CONVENTION SPECIAL

# GOOD FRUIT GROWER

DECEMBER 2016 www.goodfruit.com VOL. 67, NO. 17

**Growers of the Year**
**Mark and Bill Zirkle**

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*2016 Good Fruit Growers of the Year Bill and Mark Zirkle at their orchard in Selah, Washington. See their story beginning on Page 48.*

## Centerpiece



## Hort Show Preview



## Good to Know



## Good Grape Grower

*Technicians and students analyze apple varieties for resistance to fire blight on apple trees during a trial at Washington State University's Columbia View research orchard near Orondo, Washington, in June. Read more about their research beginning on Page 71.*

## First Bite



## Good to Know



## goodfruit.com/es



## Also in this issue



## Good Point



## Last Bite



## Departments

ROSS COURTNEY/GOOD FRUIT GROWER

## On the cover

*Growers of the Year Mark and Bill Zirkle of Zirkle Fruit Company in Selah, Washington.*

BY TJ MULLINAX, GOOD FRUIT GROWER

*goodfruit.com*





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# First Bite

*O. Casey Corr*, **Managing Editor**

# Introducing our Spanish website

**We're bringing our essential information to Spanish-speaking growers.**

I'm pleased to announce that *Good Fruit Grower* has launched a Spanish language website, *www.goodfruit.com/es*. There you'll find translations of articles from past issues, new essays by researchers and others and videos of horticulture experts. All in Spanish.

The Spanish site follows months of discussion and collaboration with growers, researchers and others who helped guide this project. The project flows from our mission of providing educational information to growers and responds to an obvious need. Look at attendance at Spanish-language sessions at any industry meeting: The overflow crowd proves a need for quality horticultural information and industry news in Spanish. Who best can fulfill that need than this magazine?

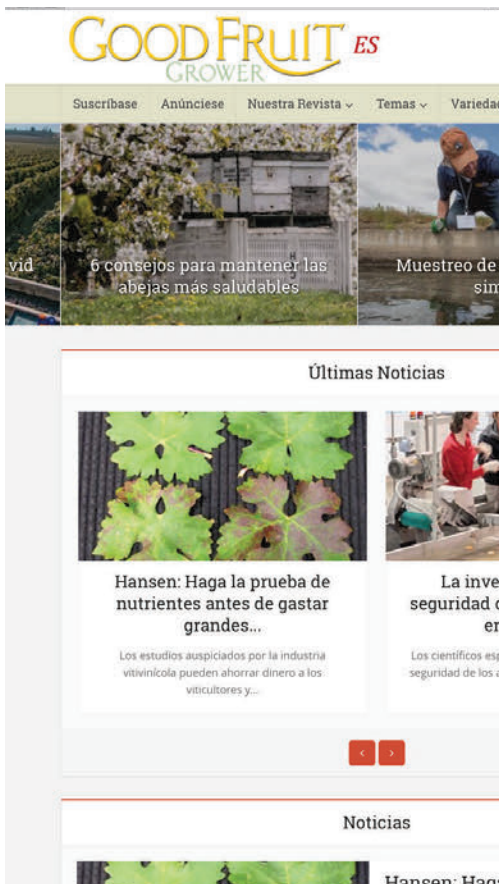
In recent years, the staff at *Good Fruit Grower* has developed new ways to make our content accessible and immediate. We launched accounts with Twitter, YouTube, Facebook and Instagram. We improved our popular *eFlash* newsletter for weekly delivery of news and information. We developed an app for quicker display on mobile devices. We engineered our website to improve its "searchability" and speed. Now we're taking another step. We're ensuring that *Good Fruit Grower's* essential information reaches every stakeholder, from field representatives to growers, for whom Spanish is their first language.

The project has been a goal of mine since I joined the magazine in 2013. I thought that we were not completely fulfilling our mission as a grower-owned publication unless we fully engaged and served a vital community in our industry.

Launching the site took time and resources, which is why I'm grateful to Audience Development Manager Maria Fernandez, project lead; to Senior Editor Shannon Dininny, who oversaw development of editorial content; to Digital Producer TJ Mullinax for building a terrific website; and to our Spanish-language sponsors, especially G.S. Long Co., whose support helps offset added cost of translation and editing. Initially, we are posting at least three new articles timed with each of our 17 issues per year. As we smooth our processes, and if we secure additional resources, we hope to increase the number and frequency of Spanish articles.

We wanted our Spanish content to reflect the same high standards that we bring to our English content. For that reason, we looked for professionals with experience translating technical, horticultural topics; who are familiar with our intended audience; and who had good judgment for situations where certain English terms did not exactly transfer into formal Spanish.

We've had tremendous support for this project from the outset, especially from the Washington State Fruit Commission, owner of this magazine, and Commission President B.J. Thurlby. We've had constant guidance and support from the advisory board we formed for this project. My thanks go to all of the advisers: Ofelio Borges, Washington State Department of Agriculture; Victor Bueno, Washington Fruit and Produce Co.; Michael Gempler, Washington Growers League; Gwen Hoheisel, Washington State University; Karen Lewis, Washington



State University; Frank Lyall, Yakima County Farm Bureau; Vicente Medelez, Opportunities Industrialization Center of Washington; Louisa Mora, Opportunities Industrialization Center of Washington; Jacqui Gordon Nunez, Washington State Tree Fruit Association; Jamie Ramon, Washington State Department of Agriculture; Mario Miranda Sazo, Cornell University; and Flor Servin, Washington State Department of Labor & Industries. Each of them made this project better.

Additional thanks go to our translators, Alicia Cardenas of ACS Translation Services and Pablo Pamlandez of the University of Washington.

We hope the grower community responds well to the Spanish site. Please help spread the word about this new resource by sharing with others a link to the site. If you want a Spanish language flier for the site, let me know.

With this, as with all our efforts, we appreciate your feedback and suggestions for improvements. As employees of a grower-owned publication, we work for you. You can contact me at *casey.corr@goodfruit.com*. Spanish speakers can contact Maria Fernandez at *maria@goodfruit.com*.

***

My congratulations to *Good Fruit Grower*'s 2016 Growers of the Year, the father and son team of Bill and Mark Zirkle, who were selected by our magazine advisory board. The Zirkles are prominent leaders and innovators in our industry, who are profiled in this issue by Senior Editor Shannon Dininny and Photojournalist TJ Mullinax. The Zirkles will receive the award later this month in Wenatchee at the annual meeting of the Washington State Tree Fruit Association.

***

Good news for those attending the hort show in Wenatchee: *Good Fruit Grower* is again teaming up with our friends at Wilbur-Ellis for a drawing to win a John Deere Gator. You can get entry forms at the Wilbur-Ellis booth or at our booth. We had a lot of fun doing this last year, when the winner was Scott Jacky, manager of orchard operations for Valley Fruit in Wapato, Washington. There's a video of him zooming around in the parking lot on our Facebook page. ●

*O. Casey Corr is managing editor of Good Fruit Grower.*

*The first section of this column is reprinted in Spanish on Page 18.*

# QUICK BITES

*People and industry in the news.*

**Read more Fresh Updates at goodfruit.com/fresh-updates**

## Prengaman joins *Good Fruit Grower*

Kate Prengaman, an award-winning science writer, has been named associate editor *of Good Fruit Grower*.

A resident of Yakima, Washington, Prengaman earned a bachelor's degree in biology and environmental science, *magna cum laude*, from the College of William and Mary and a master's degree in science journalism from the University of Wisconsin-Madison.

**Kate Prengaman**

"Kate is a talented writer who will further strengthen *Good Fruit Grower*'s science and research reporting, long a hallmark of our magazine," said Casey Corr, managing editor. "Our mission as a grower-owned publication is providing essential, educational information. I know readers will appreciate the depth and accuracy of Kate's articles on research and other important topics."

Prengaman most recently served as the natural resources reporter for the *Yakima Herald-Republic*. She will be based in the magazine's Yakima office.

TJ MULLINAX/GOOD FRUIT GROWER

**Rob Blakey, shown here in a Pasco, Washington, orchard, specializes in postharvest issues.**

## Washington State hires tree fruit extension specialist

Washington State University has hired Rob Blakey for an endowed position as tree fruit extension specialist in postharvest information and technology transfer.

Prior to coming to WSU, Blakey worked as a research horticulturist for a leading multinational supplier of fresh subtropical fruits in South Africa, specializing in avocado physiology. He earned his doctoral and undergraduate degrees from the University of Kwazulu-Natal in South Africa.

Blakey is located at WSU's Irrigated Agriculture Research and Extension Center in Prosser, Washington. He and his wife, Emily, who grew up in Spokane, Washington, have two sons. (*For more about Blakey's hire, see article beginning on Page 74.*)

## Oviedo is new regulatory information specialist at NHC

Marisol Oviedo

Marisol Oviedo is the new regulatory information specialist for the Northwest Horticultural Council.

Oviedo has a bachelor's degree in biology/chemistry from Heritage University. She previously worked for the Yakima Health District in Yakima, Washington, as an environmental health specialist.

In her role, Oviedo will be responsible for monitoring the federal register for changes of interest or concern to the tree fruit industry, such as pesticide tolerances. She also will handle policy work for organic fruit.

Oviedo grew up in Wapato, Washington, and is fluent in Spanish.

## Center for Produce Safety awards research grants

The Center for Produce Safety has awarded more than $2 million toward 10 new research projects directed at answering critical questions in specific areas for food safety producers of fruits and vegetables.

The objective of these projects is practical research data that can be used at all levels of the supply chain.

Recipients include:

—Mary Anne Amalaradjou, University of Connecticut: *Listeria monocytogenes* growth and survival on peaches and nectarines as influenced by stone fruit packing house operations, storage and transportation conditions.

—Kyle Bibby, University of Pittsburgh: Developing cross-assembly phage as a viral indicator for irrigation waters.

—Trevor Suslow, University of California-Davis: Resolving postharvest harborage sites of *Listeria monocytogenes*.

—Martin Wiedmann, Cornell University: Remotely sensed and field-collected hydrological, landscape and weather data to predict the quality of surface water used for produce production.

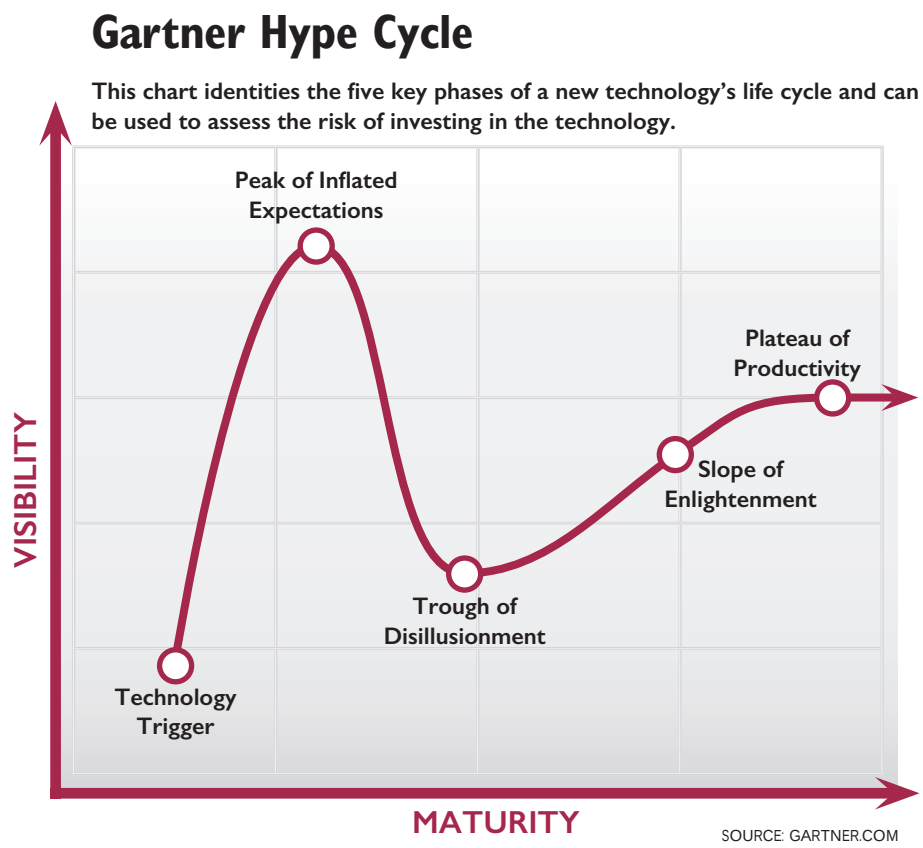
—Meijun Zhu, Washington State University: Control of *Listeria monocytogenes* on apples through spray manifold-applied antimicrobial intervention.

The group also has announced its 2017 request for proposals on food safety research, with $3 million available to fund approved research projects.

"The mission for the Center for Produce Safety is to provide and share ready-to-use, science-based solutions to prevent or minimize produce safety vulnerabilities," Drew McDonald, vice president for quality, food safety and regulatory affairs at Church Brothers and chair for the CPS Technical Committee, said in a statement. "I expect that the outreach and interaction through discussions and on-farm visits with researchers who truly want to understand the realities of our processes and products will result in even better proposal alignment with our industry's needs."

To date, the Center for Produce Safety has funded 120 projects with more than $20 million.

# Tree fruit technology road map




## "The New Normal: Continuous Change"

*by Jim McFerson*


Jim McFerson

"Continuous Change," the theme of the Washington State Tree Fruit Association 112th Annual Meeting, is a familiar challenge to the Washington tree fruit industry. Every year in its 112-year history, this meeting seems to confront a "new normal." What may be distinctive now, however, is the pace of that change — the scary rapidity with which the new normal becomes old. Everything about the tree fruit industry now moves at an accelerated pace. Globalization and the digital revolution have been catalytic in this phase shift.

Every once in a while, though, the continuity of change is disrupted significantly. For example, look back at the hugely disruptive impact of genuinely transformational technologies: federal irrigation projects, dwarfing rootstocks and high-density systems, new scion cultivars, PVC pipe, integrated pest management and biocontrol, plant growth regulators, field packing into bins, controlled atmosphere and 1-methylcyclopropene, high throughput optical sorting and so on. The success of our tree fruit industry owes much to these innovations, both hugely disruptive and hugely positive.

*The road map, emerging out of the turbulent economic times of the late 1990s, ... was an explicit and pioneering effort to develop a proactive strategy to enhance the profitability and sustainability of our national tree fruit industries in the face of globalized trade and technology.*

Certainly, it is easy enough to look backward, identifying and tracking such disruptions, from initial introduction through extensive adoption. One excellent source for that retrospective examination is the proceedings of our annual meetings. However, when these technologies were actually new, it was not at all clear whether they were winners or losers, game-changers or hype. This meeting in 2016 should help answer that tough, and often very expensive, question. Several sessions will feature exciting presentations on potentially disruptive technologies that will help our industry deal with challenges like consumer expectations, food safety, maximizing revenues, and transitioning to the next generation of growers.

Now the question becomes: "Which of these technologies should I be incorporating into my tree fruit operation, and when?" A useful approach to assessing the risk of investing in a given technology or application uses the Gartner Hype Cycle (*www.gartner.com/technology/research/methodologies/hype-cycle.jsp*), which identities the five key phases of a technology's life cycle (*see graphic*). The cost: The benefit of early adoption versus a wait-and-see approach is exceptionally difficult to predict, but those decisions based on solid, science-based information can help separate real drivers from hype.

That is exactly what many of the presentations in the WSTFA annual meeting seek to do, providing solid, relevant examinations of potentially disruptive technologies like a prototype robotic harvester, commercialization status of the new Washington State University apple cultivar known as Cosmic Crisp, new rootstocks, trellis engineering, solid-set canopy spraying, overhead netting, optimizing water use, the WSU Decision Aid System, and decision support systems for crop protection and crop load management.

The technologies central to many of these presentations can be traced to the National Tree Fruit Technology Road map, the subject of the 37th Batjer Address. The road map, emerging out of the turbulent economic times of the late 1990s, was a collaborative effort of industry stakeholders and the U.S. research and extension community. It was an explicit and pioneering effort to develop a proactive strategy to enhance the profitability and sustainability of our national tree fruit industries in the face of globalized trade and technology. Road map participants believed future markets for our products would be consumer-driven and quality-oriented, with production increasingly distributed worldwide.

Further, the road map asserted the very technologies driving this shifting market are the ones that would empower our agricultural producers to compete successfully. It was an attempt to define our future rather than simply react as it zoomed toward us, developing and adopting new technologies at the speed of the real word. While aspirational, it was also oriented toward outcomes of real world significance.

The road map also featured a novel public-private partnership. A dedicated team comprising Jim Cranney, then at USApple, Phil Baugher of Adams County Nursery, Herb Aldwinckle of Cornell University, Clark Seavert of Oregon State University and Dariusz Swietlik of the U.S. Department of Agriculture's Agricultural Research Service joined Fran Pierce of Washington State University and me, then in my role as manager of the Washington Tree Fruit Research Commission. Initially driven by the desperate economic situation faced by the

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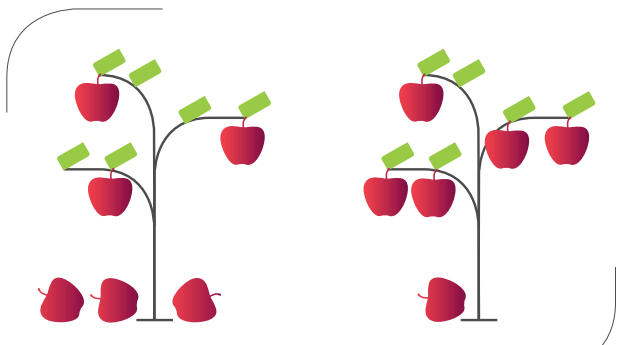

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*The full story of the road map itself is like a sausage: The end product is a lot more interesting than the process to produce it.*

Washington apple industry in 2000, we quickly realized the sort of approach and technological innovation we envisioned was much more broadly applicable — not only to apple producers across the country, but also to other tree fruit producers. In fact, as the effort evolved, it became clear we were involved in a disruptive activity ourselves.

Increasingly, specialty crop industries throughout the country, especially those dependent on hand labor, recognized their economic challenges were similar, and slowly terminal, unless addressed. While technological innovation alone does not guarantee economic sustainability, without its transformational power, we argued specialty crop industries could not possibly optimize production and handling processes and consistently deliver premium quality products to our consumers.

Further, we argued for a public-private partnership with a team-oriented, systems-based approach funded via competitive programs through the USDA. We advocated that research and extension activities should address industry stakeholder priorities and seek complementary findings from industries themselves. We suggested emphasizing two scientific areas, both advancing rapidly via digital technologies:

—Genomics, genetics and plant breeding.

—Engineering solutions.

Within those two areas, we sought to develop and fund initiatives with three goals:

—Automate orchard and fruit handling operations.

—Optimize fruit quality, nutritional value and safety.

—Deliver information via digital technologies.

This all took time. The full story of the road map itself is like a sausage: The end product is a lot more interesting than the process to produce it. Endless strategic sessions in less than exhilarating hotel conference rooms. Countless rewrites of documents. Regular visits to tree fruit commodity group meetings nationwide. Travel through Congressional and USDA National Program staff offices in Washington, D.C.

And eventually, some tangible successes, such as the creation of the Specialty Crops Research Initiative and the Specialty Crops Block Grant Program. The Tree Fruit Technology Road map had a lot to do with that, but so did similar efforts among other specialty crop industries, with crucial support from organizations like the Washington Tree Fruit Research Commission, Northwest Horticultural Council, USApple, and the Specialty Crop Farm Bill Alliance, as well as Congress and the USDA.

Projects like RosBREED and Comprehensive Automation for Specialty Crops were standout wins for the national tree fruit industry. Another tangible success, this one directly associated with our Washington tree fruit industry, is the WSU Tree Fruit Endowment. This gift, the largest in WSU history, has created an amazing legacy of industry partnership with WSU's research and extension activities supporting our tree fruit industry. Driven by industry priorities, these investments over time will provide a world-class research and extension base that will contribute to our economic sustainability in a competitive world market and help keep our fantastic fruit and fruit products affordable, accessible and health giving.

The National Tree Fruit Technology Road map is itself a meaningful legacy. I appreciate the honor of delivering the 37th Batjer Lecture on behalf of the many industry stakeholders and research/extension professionals involved. ●

*Jim McFerson, Ph.D., is the director of the Washington State University Tree Fruit Research and Extension Center.*

**ONLINE**

***To learn more about the WSTFA 112th annual meeting, visit wstfa.org/annual-meeting***

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**ONLINE**
***Good Fruit Grower has launched a Spanish site: www.goodfruit.com/es***

# Sessions engage Spanish speakers

**Spanish presentation topics at WSTFA annual meeting range from pesticide handling to economics.**

*by Ross Courtney*

Eladio Gonzales recalls days in the not-so-distant past when he struggled to translate pesticide labels for his older, more experienced co-workers. At the time, perhaps 10 years ago, he wished the fruit industry provided him more training in Spanish, even though he was completely fluent in both languages.

"It was hard to have a place where to go to find this stuff," said Gonzales, 33, an orchard manager for G.S. Long in Yakima, Washington.

Things have improved for Gonzales and his fellow Spanish-speakers. These days, state agencies, nonprofit groups and his own company hold classes and workshops entirely in Spanish. In fact, Gonazales is one of the slated Spanish-speaking presenters at the annual meeting of the Washington State Tree Fruit Association, which is presenting two sessions in Spanish.

Eladio Gonzales

The Spanish sessions will be held Dec. 6, the middle day of the three-day conference, scheduled for Dec. 5-7 at the Wenatchee Convention Center. A wide array of Spanish topics will include control of little cherry virus, food safety, state pesticide rule changes and economic topics.

The purpose of the Spanish sessions is to "take communication barriers out of the way" said Sam Godwin, a Tonasket, Washington, grower and the annual meeting committee chair.

The convention has featured Spanish sessions for years now, and they don't just deal with pesticides and tractor safety — information employees would need. Many Spanish speakers need even more information because they work at higher levels of decision making for large companies and own their own farms.

"A lot of the economic information is really geared at the guy who maybe was a foreman for a large company who has now bought a home and owns his own orchard," Godwin said. For example, one of the presentations is called "Economic Profitability of Honeycrisp Apple Production."

Gonzales, who has been working at the G.S. Long orchard off and on since middle school, agreed. He is used to giving Spanish presentations arranged by his company, both on the farm and in board rooms. One of his duties the past few years, in addition to managing an orchard, has been teaching worker protection classes, giving him an unusual celebrity status in the industry. Many workers around the state recognize him and ask him where they can find more training.

He usually knows. In fact, his presentation at the annual meeting will cover just that — where Spanish speakers can look for upcoming training seminars.

"I believe the more Spanish training we can offer as an industry working together is only going to makes us stronger in the end," he said. ●

*This article is reprinted in Spanish on Page 21.*

BAYER

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# Recruiting – and keeping – workers

Mario Miranda Sazo

**Cornell Spanish program could be model for others.**

*by Mario Miranda Sazo*

Even as growers plant high-density orchards that require significant labor to maintain, many still lack a reliable, skilled and committed horticultural team to fuel the growth they could see in the next decade.

It's a competitive challenge. Finding, attracting and retaining the right people is key to growing and remaining a player in an increasingly global marketplace. Assembling a team of people who will support development of new business opportunities may not be easy, but assembling the wrong people can be costly and catastrophic. Innovative fruit companies understand that it is much cheaper to develop a highly skilled and motivated team than it is to go out and bring in new people year after year. Empowered employees and orchard managers will perform at their best level, make independent decisions and find ways to improve orchard operations, including planting, pruning, hand thinning and harvest.

### Building a team

Creating a high-functioning horticultural team is challenging under any circumstances, but when the team you are trying to build crosses different cultures, you must meld talents and cultural expectations while alleviating communication barriers. Complicating your communication is the probability that you will incorporate the use of some type of new technology and won't be fully able to explain the benefits of the technology to your Spanish-speaking employees.

**ONLINE**
***A Spanish version of this essay can be found at our new Spanish website: goodfruit.com/es***

In this complicated and rapidly evolving labor situation for fruit growing, you have to take action to capitalize on new opportunities and execute them efficiently. But it is also essential for you and your teams to learn quickly, to keep up with developing events and to stay ahead of the competition. That will happen only if you foster strong working relationships with your most talented Spanish-speaking employees and assemble skilled horticultural teams inside your farm.

While there is no single secret to success when building the perfect horticultural team, there is one common trait I recognize in the most successful fruit growers who employ Spanish-speaking employees at their operations: communication. One of the single greatest changes you can make is to build basic Spanish-speaking relations in the orchard. No matter how good or how poor your Spanish pronunciation is, you must learn to say "Buenos dias" (Good morning), "Como está hoy?" (How are you doing today?). You can also say a few words in Spanish and smile – and mean it! When you or I smile sincerely, the warmth becomes self-reinforcing.

COURTESY MARIO MIRANDA SAZO

**Some of the skilled Hispanic employees currently working on New York apple farms.**

*Spanish-speaking employees crave one-on-one contact, horticultural coaching and constructive feedback — positive or negative — from their boss or orchard manager.*

When I am asked to serve as a translator for a meeting between a grower and the Spanish-speaking orchard workers, frequently the first question that the employees will ask their "patrón" (boss, in Spanish) is, "How am I doing in my job?" Though the grower may have just finished going through a list of things that have been done well and some that need improvement, Spanish-speaking employees crave one-on-one contact, horticultural coaching and constructive feedback — positive or negative — from their boss or orchard manager. Some growers do a good job of addressing this question, if not on a daily basis, then at least when they have a translator available.

You, the grower, must show real interest in the well-being of your orchard workers and regularly ask some of the questions mentioned above. This sort of attention to Spanish-speaking communication creates a relationship between you and your orchard worker, with the result that the labor task receives maximum attention. Your workers' commitment to the fruit farm is also increased. If you work hard at this aspect of communication with your Spanish-speaking employees, you will create better, trusted, longer-lasting relationships and avoid having to look for and train new people every year.

Most successful Spanish-speaking orchard managers are smart, have good people skills, can build confidence and generate enthusiasm, enjoy interacting with other growers, know the horticultural details of pruning, hand thinning, and harvest, and reliably make their budgets and deliver results. But in addition to all this, the best Spanish-speaking orchard managers have something more — they are

COURTESY MATT WELLS/CORNELL COOPERATIVE EXTENSION

**Participants who attended the 2016 Hispanic Summer Fruit Tour heard a presentation from Mario Miranda Sazo (right), Cornell Cooperative Extension fruit specialist, and Juan Pascal (left), a VanDeWalle Fruit Farm employee with 30 years of nursery experience, on feathering and tree growing techniques near Alton, New York.**

curious, walk the orchard regularly, and can look at a problem through multiple lenses. They excel at mobilizing and exciting Spanish-speaking workers and are clear about the tasks to be accomplished, yet know when to change direction. They can see when a new pruning practice will be profitable and convert it to a new horticultural management tool. They can spot an unmet need and change course to go after a bigger profit and more comfortable working conditions for Spanish-speaking orchard workers.

As their teams pursue new labor goals (more bins of high quality fruit per person per day when harvesting) and strive to achieve this or other milestones, they have a clear view of what is in or out of alignment in terms of skills and capabilities, compensation, communication, how workers are collaborating and behaving.

## Cornell program for Spanish-speakers

Five years ago, Cornell University began offering a lecture series to Spanish-speaking farm employees to meet a need for basic training in horticulture and pest management. Topics covered the first year included the life cycle of an apple tree, pruning of vertical axe and tall spindle systems and quality grading of apples. Subsequent workshops have addressed tool care, preventing common injuries, tree and crop load management, rootstocks, cutting fire blight damage from an orchard, recognizing pests and using traps and entrepreneurship. This year, the fruit schools for Spanish speakers were held at two farms in New York's Orleans and Wayne counties, rather than extension offices, with hands-on pruning time in an orchard. In addition, Cornell organized the first fruit summer tour last year for Spanish-speaking employees in the Northeast and held a second such tour this year.

Those tours have established some common ground and a networking system for Latinos in the Western New York fruit industry. Participants, who were surveyed this year, rated the value and quality of the presentations very highly. When asked to cite the most valuable things learned in the 2016 school, responses included:

—I learned to recognize a vegetative bud from a floral bud.

—The importance of irrigation in high density plantings.

—Why pest management is so critical for fruit quality.

—The concept of biennial bearing.

—How precision pruning can improve fruit size.

Several participants in this group have attended at least three of the five schools offered in the region, and several of them are now more familiar with the new concepts.

The success and future of Cornell's Spanish-speaking program is promising. The preliminary results — increased interest and attendance, perceived level of knowledge gained and the request for more applied technical training — build a case for developing additional curriculum or modules in horticulture, business, leadership and pest management in the near future.

It's a model that could be used elsewhere. ●

COURTESY MARIO MIRANDA SAZO

**Mario Miranda Sazo explains to Hispanic employees how to differentiate floral and vegetative buds.**

*Mario Miranda Sazo is an extension associate who specializes in orchard management and orchard mechanization with the Lake Ontario Fruit Program, Cornell University Cooperative Extension. A version of this column previously appeared in New York Fruit Quarterly and the Small Farm Quarterly of Cornell University.*

*This article is reprinted in Spanish on Pages 20-21.*

**SPECIAL SPANISH SECTION**
***In this issue only, we are reprinting three articles in Spanish as part of our introduction to our new Spanish website: www.goodfruit.com/es***

# Presentamos nuestro sitio web en español

**Traemos nuestra información educacional a los agricultores que hablan español.**

*Por O. Casey Corr*

Me agrada anunciar que *Good Fruit Grower* ha publicado un sitio web en español: *www.goodfruit.com/es*. Aquí, usted encontrará traducciones de artículos de *Good Fruit Grower* de ediciones pasadas, nuevos documentos de investigadores y otros, así como videos de expertos en horticultura y viticultura. Todo en español.

Presentamos el sitio en español después de meses de discusión y colaboración con agricultores, investigadores y otros que ayudaron guiando este proyecto. Este proyecto es parte de nuestra misión de proveer información educacional a los agricultores y responder a una obvia necesidad. Poniendo atención a la asistencia de las sesiones en español de cualquiera de las asambleas o convenciones de la industria, la multitud de asistentes prueba la necesidad de información en horticultura de calidad y noticias de la industria en español. ¿Quién mejor que esta revista para satisfacer esta necesidad?

En años recientes, el personal de *Good Fruit Grower* ha desarrollado nuevas maneras para hacer nuestro contenido accesible e inmediato: tenemos cuentas en Twitter, YouTube, Facebook e Instagram; mejoramos nuestra popular carta *eFlash* a entrega semanal de noticias e información; desarrollamos una aplicación móvil para más rápida visualización; mejoramos nuestro sito web para una mejor búsqueda y velocidad. Ahora estamos tomando otro paso: nos estamos asegurando que la información esencial de *Good Fruit Grower* alcance a cada parte interesada, desde los representantes del campo hasta los agricultores, para quienes el español es su lengua nativa.

El proyecto ha sido un objetivo mío desde que me uní a la revista en 2013. Yo creí que no cumpliríamos completamente nuestra misión como publicación que es propiedad de los

O. Casey Corr

agricultores, a menos que nos involucráramos y sirviéramos totalmente a una comunidad vital de nuestra industria.

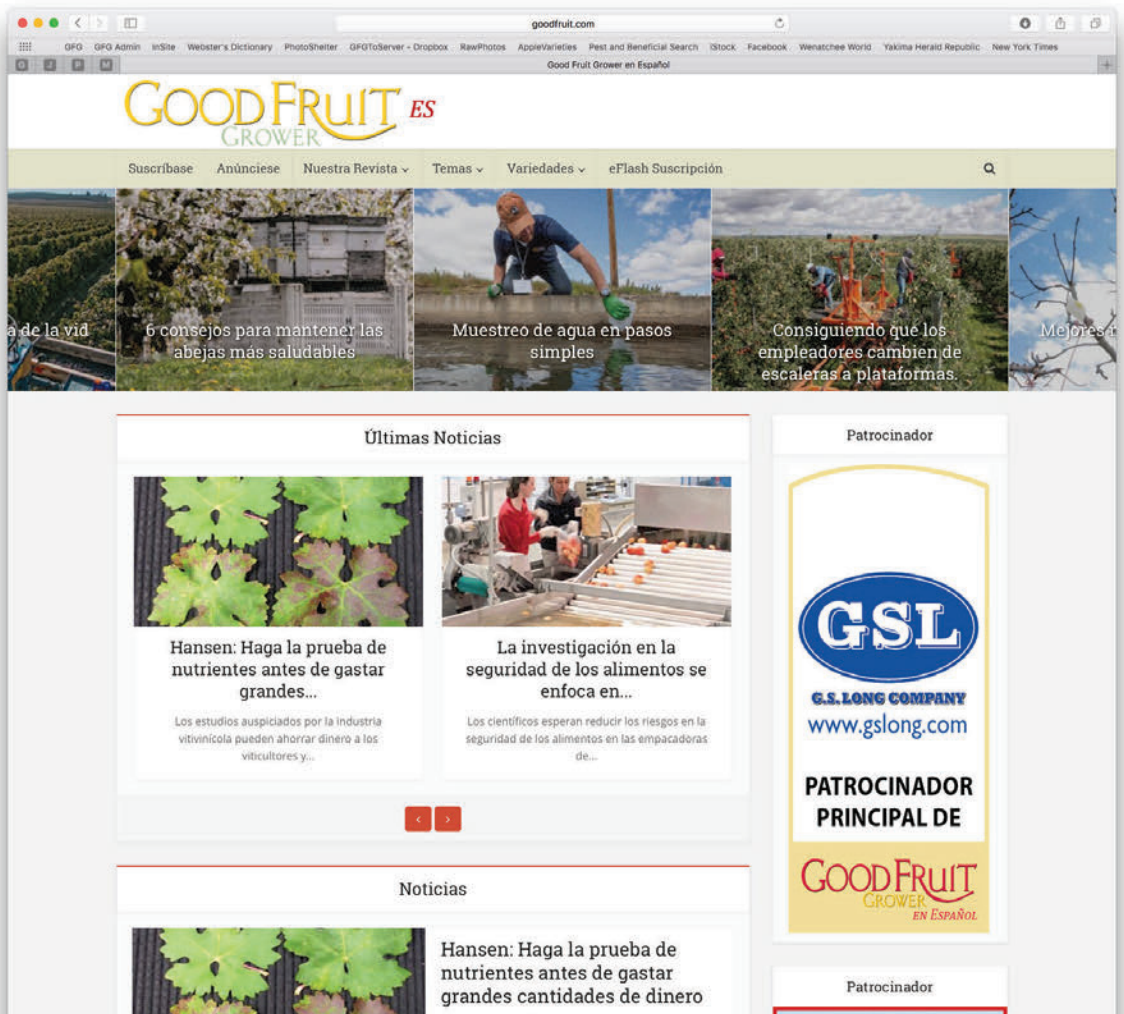
El lanzamiento del sitio tomó tiempo y recursos; razón por la cual estoy muy agradecido con María Fernández, Directora de Desarrollo de Audiencias y líder del proyecto; con Shannon Dininny, Editora Principal, quien supervisó el desarrollo del contenido editorial; con T.J. Mullinax, Productor Digital para la construcción de un sitio web fenomenal; y a nuestros patrocinadores del contenido español, especialmente G.S. Long Co., cuyo apoyo ayuda a compensar el costo adicional por traducción y edición. Al inicio publicaremos por lo menos tres artículos en cada una de nuestras 17 ediciones al año. Al suavizar el proceso, y si aseguramos recursos adicionales, esperamos incrementar el número y frecuencia de nuestro contenido en español.

Queremos que nuestro contenido en español refleje, también, el alto nivel que tenemos en nuestro contenido en inglés. Por esta razón, buscamos profesionales con experiencia en traducción de temas técnicos de horticultura, quienes están familiarizados con nuestra audiencia prevista; y con buen juicio en situaciones donde ciertos términos en inglés no corresponden con el español formal.

Hemos tenido un apoyo tremendo desde los inicios de este proyecto, especialmente de la Comisión de Fruta del Estado de Washington, propietaria de esta revista, y B.J. Thurlby, presidente de la Comisión. Hemos recibido guía y apoyo constante por parte del grupo de asesores que se formó para este proyecto. Gracias a todos los asesores: Ofelio Borges, del Departamento de Agricultura del Estado de Washington; Víctor Bueno, de Washington Fruit and Produce Co.; Michael Gempler, de la Liga de Productores de Washington; Gwen Hoheisel, de la Universidad Estatal de Washington; Karen Lewis, de la Universidad Estatal de Washington; Frank Lyall, de la Oficina de Agricultura del Condado de Yakima; Vicente Medelez, del Centro de Oportunidades de Industrialización de Washington; Louisa Mora, del Centro de Oportunidades de Industrialización de Washington; Jacqui Gordon Núñez, de la Asociación Frutícola del Estado de Washington; Jaime Ramón, del Departamento de Agricultura del Estado de Washington; Mario Miranda Sazo, de la Universidad de Cornell; y Flor Servín, del Departamento de Labor e Industrias del Estado de Washington. Cada uno de ellos hizo mejor este proyecto.

Gracias adicionales a nuestros traductores: Alicia Cárdenas, de ACS Translation Services y Pablo Palmández, del Centro de Seguridad y Salud de la Agricultura del Noroeste del Pacífico.

Esperamos que la comunidad de agricultores responda bien al sitio en español. Por favor, ayude a correr la voz sobre este nuevo recurso. Como siempre, apreciamos comentarios y sugerencias para mejorar. Como empleados de una publicación que es propiedad de los agricultores, nosotros trabajamos para usted. Puede ponerse en contacto conmigo por correo electrónico: *casey.corr@goodfruit.com*. Puede contactar, en español, a María Fernández: *maria@goodfruit.com*. ●



# Presentamos

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**SPECIAL SPANISH SECTION**
*In this issue only, we are reprinting three articles in Spanish as part of our introduction to our new Spanish website: www.goodfruit.com/es*

# Contratando – y manteniendo – a los trabajadores Hispanos

*by Mario Miranda Sazo*

Aunque los fruticultores han plantando huertos de alta densidad que requieren una cantidad de trabajo significante, todavía muchos de ellos no tienen un equipo de producción frutícola confiable, altamente calificado, y comprometido, que pueda expandir y apoyar el crecimiento de sus negocios en la próxima década.

Poder encontrar, atraer, y retener a la gente indicada es un desafío muy competitivo y es clave para el crecimiento de la compañía frutícola y para poder seguir compitiendo en un mercado más globalizado. Formar un equipo de gente que apoye el desarrollo de nuevas oportunidades de negocios no es tan fácil, pero formar uno con la gente equivocada, puede llegar a ser un error muy costoso y catastrófico. Las compañías frutícolas innovadoras entienden y saben muy bien, que es mucho más barato desarrollar un equipo frutícola altamente calificado y motivado, que tratar de formarlo con gente nueva y de poca experiencia cada año. Al desarrollarse el equipo frutícola desde adentro, los trabajadores se motivan aún más y los administradores de huertos lideran y ejecutan sus trabajos al más alto nivel, toman decisiones buenas en forma independiente, y desarrollan sus propios métodos de cómo mejorar aún más las operaciones del huerto, incluyendo la plantación de árboles, la poda, el raleo manual, y la cosecha (Foto 1).

Mario Miranda Sazo

FOTOS CORTESÍA DE MARIO MIRANDA SAZO

**Foto 1: Algunos de los trabajadores Hispanos altamente calificados que actualmente trabajan en huertos de producción de manzanas en Nueva York.**

**Foto 2: Grupo de trabajadores Hispanos que atendieron un tour frutícola organizado por Cornell el día 13 de Agosto, 2016.**

**Foto 3: Participantes del tour aprendieron técnicas de ramificación en un vivero.**

**Foto 4: El autor explica a trabajadores Hispanos como diferenciar una yema floral de una vegetativa.**

## Formando el Equipo

Crear un equipo de producción frutícola que funcione al más alto nivel es desafiante bajo cualquier circunstancia, pero cuando el equipo que usted esta tratando de formar mezcla distintas culturas, usted debe saber cómo mezclar los talentos y las expectaciones culturales, y al mismo tiempo, disminuir las barreras de comunicación. Probablemente su comunicación se puede complicar aún más, si usted decide incorporar el uso de una nueva tecnología, y no es completamente capaz de explicar los beneficios de su uso a sus trabajadores Hispanos.

Debe saber cómo actuar, capitalizar, y ejecutar las nuevas oportunidades que se presenten en este complicado y volátil mundo laboral. Pero también es esencial para usted y sus equipos, que aprendan rápido, que estén al día con el desarrollo de nuevos eventos, para poder así permanecer a la vanguardia con la competencia. Todo esto puede solamente suceder si usted cultiva relaciones de trabajo muy cercanas y sólidas con sus trabajadores Hispanos más destacados. De esta forma, podrá formar equipos de producción frutícola altamente calificados dentro de su compañía.

Aunque no existe un secreto único para formar un equipo frutícola perfecto y exitoso, si puedo reconocer un detalle en los fruticultores más exitosos que emplean trabajadores Hispanos en sus compañías: comunicación. Uno de los cambios más grandes que usted puede hacer es establecer una comunicación básica en español en el huerto. Debe aprender a decir: buenos días, ¿cómo está hoy?, no importando que tan mala o buena sea su pronunciación en español. También puede decir unas pocas palabras en Español y sonreír al mismo tiempo – hágalo con franqueza! Cuando usted o yo sonreímos con sinceridad, la calidez del gesto fortalece su comunicación.

Cuando me solicitan servir como intérprete para una reunión entre un fruticultor y sus trabajadores Hispanos, frecuentemente la primera pregunta que los trabajadores le van a preguntar a su patrón es, ¿le gusta el trabajo que he hecho?, o ¿cómo lo estoy haciendo? Aunque el fruticultor puede haber justo finalizado y mencionado un listado de cosas que se han hecho bien y algunas que necesitan mejorarse, trabajadores Hispanos necesitan un contacto cercano, un entrenamiento hortícola, y una crítica constructiva – ya sea positiva o negativa – de su patrón o administrador de huerto. Algunos fruticultores realizan un buen trabajo en este aspecto, sino casi a diario, al menos conmigo cuando estoy disponible y sirvo como intérprete.

Usted, el productor frutícola, debe saber mostrar un real interés por el bienestar de sus trabajadores y regularmente preguntar algunos de los ejemplos mencionados más arriba. Este tipo de atención cuando se comunica en español crea una "relación" entre usted y el trabajador de huerto, con el resultado que el trabajo de huerto recibe atención máxima. También se incrementa el compromiso de sus trabajadores con su compañía. Si trabaja duro en este aspecto de comunicación con sus trabajadores Hispanos, usted va a crear mejores relaciones de confianza de largo tiempo, y asi evitará tener que buscar y entrenar gente nueva cada año.

Los administradores de huerto Hispanos más exitosos son inteligentes, saben cómo tratar bien a la gente, pueden generar confianza y entusiasmo, disfrutan interactuando con otros fruticultores, saben los detalles de poda, raléo manual, y de cosecha, y confiablemente producen sus presupuestos y generan buenos resultados. Pero por sobretodo, los mejores administradores de huerto tienen algo más, son curiosos, caminan el huerto regularmente, y pueden mirar un problema desde distintos puntos de vista. Sobresalen al movilizar y excitar a los trabajadores Hispanos y son claros respecto a los trabajos que deben cumplirse, y saben bien cuando hay que cambiar de dirección. Saben darse cuenta cuando una nueva técnica de poda puede ser más beneficiosa y la pueden convertir en una nueva herramienta de producción frutícola. Pueden descubrir una nueva necesidad y cambiar de curso para conseguir un mayor ingreso y mejores condiciones de trabajo para los trabajadores Hispanos.

Como sus equipos persiguen nuevas metas laborales (más cajas de fruta de alta calidad por persona por día cuando cosechando) y se esfuerzan para conseguir ésta o otros logros, los administradores de huerto tienen una idea clara de lo que es justo en términos de habilidades y capacidades, remuneración, comunicación, y de cómo los trabajadores se están comportando y colaborando.

**EN EL SITIO DE WEB**

***Más artículos de la revista, en español: www.goodfruit.com/es***

### Programa Frutal de Cornell para los trabajadores Hispanos

Cornell comenzó a ofrecer una serie de clases para los trabajadores Hispanos debido a una necesidad de entrenamiento básico en horticultura y manejo de plagas y enfermedades hace cinco años atrás. El primer año se impartieron los temas: ciclo de un árbol de manzana; poda en sistemas de eje vertical y espiral alto (spindle); y calidad y selección de fruta en el empaque. