



# almond facts

NEWS, VIEWS, AND INDUSTRY INSIGHT

SEPTEMBER–OCTOBER 2020



Salida Safety Milestone

Seeds for Bees

Nut-Thins® Gets Tasty New Look



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After more than 10 years, *Nut-Thins*® is getting a new and refreshed package that aligns with *Blue Diamond's* snack nut campaign, *Crave Victoriously*.

#### ON THE COVER:

*Blue Diamond* rolls out new packaging design for *Blue Diamond's* line of *Nut-Thins*®.



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*Blue Diamond*, the world's largest processor and marketer of almonds, exports to over 100 countries.

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**Mark Jansen**  
President & CEO



## The Power of Innovation, The Value of *Blue Diamond*

*This is a unique year for Blue Diamond, where business as usual is dramatically changing. We are continuously finding new ways to navigate the impacts of the COVID-19 health crisis.*

This past year, apprehensions over tariff issues with China were replaced by world-wide concerns over the impacts of the pandemic. COVID-19 changed almond consumption patterns, market channels (food service and convenience stores) and shut down the Indian market for weeks, and confidence in payments for months. Ultimately, after several strategic pivots, *Blue Diamond* was able to move the entire crop while achieving a significant competitive return advantage. We remain dedicated to innovation, value-added almond product development and market growth while providing our grower-owners with industry leading returns.

The table below summarizes the final payments for all varieties. Please note the actual rates earned by your deliveries are shown in the box on the last page of your grower's statement. The Revolving Reserve for the 2019 crop has been set at 3.0 percent of the base payment rate.

### Blue Diamond 2019 Crop Returns

Variety	Overall Average	Average of High Quality	Maximum Possible
Nonpareil & Sonora Inshell	\$2.66	\$2.69	\$2.71
Nonpareil/Supareil Meats	\$2.56	\$2.58	\$2.63
Sonora Meats	\$2.48	\$2.51	\$2.54
Independence Inshell	\$2.46	\$2.49	\$2.51
Carmel & Winters	\$2.46	\$2.48	\$2.51
Independence Meats	\$2.39	\$2.43	\$2.46
Monterey	\$2.41	\$2.43	\$2.46
California/Price/Fritz/Wood Colony	\$2.42	\$2.44	\$2.46
Butte & Padre	\$2.42	\$2.44	\$2.46
Mission/Neplus	\$2.32	\$2.34	\$2.37
Peerless Inshell	\$0.90	-	\$0.92

*Note: The above rates do not include Volume Premiums, Domestic Production Activities Deduction (DPAD) or IC-DISC advantages.*



With another record crop, innovation will be the key to our success in the coming year. Our innovation team is working on groundbreaking almond products and experimenting with almond ingredients for entering new categories. Their research and development expertise will open new possibilities and partnerships for *Blue Diamond* almonds — growing the market to benefit our grower-owners.

We are most thankful that *Blue Diamond* has been able to remain operational throughout the unique challenges of COVID-19. We avoided the significant outbreaks and shutdowns that have afflicted too many food manufacturers. *Blue Diamond's* early adoption of technology and procedures put employee safety first. With significant communication and training we were able to build the trust and confidence that sick employees could make the right decisions to stay home.

The 2020 crop deliveries are consistent with the 3 billion-pound NASS forecast. As you may imagine, prices in the market have been reflecting an abundant supply, dropping by approximately \$.70 per pound over the past few months. However, the market has recently strengthened as customers move to take advantage of the attractive values available. Industry commitments are at very strong levels and shipments continue to set records.

With our strong consumer brand, innovation platforms and value-added products sold throughout the world, *Blue Diamond* is working to maximize the returns of the growers who entrust us with their almonds. As with our summer District Meetings, this year's Annual Meeting will be held on a virtual platform. You will soon be receiving more details on how to participate and I look forward to "seeing" you there as we share why the best is yet to come! ♦

Mark Jansen  
*President & CEO*



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# 2020 Grower Liaison

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- Fred Montgomery **C**
- Daniel Varner
- Greg Overton
- Kevin Borror **!**
- Kevin Davies **VC**
- John Nock
- Raymond Antonowich
- Daren Rice **!**
- P. Samantha Lewis
- Chris Alves
- Luke Konyn
- Robert Thill **!**
- Dan Cummings **\*\***
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- Zach Dennis
- Leo LaGrande **VC**
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- Brook Bachmann **!**
- Cathy Marsh
- Sid LaGrande
- Joe Martinez
- Sarah Pippitt **!**
- John Monroe **\*\***
- Elaine Rominger **\***
- Gerald Rominger **\***

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- Lloyd Van Dyken
- Bruce Oosterkamp
- Craig Miller **!**
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- Nick Alta
- Chris Rishwain **C**
- John Dalton **!**
- Michael Van Groningen
- Dale Van Groningen
- John Thoming **\*** **ABA** '09

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- Tom Christensen
- Karen Javete **VC**
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- Will Drost
- Wesley Eisenga **C**
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- Joe Gasper **!**
- John Almeida
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- Kevin Fondse **\*\***
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- Dennis Bowers
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- Eric Heinrich
- Naomi A. Layland
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- Alan Sano **!**
- Frank Fagundes
- Jeffrey Baize
- Tim Lohman **VC**
- Rick Scoto **!**
- Joe Sansoni
- Dan Mendenhall **\*\***
- Robert Weimer **\***
- David Zollinger **\***

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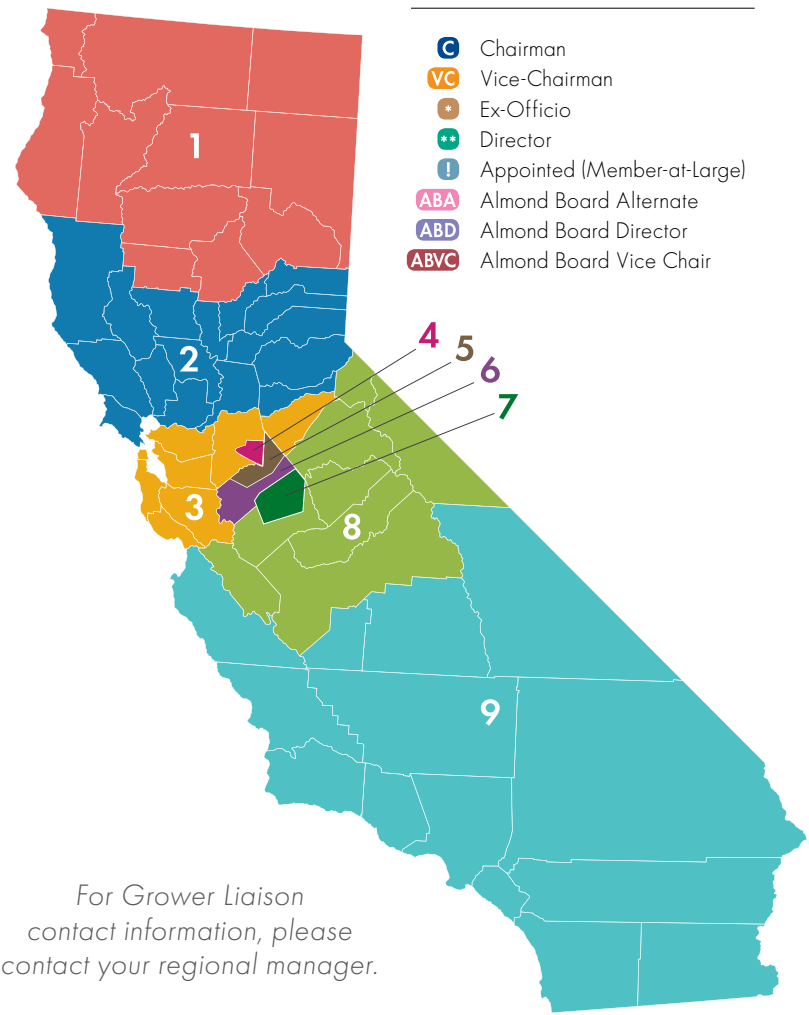
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- Gary Thompson
- Baljit Boparai
- Tom Chandler **!** **C**
- David Massaro
- Jerry Rai
- Anthony Basila
- Dan Wattenbarger **!**
- David Tolmosoff
- Robert Allen
- Jens Finderup **!**
- RJ Maan **!**
- Ranbir Grewal
- Matt Efird **\*\***
- George Goshgarian **\***
- Aldo Sansoni **\***

