



almond facts

NEWS, VIEWS AND INDUSTRY INSIGHT

JULY – AUGUST 2019



Gearing Up
for Growth

It's Election
Season

Almonds
at IFT



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Mark Jansen
President & CEO

Defining Our Sense of Purpose

As a member of this cooperative, you know what it means to work together towards a common goal – our mission of maximizing returns for growers who entrust their almonds to Blue Diamond is our clearest example. That common goal gives every Blue Diamond grower and team member a sense of purpose as they begin their day on the farm or at a facility. As preparations for harvest take place, it sharpens our sense of purpose. At July district meetings, you heard of Blue Diamond's recent accomplishments increasing almond consumption in both the U.S. and internationally. We also addressed what is happening within the industry and with market pricing. This knowledge benefits our grower-owners and empowers you to make necessary decisions that impact your business and your family.

In Spring 2018, market prices were good and stable, and your co-op was thriving! Our businesses were performing and our team members excelled at managing the crop. In May 2018, you may recall, tariffs significantly impacted almond market prices. Over the course of the past year our industry found ways to manage and overcome the tariffs. The good news is that the entire crop will be sold, in spite of the tariffs. Many key varieties of almonds are unavailable, and some buyers are waiting for next year's crop to fulfill their needs. Countries with tariffs will continue to purchase almonds and, with Australia selling all their crop, customers will be looking to California for the supplies they require. These dynamics keep the almonds moving, which is profitable for both the industry and *Blue Diamond*.

As a result of the continued tariffs and trade disruption, specifically in China, the USDA recently announced its second round of Market Facilitation Payments to affected growers. Almond growers will be eligible for \$143 per acre, which is an increase from the \$.03 per pound in the first MFP payments. The inclusion of almonds within these direct payments is possible because of the hard-fought effort by your *Blue Diamond* public affairs team, the Almond Alliance and others within the industry who had the common goal of ensuring the industry's economic export value was recognized. Although the payments will not completely offset the financial impacts of the tariffs, it is important to note that this signifies a win for our industry as it highlights our crop as an economic driver within U.S. Agriculture.

The surprise of this summer was the NASS Objective Estimate of 2.2 billion pounds. Compared to the Subject Estimate released in May, the forecast is a 12 percent decrease. In my nine years at *Blue Diamond*, this forecast was the most unexpected. From an industry perspective, 2.2 billion

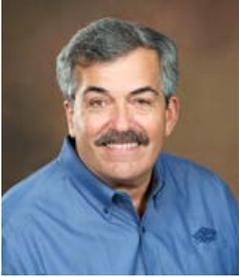
“What makes Blue Diamond unique is that we are owned and governed by our growers. We're proud to be a co-op and proud that every grower has an equal voice when it comes to the best interests of Blue Diamond.”



pounds is not sufficient for the foreseeable future. From an almond grower perspective, we can predict that the first half of the crop will sell at a higher price. By December, we will know where the crop stands; the industry will be 70 percent sold. Thankfully, the industry is optimistic and predicting a 2.4 billion-pound crop. With this in mind, we will continue to maintain our promise of competitive returns.

What makes *Blue Diamond* unique is that we are owned and governed by our growers. We're proud to be a co-op and proud that every grower has an equal voice when it comes to the best interests of *Blue Diamond*. In this issue of *Almond Facts*, you will find information about the upcoming elections. I encourage you to be an active member either by running for a seat on the Board of Directors or Liaison Committee and by simply casting your ballot to elect members to these positions. This year it will be easier for you to cast your vote with options to vote on paper, online, or by phone. By increasing participation in elections, *Blue Diamond* is one step closer to achieving its collective goals and realizing *the Best is Yet to Come*. ♦

Regional Managers



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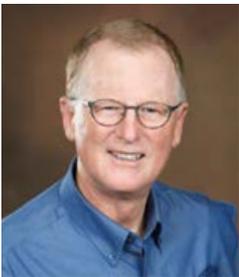
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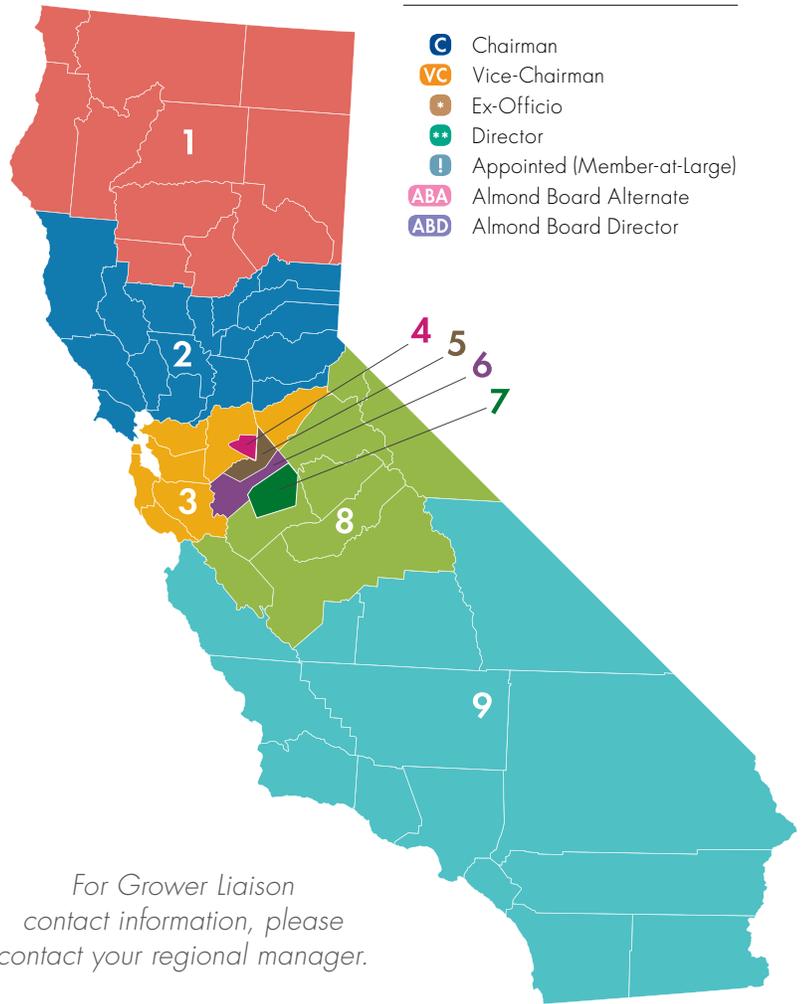
Salida Membership Dept.
 Phone: 209.545.6225
 Fax: 209.545.6215

Sacramento Membership Dept.
 Phone: 916.446.8368

2019 Grower Liaison

LEGEND

- C** Chairman
- VC** Vice-Chairman
- *** Ex-Officio
- **** Director
- !** Appointed (Member-at-Large)
- ABA** Almond Board Alternate
- ABD** Almond Board Director



*For Grower Liaison
contact information, please
contact your regional manager.*

DISTRICT 1

Gregory Watts
Lyle Livingston
Rick Pittenger
Brian Erickson **!**
Fred Montgomery **VC**
Daniel Varner
Greg Overton
Kevin Borrer **!**
Kevin Davis
John Nock
Raymond Antonowich **C**
Darren Rice **!**
Dan Cummings ******
W. Howard Isom *****
P. Samantha Lewis

DISTRICT 2

Ron Tadlock
Catherine L. Cain
Ronald Timothy
Analee Lauwerijssen **!**
Charlie Marsh **C**
Zach Dennis
Leo LaGrande
Sabrina Blickle **!**
Michael F. Doherty
Kelli Evans **VC**
Jim Peart
Brook Bachmann **!**
John Monroe ******
Elaine Rominger *****
Gerald Rominger *****
Cathy Marsh

DISTRICT 3

Joe Rishwain
Michael Van Groningen
Stephen Schmiedt
Garret Mussi **!**
Kathy Thomsen **C**
Steve Stanful
Clayton Bogetti
Jim Thoming Jr. **!**
Michael M. Petz **VC**
Lloyd Van Dyken
Bruce Oosterkamp
Mike Bogetti **!**
Dale Van Groningen ******
John Thoming **ABA '09**

DISTRICT 4

Lance Ioppini
Bob Holmes
Nick Alta
Paul Adrian **!**
Herman Doornenbal **C**
Tom Christensen
Karen Javete
Jason Dole **!**
Will Drost
Wesley John Eisenga **VC**
Robin Giuntoli
Joe Gasper **!**
Kevin Fondse ******
Kenneth Roos *****
Greg Kamper

DISTRICT 5

Nick Blom
Gordon Heinrich
Jeff Erickson
Brum DeVisser **!**
Brandon Riddle
Mark Giannini
Dennis Bowers
Neil Jolliff **! C**
Jack Hoekstra
Sonny Johns **VC**
Sid Miller
Gary Darpinian **!**
Stephen Van Dуйn ******
Neil Van Dуйn *****

DISTRICT 6

Greg Reichmuth
Rick Alvernaz **C**
Allen Peterson
Patrick Romero **! VC**
Dirk Van Konynenburg
David Richmond
John Hack
Scott Long **!**
Richard Gemperle
David M Genzoli
Paul Lara
Darryl Starn **!**
Charles Crivelli III ******
Steve Vilas *****
Bill Brush **ABA '02**
Tim A. Viera

DISTRICT 7

Mario Bandoni
Scott Abraham
Galen K. Miyamoto **C**
Joe Sansoni **!**
Daniel L. Clendenin
John Pereira
Rodney Voumard **VC**
David Passadori **!**
Jim Snyder
Victor Yamamoto
Bobby Deol
Kevin Hall **!**
Dan Mendenhall ******
Robert J. Weimer *****
Rick Scoto

