



almond **FACTS**

JANUARY | FEBRUARY 2017

News, Views & Industry Insights



**Seminar
Coverage Recap**

**Meet New Co-op
Board Members**

**Busy Year in
Washington**



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Cover:

A rainstorm floods an almond orchard during bloom. Photo by Mel Machado, Director, Member Relations.



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President's Corner

Mark Jansen
President and CEO



Protecting Agriculture and Supporting Consumer Choice

Almond growers will not soon forget the challenges of the historic drought and the negative publicity on the water use of our industry. We responded by consistently sharing the facts, like almonds represent 13 percent of California agricultural acreage and only 9 percent of the irrigated water use. The almond industry resisted the easy route of pointing the finger at our friends in agriculture. Our rationale was that agriculture has too few allies and divided we surely would fall to special interests that do not recognize the challenges and importance of American farmers.

All segments of agriculture are under great pressure to protect their value across the country. Unfortunately, dairy processor advertising has turned toward disparaging and misleading depictions of almond milk. The dairy industry should know that negative advertising really does nothing to encourage consumption of your product. Protecting the value of agriculture in America should be the focus, with us coming together and supporting one another – even dairy cows benefit from almonds by eating the nutrient-rich hulls as feed. Agricultural unity and development play a significant role in the overall health and survival of our country and we, as an industry, should be economically motivated with innovation and collaboration.

Congress also introduced legislation at the behest of the dairy lobby to limit use of the word “milk” to that which comes from cows. In a free market society, you cannot legislate consumers to use your product. At the end of the day, it’s all about supporting consumer choice and respecting the preferences and health needs of individuals. Almond milk has proven to be a satisfying alternative

for people who are looking to avoid lactose, reduce their intake of animal products or soy, or watch their calorie intake, for example. Most varieties of almond milk are fortified with calcium and vitamin D, and many provide fewer calories than many other dairy or plant-based milks. As for those looking to watch their sugar intake, the unsweetened varieties, which are available nationwide, have zero grams of sugar.

Blue Diamond has always supported consumer access to all choices for their food table. We listen to what consumers are saying and asking for in the marketplace. Each product carries its own set of benefits and, when the best almonds make the best almond milk, consumers make their choices based on quality and personal nutrition. I believe it is possible to successfully compete in the marketplace, especially when you invest in innovation, as *Blue Diamond* has proven with our range of products. You must do the hard work to understand your consumer, develop great products and communicate your brand benefits in relevant and inspiring ways.

Blue Diamond will continue to incorporate innovation, collaboration, and understanding into the operations of the co-op. We have outlined our key objectives for the year, all of which strengthen the unity of our grower-owners and consumer access. You can expect us to grow our brands, delight our customers, build for success, and win as a team. This is *Blue Diamond's* Blueprint for Success.

We are excited to see the New Year shaping up to be a strong one as the markets remain stable. At the close of 2016, the global almond markets showed growth across multiple regions and reports showed the U.S. market continued to rebound. Crop pricing stabilized as California almond shipments have grown to consume the larger 2016 crop. The upcoming period of stability is a good sign for our grower-owners.

On behalf of our team, I wish you a happy, healthy and successful 2017. The best is yet to come!

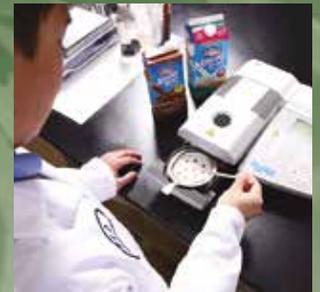


LEADING-EDGE OPERATIONS

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“Food safety is top-of-mind for growers today. From its state-of-the art processing plant in Turlock to its packing and shipping operations, Blue Diamond Almonds is proactive in protecting our product. That translates to increased profitability for the grower. Why would we trust anyone but the most stable, reliable name in the business?”

*– Galen Miyamoto, Owner
Miyamoto Farms*



At Blue Diamond Almonds, we’re recognized worldwide for our cutting-edge technology, our award-winning processing facilities, and our value-added approach, from research and development to finished product. What does that mean for you as a grower? A much broader global customer base, sustained performance in the marketplace, and higher price per pound ensure greater returns.

cutting-edge technology

**state-of-the-art
production operations**

highest health and safety options

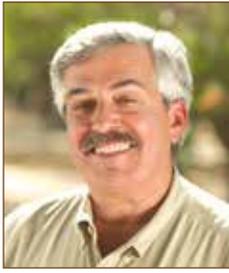
**facilities with optimum
food and worker safety**

**above and beyond
the competition**

Now the Food Safety Modernization Act (FSMA) is one more guideline we’re surpassing – leaving the competition far behind. There’s simply no other almond processor that compares to Blue Diamond’s gold standard – just ask our growers. Join us and find out how we can help you better succeed in the almond marketplace.

Give us a call. We’d love to talk to you about how we can grow your business, too. Call our Salida office directly at 209.545.6225

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 Warren Gilbert
 Rico Cinquini
 P. Samantha Lewis **!**
 Dan Cummings ******
 W. Howard Isom *****

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 Jake Sonke **C**
 Herman Doornenbal
 Donovan Adrian **!**
 Mike Ballatore
 Joe Gasper
 Sherwin De Boer
 Wes Eisenga **!**
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 Matt Visser
 Ryan Winters
 Phil Mohler **!**
 Kevin Fondse ******
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 Bill Weller
 Mary Ann Warmerdam **!**
 Michael F. Doherty
 Joe Kalfsbeek **VC**
 Matt LaGrande
 Logan Dennis **!**
 Carole M Cain **VC**
 Cathy Marsh **C**
 Maria Griselda Jauregui
 Michael DeRee
 Elaine Rominger
 Gerald Rominger *****
 Douglas D. Mathews *****

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 Dennis Bowers
 Jake Verberg
 Jerad Heinrich **! C**
 Kyle Oosterkamp
 Lucas Van Duyn
 Hans Waner III
 Doug Ott **!**
 John Regusci Jr.
 Alex Vanderstoel **VC**
 Gerret Bowman
 Ed Tilma **!**
 Stephen Van Duyn ******
 Neil Van Duyn *****

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 Allen Sipma **C**
 Bruce Oosterkamp **VC**
 Craig Miller **!**
 Jim Thoming
 Mike Bogetti
 Kris Thomsen
 Richard Low **!**
 Durk Van Laar
 Stephen Vander Veen
 William J Van Ryn II
 Ian Koetsier **!**
 Dale Van Groningen ******
 John Thoming **ABA '09**

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 Aaron Piazza **C**
 Darrell Cordova
 Rod Vilas **! VC**
 Tim A. Vieira
 Christine Gemperle - Bacon
 Eric Brush
 Chris Miller **!**
 Steven Scheuber
 Philip G Wagner
 Bart Muller
 Don Mailloux **!**
 Charles Crivelli III ******
 Steve Vilas *****
 Bill Brush **ABA '02**



Legend

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

2016

District 7

Dan Clendenin **C**
 Don Harcksen
 Michael Ohki
 Dr. S.S. "Toki" Takhar **!**
 Pete Bandoni **VC**
 Frank Fagundes
 Jeff Baize
 Jim Snyder **!**
 Rick Scoto
 Jon-Mark Horta
 Steve Moeller
 Tim Lohman **!**
 Robert J. Weimer ******
 David L. Zollinger *****

District 8

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 Richard Markarian **!**
 Dan Wattenbarger
 Curtis Bettencourt
 David Massaro
 Rusty Nonini **!**
 Ranbir Grewal
 Nayiri Saghdejian
 Ryan Indart
 David Tolmosoff **!**
 George Goshgarian **** ABD**
 Aldo Sansoni *****

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 Ernie Spencer
 Ben Wilson
 Diana Clark **!**
 Kent Stenderup **ABA VC ****
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 Carl Nikkel
 Rick Jelmini **!**
 Mark Fanucchi
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 Kyle Balakian **VC**
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For Grower Liaison contact information, please contact your field supervisor.



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protection
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Blue Diamond Extends Olympic Endeavors and Partners for Winter Games

Blue Diamond extends their Olympic endeavors with a four-year deal with the U.S. Ski and Snowboard Association (USSA) in the run up to the 2018 Winter Games in South Korea. As part of the partnership, *Blue Diamond* will be deeply incorporated into the athlete's preparation and training. *Blue Diamond* will work with the USSA's Director of High Performance and High Performance Dietician to incorporate *Blue Diamond* almonds into athlete snacks and meals at the USSA's Center of Excellence, the organization's training facility in Park City, Utah.

"Our work with USSA in the past was powerful," said *Blue Diamond* CEO Mark Jansen, "Our future partnership is just as promising. We're on track to build our relationship with the next generation of American athletes and to build our brand with the next generation of almond fans."

The partnership also includes Crown Sports, launched by Sacramento Basketball Holdings, LLC, who will serve as an agent for USSA's major events including the Toyota U.S. Grand Prix, the Putnam Investments Freestyle Challenge and U.S. Alpine Championships.

"We're excited to help USSA athletes by creating a unique partnership with *Blue Diamond*," said Sacramento Kings President and Crown Sports Executive Chris Granger.

"We continue to seek out sponsors that want to activate their brands and products with our athletes and events in unique and authentic ways," said Michael Jaquet, USSA chief marketing officer. "Integrating *Blue Diamond* almonds in to our High Performance program ... helps us on many fronts. We are very excited to welcome back our friends at *Blue Diamond* to the USSA corporate sponsorship program and roster."

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- **Save Money**
Avoid Constant Hose & Fitting Repairs



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Young Leader Shares Almonds Abroad

Cameron Burford, a grower from Burford Ranch in Fresno (District 8) and graduate of the cooperative's Young Leader class of 2014, attended a law school class in Austria taught by Supreme Court Justice Anthony Kennedy. As a thank you, Cameron gave him a can of *Blue Diamond* almonds and reminded Justice Kennedy of all the hardworking families that rely on agriculture and the challenges they face.



