a hand-held GreenSeeker and a 3DR solo small Unmanned Aircraft System (sUAS) with a Parrot Sequoia camera. Canopy spectral reflectance data was also taken at targeted phenological stages at the Fresno, Colusa and Imperial locations. Plot-specific NDVI values measured as a time-series across the season, were summarized quantitatively using the segmented() package in R. For each variety, a 3-slope, 2-breakpoint model was fit with initial breakpoints values that were average days to heading and initiation of senescence across all varieties. The variety-specific parameter values resulting from these broken-line regression models were then used as quantitative variables to describe the variance in crop productivity among varieties in a multiple regression environment.

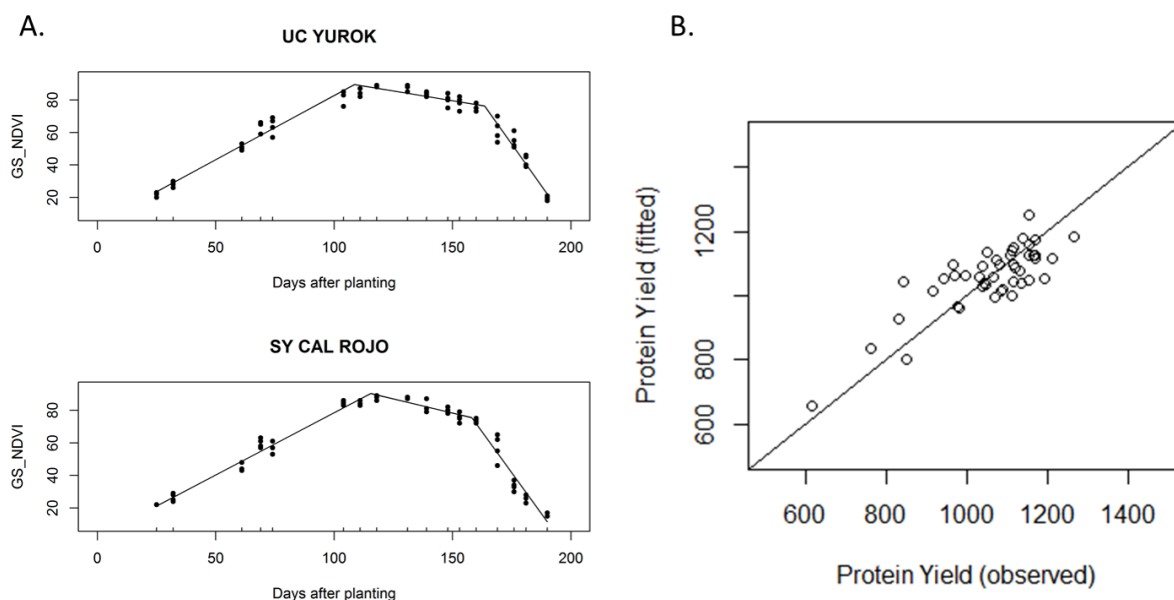


Figure 3. Example of 3-slope, 2-breakpoint model fit to all varieties, with two selected varieties to illustrate (A), and a regression of observed to fitted values of multiple regression model describing protein yield outcomes as a function of variety specific slope and breakpoint values and their interactions.

Initial analysis of these data suggest that these phenotyping and modeling approaches are able to account for a significant portion of the variability in crop productivity. More work is ongoing to relate these measurements to changes in phenological stages and changes in biomass across the season. In addition, during the current season, we are taking similar measurements at a broader range of locations to test the consistency of this approach across multiple site-years. If these phenotyping efforts continue to produce useful information, they may permit the development of more robust and quantitative variety information that can be used both in breeding selection and in site-specific variety selection moving forward.

For more information regarding Objective 3 please refer to the *Crop Model Testing* and *Canopy Spectral Reflectance* sections of the [UC Small Grains Annual Report](#).

*Objective 4: Apply multi-level statistical models to trial data to understand and communicate varietal differences due to genotypic, environmental and management effects.*

To generate estimates of variety performance, trial data from the 2016-17 season were combined with trial data from preceding seasons and then analyzed and summarized using linear mixed models and least squares means. A Genotype plus Genotype-by-Environment (GGE) analysis of trial data was conducted to describe the yield performance patterns of small grain varieties across sub-regions of California. Variety performance, summarized on a multi-year and multi-location basis, is presented in detail in our [annual report](#). To summarize briefly: the individual trials demonstrated evidence of GxE separation, with the average variety ranking based on the historical regional groupings diverging to some degree. However, there was greater GxE divergence among individual trial locations, independent of regional grouping, than the average of sites within regions. Also, the degree of GxE divergence was not entirely consistent across crop types. Moving forward, it may be most appropriate to summarize similar locations via linear mixed models and least squares means independent of regional grouping using the GGE analysis to determine within and across-year groupings.

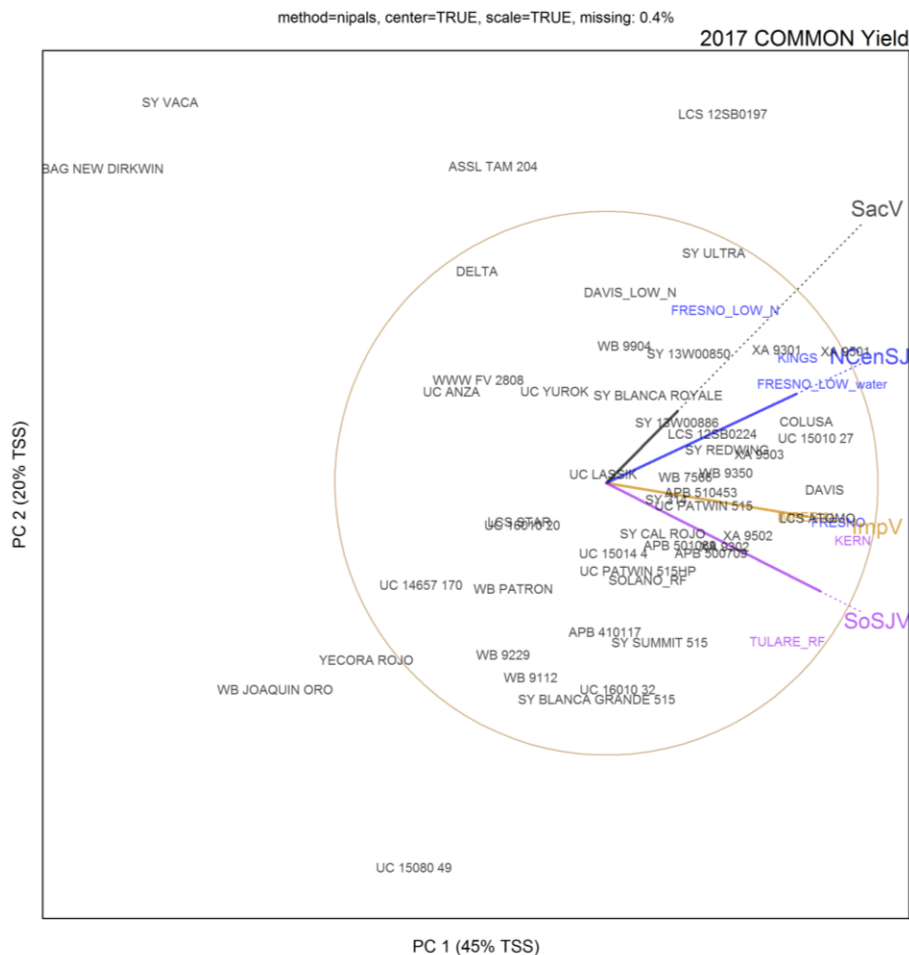


Figure 4. GGE biplot depicting the relative effect of genotype (x-axis) and genotype-by-environment (y-axis) on common wheat variety performance in the 2016-17 trial.

For more information regarding Objective 4 please refer to the *Multi-environment Trial Summary & Analysis* sections of the [UC Small Grains Annual Report](#).

*Objective 5: Report results of the research and analysis on our program website, in extension meetings and other agricultural forums.*

**Web Development:** During the reporting period, we successfully [released](#) an interactive web-based variety selection tool (<http://smallgrainselection.plantsciences.ucdavis.edu/>) as part of ongoing improvements and developments from the UC Agronomy Research and Information Center (AgRIC). The tool is designed to help pinpoint small grain varieties that have performed well in particular regions and environments of California using data from multi-year, multi-location field trials. The main features of the tool are: a series of selection menus that interact with a map to give the user real-time feedback on how particular crop selections are represented geographically in the trial data; a custom table that is returned based on these selections; and a second series of selection options that can modified/narrow the table based on user choices. A video demonstrating how to use the tool is also available. In addition, a second tool designed to navigate site-specific and multi-year data interactively in a similar manner is under development and should be finished during the spring of 2018.

This tool and other updates to the Variety section of the Small Grains portion of the AgRIC ([http://smallgrains.ucanr.edu/Variety\\_Results/2017/](http://smallgrains.ucanr.edu/Variety_Results/2017/)) have resulted in increased usage and traffic on our websites. Traffic on <http://smallgrains.ucanr.edu/> is up 270%, and average session duration increased 450% during Fall 2017 compared to Fall 2016 on the former site. The site was viewed over 11,000 times during 2017.

In addition to the efforts to update the web reporting related to variety selection, we have continued a UC Small Grains Blog, begun during the previous reporting period (<http://ucanr.edu/blogs/smallgrains/>). The goal for the blog is that it serve as a place for field notes, announcements, and timely discussions of interest to growers, consultants, agronomists and others involved in the California small grain industry. We produced 14 posts in 2016-2017 season, and the blog was viewed over 7000 times during the reporting period. The top posts were: [2017 University of California Small Grains Survey Results](#), [California small grain disease notes from the field](#), and [Topdress of nitrogen at tillering stage is something to seriously consider over the coming weeks](#).

**Extension Events:** In collaboration with CCIA and the California Wheat Commission, we hosted our annual Small Grains/Alfalfa-Forages Field Day on 11 May in Davis, with over 200 people in attendance. In addition, in collaboration with the California Grain Foundation and the California Wheat Commission, we hosted the annual Wheat Collaborators Meeting on 25 October in Davis. There were approximately 100 people in attendance. Our group also hosted a 2-day training on the use of sUAS in agricultural research and a field tour of a Fresno County trial. Finally, as detailed in the Publication or Reports section, the Grain Cropping Systems group collectively gave 16 public presentations related to small grains at extension forums during the reporting period (4/1/2017-4/1/2018).

**Student Training and Development:** The Grain Cropping Systems Lab supported 3 graduate students and 6 undergraduate students during the reporting period. Taylor Nelsen, who began as a MS student in Horticulture and Agronomy at UC Davis, is leading our efforts to improve the precision of N fertilizer management on UC malting barley varieties. She has also been instrumental to the integration of sUAS into our small grain trial efforts. Leah Puro, a MS student in the International Agricultural Development program at UC Davis, collected biomass accumulation, physiological stage, grain accumulation, and regrowth potential data on different

nitrogen and water management practices in our wheat trials. These measurements are contributing to our model calibration and validation efforts. From these same measurements Leah estimated grain re-growth potential and has summarized the potential for dual purpose wheat production under high and low-productivity environments. Taylor Becker, a MS student in Horticulture and Agronomy at UC Davis, began in the Fall 2017 and is leading efforts to develop an empirical relationship between crop evapotranspiration and N uptake in California corn crops. The undergraduate students working in our group are majoring in agricultural and environmental sciences and eager to gain exposure to the day-to-day details involved in agronomic research. They contribute greatly to the plant and soil processing and analysis in our research as part-time employees.

#### **PUBLICATION OR REPORTS (since 4/1/2017):**

Lundy, M.E., Rosa, G., Turner, C., George, N. (2017). Interactive Webtool for Smallgrain Variety Selection. *Ongoing*. Available: <http://smallgrainselection.plantsciences.ucdavis.edu/>

Lundy, M.E., Rodriguez, M.V., Puro, L., Nelsen, T., Mathesius, K., Leinfielder-Miles, M., Wright, S., Orloff, S., Wilson, R., Culp, D., George, N.A., (2017). 2017 California Small Grain Variety Testing Data. September 27, 2017. Available: [http://smallgrains.ucanr.edu/Variety\\_Results/2017/](http://smallgrains.ucanr.edu/Variety_Results/2017/)

Lundy, M.E., Quinton, M. University of California Agronomy Research and Information Center Small Grains Variety Selection. *Ongoing*. Available: <http://smallgrains.ucanr.edu/Variety/>

Lundy, M.E., UC Small Grains Blog. *Ongoing*. Available: <http://ucanr.edu/blogs/smallgrains/>

Lundy, M.E., et al. "Developing Nitrogen Management Strategies to Optimize Grain Yield and Protein Content while Minimizing Leaching Losses in California Wheat." Report to the California Department of Food and Agriculture Fertilizer Research and Education Program. May 23, 2017.

Lundy, M.E. et al. [California small grain disease notes from the field](#). UC Small Grains Blog. April 10, 2017.

Lundy, M.E., [2017 University of California Small Grains Survey Results](#). UC Small Grains Blog. July 17, 2017.