## DISTRICT 9

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- Karam Guron **VC**
- Jason Dhillon
- Ryan Clark **!**
- David Snell
- John Allen
- Don Davis
- Chris Vanborg **!**
- Mark Fanucchi
- Doug Kindig
- Ray Van Beek
- Keith Gilbert **!**
- Gurcharan Dhillon
- Kyle Balakian
- Kent Stenderup **\*\*** **ABVC**
- Clinton Shick **\***

### LEGEND

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



## Blue Diamond Elections — Member Involvement is Crucial

Your cooperative is democratically controlled and your voice matters. To give you the best opportunity to cast your vote and make it count, *Blue Diamond's* voting process allows for 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* and remember to vote! ♦

### Important Upcoming Dates

10/16	Ballots mailed for general election of directors
11/11	Deadline (5:00 p.m.) for receipt of ballots in statewide election of directors and grower liaison committee members.
11/18	General election results announced at 110th Annual Member Meeting



## Blue Diamond Supports Red Cross Fire Relief



**American Red Cross**

California's wildfire season began in August with fires burning across the state. According to CAL FIRE, since the beginning of the year, there have been well over 8,000 wildfires that have burned over 3.6 million acres in California. In partnership with the American Red Cross, *Blue Diamond* accepted donations from growers and team members to help provide shelter, food, comfort and hope to families affected by the disaster. Many in our grower and workforce community know someone who has been directly impacted by these fires. To amplify the impact of donations, *Blue Diamond* matched donations, dollar for dollar, up to \$10,000. Total contributions reached over \$16,500 — thank you to the entire cooperative for helping *Blue Diamond* deliver on our promise to support our communities. ♦

## Annual Member Meeting — Save the Date



# 110 Year Annual Meeting

**TUESDAY, NOVEMBER 17**

• Seminars

**WEDNESDAY, NOVEMBER 18**

• Business Meeting

Special two-day, virtual only format

Watch for more information in the following months.



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### Member Meeting Discounted Extended

During the month of November, *Blue Diamond* growers receive a 20 percent discount at the Nut & Gift Shop. With this year's event going virtual, we are extending the discount for the entire month of November. Growers can also use the 20 percent discount when purchasing items through the online store at [www.bluediamondstore.com](http://www.bluediamondstore.com).

**Note:** Growers personal discount code is a combination of the last three characters of grower contract number, the first letter of your last name, and the first three digits of your zip code (in that order). For example, if your name is Fred Smith, contract number 67899, with the zip code 95675 — your personal discount code would be "899S956". ♦

## Blue Diamond Salida Facility Achieves Major Safety Milestone

Blue Diamond Growers' Salida manufacturing plant recently achieved five million working hours without a Lost Time Incident. Salida's impressive safety milestone highlights the strong safety culture promoted throughout the co-op. Blue Diamond's focus on workplace safety starts with a workforce dedicated to personal responsibility and continuous improvement. In addition to a robust Health & Safety program and Zero Harm culture across the cooperative, the Salida site's focus on safety includes grassroots Safety Culture Teams, a dedicated Employee Safety Committee, OSHA 10 Hour Training, Safety Champions, and annual participation in OSHA's National Safe and Sound Week. ♦



## Salida Showcases Start of Harvest Season

Blue Diamond hosted a tour of the Salida site for California State Treasurer Fiona Ma and Almond Alliance of California President Elaine Trevino. The Blue Diamond team shared with Ma and Trevino the importance of California almonds and showcased the site's receiving and processing capabilities, including a peek inside the new Bulk 8 warehouse. ♦

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“He was truly one of the good guys in our industry, and his hard work over many years at *Blue Diamond* paved the way for our continued successes in the U.S. market today.”

— Bill Morecraft

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## *In Memoriam: Bill Wright, Industry Pioneer*

The *Blue Diamond* family lost a pioneer in our industry recently. Bill Wright, who began his career at *Blue Diamond Growers* in the early 1970s, passed away on September 2, 2020. Bill made a significant contribution to *Blue Diamond* and the California almond industry.

Bill began at *Blue Diamond* as the domestic sales manager and retired after more than 30 years as the domestic sales director for the industrial division in 2004. At the beginning of Bill's career, he was responsible for domestic ingredient sales and the emerging retail and food service business. Along with long-term business colleague John Wagaman, Bill was instrumental in growing *Blue Diamond's* business with major U.S. food companies, including Hershey, General Mills, Kellogg, Quaker Oats, Post, and many others.

“Bill was a wonderful man who was fair, genuine, and ethical to all who had the privilege to work with him,” said Bill Morecraft, Senior Vice President of Global Ingredients for *Blue Diamond*. “He was truly one of the good guys in our industry, and his hard work over many years at *Blue Diamond* paved the way for our continued successes in the U.S. market today.”

Bill was a founding member of the Peanut Tree Nut Processing Association (PTNPA) and served as its president for many years in the late 1980s and early 1990s. He worked tirelessly in this capacity for the entire tree nut industry and was bestowed an honorary lifetime membership.

He left no doubt that the most treasured thing in his life was his family and friends. *Blue Diamond* will miss you, Bill! Thank you for showing us all that “good guys do win!” ♦

## #WeAreBlueDiamond Snapshots

Almonds. Family. Farming. California. Growers are celebrating and sharing on social media what it means to be a part of the *Blue Diamond* co-op. Share yours and use the hashtag **#wearebluediamond** to be featured in a future issue. ♦





**Model 510**

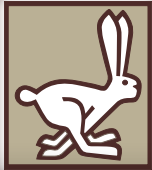
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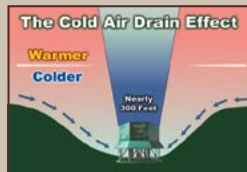
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## Smokehouse® Almond Veggie Burgers

Cook Time: 55 minutes

Serves Up To 6

### Ingredients

- 1 (6-oz.) can *Blue Diamond* Smokehouse® Almonds
- 1 cup chopped onion
- 1 cup rinsed and drained garbanzo beans
- ¾ cup cooked brown or white rice
- ⅓ cup panko breadcrumbs
- 2 teaspoons garlic salt
- 2 eggs
- Olive oil or olive oil cooking spray
- Burger buns, lettuce, sliced red onion, sliced tomato, barbecue sauce, pickles, mashed avocado and cheese (optional toppings)



### Directions:

1. Place almonds in a food processor and pulse to coarsely chop. Add onion, beans, rice, breadcrumbs, garlic salt and eggs to food processor. Pulse until all ingredients are chopped, making sure to not chop too finely and scraping down the sides once or twice. Cover and refrigerate for at least 30 minutes to allow mixture to firm up.
2. Using wet or lightly oiled hands, shape into 6 patties and coat with olive oil or cooking spray. Cook in a very large nonstick skillet set over medium heat for 5 minutes on each side or until lightly browned. Burgers may also be cooked on a well-oiled piece of foil on the grill over medium heat.
3. Serve on toasted buns with any desired toppings. Makes 6 servings.