INDEPENDENCE® ALMOND GROWER STATISTICS

Fresno County **Fresno**

Third Leaf
1,350 lbs/acre
Fourth Leaf
2,448 lbs/acre
Fifth Leaf
3,073 lbs/acre
Sixth Leaf
4,100 lbs/acre
Seventh Leaf
3,550 lbs/acre

Stanislaus County **Turlock**

124 trees per acre
Third Leaf
625 lbs/acre
Fourth Leaf
1,605 lbs/acre
Fifth Leaf
2,300 lbs/acre

Stanislaus County **Modesto**

Third Leaf
730 lbs/acre
Fourth Leaf
2,030 lbs/acre
Seventh Leaf
2,500 lbs/acre
Eighth Leaf
3,100 lbs/acre
Ninth Leaf
3,500 lbs/acre
Tenth Leaf
3,550 lbs/acre

Stanislaus County **Hughson**

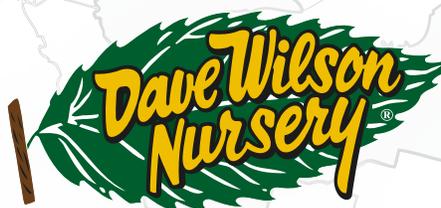
156 trees per acre
Third Leaf
1,390 lbs/acre
Fourth Leaf
2,820 lbs/acre
Fifth Leaf
2,840 lbs/acre
Sixth Leaf
4,400 lbs/acre
Seventh Leaf
4,766 lbs/acre
Eighth Leaf
3,648 lbs/acre

San Joaquin County **Ripon**

136 trees per acre
Third Leaf
680 lbs/acre
Fourth Leaf
2,100 lbs/acre
Fifth Leaf
2,600 lbs/acre
Sixth Leaf
3,100 lbs/acre
Seventh Leaf
3,500 lbs/acre
Eighth Leaf
3,100 lbs/acre

San Joaquin County **Vernalis**

121 trees per acre
Third Leaf
1,800 lbs/acre
Fourth Leaf
2,400 lbs/acre
Fifth Leaf
2,100 lbs/acre



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Donations Sent to Evacuees of Hurricane Matthew

After the destruction of Hurricane Matthew last year, *Blue Diamond* worked with the American Red Cross to provide donations to affected families. American Red Cross Regional Disaster Officer Robin Friedman deployed to North Carolina, saw first-hand the impact the donation had on morale and spirit.



Santa's Workshop 2016

In December, the *Blue Diamond Growers* Sacramento Campus welcomed more than 70 children from the local Washington Elementary School to Santa's Workshop. *Blue Diamond Growers* staff, a merry band of elves, escorted children from the school to a "North Pole" filled with activities and a chance to meet Santa and Mrs. Claus. This annual event has been a unique opportunity for *Blue Diamond* to interact with the youth of the community.



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ALMOND STREUSEL COFFEE CAKE

PREP TIME: 15 MINUTES • COOK TIME: 40 MINUTES

MAKES 12 SERVINGS

$\frac{2}{3}$ CUP SUGAR

$\frac{1}{4}$ CUP BUTTER, SOFTENED

2 EGGS + 3 EGG WHITES

1 TEASPOON VANILLA EXTRACT

1 TEASPOON ALMOND EXTRACT

$\frac{1}{3}$ CUP SOUR CREAM

2 CUPS BLUE DIAMOND EXTRA FINE BLANCHED
ALMOND FLOUR

$\frac{1}{4}$ CUP ALL-PURPOSE GLUTEN-FREE BAKING MIX

2 TEASPOONS BAKING POWDER

$\frac{1}{2}$ TEASPOON BAKING SODA

$\frac{1}{4}$ TEASPOON SALT

ALMOND OAT STREUSEL:

$\frac{1}{2}$ CUP BROWN SUGAR

$\frac{1}{2}$ CUP OLD FASHIONED OATS

$\frac{1}{4}$ CUP BLUE DIAMOND FINE NATURAL ALMOND FLOUR

$\frac{1}{4}$ CUP BUTTER, SOFTENED

1 TEASPOON CINNAMON

$\frac{1}{2}$ CUP SLICED ALMONDS

1. Preheat oven to 350°F and butter a 9-inch square baking pan.
2. Beat sugar and butter in a large bowl until fluffy.
3. Add eggs and extracts and beat until well mixed; stir in sour cream.
4. Stir in flour, baking powder, baking soda and salt.
5. Stir together all streusel ingredients in a medium bowl.
6. Spread half the coffee cake batter evenly onto the bottom of prepared pan. Sprinkle with half the streusel. Repeat layers.
7. Bake for 40 minutes or until a toothpick inserted into the center comes out clean, tenting with foil if surface browns too quickly. Let cool completely then cut into squares.

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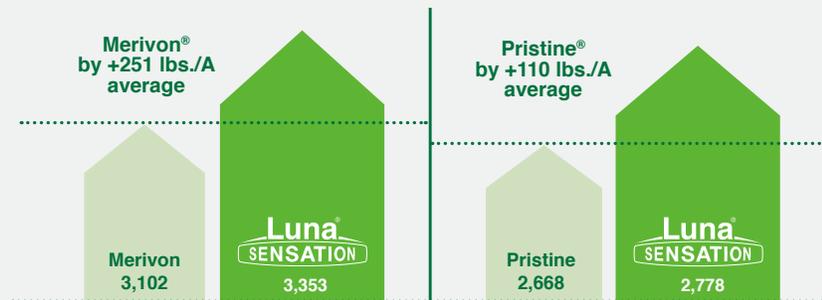
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LUNA[®] OUT-YIELDS IN PERFORMANCE TRIALS



SPRING AND EARLY SUMMER (AROUND BLOOM TIME) IS WHEN MOST DISEASES OCCUR.



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Protection Means Profits

Luna[®] out-yields Merivon[®] by more than 251 lbs./A.
+251 lbs. = an additional \$800/A*

Luna out-yields Pristine[®] by more than 110 lbs./A.
+110 lbs. = an additional \$351/A*

*Source: Average yield gain in dollars per pound based on California Agricultural Statistics Review, 2014–2015, California Department of Food and Agriculture, page 81.



Blue Diamond Grower Kent Stenderup (far left), visits with (left to right) Mohammad Yaghmour, Kern County almond farm advisor; ABC's Spencer Cooper and Bob Curtis; and Kent's father, Verner, during a review of the Stenderups' irrigation system. Cooper recently joined the Almond Board to provide outreach to all California Almond growers on irrigation and water efficiency.



Almond Board Reaches Out to Growers with In-Field Irrigation Expertise

Almond Board of California (ABC) now has an outreach program to help almond growers attain their goals of increased water efficiency through in-the-orchard visits. Spencer Cooper, senior manager, Irrigation and Water Efficiency, will have boots on the ground and other outreach activities to provide system-specific recommendations to increase the “crop per drop” on an orchard-by-orchard basis.

This new position is the latest step taken by ABC to meet the objectives of the Accelerated Innovation Management (AIM) program, adopted by the Board of Directors to promote the innovative farming practices that will be required to meet the future needs of the California Almond industry, as well as the consumer, the community and the planet.

Irrigation Improvement Continuum

A priority of the AIM program is the Almond Irrigation Improvement Continuum, a comprehensive manual of irrigation management and scheduling practices. Recognizing that growers may be operating at different stages of irrigation efficiency, the Continuum provides information at three proficiency levels (1.0, 2.0 and 3.0), each covering the following categories and how to execute and effectively integrate them:

- Measuring irrigation system performance and efficiency
- Estimating orchard water requirements based on evapotranspiration
- Determining the amount of water applied

- Evaluating soil moisture
- Evaluating plant water status

As a Board member of ABC, almond grower Kent Stenderup of Stenderup Ag Partners in Arvin, was involved in creating the position of an irrigation specialist. “We want to help growers move along the Continuum from 1.0 to 2.0 and possibly 3.0, to manage our water supply better,” he said. “It’s a new program and a new position to address the Continuum — helping growers become aware of and to utilize newer irrigation systems and the technology to operate them efficiently; for example, understanding weekly ET forecasts, amount of applied water and distribution uniformity. Almond Board’s goal,” he added, “is to have all 6,800 California Almond growers wanting to work through the Continuum to become better stewards of our natural resources.”

Stenderup has been a *Blue Diamond Growers* member for 10 years, represents the cooperative on the ABC Board of Directors and was recently elected to the *Blue Diamond* Board of Directors representing District 9.

Industry outreach will be done in partnership with many trusted and respected technical experts available to California Almond growers, including agricultural universities and programs, UC Cooperative Extension, irrigation service providers, irrigation districts and other agencies.

Opportunities for Improvement

“Growers and others in the industry need to be more aware of the opportunities for improvement,” Cooper said. “Many of the 6,800 growers are probably not aware of these programs or areas where they have opportunities to improve irrigation management.”

Cooper comes from the private sector, previously working for TAP Family of Companies in Tulare, in irrigation technology and irrigation management. He specialized in irrigation management tools, including technology and sensors, as well as water chemistry, water treatment and plant nutrition.

Distribution Uniformity

One practice Cooper is eager to help growers with is system distribution uniformity, an essential first step in the Continuum. “Understanding your system’s distribution uniformity is something that is often overlooked, and is the one practice with the greatest impact on water efficiency for almond growers,” he stated.

Continued on page 22.

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“My goal is to be out in the field four days a week helping growers with the tools that are available to help manage irrigation,” said Cooper. “I’ve made some farm calls already, going over basic tools, basic strategies. What I’m finding is that growers have adopted some of the principles of the Continuum, but were cloudy on how to implement them. They just needed a little more help in understanding how to apply them.”

Moving Up

Within the Continuum, there are three levels, and there are five categories (see above) within each level. “Not every grower is going to be a straight 1.0, a straight 2.0 or a straight 3.0,” Cooper pointed out. “They’re going to be scattered along that Continuum. A grower may be a 3.0 in one category and maybe a 1.0 in another category. Part of my job is to identify those opportunities for growers to possibly improve practices. They may be doing some practices really, really well, but if they improve some other practice, they may go up another level.”

Where is Stenderup on the Continuum? “I’m a 2.5,” he said, half-jokingly.

“Looking at the Continuum, Kent is using most of the practices that are a 3.0, but he doesn’t use a pressure chamber,” Cooper explained. “In order to be a 3.0 along the Continuum in plant water status, you should use a pressure chamber. However, Kent is using other tools that are 3.0 — soil moisture data, using weather data, using

flow meters — but his plant water status is visual, which is a 1.0. It’s a mix.”

Outreach Events

Cooper will attend all of this year’s California Almond Sustainability Program (CASP) workshops to answer any questions or make arrangements for a farm visit. He will also provide a ‘tour’ of ABC’s Irrigation Calculator, which is available at the CASP website, SustainableAlmondGrowing.org. “If you need some help navigating the Irrigation Calculator, please contact me,” he offered. “I find that when I’m meeting with growers, the scheduling tool is the first step in moving them up the Continuum, but aspects of the calculator can still be applied at level 3.0. You can use the Irrigation Calculator at the beginning of the season to develop a water budget. While the calculator builds your water budget for the year, other tools, such as soil moisture sensors, give you in-season adjustments.”

Growers can reach Cooper directly by email at scooper@almondboard.com, or by calling him at (209) 604-3727. He will also be available at outreach events, such as PCA education opportunities, crop protection company and irrigation supply company meetings, and handler meetings.

To read more about the Almond Irrigation Improvement Continuum, including several single-subject fact sheets as well as a 54-page manual, please visit Almonds.com/Irrigation.

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Kent Stenderup Joins *Blue Diamond* Board Representing District 9

For the first time since its creation, District 9 has a new almond grower on the *Blue Diamond* board of directors. Kent Stenderup, of Stenderup Ag Partners in Arvin, California, was elected to the board and assumes the seat vacated by Clinton Shick, who retired at the 2016 Annual Meeting.

The opportunity to be a part of a successful industry and contribute to the continued success of *Blue Diamond Growers* inspired him to run for election to the board. "As member-owners of the cooperative, we can participate together – both large and small growers – and be part of a global leader in *Blue Diamond*," he said of the opportunity.

Stenderup brings to the *Blue Diamond* board experience as the cooperative's grower representative on the Almond Board of California (ABC), where he currently serves as the vice chairman. "This has been an invaluable experience. Working with the ABC staff, independent growers and handlers, and *Blue Diamond* staff has given me a background to appreciate today's market and what lies in the future," he said.

Looking ahead, Stenderup emphasizes the importance of continued product innovation within the cooperative to remain ahead of the competition and maintain industry-leading returns. "The diversity and expertise of the board impresses me. To have the favorable circumstance to work with growers from Arvin to Chico is exciting. The board will continue to emphasize that we must 'beat' the competition with higher returns annually and gauge our success by the increment of the difference," he explained. "*Blue Diamond* may most easily be associated with the Smokehouse 6-ounce can in years' past. But the future will show that *Almond Breeze*, *Blue Diamond* almond flour and other not yet released or developed products will carry the brand for years to come."

Stenderup's family has been farming in the Arvin area since the 1930s after his grandparents immigrated from Denmark. Together with his father Verner and cousin Andy, the Stenderups grow almonds, juice grapes and row crops, often enjoying the safety and strength of the cooperative business model. In addition to *Blue Diamond*, they are members of Delano Growers Grape Products, Sunmaid raisins, Calcot, Kern Delta-Weedpatch Cotton gin, Central Valley Almond Association (CVAA) and Farm Credit West. "Upon planting our first almonds in 2006, decisions had to be made for hulling/shelling and marketing our crop. We immediately joined CVAA – a cooperative huller in McFarland. And after a brief survey of our mothers and wives, we decided that *Blue Diamond* was our preferred handler due to their quality and brand position," he explained.

"California has more than 6,000 almond farms and *Blue Diamond* lists more than 3,000 members. This tells me that roughly half of the farmers in a prosperous industry have entrusted *Blue Diamond* to market their almonds. In other words, 3,000 growers can't be wrong," Stenderup said. "As

Blue Diamond members, we have the benefits of global product scope of our almonds and annual returns that continue to rank first industry-wide. In the event of price fluctuation, the brand recognition and stature will carry margin. I am proud to be a *Blue Diamond* grower and to have the opportunity to serve on the *Blue Diamond* board of directors."



Blue Diamond Board Welcomes New District 2 Member

John Monroe credits his father-in-law, William “Bill” E. Warne, for fostering his dedication to growing almonds. Assuming the seat vacated by Elaine Rominger, who retired at the 2016 Annual Meeting, Monroe will represent District 2 on the *Blue Diamond* board of directors. He is CEO of Done-Again Farms, Inc., in Arbuckle, California, farming 215 acres of almonds.

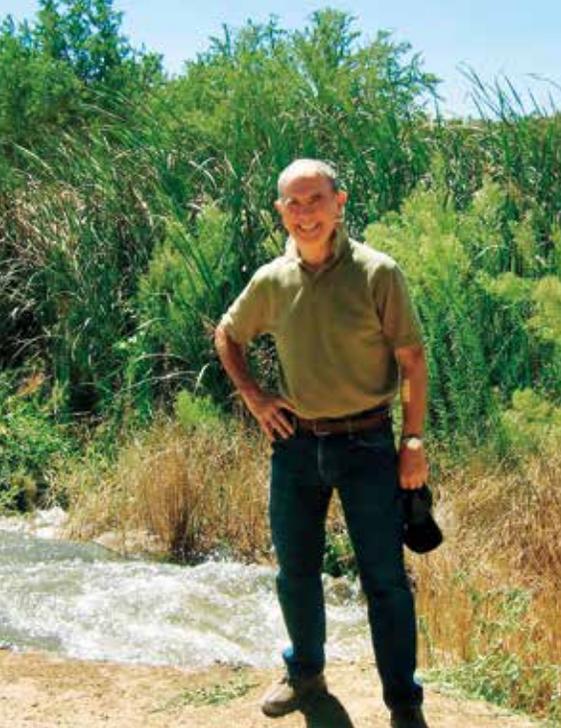
“Bill was strongly committed to the values of an agricultural community, and was a strong advocate of agricultural co-ops,” he said. For more than 45 years, the Monroe family has been members of *Blue Diamond*. In 1981, Monroe invested in a small orchard project with his father-in-law, planting almonds very densely and installing solid-set irrigation. “As Bill got older, I got involved with running his walnut orchard. After Bill died in 1996, my

wife and I decided to continue nut farming with a focus on almonds. We planted our current orchard in 1998 and 2000, and added to the operation in 2010 and 2012.”

Technology Meets Almond Farming

Almonds are not the only success Monroe has experienced in life. He spent 30 years in the technology industry working at Hewlett-Packard (HP) gaining knowledge that spans from global manufacturing, distribution, quality assurance, and marketing to general management. “My years at HP saw the company grow from about *Blue Diamond’s* size today to a level 100 times larger,” he explained. “HP’s business success was a result of a relentless





While more personal in nature, Monroe expresses a desire to learn more about how *Blue Diamond* operates and successfully convey this information back to District 2 to ensure they remain confident in entrusting their almonds to the co-op. “I would like *Blue Diamond* to remain the best place to deliver my

family’s almonds and continue to be the source of the best almonds for our customers,” he said.

Monroe is looking forward to being an active member. “I am grateful to have been elected by my fellow grower-owners and I am excited to have the opportunity to serve on the board,” he exclaimed.

focus on profitable growth through continual innovation and new product introduction.”

Monroe is ready to integrate this experience into his role on the board. He admits that technology and almonds are radically different businesses serving radically different customers, but acknowledges that success in both depends on developing new products and new markets. “Experience in technology provides *Blue Diamond* a perspective that illuminates challenges and opportunities from a different angle,” he said.

Value in Learning

As a grower-owner and long-time member of the co-op, Monroe holds a strong belief in the values of *Blue Diamond*. But that’s just one reason he decided to run for a seat on the board. “When the seat became available with the retirement of my very able predecessor, I wanted to contribute to *Blue Diamond’s* success going forward,” explained Monroe. “I believe my business management experience can benefit *Blue Diamond* grower-owners.”

And he set goals for his role.

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Advocacy Report

JULIAN HERON, Partner – Tuttle Taylor & Heron

A Busy Year Ahead in Washington

Expect a very active 2017! It has been a long time since Republicans have controlled the House, Senate and White House. The first task to receive direct attention is meeting the new appointees in the new Administration. On January 20, all political appointees were expected to resign and leave that day. This extends from Cabinet officers and Ambassadors, down to Administrators. The new Administration is tasked with filling each position or ask the previous employees to stay until they are replaced.

Our job is to meet the new people, especially at USDA, USTR, Congress and the White House. Often new appointees are not familiar with cooperatives or how they work. Many will not know the importance of exports for *Blue Diamond Growers* or our long history developing new products and new markets.

Quite a bit of time will be spent educating the new people, at all levels of government, about water, immigration, trade, food safety and marketing orders. For example, the new people will need to know of two major water issues we will focus on: the repeal of EPA's regulation on Waters of the U.S. and obtaining additional water legislation for California.