Lundy, M. E. [Glume darkening symptom observed in 2016-17 season has no apparent yield penalty in UC trial](#). UC Small Grains Blog. July 20, 2017.

Lundy, M.E. et al. [Preliminary yield results from fall-planted 2016-17](#). UC Small Grains Blog. August 4, 2017.

Lundy, M.E., et al. [Start planning your nitrogen management strategy for fall-planted wheat now \(and consider using a N-rich reference strip to manage your N more precisely\)](#). UC Small Grains Blog. August 24, 2017.

Lundy, M.E. et al. [Preliminary yield results from fall-planted 2016-17](#). UC Small Grains Blog. August 4, 2017.

Lundy, M.E. et al. [2017 California Small Grain Variety Testing Data](#). UC Small Grains Blog. September 27, 2017.

Lundy, M.E. et al. [Announcing an Interactive Webtool for Small Grain Variety Selection](#). UC Small Grains Blog. October 9, 2017.

Mathesius, K. et al. [A Slow Start to Winter Rains: checking your stand before nitrogen topdressing in wheat](#). UC Small Grains Blog. January 18, 2018.

Lundy, M.E. [Statewide small grain testing program update](#). UC Small Grains Blog. January 23, 2018.

Lundy, M.E. [Adapting in-season N rates for wheat during a dry year](#). UC Small Grains Blog. February 20, 2018.

Leinfelder-Miles, M. et al. [Frost Injury in Wheat](#). UC Small Grains Blog. March 7, 2018.

#### Presentations and Trainings

Lundy, M.E., et al. “Achieving Efficient N Fertilizer Management in California Spring Wheat.” San Joaquin Valley CCA Nitrogen Management Training Meeting, California Institute for Water Resources, 6 March, 2018.

Lundy, M.E., “Statewide Wheat and Barley Variety Trial Updates.” Sacramento Valley Field Crops Winter Grower Meeting. Woodand, CA, 21 February, 2018.

Nelsen, T. and Lundy, M.E., “How does rate and timing of N fertilizer management affect yield and quality in California malting barley?” California Plant and Soil Conference. Fresno, CA, 6 February, 2018.

Puro, L. and Lundy, M.E., “The agronomic and economic potential for wheat to be harvested as a dual-purpose crop in California” California Plant and Soil Conference. Fresno, CA, 6 February, 2018.

Lundy, M.E., “Tools for Selecting Small Grain Varieties from UCCE Statewide Trials.” Delta Field Crops Winter Grower Meeting. Stockton, CA, 12 January, 2018

Nelsen, T. and Lundy, M.E., “sUAS in Agricultural Research Training Workshop.” Department of Plant Sciences. UC Davis. 18-19 December, 2017.

- Lundy, M.E., "UC Small Grains Research and Extension Update." California Quality Collaborators Program. Davis, CA. 25 October, 2017.
- George, N., "2016-17 Collaborative Trials Overview." California Quality Collaborators Program. Davis, CA. 25 October, 2017.
- Nelsen, T. and Lundy M.E., "Will Spectral Reflectance from UAS Predict In-Season Barley Nitrogen Status?" UC Davis Small Grain and Alfalfa/Forages Field Day. Tulelake, CA, 26 July, 2017.
- Lundy, M.E., "Development of Small Grain Varieties in California." Intermountain Research and Extension Center Field Day. Tulelake, CA, 26 July, 2017.
- Rodriguez, M. and Lundy, M.E., "Potential agronomic and soil carbon contributions from the perennial wheatgrass Kernza in California?" 2017 Russell Ranch Field Day. Winters, CA, 7 June, 2017
- Nelsen, T., "Will Spectral Reflectance from UAS Predict In-Season Barley Nitrogen Status?" UC Davis Small Grain and Alfalfa/Forages Field Day. Davis, CA, 11 May 2017.
- Lundy, M.E., "Common Wheat, Durum, Triticale and Barley Variety Evaluations: Comments on Methods, Productivity, and Cropping Season Observations." UC Davis Small Grain and Alfalfa/Forages Field Day. Davis, CA, 11 May 2017.
- Lundy, M.E., "UC small grains research and extension update." UC Cooperative Extension Agronomic Crops Program Team Meeting. Davis, CA 12 May 2017.
- Lundy, M.E., "Update on the Wheat Variety Testing Program to the California Wheat Commission." California Wheat Commission Quarterly Meeting. Woodland, CA, 12 April 2017.
- George, N., "UC small grains variety testing update." Westside Research and Extension Center Field Day. Five Points, CA 19 April 2017.

#### **CONCISE GENERAL SUMMARY OF CURRENT YEAR'S RESULTS:**

The California small grain crop in 2016-17 consisted of approximately 450 thousand planted acres. Approximately 45% of the planted area of wheat was harvested for grain. Total wheat acres in California were at their lowest in a decade. The declines are likely to be the result of drought conditions in the 2013-14 and 2014-15 seasons and concurrent low grain prices.

The 2014-15 and 2015-16 seasons were characterized by considerably below average rainfall and growing season temperatures that were above average. In contrast, higher-than-average rainfall was received throughout California in the 2016-17 seasons, particularly in northern parts of the state during the period from late January to early March. Consequently, locations in the Sacramento Valley, notably Colusa and Davis, that may have received supplemental irrigation in



more average seasons did not receive any supplemental water. In comparison to previous seasons, grain yields at most locations in 2016-17 were above average. Rust ratings were not notably higher than previous years, although the warm and wet conditions may have resulted in the high incidence of powdery mildew in Southern San Joaquin Valley and presence of septoria, neither of which had been documented in the statewide tests in recent seasons.

Detailed results for yield, agronomic characteristics, disease resistance and quality evaluations are presented at the UC Davis Small Grains web site:

[http://smallgrains.ucanr.edu/Variety\\_Results/2017/](http://smallgrains.ucanr.edu/Variety_Results/2017/)

**Acknowledgements:** I greatly appreciate the efforts of the UC Grain Cropping Systems Lab members and to Jorge Dubcovsky and the members of his research group for their contributions to our work. In addition, I would also like to thank the CE Advisors, the UC research station staffs and the cooperating growers involved with the trials. We could not do this without you! We look forward to continued progress in the coming year and we are grateful for the support of our program by the California Wheat Commission and the California Crop Improvement Association.

Sincerely,



Mark Lundy, Assistant CE Specialist  
Dept. of Plant Sciences, University of California, One Shields Avenue,  
Davis CA 95616-8515, Phone: (530) 902-7295, Fax: (530) 752-4361  
E-mail: melundy@ucdavis.edu



February 27, 2018

**Wheat Producers Approve Continuation  
Of The California Wheat Commission**

In a recently completed referendum, the state’s wheat producers voted to continue the operations of the California Wheat Commission (CWC). The California Wheat Commission Law requires that such a vote must be conducted every five years. The referendum results are as follows:

<b>Results of California Wheat Commission Continuation Referendum</b> (conducted January 17, 2018 – February 15, 2018)	
Number of Eligible Producers Sent Ballots	3,372
Number of Producers that Voted in the Referendum	430
Number of Voting Producers that Voted for Continuing the CWC	367
Percentage of Voting Producers that Voted for Continuing the CWC	<b>85%</b>

In order for the CWC to continue, a majority of those producers voting must vote in favor of continuation. Since 85% of the voting producers favored continuation, the CWC is authorized to operate for another five years through April 30, 2023.

The CWC was established in 1983 to support research that improves California wheat quality and marketability and to develop and maintain domestic and international markets for California wheat. The activities of the Commission are funded by a mandatory producer assessment which is currently \$0.075 per cwt. The Commission is directed by a board of directors consisting of nine producers, two handlers, one at-large member and one public member - each with an alternate.

If you have any question regarding the referendum, please call Dennis Manderfield of this office at 916-900-5018. If you have any questions regarding the activities of the CWC, please call Claudia Carter, Executive Director of the CWC, at 530-661-1292.

Sincerely,

Robert Maxie, Chief  
Marketing Branch

2018 0227 | 2018 0227 | 4249



## California Wheat Commission Referendum History

	<u>82/83</u>	<u>87/88</u>	<u>92/93</u>	<u>97/98</u>	<u>02/03</u>	<u>07/08</u>	<u>12/13</u>	<u>17/18</u>
Date Results Received	4/19/1983	12/14/1987	2/5/1993	12/31/1997	4/8/2003	2/28/2003	3/4/2013	2/27/2018
Total Number of Producers on List	4959	4352	5206	3998	5117	5077	4405	3372
Total Number of Valid Ballots Received	2306	653	772	505	482	591	535	430
Percentage Voting	46.5%	15.0%	14.8%	12.6%	9.4%	11.6%	12.4%	12.8%
Voted in Favor of Continuation	1883	491	503	401	410	513	466	367
Voted in Favor of Termination	423	162	269	104	72	78	69	63
Percentage that Voted in Favor of Continuance	<b>81.7%</b>	<b>75.2%</b>	<b>65.2%</b>	<b>79.0%</b>	<b>85.1%</b>	<b>87%</b>	<b>87.1%</b>	<b>85.4%</b>
Percentage that Voted in Favor of Termination	<b>18.3%</b>	<b>24.8%</b>	<b>34.8%</b>	<b>21.0%</b>	<b>14.9%</b>	<b>13%</b>	<b>12.8%</b>	<b>14.7%</b>
Harvested Wheat Acreage Previous to vote (1,000 acres)	1,125	567	605	544	390	315	445	182
Wheat Production (short tons) previous to vote (1,000 tons)	2,449	1,317	1,392	1,300	945	790	1,216	372
Wheat Acreage Planted at time of vote.(1,000 acres)	810	590	591	690	710	808	700	369

## HANDLER AUDIT POLICY

### **BACKGROUND:**

For FY 2012/13 and 2013/14, the Commission had a handler audit policy calling for four random handler audits (in the absence of any targeted audit); one chosen from the top eight handlers by volume, the other three from the whole list of handlers. When the new policy was adopted in December, 2011, it included language calling for a re-evaluation after two years based on audit findings and current circumstances.

In the first year, four random audits were performed by CDFA at a cost of \$4,000. The auditors covered a three year period to verify the correctness of assessments paid on hundredweights purchased. No significant discrepancies were found.

In the second year, four random audits were also performed. Three found no discrepancies while the fourth identified \$320 in underpayment. The cost was \$800 per audit.

In reviewing the handler audit file back to 2002, there are only three major findings. Two involved underpayment of ~ \$2,800 and \$10,350. The third found an overpayment of more than \$33,000, which the Commission repaid.

The assessment collection system seems to be working well. Isabel sends out Assessment Reports on a set schedule and follows up when they are late. Late payments are subject to fines and interest, so handlers have an incentive to report in a timely manner.

At the end of the year, handlers are required to provide grower lists with tonnage and assessments; these lists are checked against the reports received.

### **RECOMMENDATION:**

For FY14/15, the Commission accepted a staff recommendation that two audits be performed, with priority given to any targeted audits. As the year progressed, with no targeted audit apparent and assessments as low as predicted, staff consulted with the Chairman and recommended that no audits be done. He accepted this recommendation.

For FY 15/16, the Commission conducted one targeted audit on February 4, 2016 and found that assessments were underpaid by \$10,073.04. CWC will add penalties and interest to the unpaid balance. The CWC has had difficulties contacting the handler and is trying to finalize this audit. The ED will continue collection efforts moving into the 2016/17 FY.

Updates: As of August 15, 2016, the targeted audit has not been finalized. Updates and recommendations will be made at the September 7, 2016 Board Meeting.

For FY 16/17, with budget still constrained, staff recommends no handler audit be performed unless the need for a targeted audit is identified. If that occurs, CDFA will be contacted and a Budget Change Proposal presented at the next Commission meeting as needed. Handler audit expenses are included in 508: Professional Services. Targeted audit performed on February 4, 2016 rolled over into FY 16/17. Due to recommendations from CDFA, two audits were performed for FY16/17. This policy should be reviewed at the April, 2017 meeting.

On April 24, 2017 the Board approved the following:

- For FY 17/18, a recommendation to perform two handler audits was approved by the California Wheat Commission Board. CDFA will be notified about the two handlers to be audited.
- Upon receiving CDFA notification of the completion of a Handler's audit with findings of assessments due to the Commission; the California Wheat Commission is responsible to send a notification to the Handler. The notification requests the Handler a payment in full within thirty-calendar days; or a late penalty fee and interest charges will incur. According to our law: "Any producer or handler who fails to file a return or pay any assessment within the time required by the commission shall pay to the commission a penalty of 10 percent of the amount of such assessment determined to be due and, in addition, 1.5 percent interest per month on the unpaid balance."

This policy should be reviewed at the April, 2018 meeting.

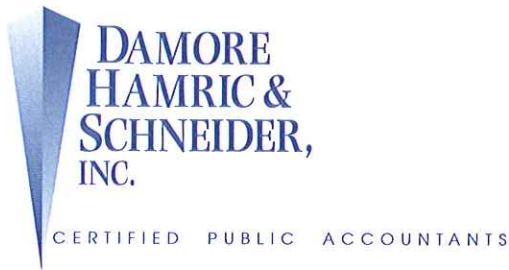
## **HANDLER AUDIT POLICY**

Upon receiving California Department of Food Agriculture (CDFA) notification of the completion of a Handler's audit with findings of assessments due to the Commission:

- The California Wheat Commission is responsible to send a notification to the Handler.
- The notification will request the Handler a payment in full within thirty-calendar days; or a late penalty fee and interest charges will incur.

According to our law: "Any producer or handler who fails to file a return or pay any assessment within the time required by the commission shall pay to the commission a penalty of 10 percent of the amount of such assessment determined to be due and, in addition, 1.5 percent interest per month on the unpaid balance."

This policy will be reviewed by the Board on April 2018.



March 15, 2018

To the Board of Directors  
Claudia Carter- Executive Director  
California Wheat Commission  
1240 Commerce Avenue, Suite A  
Woodland, CA 95776-5923

We are pleased to confirm our understanding of the terms of our engagement and the nature and limitations of the services we are to provide for California Wheat Commission.

We will apply the agreed-upon procedures listed in the attached schedule that were specified and agreed to by the management of California Wheat Commission and the State of California Department of Food and Agriculture Marketing Branch to assist California Wheat Commission in meeting the compliance requirements set forth by the California Food and Agricultural Code for the year ending April 30, 2018. Our engagement to apply agreed-upon procedures will be conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. The sufficiency of the procedures performed or to be performed is solely the responsibility of those parties specified in the report and we will require an acknowledgment in writing of that responsibility. Consequently, we make no representation regarding the sufficiency of the procedures described in the attached schedule either for the purpose for which the agreed-upon procedures report has been requested or for any other purpose.

Because the agreed-upon procedures listed in the attached schedule do not constitute an examination or review, we will not express an opinion or conclusion on California Wheat Commission's financial statements or any elements, accounts, or items thereof. In addition, we have no obligation to perform any procedures beyond those listed in the attached schedule.

We plan to begin our procedures on approximately July 23, 2018 and, unless unforeseeable problems are encountered, the engagement should be completed by September 2018.

We will issue a written report upon completion of our engagement that lists the procedures performed and our findings. Our report will be addressed to California Wheat Commission and the State of California Department of Food and Agriculture Marketing Branch. If, for any reason, we are unable to complete any of the procedures, we will describe in our report any restrictions on the performance of the procedures, or not issue a report and withdraw from this engagement.

1515 River Park Drive, Suite 150  
Sacramento, CA 95815-4606  
Tel (916) 481-2856  
Fax (916) 488-4428  
<http://www.dhscpa.com>

You understand that the report is intended solely for the information and use California Wheat Commission and the State of California Department of Food and Agriculture Marketing Branch, and should not be used by anyone other than these specified parties. Our report will contain a paragraph indication that had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

An agreed-upon procedures engagement is not designed to detect instances of fraud or noncompliance with laws or regulations; however, we will communicate to you any known and suspected fraud and noncompliance with laws or regulations affecting the procedures listed in the attached schedule that come to our attention. In addition, if, in connection with this engagement, matters come to our attention that contradicts the procedures listed in the attached schedule, we will disclose those matters in our report. Such disclosures, if any, may not necessarily include all matters that might have come to our attention had we performed additional procedures or an examination or review.

You are responsible for the presentation of California Wheat Commission's financial statements or any elements, accounts or items thereof in accordance with the requirements set forth by the California Food and Agricultural Code; and for selecting the criteria and procedures and determining that such criteria and procedures are appropriate for your purposes. You are also responsible for, and agree to provide us with a written assertion about the procedures listed in the attached schedule. In addition, you are responsible for providing (1) access to all information of which you are aware that is relevant to the performance of the agreed-upon procedures on the subject matter, (2) additional information that we may request for the purpose of performing the agreed-upon procedures, and (3) unrestricted access to persons within the Commission from whom we determine it necessary to obtain evidence relating to performing those procedures.

At the conclusion of our engagement, we will require certain written representations in the form of a representation letter from management that, among other things, will confirm management's responsibility for the procedures listed in the attached schedule in accordance with the requirements set forth by the California Food and Agricultural Code.

Ronald Ley is the engagement partner and responsible for supervising the engagement and signing the report or authorizing another individual to sign it.

We estimate that our fees for these services will range from \$1,500 to \$2,500. You will also be billed for travel and other out of pocket costs such as report production, word processing, postage, etc. The fee estimate is based on anticipated cooperation from your personnel and the assumption that unexpected circumstances will not be encountered during the engagement. If significant additional time is necessary, we will discuss it with you and arrive at a new fee estimate before we incur the additional costs. Our invoice is payable on presentation.



We appreciate the opportunity to assist you and believe this letter accurately summarizes the significant terms of our engagement. If you have any questions, please let us know. If you agree with the terms of our engagement as described in this letter, please sign one copy of the letter and return it to us. If the need for additional services arises, our agreement with you will need to be revised. It is customary for us to enumerate these revisions in an addendum to this letter. If additional specified parties of the report are added, we will require that they acknowledge in writing their agreement with the procedures performed or to be performed and their responsibility for the sufficiency of procedures.



DAMORE, HAMRIC & SCHNEIDER, INC.  
Certified Public Accountants

RESPONSE:

This letter correctly sets forth the understanding of California Wheat Commission.

By: \_\_\_\_\_

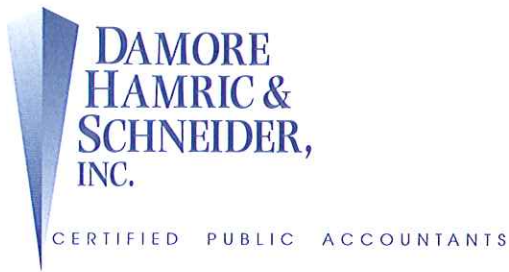
Title: \_\_\_\_\_

Date: \_\_\_\_\_

ATTACHMENT

The procedures to be performed are as follows:

1. In order to review compliance with California Department of Food & Agriculture (CDFA) Accounting Guidelines and General Rules and the Commission's internal policies and procedures for the period of May 1, 2017 – April 30, 2018:
  - a. We will select a sample of all travel, lodging, meals, and entertainment expense accounts.
  - b. We will determine if the Commission was properly reporting employee vehicle use and tax by:
    - i. Ensuring that employees using Commission-owned vehicles followed the Commission's automobile policy, if any.
    - ii. Review the vehicle use calculation and agreeing the amount to employee's form W-2, if applicable.
  - c. We will determine if any inappropriate financial transactions were occurring between the Commission and the related entities by:
    - i. Reviewing all financial transactions between the Commission and related entities to determine if they met the requirements of the Memorandum of Understanding applicable to the period. We will then select transactions and contracts for testing.
  - d. We will select a sample of all contracts.
2. In order to assess the Commission's current internal control structure, we identified key controls of each cycle listed below and as described in the *CDFA Accounting Guidelines and General Rules*, and will compare the key controls to the Commission's current internal control procedures as documented in the Commission's Accounting Policies and Procedures Manual. We will also perform a verification of each key control by selecting a sample item to confirm the process.
  - a. General ledger and bank reconciliation oversight
  - b. Safety of property
  - c. Cash receipts
  - d. Accounts receivable
  - e. Cash disbursements
  - f. Travel, lodging, and meals



March 15, 2018

To the Board of Directors  
Claudia Carter- Executive Director  
California Wheat Commission  
1240 Commerce Avenue, Suite A  
Woodland, CA 95776-5923

We are pleased to confirm our understanding of the services we are to provide for California Wheat Commission for the year ended April 30, 2018.

We will audit the financial statement of California Wheat Commission which comprise the statements of net position as of April 30, 2018 and 2017, and the related statements of revenues, expenses and changes in net position, and statements of cash flows for the years then ended, and the related notes to the financial statements. Also, the following supplementary information accompanying the financial statements will be subjected to the auditing procedures applied in our audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, in accordance with auditing standards generally accepted in the United States of America, and we will provide an opinion on it in relation to the financial statements as a whole:

1. Schedules of General and Administrative Expenses

### **Audit Objective**

The objective of our audit is the expression of an opinion about whether your financial statements are fairly presented, in all material respects, in conformity with U.S. generally accepted accounting principles. Our audit will be conducted in accordance with auditing standards generally accepted in the United States of America and will include tests of your accounting records and other procedures we consider necessary to enable us to express such an opinion. We will issue a written report upon completion of our audit of California Wheat Commission's financial statements. Our report will be addressed to the Board of Directors and Senior Management of California Wheat Commission. We cannot provide assurance that an unmodified opinion will be expressed. Circumstances may arise in which it is necessary for us to modify our opinion or add an emphasis-of-matter or other-matter paragraph. If our opinion is other than unmodified, we will discuss the reasons with you in advance. If, for any reason, we

are unable to complete the audit or are unable to form or have not formed an opinion, we may decline to express an opinion or withdraw from this engagement.

### **Audit Procedures**

Our procedures will include tests of documentary evidence supporting the transactions recorded in the accounts, tests of the physical existence of inventories, and direct confirmation of certain assets and liabilities by correspondence with selected customers, creditors, and financial institutions. We will also request written representations from your attorneys as part of the engagement. At the conclusion of our audit, we will require certain written representations from you about the financial statements and related matters.

An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements; therefore, our audit will involve judgment about the number of transactions to be examined and the areas to be tested. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements. We will plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether from (1) errors, (2) fraudulent financial reporting, (3) misappropriation of assets, or (4) violations of laws or governmental regulations that are attributable to the entity or to acts by management or employees acting on behalf of the entity.

Because of the inherent limitations of an audit, combined with the inherent limitations of internal control, and because we will not perform a detailed examination of all transactions, there is a risk that material misstatements may exist and not be detected by us, even though the audit is properly planned and performed in accordance with U.S. generally accepted auditing standards. In addition, an audit is not designed to detect immaterial misstatements or violations of laws or governmental regulations that do not have a direct and material effect on the financial statements. However, we will inform the appropriate level of management of any material errors, fraudulent financial reporting, or misappropriation of assets that comes to our attention. We will also inform the appropriate level of management of any violations of laws or governmental regulations that come to our attention, unless clearly inconsequential. Our responsibility as auditors is limited to the period covered by our audit and does not extend to any later periods for which we are not engaged as auditors.

Our audit will include obtaining an understanding of the entity and its environment, including internal control, sufficient to assess the risks of material misstatement of the financial statements and to design the nature, timing, and extent of further audit procedures. An audit is not designed to provide assurance on internal control or to identify deficiencies in internal control. However, during the audit, we will communicate to you and those charged with governance internal control related matters that are required to be communicated under professional standards.

We may from time to time, and depending on the circumstances, use third-party service providers in serving your account. We may share confidential information about you with these service providers, but remain committed to maintaining the confidentiality and security of your information. Accordingly, we maintain internal policies, procedures, and safeguards to protect

the confidentiality of your personal information. In addition, we will secure confidentiality agreements with all service providers to maintain the confidentiality of your information and we will take reasonable precautions to determine that they have appropriate procedures in place to prevent the unauthorized release of your confidential information to others. In the event that we are unable to secure an appropriate confidentiality agreement, you will be asked to provide your consent prior to the sharing of your confidential information with the third-party service provider. Furthermore, we will remain responsible for the work provided by any such third-party service providers.

### **Other Services**

We will prepare the financial statements of the California Wheat Commission in conformity with U.S. generally accepted accounting principles based on information provided by you.

We will perform the services in accordance with applicable professional standards issued by the American Institute of Certified Public Accountants. The other services are limited to the financial statement previously defined. We, in our sole professional judgment, reserve the right to refuse to perform any procedure or take any action that could be construed as assuming management responsibilities.

### **Management Responsibilities**

You are responsible for designing, implementing, and maintaining internal controls, including monitoring ongoing activities; for the selection and application of accounting principles; and for the preparation and fair presentation of the financial statements in conformity with U.S. generally accepted accounting principles. You are also responsible for making all financial records and related information available to us and for the accuracy and completeness of that information. You are also responsible for providing us with (1) access to all information of which you are aware that is relevant to the preparation and fair presentation of the financial statements, (2) additional information that we may request for the purpose of the audit, and (3) unrestricted access to persons within the company from whom we determine it necessary to obtain audit evidence.

Your responsibilities include adjusting the financial statements to correct material misstatements and confirming to us in the management representation letter that the effects of any uncorrected misstatements aggregated by us during the current engagement and pertaining to the latest period presented are immaterial, both individually and in the aggregate, to the financial statements taken as a whole.

You are responsible for the design and implementation of programs and controls to prevent and detect fraud, and for informing us about all known or suspected fraud affecting the entity involving (1) management, (2) employees who have significant roles in internal control, and (3) others where the fraud could have a material effect on the financial statements. Your responsibilities include informing us of your knowledge of any allegations of fraud or suspected fraud affecting the entity received in communications from employees, former employees, regulators, or others. In addition, you are responsible for identifying and ensuring that the Company complies with applicable laws and regulations. You are responsible for the preparation of the supplementary information in conformity with U.S. generally accepted accounting

principles. You agree to include our report on the supplementary information in any document that contains, and indicates that we have reported on, the supplementary information. You also agree to include the audited financial statements with any presentation of the supplementary information that includes our report thereon.