### Notes:

- Mix ingredients and store covered in the refrigerator for up to 2 days. Cook just before serving.
- May substitute cannellini or small white beans in place of garbanzo beans.
- Add a teaspoon of dried thyme for extra flavor.
- For a Mexican burger, use *Blue Diamond* BOLD Habanero BBQ Almonds in place of Smokehouse® and use black beans in place of the garbanzo beans. Top with Pepper Jack cheese, avocado and salsa.





**Ron Boone**  
Northern California



**Gerry Hunter**  
Northern California & Western States



**Tim Gerdt**  
Fresno & South Valley



**Manny Sousa**  
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**Robert Gray**  
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*Please welcome our guest contributor, Billy Synk — Director of Pollination Programs for Project Apis m. (PAm). Billy manages the Seeds for Bees program which encourages cover crop use in agriculture by supplying growers with seed mixes designed to increase soil health while providing forage for bees. Enrollment for Seeds for Bees is currently open. Read on to learn more about the program and the benefits it provides to growers.*

## Seeds for Bees Encourages Cover Crop Use

The 2020–2021 Seeds for Bees season is shaping up to be the best one yet! Seeds for Bees helps growers develop bee friendly cover crops and habitat by providing seed and advice specific to their operation. The seed mixes available are designed to bloom at critical times of the year when natural forage is scarce, but bees are active. Seeds for Bees serves the needs of bees, beekeepers, and growers, increasing sustainability of pollination and agriculture.

### **Program Benefits**

Not only do cover crops support bees, but there are other benefits as well. Other pollinators, soil, orchard management, and environmental efforts all benefit from cover crop usage. See examples below:

### **Soil Benefits**

- Improves soil fertility
- Increases organic matter and water availability
- Suppresses weeds
- Prevents erosion and improves water infiltration

### Orchard Management Benefits

- Attracts beneficial insects that control pests (IPM)
- Assists mummy nut decomposition
- Reduces dust
- Decreases muddy orchard floor conditions

### Environmental Benefits

- Carbon sequestration
- Chemical free nematode suppression with mustards
- Amends soil with non-fertilizer sources of nitrogen

Besides bee health, the top four reported reasons Seeds for Bees participants use cover crops are, increased water infiltration, increased organic matter, better weed control and nitrogen fixation. Often these benefits are seen after planting cover crops for several years. Improving neglected soil is a long-term investment, just like your trees and vines. However, some graduates of the Seeds for Bees program saw a difference in two years. I hear testimonials like “My compacted ground is already opening up,” or “I spent less money on weed control” every year. Now is the time to start using cover crops to improve your crop production.

### Supporting Data

The anecdotal evidence I hear about is also being backed by hard data. 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. The preliminary data shared by these investigators regarding benefits and risks is very exciting. Research shows seed mixes high in legumes (like PAm’s Clover Mix, Soil Builder Mix and Vetch-Grain Mix) can boost nitrogen levels in the soil. Orchards with cover crops had 82 more nitrogen pounds per acre in Merced county and 126 more nitrogen pounds per acre in Kern county, than orchards without cover crops.

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While it is hard to be certain which factor is responsible, and it is likely multiple benefits are contributing, the University of California study found that orchards with cover crops also have higher almond yields. At the Merced county site yields were 225 pounds per acre higher when compared to control orchards with resident vegetation/weeds. In Kern county the yields were 94 pounds per acre higher when compared to bare soil.

Busting common myths about the risks associated with cover cropping is also a valuable part of this research. The risk of frost damage is a concern some growers have when deciding whether to use cover crops. Preliminary results on the effects of frost were intriguing and may help shed some light on the role cover crops play in orchard temperatures. At ground level 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 same. Research into temperature dynamics is ongoing. ♦



*Predator insects, like this hungry wasp photographed in a Seeds for Bees Wildflower planting, benefit from cover crops and habitat along with pollinators. Insect predators can help control insect pest populations – another benefit of planting Seeds for Bees.*



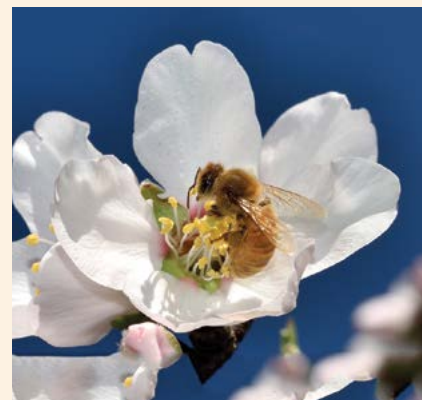
**Billy Synk,**  
**Director of Pollination Programs,**  
**Project Apis m.**  
**Billy@ProjectApism.org**



## Enroll for Seeds for Bees Today

The 2020–2021 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 ([projectapism.org/seeds-for-bees.html](http://projectapism.org/seeds-for-bees.html)). We are currently accepting applications through November 1st, 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 greatest benefit possible from your cover crop stand.

Feel free to contact me, Billy Synk, at [Billy@ProjectApism.org](mailto:Billy@ProjectApism.org) for any questions regarding the Seeds for Bees program, cover crops, habitat or bees/pollination.



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## Almond Breeze® Brings Convenience to South Korea



The launch of *Almond Breeze*® Nutriplus Fiber in South Korea further strengthens *Blue Diamond*'s position as the number one brand of almond milk in the country. This fiber fortified 190ml single-serve product will feature five grams of fiber per pack, tapping into the increased consumer demand for convenient, on-the-go, dairy-free functional foods. With this launch, *Blue Diamond* is building on the success of *Almond Breeze*®'s Nutriplus Protein, launched in South Korea last year. The Nutriplus Protein has seen impressive growth in both online and brick-and-mortar channels, becoming our number two selling product in the market, behind Original and Unsweetened *Almond Breeze*®.

"We are excited about the launch of Nutriplus Fiber," said Sean Ryoo, country manager of South Korea for *Blue Diamond*. "This new product is a natural evolution of our fortified *Almond Breeze*® platform in the market, leveraging both online and offline sales channels."

Nutriplus Fiber was made available to consumers in October through Coupang — the leading e-commerce platform in South Korea — as an exclusive item until December 2020. From January 2021 onwards, distribution of the product will expand to other major online and brick-and-mortar stores. This strategy of launching in the online channel first has proven to be successful for *Blue Diamond* in the Korean market for innovation.

*Blue Diamond* has developed digital and social media content and messaging to support the launch, linking to the product e-commerce page. The launch plan also includes featuring popular Korean actor Ahn Bo-hyun, *Almond Breeze*®'s new brand spokesperson, for a "live launch" event on Instagram and Facebook. These events will feature a product tasting, question and answer session, and live chat to draw attention and engagement of target consumers to the new product. ◆

## Nut-Thins® Gets Tasty New Look

In 1997, *Blue Diamond* launched Nut-Thins®, a crispy cracker made with almonds and rice. This innovative snack arrived at just the right time as a tasty, wholesome and gluten-free option for consumers. After more than 10 years in its current package design, Nut-Thins® is getting a new and refreshed package that aligns with *Blue Diamond*'s snack nut campaign, *Crave Victoriously*, that inspires consumers to embrace their snack cravings.

The new look jumps flavor first into snacking with dynamic, delicious flavor visuals and bright, breakthrough colors — all with the goodness of *Blue Diamond* almonds to show what makes these crackers lovable and crunchable.

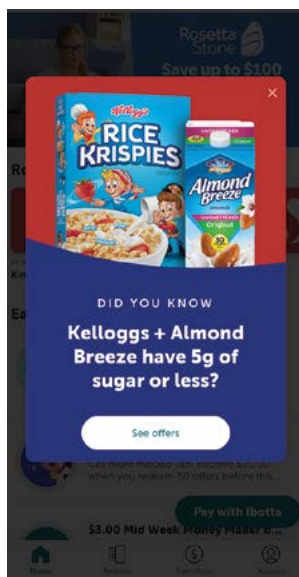
New packaging started rolling out to grocers nationwide in October. ◆



## Almond Breeze® and Kellogg's Team Up for Breakfast

*Almond Breeze*® partnered with Kellogg's cereal on three promotions designed to encourage consumers to purchase *Almond Breeze*® and Kellogg's cereal on the same shopping trip to drive velocities for both brands. This partnership offered *Blue Diamond* the opportunity to leverage Kellogg's brand scale and gain new households.

The first promotion was an Ibotta Joint Cash Back Offer, where consumers had the opportunity to receive savings on individual *Almond Breeze*® products when both brands were purchased together. This offer was promoted as part of Kellogg's "Did You Know Campaign," highlighting Kellogg's healthier options. We highlighted a low sugar pairing by coupling our Unsweetened *Almond Breeze*® with Kellogg's lower-sugar cereal choices. The Ibotta promotion reached consumers with a home screen takeover on their app and on social



media channels. Ibotta is the number one shopping rewards app with over 34 million registered users and over one million Facebook, Twitter and Pinterest followers.

A Back to School reward incentive and a Back to School sweepstakes helped to expand on the partnership. Consumers who purchased any *Almond Breeze*® and any Kellogg's cereal together in the same shopping trip could upload their receipt on our website landing page and receive a virtual reward toward back to school supplies. Consumers also had the opportunity to enter a sweepstakes for free breakfast for a year, including one free

*Almond Breeze*® and one free Kellogg cereal every week for one year.

Both promotions used digital ad banners and paid social media ads and posts by social media influencers to reach consumers. ◆



## Advocating for the Almond Community

The year 2020 has been unlike any we have ever seen before — and we still have several months to go! The COVID-19 pandemic, hundreds of wildfires that have consumed vast amounts of acreage and polluted the air, ongoing global trade challenges, ever changing water supply policies — these issues have definitely grabbed a large amount of attention.

And yet, the Almond Alliance, which advocates at the state and federal level on behalf of the entire California almond community, has been making quiet, steady progress on a number of fronts. Here is a quick review of those successes:

### Coronavirus Food Assistance Program

The Almond Alliance fought for almonds to be included in the Coronavirus Food Assistance Program (CFAP) which consists of direct payments to almond growers for losses

suffered as a result of COVID-19 and disruptions to the supply chain. We have advocated for more funding in the newly announced CFAP 2 to assist with pricing damages. To date our industry has received approximately \$100 million dollars. We are proud of our advocacy efforts to have almonds included in this program. We coordinated our efforts with *Blue Diamond* and worked with the Almond Board of California for outreach and workshops as well as the USDA Farm Service Agency and Agricultural Marketing Service for application technical and webinar support.

### Section 32 Buy for Almonds

The Almond Alliance worked with association members to get funding from the United States Department of Agriculture (USDA) to buy California almonds. The USDA issued a solicitation to purchase \$40 million dollars' worth of almonds before September 30, 2020 for food



banks and nutrition centers. Our goal is to see the solicitation fulfilled and seek additional Section 32 funds in the next budget cycle. This USDA action under Section 32 can expand the demand for almonds which supports overall pricing.

### **USDA Export of Whole Almond Hulls Grant**

The Almond Alliance applied for USDA export program funding for “Establishing New Export Markets in Asia for Whole Almond Hulls.” This will focus on promoting nutritional and feed efficiency for the international dairy industry. The Almond Alliance was awarded funding over two years to assist with the export of almond hulls (not cubes or pellets) to Asia. As you know this is harder than it sounds. Our proposal includes the following:

- Classify whole almond hulls as a feed commodity by importing country’s Ministries of Agriculture.
- Facilitate creation of correct HS Codes by importing country.
- Address and resolve confusion regarding application of phytosanitary protocols by importing country customs authorities.

For this commodity to be exported in volume and become a dairy feed staple in the primary target markets in Asia, we must overcome the fundamental barriers of the lack of phytosanitary protocols, enumeration of chemical residues, objects of quarantine for imported whole almond hulls and inclusion on allowable feed listings. This proposal will address and fund research, education and registration of whole almond hulls as a dairy feed with

ministries of agriculture and customs and quarantine administrations in target export markets in Asia and Southeast Asia.

### **Regulatory Actions**

The Almond Alliance spends an extraordinary amount of time on regulatory issues. Below is a brief summary of some of the top regulatory items and how the Alliance is involved on your behalf.

### **DPR and 1,3 Dichloropropene Pilot Project**

In early 2020, the Department of Pesticide Regulations (DPR) initiated pilot programs specific to the use of 1,3 Dichloropropene in three areas of the state: Shafter, Kern County; Parlier, Fresno County; Delhi, Merced County. 1,3-D (also known as Telone) is an approved soil fumigant made up of carbon, hydrogen and chlorine. 1,3-D is used to eradicate harmful, microscopic, root-eating worms prior to planting almond trees. The objective of the pilot programs is to provide growers and applicators with alternative methods of achieving emission reductions of 1,3-D comparable to tarping. The Almond Alliance engaged our membership in discussion about the 13 proposed mitigation measures presented by DPR. Our grower members reviewed the proposals and commented on what is feasible and what is not realistic in practice and outlined the economic impacts to each of the mitigation measures. We met with DPR over five times on this issue and submitted a letter clearly outlining what was “doable” for the industry and why some mitigation measures

are not feasible. DPR was asked to consider the timing of requiring new mitigation options and emphasized that fumigations are applied both by specialized equipment and specially trained applicators. We reminded DPR that 74 percent of almond growers farm 100 acres or less. Re/planting an orchard is a major long-term investment with no return from that ground for three to four years, and it takes seven to 15 years to fully recoup the investment costs. Everything that increases the planting costs, including efforts to achieve successful soil pest management prior to planting, means the grower needs that much more capital to put in and it will take that much longer to amortize the costs. Yet, good soil pest management is critical for the long-term productivity and health of an almond orchard. The Almond Alliance continues to be very engaged in this issue with DPR and have invited decision makers to almond orchards for a tour and further discussion and to get a better understanding of the geographies for possible mitigation measures.

### **Proposition 65 – Acrylamide in Roasted Almonds**

The Almond Alliance has led a coalition of chocolate and nut producers addressing concerns about recent developments regarding Prop. 65 and the prospect of claims being filed alleging that cancer warnings are required for acrylamide in products made with, or primarily derived from, nuts and cocoa/chocolate. The purpose of our involvement is the prospect of claims being filed alleging that cancer warnings are required for

acrylamide in products made with, or primarily derived from, nuts and cocoa/chocolate. This development portends to make a mockery of Prop. 65 and adversely affect public health. We requested that the California Office of Environmental Health Hazard Assessment correct the situation and prevent the ongoing abuse by attorneys and their clients for hire. Dozens of notices of violation have been filed and the vast majority of these notices have been filed by two law firms on behalf of a single plaintiff. We will provide comments on the regulations in partnership with our coalition stakeholders as well as the Almond Board of California. This is a very important and focused issue for the almond industry. The Almond Alliance will stay engaged in this issue until there is resolution.

### Bumble Bees

The Almond Alliance, in collaboration with other agricultural groups, has filed suit with California Fish and Game Commission in response to a vote to grant candidacy status to four subspecies of bumble bees under the California Endangered Species Act. The outcome from the Commission is problematic to the almond industry on multiple fronts and we continue to work in collaboration and be actively engaged in this issue.

### COVID-19

To help our industry wade through the huge amounts of information, we have compiled an online directory of

COVID-19 resources which you can find on our website at [www.almondalliance.org/resources/covid-19/](http://www.almondalliance.org/resources/covid-19/).

As part of coalitions and independently, we make sure that local, state and federal decision makers are aware of how the almond

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industry has addressed COVID-19, incorporated safety guidance and have continued to provide our industry the needed resources and information to navigate through these challenging times.

I was appointed to the Governor's Economic Recovery Task Force as a voice for California agriculture where I regularly expresses the industry's workforce and employer needs and concerns. Specifically, I have advocated for more PPE, employment and workers compensation relief, liability protections, childcare for essential employees, COVID-19 isolation housing and rural mobile testing sites.

### State Legislation

On the legislative front, the Almond Alliance was excited to start out the year with two very important bills for our industry.

- AB 2831 (Flora) Carbon offset credits: whole orchard recycling: healthy soils

This bill would require the California Air Resources Board to develop a carbon offset credit for whole orchard recycling.

- AB 3103 (Dahle) Commercial feed: Feed Inspection Advisory Board

This bill would allow the California Department of Food and Agriculture (CDFA) Secretary to authorize state accredited, certified, or licensed laboratories to be established or designated for testing, sampling, and analyzing California almond hulls and agricultural products.

The COVID-19 pandemic put a halt on many bills this year, as a result, both Almond Alliance sponsored bills did not move forward. COVID-19 related bills was the focus for the legislature, and because of that, the policy committees the bills were referred to did not feel they directly impacted the pandemic; therefore, they were held. However, each policy committee indicated that the bills have merit and should be reintroduced next year. The Almond Alliance will continue to work with authors and their staff to identify a legislative roadmap and strategy for next year's reintroduction.

With the onset of COVID-19 our focus shifted to PPE, guidance and standards for coronavirus infection prevention, labor, workers compensation, family leave, expansion of family rights act, single use packaging, biomass, classification of solar energy and more. While our efforts and coalition partnerships were able to defeat many bad bills, there are still some on the Governor's desk for signature that we were not able to defeat. A summary of bills that the Almond Alliance focused on will be outlined in our 2020 Advocacy Report that will be emailed soon.

### Our Work is Making a Difference

The Almond Alliance received a letter from USDA leadership thanking us for our request for USDA to purchase almonds and let us know that since 2018, because of the advocacy efforts of the Almond Alliance and industry partners, the industry has

received over \$112 million in direct funding relief. This figure does not include CFAP 1 funding which is at \$100 million to date, the upcoming CFAP 2 program or the recently announced USDA Section 32 buy at \$40 million. While direct payments and government almond purchases are not the ideal solution, they will help assist those who have been negatively impacted by COVID-19.

The Almond Alliance remains focused on helping the industry resume strong international trade and market growth. The industry has worked hard over the last 30 years to develop strong international commercial partnerships and new markets, and our goal is to see those relationships come to fruition.

Needless to say, I am very proud of our team and our efforts. My thanks to all of those who take the time to be involved with and support ongoing Almond Alliance activities. We advocate on behalf of the entire California almond community. You can learn more about the Almond Alliance at [www.almondalliance.org](http://www.almondalliance.org). ♦



**Elaine Trevino,  
President,  
Almond Alliance  
of California**

## THE BEE BOX

### Unusual Times; The Bee Informed Partnership National Survey State Specific Colony Losses

These past months have been unusual in so many ways. A few examples range from beekeepers having to work without crew help for months to many reporting difficulties finding sugar. Another example comes from the 2019–20 Bee Informed Partnership (BIP) Colony Loss Survey results.

If you’ve read this year’s 2019–2020 *Honey Bee Colony Losses in the United States: Preliminary Results* or watched the news, you already know that we recently reported that beekeepers experienced the highest honey bee colony summer losses on record last year (2019). It was one of those rare times when beekeepers experienced higher losses in the summer compared to the winter. Similar to previous years, summer losses were driven by commercial beekeepers (managing 500-plus colonies) who lost more colonies compared to sideliners and backyard beekeepers (managing 50 to 500 and 1 to 50 colonies, respectively). However, Summer 2019 seemed to have hit commercial beekeepers particularly hard.

Given all the “unusuals” of the past year, we stuck to the traditional BIP colony loss map to present state-specific results for annual, summer and winter colony losses for the 2019–2020 season.

As in previous years, we present both *Total and Average Loss* for each region and season; individual loss rates are aggregated by either summing up each operation’s losses according to the number of colonies they owned or not.

2019/20 Total Summer All Colony Loss

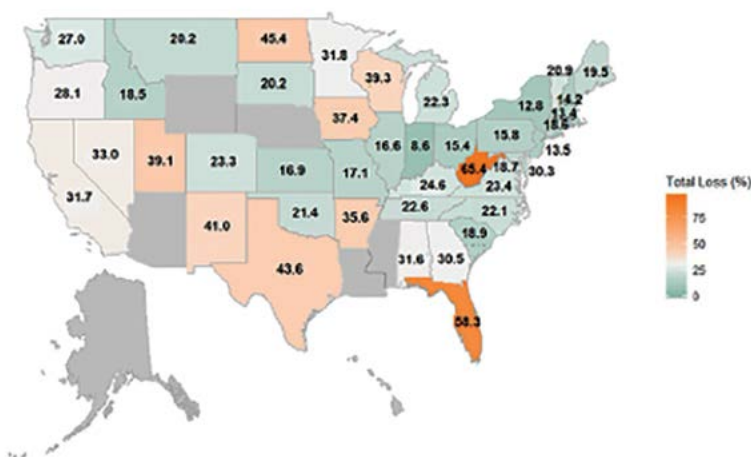


Figure 1: 2019–2020 Summer Colony Loss Map by States.

Here’s a quick explanation of the two types of losses:

- **Total Loss** = every colony is treated equally. Thus, Total Loss is more representative of commercial beekeepers who are managing most of the honey bee colonies in the country.
- **Average Loss** = every beekeeper is treated the same, no matter how many colonies they manage. Therefore, Average Loss is more representative of backyard beekeepers since they make up the majority of the U.S. beekeepers.

Depending on the number of respondents for each state and the variability in their responses we can be more or less confident in state-level loss rates. As a measure of confidence, we are using “confidence intervals” which reveal the range of plausible loss estimates. The narrower the confidence interval, the better! It means that we have a good idea of what the actual state loss rate was.

Broad confidence intervals — when we don’t have a good idea of the actual state loss rate — occur when states have low participation rates or extremely high variability in beekeeper responses.

There is an elegant way to account for this though: A statistical tool called “bootstrapping.”

For example, instead of calculating the *Total Loss* for Alabama just once, this tool is doing it thousands of times! It shuffles the 68 state-specific respondents like cards and keeping some out every time, thereby reducing the variability in the calculated estimates.

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**SC 816 Shuttle Cart**

**BO 816 Bank Out Cart**

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**Front Discharge Door**

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Let us switch from technicalities to visuals. Here we present the traditional BIP map showing Total Summer Losses specific to each state.

If you want to take it a step further, head over to the BIP's Interactive Loss Map. This tool gives you the opportunity to look at the region-specific data for winter and annual losses of this year's survey. You also get the chance to compare estimates between "Operation Types", i.e. beekeepers that keep their colonies exclusively in one state ("Single State Only") versus having apiaries in multiple states ("Multiple State Only").

Or perhaps you see some trends emerging when you look at results from previous years? This is the opportunity afforded by a long-term dataset.