Debate will begin on the 2018 Farm Bill, a policy tool used to assist agriculture and provide food to the needy. Historically, Farm Bills have great impact, affecting international trade, food stamps, nutrition programs, commodity programs, crop insurance and more. *Blue Diamond* members directly benefit from some of these programs, including the Marketing Order, Crop Insurance, Market Access Program (MAP) and Value Added Grant Program (VAGP).

As for trade negotiations, 2016 proved to be a disappointment. The Trans-Pacific Partnership (TPP) was not addressed by Congress and the Transatlantic Trade and Investment Partnership (TTIP) negotiations were

suspended. It is unknown when either will resume or in what form. When they do, we will be closely involved. *Blue Diamond Growers* will benefit from both, if either is adopted.

Blue Diamond Growers remains concentrated on India, Israel, China and the European Union. India has become a very large market for *Blue Diamond* almonds. A duty reduction is necessary due the smuggling of almonds into India from Pakistan. The Indian Government has now officially recognized this problem and is investigating it at the border.

In Israel, we are working closely with U.S. negotiators to obtain a zero duty for *Blue Diamond* almonds. There is a free trade agreement with Israel, but a high duty and quota remain on U.S. almonds.

China now has a free trade agreement with Australia. This gives Australia a duty advantage over U.S. almonds. A strong effort is being made to eliminate the disparity between the duty for Australia and the duty for the U.S.

During the coming year, we expect to be engaged in many other areas including tax reform, food safety and labeling regulations and anti-trust issues facing cooperatives. It will be a very busy year in Washington.

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The Bee Box
KAREN RENNICH

Before the Flood

More than a thousand beekeepers, research scientists, almond growers and industry leaders are gathered in Galveston, Texas for the North American Beekeeping conference. There may be a few interested locals here too, wondering who all these folks are in full bee regalia and driving large pickup trucks. It is an exciting but challenging time to be working in the field of honey bees. This conference enables even the most novice beekeeper to rub shoulders with large commercial operations and world renowned honey bee researchers. It is a time of joy to catch up with folks you haven't seen in a year but also a time of anxiety as beekeepers begin to move into almonds and hope that the weather cooperates and that the bees stay healthy.

We have focused on the efforts of the technical transfer teams in previous articles but as with many multi-faceted organizations, there is a crew behind the scenes helping make everything run on schedule and stay organized. I'd like to highlight the efforts of our Bee Informed Partnership central processing lab at the University of



Varroa shaker set up to process. Up to 12 samples are shaken for 30 minutes to dislodge any varroa mites. The mites are then counted and a mite load is calculated. Photo courtesy of the Bee Informed Partnership, Inc.

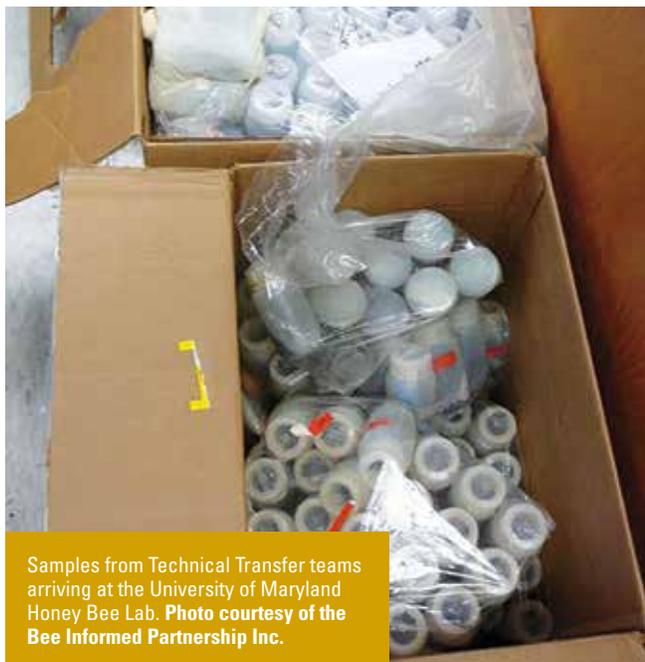
Maryland and how it serves more than 100 commercial beekeepers and their operations. We have a small window (less than a month) where our lab gets a breather, cleans, archives samples, resupplies and gets organized as we gear up for another busy year. Once our teams start sampling in almonds in only a few short weeks, the flood of samples and data begins anew.

High Throughput

Our lab processes well over 10,000 samples a year just for our five technical transfer teams alone and after doing this for over five years, it is well-oiled machine. Sample bottles arrive daily and after they are logged in, colony health assessment data is entered into our database and the samples are prepped for varroa mite load analysis and nosema spore analysis. After analysis, data are entered and checked several times before reports are generated and sent to the tech teams and beekeepers.

Required samples are archived with ethanol in glass scintillation vials and vacuum packed in our cold room for long term storage in the event we want to go back to those samples to evaluate them for any new threats we may see in the future.

Not only does our lab process all the samples, we generate all the sampling kits for the technical transfer team. With the use of a super-saturated salt solution instead of alcohol as the preservative liquid, we are able to recycle the sample bottles many times. We clean and dry them thoroughly and



Samples from Technical Transfer teams arriving at the University of Maryland Honey Bee Lab. Photo courtesy of the Bee Informed Partnership Inc.



Archived samples awaiting vacuum packing for long term storage at the University of Maryland. Photo courtesy of the Bee Informed Partnership Inc.

Colony bee tag. These are the size of a credit card and the information is printed right on the tag. It is then stapled to the lowest brood box of the sampled colony. Photo courtesy of the Bee Informed Partnership Inc.



then relabel. We also print all the colony tags that are used to identify the colonies that we sample and follow longitudinally.

We can process more than 100 samples per day and have reduced the turnaround time, from when we receive the samples to when the reports are sent, out to four days. This rapid, near real-time reporting is invaluable to the beekeeper who is waiting to make a decision, based on these data, to treat his colonies for mites or nosema.

To do all this takes a team that is well-trained and committed to doing the critical analysis that is required. Although a research lab, ours is also very much like a commercial lab with streamlined procedures and protocols and an adherence to accuracy and consistency. The

key to making this all work is a level of dedication by our staff. Despite taking our job very seriously, we also make it as enjoyable as possible. Music and laughter are not incompatible to hard work.

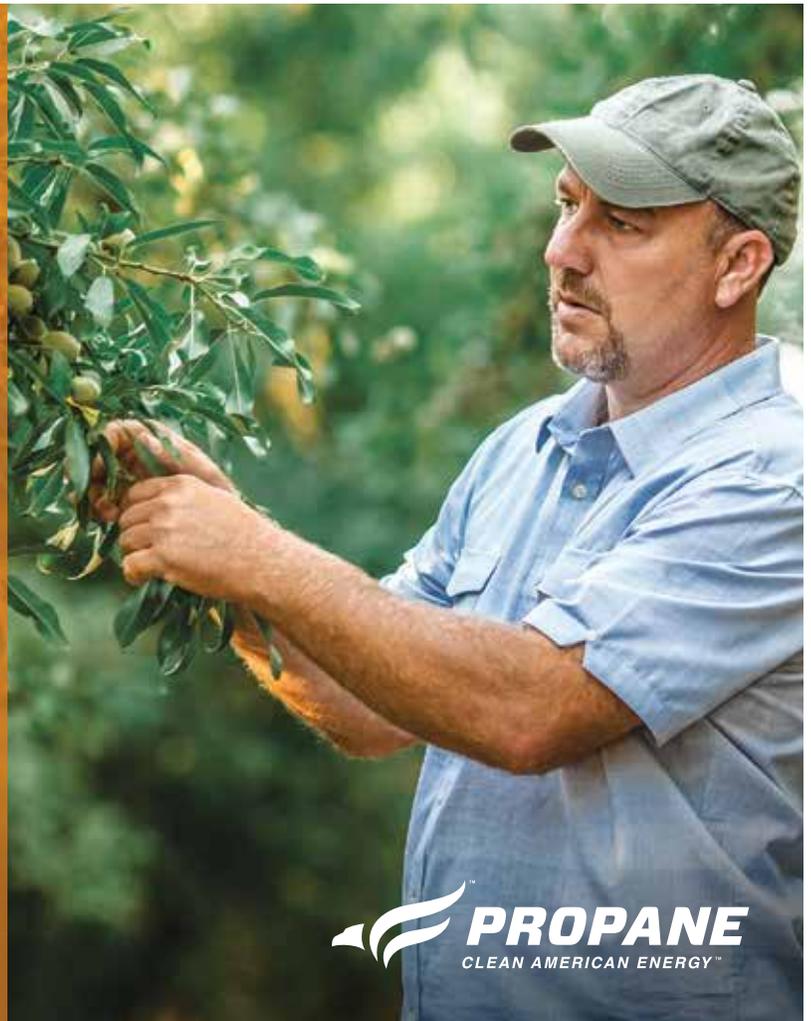
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Time To Consider

DAVID DOLL, UCCE Nut Crop Pomology Farm Advisor, Merced County

I hope you all had a wonderful holiday season and a great start to the New Year. The winter has been favorable for almond production with adequate chill and rains. If it remains cold through the end of January, bloom should be a bit later than we have experienced in the previous years. Warmer conditions, however, will accelerate bloom. With that in mind, below are some considerations for your operations.

Fungicide Sprays

Due to almond flower sensitivity to disease and weather conditions conducive for disease, most people will spray a fungicide during this period. In wet conditions, multiple sprays may be needed, while in dry years zero to one spray may suffice. Conditions that favor disease formation include rain or heavy dew, and warmer temperatures for Brown Rot, Anthracnose, Bacterial Spot and Shot-hole, and cool, wet weather for Jacket-rot. Fungicide selection should provide coverage for the diseases of concern (Please see the fungicide efficacy table).