DISTRICT 8

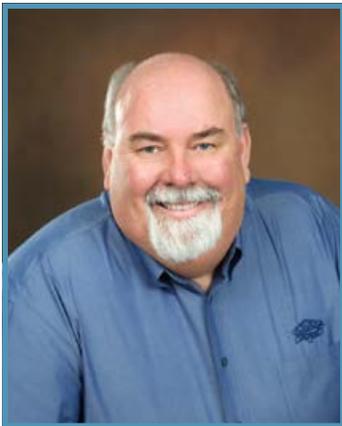
George Goshgarian Jr.
Paramjit Singh
Joey Biscay
Norman Pretzer **!**
Bruce Chapman **VC**
Gary Thompson
Baljit Boparai
Tom Chandler **! C**
David Massaro
Jerry Rai
Anthony Basila
Dan Wattenbarger **!**
George Goshgarian ******
Aldo Sansoni *****
Ranbir Grewal

DISTRICT 9

Thom Gruber
Craig Fulwyler **VC**
Jeff Parsons
Gurcharan Dhillon **!**
Ben Wilson
Karam Guron
Jason Dhillon
Ryan Clark **!**
David Snell
John Allen
Don Davis **C**
Chris Vandborg **!**
Kent Stenderup **** ABA**
Clinton Shick *****
Kyle Balakian

Regional Manager Dennis Meinberg Retires

Dennis Meinberg always wanted to work for *Blue Diamond*. His dad joined as a member in 1955, giving Dennis the opportunity to be involved in the family operations as well as the cooperative, even appearing in the 1980's "Can A Week" commercials. So when he was hired in July 2004 as a regional manager to represent the Chico area — where he was born and raised — it was a perfect match.



"I already knew all the growers and they knew me," said Dennis. "I served on *Blue Diamond's* Grower Liaison Committee and also worked as a nursery representative. I just changed pickups, shirts, and hats."

After fifteen years serving Butte, Tehama and Glenn counties, Dennis is retiring. He acknowledges that *Blue Diamond's* greatest asset is the people and when growers and team members work together, it brings together the attributes of being able to deliver the benefits of almonds to the world for generations to come.

Dennis is fond of his time at *Blue Diamond*. Witnessing the company emerge from an almond handler to a global food company and helping grow the cooperative's membership to its current levels are times he won't soon forget. He also admits that before coming to *Blue Diamond*, he never knew what happened to the almond after harvest. Learning the details about the processing and marketing of a final product was remarkable to him.

"When I came to work at *Blue Diamond*, we were right at the cusp of hitting one billion pounds," he recalls. "That wasn't very long ago and we've doubled that in the timeframe I was there. To be able to put in place vast resources and people to bring the crop from the field to the plants is an extraordinary show of teamwork. I'm proud to have been a part of that."

His decision to retire was not an easy one, but Dennis is ready to spend more time with his wife Sharon and their

growing number of great-grandchildren. When asked how he is going to spend his retirement, Dennis smartly says that he is going to do whatever he wants, whenever he wants to.

"This is the first Labor Day I can take as a holiday," he said. "And I have an old fishing pole that needs to get the dust off of it. I will get the RV ready and head up to where the fish are biting, then see what is around the next bend and find that next fishing spot."

Since delivering his first pound of almonds for the cooperative, Dennis knew working for *Blue Diamond* would be memorable. He and Sharon are thankful for all the help over the years from both grower-owners and team members.

"*Blue Diamond* is a cooperative made up of trusted people who support one another and I am going to miss that." ♦

“*Blue Diamond is a cooperative made up of trusted people who support one another and I am going to miss that.*”

Save the Date!

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Blue Diamond Elections — Your Voice Matters

Exercising your right to vote is one the greatest benefits of being a *Blue Diamond* grower-owner. Each year you — as a cooperative member — have the opportunity to elect members of the Board of Directors and Grower Liaison Committee. Through voting or representing your district by running for a seat on the Board of Directors, you are taking an active role in your cooperative and helping to shape policy. Member involvement is crucial to the success of any cooperative and is even more so to *Blue Diamond* as it competes in a fast-changing, highly competitive industry.

Blue Diamond offers members several ways to be involved and affect policy:

- Participation in the district and annual meetings;
- Discussions with district directors and regional managers;
- Voting in elections; and
- Service on the Grower Liaison Committee, Advisory Committee or Board of Directors.

Between now and the end of the year, you can participate in several of these activities. You will also have an opportunity to attend *Blue Diamond's* Annual Member Meeting in Modesto on Wednesday, November 20, 2019. Mark that date on the calendar and plan to attend!

Be Active as a Board Director

As a director on the board of *Blue Diamond Growers*, members are significant contributors to the ongoing success of the leading grower-owned cooperative and marketer of almond products. It's an exciting time to consider running for a seat on the board of directors.

Board directors represent the cooperative's grower-owners and monitor the performance of the CEO. They also collaborate with the CEO and *Blue Diamond's* Leadership Team on strategic direction with the mission of maximizing the return of each grower who entrusts their almonds to *Blue Diamond*. Serving on the board is a significant responsibility — one that requires the time and commitment to fulfill the powers and duties of the position as defined in the corporate bylaws. Board directors must also actively participate in scheduled *Blue Diamond* meetings and events.

Blue Diamond's New Voting Process

Your cooperative is democratically controlled and your voice matters. Over the last five years, less than 30 percent of grower-owners cast a vote to elect members of the Board of Directors and Grower Liaison Committees. To give you the best opportunity to cast your vote and make it count, *Blue Diamond* is implementing a new voting process starting with the 2019 cycle. This change will offer more voting options and convenience so we can reach more members and increase voter turnout.

Members can now vote in one of three ways:

- Paper Ballot;
- Telephone; or
- Online

A third-party administrator, Intelliscan, Inc., will handle the balloting process.

Watch your mailbox for election materials from *Blue Diamond Growers*.



The board seats are subject to an election each year, either to re-elect the incumbent or choose a new director. The director positions from Districts 2, 8, and 9 are those seats that will stand for election during the 2019 cycle. Incumbents from Districts 2 and 9 are both seeking re-election. The District 8 director is retiring.

Those considering running for a director position should understand there is a significant time commitment for the three-year position. Day-long board meetings occur typically five times each year. Directors also participate in various committees of the board, which typically occur the day before a board meeting. Also, attendance at Grower Liaison Committee (twice a year) and Advisory Committee (once a year) meetings is common practice. Additionally, the board and management have an annual three-day strategic planning session. Invitations to represent *Blue Diamond* at political fundraisers and other events and meetings also commonly occur, as well as opportunities to attend industry-related conferences. Preparation time for board and committee meetings and the travel time to meetings and events need to be considered.

2019 Election Deadlines and Procedures

9/1	Deadline for filing petitions.
9/10	Deadline for filing a statement of not more than 500 words.
9/14	Ballots mailed for primary election of directors.
9/28	Postmark deadline for primary election.
10/12	Results of the primary election are mailed to members in districts having primary elections.
11/2	Deadline for postmark of ballots in statewide election of directors and Grower Liaison Committee members.
11/20	109 th Annual Member Meeting. General election results announced.



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Directors should:

- Act in a manner consistent with their fiduciary duties of loyalty and care.
- Demonstrate integrity and independent judgment, including the ability to understand and exercise sound discretion on issues related to the cooperative's goals.
- Have business or professional skills and experience that will contribute to the effectiveness of the Board and its committees.
- Intend to foster long-term value for the cooperative's members.
- Act in the interest of all members rather than any particular member constituency, while understanding and balancing the concerns of other stakeholders, including team members, customers, and communities.
- Be willing to challenge management constructively about corporate strategy, the adequacy of internal resources and the soundness of controls, and to insist upon a management tone and environment that values accuracy in accounting, transparency in reporting, and integrity in business conduct.
- Be able to work as part of a team in an environment of trust.
- In light of their other commitments, be willing and able to devote the time and effort necessary to serve as an effective director, including preparation for board and committee meetings.

Requirements for nomination:

- A petition signed by 15 members from the district in which the potential nominee wishes to run, **filed by September 1.**
- An optional statement of candidacy (written statement of not more than 500 words stating the candidate's qualifications and interest in being a director) **filed by September 10.**

Get Involved in the Grower Liaison Committee

Blue Diamond's Grower Liaison Committee (GLC) comprises of nine growers elected by the membership in their respective districts for three-year terms, plus three members appointed by the committee. Three GLC positions in each district are up for election each year. Of the twelve committee members in each district, up to three can hold a non-member purchase and sale agreement with *Blue Diamond*. These committees serve as communication links between members and the board and management of *Blue Diamond*. They meet twice a year with their district director and management to discuss issues of concern and crop status but may request additional meetings.

To become a candidate, file a petition signed by five *Blue Diamond* members in your district by **September 1**. Incumbent members from each committee are responsible for ensuring that there is at least one candidate for each vacancy on the committee.

Advisory Committee Appointment

The Advisory Committee provides even closer communication between the board, the GLCs, and the membership. It is made up of two members appointed from and by each of the nine GLCs. Advisory Committee members meet periodically with management and members of the Board of Directors for in-depth discussions on issues that affect the membership.

Make a Commitment to Communication

Being a cooperative member involves an ownership responsibility that includes being well-informed and involved in the off-farm aspect of your business. It's your co-op. Take part in its activities. Help keep it successful and growing!