You agree to assume all management responsibilities for the financial statement preparation services, and any other nonattest services we provide; oversee the services by designating an individual, preferably from senior management, with suitable skill, knowledge, or experience; evaluate the adequacy and results of the services; and accept responsibility for them.

**Engagement Administration, Fees, and Other**

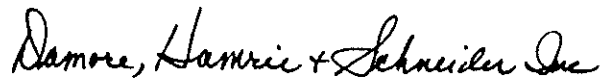
We understand that your employees will prepare all cash, accounts receivable, and other confirmations we request and will locate any documents selected by us for testing.

Ronald Ley is the engagement partner and is responsible for supervising the engagement and signing the report or authorizing another individual to sign it. We expect to begin our audit on July 23, 2018 and to issue our report no later than September 2018.

We estimate that our fees for these services will be \$8,500. The fee estimate is based on anticipated cooperation from your personnel and the assumption that unexpected circumstances will not be encountered during the engagement. If significant additional time is necessary, we will keep you informed of any problems we encounter and our fees will be adjusted accordingly. Our invoices for these fees will be rendered each month as work progresses and are payable on presentation.

We appreciate the opportunity to be of service to you and believe this letter accurately summarizes the significant terms of our engagement. If you have any questions, please let us know. If you agree with the terms of our engagement as described in this letter, please sign the enclosed copy and return it to us.

Very truly yours,

  
DAMORE, HAMRIC & SCHNEIDER, INC.  
Certified Public Accountants

RESPONSE:

This letter correctly sets forth the understanding of California Wheat Commission.

Officer signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**California Wheat Commission  
Year-End Checklist  
For the Year Ended April 30, 2018**

Please provide us with the following items at the time of our initial visit or the start of our field work, unless otherwise noted:

1. FY 2017/18 QuickBooks file- **Please upload to Smartvault 3 weeks prior to our scheduled fieldwork for sample selection**
2. Prepared Confirmation letters for all assessments, cash accounts, investment accounts, and legal - **Please provide by May 7, 2018. DHS will provide the templates**
3. A copy of each budget and amendment adopted for the period under audit.
4. A list of members of management and the governing body.
5. A copy of the minutes of each meeting of the governing body held during the period under audit.
6. The chart of accounts and accounting manual.
7. Listing of manual journal entries for the period May 1, 2017 through April 30, 2018.- **Please upload to Smartvault 1 week prior to our scheduled fieldwork for sample selection**
8. Bank reconciliations – April 30, 2018 bank reconciliations for each bank account. Provide access to the April 30, 2018 and May 31, 2018 bank statements.
  - Additional Bank reconciliations for June 2017 and February 2018
9. A list of investments at the end of the current period and the corresponding statements.
10. Listing of any prepaid expenses.
11. Year-end fixed asset listings reconciled to the general ledger, in excel format- **Please upload to Smartvault 1 week prior to our scheduled fieldwork**
12. Schedule of Accounts Payable
13. Check registers – May 1, 2018 through July 13, 2018, in excel format- **Please upload to Smartvault 1 week prior to our scheduled fieldwork for sample selection**

14. Schedule of any accruals.
15. Compensated absences schedule, in excel format.
16. A schedule of all insurance policies showing the names of companies, type of coverage, inclusive dates of coverage, and total cost per policy.
17. All reconciliations of payrolls for pay periods in the period under audit.
18. All contracts and agreements entered into by the governmental unit, including debt agreements and lease agreements.
19. Listing of all contracts in excel format.
20. Year end reconciliation of the accounts receivable subsidiary ledgers to the control total on the general ledger.
21. Comprehensive general ledger printout (electronically).
22. Internal control transactions flows updated for the current audit year- **DHS will provide prior year's templates for update**
23. Listing of employees including permanent and temporary.
24. Payroll registers for the following payroll periods: 6/30/17, 9/15/17, 2/28/18, 4/30/18 - **Please upload to Smartvault 3 weeks prior to our scheduled fieldwork for sample selection**
25. FY 17-18 Assessment Ranking Spreadsheet, in excel format.



## **MARKET DEVELOPMENT AND OUTREACH**

### **JANUARY – APRIL 2018**

#### **US Wheat Winter Meeting and DC Congress visits – Washington, DC**

During the US Wheat Winter Meeting, I had the opportunity to join in a few visits with the California Association of Wheat Growers Board members to the California representatives in Congress. Several issues were mentioned, including immigration and water issues in California; just to mention a few.

The US Wheat Winter meeting was well attended by all the wheat growing States. A well-attended presentations was of Mr. Len Heflich, President of Innovation for Success, LLC and vice-president of Global Food Safety, Quality and Crisis Management for Grupo Bimbo in Mexico City. Mr. Heflich expressed his concerns about the declining of US wheat quality and stated as one of the reasons being no incentives for growers to be paid for quality. Mr. Heflich mentioned that today due to the lack of high quality wheat, bakers need to add extra gluten (as an ingredient called Vital Wheat Gluten) as high as 6%; whereas before, about 40 years ago, white bread only contained ~1.5% gluten. Gluten is an expensive ingredient and more difficult to work with than just wheat. In addition, he mentioned that this ingredient might go into shortage, a problem for many bakers who use it to maintain consistency.

#### **Trip to Spain - Funded by the Grupo Iñesta Company, invited Commissioner Bill Cruickshank and myself**

This trip included visits to their headquarters to learn about their agricultural products and different farming operations in the Region of Andalucía, Spain. We visited farms producing different crops such as: lettuce, oranges, wheat, tomatoes, peppers, and others. The visits also included Greenhouse operations. We visited two wheat farms and met with the growers. On one of the wheat farms the grower explained how wheat is marketed in Spain. There are two types of wheat in Spain: hard and soft. Hard is considered durum wheat and soft is any other type of wheat. Soft wheat for them is anything they use for baking either for cookies or bread. The grower explained that after harvest he sends his wheat sample to a Wheat Quality Lab for testing. The grower receives the results and for instance last year from different fields he harvested wheat with protein content ranging from 10 – 13%. The grower sells the wheat directly to the miller. The miller receives the results and makes the decision regarding protein content and quality, they buy it based on those two parameters: protein content and quality.

#### **Latin American Cereals Conference (LACC) and International Gluten Workshop (IGW) organized by International Association for Cereal Science and Technology (ICC) and the International Maize and Wheat Improvement Center (CIMMYT). – Mexico City.**

First time attending this meeting. The meeting included breeders, millers, grain scientists and other companies interested in wheat mainly. The attendees were from several countries. We visited CIMMYT headquarters and toured their largest seed bank. We also visited CIMMYT wheat quality Lab. In general, most of the presentations were focused on wheat with enhanced wheat nutritional value such as high zinc wheat, high phenolic compounds, high antioxidants (anthocyanins), high resistant starch (fiber), and many other nutritional related research. Another significant focused was on wheat quality and studies about the improvement in that area. Relevant presentations included:

- Waxy wheat and its uses in baked products.
- Purple wheat and clinical studies to prove its health benefits. Moving forward with colored wheats.

- Ongoing Research in methods that will be fast and efficient for testing quality to avoid other methods that are time consuming for farmers, elevators, and breeders.
- Whole Grain Initiative to increase whole grain intake worldwide.
- New techniques for fast measurement of wheat quality using NIR or NMR in breeding programs.
- Durum study for bread baking.

At this meeting, I was able to talk with other representatives from Ardent Mills and to further gain knowledge of their interest in testing more specific wheat varieties from California. They are looking for varieties that perform well in different environments. They still like to use CA wheat in their blends because of highly functional properties in wheat make it for excellent products such as pancake batters as well as other array of baked products. We still need to know more about our own wheat and the many end-product use they have. Ardent Mills and their new ANNEX project includes a program of sourcing and milling 100% Sonora white wheat.

### **State Executives Meeting - Oklahoma, March 27th.**

Twelve State Wheat Commissions attended to this meeting. Among many issues we discussed, the States provide recommendations to US Wheat regarding upcoming meetings and locations. Also, each state provided an overview of their programs and how assessments are handled and how do each state deals with organic wheat participants not reporting or not willing to submit assessments.

In states such as Kansas and Oklahoma a new company called Indigo, is carrying an IP program. Indigo have signed a supply agreement with Grain Craft to purchase 1 million bushels of IP Indigo brand wheat with enhanced baking and milling quality. State Executives from both states are skeptical of this new venture and have not had a word with Indigo. According to Indigo, their technology uses seed treatments with microbes to improve plant's health and to boost crop yields.

Most of the states reported increased in refunds; which tends to be higher than average during years of low wheat prices.

### **Other marketing related meetings:**

- SUMESA S.A. Ecuador mill visit to learn more about Durum wheat growing region– March 26
- Visit with growers and Handlers in Bakersfield – April 2.
- AACCI Milling and Baking meeting – April 4-6. – Tennessee.

# STRATEGIC PLAN 2018-2022

## Background<sup>1</sup> and Developing the Strategic Plan

Wheat was the major crop planted in California in the 19<sup>th</sup> century (1801-1900). By the 1950's, the state's wheat output exceeded local consumption. California also was a leader in exports when most wheat produced in the state was shipped to Europe. This led to a pattern of integration to world markets which has characterized California agriculture to the present. In early 1980's wheat acreage exceeded 1 million due to the introduction of germplasm from the CIMMYT program in Mexico. However, the wheat lacked important wheat quality traits.

In 1983, the California Wheat Commission was formed mainly to address the wheat quality and protein issues in the state. Less than 500,000 acres of wheat currently is planted in California. We are set up to develop and implement a manageable program that will allow only the best wheat produced in the state to enter milling channels. Based on this, we need to provide to our domestic and international customers exactly what they are looking for regarding wheat quality, rather than expecting them to take what we have. California will be the leader in the development and implementation of a new wheat classification system based on quality.

Due to several disadvantages in the market place, we need to focus on a new strategy that will help create value to the wheat produced in California. Among the many disadvantages, transportation costs are high and are already an impediment for us to reach certain domestic and international markets. Also, volume will continue to be another of our major challenges. The ability to compete depends on capturing the higher end of the market, therefore we need to create value for the wheat that we produce in our state!

This strategic plan will focus on four goals (others will be considered in the future) and specific measures which are key for successful organizational functions in serving our stakeholders and the public over the next five years. We will be able to assess and measure performance to fulfill goals. The intention of this plan is to provide a strategic framework for this organization and its functions with the potential to accomplish improvements in programs and services that advance the Commission's vital role in the future success of the California Wheat Grower, impacting both domestic and international markets. Most of all, the strategies are intended to help foster a more constructive and productive relationship among all sectors of the California's Wheat Industry whose support will help to address the challenges in a more effective and impactful way.

SUMMARY: Independently and in collaboration with growers and handlers we aim to:

**Assure Quality ~ Facilitate Transactions ~ Add Value and Motivate Purchases**

Claudia Carter,  
Executive Director

## **GOAL ONE**

### **Implement Wheat Quality Classification System and Certification Program**

#### **Executive Summary**

This goal is designed to create a must needed definition of industry's expectations of California Wheat quality for wheat that is produced for food uses. This will become a guide for wheat growers and handlers, breeders, millers, and others in the wheat industry.

#### **Objectives and Strategies**

- 1. Develop wheat quality parameters to be considered for California Wheat.**
  - Establish a Wheat Quality Technical Committee which will include private and public breeders, millers, bakers, and a Wheat Commission representative.
  - Develop wheat quality targets by class, region and end-use.
  - Establish a California wheat quality classification protocol based on protein quality and end-use.
  
- 2. Evaluate and classify by quality all wheat varieties grown in California.**
  - Follow wheat quality classification protocol established by the Wheat Quality Technical Committee.
  - Acquire knowledge of every wheat variety grown in California and new varieties beginning to be produced, and spread that knowledge via publications.
  - Identify, evaluate and where beneficial implement quality testing technologies for fast and efficient testing.
  
- 3. Implement a certification program for varieties with enhanced wheat quality traits.**
  - Partner with the California Crop Improvement Association to implement a Quality Certification Program for new wheat varieties.
  - California Wheat Commission Quality Lab will evaluate new wheat varieties and share quality data for the certification process.
  - Analyze, certify, test and inspect wheat varieties from fields of growers desiring to participate in this program.
  - Find other partners who will help to endorse this certification program.

#### **Performance Measures**

- Increase the planted acreage of commercially available wheat varieties that have desirable quality characteristics.
- Increase the number of growers participating in the Wheat Quality Certification Program.
- Increase demand and use of wheat produced in California by domestic and international customers.

## GOAL TWO

### **Gain knowledge about current California market.**

#### **Executive Summary**

For the California Wheat Commission to develop budgets and strategies, we need to gain knowledge of the current market situation in California. The following strategies are proposed to help us gain that knowledge in a timely matter.

#### **Objectives and Strategies**

- 1. Learn the current and potential ways that wheat adds value.**
  - On the farm (revenue, rotational benefits, soil quality, etc.).
  - At the mill (synergies with imported wheat, meeting customers in niche markets, etc.).
  - For the California environment (air, water, biological diversity, etc.).
- 2. Learn how California wheat meets the needs of wheat buyers in California and other places.**
  - By classes for specific products.
  - Explore niche markets where California wheat will fit that might add value to California wheat.
  - Analyze the scale of California wheat production and scale of use of various markets.
- 3. Learn about the current obstacles California wheat faces.**
  - Supply or demand obstacles.
  - Wheat prices.
  - Environmental challenges.
  - Transaction costs per unit and added inconvenience compared to purchases of wheat brought in by rail from other regions.
  - Forage wheat mixes.

#### **Performance Measures**

- Increase information of our current situation in the market place.
- Increase the number of short-term studies to learn more our market.

## **GOAL THREE**

### **Promote and protect the desirable wheat quality characteristics of California Wheat.**

#### **Executive Summary**

California Wheat Growers helped set a hallmark for the state's farm sector. The image of California Wheat is rooted in innovation and in implementing novel approaches for growing and classifying wheat based on quality. California wheat farmers are world leaders in producing the best quality wheat by embracing modern technologies and utilizing prime agricultural practices.

#### **Objectives and Strategies**

- 1. Create an effective Communication Program to inform growers, handlers, millers, bakers, consumers, etc.**
  - Develop a catalog (printed and online) that contains the final wheat classification scheme and variety recommendations. Distribute catalogues to stakeholders.
  - Create a short 1-3-minute video introducing the wheat quality program and informing growers and handlers to the recommendations.
  - Partner with University of California Cooperative Extension Service to present seminars once or twice a year to inform growers.
  - Provide quarterly updates (e-Newsletter) and annual reports describing CWC's updates, informative material, and other pertinent materials.
- 2. Identify potential partners to help promote public varieties.**
  - Assess partnering with private breeders, seed companies, or grain handlers to help co-release and promote public varieties.
  - Establish an exclusive Variety Release Committee to assess the advantages of partnering with seed companies to promote certain public varieties containing specific quality or enhanced nutritional traits.
- 3. Open new markets, maintain markets and prevent marketing disruptions.**
  - Find partners that will help us reach our marketing efforts, such as other Commissions or Boards.
  - Continue our partnership with the University of California to evaluate public and private wheat varieties across California and to develop new California wheat varieties with improved disease resistance, quality and yield.
  - Collect, evaluate and distribute annual Crop Quality Reports.
- 4. Develop a Food Safety Program and industry participation.**
  - Assess the potential food safety risks in wheat production and handling in California.

- Develop a comprehensive program to inform growers and handlers about the potential food safety risks related to handling wheat.
- Establish an action plan in case of a major wheat product recall in the state – traceability.
- Create an education program for consumers about the potential risks of eating raw wheat flour.

#### **5. Expand our education efforts**

- Increase social network involvement to inform consumers about the California Wheat Commission efforts, wheat quality, wheat end uses, and wheat nutritional value.
- Attend regional events pertaining to agriculture and consumers.
- Develop short videos addressing wheat quality, wheat food safety, and wheat nutritional facts.

#### **Performance Measures**

- Increased the number and diversity of communication efforts to inform the industry about the Wheat Quality Program and Food Safety efforts.
- Increase the number of news releases from the California Wheat Commission to emphasize the Commission’s role in promoting and protecting the California Wheat Market.
- Increase the number of new UC wheat varieties with increased quality, yield and disease resistance.
- Increase the number of readers and followers in our social media and other networking outlets.
- Increase the number of partners to successfully help in promoting and protecting California Wheat.

## GOAL FOUR

### **Increase Engagement and Partnerships to fulfill the Commission's mission at its fullest potential.**

#### **Executive Summary**

Due to the decline in wheat acreage, the Commission's income continues to be reduced. Today we try to utilize our limited resources in thoughtful and efficient ways. We will rely even more on strategic partnerships and innovation to continue with our mission to support research and to develop and maintain markets for California wheat.

#### **Objectives and Strategies**

- 1. Strengthen Commission's support of and involvement with the Wheat Research Programs at the University of California. RESEARCH**
  - Work closely with the UC Wheat Breeding Program and Wheat Cooperative Extension Program to create an efficient collaborative effort.
  - Organize and hold meetings with University researchers of the wheat programs to foster fruitful communication with and between both entities.
  - Reinforce the Commission's presence and support at University organized events such a Field Days.
  
- 2. Expand and incorporate tools and approaches which improve efficacy and/or efficiency of existing programs. INNOVATION**
  - Partner with University of California to host wheat workshops at the different Cooperative Extension Programs in the state.
  - Initiate the Commission's participation in the Wheat Variety Release Committee at the University of California, Davis.
  - Create and publish timely updates from both wheat breeding and Cooperative Extension programs and distribute them electronically.
  
- 3. Identify potential partners to increase value of California Wheat. PARTNERSHIPS**
  - Explore the specific strengths of California's environment for wheat production and work with partners who have studied and understand the advantages of farming in California because of its climate and environment.
  - Find partners to amplify the message of Sustainability of wheat production in California.
  - Explore and fund specific short-term studies that focus on areas of advantages of producing wheat in California.
  - Develop strong partnerships with domestic mills to increase their interest in California Wheat.



## **Performance Measures**

- Increase the number of growers who participate in workshops and increase their awareness of the public breeding and cooperative extension programs.
- Increase the number of industry partners that read and share electronic updates.
- Increase the number of updates about the ongoing wheat research at the University of California.
- Increase the number of partners that will help us create value to California Wheat.



TO: California Wheat Commission  
From: TENG VANG  
DATE: April 13, 2018  
SUBJECT: LAB MANAGER REPORT

## **MEETING**

### **PNW (Pacific Northwest) Wheat Quality Council Meeting on 1/24/2018 – 1/26/2018**

- Participated in evaluating the breeder wheat lines and presented the results at the PNW meeting.

### **Common Wheat and Durum Wheat Regional Sites Quality Testing**

- Normally we run complete quality analysis for 2 sites for common wheat and durum wheat.
- This year and moving forward, all the sites will be evaluated for quality. Only select test will be conducted.
- There is a total of 9 sites for the common wheat and 5 sites for the durum wheat. The combined sample size is over 500 plus samples.
- Evaluating the samples is still in progress. Extremely busy.

### **Preferred Variety List**

- Work in progress. To establish a preferred variety list for all the California Wheat commercially grown in California.

### **Upcoming Projects**

- Modified Alveograph Method for common wheat
- Water and Nitrogen Management Evaluation for common wheat varieties.
- Results will be presented and display in upcoming future meetings.

### **Crop Quality Project**

- With the harvest approaching, I will be contacting handlers to help us collect samples for this year's crop quality program. The collection bags will be sent out to them before the harvest, Alejandra and I will be driving to all the various counties to pick up the samples.

**CALIFORNIA WHEAT COMMISSION**  
**FY 17/18 Income / Expense as of 3/31/18**

	FY 2016/17 ACTUAL \$.075/cwt	FY 2017/18 APPROVED 8/30/2017 \$.075/cwt	FY 2017/18 92% of FY (as of 03/31/18) \$.075/cwt	% of Budget	FY 2017/18 PROJECTED End of FY 17/18 \$.075/cwt
<b>INCOME:</b>					
401. ASSESSMENTS	\$765,850	\$700,000	\$569,612	81%	\$600,000
402. INTEREST	\$4,063	\$4,000	\$6,149	154%	\$6,150
403. OTHER INCOME	\$5,106	\$100	\$100	100%	\$100
407. LABORATORY					
CROP QUALITY	\$6,635	\$8,000	\$12,310	154%	\$12,310
LABORATORY ANALYSIS (+Training)	\$90,017	\$135,000	\$109,664	81%	\$113,000
405. REFUNDS	\$0	(\$20,000)	(\$15,064)	75%	(\$15,064)
<b>TOTAL INCOME</b>	<b>\$871,671</b>	<b>\$827,100</b>	<b>\$682,771</b>	<b>83%</b>	<b>\$716,496</b>
<b>EXPENSES:</b>					
<b>GENERAL &amp; ADMINISTRATIVE</b>					
501. SALARIES	\$192,299	\$238,398	\$201,302	84%	\$238,398
502. STAFF EXPENSE	\$2,772	\$3,000	\$3,121	104%	\$3,121
503. OFFICE EXPENSE	\$8,104	\$11,600	\$7,568	65%	\$8,000
504. OFFICE SERVICES	\$8,691	\$10,700	\$9,554	89%	\$10,000
506. INSURANCE	\$12,315	\$16,520	\$11,201	68%	\$12,000
508. PROFESSIONAL SERVICES	\$18,012	\$19,000	\$13,367	70%	\$13,500
509. CDFA	\$17,803	\$19,000	\$19,741	104%	\$19,800
513. COMM MTGS	\$4,847	\$6,182	\$4,466	72%	\$6,000
516. CONDOMINIUM FEES	\$4,047	\$4,100	\$3,710	90%	\$4,750
521. Building Maintenance	\$547	\$10,000	\$9,702	97%	\$9,702
<b>TOTAL G&amp;A EXPENSES</b>	<b>\$269,435</b>	<b>\$338,500</b>	<b>\$283,732</b>	<b>84%</b>	<b>\$325,271</b>
<b>RESEARCH</b>					
601. RESEARCH CONTRACTS	\$284,275	\$330,000	\$328,333	99%	\$328,333

**CALIFORNIA WHEAT COMMISSION**  
**FY 17/18 Income / Expense as of 3/31/18**

	FY 2016/17 ACTUAL \$.075/cwt	FY 2017/18 APPROVED 8/30/2017 \$.075/cwt	FY 2017/18 92% of FY (as of 03/31/18) \$.075/cwt	% of Budget	FY 2017/18 PROJECTED End of FY 17/18 \$.075/cwt
<b>MARKET DEVELOPMENT/OUTREACH</b>					
505. INFORMATION/MEMBERSHIP	\$3,614	\$3,550	\$2,903	82%	\$3,000
510. CAWG CONTRACT	\$18,000	\$20,000	\$20,000	100%	\$20,000
512. COMM EXPENSE	\$6,570	\$6,000	\$6,415	107%	\$6,500
600. TECHNICAL SERVICES	\$3,269	\$4,500	\$4,749	106%	\$4,749
602. PUBLICATIONS	\$700	\$1,500	\$4,953	330%	\$4,953
603. TRADE TEAMS	\$815	\$1,500	\$1,394	93%	\$1,394
604. MARKET DEVELOPMENT	\$13,009	\$10,000	\$9,307	93%	\$10,000
605. USWA	\$25,638	\$18,950	\$19,950	105%	\$19,950
621. WHEAT VARIETY SURVEY	\$3,936	\$4,000	\$2,018	50%	\$2,018
624. OUTREACH	\$13,889	\$10,000	\$10,078	101%	\$10,100
<b>TOTAL MARKET DEVELOPMENT</b>	<b>\$89,440</b>	<b>\$80,000</b>	<b>\$81,766</b>	<b>102%</b>	<b>\$82,664</b>
<b>LABORATORY</b>					
617. LABORATORY					
SALARIES	\$143,027	\$143,481	\$123,790	86%	\$135,000
OPERATING EXPENSE	\$33,286	\$38,500	\$27,939	73%	\$30,000
<b>TOTAL LAB</b>	<b>\$176,314</b>	<b>\$181,981</b>	<b>\$151,729</b>	<b>83%</b>	<b>\$165,000</b>
<b>OTHER</b>					
626. CAPITAL EXPENSE					
OFFICE	\$0	\$1,000	\$0	0%	\$0
LABORATORY	\$0	\$12,000	\$8,043	67%	\$8,043
<b>TOTAL CAPITAL EXPENSE</b>	<b>\$0</b>	<b>\$13,000</b>	<b>\$8,043</b>	<b>62%</b>	<b>\$8,043</b>
526. Reimbursed Expenses	(\$473)				
529. Bad Debt	\$5,361				
525. Depreciation Expenses	\$15,873				
<b>TOTAL EXPENSES</b>	<b>\$840,225</b>	<b>\$943,481</b>	<b>\$853,604</b>	<b>90%</b>	<b>\$909,311</b>
<b>NET INCOME</b>	<b>\$31,447</b>	<b>(\$116,381)</b>	<b>(\$170,833)</b>	<b>147%</b>	<b>(\$192,815)</b>
Adjustments to reconcile Net Income					
Net Cash by Operating Activities	\$35,870		(\$165,701)		
Net Cash by Investing Activities	\$9,231		0		
Net Cash Increase for Period	\$45,101		(\$165,701)		
<b>Changes In Net position:</b>					
Net Position, Beginning of Year	\$821,628	\$866,729	\$866,729		\$866,729
Net Position, End of Year	\$866,729	\$750,348	\$701,028		\$673,913

**California Wheat Commission**  
**Cash Flow Statement**  
**5/1/2017 to 3/31/2018**

**NET INCOME/EXPENSE** \$ (170,832.83)

Adjustments to reconcile Net Income  
to net cash provided:

**By Operations:**

Assessments Receivable	\$ 12,204.17
Customer Invoices (receivables)	\$ 4,884.19
Prepaid Contracts	\$ (666.33)
Prepaid Expenses	\$ 12,099.49
Accounts Payable	\$ (558.87)
Pension Payable	\$ (22,830.97)

**NET CASH INCREASE/DECREASE AS OF 3/31/18** \$ (165,701.15)

(Net Income +/- adjustments)

The Cash Flow Statement accounts for actual cash flows in and out of CWC. If income or an expenditure is not accounted for on the *current* FY Income/Expense report, then adjustments are made on the Cash Flow Statement to account for changes in cash position.

**BEGINNING CASH** (as of 5/01/2017)

Edward Jones CD	\$ 560,000.00
Edward Jones MM	\$ 1,295.06
RVCTY-MM	\$ 153,267.78
Tri Counties Bank MM	\$ 150,567.86
Tri Counties Bank Checking	\$ 1,598.00

**TOTAL OF BEGINNING CASH** \$866,728.70

**TOTAL CASH as of 3/31/2018** \$ 701,027.55

(Net cash provided by activities + beginning cash)

**CASH ON HAND** (as of 3/31/2018)

Edward Jones CD	\$ 513,000.00
Edward Jones MM	\$ 742.32
RVCTY-MM	\$ 153,494.49
Tri Counties Bank MM	\$ 26,064.30
Tri Counties Bank Checking	\$ 7,726.44

**TOTAL CASH AND BANK ACCOUNTS** \$701,027.55

**CALIFORNIA WHEAT COMMISSION  
ASSESSMENT HISTORY --**

MONTH	07/08		08/09		9/10		10/11		11/12		12/13		13/14	
	\$.05/cwt		Accrual method begins. \$.05/cwt		\$.05/cwt		\$.05/cwt		\$.05/cwt		\$.05/cwt		\$.05/cwt	
MAY	-\$22	0.0%	\$32,476	2.26%	\$60,504	5.58%	\$20,500	1.9%	\$38,542	3.2%	\$38,516	4.0%	\$20,560	2.4%
JUNE	\$20,971	2.6%	\$299,935	23.13%	\$299,268	33.16%	\$211,343	21.0%	\$238,798	23.3%	\$305,086	35.3%	\$278,041	35.1%
JULY	\$273,435	36.2%	\$568,415	62.68%	\$314,075	62.11%	\$474,756	64.1%	\$390,968	56.1%	\$360,093	72.3%	\$295,267	69.9%
AUG	\$280,284	70.7%	\$255,674	80.48%	\$98,140	71.15%	\$189,184	81.2%	\$260,621	77.9%	\$61,845	78.7%	\$77,979	79.1%
SEPT	\$111,799	84.5%	\$68,392	85.23%	\$44,579	75.26%	\$53,064	86.0%	\$69,461	83.7%	\$34,928	82.3%	\$38,490	83.6%
OCT	\$36,152	88.9%	\$49,849	88.70%	\$48,796	79.76%	\$40,035	89.7%	\$66,233	89.3%	\$41,025	86.5%	\$22,987	86.3%
NOV	\$15,830	90.9%	\$8,703	89.31%	\$32,616	82.76%	\$12,452	90.8%	\$11,707	90.3%	\$11,460	87.7%	\$10,430	87.5%
DEC	\$17,617	93.0%	\$15,415	90.38%	\$23,696	84.95%	\$15,162	92.2%	\$18,978	91.9%	\$24,267	90.2%	\$17,142	89.5%
JAN	\$7,824	94.0%	\$79,898	95.94%	\$55,468	90.06%	\$53,357	97.0%	\$69,396	97.7%	\$59,915	96.3%	\$44,938	94.8%
FEB	\$28,070	97.5%	\$18,329	97.22%	\$16,593	91.59%	\$11,365	98.0%	\$10,517	98.6%	\$14,735	97.8%	\$18,701	97.0%
MAR	\$13,032	99.1%	\$19,046	98.54%	\$13,824	92.86%	\$3,774	98.4%	\$1,063	98.7%	\$6,652	98.5%	\$13,435	98.6%
APRIL	\$7,591	100.0%	\$20,959	100.00%	\$77,435	100.00%	\$18,027	100.0%	\$15,892	100.0%	\$14,474	100.0%	\$11,897	100.0%
	\$812,582		\$1,437,091		\$1,084,994		\$1,103,021		\$1,192,175		\$972,994		\$849,864	

MONTH	14/15		15/16		16/17		17/18	
	\$.06/cwt		\$.075/cwt		\$.075/cwt		\$.075/cwt	cumulative percentage of total budget
MAY	\$33,791	5.5%	\$23,259	2.7%	\$32,423	4.2%	\$31,495	4.5%
JUNE	\$191,432	36.4%	\$285,959	36.3%	\$168,660	26.2%	\$160,877	27.5%
JULY	\$190,406	67.1%	\$225,065	62.6%	\$162,565	47.5%	\$209,369	57.4%
AUG	\$30,260	72.0%	\$46,090	68.1%	\$94,317	59.8%	\$52,399	64.9%
SEPT	\$42,346	78.9%	\$11,984	69.5%	\$32,530	64.0%	\$25,199	68.5%
OCT	\$23,521	82.7%	\$38,732	74.0%	\$54,644	71.1%	\$17,209	70.9%
NOV	\$16,127	85.3%	\$17,383	76.0%	\$36,902	75.9%	\$7,609	72.0%
DEC	\$24,746	89.3%	\$33,490	80.0%	\$55,146	83.1%	\$22,203	75.2%
JAN	\$39,228	95.6%	\$64,424	87.5%	\$67,341	91.9%	\$28,302	79.2%
FEB	\$7,046	96.7%	\$33,303	91.4%	\$36,462	96.7%	\$14,830	81.4%
MAR	\$6,150	97.7%	\$43,939	96.6%	\$12,302	98.3%	\$121	81.4%
APRIL	\$13,974	100.0%	\$29,232	100.0%	\$13,069	100.0%		81.4%
	\$619,028		\$852,860		\$766,361		<b>\$569,612</b>	as of 4/16/18
							<b>\$700,000</b>	← budget

## FY 17/18 Valuation of Non-Billed CWC Laboratory Services Provided for Research UC Breeding and Field Trials (Research)

UC Regional Trials (Durum) 112 samples @\$200	\$	22,400.00
UC Regional Trials (Common Wheat) 446 X \$150	\$	66,900.00
J Dubcovsky Breeding Program (Durum) 154 x \$200	\$	30,800.00
J Dubcovsky Breeding Program (Common Wheat) 116 x \$150	\$	17,400.00

**Subtotal UC Programs \$ 137,500.00**

### Collaborator Meeting (Research)

Collaborator Mtg testing from CWC lab (Durum) 8 @ \$200	\$	1,600.00
Collaborator Mtg (Common Wheat) 59 @ \$150	\$	8,850.00

**Subtotal Collaborator Meeting \$ 10,450.00**

### Pacific Northwest Wheat Quality Council (Research)

11 samples @ \$150 (Complete Test)	<b>\$ 1,650.00</b>
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### Crop Quality Samples (Market Development)

CA Desert Durum Crop Quality (75% of 14 samples @ \$200)	\$	2,100.00
CA Desert Durum Crop Quality (75% of 14 samples @ \$30.00)	\$	315.00
CA Desert Durum Crop Quality (75% of 14 samples @ \$10.00)	\$	105.00
Composite CA Desert Durum CQ (75% of 4 samples @ \$200)	\$	600.00
Composite CA Desert Durum CQ (75% of 4 samples @ \$30)	\$	90.00
Composite CA Desert Durum CQ (75% of 4 samples @ \$10)	\$	30.00
CA Desert Durum Crop Quality (75% of 4 samples @ \$80)	\$	240.00
HRW Crop Quality (*75% of 131 samples @ \$150)	\$	14,737.50
HRW Crop Quality (*75% of 131 samples Sedimentation @ \$10)	\$	982.50
HRW Crop Quality (*75% of 22 samples SRC @ \$60)	\$	990.00
HRW Crop Quality (*75% of 22 samples SRC @ \$50)	\$	825.00
HRW Crop Quality (*75% of 22 samples SRC @ \$5)	\$	82.50
Lab Analysis (used outside services)	\$	390.00
2 samples - Amylograph, Extensograph, Starch Damage, Vomitoxin		

**Subtotal Crop Quality Samples \$ 21,487.50**

**Total:**

**\$ 171,087.50**

last year: \$91,555

<b>Research</b>	<b>\$ 149,600.00</b>	<b>87%</b>
<b>Market Development</b>	<b>\$ 21,487.50</b>	<b>13%</b>

\* US Wheat reimburses CWC 25% for the use of CA crop quality data in their USW CQ report. (The reimbursement (and other indirect costs) show up on the Income statement: Lab/Crop quality, so are not included here).

AZ durum samples are totally reimbursed: 75% from AGRPC and 25% from U.S. Wheat.

## CERTIFICATES OF DEPOSIT

MATURITY DATE	BANK	TERM	INTEREST RATE	VALUE
<b>EDWARD JONES</b>				
05/30/18	Bank Hapoalim BM	6 MO	1.40	\$ 100,000.00
09/14/18	State Bank	6 MO	1.70	\$ 206,000.00
12/28/2018	Bank of Birmingham	9 MO	1.90	\$ 207,000.00
	(Interest paid at intervals into money market)			\$ 513,000.00

## MONEY MARKET ACCOUNTS

BANK	RATE	VALUE
Edward Jones MM	0.01	\$ 742.32
River City Bank MM	0.15	\$ 153,494.49
TriCounties Bank MM	0.18	\$ 26,064.30
		\$ 180,301.11

<b>TOTAL</b>	<b>\$693,301.11</b>
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Updated 3/31/18



<b>VACATION SUMMARY AS OF 3/31/18</b>					
Name	Hire Date	Yearly Vacation Rate (days)	Maximum Accrual Rate (Days)	Amount accrued as of 3/31/18 (days)	Vacation Liability as of 3/31/18
Teng Vang	02/12/07	20	40	29.47	\$ 7,141.17
Isabel Rivera	01/01/13	15	30	14.32	\$ 2,891.49
Claudia Carter	6/15/2014	15	20	6.56	\$ 2,649.19
Crystal Sandoval	8/15/2016	10	20	6.42	\$ 770.40
Alejandra Andrade	1/3/2017	10	20	11.38	\$ 1,229.04
					<b>\$ 14,681.30</b>
<b>TOTAL</b>					
prepared by CS					

## FY 2017/18 Research Funding Approved 4.24.17

Project	FY 14/15 Actual	FY 15/16 Actual	FY 16/17 Approved	FY 17/18 Approved	FY 18/19 Approved
<b>UCD Wheat Breeding</b>	\$204,000	Research Committee	\$180,000	\$190,000	\$198,000
<b>Field Trials/SRA II</b>	\$35,000	recommends a total of	\$130,000	\$140,000	\$137,000
<b>Shared Breeder</b>	\$36,000	\$325,000 be allocated for			
<b>UCCE Minigrants</b>	\$60,350	UCD breeding and testing			
<b>UCCE Internships</b>		program.			
<b>UCR Root Study</b>					
<b>Conferences</b>	\$560				
<b>Total:</b>	<b>\$335,910</b>	<b>\$325,000</b>	<b>\$310,000</b>	<b>\$330,000</b>	<b>\$335,000</b>

# FY 18/19 Assessment Projections

Report Date 3.31.18

## SCENARIO 1 - Variety Survey DRAFT Results

2018-2019 Variety Survey DRAFT Results - assessment: \$.075/cwt				
<small>Based on 2018 CWC Variety Survey DRAFT results</small>				
	ACRES PLANTED	ACRES HARVESTED	YIELD T/ACRE	TOTAL
<b>WINTER WHEAT</b>	344,000	141,040	2.35	331,444 tons
<small>Harvested acreage based on estimates from handlers in each region (~41% harvested statewide); USDA Avg 5 yr yield = 2.35.</small>				
<b>DURUM</b>	41,500	39,425	2.92	115,121 tons
<small>Based on 95% historical harvested ; USDA avg 5 yr. yield = 2.92</small>				
<b>Total</b>	<b>385,500</b>	<b>180,465</b>		<b>446,565 tons</b>
	<b>COLLECTIONS</b>			X.90
				401,909 tons
	<b>ASSESSMENT RATE</b>			\$1.50 /ton
	<b>TOTAL ASSESSMENT REVENUES</b>			<b>\$602,863</b>

## SCENARIO 2

2018-2019 Assesment Projection DRAFT Results - assessment: \$.075/cwt				
<small>Based on USDA Est. Acres Planted report 3/29/2018 and 10-yr Avg Acres harvested</small>				
	ACRES PLANTED	ACRES HARVESTED	YIELD T/ACRE	TOTAL
<b>WINTER WHEAT</b>	380,000	186,200	2.23	415,226 tons
<small>Harvested acreage based on estimates Avg 10 yr (~49% harvested statewide); USDA yield 5-yr Avg = 2.23)</small>				
<b>DURUM</b>	40,000	34,000	2.92	99,280 tons
<small>Used Harvested acres based on ~85%; USDA 5-yr Avg yield = 2.92</small>				
<b>Total</b>	<b>420,000</b>	<b>220,200</b>		<b>514,506 tons</b>
	<b>COLLECTIONS</b>			X.90
				463,055 tons
	<b>ASSESSMENT RATE</b>			\$1.50 /ton
	<b>TOTAL ASSESSMENT REVENUES</b>			<b>\$694,583</b>