Since most fungicides work to protect the plant from being infected by killing the germinating spore, bloom sprays should be applied before rain events to provide protection for flowers, flower parts and emerging leaf tissue. Some chemistries, such as FRAC groups 3 and 11, have the ability to “reach back” because they are able to move through the epidermis of the plant’s leaves or flowers. This provides a slight curative component to these powerful fungicides and makes them a great option if a spray was

missed by one to two days or there wasn’t enough time to cover the acreage prior to the rain event.

Coverage from a fungicide spray will last around two weeks, unless significant rainfall occurs. If applying prior to a rain event, applications will need a few hours to dry to prevent “run-off.” In rainy weather, follow-up sprays will be needed every seven to 10 days. Some varieties — such as Butte and Carmel, are more susceptible to disease and may require a spray even in dry weather, while others — such as Nonpareil, are quite tolerant and may not need a bloom spray. Orchard history, weather and your comfort level should be the guidance in determining your bloom and springtime disease control strategy.

It is important to avoid back-to-back application of fungicides within the same mode of action. Mode of actions is simplified using the FRAC number – and thus back-to-back applications of the same FRAC number should be avoided. This includes pre-mixed fungicides. An example of a rotation program for a multiple sprays for rainy weather include:

Figure 1: Fungicide timings for various almond diseases. Some diseases may require multiple treatments to prevent.

ALMOND: TREATMENT TIMING

Note: Not all indicated timings may be necessary for disease control.

Disease	Dormant	Bloom			Spring ¹		Summer	
		Pink bud	Full bloom	Petal fall	2 weeks	5 weeks	May	June
Alternaria	----	----	----	----	----	++	+++	+++
Anthracnose ²	----	++	+++	+++	+++	+++	+++	++
Bacterial spot	+	----	+	++	+++	+++	+	----
Brown rot	----	++	+++	+	----	----	----	----
Green fruit rot	----	----	+++	++	----	----	----	----
Hull rot ⁷	—	—	—	—	—	—	—	+++
Leaf blight	----	----	+++	++	+	----	----	----
Scab ³	++	---	---	++	+++	+++	+	---
Shot hole ⁴	+ ⁵	+	++	+++	+++	++	----	----
Rust	----	----	----	----	----	+++	+++	+ ⁶

Rating: +++ = most effective, ++ = moderately effective, + = least effective, and ---- = ineffective

- 1st Spray: FRAC 9 (Scala, Vanguard)
- 2nd Spray: FRAC 11 or FRAC 7/11(Gem, Abound, Pristine, Luna Sensation, Merivon, etc)
- 3rd Spray: FRAC M4 (Chlorothalonil)

- 4th spray: FRAC 3, FRAC 11, or FRAC3/11 (Bumper, Tilt, Gem, Abound, Indar, Quadris Top, Quilt Xcel, etc). Note how the two applications of FRAC 11 were split by rotating away to

Continued on page 34.

Figure 2: The 2015 almond fungicide efficacy table developed by the University of California. More information can be found at <http://ucipm.ucdavis.edu/PDF/PMG/fungicideefficacytiming.pdf>.

ALMOND: FUNGICIDE EFFICACY											
Fungicide	Resistance risk (FRAC)¹	Brown rot	Jacket rot	Anthrac-nose	Shot hole	Scab³	Rust³	Leaf blight	Alternaria leaf spot³	PM-like⁵	Hull rot¹⁶
Bumper/Tilt/Propicure/Propiconazole ⁴	high (3)	++++	+/-	++++	++	++	+++	ND	++	+++	++
Indar	high (3)	++++	+/-	+++	++	++	NL	ND	+	ND	----
Inspire Super ⁴	high (3/9)	++++	++++	ND	+++	+++	+++	ND	+++	ND	+++
Luna Sensation	medium (7/11) ^{3,7}	++++	++++	++++	++++	++++	++++	ND	++++	+++	+++
Pristine	medium (7/11) ^{3,7}	++++	++++	++++	++++	++++	+++	ND	+++	+++	+++
Merivon	medium (7/11) ^{3,7}	++++	++++	++++	++++	++++	+++	ND	++++	++++	+++
Quash ⁴	high (3)	++++	++	++++	+++	+++	++++	ND	++++	+++	+++
Luna Experience	medium (3/7) ³	++++	+++	++++	+++	++++	++++	ND	++++	+++	+++
Quadris Top	medium (3/11) ³	++++	+++	++++	+++	++++	++++	ND	+++	+++	+++
Quilt Xcel	medium (3/11) ³	++++	+++	++++	+++	++++	++++	ND	+++	+++	+++
Rovral + oil ⁸	low (2)	++++	++++	----	+++	+/-	++	ND	+++ ⁹	ND	----
Scala ³	high (9) ^{3,7}	++++	++++	ND	++	----	ND	ND	+	----	----
Tebucon/Toledo (Elite**/Tebuzol**)	high (3)	++++	+/-	+++	++	++	+++	ND	+	ND	++
Viathon	Medium (3/33)	++++	+/-	+++	++	++	+++	ND	+	ND	++
Topsin-M/T-Methyl/Incognito ²	high (1) ^{2,7}	++++	++++	----	----	+++ ⁸	+	+++ ⁶	----	++	----
Vanguard	high (9) ^{3,7}	++++	++++	ND	++	----	ND	ND	+ ⁹	----	----
Fontelis	high (7) ⁴	++++	++++	++	++++	+++	+++	ND	+++	ND	----
Abound ⁴	high (11) ^{3,7}	+++	----	++++	+++	++++	++++	+++	+++ ¹⁰	+++	+++
Elevate	high (17) ⁷	+++	++++	----	+	ND	ND	ND	ND	ND	----
Protexio	high (17) ⁷	+++	++++	----	+	ND	ND	ND	ND	ND	----
Gem ⁴	high (11) ^{3,7}	+++	----	++++	+++	++++	++++	+++	+++ ¹⁰	+++	+++
Laredo	high (3)	+++	----	++	++	----	+	+++	----	+++	----
Rovral/Iprodione/Nevado	low (2)	+++	+++	----	+++	----	----	ND	+++ ⁹	----	----
Rhyme*	high (3)	+++	+/-	ND	+	++	ND	ND	++	ND	ND
Bravo/Chlorothalonil/Echo/Equus ^{11,12}	low (M5)	++	NL	+++	+++	+++ ¹⁵	++++	NL	NL	----	----
Captan ^{4,12}	low (M4)	++	++	+++	+++	++	----	+++ ⁶	+	----	----
CaptEstate*	low (M4/17)	+++	+++	+++	+++	+++	----	+++	+	----	----
Ph-D	medium (19)	++	+++	----	++	+++	+++	ND	++++	ND	++
Syllit	Medium (U12)	+	----	ND	+++	++++	ND	ND	+	ND	----
Rally ¹³	high (3)	+++	----	++	+/-	----	+	+++	----	+++	----
Ziram	low (M3)	++	+	+++	+++	+++	----	++	+	----	----
Copper ¹⁴	low (M1)	+/-	+/-	----	+	+ ¹⁵	----	----	ND	----	----
Copper + oil ¹⁴	low (M1)	ND	ND	----	+	+++ ¹⁵	----	----	ND	----	----
Lime sulfur ¹²	low (M2)	+/-	NL	----	+/-	+ ¹⁵	++	NL	NL	----	----
Sulfur ^{4,12}	low (M2)	+/-	+/-	----	----	++	++	----	----	+++	----
Fracture	low	++	+	----	----	----	----	----	----	----	----
PlantShield***	low	----	----	----	----	----	----	----	----	----	----

Rating: ++++ = excellent and consistent, +++ = good and reliable, ++ = moderate and variable, + = limited and/or erratic, +/- = minimal and often ineffective, ---- = ineffective, NL = not on label, and ND = no data

* Registration pending in California.
 **Not registered, label withdrawn or inactive in California.
 *** Section 24C (special local needs) registration approved in California for silver leaf disease of almond.

another chemistry. **Please note that the fungicides listed are an example, not an endorsement for use. Please refer to Timing and Efficacy Tables for full list of tested fungicides** (Attached fungicide efficacy table). **There are many effective fungicides not listed in this example.**

In 2016 we saw an increase in Green Fruit Rot/Botrytis infections across California. This was due to long periods of leaf wetness, poor coverage and incorrect selection of fungicides. Keep in mind that FRAC 3 (DMIs) do not provide any protection for Botrytis. Develop the fungicide plan before bloom begins. There is a lot of information regarding bloom spray timings and diseases at www.thealmonddoctor.com and ucipm.ucdavis.edu.

Insecticide applications at bloom for peach twig borer (PTB)

Recent research has found that applications of diflubenzuron timed at bloom has a negative impact on bee health. This insecticide has been shown to reduce the survival of immature queens. It is unknown if other insecticides “tank mixed” at bloom have the same effect. Until more research is conducted, it is recommended that insecticide applications at bloom be removed. Other timings for PTB include dormant and the “May Spray,” which may reduce navel orangeworm (NOW) populations. Please keep in mind that insecticides applied during the dormant period do not provide any control for NOW.

Work done more than 20 years ago has found that *Bacillus*

thuringiensis (Bt) can be applied at bloom to effectively control PTB without impacting bees. For low populations, a single spray made during bloom should suffice. For moderate to high populations, two applications applied at the beginning of bloom and 10 to 14 days later should be considered. Trial work (which used Javelin WG at 0.75lbs/100 gpa) has shown these spray timings to be as effective as dormant timings (which are as effective as in-season timings). Please see the UC IPM page for PTB for

Continued on page 36.



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more information and check with your pest control advisor for product availability and recommended rates.