What are some of your most pressing questions? Maybe we can answer a few! Visit [www.beeinformed.org/about/contact/](http://www.beeinformed.org/about/contact/) to send us a message. ◆



**Nathalie Steinbauer,**  
Science Coordinator,  
The Bee Informed Partnership

*Not Pictured:*  
**Selina Bruckner, Auburn University**

**Web Resources:**

- 2019–2020 Honey Bee Colony Losses in the United States: Preliminary Results: [beeinformed.org/wp-content/uploads/2020/06BIP\\_2019\\_2020\\_Losses\\_Abstract.pdf](http://beeinformed.org/wp-content/uploads/2020/06BIP_2019_2020_Losses_Abstract.pdf)
- BIP's Interactive Loss Map: [bip2.beeinformed.org/loss-map/](http://bip2.beeinformed.org/loss-map/)

### ALMOND BOARD

## Irrigation Tech Fundamental in Almond Orchard of the Future

When considering what irrigation will look like in the almond orchard of the future, it's reasonable to expect that growers will rely as much on artificial intelligence as they do their own experience: In-field data on soil moisture and texture, spatial variability, and weather information collected by remote sensors or pressure chambers could be combined with aerial imagery that captures plant vigor or water stress to provide real-time analytics on an orchard. Similarly, computer algorithms could help growers make scientifically informed decisions around water in the areas of how much, at what frequency and where to apply this valuable resource across the orchard.

This concept of irrigation in the almond orchard of the future may sound like something from a futuristic movie. However, many of the components mentioned above are already accessible and being used today in orchards up and down the Central Valley. The key next step for the industry is to harness this technology and organize the data it provides so that growers can quickly act upon it.

With the sting of California's latest drought still in memory and the state beginning to clamp down on groundwater use, maximizing every "crop per drop" of water has never been more important. This reality helped propel the almond industry to announce its Almond Orchard 2025 Goals — one of which is to reduce the amount of water needed to grow a pound of almonds by an additional<sup>1</sup> 20 percent.

#### Tech Can Lead to New Solutions

The rapid advancement of commercial precision farming



technology — paired with an understanding of almond tree growth and what drives yield — is expected to lead to new irrigation solutions for growers.

"Smart irrigation management will consist of a combination of hardware and software that will allow growers to make precise irrigation decisions," said Sebastian Saa, associate director of Agricultural Research for the Almond Board of California (ABC).



<sup>1</sup> Why "additional"? Over the past two decades, almond growers have successfully reduced the amount of water needed to grow a pound of almonds by 33% via improved production practices and adoption of efficient microirrigation technology. (Source: University of California, 2010. Food and Agriculture Organization of the United Nations, 2012. Almond Board of California, 1990–94, 2000-14.)



### What does that look like for growers?

Saa and ABC’s Senior Manager of Field Outreach and Education Tom Devol outlined these anticipated advancements for growers within the next decade:

- Measuring actual evapotranspiration (ETa) — the amount of water a tree really uses — will allow growers to more effectively calibrate irrigation needs.
- Yield forecasts will be fine-tuned, leading to precise irrigation plans that determine how much water is needed to maximize production.
- Irrigation technology will allow different volumes of water to be applied in different parts of the same orchard.
- SGMA (Sustainable Groundwater Management Act) will inspire additional improvements in water use efficiency.

Devol said the data shows many growers already take advantage of technology available today,<sup>2</sup> but that enhancements in software and standardization of some of the metrics will make it easier to aggregate and analyze the data.

“There are pieces of the larger irrigation improvement puzzle being implemented now in different forms,” he said. “For instance, remote imagery is becoming more common. There are a number of companies that provide that service — they send satellite images to growers every couple of weeks.”

Devol said growers developing new orchards — with brand new irrigation systems — are most likely to integrate new technology. Conversely, the cost of replacing already established micro-irrigation systems may be a financial disincentive for other growers, he said.

“What we’re looking to do is break the irrigation system into a grid of irrigation blocks,” Devol explained. “Then, we can choose where we deliver water to, using a software tool to help guide that decision. The goal is to have flexibility in to how to deliver water.”

### ABC’s Strategic Plan on Irrigation

The Almond Board has been investing in irrigation-related research for nearly 50 years, recognizing and underscoring the role almond growers must play in sustainably managing water resources in the state. In the last five years, ABC has devoted almost \$4 million to irrigation research, encompassing 21 projects (eight of which are ongoing).

Table 1. How irrigation decisions are made by our growers (2019 CASP data).

How irrigation decisions are made by our growers	Percentage of adoption (%)
ETc Based Scheduling	75%
Water District Influenced Schedule	23%
Deficit Irrigation Used at Hull Split	76%
Remotely Read Soil Moisture Sensors	61%
Manually Read Soil Moisture Sensors	59%
Pressure Chamber Used	31%
Pressure Chamber to Determine First Irrigation	20%
Use Flow Meters	43%
Growers Estimate Water Use	57%
Hand Feel Method Used to Determine Moisture	89%
Use Soil Auger to Check Moisture:	49%

2 2019 California Almond Sustainability Program (CASP) data.

Research funded by the Almond Board will be a critical factor in how irrigation in the orchard of the future evolves, Saa said.

“We will play a catalytic role, connecting the expertise we have supported through public sector research with the growing arena of commercial technology innovation,” he said. “We expect this to result in the development of better instruments, software and hardware that provide a more reliable and user-friendly experience by really understanding the almond ecosystem.”

ABC research builds on work that led to the creation of the Almond Irrigation Improvement Continuum,<sup>3</sup> a comprehensive 149-page guide that outlines irrigation management practices for the almond industry. The Continuum also features an Irrigation Calculator, which is available to growers who participate in ABC’s California Almond Sustainability Program (CASP).<sup>4</sup>

Saa said the grower-related data on irrigation techniques and water use provided through CASP is critical for researchers as well as the companies who make irrigation equipment. The data also influenced multiple discussions among ABC’s Irrigation, Nutrients and Soil Health Workgroup members, who identified several factors that must take place in order for the orchard of the future to take shape, elements that are outlined in ABC’s Strategic Plan on Irrigation:

- Growers must be less confined by water district schedules that influence when and how much water is available. These schedules limit the flexibility of scheduling use-based timing and can affect the feasibility of variable fertility application.
- Utility companies compel growers to schedule irrigation around off-peak times for economic reasons. This can strain the ability to meet water demands during the hottest periods of the year (summer months), which have higher water requirements than other times in the growing season.



- Growers would benefit from having better recommendations on when to start irrigating (in early spring) and when to stop irrigating (by the end of the growing season).
- Low adoption of pressure chamber use illustrates the need for more user-friendly devices that could provide plant water status data.
- Continued outreach efforts in all these areas are important to expand adoption, particularly enhancing the level of outreach in the use and benefits of flow meters.

ABC’s Irrigation, Nutrients and Soil Health Workgroup members charted a research path that focuses on ETa, the continued development and application on remote sensing technology and better ways to measure spatial variability (the difference in soil types) within an orchard.

The group also put a strong emphasis on better understanding almond tree physiology and pomology, wondering why, if the same amount of water should be applied to orchards of similar canopy size, one produces 2,000 pounds of nuts per acre and the other 4,000 pounds per acre.

<sup>3</sup> View the Continuum in its entirety at [www.almonds.com/sites/default/files/Almond-Irrigation-Improvement-Continuum.pdf](http://www.almonds.com/sites/default/files/Almond-Irrigation-Improvement-Continuum.pdf).

<sup>4</sup> Visit [www.sustainablealmondgrowing.org/](http://www.sustainablealmondgrowing.org/) to learn more about CASP and create your own account.



"We would like to further explore this question from a physiological point of view in terms of how water use is driven by yield, without reducing the yield potential defined at fruit set, nor affecting the quality of almond buds for the subsequent season," Saa said.

"We are also interested in finding the breaking point between tree water demand and the tree energy needed to support predicted yield early in the season. We envision that the results in this area will provide the means to make decisions on how much to irrigate given a certain crop load and thus translate into water-saving capabilities."