If you are interested in either a Director or Grower Liaison Committee position, please call your local Regional Manager or the Membership Department at 209.545.6225. ♦

SAVE THE DATE!



109th Blue Diamond Growers Annual Member Meeting

WEDNESDAY, NOVEMBER 20, 2019

Modesto Centre Plaza, 10th & K Streets

(Adjacent to the Modesto Doubletree Hotel)

Join us for seminars, lively exhibits, a membership luncheon and business meeting, all celebrating the continued success of *Blue Diamond* and its members.

Watch for more information in the following months.

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2019 Accelerated and Deferred Payments

Agreements for the 2019 crop Accelerated and Deferred Payment Programs have been mailed to all who participated in the 2018 crop programs. Anyone planning on deferring any 2019 crop payments must have a completed Deferred Payment Agreement on record with *Blue Diamond* prior to crop delivery from the sub-contract you wish to defer. Any payee may defer an entire payment or elect to receive a set amount and defer the residual to the next calendar or fiscal year. Deferred payment agreements will not be accepted after a sub-contract's first delivery.

Those wishing to accelerate their 2019 payments ahead of the regular payment schedule may complete an Accelerated Payment Agreement at any time. The 2019 Accelerated Payment rate was announced in mid-July. Anyone interested in either of these programs may obtain the necessary agreements from their local Regional Manager or by contacting Kristie Ezell via email at kezell@bdgrowers.com or by phone at 916.446.8368 in our Sacramento Membership office. ♦

Gearing Up for Growth

Blue Diamond is expanding on delivering on innovation with the construction of a new almond receiving warehouse at the Salida facility. The new bulk receiving warehouse will store an additional 50 million pounds of almond meats

and bring the total number of bulk warehouses at the facility to eight. The cooperative commemorated the expansion with a special groundbreaking ceremony on June 19.

Building on the success of the Bulk 7 warehouse, constructed in 2015, the new state-of-the-art warehouse will feature a number of enhancements to reduce the cooperative's carbon footprint and meet *Blue Diamond* sustainability initiatives including increased energy efficiency, reduction of greenhouse gas (GHG) emissions, and stormwater recharge. The warehouse will have LED lights, an integrated truck scale and loading pit, and 2,400 feet of buried perforated pipe directing the stormwater to the soil beneath the facility.

The unique design of the warehouse features 60-foot ceilings and extends 26 feet into the ground, increasing *Blue Diamond's* receiving capacity by 25 percent. Additional improvements to the design bring added benefits to grower-owners who deliver their crop to the Salida facility. Growers can expect gentle handling of the almond meats, enabling higher yield and throughput on the main production line, and separate areas inside for storing three different varieties of almonds.

Working with Whiting-Turner, a valued partner of *Blue Diamond*, this project demonstrates investment and commitment to the continued growth of the cooperative's business. The new warehouse is expected to be in operation for the fall 2020 harvest season. ♦



Blue Diamond partners with the Salvation Army on community events that are supported through the cooperative's community giving program. This long-time partnership was highlighted during the groundbreaking ceremony with a check presentation for *Blue Diamond's* sponsorship of the organization's Kidz Day.

The Salvation Army's Kidz Day event is an annual fundraising event for the Red Shield Center that has served South Modesto since 1970. The Red Shield Center provides services to area youth and their families, such as after-school programs, sports and recreation, swimming and swim lessons, summer camp and gang intervention and prevention. *Blue Diamond's* participation in the Kidz Day event began in 2009.

NASS Releases Objective Forecast for Almond Crop

This year's Objective Report projects an almond crop down 12 percent from the May 2019 California Almond Subjective Forecast of 2.5 billion pounds. The Objective Report collects data later in the growing season, closer to harvest, and is based on an actual count of nuts on the trees versus phone interviews with farmers, the method used for the Subjective Forecast.

According to the Objective Report, the average nut set per tree is 4,667, down 17.8 percent from the 2018 almond crop. The Nonpareil average nut set per tree is 4,429, down 10.1 percent from last year's set. The average kernel weight for all varieties sampled was 1.54 grams, unchanged from the 2018 average weight. ♦

Blue Diamond Investment Programs — Current Investment Rates available as of July 1, 2019

Blue Diamond Growers offers members short-term and long-term investment programs.

The objective of these programs is to serve as a competitive investment alternative for our members and provide *Blue Diamond Growers* with a steady source of funds. The interest rates effective July 1, 2019 for the program are listed below:

	Short-Term Investment Certificate (STIC)	Long-Term Investment Certificate (LTIC) (Maturity Date of 6/30/2022)
Initial Investment Required	\$1,000	\$50,000
Interest Rate	3.00%	3.50%
	(Variable, subject to change)	(Fixed rate)

For more information, contact your local Regional Manager, or Member Services at 209.545.6225.

This summary does not constitute an offer to sell or a solicitation to purchase investment certificates. We will provide a package of documents for the programs to those members who are California residents and who express an interest in participating in the program. ♦

Korean Ag Co-op Group Visits *Blue Diamond*



The cooperative welcomed visitors from Korea who visited *Blue Diamond's* Salida campus where they were introduced to the cooperative and received a tour of the facility. This visit was arranged by the U.S. Embassy Agricultural Trade Office in Seoul and the visitors are part of the National Agriculture Cooperative Federation in Korea. Many were familiar with *Blue Diamond* almonds and recently noticed the availability of *Almond Breeze*® in Korea.

Jeff Sleeper, International Sales Director (Asia/Pacific) for *Blue Diamond*, acknowledges this is a great opportunity for the cooperative. "Our participation and openness to host international agriculture groups definitely goes a long way in our relationship with the Agricultural Trade Office and helps further solidify our good-standing with them." ♦



Recipe credit: *Simply Quinoa*

Avocado Alfredo with Zucchini Noodles

Cook Time: 8 minutes

Difficulty: Easy

Makes up to 4 servings

Ingredients

- 1 large avocado
- ¼ cup nutritional yeast
- Pinch of sea salt
- Pinch of cracked pepper
- ½ teaspoon garlic powder
- 1 cup fresh basil
- ¼–½ cup *Almond Breeze*® Unsweetened Almondmilk (depending on consistency)
- 4 medium zucchini
- 1 tablespoon olive oil
- 2 garlic cloves minced
- ½ teaspoon red pepper flakes

Directions

1. Add all the sauce ingredients into a food processor, starting with just ¼ cup of almondmilk. Process on high until smooth and creamy. Depending on the size of your avocado, you might need to add more almondmilk. Add additional almondmilk 1 tablespoon at a time, until you reach the consistency of a soft pudding.
2. Prepare the zucchini noodles by first spiralizing them into long noodles. Then heat the oil in a large pan over medium heat. Add garlic and red pepper flakes and sauté until fragrant, about 60 seconds. Add zucchini noodles and sauté until just tender, about 2–3 minutes.
3. Transfer zucchini noodles to a bowl and top with sauce. Toss with salad tongs until all the noodles are evenly coated. Divide evenly among four dishes and serve!



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Seeds for Bees® Program Offers Free Cover Crop Seed to Almond Growers

In 2011, Project Apis m. (PAm) launched the Seeds for Bees® program to directly and immediately support honey bee health in almond orchards. Since that time, we have partnered with hundreds of growers to plant over 28,000 acres of cover crops. As acres of monoculture crops increase, available forage (food) for honey bees and other important pollinators is decreasing. Bees need diverse and healthy diets in order to mitigate environmental stressors like Varroa, pathogens and pesticide exposure. Access to adequate pollen sources also help build colony strength which is important for pollination. As the population of each hive grows, so does their ability to successfully pollinate, especially when facing adverse weather conditions like we saw in 2019.

Seeds for Bees® is an elegant way to increase the density, duration, and diversity of blooming plants while improving soil conditions in the orchard where honey bees are placed before the almond bloom. This extra source of nutrition before and after the bloom helps “jump start” the hive, supporting stronger pollination and keeping colonies stronger year-round. However, honey bees and other pollinators are not the only beneficiaries when growers incorporate cover crops into their management practices. We know by observation that soil health, water infiltration and retention, and weed suppression are also improved by planting PAm seed mixes. Thanks to collaborative research efforts, we are also beginning to better understand these additional environmental benefits.

University of California professors, University of California Agriculture & Natural Resources extension agents, Almond Board of California, and Project Apis m. are working together in almond orchards throughout the state to gather data on the effect of cover crops in orchard systems. It may be another one to two years before data collection is complete and the paper is published, but preliminary data shared by these investigators regarding colony health, survival, and frost risk is very exciting.

Dr. Elina Niño, Apiculture Extension and Researcher at UC Davis, evaluated honey bee colonies for adult populations, brood population, Varroa mite levels, and forager collection rates before and after they were



PAm Mustard Mix provides a source of pollen for honey bees before and after the almond bloom, helping them build colony strength for pollination, and leaves the orchards strong.