## SCENARIO 3

2018-2019 Assesment Projection DRAFT Results - assessment: \$.075/cwt				
<small>Based on USDA Est. Acres Planted report 3/29/2018 and 5-yr Avg Acres harvested</small>				
	ACRES PLANTED	ACRES HARVESTED	YIELD T/ACRE	TOTAL
<b>WINTER WHEAT</b>	380,000	159,600	2.23	355,908 tons
<small>Harvested acreage based on estimates Avg 5 yr (~42% harvested statewide); USDA yield = 2.23</small>				
<b>DURUM</b>	40,000	31,600	2.92	92,272 tons
<small>Used Harvested acres based on ~79%; USDA yield = 2.92</small>				
<b>Total</b>	<b>420,000</b>	<b>191,200</b>		<b>448,180 tons</b>
	<b>COLLECTIONS</b>			X.90
				403,362 tons
	<b>ASSESSMENT RATE</b>			\$1.50 /ton
	<b>TOTAL ASSESSMENT REVENUES</b>			<b>\$605,043</b>

To setup Assessment For FY	Grain Production Year	<a href="#">Grain Production value \$</a>	1% of value	Production Forecast Year	<a href="#">Production Forecast Tons</a>	Assessment Forecast		
						\$1.5/ton	\$1.6/ton	\$2/ton
15/16	2014	\$ 128,000,000	\$ 1,280,000	2015	500,000	750,000.0	800,000.0	1,000,000.0
17/18	2016	\$ 89,226,000	\$ 892,260	2017	460,050	690,075.0	736,080.0	920,100.0
18/19	2017	\$ 67,854,000	\$ 678,540	2018	403,362	605,043.0	645,379.2	806,724.0
19/20	2018		\$ -	2019		-		

Article 6. 72101. The commission shall, not later than April 30 of each year, establish the assessment for the following year beginning May 1 and ending April 30. In no event shall the combined assessment of the commission and any other state authorized wheat production research and market program exceed 1 percent of the gross dollar value of the year's sale of wheat by all producers to handlers. The commission shall establish producer gross dollar value through rules and regulations. (Amended by Stats. 1985, Ch. 1004, Sec. 22. Effective September 26, 1985.)

**CALIFORNIA WHEAT COMMISSION - FY 18/19 BUDGET PROPOSAL**

	<b>FY 2016/17</b>	<b>FY 2017/18</b>	<b>FY 2017/18</b>	<b>FY 2018/19</b>
	<b>100% of FY</b>	<b>APPROVED</b>	<b>PROJECTED</b>	<b>PROPOSED</b>
	<b>\$.075/cwt</b>	<b>8/30/2017</b>	<b>End of FY 17/18</b>	<b>BUDGET</b>
	<b>\$.075/cwt</b>	<b>\$.075/cwt</b>	<b>\$.075/cwt</b>	<b>\$.075/cwt</b>
<b>INCOME:</b>				
401. ASSESSMENTS	\$765,850	\$700,000	\$600,000	\$600,000
402. INTEREST	\$4,063	\$4,000	\$6,150	\$4,000
403. OTHER INCOME	\$5,106	\$100	\$100	\$100
407. LABORATORY				
CROP QUALITY	\$6,635	\$8,000	\$12,310	\$10,000
LABORATORY ANALYSIS (+Training)	\$90,017	\$135,000	\$113,000	\$125,000
405. REFUNDS	\$0	(\$20,000)	(\$15,064)	(\$10,000)
<b>TOTAL INCOME</b>	<b>\$871,671</b>	<b>\$827,100</b>	<b>\$716,496</b>	<b>\$729,100</b>
<b>EXPENSES:</b>				
<b>GENERAL &amp; ADMINISTRATIVE</b>				
501. SALARIES	\$192,299	\$238,398	\$238,398	\$245,000
502. STAFF EXPENSE	\$2,772	\$3,000	\$3,121	\$3,000
503. OFFICE EXPENSE	\$8,104	\$11,600	\$8,000	\$8,000
504. OFFICE SERVICES	\$8,691	\$10,700	\$10,000	\$10,000
506. INSURANCE	\$12,315	\$16,520	\$12,000	\$15,000
508. PROFESSIONAL SERVICES	\$18,012	\$19,000	\$13,500	\$18,500
509. CDFA	\$17,803	\$19,000	\$19,800	\$19,500
513. COMM MTGS	\$4,847	\$6,182	\$6,000	\$6,000
516. CONDOMINIUM FEES	\$4,047	\$4,100	\$4,750	\$4,100
521. Building Maintenance	\$547	\$10,000	\$9,702	\$1,000
<b>TOTAL G&amp;A EXPENSES</b>	<b>\$269,435</b>	<b>\$338,500</b>	<b>\$325,271</b>	<b>\$330,100</b>
<b>RESEARCH</b>				
601. RESEARCH CONTRACTS	\$284,275	\$330,000	\$328,333	\$335,000

**CALIFORNIA WHEAT COMMISSION - FY 18/19 BUDGET PROPOSAL**

	FY 2016/17 100% of FY \$.075/cwt	FY 2017/18 APPROVED 8/30/2017 \$.075/cwt	FY 2017/18 PROJECTED End of FY 17/18 \$.075/cwt	FY 2018/19 PROPOSED BUDGET \$.075/cwt
<b>MARKET DEVELOPMENT/OUTREACH</b>				
505. INFORMATION/MEMBERSHIP	\$3,614	\$3,550	\$3,000	\$3,500
510. CAWG CONTRACT	\$18,000	\$20,000	\$20,000	\$20,000
512. COMM EXPENSE	\$6,570	\$6,000	\$6,500	\$6,500
600. TECHNICAL SERVICES	\$3,269	\$4,500	\$4,749	\$4,500
602. PUBLICATIONS	\$700	\$1,500	\$4,953	\$4,000
603. TRADE TEAMS	\$815	\$1,500	\$1,394	\$1,500
604. MARKET DEVELOPMENT	\$13,009	\$10,000	\$10,000	\$12,000
605. USWA	\$25,638	\$18,950	\$19,950	\$15,000
621. WHEAT VARIETY SURVEY	\$3,936	\$4,000	\$2,018	\$4,000
624. OUTREACH	\$13,889	\$10,000	\$10,100	\$12,000
<b>TOTAL MARKET DEVELOPMENT</b>	<b>\$89,440</b>	<b>\$80,000</b>	<b>\$82,664</b>	<b>\$83,000</b>
<b>LABORATORY</b>				
617. LABORATORY				
SALARIES	\$143,027	\$143,481	\$135,000	\$150,000
OPERATING EXPENSE	\$33,286	\$38,500	\$30,000	\$40,000
<b>TOTAL LAB</b>	<b>\$176,314</b>	<b>\$181,981</b>	<b>\$165,000</b>	<b>\$190,000</b>
<b>OTHER</b>				
626. CAPITAL EXPENSE				
OFFICE	\$0	\$1,000	\$0	\$1,000
LABORATORY	\$0	\$12,000	\$8,043	\$8,500
<b>TOTAL CAPITAL EXPENSE</b>	<b>\$0</b>	<b>\$13,000</b>	<b>\$8,043</b>	<b>\$9,500</b>
526. Reimbursed Expenses	(\$473)			
529. Bad Debt	\$5,361			
525. Depreciation Expenses	\$15,873			
<b>TOTAL EXPENSES</b>	<b>\$840,225</b>	<b>\$943,481</b>	<b>\$909,311</b>	<b>\$947,600</b>
<b>NET INCOME</b>	<b>\$31,447</b>	<b>(\$116,381)</b>	<b>(\$192,815)</b>	<b>(\$218,500)</b>
Adjustments to reconcile Net Income				
Net Cash by Operating Activities	\$35,870			
Net Cash by Investing Activities	\$9,231			
Net Cash Increase for Period	\$45,101			
<b>Changes In Net position:</b>				
Net Position, Beginning of Year	\$821,628	\$866,729	\$866,729	\$673,913
Net Position, End of Year	\$866,729	\$750,348	\$673,913	\$455,413

# California Wheat Commission

## FY 2018/19 Proposed Budget Detail

**INCOME**

FY 17/18

**401: Assessments**

Projected assessment revenue is based on projected production of 448,180 tons and an assessment rate of \$1.5/ton (\$.075/cwt). This is maintaining the FY 17/18 assessment rate same as last year's rate. **\$ 600,000**

**402: Interest**

Interest from Savings accounts, Money Market Accounts and CDs. **\$4,000**  
*Lower reserves will mean lower interest.*

**403. Miscellaneous Income**

**\$100.00**

**407: Laboratory Income**

Crop quality - reimbursement from USW and AZ **\$10,000**  
 Lab analysis - services for commercial customers **\$120,000**  
 Other lab income - training **\$5,000**

*Lab services for Research for FY 17/18 (not billed) \$ 137,500*

**405: Refunds**

**-\$10,000**

History:	FY 18/19 (\$.075/cwt)* 1.68%	
	FY 17/18 (\$.075/cwt) 2.65%	
	FY 16/17 (\$.075/cwt) 0%	FY 06/07 (\$.04/cwt) 4.4%
	FY 15/16 (\$.075/cwt) 0.3%	FY 05/06 (\$.04/cwt) 5.0%
	FY 14/15 (\$.06/cwt) 0.9%	FY 04/05 (\$.04/cwt) 4.7%
	FY 13/14 (\$.05/cwt) 2.7%	FY 03/04 (\$.04/cwt) 4.6%
	FY 12/13 (\$.05/cwt) 3.6%	FY02/03 (\$.04/cwt) 5.8%
	FY 11/12 (\$.05/cwt) 2.8%	FY01/02* (\$.04/cwt) 9.5%
	FY 10/11 (\$.05/cwt) 5.3%	FY00/01 (\$.03/cwt) 5.1%
	FY 09/10 (\$.05/cwt) 2.3%	FY99/00 (\$.03/cwt) 6.1%
	FY 08/09 (\$.05/cwt) 4.3%	FY 98/99 (\$.03/cwt) 7.4%
	FY 07/08 (\$.05/cwt) 3.9%	FY97/98 (\$.03/cwt) 7.0%

\*Projected refunds percent for FY 18/19.

**Total Income**

**\$ 729,100**

# California Wheat Commission

## FY 2018/19 Proposed Budget Detail

### EXPENSES

#### GENERAL & ADMINISTRATIVE

*G&A expenses are largely fixed, absent and new staff changes.*

#### **501. Salaries**

*This figure needs salary recommendations and revision by the Executive Committee. Proposed ~3% salary increase.*

**\$245,000**

Claudia Carter Hired as Executive Director - June 2016

Isabel Rivera Promoted as Operations Manager - May 2016

Crystal Sandoval Hired as Office Assistant - August 2016

#### **502. Staff Expenses**

**\$3,000**

Additional staff training and associated travel exp.

#### **503. Office Expenses**

**\$8,000**

Postage, commissioner elections, office supplies

Office Supplies \$3,000

Postage \$600

Printing \$300

Commissioner Elections \$2,500

Non-Capitalized equipment \$1,000

Bank Fees \$600

#### **504. Office Services**

**\$10,000**

Office equipment maintenance, equipment rental and maintenance agreements, telephone, fax, janitorial and utilities, mail permits.

Mail Permits fees (Permits 51 and 81) \$500

Janitorial \$1,700

Rent/ Main Cont. (Postage machine, water, copier) \$2,700

Telephone/Fax/e-mail \$1,600

Utilities \$3,500

**521. Building Maintenance / Repairs** **\$1,000**

#### **506. Insurance**

*Estimate*

**\$15,000**

State Fund \$5,000

*Workers Compensation*

AIG Life Insurance Companies \$100

Business Travel Accident Insurance

- covers Commissioners and staff

Travelers Insurance \$700

Fidelity Policy (Crime)

CNA \$4,050

Directors & Officers Liability



# California Wheat Commission

## FY 2018/19 Proposed Budget Detail

<u>Great American</u>		\$4,300	
	General Liability, Commercial Property and Hired Auto Liability		
	Allowance for rate increases	\$850	
 <b>508. Professional Services</b>			<b>\$18,500</b>
	-Annual Audit & support -Damore, Hamric & Schneider, Inc.	\$10,500	
	-Computer Support	\$500	
	-Attorney: Update Procedures, Form 700 advice	\$4,500	
	<i>handler audits/proposing three audits (\$1000/audit)</i>	\$3,000	
 <b>509. CDFA</b>			
	CWC share of Marketing Department's overhead, time spent by our CDFA economist and CDFA expenses related to elections.		<b>\$19,500</b>
 <b>513. Commission Meetings</b>			<b>\$6,000</b>
	Three board meetings @ \$2060/meeting.		
 <b>516: Condominium Fees</b>			<b>\$4,100</b>
	Covers annual condo fees, paid quarterly. Includes Administration, Garbage, Insurance, Landscaping, Repairs, Taxes, Alarm Monitoring.		
 <b><u>SUBTOTAL FOR G&amp;A</u></b>			
			<hr/> <b>\$330,100</b>
 <b><u>RESEARCH</u></b>			
<b>601. Research</b>			
	This item is reported as the cash commitment to research.		<b>\$335,000</b>
	<i>UC Breeding program \$198,000 and UC Testing \$137,000. Further discussion by Research Comm on April 16th.</i>		
 <b><u>MARKET DEVELOPMENT/ OUTREACH</u></b>			
 <b>505. Memberships / Information</b>			<b>\$3,500</b>
	Memberships, subscriptions, technical books or special information. Includes on-line news services, export data collection.		
	Memberships:		
	California Farm Bureau, Tortilla Industry Association, CA Seed Assoc.,		
	California Grain & Feed Association, Bread Bakers Guild of America,	\$2,000	
	AmazonPrime		
	Subscriptions (Milling&Baking Magazine, Carbonite, Microsoft Office)	\$400	
	Internet / Website Hosting	\$1,000	
	Other - California Chamber of Commerce, other related expenses	\$100	
 <b>510. CAWG Contract</b>			<b>\$20,000</b>

# California Wheat Commission

## FY 2018/19 Proposed Budget Detail

Contracted services from the California Association of Wheat Growers.

**512. Commissioner Expense \$6,500**

Travel expenses for Commissioners to attend USW and other meetings

**600. Technical Services \$4,500**

Costs to run the various crop quality programs including sample pick up, Imperial expense to collect and grade samples, postage. Present program includes:

- Durum - samples collected through Inspection stations.
- HWW - HRW Crop Quality - Handler samples
- UCCE Tulare will provide support

**602. Publications \$4,000**

Crop Quality reports for HRW, HWW & Desert Durum \$3,500  
 Certified Seed Guide \$500

*Note: Will print more Crop Quality Reports to distribute to industry: Handlers, growers, and millers.*

**603. Trade Teams \$1,500**

USW Trade Teams visit to CA

**604. Market Development \$12,000**

Travel related to domestic/international market Development.

**605. US Wheat Associates \$15,000**

*Full membership is \$58,100. \$14,525 represent 25% membership- CWC is Contributing Member at this level.*

**History – US Wheat Membership (FY is July 1 - June 30)**

2017 ¼ membership 18,950	2005 ½ membership 46,145
2016 ¼ membership 24,950	2004 ¼ membership 24,534
2015 ¼ membership 44,915	2003 ¼ membership 28,522
2014 Full membership 123,784	2002 ¼ membership 27,960
2013 Full membership 122,200 + 2,000	2001 ½ membership 55,221
2012 Full membership 124,100 + 2,000	2000 ¾ membership 86,927
2011 Full membership 104,500	1999 ¾ membership 89,123
2010 Full membership 93,700	1998 ¾ membership 87,140
2009 Full membership 84,700 + 5,000	1997 Full membership 107,240
2008 ¼ membership 22,250	1996 Full membership 109,819
2007 < ¼ membership 20,000	1995 Full membership 110,449
2006 ¼ membership 23,076	1994 Full membership 113,039

**621. Wheat Variety Survey \$4,000**

Maintaining paper survey

**624. Outreach \$12,000**

Outreach to industry including Farm Bureau, CGFA, Field Days and conferences.

**California Wheat Commission**  
**FY 2018/19 Proposed Budget Detail**

Outreach to the Milling industry PNW, AACCI Spring and Annual Meetings, Durum Quality event  
 Category also includes travel to events, hosting visitors,  
 and small sponsorships.

**SUBTOTAL FOR MARKET DEVELOPMENT/OUTREACH** **\$83,000**

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**LABORATORY**

**617A: Salaries - Laboratory** **\$150,000**

Teng Vang - Lab Manager  
 Alejandra Andrade Hired as Lab Assistant - January 2017  
 Four Summer Students and 1 part time student if needed.

**617B: Operating Exp. - Laboratory** **\$40,000**

Staff Expense	\$	200	
Equipment Main. (Outside Services and Routine Main. Parts)	\$	14,500	
Maintenance (Janitorial)	\$	3,500	
Postage	\$	300	
Rental & Maintenance Agreements	\$	800	
Subscriptions/ Memberships(AACCI, PNW)	\$	1,200	
Supplies	\$	10,000	
Non capital equipment and Misc.	\$	1,000	
Utilities	\$	7,000	
		\$	38,500
<b>617E: LAB MANAGER</b>	<b>\$</b>	<b>1,500</b>	

**SUBTOTAL FOR LABORATORY** **\$190,000**

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**OTHER**

**626. Capital Expense**

Office	\$1,000	<b>\$1,000</b>
Laboratory	\$2,000	<b>\$8,500</b>

**TOTAL EXPENSES** **\$947,600**

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**NET INCOME** **\$ (218,500)**

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# CWC Reserve Policy/Options

3-year moving average of Budget for FY18/19

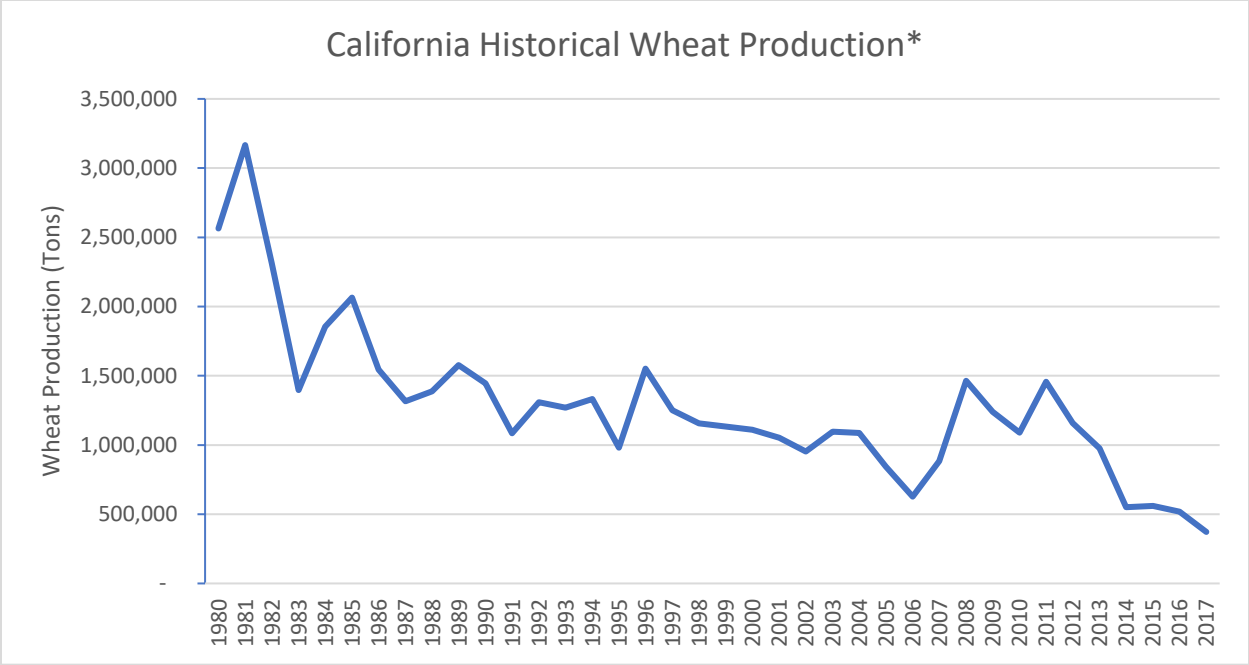
	FY 17/18	FY16/17	FY15/16	FY14/15	3 year average of 16/17, 15/16, & 14/15	25% of 3- year average	35% of 3 year average	Cash at end of 4/30/2017
Total Budgeted Income	827,100	\$ 677,100	\$ 877,100	\$ 640,100	\$ 731,433	\$ 182,858	\$ 256,002	
<b>Total Budgeted Expenses</b>	<b>\$ 943,481</b>	<b>\$ 894,360</b>	<b>\$ 979,942</b>	<b>\$ 1,093,328</b>	<b>\$ 989,210</b>	<b>\$ 247,303</b>	<b>\$ 346,224</b>	
Total Budgeted Net Income	<b>\$ (116,381.00)</b>	<b>(217,260.00)</b>	<b>(102,842.00)</b>	<b>(453,228.00)</b>				
Actual Income		871,671.00	\$ 929,533.00	\$ 693,142.00	\$ 831,449	\$ 207,862	\$ 291,007	
<b>Actual Expenses</b>		840,225.00	\$ 914,127.00	\$ 1,091,008.00	\$ 948,453	<b>\$ 237,113</b>	\$ 331,959	<b>\$ 866,729.00</b>
Actual Net Income		31,446.00	15,406.00	<b>(397,866.00)</b>				

**EXCERPT of December 4, 2007 minutes:**

A discussion on an “adequate” amount of cash reserves took place. Reserves of ~\$200,000 have been considered a “good” number; however they have been as low as \$25,000 in earlier years.

**September 10, 2015 meeting**

Commissioners reviewed and clarified its reserve policy from 2007 to read: Year-end reserves shall be a minimum of 25% of a 3-year moving average of actual expenses, subject to the discretion of the Executive Committee. Further, a committee was formed to discuss different budget scenarios to be presented for further discussion at the December meeting.



\*USDA, NASS: <https://quickstats.nass.usda.gov/results/3536F785-D8E2-360C-923B-E18AE6CB5764>

## California Wheat Historical HARVESTED vs. NON HARVESTED Percentages

Winter Wheat					Durum Wheat				Total Crop	
<i>*As of USDA's August 25, 2016 NASS</i>										
	Acres Planted (1000)	Acres Harvested (1000)	% Harvested for grain	% for Non-grain	Acres Planted (1000)	Acres Harvested (1000)	% Harvested for grain	% for Non-grain	% Harvested for grain	% for Non-grain
2017	385	155	40%	60%	35	27	77%	23%	43%	57%
2016	425	170	40%	60%	55	47	85%	15%	45%	55%
2015	450	150	33%	62%	70	60	86%	14%	40%	60%
2014	490	190	39%	61%	40	30	75%	25%	42%	58%
2013	620	345	56%	44%	70	49	70%	30%	57%	43%
2012	590	305	52%	48%	125	120	96%	4%	59%	41%
2011	680	440	65%	35%	95	90	95%	5%	68%	32%
2010	680	350	51%	49%	85	75	88%	12%	56%	44%
2009	660	350	53%	47%	150	140	93%	7%	60%	40%
2008	730	420	58%	42%	150	125	83%	17%	62%	38%
10-yr Avg	571	288	49%	51%	88	76	85%	15%	53%	47%
5-yr Avg	474	202	42%	58%	54	42.6	79%	21%	46%	54%
<b>10-year Avg (2008-2017)</b>										
<b>5-year Avg (2013-2017)</b>										
2007	550	265	48%	52%	90	80	89%	11%	54%	46%
2006	450	250	56%	44%	70	65	93%	7%	61%	39%
2005	495	300	61%	39%	75	69	92%	8%	65%	35%
2004	560	320	57%	43%	120	100	83%	17%	62%	38%
2003	740	410	55%	45%	130	115	88%	12%	60%	40%
2002	530	300	57%	43%	95	90	95%	5%	62%	38%
2001	530	380	72%	28%	85	81	95%	5%	75%	25%
2000	535	390	73%	27%	100	97	97%	3%	77%	23%
1999	500	370	74%	26%	90	85	94%	6%	77%	23%
1998	500	380	76%	24%	180	175	97%	3%	82%	18%
10-yr Avg	539	337	63%	37%	104	96	92%	8%	67%	33%
<b>10-year avg (1996-2005)</b>										
1997	510	400	78%	22%	145	144	99%	1%	83%	17%
1996	640	550	86%	14%	140	138	99%	1%	88%	12%
1995	580	425	73%	27%	70	68	97%	3%	76%	24%
1994	590	510	86%	14%	60	59	98%	2%	88%	12%
1993	550	500	91%	9%	41	40	98%	2%	91%	9%
1992	585	535	91%	9%	57	55	96%	4%	92%	8%
1991	450	410	91%	9%	33	32	97%	3%	92%	8%
1990	620	560	90%	10%	60	59	98%	2%	91%	9%
1989	625	570	91%	9%	106	105	99%	1%	92%	8%
1988	530	490	92%	8%	60	59	98%	2%	93%	7%
10-yr Avg	568	495	87%	13%	77	76	98%	2%	89%	11%
<b>10-year Avg (1988-1997)</b>										
1987	560	510	91%	9%	60	57	95%	5%	91%	9%
1986	650	600	92%	8%	80	75	94%	6%	92%	8%
1985	800	750	94%	6%	85	80	94%	6%	94%	6%
1984	770	690	90%	10%	100	94	94%	6%	90%	10%
1983	730	610	84%	16%	80	70	88%	13%	84%	16%
1982	1020	1000	98%	2%	130	125	96%	4%	98%	2%