Growers interested to learn more about the work of ABC's Irrigation, Nutrients and Soil Health Workgroup are invited to attend an upcoming meeting. For meeting information, visit [Almonds.com/Events](http://Almonds.com/Events). ♦

Article contributed by the Almond Board of California

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### TIME TO CONSIDER

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*Late fall is generally a slower time in almond orchards as harvest winds down and days grow shorter, but there is both reviewing and planning to do as the focus shifts to next year.*

#### Planning Ahead

Planning for the 2021 crop will be more challenging than usual. Experienced growers tell me that surviving the tough years is what is most important to their long-term success. This means careful planning decisions going forward.

The following is general planning advice reviewed by the new UC Extension Ag Econ Specialist at UC Davis, Dr. Brittney Goodrich.

- Don't use only cash to fund the 2021 season. Get production credit to allow you to cover basics so the trees meet potential that year and beyond.
- Successful almond growers are profit maximizers, not cost minimizers. That said consider a budgeting approach for 2021 that ensures that all planned expenses for the year are based on the expected value to the grower.
- Growers should spend carefully, but not sacrifice orchard health to maintain long-term viability of their orchards.

#### Irrigation is Critical

Irrigation is the always critical "right now" task to stay up on. There is no more critical time of the year for careful irrigation than postharvest to leaf drop. Excessive irrigation is not needed or helpful, but avoid



long stretches of moderate to high moisture stress (more negative than -14 bars in pressure chamber readout) that can shut down photosynthesis for longer times in the day and possibly result in early leaf loss and reduced energy (starch) storage.

Fall is also a good time to maintain your irrigation systems while water is still being applied and is available from water districts. Don't start next season with an irrigation system that isn't ready. Check your system's irrigation water distribution uniformity (DU) as well as cleaning/flushing the entire system.

A potential major impact on irrigation next year is the winter climate forecast with a La Niña advisory being issued by the National Weather Service's Climate Prediction Center. This usually means less than normal rainfall in California. While a La Niña forecast is not a guarantee of low rainfall this winter, it is certainly cause for concern for growers looking to a wet winter to fill reservoirs and leach root zone salts. Including water purchases in one 2021 budget scenario may be realistic.



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## Soil Sampling

Soil sampling should be done in the fall at the end of the irrigation season. Samples to 24-inch depth help assess rootzone health (pH, EC, boron, chloride and sodium) while deeper samples provide a check on leaching programs, especially if irrigation water contains enough salts for concern with salinity and toxic elements. Soil nutrient analysis can also be done on these samples, but my preference is to focus on leaf samples for input on nutrient management. Sampling at the same distance from irrigation emitter and the same soil depths every year helps for more accurate comparisons of results over time.

## Nutrition is Key

Nutrition is a key concern in the fall, particularly for micronutrients.

Foliar boron should be applied in October or November if harvest hull samples show low to adequate levels of this essential micronutrient. The general recommendation is for 0.4 pounds of actual boron per acre (for example two pounds per acre of a 20 percent boron material such as Solubor®) if hull levels are under 120 ppm boron. Dr. Patrick Brown, professor in the Plant Sciences Department at UC Davis, believes there may be benefit to using one pound per acre of 20 percent boron if hull levels are between 120 to 200 ppm boron. Where needed, fall foliar



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boron can significantly increase nut set and delivers the best return on investment of any fertilizer. The goal of fall boron spraying is to increase flower boron levels and nut set. Soil applied boron at this time of year will not get to the buds in time to make a difference in set next February.

Fall is also an effective timing for foliar zinc application. The traditional application timing is early November as natural leaf drop begins using a high rate (for example, 20 pounds per acre of zinc sulfate) to get zinc into the trees and accelerate leaf drop. This can be part of an integrated program for rust control, as removing infected leaves reduces inoculum

pressure. A lower rate, in the range of five pounds per acre of zinc sulfate, applied in October can be more effective in getting zinc into the trees without damaging leaves.

When tankmixing sodium borate (Solubor®-type materials) and zinc sulfate, keep the solution pH below six with an organic acid material (Trifol®, MixWell™, etc.) to avoid a low grade incompatibility that can reduce boron delivery to the trees, even though it doesn't plug nozzles in my experience.

What about fall nitrogen fertilization? In my experience, soil applied fall nitrogen does not improve yield next year in orchards with good production and adequate leaf nitrogen levels in the summer leaf samples. However, especially following a big crop, it is a good idea to double check lab results from July leaf levels. If levels are less than 2.2 percent nitrogen (deficient) then a low rate of fall nitrogen (for example, 30 pounds of nitrogen per acre) may be considered. Why such a low rate if trees are low in nitrogen? Flower bud differentiation has already occurred, so any nitrogen applied now simply goes to storage for next spring and even deficient trees have limited storage space.

Potassium nutrition is a good example of where careful management can maximize return on input investment. Potassium primarily accumulates in the nuts, so its demand is driven by cropload. A big crop requires



a lot of potassium, a light crop not so much. In a tight budget year, growers must choose how and when to apply potassium to keep orchards out of deficiency and within budget. The cost of the traditional maintenance rate of potassium fertilizer (for example, dry potassium sulfate at 400 to 500 pounds per acre), applied in the fall long before the new crop set is known, is as much as 10 percent of total cultural costs. This is a solid investment in good years, avoiding the risk of potassium deficiency that can limit yield the next year. In 2021, there might be a reduced rate of potassium application (250 pounds dry SOP per acre) could be enough to keep July 2021 leaf potassium at or above adequate levels. If using a lighter rate this fall, mark your calendar in May or early June of 2021 for a quick

early leaf sample to make sure leaf potassium levels are solidly above the July adequate level (1.4 percent potassium). If leaf levels are lower than that, a small rate of fertigated potassium (40 to 50 pounds  $K_2O$  per acre) should keep the orchard out of deficiency through harvest.

### **Pest Management Practices**

Pest management practices in the fall include careful monitoring and preparing for future practices. Monitor leaves for shot hole and rust in late October. Plan to take a dormant spur/twig sample to look for scale and scab after mid-November. A dormant spray is effective in managing these pests but may not be needed.

Plan and prep for orchard sanitation. It is a critical step in managing navel orangeworm (NOW) and maximizing crop quality and nut price to grower in 2021. Mummy nuts left over from the 2020 crop are food and shelter for NOW in your orchard and a significant risk to next year's crop. They should be removed and destroyed before March 1. While the actual shaking may not happen until December or January, make sure the equipment and operators are ready ahead of time. There may be only a short window for orchard access between rains. Start with blocks that have the highest damage history.

Monitoring mummies before and after sanitation helps keep costs and NOW pressure down. Once leaves drop, count the mummies in 20 trees per block. The target is two mummies or less per tree by February 1, with

very low numbers (0.2 mummies per tree and less than four "grounder" mummies under each tree) suggested in high pressure areas. Keep final mummy counts under these thresholds for best results. If shaking doesn't do it, consider polling with hand crews — especially in areas with a high damage history. Reducing mummy numbers also reduces two-year-old, moldy nuts in the crop next year, which further reduces rejects.

Don't talk yourself out of orchard sanitation. If the fall mummy counts show a need, not doing this key practice means you could be taking a chance with your returns for next year.

Weed management is another important task in the late fall and into winter. A careful weed survey after the first winter rains is the first step

in effective weed management. Talk with your PCA about cost-effective weed control practices. Once target weeds have been identified, consider timing and materials for pre-emergent control for the coming season. Post-emergent sprays can be used with pre-emergents as well as applied next year once rains have passed.

One cost-effective strategy for long-term weed control is sequential applications of pre-emergent herbicides. This is where a combination of winter and spring treatments is used to extend control into the summer instead of a single tankmix spray of heavy winter rates. March applications of pre-emergent materials require sprinklers or rain for incorporation, so such a program may not be for all growers in all years, but worth a look. Make sure all pre-emergent sprays are applied to clean, bare soil, not over the top of leaf litter. The herbicide can attach to the leaf litter and not end up on the soil.

Talk with your PCA about pre-emergent materials/programs in young orchards. Water, nutrients and sunlight make for "great" weed growing, and repeated post-emergent "burndown" applications can be expensive.

Also, check with your PCA about possible unintended tree damage with certain herbicides (pre- and post-emergents), especially at the row ends where extra material may be applied as the sprayer slows down or speeds up. Certain effective



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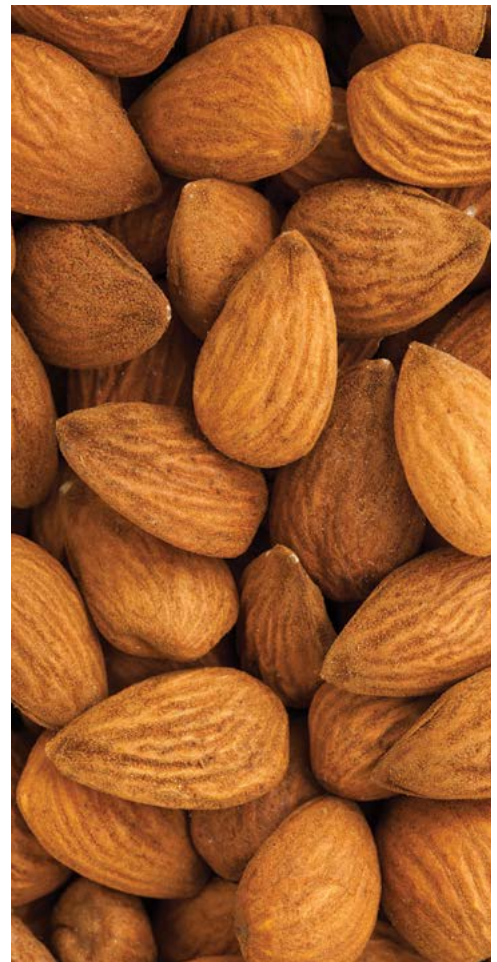


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herbicides may cause significant tree damage under these conditions, particularly on low organic matter soils, and applicators should be particularly careful when spraying those products. Remind operators to shut off the booms before slowing down at the end of the row and, when starting down a row, to not to turn on the booms before reaching the speed used when calibrating the sprayer.

### Pollination

Good pollination is critical in every year, with strong hives (eight frames of bees or better per hive) delivering significantly better pollination than weaker ones. Late fall is a good time to sign a pollination contract (including hive strength language) to lock in that key service ahead of bloom. Waiting for a “deal” for bees might leave you without good pollination in the field next bloom. Consider planting a bee pasture this fall to feed bees next spring.

### Pruning Trees

Pruning/roping young trees is important to good tree structure and future production. Without careful early pruning and (where needed) roping there is a significant risk of limb breakage through wind torque and/or crop weight. Select a limited number of scaffolds, three to four, up and down the trunk and as evenly distributed around the trunk as possible. If multiple scaffolds, five to six, are selected, they must be well

spaced up, down and around the tree or there is a good chance you will have a heartbreaking, days-long appointment with a chainsaw and a buck-rake in a couple of years. There is no cost savings in skimping on pruning scaffold selection.

Pruning potted trees planted this year can be particularly challenging. If trees were not pruned at planting and go into winter with a mess of scaffolds near or at the top of the trunk, even with good shoot and trunk growth, consider cutting off all scaffolds and letting the tree push new scaffolds up and down the trunk next spring. There is an excellent chance that you will be happier with the results (better orchard structure for the life of the orchard) than trying to cope with the mess resulting from not starting over.

Time pruning and apply fungicide to protect pruning wounds as young trees are particularly vulnerable to pruning wound infection by canker diseases. Recent research in Dr. Florent Trouillas’ lab (UC Extension Specialist) has provided answers to the questions: “When do I prune?” and “When are pruning wounds most vulnerable?” Pruning in December resulted in less canker disease infection than in the fall. Pruning wounds were most vulnerable to infection right after cutting. Infection susceptibility decreased by 60 percent at two weeks after pruning and 75 percent after three weeks from pruning. In field trials, Topsin-M provided the best pruning wound

protection (82 percent infection reduction). Rain is needed to carry disease spores and allow infection, so cuts should be sprayed ahead of any forecasted rain.

### Nematode Sampling

Don’t push out an old orchard that you plan to replant anytime soon without first taking a nematode sample. Sample soil and small roots from 4 to 24 inches with a soil probe or auger from different locations across a field. Separate samples should be taken from different soil types across a field. Keep the samples cool and submit to a lab to conduct the analysis as soon as possible.

### Take a Walk

Walk through your orchard to check general appearance of the trees and soil and ask yourself some important questions. Is early leaf drop more pronounced in one area compared to another? How does shoot growth from 2020 season compare across the block? Is there ponding in certain areas right or during after irrigation? Encourage your PCA/CCA and key employees to do the same and compare notes. This information helps direct work to improve tree performance in certain areas of the orchard, which should improve the bottom line for the whole planting.

Best wishes for a productive and restful fall. ♦





## Web Resources:

- *Maintaining Microirrigation Systems*, UC ANR publication no. 21637, is a valuable resource on drip and micro-sprinkler system maintenance. It is available on-line (\$20) from [anrcatalog.ucanr.edu](http://anrcatalog.ucanr.edu) or your local UCCE office.
- National Weather Service's Climate Prediction Center:  
[cpc.ncep.noaa.gov/products/analysis\\_monitoring/enso\\_advisory/ensodisc.shtml](http://cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml)
- Monitor leaves for shot hole and rust:  
[www2.ipm.ucanr.edu/agriculture/almond/postharvest/](http://www2.ipm.ucanr.edu/agriculture/almond/postharvest/)
- Details on dormant sampling including economic thresholds for treatment can be found at:  
[www2.ipm.ucanr.edu/agriculture/almond/dormant-spur-or-first-year-twigs-sampling-and-treatment-guidelines/](http://www2.ipm.ucanr.edu/agriculture/almond/dormant-spur-or-first-year-twigs-sampling-and-treatment-guidelines/)
- Details and examples of seedling weeds at:  
[ipm.ucanr.edu/pmg/C003/m003pcweeds02.html](http://ipm.ucanr.edu/pmg/C003/m003pcweeds02.html).
- Report on weed control:  
[ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=29080](http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=29080)
- Research by Dr. Brad Hanson, UC Extension Specialist:  
[growingthevalleypodcast.com/](http://growingthevalleypodcast.com/)
- Grower resources and seed available at:  
[www.projectapism.org/seeds-for-bees-for-the-grower.html](http://www.projectapism.org/seeds-for-bees-for-the-grower.html)
- Video from Dr. Katherine Jarvis-Shean (UCCE Sac/Solano/Yolo Counties) on pruning young almonds at:  
[www.youtube.com/watch?v=LraGW0FCbi8](http://www.youtube.com/watch?v=LraGW0FCbi8)
- Wes Asai, private consultant in the Turlock area and former UCCE Farm Advisor, on early pruning:  
[growingproduce.com/nuts/how-to-give-your-almond-trees-the-right-support/](http://growingproduce.com/nuts/how-to-give-your-almond-trees-the-right-support/)
- Pruning information can be found in the Young Orchard Handbook:  
[sacvalleyorchards.com/manuals/young-orchard-handbook/](http://sacvalleyorchards.com/manuals/young-orchard-handbook/)



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