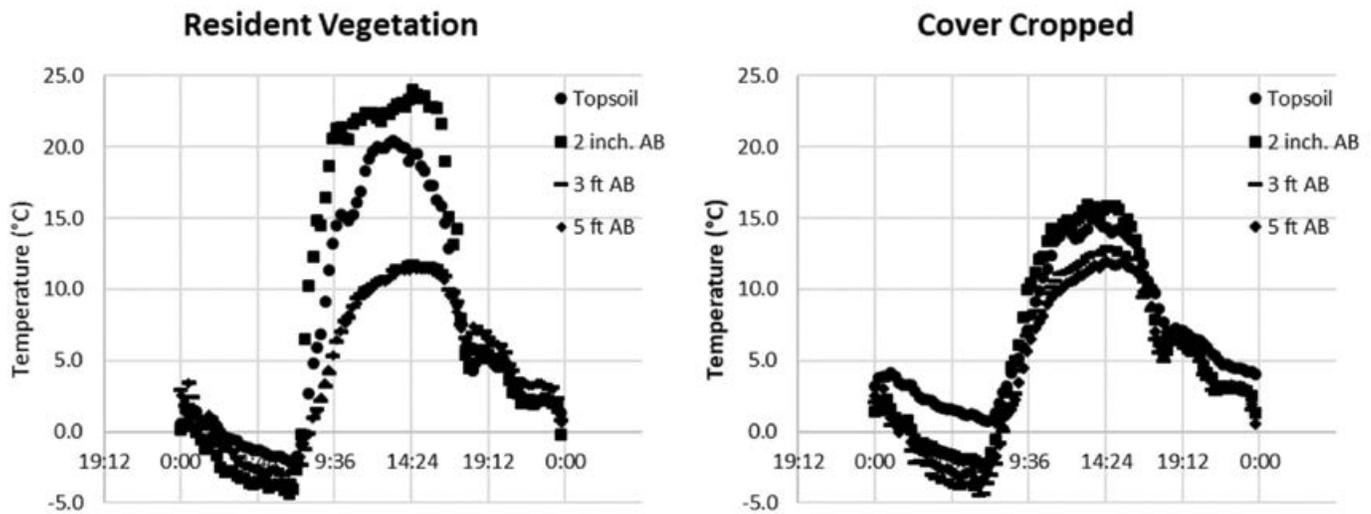


Figure 1. Average temperatures (degrees C) in the resident vegetation (left graph) and the cover cropped (right graph) treatments from the frost event occurring February 19, 2018. Temperatures were measured in the topsoil and at two inches, three feet, and five feet above ground (AB). Temperatures at five feet were nearly identical between cover cropped and resident vegetation treatments².

placed in orchards with or without cover crops. She also tracked the rate of survival of each colony throughout the year after they were done pollinating almonds. The results have significant positive implications for both the grower and beekeeper. The colonies pollinating almonds that had access to the PAM Mustard Mix had a 100 percent survival rate as compared to a survival range of 70 percent to 80 percent of colonies with access to later blooming cover crops or bare ground (no cover crop). Dr. Niño also found colonies that pollinated almonds with the PAM Mustard Mix cover crop were more populous by an average of three frames than colonies without access to cover crops¹.

The risk of frost damage is a concern some growers have when deciding whether to use cover crops. Preliminary results from a recent study on the effects of frost were intriguing and may help shed some light on the role cover crops play in orchard temperatures. Recent work from Dr. Dani Lightle, Cynthia Crézé, and Dr.

Amélie Gaudin will also answer some important questions regarding how cover crops affect soil organic matter, water use, pest pressure, and greenhouse gas emissions. They found orchard floors with cover crops were cooler by a few degrees than those with bare ground or resident vegetation. However, at a height of five feet above ground the average temperatures of the orchard with a cover crop and without were the same². Research into temperature dynamics is continuing.

Project *Apis m.*'s Seeds for Bees[®] continues to increase the acres of cover crops who growers and beekeepers are relying on to improve the health of their soil, trees, and bees. Last year we provided enough seed to plant more than 8,000 acres of cover crops. The 2019–2020 growing season Seeds for Bees[®] open enrollment period is going on now. Interested applicants are encouraged to apply by going to the Project Apis m. Seeds for Bees[®] website at www.projectapism.org/apply-to-enroll. We

are currently accepting applications through November 1, or until we run out of seed. Growers of all types can apply and first-year applicants are awarded up to \$2,000 of free seed. Keep in mind early planting is key to getting the most benefit as possible from your cover crop stand.

Stay tuned for more results from the 11 scientists who are working hard to study what exactly is going on in your cover crops. Feel free to contact Billy Synk at billy@projectapism.org for any questions regarding the Seeds for Bees[®] program, cover crops, or bees/pollination. ♦

References:

- ¹Nino, Elina, 2016 and 2017. Longitudinal Evaluation of Honey Bee Colonies on Different Forage Regimes. Almond Board of California Annual Research Reports
- ²Lightle, D. Crézé, C. Gaudin, A. 2018. Cover Crops in Almonds: Research Updates. UCCE Tehama County Fruit and Nut Notes

Article contributed by Project Apis m.



Almond Indulgence at IFT 2019 New Orleans

Blue Diamond Global Ingredients exhibited at the Institute of Food Technologists (IFT) 2019 in New Orleans June 3 through June 5. IFT is the premier tradeshow for research and development professionals in the food industry and draws 20,000 to 30,000 attendees. Blue Diamond focused on three strategic almond products: almond flour, almond butter, and almond protein powder. We highlighted these products with live demonstrations and product samples.

The show kicked off with sampling a signature New Orleans beignet, also known as the Louisiana State Doughnut, at the *Blue Diamond* booth. Boasting a honey almond butter glaze, this traditional beignet featured honey almond butter and attracted show-goers to sample this sweet sensation.

To showcase *Blue Diamond* Almond Protein Powder, which launched last year at IFT 2018, it was blended into two smoothie applications. The first

was a Vanilla *Almond Breeze*® Protein Powder Beverage that highlighted our plant-based almond protein powder's clean taste. The second was a Vanilla Banana Protein Smoothie which featured Vanilla *Almond Breeze*®, real bananas, and a complete protein blend of almond protein powder, pea protein, and rice protein. This second execution demonstrated how almond protein helps to mask the strong flavors of pea protein and texture of rice protein.

A live demonstration of almond flour madeleines made for an "attention-getting" booth attraction. The madeleines were made of a blend of almond flour and almond protein powder. They were dipped in a warm sauce of chocolate and almond butter and then topped with dry roasted diced almonds. This powerful quartet of almond ingredients exemplified the permissible indulgence that almonds offer to the baking industry.



To top it off, *Blue Diamond* hosted an ice cream social the second evening of IFT. The booth transformed into an ice cream shop and non-dairy almond butter-based ice cream bars were served. Attendees highly appreciated these refreshing treats and enjoyed their creamy texture.

With hundreds of visitors to the booth, we found that these demonstrations spoke clearly of our innovative ingredients and allowed for thoughtful customer conversations, driving *Blue Diamond's* effort to grow value-added volume. ◆



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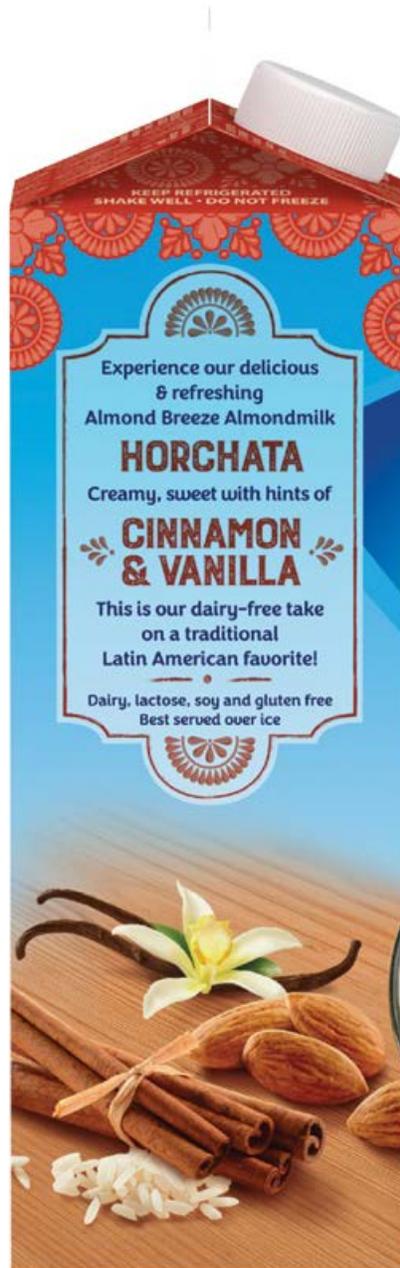
New *Almond Breeze*® Horchata is Una Bebida Deliciosa

Inspired by the flavors and traditions of Latin America, *Blue Diamond* introduced *Almond Breeze*® Horchata, expanding the already extensive *Almond Breeze*® product line. This dairy-free take on the popular beverage captures the true flavor of the drink that is delicious, creamy and sweet, with hints of cinnamon and vanilla.

Blue Diamond is deepening the commitment to its customers and raising the bar with this plant-based take on a cherished classic. Delicious almondmilk beverages are what *Blue Diamond* does best and the ability to diversify the *Almond Breeze*® portfolio with another satisfying dairy-free alternative is an exciting addition. *Almond Breeze*® Horchata is made with the Latin community in mind and will delight consumers who are looking for a refreshing, delicious-tasting drink.

Best served over ice as a standalone beverage, the new almondmilk flavor demonstrates a versatility that allows consumers the freedom to use the beverage in many different ways. Whether poured over morning cereal, added to smoothies, or even coffee, *Almond Breeze*® Horchata can be enjoyed any time of day.

Almond Breeze® Horchata features bilingual packaging in both Spanish and English, and is currently available in major retailers throughout the southwest, as well as New York and New England. ◆





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What's Happening on The Hill

Six months into the year and it has been busy in Washington D.C. This advocacy report will get you updated on the most important developments happening at the federal level affecting California almond growers.

Farm Bill

Implementation of the Farm Bill is happening and the process is taking time. Of importance is the MAP program, which is proceeding well and remains a beneficial program that brings in funds for *Blue Diamond's* international marketing. The cooperative uses these funds to successfully promote and market the brand's products in many countries, which has proven to be a big success.

