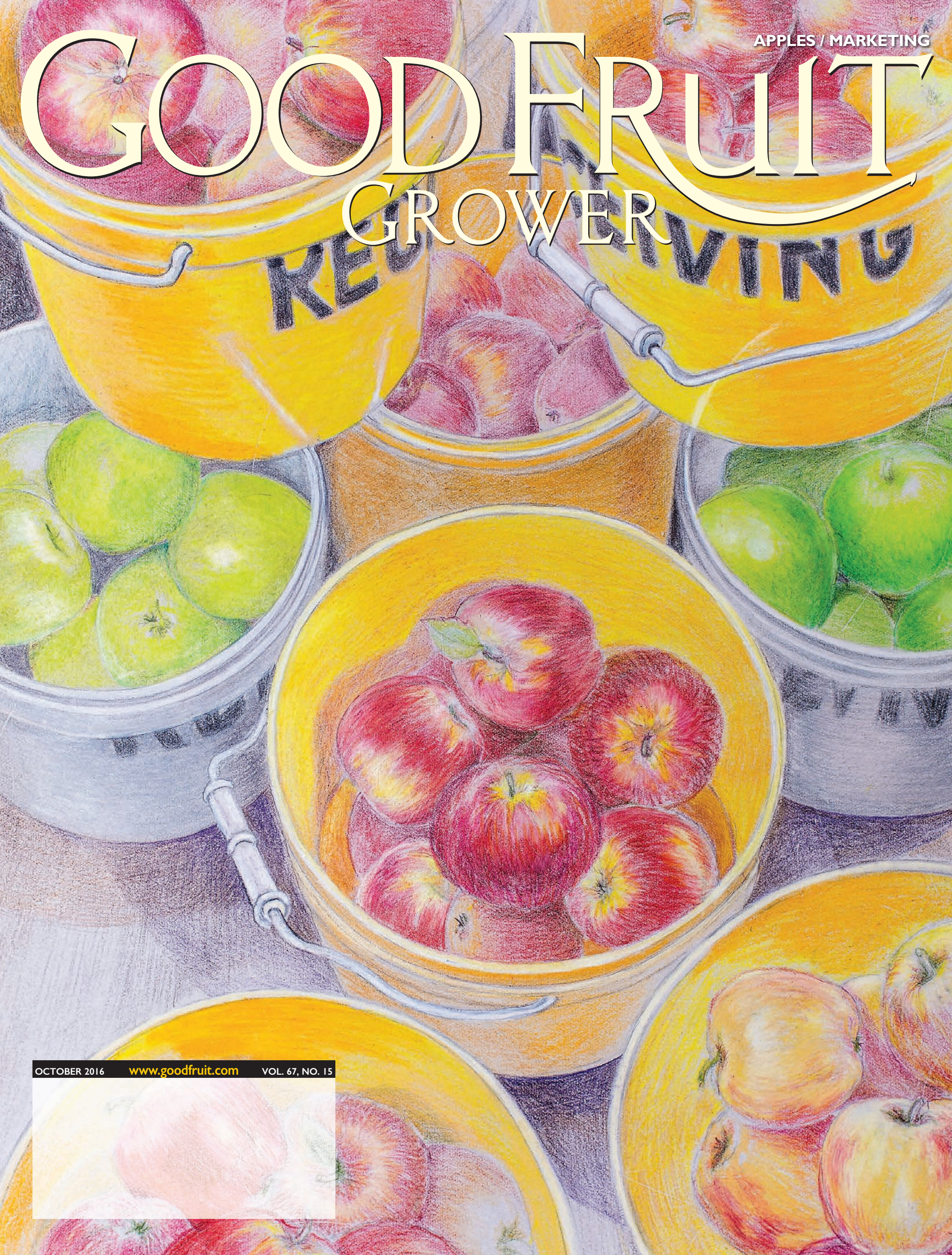


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TJ MULLINAX/GOOD FRUIT GROWER

The sun rises in March, lighting California's Cuyama Valley, an agricultural area of mostly row crops near the Los Padres National Forest. The isolated valley was once home to some 2,500 acres of apples. Today, just one family of apple growers remains. Read about their story beginning on Page 26.



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TJ MULLINAX/GOOD FRUIT GROWER

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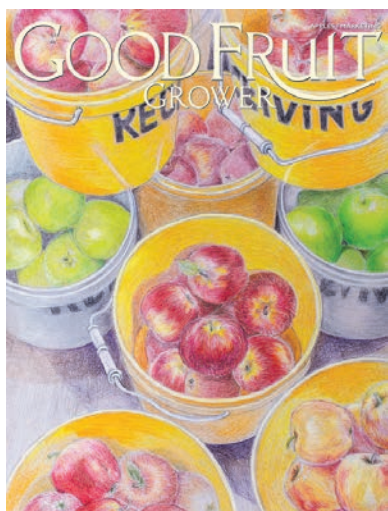
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## On the cover

Colored pencil  
drawing of apples

ARTWORK BY  
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## FIRST BITE

O. Casey Corr, Managing Editor

# Hitting the winter road

**A**s employees of a grower-owned, nonprofit publication, the staff at *Good Fruit Grower* manages resources wisely. We resist costly trends and put a lot of miles on our cars and our computers.

But when it comes improving service to readers, we make investments.

That's why you'll see *Good Fruit Grower* staff over the next few months at many of our industry's best conferences, gathering information on research and innovative practices in order to produce the best reports for you.

**Look for Good Fruit Grower editors at fruit shows in several states.**

You will see us at shows in Washington, Pennsylvania, New York and Michigan, including:

—Great Lakes Fruit, Vegetable and Farm Market EXPO in Grand Rapids, Michigan, Dec. 6-8.

—112th Washington State Tree Fruit Association Annual Meeting and Northwest Hort Expo in Wenatchee, Washington, Dec. 5-7. (We will again partner with Wilbur-Ellis on a drawing for a nice piece of farm equipment; last year, we gave away a John Deere Gator TX 4X2.)

—Empire State Producers Expo in Syracuse, New York, Jan. 17-19.

—Mid-Atlantic Fruit and Vegetable Convention, Hershey, Pennsylvania, Jan. 31 to Feb. 2.

—Washington Association of Wine Grape Growers in Kennewick, Washington, Feb. 7-9.

That's a partial list. We are literally going the extra mile so our print and online pages contain the industry's most in-depth and trusted reports.

One highlight of the winter meetings will be the presentation of the 2016 *Good Fruit Grower* magazine Grower of the Year. We announce the winner in our December issue and present the award at the annual meeting of the Washington State Tree Fruit Association. Selected by the magazine's advisory board, winners represent the best in our industry, orchardists who not only grow great fruit but also contribute to the industry. We began the award in 1997 with recognition of Bruce Allen of Yakima, Washington. Last year, we recognized Brenton Roy of Prosser, Washington. I know you will enjoy reading about this year's winner.

December is also a time when we like to launch new services, and this year is no exception. Beginning with our December issue, we start a project to better serve Spanish speakers. I'll talk about that in future issues. We're excited about this project, and we thank those who have advised us and the sponsors who make this service possible.

\*\*\*



Marcus Michelson

With this issue, our masthead gains a new name: Marcus Michelson, our new content and design specialist. He fills a position vacated by the retirement of Aurora Lee. Marcus comes to us from the newspaper industry, most recently the *Yakima Herald-Republic*, where he has served as an editor and designer. Marcus' initial focus will be working with Jared Johnson, design/production manager, on page designs and with our advertising staff on designing ads for clients. He will also work with Senior Editor Shannon Dininny on writing assignments.

Marcus grew up in Poulsbo, Washington, and graduated from Washington State University. He is so talented, there's not much he can't do. He's also experienced in web design, social media and podcasting. I highly recommend his Trivia Minute podcast; it's addictive.

\*\*\*

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Red Delicious apples in Wapato, Washington, in August.

# Picking prospects

TJ MULLINAX/GOOD FRUIT GROWER

## Drought in Eastern U.S. dampens outlook, but other U.S. regions are forecasting steady — or even larger — apple crops.

by Shannon Dininny

One year, Mother Nature shines on your orchards. The next, she wreaks havoc and shines on someone else.

Therein lies the story of the U.S. Apple Association forecast for the 2016-17 crop: 246 million 42-pound bushels, both fresh and processed, a 3 percent increase from last year and 3 percent above the five-year average.

The largest portion of the crop will come from Washington, forecast at 149 million bushels, a state that experienced high temperatures the past two years and drought conditions last year but saw excellent growing conditions this season.

Meanwhile, growers in the Northeast saw late spring storms and drought slice into their forecast. “The Eastern growing area can be summed up in one word, and unfortunately, that word is drought,” Jim Allen, president and CEO of the New York Apple Association, told attendees at the U.S. Apple Association annual meeting in Chicago in August.

Nine of the 11 states that contribute to the USApple forecast for the Eastern U.S. expected to see a decline in production this year, with the total forecast for the region down 10 percent to 53.8 million bushels.

In the Midwest, which estimated its 2016 crop at 34 million bushels, Michigan could see a record crop of 31 million bushels, a 31 percent increase over 2015 that would top the five-year average by 49 percent “if it should come to be,” said Mike Rothwell, president and general manager of BelleHarvest Sales.

Overall, the West was forecast at nearly 158 million bushels, an increase of 5 percent from last season.

Washington’s forecast also would be an increase of 5 percent; after two years of hot, dry weather, Washington

growers experienced excellent growing conditions with good size and color, said Jon DeVaney of the Washington State Tree Fruit Association.

Bearing acreage for apples in the U.S. declined 16 percent from 2004 to 2015. However, yields per acre have increased 45 percent since 2003, thanks to the increasing number of high-density plantings, said Mark Seetin, director of regulatory policy and industry affairs for USApple.

Nationally, Red Delicious remains the top crop, but production relative to other varieties was expected to continue to decrease as other varieties increase their share of overall production. Gala, Granny Smith, Fuji and Golden Delicious round out the top five varieties in the U.S.

Last season, world apple production closed at about 77 million metric tons, with China accounting for 56 percent of the overall crop. Here’s a snapshot of the apple crop forecast for other regions:

### Canada

Canada estimated its 2016-17 crop at 17.1 million bushels, up 17 percent from last season and up 5 percent from the five-year average. That estimate could increase more if Eastern growing regions received much-needed rain, said Don Werden with the Norfolk Fruit Growers’ Association in Simcoe, Ontario.

Ontario growers, who experienced good bloom but a dry growing season, forecast a crop of 7.1 million bushels, which would be a 57 percent increase. McIntosh made up 25 percent of the crop, followed by Empire, Honeycrisp, Gala and Ambrosia.

Quebec’s crop was predicted to be 5.6 million bushels, down 4 percent from 2015. Growers there got off to a good start, Werden said, with no frost and a good, strong

*The Eastern growing area can be summed up in one word, and unfortunately, that word is drought.”*

—Jim Allen

bloom, but there was some fire blight damage.

Nova Scotia growers forecast a crop of 1.3 million bushels following a dry summer growing season, a dip of 3 percent from last year. Honeycrisp volume there continued to grow, at 325,000 bushels, comprising 25 percent of the crop, followed by Northern Spy, Cortland and Idared.

British Columbia expected a very early crop, though the region experienced hail damage in some areas. Growers there forecast a 7.7 percent increase from last year, with Gala comprising 45 percent of the crop at 1.3 million bushels, followed by Ambrosia at 632,000 bushels.

Across Canada, McIntosh made up 32 percent of the crop, while Gala comprised nearly 13 percent.

### Mexico

Mexico expected another bumper crop: 31 million 20-kilogram boxes (roughly 44-pound boxes) a 15 percent increase from last year’s 27 million boxes, according to Leighton Romney with the Paquime Group in Chihuahua. That’s also 8.5 percent above the five-year average.

Strong growth was expected in Chihuahua, up 17 percent, and Coahuila and Durango, each up 10 percent.

Mexico will consume somewhere around 40 million boxes — and consumption is growing — but consumer prices are high and apples are still a luxury item, he said. The dollar exchange rate also is still high, and there will be no tariffs on U.S. apples for 2016.





COURTESY WASHINGTON APPLE COMMISSION

Washington apple samples from the 2000 harvest in Japanese retail stores in 2001, the last time U.S. apples were exported in Japan.

## U.S. growers hope to send apples to Japan once again

For the first time in 15 years, apple growers are pursuing exports to Japan.

The U.S. is the top food exporter to Japan, but apples haven't been a big player. Northwest growers haven't exported to Japan since the 2000-01 season, largely due to that country's 17 percent tariff and the high cost of the export program. Apples must be treated with a 55-day cold treatment and methyl bromide fumigation and inspected by Japanese officials prior to shipment.

Japan has identified codling moth as a quarantine pest of concern.

However, at least two growers this year have expressed interest in pursuing exports to Japan, and Japanese inspectors have made one visit to a packing house already, according to Northwest Fruit Exporters.

"These packers have taken the expense into account, and they're willing to give it a try," said Fred Scarlett, manager of Northwest Fruit Exporters. "Obviously, they think they can make some money doing it."

Apple production has fluctuated and declined slightly in recent years in Japan, though it remains a top-20 producer globally at nearly 600,000 tons in 2013, according to the latest data from the World Apple and Pear Association. However, led by Japan's own Fuji variety, apples are a premium product there, and the country's farming lobby is strong.

Traditionally, Japanese retailers have wanted Washington apples to come in at a significantly lower price point, which was difficult to do under the constraints of the work plan, said Rebecca Lyons, international marketing director for the Washington Apple Commission.

"One thing that is interesting is that unlike many of the export markets, Japan is a developed market," Lyons said. "They have consumers who can afford to buy the higher value out of Washington state."

Meanwhile, U.S. industry groups are in the early stages of trying to develop a new systems-approach apple work plan with Japan that would not require fumigation. The last such plan among tree fruit, for cherries, took almost 12 years to finalize. —*S. Dininny*

### South America

South America contributes a mere 3 percent to the world's apple supply but is a big player in the export market, competing with U.S. exporters.

Production there fell 19 percent in 2015 to about 323,000 metric tons, and growers anticipated another decline overall in the region, said Rene Alarcon, a broker with the Doehtler Group in Santiago, Chile.

Argentina forecast a 20 to 30 percent decline in its crop size to about 550,000 metric tons, while Brazil anticipated a 15 to 20 percent reduction to about

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1 million metric tons. Chile, the bright spot, saw growth in apple production, mainly driven by demand for bicolor varieties, such as Fuji and Royal Gala, he said. Crop size there could be up about 5 percent to roughly 1.6 metric tons.

Europe

Europe forecast its third largest crop at 12 million metric tons, down from the past two years but above the five- and 10-year averages. Frost damage in Central Europe drove the forecast down to 420,000 metric tons for those countries.

Poland, which produces 35 percent of all apples in Europe, expected a strong crop, along with Germany, Greece and Romania. However, the ongoing Russian embargo against fruit and vegetable imports is likely to hurt market access as exporters seek substitute markets.

China

Apple production in China has climbed steadily over the past 15 years, with an average annual increase of 1.8 million metric tons from 2001 to 2015, according to Michael Choi, president of Zhonglu America, a wholly owned subsidiary of the Chinese Zhonglu fruit juice company.

For the 2016-17 season, China will likely set another production record of 43.8 million metric tons, a 2.8 percent increase from the 2015 crop and a nearly 11 percent increase from the five-year average, he said.

Early varieties, such as Gala, should see a smaller crop, but a bigger crop was anticipated for later varieties like Qinguan and Fuji. ●

Domestic apple market looks bright

The value of the dollar and the increasing size of the apple crop in other countries — boosting competition on the export market — may pose some challenges for packers and shippers in the coming year.

However, the domestic market continues to be a bright spot for the U.S. apple industry. Except for last year, U.S. apple consumption has grown each year since 2010, and when you factor in all the new varieties that consumers have to choose from, the U.S. market should continue to be strong, said Todd Fryhover, president of the Washington Apple Commission.



Todd Fryhover

“The producers are realizing that you have to provide really good quality fruit if people are going to buy them, and they are doing well,” he said.

Internationally, there may be some hurdles U.S. growers will have to overcome, including the value of the dollar, he said. A resurgence of the crop in Canada, possibly the biggest crop in history in Mexico, the potential for the third-largest crop in history in the European Union and another large crop in China together create a very competitive international marketplace.

The Russian embargo on fruit and vegetables from the European Union means Poland, with a heavy emphasis on older varieties, will be seeking new markets, he said.

Vietnam, which focuses on the food safety aspect of U.S. products, is a great market, and Indonesia and India are good markets as well. Of course, he said, the European Union and China will be shipping there, too.

China exports about 80 million boxes of apples, a fraction of its 2 billion-box fresh crop, but the country is fairly one-dimensional at 70 percent Fuji, Fryhover said.

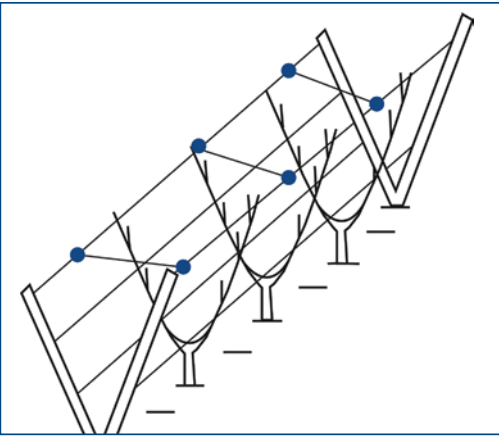
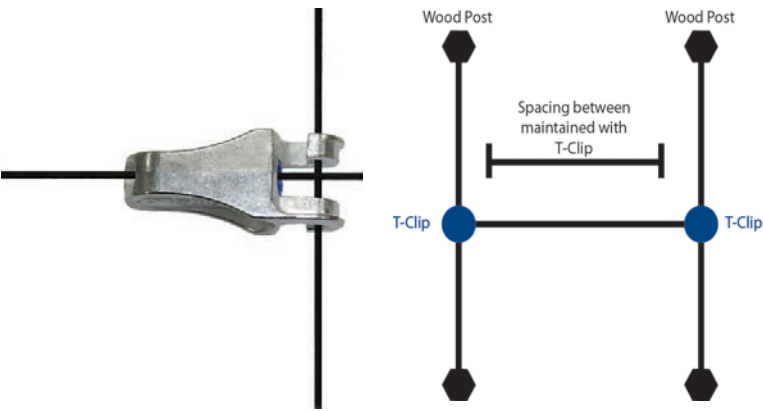
That means U.S. Red Delicious are maintaining export interest, something growers might have thought would be hard 10 or 15 years ago, he said.

“Another thing to keep in mind: It is the one variety that we can produce and pack the least expensively, so it gives us a competitive advantage in the international marketplace over some of the higher value varieties,” he said. “We need to find a level for Reds, but I think we’re really close to it.” —S. Dininny



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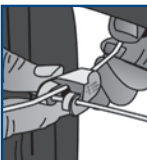
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# Wal-Mart weighs in on food safety

## Company's VP offers tips for growers and packers.

by Shannon Dininny

**I**llnesses caused by foodborne pathogens are becoming much easier to track and investigate, and new science — whole genome sequencing — is enabling outbreaks to be traced to the source of the investigation.

That means apple growers and packers need to up their game, according to Frank Yiannas, vice president of food safety and health for Wal-Mart.

"What you did for food safety last year is no longer good enough, and you're going to have to do something different this year and next year," Yiannas told some 300 industry members at the annual meeting of the U.S. Apple Association in Chicago.

Today's supermarkets have tens of thousands of food products, and there will be new products derived from apples that will introduce new risks over the next



*"There are some things I think you need to be doing to manage food safety risk with apples that FSMA won't require you to do."*

—Frank Yiannas

20 years, he said. "This concept of history of safe use, don't let that lull you into complacency," he said.

Yiannas offered a few tips to help ensure growers and packers are doing all they can to prevent an outbreak:

—Avoid complacency. "Complacency is overconfidence and poor metrics," he said. Talking to companies that have had outbreaks, Yiannas said he's learned overconfidence plays a role — companies hadn't had a problem, so they didn't think they could have a problem. "And they were all using poor metrics to measure food safety," he said.

—Ask questions and question assumptions.

—Manage real, regulatory and perceived risk. "If you aren't an expert on true, public health risk, get experts," he said.

—Also, regulations don't always align with risk. "Don't assume those two are the same all of the time," Yiannas said. "There are some things I think you need to be doing to manage food safety risk with apples that FSMA won't require you to do."

—Prevention costs less than an outbreak. For the apple industry, that

means focusing on the site where apples are packed and washed to make sure packing houses are designed with food safety in mind — that contamination is controlled and not spread — and that microbial evaluations are completed. "You can't tell just by looking at it," he said.

"The things you have to do are meaningful, and they can be done with low cost structures and still allow you to be profitable and have a healthy business."

—Create a food safety culture, not a program. "Culture is about the shared values and beliefs. It persists through time," he said. "It's the soft stuff that's the hard stuff, because all of food safety is about people."

"Food safety culture is a choice," he said.

Yiannas noted that, during an outbreak, retailers suffer the shortest amount of time, while the country of origin suffers the longest. "The apple industry wins and loses together," he said. ●

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# Why change now?

**The WSTFA annual meeting will focus on how continuous change forces us to adapt.**

*by Sam Godwin*



Sam Godwin

**T**he Washington State Tree Fruit Association Annual Meeting is just around the corner, Dec. 5-7. Most people are busily working to bring in another harvest. This time of year we see firsthand the rewards of our efforts. There is nothing like the crisp morning air and dew on the grass to focus your efforts as the harvest swings into full motion around the state.

A dedicated team of professionals from across our industry is busy planning and organizing the annual meeting. As most know, this is our primary outreach

and educational conference. We again will have the customary trade show in conjunction with the conference in Wenatchee.

This year's theme is "Welcome to the new normal: continuous change." Our goal for the conference is to let members enjoy educational sessions that are focused on a series of themes during the conference. Another objective is to highlight research that is being supported by our Washington State Tree Fruit Endowment. Organizers are putting together another exciting slate of speakers that is sure to have something for everyone. Come prepared to listen, learn and be challenged in new ways as the demand for continuous change forces us all to adapt to survive.

Our keynote speaker this year will be Jim McFerson, director of Washington

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State University's Tree Fruit Research and Extension Center, who will share highlights from our journey on the technology roadmap. More importantly, he will dive into what's next for our industry on our technology journey. We all are looking for that next breakthrough that will help lower costs, increase productivity of target fruit or both.

We will follow up the first day's morning address by diving into how our customers are choosing what produce they stock in their stores — identifying retail consumer trends. Mike Hulett, senior merchant for Wal-Mart Fresh, will give the audience a glimpse into how domestic retail evaluates the categories they sell. The big question we want to understand: What do people want and can we grow it economically?

The first day also will highlight our dedication to the partnership between our industry and WSU. It features an introduction of the new WSU President, Kirk Schulz, who will share his vision about the importance of our industry's commitment to the endowment and how, working together, we can create empowering change, as well as a detailed discussion on the rollout of Cosmic Crisp, a practical example of that partnership. The goal is to provide a good understanding of what has been learned about this exciting new variety so that growers can make better decisions as the industry prepares to launch into production.

The format for days two and three of the conference will be slightly different than past conferences. The sessions will be topical and cover apples, pears, cherries, preharvest and postharvest, as well as organic and conventional approaches to growing tree fruit. The chosen topics:

- Picking winning technology strategies.
- Consumer expectations for apples, pears and cherries.
- Strategies to maximize revenue.
- Food safety regulations.
- Spanish sessions.
- Science-based applied horticulture.
- Future farmers: Where will they come from?

As the planning committee developed the outline for the conference, we attempted to build a robust program that will challenge all of us to think about our various business models and consider how future changes could impact how we do business. In so many ways, we are exposed to changing times, including with labor, food safety regulations, new genetics or changing consumer expectations, to highlight a few. All of these variables impact us, and how quickly we recognize them and adjust will determine our success in the future.

I look forward to hearing from many of you at the conference this December. Until then, have a safe and productive harvest. ●

*Sam Godwin, a grower based in Tonasket, Washington, is chairman of the WSTFA Planning Committee.*

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## GOOD TO KNOW



PHOTOS BY BAS VAN DEN ENDE

Meticulous training of these 17-month-old apple trees on Malling-Merton 106 lays the foundation of a productive apple orchard. The positioning of the secondary framework (branches) of these Open Tatura trees ensures there won't be gaps in the canopies between trees. Light interception in third, fourth and fifth leaf is estimated at 45 percent, 55 percent and between 65 and 70 percent, respectively. Trees produced 11 tonnes and 45 tonnes per hectare (4.9 tons and 20.1 tons per acre) in the second and third years, respectively.

# Why gaps are money losers

**The quicker you fill the space on a trellis, the more sunlight is captured in the canopy.**

*by Bas van den Ende*

**I**n Australia, orchardists' expectations of early tree growth are generally not high enough: Too much sunlight, and therefore potential crop, is being wasted.

Cropping is directly linked to the amount of sunlight captured (intercepted) by fruit trees. The more light the trees capture, the more crop they can carry. Sunlight that hits the orchard floor is mostly wasted.

Most orchardists do not develop the canopy as quickly as they could. Although trees are generally planted at the right density and on the right size-controlling rootstocks, insufficient early tree training means that the canopy is not developed as quickly as it should.

Pushing the young trees with water and nitrogen is not much good if you don't guide the new growth toward filling the tree's space. This is done by summer pruning and tree training.

The quicker you fill the tree's space on a trellis, the more sunlight its canopy can capture and use the energy of this sunlight to produce fruit.

The highest possible light interception for sustainable

high yields of good quality fruit is 70 percent. This allows alleyways between rows for orchard equipment to pass through.

Most of the tree's permanent structure should be established during the first three years. To maximize early growth of the trees, they should not be cropped in the second year, unless large, well-feathered trees are planted. Cropping, and sometimes overcropping the trees in the third year, can severely set the trees back, especially when they are on Malling 9 or M.26 rootstock. It will be difficult to invigorate young apple trees after they have been overcropped.

Vertical or angular canopies of apple trees that are thin and continuous and have the correct height in relation to the width of the rows should reach the 65 to 70 percent light interception by the fifth year. When that has been reached, accumulated yields of 145 tonnes per hectare (65 tons per acre) have been recorded from three harvests, with sustainable annual yields of between 65 and 90 tonnes per hectare (29 and 40 tons per acre) of good quality fruit after year five.

If your apple trees do not produce such yields and fruit quality, you should have a look at the architecture of your trees. Gaps in the canopy between trees is a waste of space — space that should be occupied with fruiting wood and apples, not fresh air. ●

*Bas Van den Ende is a tree fruit consultant in Australia's Goulburn Valley.*





These third-leaf apple trees on Malling 9 rootstock on Open Tatura have twice the number of apples on the tree as their average trunk size should have. This has not only restricted canopy development, but also has resulted in more than six different sizes of apples in the unthinned crop.



These sixth-leaf slender spindle Pink Lady trees on Malling 26 at 2,850 trees per hectare have deep V-shaped unproductive gaps in the canopy.



These traditional central leader trees at 1,000 trees per hectare lose at least one-third of their potential crop each year because of the gaps between the tree canopies.



Continuous thin, angular canopies, such as this Open Tatura, regularly produce high yields of good quality apples of marketable sizes. Notice the distribution of apples from the top of the canopy to the bottom. The shade pattern on the orchard floor between the rows also indicates good distribution of sunlight throughout the canopy. These trees have been meticulously trained in the first three years, and the orchard now reaps the long-term benefits.

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John Gomez of Hedges Family Estates talks about field grafting in the winery's Red Mountain vineyard near Benton City, Washington, in August. Gomez shared his experience with grafting Cabernet Sauvignon onto Merlot plants during a Washington State University Viticulture and Enology Field Day.



PHOTOS BY SHANNON DININNY/GOOD FRUIT GROWER

# Grafting provides 'A better solution'



Cabernet Sauvignon grapes ripen on the vine at Hedges Family Estates.

**Hedges Family Estates grafts Cabernet Sauvignon to Merlot as a cost-effective option to replanting**

*by Shannon Dininny*

**W**hen Hedges Family Estates wanted additional acreage planted in Cabernet Sauvignon to meet rising demand, the longtime wine grape growers and vintners on Washington's famed Red Mountain had a few options.

One: Pull out a 25-year-old block of Merlot, drip irrigated and planted to 10-foot-by-4-foot spacing. They could have replanted in 8-by-4-foot spacing, which would equate to more plants and a few more tons of fruit. But the cost of starting a Cabernet Sauvignon block from bare ground, which meant pulling out everything and reinstalling a new trellis system, was about \$18,000 per acre.

"Our accountant said, 'Find a better solution,'" Vineyard Manager John Gomez said.

Option two: Spend about \$6,500 per acre just to get everything clean, rather than remove the entire system, and replant. "The accountant said, 'Find something else,'" Gomez said.

The best benefit, money-wise, and the option they



chose: Cleaning up materials, cutting back the plants and grafting on Cabernet Sauvignon, at a cost of \$2,800 per acre.

"The plants being 20-plus years old, we thought if we could get another 10 years out of them, maybe then we could come in and replant," Gomez said at a Washington State University Viticulture and Enology Field day in August at the vineyard outside of Benton City, Washington. "We always pick this Merlot block right around Labor Day, no matter whether it's a cold or hot year. That's the reason we chose it — it's a consistent block. The thought was to take the best of the Cab and the Merlot to start again."

More and more, wine grape growers are turning to grafting new varieties onto existing vines in hopes of saving money and producing fruit more quickly.

"You're definitely into production quicker versus starting over entirely," said Kevin Judkins, nursery manager of Inland Desert Nursery. "A lot of that goes back to recouping revenue sooner. You have a trellis system that's

*"That's the reason we chose it — it's a consistent block. The thought was to take the best of the Cab and the Merlot to start again."*

—John Gomez

front, it can cause a lot of damage," he said. "It's like starting all over again."

Most of the grafting in Washington has been of red varieties to white varieties, particularly in some young Riesling blocks, since that variety has fallen slightly in popularity. However, Judkins warned growers to be wary of leafroll virus, which is symptomless in white varieties. "You graft reds on top and it lights up. You have to be cautious of that and maybe consider testing the rootstock before grafting," he said.

Judkins often has growers come to the nursery looking to buy certified budwood to graft onto their existing vineyards. However, Hedges Family Estates chose to take cuttings from its best Cab block. Inland Nursery picked the cuttings at dormancy, usually a six-bud cutting reduced to two-bud spurs grafted onto each vine in the spring.

Gomez hired a crew from California to handle the grafting. "If we'd had half an acre, maybe 1 acre, we might have done this ourselves," he said. "I wasn't going to screw up 6 acres."

#### Considerations and challenges

Hedges grafted the Cabernet onto two separate Merlot blocks, one 4 acres and another 2 acres higher on the hill. Gomez gave a tour of the 4-acre site, shared his experience and offered a few tips.

The first challenge was getting rid of the old cordon and anything that had grown on the wire. But they got lucky, Gomez said; the 4-acre site only required about 100 splices.

That vineyard had been planted in a two-trunk system. Hedges decided to leave the best trunk and get rid of the other, moving to a single-trunk system in the new vineyard.

With wind an issue at the site — 15, 20 and 30 mph wind gusts are not uncommon — they decided to train the tender young shoots. "We just started grabbing what was there and training it on the wire," he said.

Next spring, the winery plans to hire a special crew to come through at pruning to examine shoots and ensure

already there and setup in place. As long as the spacing is desirable and the rootstock is clean, it's a good option."

The drawback — and the risk, especially in the early years — is an early fall cold snap that takes out young grafts. "If it's still green at the graft union and we get a cold

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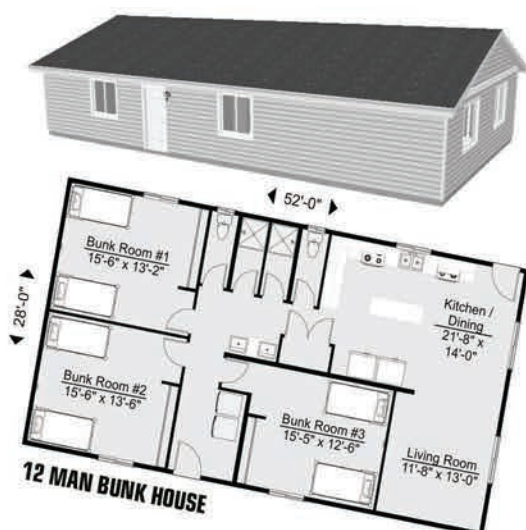
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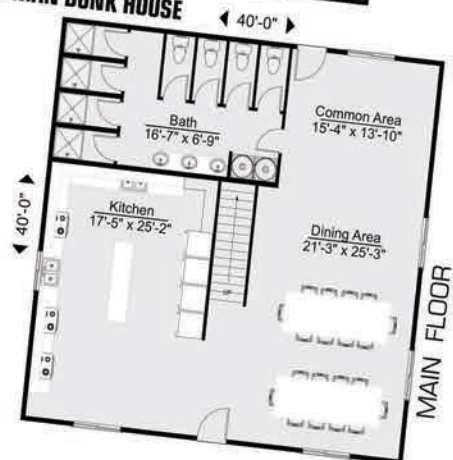
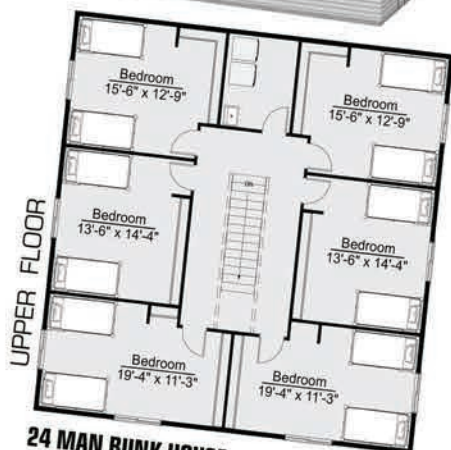


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Black tape marks the graft union of Cabernet Sauvignon onto Merlot plants at a Hedges Family Estates vineyard. The shoot on the lower left may still be Merlot because it's below the union, Gomez said, and crews will have to go through next spring to eliminate those shoots.

the right wood is up on the wire. It will be time consuming but worth it, Gomez said.

The graft union is high off the ground, above the second wire, to minimize frost risk. That means Merlot spurs have grown below the graft union, which is one of the things the crew will be looking for in the spring, he said.

The site sits on very porous soil that holds no water. The vineyard is set up as a separate irrigation block that requires more water on hot days. "You can't deprive this of any water. Don't stress it out. Make sure it's growing. If you stress it out, that grafted material will collapse and you're back to regrafting the following year," he said. "Next year and the year after that, then we will start adjusting the growth"

So far, the block looks good, Gomez said. The vineyard

had a slight powdery mildew issue, which he addressed using 2 percent Stylet oil. "I'm hoping to come in with the big sprayer next year. It's just too rough on young plants this year," he said. Crown gall developed at the base of some grafts, where wind pulled at the cut. They will have to be regrafted next year.

Anywhere the graft didn't take, they are letting the plant continue to grow. "You want the trunk to think it's still growing, and we'll regraft next year," he said.

Gomez said they are hoping to be in full production in year three. About 4.5 to 5 tons per acre would be a good crop; 3 tons might be feasible this year, he said.

"Almost everyone tells me Cab Sauv acts like Cab Sauv no matter what rootstock is on the bottom," he said. "We'll see in a few years." ●



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Carl Rosen, department head and professor in the University of Minnesota Department of Soil, Water and Climate, presents research results from the Northern Grapes Project at a field day. He is studying the effect of nutrients on vine health and ultimately on the wine.



PHOTO BY MARJORIE BONSE/UNIVERSITY OF MINNESOTA

# Demystifying cold-hardy grapes



PHOTO BY MURRAY CLAYTON

Patricia McManus, professor and chair of the University of Wisconsin-Madison Department of Plant Pathology, is investigating fungicide phytotoxicity in cold-hardy grapes.

**Northern Grapes Project is designed to encourage the wine industry in colder climates.**

by Leslie Mertz

While years of research and field experience have provided solid information about how to grow European wine grape varieties that yield high-quality juice, the same cannot be said of the cold-hardy grapes that are expanding throughout vineyards in New England and the upper Midwest. That is starting to change, however, as research associated with the Northern Grapes Project begins to provide insight into cold-hardy cultivars — those based on *Vitis riparia*.

Funded in 2011 by the National Institute of Food and Agriculture's Specialty Crop Research Initiative, the Northern Grapes Project is designed to encourage the wine industry in colder climates. The five-year project is

**ONLINE**  
For full details on the study, visit [bit.ly/1UEZ0dZ](http://bit.ly/1UEZ0dZ)

wrapping up later this year.

Two of the groups conducting studies on cold-hardy cultivars through the Northern Grapes Project are those of Patricia McManus, professor and chair of the University of Wisconsin-Madison Department of Plant Pathology, who is investigating fungicide phytotoxicity; and Carl Rosen, department head and professor in the University of Minnesota Department of Soil, Water and Climate, who is considering the effect of nutrients on vine health and ultimately on the wine.

## Fighting fungus

"There are a few fungicides that could have a use in grape production, but people are sometimes afraid to use them because of phytotoxic effects," McManus said.





PHOTO BY CARL ROSEN

Preliminary results from the nutrition study suggest that whole-leaf sampling may be a better gauge of tissue-nutrient level than the common technique of sampling only the petiole. Here, a leaf is separated into blades (left) and petioles (right).

For instance, copper and sulfur have been used as fungicides for centuries, but both are known to cause injuries to some of the European wine grape varieties. “The issue with northern cultivars is there’s a whole lot less known about them, because most just haven’t been around very long. In fact, if you look at extension literature on copper and sulfur phytotoxicity, the columns next to these cold-climate varieties are filled with question marks,” she said.

For the study, McManus’ group monitored 15 cold-climate varieties in two Wisconsin vineyards over four years. One vineyard is in Door County, which is on a peninsula that juts out into northern Lake Michigan and gets the big lake’s moderating influences, including later springs and cooler summers. The other vineyard is in Madison, which is located inland in the southern part of the state. Vines at the two sites were randomly selected each season to receive biweekly treatments with one of three types of fungicides — copper, sulfur, or a newer product called difenoconazole, which has been available for a few years — or to receive no fungicide.

The researchers regularly checked the vines for marginal browning, speckling or any other potential leaf injuries and ranked the amount of visible damage.

Among the results:

—As expected, Maréchal Foch and the related cultivar Leon Millot showed high sensitivity to sulfur. “Those two varieties are older ones that have been around for decades, and we knew going into the trial that they had sulfur sensitivity,” McManus said.

—Brianna, which experienced minor injury from sulfur, showed significant damage when treated with copper. “Brianna was the most sensitive to copper of all 15 varieties to the point that in some of our trials, just one or two sprays to Brianna with the copper fungicide caused a reaction,” she said.

—None of the tested varieties showed a negative response to difenoconazole, even though the labels

*“One of our main goals is to remove some of those question marks in the extension literature and replace anecdotal observations with real scientific data.”*

—Patricia McManus

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on many difenoconazole-containing products include warnings about their use on hybrid varieties, such as cold-hardy cultivars.

Overall, she was pleased — and somewhat surprised — that the cold-hardy varieties performed so well. “I was expecting to see more of the cultivars react to the fungicides, because we were using high rates of copper and sulfur that were right at the upper limit of what’s recommended on the label,” McManus said. While they were spraying about every two weeks, she explained that most growers would probably restrict the spraying to a couple of times a year for fungicide resistance management and perhaps one extra spray of sulfur later in the season to control powdery mildew.

#### Tracking leaf nutrients

Rosen’s project on nutrition involves researchers from five universities and includes 16 sites, mainly in the upper Midwest. “We concentrated on the cold-hardy cultivars Frontenac, Marquette and La Crescent, collected tissue samples either at bloom or at veraison, which are the recommended times for grape production, plus one additional time in between, and developed a background database,” he said. They also gathered data on grape yields and juice quality.

The tissue samples provide insight that soil testing alone cannot, he said. “The problem with soil tests for established vineyards is that grape roots are prolific and explore large amounts of soil, so while soil tests provide initial information about the site for planting, we think that the tissue tests integrate what is going on in fruiting vines a little bit better.”



PHOTO BY JAMES CRANTS/UNIVERSITY OF MINNESOTA

Field researchers harvest grapes at one of the locations in the nutrition study. The research group hopes to provide growers with nutrient sufficiency ranges for Frontenac, Marquette and La Crescent.

By analyzing all of the collected tissue-testing data, he said, they hope to come up with average nutrient values for the three varieties, as well as sufficiency ranges, which would give growers target nutrient ranges for good vine growth and juice quality. “For instance, if your potassium is low in the leaf tissue, you would need to look at perhaps amending the soil to increase that nutrient,” he said.

Preliminary results suggest that whole-leaf sampling

may be a better gauge of tissue-nutrient level than the common technique of sampling only the petiole (the leaf stem). “We’re still looking at the data so we don’t want to draw definite conclusions quite yet, but we’re finding that sampling the whole leaf or blade tissue at bloom seems to be a relatively good indicator of yeast-assimilable nitrogen,” he said. In addition, their early analyses suggest that vine nitrogen affects yeast-assimilable

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The variety Brianna was the most sensitive to copper of the 15 cold-hardy varieties in McManus' trials. Just one or two sprays of the copper fungicide caused a reaction.



This Maréchal Foch shows severe sulfur injury/defoliation in the left cordon. The right cordon, which was treated with copper, is fine.

PHOTOS BY PATRICIA MCMANUS

nitrogen (YAN) and potassium influences juice pH.

The research group has finished its number crunching and will soon be able to provide growers with nutrient sufficiency ranges for Frontenac, Marquette and La Crescent.

While this type of information is critical for understanding these northern varieties, Rosen said growers should keep in mind that nutrition level is just one part of a bigger picture. "There are many factors beyond nutrition that affect juice quality, but this study will give us a little more data to help grow cold-hardy cultivars."

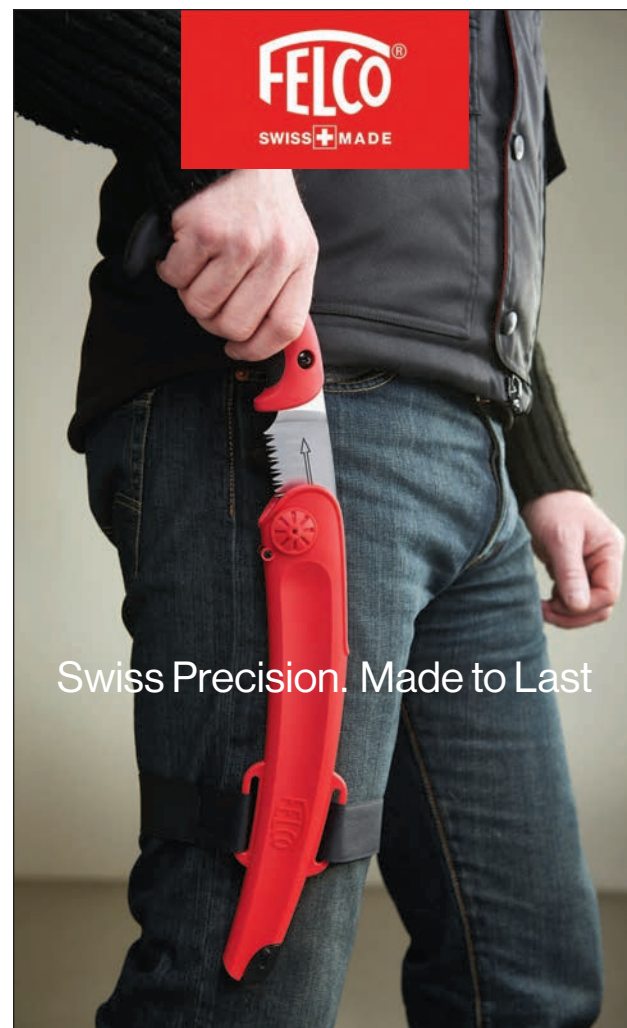
Both Rosen and McManus lauded the Northern Grapes Project and its focus on cold-hardy varieties. Rosen remarked, "There just hasn't been any work done on these cold-hardy cultivars, so we are having to rely mostly on nutrition studies that had been done on *Vitis vinifera* or *Vitis labrusca* types. The Northern Grapes Project gives us the opportunity to see if there are actually any differences and determine whether we need to change any of the diagnostic tools that are being used for

cold-hardy grape nutrition."

McManus describes the Northern Grapes Project as "hugely important," particularly in providing base information to the growing number of people just entering the grape industry in cool climates. "The timing has been really good."

The end of the Northern Grapes Project later this year, however, does not mean the end of research on cold-hardy grapes, she said. Her research group, for instance, is now trying to fill another major knowledge gap related to these varieties: One of her graduate students, David Jones, is conducting replicated trials to do an analysis of their disease resistance and provide susceptibility ratings.

This will be another step toward providing growers with information that is based on careful studies of these cold-hardy cultivars. She added, "One of our main goals is to remove some of those question marks in the extension literature and replace anecdotal observations with real scientific data." ●



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# Growers who Innovate in the



Orchard manager Steve DaValle, along with his dog Buddy, checks on crews installing wire and steel for new V-trellis systems at the Grupe Operating Co. ranch in Lodi, California, in March. At converting vertical systems to V-trellis at the same time.



# Golden State



**California apple growers hang in there and invest with focus on fresh market.**

*by Ross Courtney*

*photos by TJ Mullinax*

**I**n early March, Steve DaValle's crews used a repurposed trailer as a poor-man's platform to string wire for V-trellises throughout his Lodi, California, apple orchard.

The manager for Grupe Operating Co. has been switching from vertical to V-trellises and grafting to new Gala strains to not only survive but improve in an industry that has been shrinking in California for decades.

"We're battling," DaValle said. "Let's put it that way." California apples are not what they were and will never be again. The once hotbed of apple production, home of John Steinbeck's orchard tales, hardly makes a speck on the U.S. production charts anymore. Growers harvest roughly 17 percent of the fresh apples they did 20 years ago, while acreage has dropped by a third in the Golden State in the past 10 years or so.

However, California growers are not only hanging in there, they're growing and innovating in places, hoping to capitalize on the seasonal excitement of fresh apples.

"We're the first fresh apples to be harvested in America," said Jeff Colombini, another Lodi area grower. "We're a niche market."

## California apple numbers

(includes fresh and processed)

**2007:** 20,500 bearing acres, 180,000 tons

**2015:** 14,000 bearing acres, 73,000 tons

SOURCE: U.S. DEPARTMENT OF AGRICULTURE

Washington's massive acreage, controlled-atmosphere rooms and cold storage allow Northwest packers to stretch the apple season throughout the year, selling out one crop just as the new one comes off the trees. California does little of that, instead marketing apples much like cherries, as a get-it-while-it's-fresh crop.

"That's what gets consumers excited," said Kevin Ott, president of the California Apple Commission. "We pick 'em, we pack 'em, we ship 'em."

right, some of DaValle's changes include grafting some Fuji and Cripps Pink over to newer Gala strains and





Grupe Operating Co. cut back its Cripps Pink block in Lodi to help retrain the trees into a V-trellis system. The work required adapting an older vertical system by adding new steel and wires.

### History of decline

Apples came to the Golden State following the mid-1800s Gold Rush, when transplants from the East Coast and other nations stayed to plant fruit trees in areas such as Watsonville, which is near the Bay Area, and Placerville in the Sierra foothills.

Codling moth in the 1930s took a toll, but even in the 1980s, Granny Smiths grew up and down the Central Valley on thousands of acres, mostly in the southern, warmer areas, Colombini said. The story goes that in about 1985, a chance visit by a Taiwanese buyer to a California apple packer led him to Fujis, previously used primarily as a pollinizer for Grannies.

The variety became a hit for the export market within a few years and expanded through the 1990s. California grew a sweet Fuji but struggled to get color. In fact, Taiwanese buyers nicknamed the Fuji the Green Dragon, Colombini said. In 1998 or so, supply caught up with demand and overseas customers grew more particular about color. Orchardists began removing orchards over the next four or five years.

Meanwhile, crops like walnuts, almonds and pistachios began replacing apples due to their low labor costs with mechanical harvest. Employers in California are ramping up for a \$15 minimum wage by 2020.

"It's difficult to make money growing any crop that can be grown equally successfully in any other state ... the caveat is unless you're harvesting it when no one else is harvesting it and selling it when no one else is selling it," Colombini said. "And that's really the bottom line."

Colombini estimates his apples cost between \$4,000 to \$5,000 per acre in labor. He hires about 200 seasonal workers to pick his 500-plus acres of apples. He could harvest the same acreage of walnuts with six people. He diversifies in walnuts and oil olives.

### Innovation, investment and the future

Growers are experimenting and spending money on new plantings, grafts and technology when they can.

Colombini has a test plot of Honeycrisp, not widely grown in California, that he will put under shade cloth when mature. He otherwise grows mostly Gala and Fuji, but also has Granny and Pink Lady, an apple that he believes performs well in California.

Galas are probably California's most common variety now, as growers hope to capitalize on the early season, which runs about four weeks ahead of Washington.

"We've had a little marketing window in the Gala business" DaValle said. Over the past 10 years, he and



Above, grower Jeff Colombini with his new Honeycrisp plantings in Lodi. Colombini is training the trees onto a V-trellis and will install shade cloth when they begin producing.



Left, Luis Velasco marks steel, used for a vertically grown Cripps Pink block, before it's converted to a V-trellis system at the Grupe Operating Co. ranch in Lodi.

Right, orchard manager Steve DaValle takes a phone call while walking along an acre-long pile of Fuji and Cripps Pink cuttings in preparation for updating apple blocks to newer strains of Gala.

his assistant Kevin Baroni have been grafting Fujis and Cripps Pink over to high-color trademarked strains of Gala such as Buckeye, Gale and Ultima. They have one more block of Imperial, an older Gala strain, but plan to convert it this coming winter. Of their 100 acres of apples, only half are currently in production due to all their changes.

They still have 16 acres of Fujis and will leave those for a few years at least, Baroni said.

They also are converting from vertical trellises to V-trellises to help fill the space and boost yields from 40 to 75 bins per acre in their 14-foot rows, something they consider crucial to survival.

"You go to the super high-density V-trellis or you're done," Baroni said.

They call their trellis projects minor, reusing the same

anchors, posts and overhead cooling sprinklers and spending about one-third of what it would typically cost to start from scratch. They have eight full-time employees and do as much of their own in-house construction and training, bending the limbs to the brink of breaking to keep them horizontal.

"We're cheap," DaValle said with a laugh.

They hire up to 100 extra workers during the apple season for picking. Besides apples, they grow walnuts, cherries and oil olives.

With growers such as Colombini and DaValle, nobody suspects the apple industry will disappear. The California Apple Commission estimates it will plod along between 1.5 million and 3 million boxes.

"I don't think it's going to get smaller, but I don't think it's going to get much bigger," Colombini said. ●





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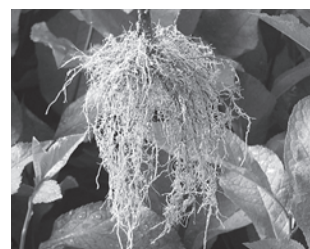
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# The solitary orch



A tour of Byron Albano's orchards in California's Cuyama Valley in March. The orchards rest high in the Sierra Madre Mountains, across a dry riverbed leading out of Los Padres National Forest. leaders overhead in a hoop to help control vigor.

## A long commute

Byron Albano drives two hours on both interstate and twisty mountainous highways from his home north of Los Angeles to reach his remote orchard in the Cuyama Valley in Southern California. From there, his packing facility is more than an hour away in Arvin, southeast of Bakersfield.



JARED JOHNSON/GOOD FRUIT GROWER

## Southern California apple grower combines urban life with rural farming.

by Ross Courtney

photos by TJ Mullinax

**B** yron Albano is one of the southernmost apple growers on the West Coast but has a late season. He has plenty of water but no surface irrigation. He lives in the Los Angeles suburbs but farms in a remote mountain hideaway.

"One of the things I love out here is your cell phone doesn't ring," he said, surveying his family's 316-acre Cuyama Orchards abutting the Los Padres National Forest.

Welcome to life at 3,300 feet in the Cuyama Valley, a rugged region of pinyon pine, manzanita and sagebrush that belies its proximity to metropolitan sprawl.

About 20 years ago, the Cuyama Valley was home to some 2,500 acres of apples. His parents, Howard and Jean, also live in the Los Angeles area but spent half their days in Cuyama cutting their blocks out of the hills. Byron, now 50, helped but mostly concentrated on marketing.

Around the year 2000, the market glutted. To survive,





# ard



Moisture during bloom can be an issue in the Cuyama Valley, sometimes leading to fire blight problems. Workers mark trees that look to have fire blight before they are trimmed or removed from the block.

Below, in Albano's V-trellis system, he ties the



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A worker thins blossoms in March in one of Albano's Pink Lady blocks.

the family sold directly to Los Angeles stores and kept planting, while others turned to carrots. Many trees came into production from 2003 to 2007, just as the market improved.

Today, they are the only apple growers left in the Cuyama Valley, with Whole Foods and Gelson's, a Southern California grocery chain, among their clients. They also sell to stores and farmers' markets in the Bay Area. The family owns a packing facility with cold storage in Arvin, near Bakersfield.

Byron Albano credits loyal customers for their survival. "That keeps us in business," he said. "Without that, we're not here."

Gelson's stocks apples from all parts of the globe but gets about 80 percent of its California apples from Cuyama Orchards, said Mark Carroll, senior director of produce. The company's high-end shoppers are willing to pay a little more for a combination of organic and local produce, Carroll said.

"They're about as local as you can get in Southern California," Carroll said.

Like all fruit growers, the Albanos have been converting to high-density trellised systems, choosing tall-spindle for Fuji, Pink Lady and Honeycrisp varieties. They actually have been replacing older Honeycrisp trees with new ones, experimenting with rootstocks in blocks of 11-by-3-foot spacing. The variety is not widely grown in California.

The family also has been changing from overhead sprinkler frost control to wind machines because moisture at bloom has exacerbated fire blight problems. Blossom onset has crept from April 1 to early March



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Byron Albano says loyal customers keep him in business. "Without that, we're not here," he said.

in recent years. They had snow a day or two before the beekeepers arrived this year. They use organic copper sprays, lime sulfur bloom thinner and Blossom Protect, a yeast solution, as prophylactic controls.

Meanwhile, commercial heirloom varieties make up about 10 percent of their acreage, and they have 500 trees of other heirloom varieties in a test block. They also grow a few rows of pears and even a little hay.

## Characteristics of growing area

Bountiful water is one of Albano's fortunate geographical quirks. Spring flooding aside, the Cuyama River runs dry a lot of the year, but his farm sits atop an alluvial aquifer.

The southern latitude provides warm days and the elevation cool nights, giving him a harvest window similar to Washington's Yakima Valley. The rest of California picks much earlier.

Albano has no neighbors, unless you count the occasional illicit marijuana grower in the surrounding hills. So, he doesn't have to worry about somebody else's spray drift, but he also has no one with whom to compare notes. University extension staff focus on the larger apple growing region near Lodi. Albano attends industry workshops and conferences and even hosted an International



Marcel Emea repairs a seal on an irrigation pump. The orchards canal system.

Fruit Tree Association tour in 2008. His father, Howard, is a past IFTA board member.

Albano has faced little pressure from codling moth. His pheromone disruption keeps the pests almost non-existent, he said. He has not seen the brown marmorated stink bug in the orchard, but he knows it has reached Los Angeles. He's afraid it's going to hitchhike one day on his commute.

That's a two-hour commute, by the way, which he makes two or three days a week. Albano lives in La Cañada on the outskirts of Pasadena with his wife and three children.





Washington's Yakima Valley.



rely on pumped irrigation because the remote location lacks a

This year, he has taken on the bulk of farm management, as well as his marketing work, due to his parents' ages — both are in their 80s. Four of his 50 year-round employees already live on the farm, and he plans to recruit an on-site farm manager next year so he can focus more on business management and sales.

Still, Albano enjoys spending time on his family's orchard, occasionally scrambling up a nearby hill for a bird's-eye view.

"Frankly, it's really unbelievable, I think, to me that my father was able to scratch a living out of this location with apples and that we've survived and actually thrived." ●

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# Beating bitter pit in Honeycrisp



Mario Miranda Sazo



Lailiang Cheng

**The key lies in combining foliar calcium sprays with reduced potassium fertilization.**

by Dave Weinstock

**G**rowers have long believed full-season foliar calcium sprays will reduce bitter pit, but two Cornell University horticulture researchers have discovered it's only half the solution: Reduced potassium fertilization fills out the rest of the equation.

Lailiang Cheng, Cornell University horticulture associate professor, and Mario Miranda Sazo, Cornell Cooperative Extension fruit specialist, made this discovery based on ratios of calcium to potassium, phosphorus and magnesium found in Honeycrisp peels and flesh.

This year, for the first time, Miranda Sazo recommended western New York growers reduce their potassium fertilization rather than replenish supplies taken up by the previous year's crop. Based on their findings, lower

potassium uptake results in higher levels of calcium in Honeycrisp fruit.

"Until now, we have been telling Gala, Empire and McIntosh growers whose orchards produce 1,000 or 1,500 bushels per acre, they needed to apply 70 to 100 pounds of potash (K<sub>2</sub>O) per acre to replenish what the trees took from the soil," he said.

That application is far more likely to set the stage for bitter pit in Honeycrisps. "For Honeycrisp, we may need to lower the (potassium application) rate by 25 to 30 percent," Miranda Sazo said.

At this point, Miranda Sazo and Cheng are not saying potassium should be brought down lower than that because it is still important to fruit development and sugar accumulation. They are continuing application rate testing this year.

Testing is being done in Michigan because its sandier soils hold less potassium. "This allows us to alter the soil potassium level faster," Cheng said.

## More than just calcium

Increasing fruit calcium level by means of foliar sprays still plays a major role in bitter pit mitigation, but it is by no means a panacea.

In the early 2000s, Cheng did some research

with Dave Rosenberger, Chris Watkins and Steven Hoying using foliar calcium sprays to control bitter pit. "It was effective in some years, but in others, not as effective," Cheng said.

One of the things they found was the incidence of bitter pit in Honeycrisp is negatively associated with the fruit cortex (flesh) calcium level. "Overall, in a best-case scenario, fruit calcium level explains about 45 to 50 percent of the variation in bitter pit incidence," he said. "In other years, this relationship only explains less than 20 percent."

That led them to conclude that there was a lot more to bitter pit than fruit calcium concentration alone.

In 2006, Cheng's research group did a study of Gala macronutrient and micronutrient requirements. They discovered when calcium was partitioned between fruit and tree leaves, 86 percent of calcium went to leaves and only 14 percent went to fruit.

Three years later, Cheng found Honeycrisp leaves had an even higher level of calcium than Gala leaves, and consequently, even lower fruit calcium levels.

Based on these two facts, Cheng decided to compare Gala and Honeycrisp in terms of fruit calcium level in balance with other fruit



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## Bitter pit reduction begins at ground level

Preventing or mitigating bitter pit in Honeycrisp begins before trees are planted, especially in regions like western New York, where soils tend toward acidity. Applying lime to bring soil pH up to optimal levels — 6 to 6.5 — followed by the right rootstock are the very first steps growers can take to reduce bitter pit incidence.

Liming sites before planting is just one more way to increase calcium availability. “I’ve known growers whose orchards get very acidic by the second or third leaf. Under those conditions, calcium is not fully available to the roots,” said Mario Miranda Sazo, Cornell Cooperative Extension fruit specialist.

Sample soil from both the topsoil layer — zero to 8 inches — and the subsoil layer, from 8 to 12 inches. “Do it before planting, and that will tell you how much lime you have to apply,” he said.

Cornell Cooperative Extension personnel also recommend three to four foliar sprays of 1.5 to 2 pounds of 78 percent calcium chloride per 100 gallons, at two-week intervals beginning seven to 10 days after petal fall.

Follow this with two additional sprays at 3 to 4 pounds of calcium chloride per 100 gallons at four weeks and two weeks prior to harvest.

Rootstock plays an important role in bitter pit susceptibility as well. “Based on data I’ve seen in the NC-140 trials, Honeycrisp trees on Bud 9 seem to have less bitter pit than those on M.9 or M.26,” said Lailiang Cheng, Cornell University horticulture associate professor. —**D. Weinstock**

nutrients, such as phosphorus, potassium and magnesium. He also wanted to evaluate Honeycrisp fruit with and without bitter pit, comparing nutrient levels in both the peel and the cortex.

So he and Miranda Sazo found a block of Honeycrisp with moderate amounts of bitter pit alongside a Gala block with no bitter pit at all in western New York. They took leaf and fruit samples from both and analyzed them.

### An imbalance

They duplicated the results of Cheng’s 2009 study that Honeycrisp leaves had even higher calcium levels than Gala leaves. In addition, they found Honeycrisp leaves had lower levels of phosphorus, potassium and magnesium.

Next, they looked at the fruit samples. They separated the peels from the cortex tissue and analyzed them for the presence of nutrients. “The first thing that caught my eye was in both the cortex and peel tissues, Honeycrisp fruit had only half the calcium that Gala had,” Cheng said.

In Gala and Honeycrisp cortex tissue, they found no significant differences in the potassium, magnesium or phosphorus levels. Once they examined Honeycrisp peel tissues, however, they found almost 50 percent higher levels of potassium and phosphorus.

Then they calculated the ratios of potassium to calcium and phosphorus to calcium. Both were much higher in Honeycrisp than in Gala, which Cheng said depicted a nutrient imbalance associated with bitter pit susceptibility.

Visually healthy peels on Honeycrisp apples with bitter pit had lower calcium content than those Honeycrisp free of the disorder, but had higher concentrations of potassium and phosphorus. Pitted peels had the lowest calcium level and the highest concentrations of potassium and phosphorus.

The pattern was clear. Wherever potassium levels were higher, calcium levels were lower.

And because they observed the level differences in peels and not the cortex, Cheng and Miranda Sazo think peel nutrient analysis is a far better indicator of bitter pit development than calcium levels in the cortex. “Peel nutrient levels are very consistent with bitter pit development,” Cheng said. ●

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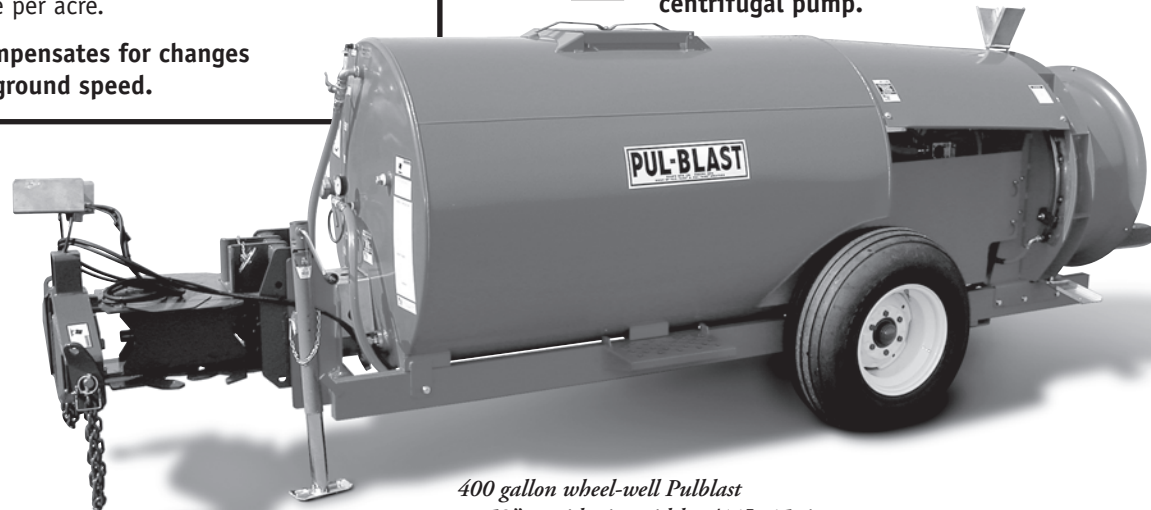
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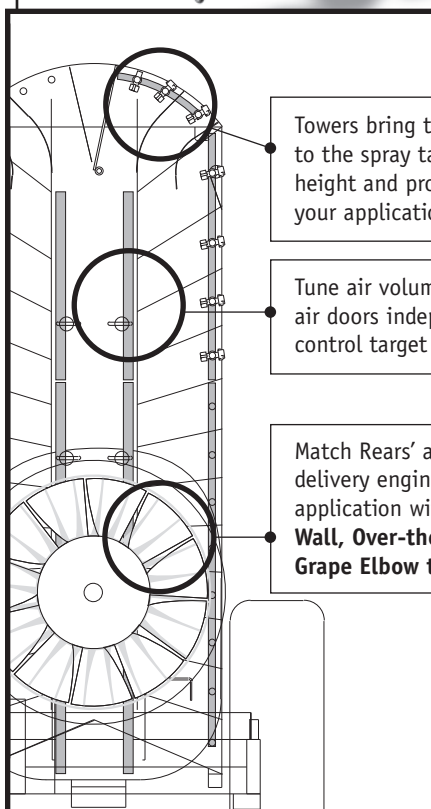
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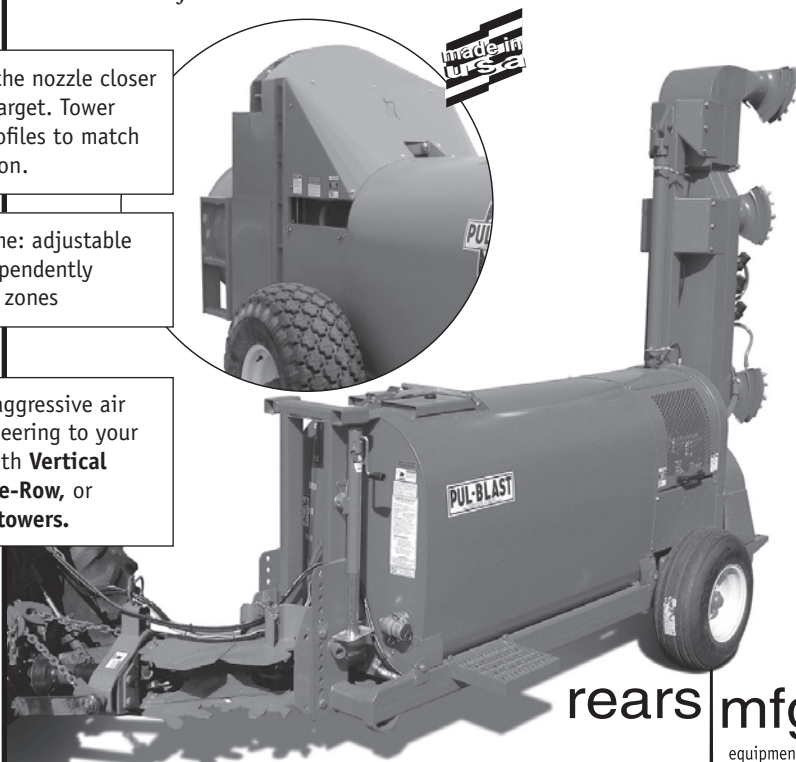
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# Growing with Pazazz!



Sun Orchard Fruit Co., Honeybear Brands' exclusive Eastern U.S. packing partner, will pay a premium for Pazazz apples, similar to those paid for Honeycrisp or other club varieties.

## New York grower Dan Pettit shares his experience growing Honeybear Brands' latest club variety.

by Dave Weinstock

Seeing the potential for high returns, Pettit Farms of Medina, New York, committed five of its 100 acres of apples to Pazazz.

The Honeybear Brands club variety commands a premium, close to Honeycrisp or other club varieties, according to Tim Mansfield, director of marketing and sales for Sun Orchard Fruit Co. of Burt, New York, the exclusive packer in the Eastern United States.

And that's how Pettit Farms first heard of the apple. "We've been doing business with Sun Orchard for 40 years," said Dan Pettit, an owner and general manager who made the decision with his Pettit Farms partners — his dad, Charles, his uncle, Thomas Pettit, and Matt Crandall, a full-time employee.

Pettit likes Pazazz's harvest time, because prior to planting it, the farm devoted late September and early October to picking Empires. "The returns for Empires are not as favorable as they are for some varieties," he said.

Pettit shared his experiences growing Pazazz during the 2016 International Fruit Tree Association's New York Study Tour in July.

### Getting started

The farm's first and second plantings are 4 and 3 years old. Rows are 12 feet apart with 2.5 feet between trees on a three-wire trellis with bamboo stakes for vertical support.

They procured trees for the first planting from a local grower and, for the later one, from a Washington grower. All Pazazz propagation is done under the authority and direction of Willow Drive Nursery of Ephrata, Washington.

Trees from both sources grew on Nic.29 rootstock. Because the nurseries weren't familiar with the trees' growth habits, they chose a vigorous one. "If we were to do it again, we'd possibly try the less vigorous B.9," Pettit said.

They planted the trees on their best ground — cropland converted to orchards that retain moisture and is tile-drained. Outside of their placement, the trees get no special treatment.

In years one and two, the Pettits applied 200 pounds of calcium nitrate twice a year — when the trees began to green and again a month later. For year three, they applied 100 pounds twice.

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"In year four, we did none; that's sort of an experiment we have going on our farm," he said. "Pazazz has that large fruit size and our thought was, by reducing the nitrogen, it would help to reduce that fruit size."

Pazazz wants to be a big apple, especially in early plantings, Mansfield said. "Over time, the sizing will moderate, but these young trees want to put out large retail-sized fruit when they first get going."

#### Easy keeper

Don Roper, Honeybear Brands marketing vice president, said the variety lends itself to conventional practices, though Washington growers are doing well with it in organic operations, too. "In the East, it fares much better when grown conventionally, due to the challenges of the region's moisture-rich environment," he said.



Dan Pettit

Pettit said it's an easy tree to grow. They use bamboo for vertical support to guide leaders but he thinks the trees don't need them. "I'm not sure they're necessary because it does grow wild, like a bush," he said.

Pruning demands are no different for Pazazz either. The Pettits make five cuts every year on all their trees.

Thinning wasn't an issue this year mostly because of the previous spring's weather. Pettit Farms didn't escape the early warming week in late March, followed by the deep freeze in early April that afflicted most of the Northeast this year. "If we had thinned, I don't think we'd get much of a crop," Pettit said.



Tim Mansfield

In the second year, they were just looking to get the blooms off the tree. They applied one-half pint of carbaryl per 100 gallons this

year. "It turned out well," he said.

They haven't embraced mechanization, although they narrow their tree shape into what Pettit describes as a tall, slender spindle. Fruit is generally no farther than 2 feet from the trunk.

Pazazz growers must be careful to not over-crop limbs. "If you over-crop limbs, they have a tendency to rip off," he said. "Planting the trees closer together might be a good thing, keeping the fruit in."

In last year's harvest on 3-year-old trees, they picked twice, taking 80 percent of the fruit the first time. Seven days later, they picked the rest.

The Pettits thought they might have bitter pit problems, given that Honeycrisp is one of the parents of Pazazz, and they did in their younger trees. "Our second-year crop was riddled with it, but our third-year crop had very little," he said.

#### Postharvest

This will be Sun Orchards' second year marketing the apple, with 10 Eastern U.S. growers currently. "It has a good, complex flavor that should sell well," Mansfield said.

The apple's acid is high at harvest. "Similar to Pink Lady, it needs to sit in storage for up to a month to reach an optimal balance between acid and sugar," he said, but added that coming out of storage, the apple should sell well through July.

Roper said Honeybear Brands sold Pazazz to 24 markets last year, and he predicted the company will double that number in 2016 because production from all four growing zones will provide more volume. Pazazz is grown in Washington, Minnesota, New York and Nova Scotia, with test plantings in Chile and New Zealand. ●

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# Thinning without carbaryl

## Darwin thinning followed by MaxCel application shows promise for Galas and Honeycrisps.

by Dave Weinstock

**W**hole Foods Markets accepted apples treated with carbaryl for the last time Sept. 25, marking the fifth organophosphate chemical it has banned from use on products sold in its stores.

Whether Whole Foods' actions become a trend for other supermarket chains — or if the federal government or states consider canceling the registration for carbaryl — remains to be seen. Regardless, new research shows the promise of mechanical thinning as an alternative.

"I'm not sure that its loss is imminent, but it seems to be a threat every year,"

said Rod Farrow, a Waterport, New York, apple grower and vice president of the International Fruit Tree Association.

It would be a tough loss for Northeastern U.S. fruit growers — nearly all chemically thin in the early part of the year using NAA (naphthaleneacetic acid) plus carbaryl or BA (benzyladenine) plus carbaryl. "If carbaryl were removed from the market, apple growers in the Northeast would not achieve adequate thinning with NAA or BA alone," said Mario Miranda Sazo, a fruit extension specialist in Cornell Cooperative Extension's Lake Ontario Fruit program.

That's why Farrow approached Miranda Sazo three years ago with a request to look at mechanical thinning as an alternative to using carbaryl. After securing funding from the U.S. Department of Agriculture Sustainable Agriculture Research and Education program and New York Apple Research and Development, Miranda Sazo set about the three-year study.

First-year results were not encouraging because fruit size ended up being too

small. However, Miranda Sazo reported to growers who attended the 2016 IFTA New York Study Tour in July that he and Lamont Farms personnel have since been able to employ techniques that didn't reduce fruit size and produced fruit at rates comparable to standard chemical thinning programs.

### The proper rpm

The Lamont Farm canopies form a very rectangular tree, with a compact box and shoots no more than 12 to 14 inches from the trunk. "We believe they are the right canopies for using the thinner," Miranda Sazo said.

Trees were 7 to 9 years old and trained to a super spindle system. All were planted on Bud 9 rootstock in 2-foot tree spacings with 11 feet between rows.

In May 2014, the first year of the trial, Jason Woodworth, one of Farrow's Lamont Farm partners, ran a Darwin thinner through four rows of Gala and Honeycrisp trees at 240 rpm at 5 mph. King flowers were at 70 to 80 percent bloom and balloon stage for the laterals.


It was too hard on the cultivars. "When we evaluated it, it was a lot harder on the apples, especially the Honeycrisps. We lost shoots and broke spurs," Miranda Sazo said.

So, in 2015, on the rows they tested the previous year at 240 rpm, they reduced thinner speeds to 220 and 200 rpm. When Miranda Sazo measured the return blooms, he found the reduced speeds were appropriate for Honeycrisp, but that Gala might respond better at an even lower speed. For this year's trial, Miranda Sazo and Woodworth further reduced the speed in the Gala rows, from 220 to 200 rpm and from 200 to 180 rpm in the respective blocks.



Jason Woodworth


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They also applied the Darwin thinner closer to the trunk so that when its cords hit the canopy, some also hit the trunk or the wire, retracting when they struck those surfaces. "They were much less invasive in the canopy that way," he said.

Thus far, they have determined the optimal operational speeds in super spindles lie within the 180- to 200-rpm range. "In a heavier canopy, you could go to 220, but in this one, it would have been too invasive," said Miranda Sazo.

#### Follow with MaxCel

In 2014, they ran the string thinner through the rows on May 17 and applied MaxCel (benzyladenine) on June 1 at one gallon per acre. The results were very disappointing, with a 30- to 40-gram decrease in fruit weight in Galas, largely attributable to the string thinning treatments at high rpm.

Last year, in addition to dropping the Darwin's speed, they applied MaxCel at the same rate when fruit measured 7 to 9 millimeters. The change in speed reduced tree damage, and fruit regained the weight that had been lost in the 2014 trial, which is the result they wanted.

This year, Miranda Sazo is doubling down on the MaxCel applications. He's repeating the Darwin thinning followed

by a single MaxCel treatment on some rows, while on others, he's following with a second MaxCel application seven days after the first one.

"We expect to see an even better improvement on fruit size from the second application on Gala at harvest," he said.

#### Getting there

At a stop on the IFTA summer tour in July, Farrow related how he and his partners have built the farm's success by producing and marketing fruit of a consistent size and quality. "We like to peak in 88s," he said, "but we target the sizes where the greatest value lies in each variety."

So far, he likes what he sees in Miranda Sazo's trial, though there is one last glitch he'd like solved. "The apples tend to clump on the branches," he said, "which means they don't color as well."

In mid-June, Lamont Farms personnel laid reflective mulch material down along the rows, thinking it might improve fruit set and color, at a cost of \$600 per acre. "You can get 10 years of use if you don't drive on it," Miranda Sazo said. He said they initially placed it between the rows and then, three years ago, moved it within the rows. "Color is improved easily by 20 to 30 percent minimum, if not more, in the lower part of the canopy," he said. ●



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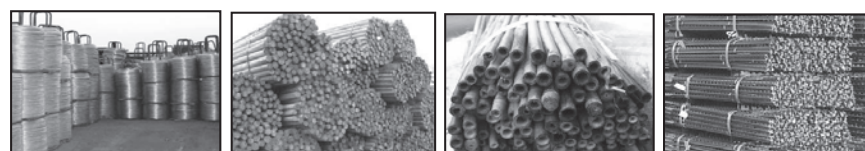
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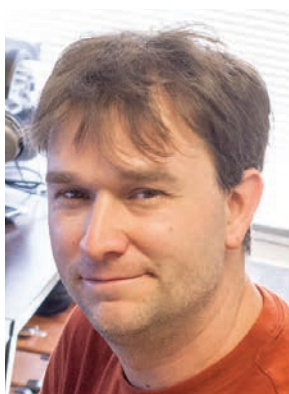
# Fighting fire blight

**Antibiotics and Apogee continue to top the list of control products.**

by Dave Weinstock

A new study by researchers in New York shows that antibiotics remain the tool of choice for fire blight prevention in conventional apple orchards and that Apogee can be used in young blocks without limiting growth.

Fire blight hit Eastern New York growers especially hard this year and never stopped, thanks to a one-two punch of heat and some untimely early summer windstorms in the Lake Champlain and Hudson Valley apple growing regions. "All it takes is a few storms and 30 to 40 bacteria and you've got trouble," said Kerik Cox, Cornell University School of Integrative Plant Science associate professor.



Kerik Cox



Amelia Zhao

Apple growers use two chemical tools to control fire blight: antibiotics to suppress growth of the bacterial pathogen *Erwinia amylovora*, in its blossom blight phase and also later in the season, and Apogee (prohexadione calcium) to slow down and toughen tender growth during the shoot blight infection phase.

However, concerns about antibiotic resistance have raised questions about whether they should be used widely, and growers are hesitant to apply Apogee to young trees, even though they are especially susceptible.

Researchers in New York infected four plots in one orchard with fire blight to evaluate best treatments last spring and summer. They then treated the trees with various fire blight control products; some trees were treated after infection with Apogee and a systemic acquired resistance inducer.

"Overall, most of the products did fairly well controlling both blossom and shoot blight," though the antibiotics showed the strongest effects, said Amelia Zhao, a senior neuroscience major at Hobart and William Smith Colleges in Geneva, New York, who conducted the study with Cox.

In the study, streptomycin, kasugamycin and oxytetracycline topped the list of fire blight control products.

Luckily, antibiotic resistance is not a problem in New York — yet. Nineteen orchards there reported streptomycin-resistant disease in 2012 and 2013, but there have been no reports since.

"There have been no reports of kasugamycin and oxytetracycline of fire blight pathogen resistance in New



DAVE WEINSTOCK/GOOD FRUIT GROWER

Participants in the International Fruit Tree Association New York Study Tour saw lots of orchards with fire blight in them alongside the roads of Orleans and Monroe counties.

York," Cox said.

Zhao presented the findings at the 2016 Cornell Fruit Field Day, attended by Finger Lake region growers and International Fruit Tree Association New York Study Tour participants in mid-July.

## Trial setup

Fire blight is a bacterial infection exacerbated by early summer's heat, which helps the bacteria multiply. It spreads by means of rain, birds and insects (see "Blight and bugs," *Good Fruit Grower*, September 2016).

There were four blocks in the research orchard, providing four replicates for each treatment.

Zhao and Cox applied treatments at pink, 20 percent bloom, 40 percent bloom and 80 percent bloom using a motorized backpack application. On May 12, the day after the 80 percent bloom application, they used hand pumps to inoculate the orchards with fire blight bacteria.

Control trees, which were untreated, presented 60 percent blossom blight incidence and 23 percent shoot blight incidence.

For the three most effective treatments — streptomycin, kasugamycin and oxytetracycline — incidence of blossom blight was under 10 percent and shoot blight was under 5 percent.

Biocontrol products were less effective at controlling fire blight, reducing blossom blight to 20 percent and shoot blight below 10 percent. But Zhao and Cox enhanced their effectiveness to levels similar to those of antibiotics by adding fungicides to two of them.

Adding Magna-bon CS 2005 (copper sulfate pentahydrate) to Regalia (*Reynoutria sachalinensis*), a SAR



## ONLINE

Look for more coverage of the 2016 IFTA New York Study Tour at [goodfruit.com](http://goodfruit.com) and in future issues.



product, almost halved both blossom blight to 10 percent and shoot blight incidence to 3 percent. Similarly, adding Rampart (mono- and di-potassium salts of phosphorous acid) to Serenade (*Bacillus subtilis*) cut blossom blight by two-thirds to 3 percent and increased shoot blight incidence slightly to 3 percent.

The next best contender was a program of Apogee and Double Nickel (*Bacillus amyloliquefaciens*), a biological control product, at full bloom.

Apogee thickens plant cell walls, slowing the invasion of infections occurring later at bloom. Bacteria in Double Nickel produce antimicrobial metabolites to reduce the populations on the stigmatic surface.

Though not as effective at fire blight control as antibiotics, they still kept blossom blight down to less than 30 percent and shoot blight to 5 percent, Zhao said.

### Apogee in young blocks

Typically growers are hesitant to use Apogee on younger trees because they don't want to limit their growth. That's why Zhao and Cox also tested its use in young stock. "We wanted to see if they would control blossom and shoot blight without using antibiotics and negatively affecting growth," Zhao said.

They applied Apogee in both early

and late treatments. The early treatment — done at pink — was a combined application of Apogee and Double Nickel. The late treatment, Apogee by itself, was done at petal fall.


They applied Apogee in both low and high concentrations in the early treatment and in high concentration only in the late treatment. The low concentration treatment was 3 ounces per 100 gallons, while the high concentration treatment was 6 ounces per 100 gallons.

Double Nickel was applied at one rate, 32 fluid ounces per acre.

Early Apogee treatments kept both blossom and shoot blight incidence below 10 percent. Late treatments took blossom shoot incidence down to 12 percent and shoot blight to less than 5 percent.

Apogee, in both low and high concentrations and early and late applications, did not negatively impact fruit size. "All the treatments showed good increases in fruit size," she said.

Two of the trial products — streptomycin and late Apogee treatments — lived up to grower concerns, stunting primary shoot growth. Overall primary shoot length averaged 98 inches. Streptomycin-treated tree primary shoots reached only 78 inches and late Apogee treatments produced 70-inch primary shoots. ●



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**2016 WAEF Volunteer of the Year award recipients Dee Schoenmakers, Vanessa Reyes-Romero and Emily Bautista-Herd** representing AgroFresh.

### Washington Apple Education Foundation honors volunteers

The Washington Apple Education Foundation awarded three volunteer of the year awards during its annual appreciation breakfast on Aug. 25 at Cave B Inn in Quincy, Washington.

Vanessa Reyes-Romero of Yakima was chosen alumni volunteer of the year, marking the first time the foundation has handed out the award. Reyes-Romero started volunteering the same year she became a WAEF scholarship recipient. Since then she has completed her master's degree in criminal justice at Seattle University and is preparing for law school.

Dee Schoenmakers of Wenatchee was named individual volunteer of the year. She began with WAEF while employed by the Washington State Horticultural Association and continued her involvement when she was hired by Van Well Nursery. For 15 years, Schoenmakers has been charged with handling registration transactions at the foundation's Wenatchee and Yakima golf tournaments.

AgroFresh received the company/group volunteers of the year award. AgroFresh volunteers La Verne Bergstrom (Wenatchee), Darrell Riddle (Yakima), Garret Babst (Wenatchee) and Emily Bautista-Herd (Wenatchee) led the company's involvement in 2016 with volunteer efforts including serving on the scholarship selection and farmworker education committees, assisting at the scholarship luncheons and golf tournaments, serving on the board of directors, posting training jobs for WAEF students, and coming together to raise funds from their coworkers to award their own AgroFresh employee funded scholarship award granted to a WAEF Wish List student. Bautista-Herd represented AgroFresh and received the award.

The Washington Apple Education Foundation is the charity of the tree fruit industry. The foundation receives help from more than 150 volunteers. This year, it supported 225 college students and awarded over \$1 million in scholarships. For more information, please visit the foundation's website, [www.waef.org](http://www.waef.org), or contact the foundation office at (509) 663-7713.

### Dramm Corporation celebrates 75 years

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### Clarification

A story in the August 2016 issue about Bernardita Sallato, Washington State University's cherry breeding program manager, contained some unclear information. The story reported that the breeding program has selections in phase two and phase three trials; there is only one selection in phase three. Also, the story reported that breeding programs in her home country of Chile are funded by the university, but they receive both public and private money.

### Covering the fruit industry

As you well know, our covers are something special.

We love to bring stunning images and beautiful artwork into your hands with each issue. It's a wonderful tradition made possible by talented photographers and artists, including some with ties to the fruit industry. And this month's cover is a perfect illustration, so to speak. Vicki DeRooy, a longtime art instructor in Wenatchee, Washington, created her colored pencil drawing from a photo taken at McDougall and Sons in Wenatchee, where Vicki works part-time in quality control.



We feel fortunate to share the work of Vicki and other artists and photographers who use their creative flair to highlight the tree fruit and grape growing industry. Our extra-large format — one of the biggest magazines published in any field — is a great canvas to feature the beauty of fruit and everything it entails.

With that in mind, we're getting ready to make our selections for next year's covers, and we'd like to invite accomplished photographers and artists to submit their work. If you know of someone, spread the word. You can find more details and submission guidelines on our website at [www.goodfruit.com/upload-your-cover](http://www.goodfruit.com/upload-your-cover). —Jared Johnson

In 1941, Manitowoc florist John G. Dramm invented the 400 Water Breaker Nozzle to water plants quickly and efficiently while not damaging the plants. Today the company has expanded into four business segments: retail, commercial, DRAMMwater, and fertilizer.

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For more information about Dramm's new and current products, visit [www.dramm.com](http://www.dramm.com).

### Botector biofungicide receives California registration

The California Department of Pesticide Regulation has approved the addition of stone fruit and almonds to the Botector label, Westbridge Agricultural Products announced.

The registration change provides stone fruit and almond growers a new tool in preventing blossom blight and brown.

Botector is an organic biofungicide that is also registered for the prevention of botrytis in grapes, tomatoes and berries, and anthracnose, phomopsis and rhizopus rots of berries.

The active ingredient in Botector consists of two strains of *Aureobasidium pullulans*, a beneficial fungus that is commonly found on the surface of fruit and flowers. Botector's mode of action is "competitive exclusion", whereby beneficial organisms outgrow disease pathogens, robbing them of essential nutrients and space for growth. Because *A. pullulans* has evolved on the surface of plants, it will survive through irrigation or rain events.

For questions about Botector or the Westbridge product line, call (800) 876-2767 or visit [www.westbridge.com](http://www.westbridge.com).

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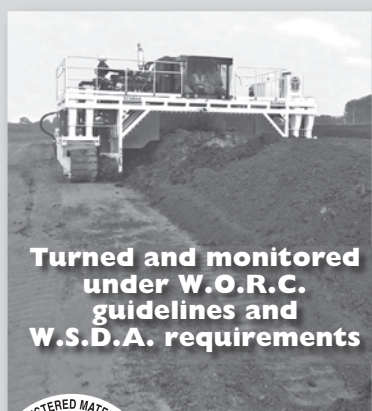
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## GOOD TO GO

See a complete list of events on the Calendar at [www.goodfruit.com](http://www.goodfruit.com)

## OCTOBER

**October 11-13:** FSMA Preventive Controls Qualified Individual (PCQI) training, Manteca, California, [dfaofca.com](http://dfaofca.com).

**October 14-16:** Produce Marketing Association Fresh Summit, Orlando, Florida, [www.pma.com/events/freshsummit](http://www.pma.com/events/freshsummit).

## NOVEMBER

**November 7-11:** American Society of Farm Managers and Rural Appraisers (ASFMRA) Annual Meeting and Trade Show, "Agronomics — Performance Under Pressure," Indian Wells, California, [asfmra.org](http://asfmra.org).

**November 8-10:** The Methyl Bromide Alternatives and Emissions Conference, Orlando, Florida, [www.mbao.org](http://www.mbao.org).

**November 9-10:** Northwest Cherry Research Review, Wenatchee, Washington, [www.treefruitresearch.com](http://www.treefruitresearch.com). For more information, contact Kathy Coffey, (509) 665-8271, ext. 2.

**November 10-11:** Washington State Grape Society Annual Meeting and Trade Show, Grandview, Washington, [www.grapesociety.org](http://www.grapesociety.org).

**November 11-13:** Tilth Annual Conference, Wenatchee, Washington, [seattletilth.org/special\\_events](http://seattletilth.org/special_events).

**November 14-15:** Sustainable Ag Expo, San Luis Obispo, California, 805-466-2288, [www.sustainableagexpo.org](http://www.sustainableagexpo.org).

**November 15-17:** FSMA Preventive Controls Qualified Individual (PCQI) training, Modesto, California, [dfaofca.com](http://dfaofca.com).

**November 22:** Stone Fruit Research Review, CPAAS, Prosser, Washington, [www.treefruitresearch.com](http://www.treefruitresearch.com). For more information, contact Kathy Coffey, (509) 665-8271, ext. 2.

**November 28-30:** FSMA Preventive Controls Qualified Individual (PCQI) training, Manteca, California, [dfaofca.com](http://dfaofca.com).

## DECEMBER

**December 5-7:** Washington State Tree Fruit Association 112th Annual Meeting and NW Hort Expo, Wenatchee Convention Center, Wenatchee, Washington, [www.wstfa.org](http://www.wstfa.org).

**December 5-9:** Irrigation Show and Education Conference, Las Vegas, Nevada, [info@irrigationshow.org](mailto:info@irrigationshow.org); [www.irrigationshow.org](http://www.irrigationshow.org).

**December 6-8:** Great Lakes Fruit, Vegetable and Farm Market Expo, Grand Rapids, Michigan, [www.glexpo.com](http://www.glexpo.com).

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## WINE GRAPE PLANTS

**CONCORD GRAPE PLANTS** for sale. Cabernet Sauvignon #8, Merlot #3, Syrah Phelps clone. 509-832-2066. Jeff.



# LAST BITE

More Young Growers at [goodfruit.com/yg](http://goodfruit.com/yg)

## Monica Libbey

grower / Manson, Washington

age / 33

crops / Apples, cherries and pears

business / Rocky and Christy Orchard

**family background** / Both sides of Monica's family have long histories farming in the Chelan Valley, in Manson and long ago in Stehekin, Washington. Her parents are Rocky Libbey and Christy (Buckner) Libbey.

### How did you get your start?

“I grew up in Manson, living on orchard property my entire life. I went off to college at Western Washington University. Growing up, I never thought I'd want to be an orchardist. I worked all the summer jobs helping out in the orchard and I thought it was terribly boring, so I got my environmental policy degree and started working for the City of Wenatchee. At that point I decided I didn't like the office. I wanted to be doing something in agriculture. Eventually it finally clicked — “Why not just come back home and work in the orchard?”

### Why return to the farm?

“There were a lot of different factors. One, I really love being outside. It's good that I don't mind being on a computer because nowadays there's a lot of computer work required of orcharding. Two, I think agriculture is incredibly important and provides a value to society. Three, I loved growing up in Manson and Lake Chelan, and I've been a little saddened by what I see as a trend happening here. A lot of the orchards are getting pulled out and getting turned into 5-acre houses, second homes. So, I kept thinking, how can this trend change? What better way to try to put my effort into stopping this trend than by diving into my heritage? The only way I could do that was by coming back to farm. If the generations to come can come in and buy the orchards and continue farming, that'll make me very happy.

### What are your current challenges?

“One of the more intriguing things I've been learning is our chemical thinning program. It's a science; however, there's an art to it, too. Every block is different. Dad knows the differences, because he's been farming them for so long. Right now, the chemical thinning is one program that I'm still trying to glean information about. The how, when and what he decides to do is so full of variables.

### Do you have any tips for young growers?

“I try to keep a daily journal of what we're doing, or when we've calibrated something, or when we do certain things through the season. Those notes are going to help me going forward.

“Looking back at my first year... I'm not having to reinvent the wheel each season.”

by TJ Mullinax  
More from this interview  
and other Young Growers  
at [goodfruit.com/yg](http://goodfruit.com/yg).



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the interview

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