Foliar Nutrients at Bloom

Boron and zinc foliar nutrients applied either in the post-harvest period (e.g. September) or at pink bud have been shown to increase yield in almond trees in many orchard situations. Interestingly, applying these products after pink bud have either failed to increase yield or decreased kernel yields. Concentration of boron should not exceed 400 ppm of boron in solution, and good results have been shown with rates between 200 to 400 ppm, depending on the tree's boron status. Zinc applications appear to have a synergistic effect with boron, meaning that the combination of the treatments has been shown to outperform either material sprayed alone. Interestingly, zinc applied alone was not found to increase yields. Other trials have found limited to no benefits from the application of other micronutrients at bloom unless nutrient deficiencies are present.

Be Careful with Bees

There has been a lot of concern about honeybee health related to fungicide and insecticide applications within orchards. More is being learned every year about the impacts of pest management practices on hive health. Recently, The Almond Board of California released an excellent resource titled "Honey Bee Best Management Practices for California Almonds (<http://www.almonds.com/pollination>)." This resource provides an overview of the research conducted and the recommendations generated from the results and conclusions.

The University of California Agricultural and Natural Resources Integrated Pest Management Program has developed a nice website that provides toxicity information of various pesticides (ipm.ucanr.edu/bee precaution/). Precaution rankings (I, II, III) have been created based on all of the currently available scientific studies. The table does include effects on bee brood if research is not available. Lack of toxicity data for honey bee brood means that there is no data currently available, not that the material has no impact. Always proceed with caution and err on the side of bee safety.

Proper Tree Planting

When planting a new orchard, it is important to take the proper precautions to avoid tree loss. Trees should be planted as soon as possible after delivery. Prior to delivery, make sure the field is prepared, which includes ensuring



Almond flowers are sensitive to a wide variety of diseases. Fungicides should be considered when inclement weather is in the forecast.



Heavy rains can flood fields, preventing access. Driving within these fields can create compaction issues that will take several years to correct. Plan ahead!

that soil fumigants have completely dissipated, soil clods are broken down and workable, and large amounts of organic material (e.g. grass clippings, compost) are not present in the planting areas. Berms are recommended for most soils to prevent crown infections by Phytophthora. Berms may not be needed in soils with high infiltration rates. If planned, berms should be pulled prior to tree planting. Do not pull berms as an after-thought: soil covering the graft union will increase the risk of Phytophthora.

To prevent root drying, keep the roots moist and cover with a tarp when being transported within the field. Do not prune tree roots unless they are broken. Holes should be dug at the time of planting if possible, but if not, as close to the timing of planting to prevent "glazing" of the soil by the sun. If the holes are dug with an auger or prior to the planting day, slice the sides of the hole with a shovel to break any crust that may have formed. When planting, dig a large enough hole to fit the entire root system without bending or wrapping. Forcing trees into planting holes causes "J-rooting" and increases the chance of crown

gall and tree loss. Plant the tree high enough so that the nursery soil line is just above the current soil line. Backfill the soil and compact gently around the tree's base to remove air pockets. Tank the tree in with four to five gallons of water to help settle the soil. Trees should be headed at 32 to 36 inches, staked, and side branches pruned. Fertilizers should not be applied until there is four to six inches of new growth.

In preparation for a wet year, planting may be more difficult. Hand planting crews have an easier time than machine planting due to limited field access. If planting delays occur, trees should be placed into cold storage at the nursery as soon as possible to reduce the risk of leaf out and weakened trees. Keep trees in cold storage until ready to plant. Unless there is no other option, do not take delivery of trees in bins or plant them in a temporary location at the farm. On delivery, check tree roots to make sure they are healthy and living (should be white in color). Although it seems counter-intuitive, tanking is still recommended due to clods that form with wet soil. Trees planted late (e.g. mid-April) should be painted white to reduce sun-burn risks.

Herbicides

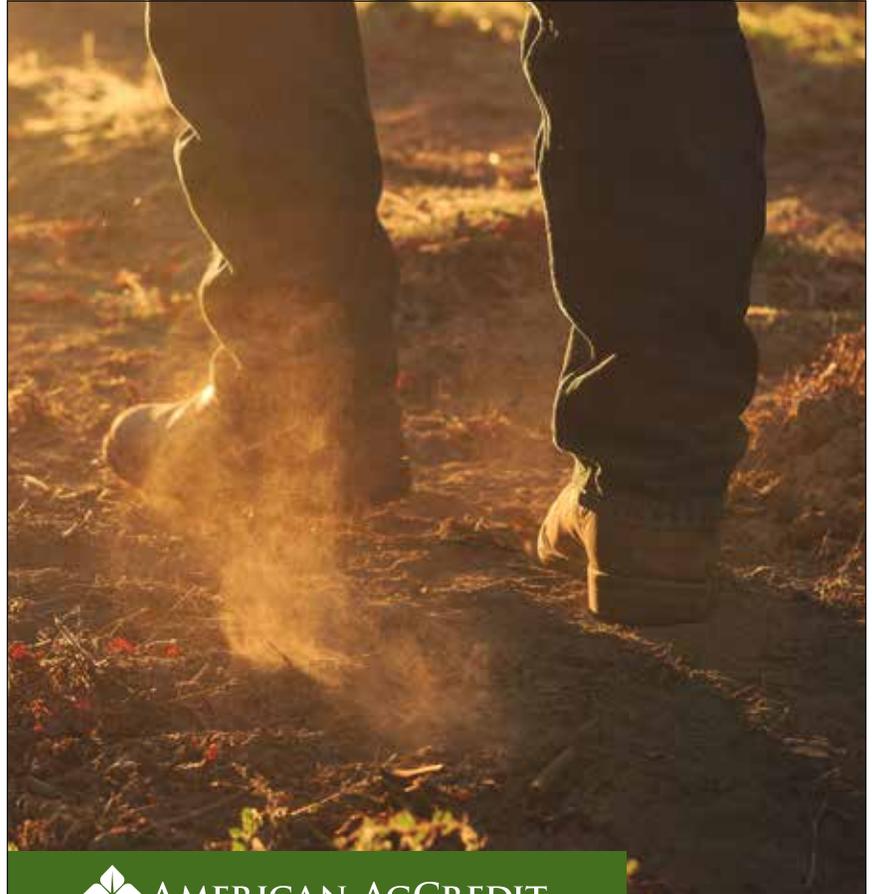
This is a good time to apply any pre-emergent herbicides. Orchard weeds need to be surveyed to determine any specific challenges. The pre-emergent product and burn-down partner selected should provide control for the whole spectrum of weeds within the orchard. Most pre-emergent products need to be "watered-in" with either an irrigation or rainfall in order to have efficacy.

Delays in pre-emergent herbicide application from rain can create a number of issues. Rain events knock down debris that can hinder the application or uniform incorporation of herbicides. If not able to re-clean the berms, avoid pre-emergent herbicides that are more tightly bound to organic matter (e.g. indaziflam, pendimethalin). Consistent rains also limit field access which, in combination with warming temperatures in the spring, increases weed germination and rapid growth. Delayed applications of pre-emergent materials will likely require tank mixing with burndown herbicides and possibly even a separate, post-emergent herbicide application. On very sandy soils, high rainfall events

may also move some pre-emergent herbicides into the tree rootzone, which may impact plant performance if the tree is active. Reduce rates in these situations.

The Final Thought

So far in 2017, we have been experiencing a wet winter. If this continues, certain dormant practices may not be completed due limited orchard access. Plan ahead to implement strategies to mitigate the missed practices. This could include aerial applications of fungicides, in-season sprays for insect control and more frequent herbicide applications.



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Avoiding Disease in Almonds

Untimely rains in spring and early summer 2016 triggered the onset of almond diseases that were not widely seen during the drought years. That was the observation of Roger Duncan, UC Cooperative Extension, Stanislaus County, at Blue Diamond's 2016 Annual Meeting.

“Maybe the drought made us complacent,” he said. “We had gotten used to not having a lot of rain, maybe we didn’t put on the third or fourth fungicide spray like we used to.”

Recapping the season, he said, “The first two weeks of March we had quite a bit of rain, which set us up for the Green Fruit Rot/Jacket Rot that we typically do not see. Then we had more rain in April which made conditions ripe for summer-type diseases.”

Duncan reviewed the most problematic diseases, their symptoms and recommended treatments.

Jacket Rot/Green Fruit Rot

(Botrytis cinerea)

Botrytis infects the flower, which is very susceptible. Once it establishes itself it spreads to the nuts and then into the stem, twig and spur, leading to loss of adjacent leaves, said Duncan. “Botrytis spores are everywhere. They colonize in dying flower parts or leaves. In the right conditions – wet, cool weather – infections can occur anytime from late bloom to immature nut stage.”

Citing UC Extension sources, Duncan said full bloom is the best timing for fungicide treatment for green fruit rot. “But in a year like 2016, when we continued to have rain after bloom, another treatment at petal fall or even a little later would have been effective for the kind of outbreak we had.”

Almond Scab

(Cladosporium carpophilum)

Several almond varieties are susceptible to scab, Duncan noted. He described it as a little, velvety, olive-colored lesion that grows very slowly. It also appears on the hull.

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Cladosporium is a very common fungus that overwinters as mycelium in twig lesions. It resumes growth in spring producing spores that spread to fruit, shoots and leaves. The infection eventually leads to defoliation.

“The problem with this disease is that symptoms do not appear right away,” Duncan warns. “Germination of the spores takes up to two months, so by the time you see the lesions it is too late to treat for it. Therefore, prevention is the key.”

Fungicides are the best preventive treatment for scab and the best timing for treatment is two to five weeks after petal fall – late March or first of April. Also, a dormant application of copper and oil or chlorothalonil and oil delays the onset of symptoms. While dormant treatment does not eliminate the disease, it reduces and delays the formation of spores.

Rust

(*Tranzschelia discolor*)

Rust infections were widespread in 2016, said Duncan. He explained that rust overwinters on leaves. Rust spores on leaves attached to trees remain viable for five months while spores on leaves on the ground are viable for one month. To reduce rust, remove leaves from the trees. A high rate of zinc with urea applied in October will burn the leaves and cause them to fall off the tree, while also providing the trees with nutrition and nitrogen, he said.

High humidity and calm wind promotes rust. It occurs later than scab, five weeks after petal fall or even as late as May. For prevention, Duncan recommended a spray in the middle of April for scab and rust, if your orchard has a history of moderate occurrences of those diseases. Or one spray in early April and if rains continue like last year, add a second spray in the middle or the end of April. Duncan recommends using each fungicide class only once per season or rotate between pre-mixtures containing different classes.

Hull Rot – caused by two different fungi (*Rhizopus stolonifer* - bread mold) and (*Monilinia fructicola* – brown rot fungus)

Rhizopus is present in the soil. It produces fumaric acid which causes shoot dieback. Monilinia causes blossom blight and brown rot.

Controlling hull rot is best accomplished by cultural controls, said Duncan. Heavy irrigation and high nitrogen inputs promote hull rot, he explained. Therefore, to minimize hull rot, employ regulated deficit irrigation, beginning no later than first blank split. At that point, simply cut water applications in half. Continue for about three weeks, then just before harvest return to normal applications to bring the trees back up to normal, then dry back down for harvest. The idea is to speed up the hull split process to reduce the odds of a hull rot spore drifting down to the splitting hull.

Fungicide sprays can provide about 50 percent control of hull rot. For the brown rot fungus, application is one month before hull split – early to mid-June. To treat for Rhizopus, application is right at hull split, says Duncan. It can be applied with the navel orangeworm spray.

For information on identification and control of diseases in almonds, Duncan recommended “Efficacy and Timing of Fungicides, Bactericides, and Biologicals for Deciduous Tree Fruit, Nut, Strawberry, and Vine Crops – 2015” which is available at the Statewide IPM Program website: www.ipm.ucdavis.edu

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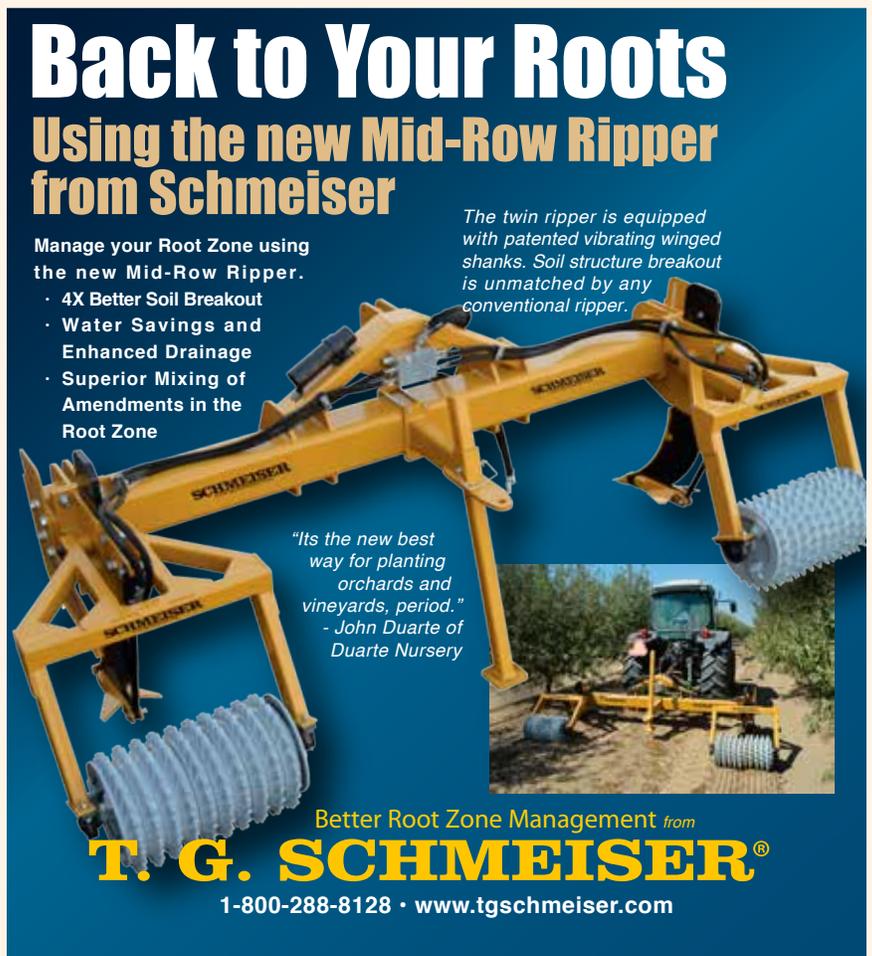
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Election Outcome 2016

Election seminar panel thoughtfully answers questions from the audience of Annual Meeting attendees.



On Tuesday, November 8, 2016, the nation took to the polls and voted in a new President of the United States. The outcome effected both Republican and Democratic parties, and will most certainly bring about policy changes. At the recent *Blue Diamond Annual Meeting*, attendees had the opportunity to hear from legislative advocates on what the outcome will mean at the federal level and how voters shaped California's political future.

New Leadership Brings Uncertainty

“The most significant thing about this election was that it had the lowest voter turnout since 1996,” said Julian Heron of Tuttle Taylor Heron, a Washington D.C.-based representative for *Blue Diamond* and other cooperatives on federal policy and regulations. “The RNC (Republican National Committee) made a real effort to turn out the vote, particularly in rural areas.”

Heron acknowledged that rural America, namely farmers, have such a strong influence. “President Trump will actually be paying close attention to issues of interest to rural America,” said Heron.

In looking at how the election outcome will impact policy issues, Heron outlined President Trump's agenda. High-priority items include the repeal of Obamacare; executive action in regulatory oversight; elimination of the Environmental Protection Agency (EPA) and the Department of Education; and the renegotiation of trade deals.

An agricultural agenda has also been identified by the new President. “President Trump supports the renewable fuel standard for ethanol and recognizes the unique labor challenges facing the American farm community,” said Heron. “He will include farmers and ranchers in the process of determining the best possible immigration policies.” Heron also noted that President Trump will look to repeal Waters of the United States (WOTUS) within his first 100 days in office and is against the Trans-Pacific Partnership (TPP).

Heron recognized there will be uncertainty as transitions within the agricultural industry take place under President Trump's leadership. “Stay tuned. Next year is going to be very exciting,” exclaimed Heron.

Californians Cast Their Vote

“If you just voted in this election, congratulations,” said Erin Niemela, partner at Niemela Pappas and Associates. “Not only was it the right thing to do, it was the long thing to do.” San Joaquin County reported that it took a single voter an average of 40 minutes to get through the ballot, which included 17 statewide ballot propositions.

According to Niemela, California is notoriously independent and votes when it really counts. The state is unique. It is home to 12 percent of the nation’s population and is the 6th largest economy in the world. These factors allow for California to operate differently than most of the rest of the nation when it comes to political and policy issues.

In California, this Presidential election saw a surge in participation from Democrats and Independents. The outcome resulted in the State Assembly claiming a Democratic supermajority and the Senate falling one vote short of that supermajority. “Thanks to the open primary system, the partisan caucuses are more ideologically diverse than they have ever been,” said Niemela.

California voters also decided in favor of 11 of the 17 statewide ballot propositions. Niemela highlighted the defeat of Proposition 53, an initiative intended to impact high

profile and controversial state infrastructure projects, and the passage of Proposition 64 legalizing marijuana. “The advocates for that initiative [Proposition 64] argued, in part, that they should be treated as ‘any other farm’ in this state.”

Issues of Interest

The seminar also provided the audience a chance to engage in the conversation. Joining Heron and Niemela for a panel discussion were Paul Wenger, President of the California Farm Bureau Federation, and Emily Rooney, President of the Agricultural Council of California. Issues ranging from the Farm Bill, outlook for TPP and breaking up union control of ports were of interest to the audience. Wenger encouraged people to get involved. “It is critical,” said Wenger. “If we don’t stand up and fight back, we are going to lose.”

Advocacy is Crucial!

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Global Food Trade Drives Increased Food Safety Monitoring

Essential for commodities to establish pesticide residue standards

With world trade in food products on the rise, many countries have stepped up monitoring of food imports, which can result in delays at the border or outright rejection of a shipment judged to not meet that nation's standards.

Inconsistency in standards and political antics sometimes come into play to keep shipments from timely delivery, which can become a costly headache for a shipper. Being up to speed on changing standards and methods of operation in foreign markets is vital in today's global economy. That was the theme of the annual meeting seminar on "Maximum Residue Levels (MRLs)" led by Molly Miller, Import Tolerance Strategist with BASF Corp. She noted that a common target for regulators today is pesticide residue levels on food entering their countries, a practice that makes having prior clearance highly advisable.

Blue Diamond has a rigorous screening program to make certain its products test well within legal limits and assures customers of its products' safety. After years of testing, *Blue Diamond* has not found any product arriving from the field to be over established specifications, observed Mel Machado, Director of Member Relations. He pointed out "that's a testament to the conscientiousness of our growers." Machado also noted that customers increasingly ask, "What do growers do to produce the crop?" Customers want to know more about cultural practices and inputs than ever before, he said.

MRLs

A tool increasingly used by exporters and receiving countries to evaluate product safety is the (MRLs) designation obtained from government authorities. An MRL denotes the highest residues legally allowed to be in or on a food item after use of a particular pesticide in accordance with label directions.

Miller pointed out that MRLs indicate proper use of a pesticide and that a product testing within an MRL's specifications is safe for consumers. "It's a trading standard," she said, "and it's needed for export, especially now as more countries monitor imports and monitor them more closely. If there is no MRL for a pesticide used on a commodity there is strong potential for a trade barrier."

To obtain an MRL for a pesticide used on a given commodity, residue trials are conducted using the "worst case" scenario, Miller explained, "The trials use the highest application rates, shortest intervals between applications, maximum number of applications, and shortest pre-harvest intervals. The resulting residue levels are used to calculate MRLs."

Trial results are submitted to the appropriate authorities (EPA, for example) for review and calculation of MRLs. The MRLs are published to support use of the chemical, she said.

Import Tolerances

Another tool in use for international trade in food products is what is called Import Tolerances (IT), which are available for some but not all countries. According to Miller, an IT is an MRL based on residue data developed by a foreign country to facilitate trade.

Countries without an IT process may use CODEX, an international food standard adopted by the World Health Organization and Foreign Agriculture Organization. CODEX develops international food standards covering a multitude of diets around the world. CODEX is not a regulatory body. Its standards are voluntary, including its MRLs, called CXLs. "CXLs are very important for countries without a well-developed MRL system," Miller said.

Countries without an IT may also try to harmonize their MRLs with other countries, she explained, "but that rarely works out due to different levels of sophistication and food safety standards." Some product groups negotiate for ITs on their own, which can be more efficient than working through the government, she added.

Default MRLs

Some countries use a Default MRL when no MRL has been established for a chemical-commodity combination, Miller noted. Examples include the European Union, Japan, Korea and Canada. Default MRLs are usually set very low.

Challenges to Harmonization

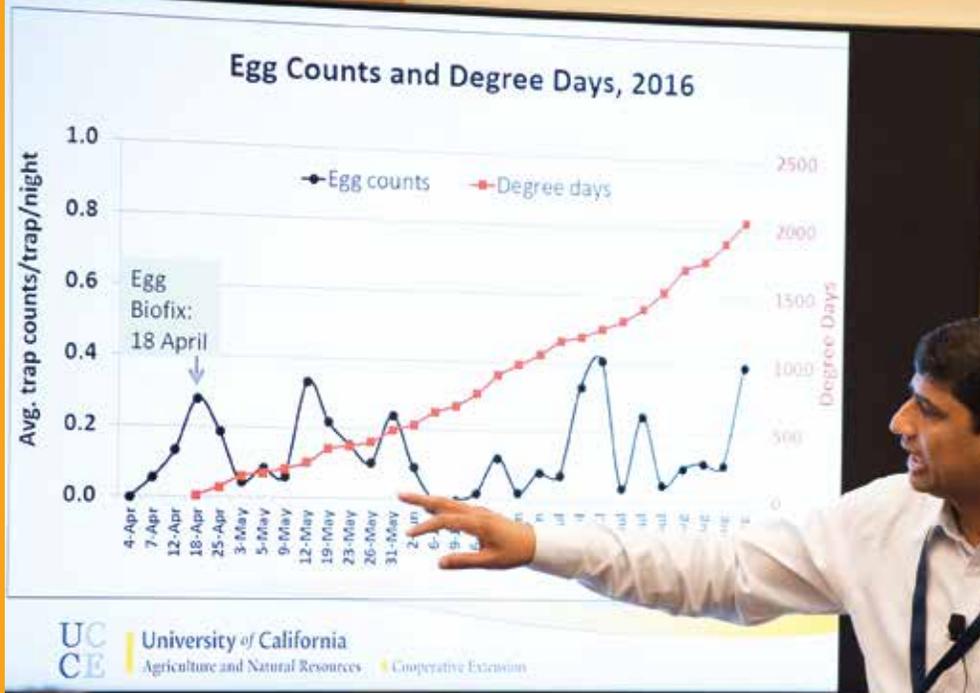
When countries attempt to “harmonize” their MRLs problems arising from differences in procedures, timing for registration, crops, pest pressure and chemical use, as well as different interpretations of available data, Miller explained. The time from submission of data to registration of an IT can range from two years in the U.S. to five years in Taiwan, Miller noted. In addition, countries approach and use the data differently. Miller cited BASF registration of a chemical used on stone fruit, for example. The U.S. established a sub group with a single MRL to cover cherries, peaches and plums. The EU required many more trials and established sub groups with different MRLs for each commodity. CODEX established a single MRL but at a different level than the U.S.

What Growers Can Do

While these examples shine a light on the difficulties encountered marketing to different countries and cultures, the opportunity outweighs the complications, and growers can increase their likelihood of success by working with buyers and exporters to understand requirements. Growers can work through industry associations to promote the adoption of MRLs in target countries, Miller advised, concluding with, “If you need something, ask!”

Molly Miller addresses the audience at the Annual Meeting with information about MRLs.





Update on NOW Control

Fresh insights on monitoring and treatment

Proven techniques and new approaches to controlling one of the most destructive pests targeting almonds were presented at the Blue Diamond annual growers meeting in Modesto in November. Jhalendra Rijal, Area IPM Farm Advisor for San Joaquin, Stanislaus and Merced counties, discussed techniques and materials that the University of California Cooperative Extension is using for monitoring and management of the navel orangeworm (NOW).

Describing the life cycle and best times and materials for treatment to prevent economic damage by NOW, Rijal

described the insect as a small moth that lays clusters of tiny white eggs on the nuts. When it is time for the eggs to hatch their color changes to orange. Tiny larvae emerge and begin feeding on the nuts. They continue to do so until they pupate and eventually emerge as a moth.

NOW overwinters as miniature larvae. In March/April, the surviving larvae pupate and emerge as moths in April and May and begin laying eggs. “This generation is of concern because they lay eggs in the mummy nuts, which is why it is very important to remove the mummy nuts during post-harvest orchard clean-up,” Rijal counseled. The moths that emerge from the mummy nuts lay eggs on the developing nuts, producing new generations of NOW to infest the crop. Rijal found high counts of third generation moths in Merced-area orchards as late as October 21 and speculates that a fourth generation could have emerged in orchards south of there in years of high temperatures.

Monitoring

Egg Trap

The IPM team uses egg traps, pheromone traps and harvest samples to develop data for estimating NOW

pressure the following year. Rijal also does mummy nut sampling. “This is important to do given that NOW is becoming more of a problem,” he said. He encouraged the audience to develop orchard histories of NOW damage on their ranches: “Once there is insect pressure it tends to continue in following years, so orchard histories play a very important role in navel orangeworm management.”

The farm advisor begins placing egg traps in March/April to establish a biofix – the date at which the NOW moths first emerge from pupation and begin flying to lay eggs on the nuts. When 75 percent or more of the traps have increased egg counts in two consecutive weeks, the team establishes that date as the biofix date and begins counting the degree days to calculate when to begin pest management. In 2016, egg traps placed in early April had egg counts high enough to establish April 18 as the biofix. At 100 degree days, in late April, the “May” spray would be applied if needed, based on insect activity. At 1200 degree days, the first week of July, the hullsplit spray would be applied, if needed.

Pheromone Traps

Pheromone traps contain the female sex hormone – pheromone – to attract male moths. These traps provide information about adult flight activity and identify peak flights. They are more useful in making hullsplit treatment decisions, Rijal observed. The egg traps may not attract a representative sample of females because they have the option of laying eggs on almonds already at hullsplit. The combination of the two types of traps gives a better indication of NOW populations and activity.

Harvest Samples

Harvest samples enable growers and their PCAs to identify the types of insect damage occurring in an orchard, whether it is from NOW, peach twig borer, Oriental fruit moth, ants, leaffooted bugs or some other pest. Rijal recommends a minimum sample of 500 nuts. The findings can be important in planning management and control programs, he said.

Management Options

Rijal noted that two management practices stand out as the most effective in reducing NOW damage. He cited (1) orchard sanitation – **removing mummy nuts**, and (2) early harvest. He recommends no more than one mummy per tree, being certain the mummies are removed from the trees by February 1, and flail mowing or discing by March 1 to remove the mummies from the ground. The moths will lay eggs on mummies left on the ground causing significant damage to the crop.

By **early harvest**, he means harvesting before the 3rd generation eggs hatch, and when 100 percent of the nuts at the six- to eight-foot level are at hullsplit.

Insecticide control, he said, is a help and can reduce NOW damage by 50 percent. For example, if a grower does not use insecticide and gets 4 percent damage, but had used an insecticide he would have reduced the damage to 2 percent.

Mating disruption is a new technique under investigation that may have applicability in the future. It involves releasing female pheromone in the orchard to confuse the males seeking a mate. Two companies are producing the material at present and others are testing their compounds for registration. The technique involves a container hung in trees that periodically releases the pheromone to confuse the male insects. Data is still being collected to determine the effectiveness of this approach.

Insecticides

Many new chemicals are available that are very effective, Rijal reported, and also are less problematic for other insects, such as mites. Some chemistries used in May will cause an outbreak of mites, he said. He advises using egg trap data and the 100 degree day regimen for optimum timing of the May spray. And encourages using a “soft” or reduced-risk material. He cited Intrepid, Altacor and Proclaim, for example. He mentioned Delegate and Entrust, but noted that those chemistries are harmful to bees.

For hullsplit spray he again suggested using egg trap data and the 1200 degree day measurement from the spring biofix. He cited Intrepid, Delegate, Entrust, Altacor, and Proclaim as possible choices along with other products listed on the UC IPM website.

The critical issue with insecticide use, he said, is **spray coverage**. Poor spray coverage and lower NOW control occurs in the upper quarter of the tree canopy – above 10 feet. He suggests tractor speed of two miles per hour and higher spray volume (200 gallons per acre) for best NOW control.

Needs Volunteers

Rijal invited growers to join a demonstration study in Stanislaus and Merced counties that is comparing IPM control to a grower standard regimen. The study will focus on NOW, PTB, Leaffooted bug, ants, scale and mites. Participants will need to be willing to use mating disruption materials. Ideally each block should be about 100 acres, he said. Contact Jhalendra Rijal, jrijal@ucdavis.edu.

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