Dairy Pride and FDA

Even though it is not included in the Farm Bill, the Dairy Pride act has been reintroduced. The Chairman of the House Agriculture Committee is a strong supporter of dairy and was a proponent for the Dairy Pride Act in the last Congress. The cooperative maintains our position and is working to prevent the act from becoming law. Within the FDA, enforcement of the existing Standard of Identity for "milk" is still being pursued by the dairy industry. If the Standard of Identity is enforced, companies would have to change the labeling on plant-based beverages and could be costly for many. *Blue Diamond* continues to work to obtain FDA's approval of the use of "almondmilk" on the *Almond Breeze*® label.

Trade

Trade issues are requiring dedicated attention as much is happening that directly affects the industry. California almonds remain subject to retaliatory tariffs in several important markets, including China, India, and Turkey. These tariffs are causing lower prices worldwide.

The President announced a second program to help agriculture in the form of direct payments, increased



food purchases, and help with export funding. Almonds received both a direct payment and funds for export promotion. The damage estimate was \$63 million, of which approximately \$25 million has been paid to almond growers. The remaining funds are in the process of being distributed, but the USDA is resisting.

Almond growers will receive a second direct payment from the new mitigation program and additional funds for export promotion. The amount has not yet been disclosed, but it is expected soon.

Ongoing negotiations with China are drawing attention as the U.S. expects China to purchase agricultural products. These negotiations were broken off for a time and there is anticipation as to when a meeting will be scheduled to resume the discussion. If the U.S. is successful, it is expected that the increased duty on almonds by China will be reduced to the original level, or even lower.

New bilateral discussions with India have begun as a result of the country's retaliation on almonds and other products. The retaliation occurred when the President terminated the Generalized System of Preferences duties for India. Negotiators from the U.S. Trade Representative were in India last week and have not yet reported on the negotiations.

The President announced that the U.S. would seek a trade agreement with Japan. This will be important for *Blue Diamond* as it will focus on agriculture and is expected to be obtained after the Japanese elections. Obtaining lower duties on almonds and almond products in Japan will be beneficial; however, if the U.S. imposes auto tariffs on Japanese cars, this agreement will not happen.

It is necessary to obtain Congressional approval of the United States-Mexico-Canada Agreement (USMCA) for it to go into effect. Mexico has approved it and Canada is in the approval process. Until the House Speaker believes there are enough Democratic votes for the agreement, it will not reach the Floor. Many House Democrats want provisions in the agreement changed. When the agreement goes for a vote in the Senate, it will pass without difficulty.

The U.S. is considering other new trade agreements currently, including discussions with the European Union and suggestions of new agreements in Africa and Asia.

Immigration Reform

The Democrats in the House are working on immigration reform. Negotiations between the United Farm Workers and agricultural employers are continuing. These negotiations are under the supervision of the House Judiciary Sub-Committee. There is a push to ensure E-Verify is not adopted into law without a workable guest worker program. Also, the House is expected to address DACA this year, which could be separate from the guest worker program.

Tax Reform

Last year, the House and Senate devoted much of their time to tax reform. Section 199, which is very important to almond growers and received a lot of attention, was preserved at the end. The House Democrats may look at this section again later this year. *Blue Diamond* will be paying close attention to this issue as it moves forward. ♦



Blue Diamond Advocate
Julian Heron,
Partner, Tuttle Taylor & Heron

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BDG Foundation Announces Scholarship Awards

The future of agriculture requires the dedication of a new generation to evolve and meet the needs of the growing global population. The Blue Diamond Growers Foundation selected 20 young men and women to receive a scholarship for the 2019–2020 academic year. The Foundation assists students whose goal is to be a positive influence on the future of agriculture and want to make a difference in the community.

Here are the profiles of this year's Blue Diamond Growers Foundation scholarship recipients, with an excerpt from their essay in which they were asked to describe future goals.



Ricky Alba – Springville

Fall 2019 School: Cal Poly, San Luis Obispo
Major: Agribusiness & Management

I will bring my success back to my community and begin making positive changes that will benefit the agriculture industry and the citizens of my city, state, and country. As a productive member of society, I will contribute my time, energy, and money to improve the lives of others. I plan to be a leader, mentor, and advocate for the agriculture industry.

produces are vast. It is very important to educate the public and especially our youth about the importance of agriculture and where their food comes from, many people have no idea at all.



Quinn Cunha – Ripon

Fall 2019 School: U.C. Davis
Major: Agricultural and Environmental Sciences

Research on how to increase sustainability and reduce the environmental effects is going to be an ever growing field because of society and technology. To be able to produce crops stronger, healthier, and more productive while being able to work with government and the environment are steps to better society. My research in biotechnology starts with the basic of these in making food stronger and more productive.



Morgan Boer – Modesto

Fall 2019 School: Cal Poly, San Luis Obispo
Major: Agriculture Education

I hope to educate my students using facts and experience from the agriculture industry. This is important because people in the agriculture industry are beginning to age out and it is important that there are people that are able to replace them to continue to feed the growing population.



Emma Doherty – Arbuckle

Fall 2019 School: Cal Poly, San Luis Obispo
Major: Viticulture and Enology

My degree will benefit society as a whole because I will become a college educated advocate for agriculture, who wants to give back to her community.

I am proud to become a part of the many small family farms in California and the amazing businesses that lead this nation.



Jeff Clark – Atwater

Fall 2019 School: Cal Poly, San Luis Obispo
Major: Agriculture Science

I realize how important agriculture is in our state and our region. Not only is it important to the people involved in agriculture, but to everyone. California feeds the world, the commodities it



Kylie Farmer – Chowchilla

Fall 2019 School: Texas Tech University
Major: Agricultural Communications

I want to spend a year dedicated to service by becoming an Agri-Corps Fellow. I want to work for an agriculturally-based, non-profit organization to help spread agricultural

literacy to those who do not have first-hand experiences for themselves. My ultimate goal is to benefit society as a whole by ensuring that every consumer not only has a safe and reliable food source, but knows exactly where their food comes from.

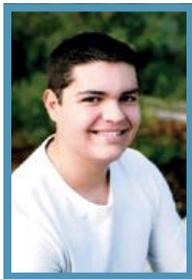


Rachel Firl – Sacramento

Fall 2019 School: Point Loma Nazarene University
Major: Environmental Science

My dream job is to be able to fight for a direct effect on the health of our environment. This will benefit society because I can improve the state of the

natural world, which will help society to thrive well into the future. An improved environment leads to an improved future for the health and well-being of society.



Devan Gomes – Delhi

Fall 2019 School: Cal Poly, San Luis Obispo
Major: Agriculture Systems Management

I hope to use this degree to make an impact on my local agriculture community. Whether it's running my own business or working through a company like *Blue Diamond*, TID, Gallo, or

PG&E. I also hope that I can build up a successful living and give back through organizations and programs that helped me get to the position that I'll hopefully be in.



Gabriel Grimmer – Arbuckle

Fall 2019 School: Fresno State
Major: Plant Science

I will use the knowledge that I have gained from my schooling at these two esteemed agricultural colleges to continue the family tradition of farming

Blue Diamond almonds in Arbuckle. My hope is to use my education to improve the family farm. I want to use the techniques and expertise I have learned to streamline and improve the production to the farm.



Josephine Henderson – Modesto

Fall 2019 School: CSU Fresno
Major: Agriculture Business

I am very interested in working directly with agriculturalists and entrepreneurs in my community, and I feel as if sales is the perfect arena to do so. An agriculture business major will allow me

to go out into society and advocate for the ag industry. I want to teach people about the honest business practices agriculturalists have, and the hard work that goes into this industry.



Tanner Hoekstra – Oakdale

Fall 2019 School: Oklahoma State University
Major: Ag Business

Combining hard work and passion with business skills is essential to running a successful business in California. Producing a quality product, while

maintaining the ecosystem and natural resources around you is also essential to planning for the future of agriculture. I look forward to contributing to our society by providing safe, wholesome products that feed the world.



Courtney Malmberg – Ceres

Fall 2019 School: Cal Poly, San Luis Obispo
Major: BioResource & Agricultural Engineering

During and after college, I plan to remain in California to work with others who understand the importance of agriculture to our society, but also, to

design and create new and more efficient agricultural practices. I look forward to exploring the ways in which I can help the California Ag industry continue to thrive while still maintaining a responsible and safe environment.



Landon Rocha – Hilmar

Fall 2019 School: Fresno State University
Major: Agriculture Systems Management

I will apply what I learn to create new designs of my own that will help improve efficiency and functionality in the way farmers provide food to the world. This includes irrigation methods that will make better use of the water available to farmers in the future. I will also be an active member of organizations that fight to protect prime agricultural lands in this state that are constantly being considered for urban developments.



Garrin Schaap – Visalia

Fall 2019 School: Cal Poly, San Luis Obispo
Major: BioResource & Agricultural Engineering

I want to help address the challenges that are associated with efficiency, staying competitive in the world market, producing better quality products, implementing automation and optimizing labor, and achieving increased sustainability. Through the pursuit of this goal, I will be benefitting society by devoting my whole career towards the improvement of all aspects of agriculture.



Ajeet Sohal – Yuba City

Fall 2019 School: CSU Fresno
Major: Agriculture Business

My degree and knowledge obtained will assist farmers in preparing crop budgets and projecting income and expenses on crops. I enjoy working with farmers and my degree will allow me to assist them. I believe I will make a positive impact in my local community by giving back and contributing to our local community upon completion of my degree.



Ashleigh Sorensen – Sanger

Fall 2019 School: CSU Fresno
Major: Agriculture Business

As I pursue to have a job in marketing, I strive to use my platform to tell others about the necessity of agriculture in the world today. I would like to inform and educate people around the state about where their food comes from. Agriculture serves an important economic role that continues to expand and innovate while sourcing the world's food.



Shelby Stillman – Le Grand

Fall 2019 School: Oklahoma State University
Major: Agriculture Business (International)

I know the impact of government on agriculture, and how many pathways are within the agricultural industry. This would give me an opportunity to achieve my aspiration to care for others, help with agricultural advancements in other countries, and most importantly do my part in changing the world.



Drew Vogt – Kingsburg

Fall 2019 School: Oklahoma State University
Major: Agriculture Business & Agriculture Communications

I plan on finding my way into marketing in order to connect with the general public domestically and abroad to market California products to the world. Ultimately, bridging the gap between consumer and producer to educate our public. Our world needs individuals ready to step up, step out, and take action on positively enhancing society's view and understanding of the agriculture industry.



Elisabeth Watkins
– Linden

Fall 2019 School:
Ohio State University
Major: Agriculture
Communication

I can connect
with the [television]

viewers by teaching them how to prepare the produce into a healthy meal to fuel their families. Having already established my own communication business, Farm Girl Chef, I have begun the journey to achieve my career goals. Farm Girl Chef is a growing business, which I started as my FFA Supervised Agriculture Experience. I fully intend to continue this business, expanding and developing as needed.



Peyton Woods
– Fresno

Fall 2019 School:
Fresno State
University
Major: Agribusiness

Being an auditor,
I can benefit an

operation by keeping the system and facility in good shape, making sure all is well in every aspect of the property from growing the crop to putting it on the shelf at your local grocery store. I will take my education of business and apply my communication skills to each audit by keeping in touch with my clients as well as working with them in constantly improving their facility. ♦

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Almond Industry Makes Record Investment in Promising Navel Orangeworm (NOW) Research

The Almond Board of California (ABC) is spending a record \$1 million on promising new research for management of navel orangeworm (NOW). The investment will advance research in Sterile Insect Technique, a pest control method of introducing sterilized adult NOW moths into production areas to disrupt the pests' lifecycle and reproduction.

"This funding represents the largest single-year investment in a research project the almond industry has ever made," said Almond Board President and CEO Richard Waycott. "We're hoping the technology can become a significant tool in the suppression of navel orangeworm across the tree nut industry."

Navel orangeworm is a major pest in almonds and pistachios and a secondary pest in walnuts and a

number of other fruit and nut crops grown in California's Central Valley. Larvae bore into the almonds and damage the nut, which can lead to fungal aspergillus flavus infections that are a significant concern for almonds and other nut crops, due to the residue of aflatoxin.

The Almond Board has funded \$3.3 million in research on NOW control over the last four decades. Research findings have led to significant strides in controlling the pest through integrated pest management techniques, such as winter sanitation to remove overwintering hosts for NOW larvae; trapping and monitoring to target hull split sprays; and, most recently, mating disruption with attractant pheromones to disrupt the mating behavior of moths.

As a result, almond growers over the last 10 to 15 years have seen reduced pest damage and resulting insect damage rejections at the handler, according to Josette Lewis, the Almond Board's Director of Agricultural Affairs. An uptick in rejections in 2017, however, along with concerns about resistance to current NOW pest management products, served as a reminder that the industry must not be complacent in finding new ways to manage the pest.

Lewis noted that Sterile Insect Technique also fits into the almond industry's newly developed Almond Orchard 2025 Goal of increasing the adoption of environmentally friendly pest management tools by 25 percent by the year 2025.

Researchers developed Sterile Insect Technique, or SIT, in the 1930s as

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a means of controlling insects by disrupting the reproductive process of moth insects by rendering insects sterile. Sterile insects are then released into the environment in very large numbers to mate with native insects. Those matings do not produce viable eggs and overall populations, in time, decline.

Perhaps the most recent example of SIT is the eradication of Pink Bollworm as part of an integrated pest management strategy on cotton in Arizona and California. That eradication, in fact, led the Almond Board to its decision to invest heavily in SIT research. After Pink Bollworm was declared eradicated in 2018, USDA announced in 2019 that it would be closing the USDA Animal Plant Health Inspection Service's sterile Pink Bollworm rearing facility in Phoenix. Concerned that closing that facility would halt progress on important research on SIT, the Almond Board teamed up with the American Pistachio Growers Association, the Pistachio Research Committee, the Western Agricultural Processors Association and the Almond Alliance of California to keep the facility in operation this year, said Stanislaus County almond grower and farm manager Lane Parker. Parker also chairs the Almond Board's Strategic Agriculture Innovation Committee, which ultimately made the decision to authorize this year's funding.

Of the total funding, \$50,000 will match the pistachio industry's

funding toward researching the best sterilization and release methods for NOW at UC's Kearney Ag Center in Parlier and in small-scale trials at Wonderful pistachio orchards in Lost Hills. The remaining \$950,000 is earmarked toward operating expenses to keep the APHIS facility in Phoenix operating for another year.

"We wrestled with this decision for several months because of the sheer size of the proposal for one year of funding," Parker said. "We have invested a lot in NOW over the years but this is the largest ask for a new area with a lot of uncertainty about whether there would be a positive outcome. Ultimately it came down to the opportunity cost of a negative vote: If we said no, SIT would have ceased and we would not have new information.

"To reopen that door and start over would have been cost prohibitive. Keeping the facility alive, we are able to leverage past research the cotton industry invested in the facility so we don't have to start all over with licensing and building a new facility."

In mid-April, the almond industry met with representatives of the walnut and pistachio industries to sketch out areas for a more collaborative approach. Waycott hopes the NOW SIT project will be part of a cooperative, multi-crop effort to advance information about controlling navel orangeworm.

The Almond Board hosted a NOW Summit in Modesto on June 18 to update the almond industry and other tree nuts crop on ABC's current NOW research, what problems remain and what potential solutions lie on the horizon, including SIT. Almond growers, UCCE farm advisors, PCAs, handlers and leaders in the almond, walnut and pistachio industries participated in the event, which drew more than 150 attendees. ◆

Article submitted by the Almond Board of California

- **The Almond Board has funded millions of dollars in research on navel orangeworm control, leading to IPM practices such as winter sanitation that have significantly reduced worm damage in almonds. The \$1 million SIT project for navel orangeworm represents the industry's largest single-year investment in a production research project.**
- **The concept behind Sterile Insect Technique is to release sterile navel orangeworm moths into the environment where they mate with native populations and produce sterile offspring.**

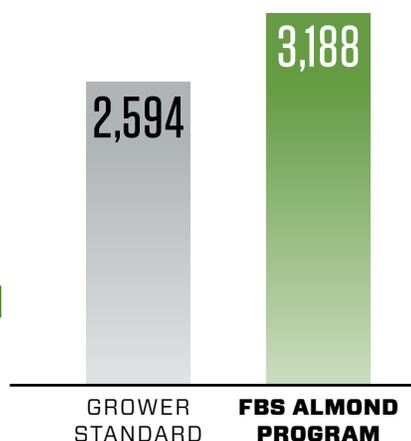
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THE BEE BOX

Loss Survey, Measurements and What to Do?

There is an old adage that says, “If you can’t measure it, it doesn’t exist.” There are many things we knew existed (the Higgs Boson particle if we are to dive really deep in science), but had no way of measuring until recently. And sometimes our measurements aren’t ideal, but we do what we can. The ultimate goal, really, is to turn that phrase into “If you can’t measure it, you can’t improve it.” So, by having some metric by which we can measure say, a tool, a hypothesis, a method, we can also determine if and how we can make it better.

Honey bee colony numbers (and health) are difficult to measure. By nature, the number of honey bee colonies in the U.S. is a fluid, amorphous value that changes with a biological cue (a swarm) or by determined actions of a beekeeper (splitting or combining colonies) and also depend on a variety of environmental factors. Part of our goal at the Bee Informed Partnership is to take on the challenge to put a number on annual, winter, and summer losses each year. We have been conducting our national survey now for 13 years and have no plans to stop. We need to continue to measure colony losses and honey bee health if we hope to improve their survival. Let’s take a look at what the survey numbers tell us this year and what obstacles to improvement are in our path.

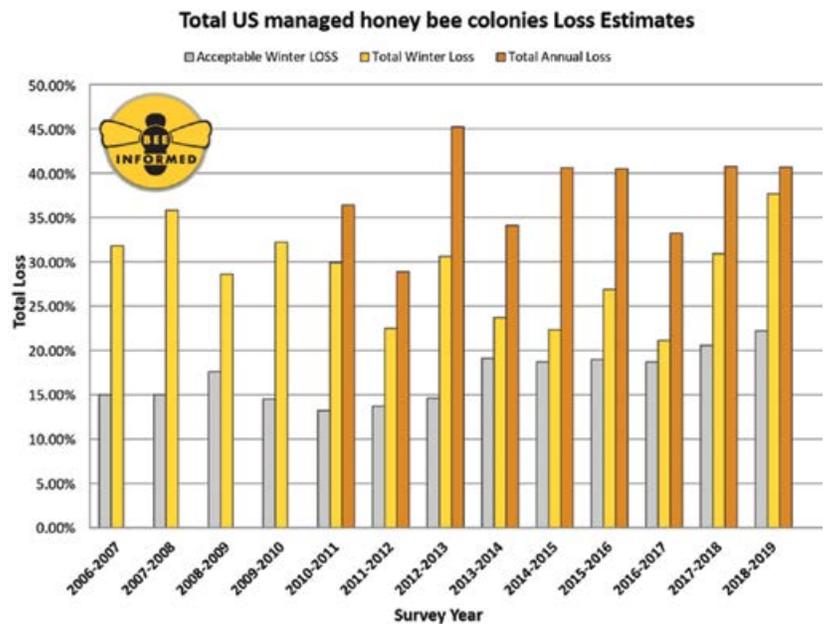
2018–2019 Loss Survey

This year’s survey data represents 4,696 beekeepers collectively managing 319,787 colonies. The number of colonies managed by surveyed respondents represents around 12 percent of the estimated 2.69 million managed honey-producing colonies in the nation.

During the 2018–2019 winter (October 1, 2018 – April 1, 2019), an estimated 37.7 percent of managed honey bee colonies in the United States were lost. This loss represents an increase of seven percentage points compared to last year (30.7 percent), and an increase of

8.9 percentage points compared to the 13-year average winter colony loss rate of 28.8 percent. This year’s estimate is the highest level of winter losses reported since the survey began in 2006–2007. We’ll get to why we think it was so high this year in a bit.

Our survey also asked what level of winter loss would be acceptable by beekeepers (the gray bar on the graph). Interestingly, this revealed an increase from 20.6 percent last year to 22.2 percent this year, which is much greater than the 11-year average of 17 percent. This increased acceptable loss may indicate that beekeepers are more





Bee Informed Partnership Technical Transfer team member Dan Aurell performing a colony assessment in almonds. Part of our assessment is to do an "alcohol wash" that provides beekeepers with immediate mite loads.

realistic or pragmatic in their expectations of colony losses. Even with a higher acceptable loss, 62 percent of responding beekeepers lost more colonies than the level deemed acceptable.

What Happened and How Can We Respond?

The number one concern among beekeepers and a leading contributor to winter colony losses are Varroa mites, lethal parasites that can readily spread from colony to colony, transmitting viruses, and discussed frequently in this column. These mites have been decimating colonies for years and a major part of The Bee Informed Partnership's outreach as well as many extension offices are to educate beekeepers on how to monitor and have

a management plan in place to minimize the Varroa population. Beekeepers need to acknowledge that these mites are in every one of their colonies and be ready to act if infestations get too high. A large part of the losses we saw this past winter were no doubt due to increased mite loads (something we can and do measure) and the seemingly lower efficacy of Varroa mite treatments. Beekeepers nationwide reported poor treatment efficacy and limited field trials confirmed this. We need better products or methods for managing these mites. We also need more beekeepers to monitor frequently and to make sure that their treatment or management methods are working (remember, if you can't measure it, you can't improve it).

There is also no way we can dismiss extreme weather events due to climate change. When much of California (and large parts of Oregon) were wrapped in smoke for many months due to wild fires, or fields and orchards in the Midwest were under water due to flooding, the effects on insects who must forage directly from the environment are usually swift and harmful. We can't control weather (but we can measure it and this year has shattered records around the globe), however, we can be better prepared to respond to it. Beekeepers who can act quickly to move colonies, apply supplemental feed and manage emergencies will lose fewer bees. This is our new reality.

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Part of the reduction in forage comes not from the weather, but from eliminating diverse and highly nutritional forage. Many growers are seeing the advantage of planting native, pollinator friendly plants alongside their crops for not only an increase in beneficial insects but also to attract a wide range of wildlife to help boost their yields. Beekeepers need to advocate for this and we all need to advocate for the organizations that can help growers establish these pollinator pathways. We lose fewer bees when they have a wide ranging, long blooming nutritional forage. Like us, their immune systems are much healthier and robust if they eat a well-balanced and diversified diet.

What to do Next?

We keep educating and advocating. We have hope and firmly believe that solutions are close at hand. And so, at the Bee Informed Partnership, we'll keep measuring honey bee colony losses (and health) so that we can find improvements to increase survivorship. Now, more than ever, we need data driven solutions. ♦



Karen Rennich,
Executive
Director of the
Bee Informed
Partnership, Inc.



A diverse pollen collection on honey bee comb representing a varied diet. Photo courtesy of Rob Snyder, Bee Informed Partnership

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Pre-Harvest Checklist

- ✓ **Portal** - Sign-up for the *Blue Diamond Portal* or ensure that your current password is active.
 - ✓ **Acreage Changes** - Ensure that your current acreage is correct, did you pull or plant any new orchards this year? Did you change any sub-contract designations or names?
 - ✓ **Hulling Changes** - Verify your huller for the current crop year.
 - ✓ **Assignments** - Verify Irrevocable Assignments (prior year assignments that end). Create any new assignments for the current crop year.
 - ✓ **Direct Deposit** - Verify your banking information and mailing address changes. Better yet, sign-up for direct deposit, this enables quicker and more secure payment.
 - ✓ **Deferrals** - Will you be deferring any payments from the 2019 crop? Complete a Crop Deferral form.
 - ✓ **Huller Communication** - Specify which lots require a "Breakdown Request" (checkbox on tag).
Verify subcontract field names.
 - ✓ **Harvest Coordination** - Educate crew and custom harvester on subcontract field names to reduce errors.
 - ✓ **Stockpile Advances** - Get a Stockpile Advance Agreement form filled out in order to request an advance.
 - ✓ **Dry and Ready** - Only harvest when the crop is dry and ready.
 - ✓ **Inshell Survey** - Determine if you will produce inshell almonds: conduct a NOW field survey, must be less than 2.5 percent.
- If you have questions, contact your Regional Manager**



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TIME TO CONSIDER

Irrigation

Careful irrigation during hull split is critical to delivering the highest quality crop and income potential to the grower. Kernel weight continues to increase through hull split. Water stress during hull split reduces kernel weight by limiting photosynthetic activity and sugar production that serve as the feed stock for the proteins and fats that fill kernels. Water stress also limits hull split and increases hull tights. On the other irrigation extreme, excess irrigation/water availability extends hull split, delaying harvest and exposing the crop to extended navel orangeworm (NOW) pressure.

All orchard irrigation management tools are valuable in avoiding plant stress due to insufficient or excessive irrigation and the issues listed above. But recent research and experience supports the use of the pressure chamber as the key device for irrigation monitoring/management in almonds. A free UC publication on the use of the pressure bomb in almond (and walnut and prune production) is available at anrcatalog.ucanr.edu/pdf/8503.pdf.

Following the moderate water stress program during hull split (described in this column in the May/June issue of *Almond Facts*), maintain full irrigation (100 percent ETc) until harvest dry down. Low to mild orchard moisture stress (-10 to -14 bars reading using the pressure chamber) during this timing did not harm yield in recent research.

Flower bud differentiation occurs just prior or during harvest, generally mid to late August. Water stress during this time risks fewer flowers, and lost crop potential, next year. Return water to the orchard as soon as possible after shaking, without wetting nuts on the orchard floor. I see growers taking extra steps to limit the time that irrigation is off during harvest. Some sweep partially dried nuts into wide, shallow conditioned windrows (under good drying conditions in August or early September) and run drip irrigation for short sets to get some moisture back in the ground while monitoring the orchards to avoid wetting nuts.



Others move all shaken nuts from one row into a single middle and irrigate the open middle with longer sets. Care must be taken to avoid wetting nuts on the orchard floor or piling wet nuts under poor drying conditions.

There is no more important irrigation timing for successful almond production than post-harvest. Continue to irrigate orchards at or near 100 percent ETc after harvest with the goal of maintaining adequate moisture in the orchard until leaf drop. Orchard water use declines as the days shorten (and hopefully cool), so less water per irrigation is needed to deliver this goal as the season winds down.

Harvest Timing

The orchard should be ready to harvest when 100 percent of the nuts have split and test trees shake clean without extended shake. Timely harvest (as soon as possible once the orchard is ready to shake) helps reduce NOW damage to the shaken nuts; the NOW females can't find them. Growers targeting the inshell market may need to balance the need for a dry, open hull at shaking, which hulls more easily and cleanly, with the risk of more NOW damage with delayed harvest while waiting for the desired hull quality.

Stockpiles

Stockpiles can be very helpful in managing a crop between harvest and hulling, especially a large crop. However, done wrong, stockpiling can damage the crop and grower returns. In a possibly record crop year, nut quality and market perception of almonds are particularly important. Poor stockpile management decisions can produce conditions in the stockpiles that support *Aspergillus* mold (which produce aflatoxins) growth and concealed damage development. These two are threats not only to grower income, but to market perception of

almonds and, perhaps, ultimately nut price. The Almond Board of California has several reference guides for stockpile management. Here are basic guidelines.

Don't windrow and/or pickup wet nuts unless it is to move them to another location for further drying. Hull and kernel percent moisture should be less than 12 and six percent, respectively, at pickup when headed to the huller or stockpile. To ensure that nuts are dry at pickup, make sure they are dry at windrowing. Check nut moisture at locations from trunk to trunk, down and across the rows, before windrowing. Moisture levels can be two percent higher near the trunk compared to out in the drive row middles. Moisture levels can vary also from the top to the bottom of windrows, so sample at different depths before deciding on final pickup.

Build stockpiles carefully. Stockpiles should be oriented North to South with smooth ridgeline (no peaks and valleys) and covered with white on black tarps. White on black tarps minimize the temperature fluctuations inside the stockpile that can produce condensation and mold growth. Peak and valley ridgelines on stockpiles can lead to condensation accumulating in the low spots, producing higher mold risk in those locations vs lower, more uniform moisture along a flat ridgeline.

Finally, consider fumigating stockpiles to control any NOW in the crop. NOW larvae and eggs survive very happily in stockpiles unless fumigated and damage levels will only go up in stockpiles built with worm damaged nuts. Careful huller operators monitor worm damage in loads to determine if fumigation is needed.

Harvest Sample

To measure crop quality at harvest, how your pest control and nutritional program worked, take a sample (500 nuts per orchard) from the orchard floor after shaking but just before sweeping into windrows. Put the nuts into a paper bag and freeze them (this kills insects in the samples) until you can crack out the nuts and see what you have. Check the UC IPM website (www.ipm.ucanr.edu) for photos of nuts with damage from a range of sources. Why go to all this trouble? Because sweeping, harvesting and processing removes two to four times the number of damaged nuts that appear in your grade sheets, which often lump

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different pest damage into one category. To know what your real losses are and what caused them, take a harvest sample. Then you can plan to or take corrective steps after harvest and see how your harvest sample(s) look next year.

Dust Management

Controlling dust is good for the grower, the orchard, the community, and the environment. Stress the importance of dust control and management to your employees. Practices to control dust include, watering or oiling access roads, watching equipment speeds and settings, keeping a smooth clean orchard floor, and directing sweeper and harvester blowers into the orchard when operating near field edges. See dust management information from the Almond Board of California at: www.almonds.com/growers/in-the-orchard/harvest/harvest-dust

Pest Management

- Navel orangeworm (NOW): NOW is the key pest in almond production. Pressure from this pest grows in many almond orchards from July through the end of harvest. Harvest timing and insecticide spray(s) are the two main NOW management options for growers during July and August. Under high NOW pressure, a timely harvest should deliver better reject sheets than delaying harvest and applying an insecticide. The target for reducing NOW damage using timely harvest is to shake your Nonpareil before or early in the third generation of NOW. This requires a knowledgeable grower, crew, and/or an experienced PCA to trap NOW eggs starting in late March or April into the harvest to understand the timing of the NOW generations in a particular orchard or district.

Excellent coverage is required for effective NOW control from pesticide sprays, and this means slow sprayer ground speeds (two miles per hour) and higher spray volumes (150 to 200 GPA). Helicopter applications can be effective at higher volumes for aerial applications (for example, 30 gallons per acre) when timing is more important than complete coverage such as meeting PHI requirements just prior

to Nonpareil shake. Consider treating your pollinizers if Nonpareil damage in field samples is uncomfortable. Spray timing can be tricky given the dance between irrigation, PHI and next shake.

- Peach twig borer (PTB): Materials that work for NOW control (Altacor®, Intrepid®, and pyrethroids) are all effective on PTB, and the focus at harvest in most districts is NOW. If you have a history of mostly PTB and not NOW pressure, spray timings are 300 to 400 DD after biofix for each generation (roughly 1030 DD long). All the same coverage concerns listed above for NOW apply to PTB.
- Mites: Late season mite flareups can increase leaf drop at harvest and slow nut drying. Excess leaf drop at harvest can slow drying on the orchard floor and cause quality concerns 1) if nuts are picked up before dry enough to safely stockpile or 2) if pickup is delayed to allow nuts to fully dry (more time for ant feeding). Monitor mites weekly before harvest, paying particular attention to those blocks 50 to 60-plus days after abamectin application where beneficial insects and/or mite numbers (and natural mite control) are often low. Few beneficials, rising temperatures and pre-harvest dry down can lead to fast mite flare-ups and leaf loss at harvest. See details on mite monitoring practices at www.ipm.ucanr.edu.
- Ants: Harvesting with green hulls can mean longer drying time on the orchard floor, which means more risk of ant damage. However, NOW pressure comes from your orchard and your neighbors as NOW can fly a quarter of a mile. Ants don't fly and there are several effective ant bait materials on the market that can be applied quickly and cheaply to control the protein feeding (pavement and/or fire) ant populations in your orchard. The keys to ant control are 1) monitoring to know if you have protein-feeding ants in your orchard and 2) applying at proper timing to make sure any such ants in your orchard are controlled by harvest. Some baits should be applied in June, while there is at least one product that has very quick knock down and short

PHI. Check with your PCA about the need for baiting and what bait would be best for your orchard and situation.

- Weeds: Grass germination following irrigation after Nonpareil harvest and before pollinizer shaking can delay nut drying on the orchard floor by holding leaves and other trash around harvested pollinizer nuts. Consult with your PCAs regarding materials and PHI for grass control during harvest.

Nutrition

The key nutrition topic during July and August is tissue sampling; leaves for all nutrients except for boron, hulls for boron. Take leaf samples for nutrients (including sodium) in July. Leaves from bearing spurs contain lower nutrient levels than non-bearing spurs and all the nutrient thresholds developed by UC over the years are based on non-bearing spur samples. Leaf samples should be pulled from non-bearing spurs from representative trees. Don't sample leaves from areas of the canopy contacted by irrigation water as salts in the water can accumulate on the leaves and may influence lab results. Disregard lab results for zinc and manganese from leaves treated with certain fungicides (ziram, chlorothalonil, etc.) and micronutrient foliar fertilizers.

Leaf sampling is an important task and should be done by a trained individual who takes the task seriously. Leaf analysis results are used to make fertilizer decisions worth hundreds of dollars an acre. Dr. Don Horneck (Oregon State University) used to say "Pay your leaf sampler \$100 per hour." Ask the leaf sampler to check and make notes on the overall vigor of the block as well as pull leaves. Evaluate the nutrient status of the orchard both with leaf analysis results and orchard vigor monitoring.

In almonds, boron (B) is mobile and will move from leaves and accumulate in the hulls. So, to determine boron status of the orchard, ignore leaf B analysis and, instead, collect a pint of dry hulls from windrows across the block just before nut pickup and submit to the lab for B analysis. Knowing if your orchard is B deficient can be critical to maximizing production. Boron deficient trees consistently yielded 150 to 400 kernel pounds per acre less in trials at the Nickels Soil Lab (Meyer and Edstrom, 1995–97) compared to trees treated with foliar B after harvest (or



at pink the following spring). Hulls with less than 80 ppm B are considered deficient and should be sprayed with 0.4 to 0.5 pounds actual B per acre (equivalent to two pounds Solubor® per acre) in the fall. Hull levels greater than 300 ppm B indicate toxic levels of boron in the orchard. Orchards where hull B falls into the 100 to 200 ppm B range may benefit from a low rate (equivalent to one pound Solubor® per acre) of foliar B in the fall. Annual hull B analyses along with crop yield over time can be used to track orchard B status.

Final Note on Harvest

There is no faster way to ruin an orchard than extensive bark damage ("barking") across the block from a poorly supervised harvest operation. Someone with the authority to shut down shaking should make their presence gently known throughout the day during harvest. To a grower used to getting things done, "just watching" harvest may seem like doing nothing, but it lets everyone know how important a clean shake, up and down every tree, is to the current and long term health of the orchard and the operation. ◆



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2200 lb./hr. almond hulling plant. Two lines, Fadie huller and separator deck with three air-legs. Pre-cleaner 15 ton/hr. with midstate pre-cleaner, H8 Foresberg de-stoner, and Agsco de-twigger. Complete with pit, elevators, cyclones, and 190 ft. hull auger. Sell all or part. Open to offers. Contact Gale Langum at (209) 612-4830.

FOR SALE

- KCI bank out cart - \$13,000
- KCI drive over elevator - \$8,500
- KCI dump cart - \$5,000

Contact Ian at (559) 286-5709

FOR SALE

Beautifully restored to original 1931 Ford Roadster Pickup, \$18,000 or best offer.

Call (925) 872-0980

FOR SALE

Almond Orchard — Stanislaus County: \$1,950,000

43-acre Oakdale Ranch. Desirable young almond orchard planted in 2014 NP/Carmel/Aldrich

Oakdale Irrigation District Water + Ag Well. Multiple parcels with 2,361 sq. ft. ranch home.

Contact Century 21 MM Jeff Titus at (209) 844-1759. List #18052742.

FOR SALE

Complete walnut hulling plant. 5 ton live bottom pit. 50 tons of drying. Contact (209) 810-4440.

FOR SALE

2004 John Deere Backhoe, Model 310G, Ext. hoe, 4 in 1 front bucket, aux hydraulics, 1432 hrs, light use, ready to work. \$24,000. Call (209) 482-7769.

FOR SALE

REARS 500 gallon Power Blast sprayer with 33" fan. Purchased in 2016 new. Used 13 times. Maintained per manufactures recommendations. Asking \$20,000 OBO. Call (209) 604-7444

FOR SALE

1 x 4 x 8' DF tree props bundles of 200. \$50.00 ea.

1 x 4 x 10' bundles of 200. \$60.00 ea.

Barn stored in Merced. Call Dan at (209) 777-3292

FOR SALE

Orchard sprayer FMC. 500g stainless steel tank; rollover nozzels 50/100 gal per ac.; dual diesel fuel tanks; flotation tires meyers 2 stage; pump; 44" fan; good shape. \$7,500

Call (209) 838-7064 (Darrell Voortman)

FOR SALE

- Tractor trailer, 10'x6'-6". 22.5 tires. Crank up ramps. \$4,500
- Enviromist Sprayer. 6'-6" spray band. Brand new. Never used. Cost \$2,500. Sell \$1,250.

Call (209) 537-9491. Ceres.

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Unless advised otherwise, ads will run two consecutive issues. To guarantee placement, classified listings must be submitted by the 10th of: January, March, May, July, September & November.



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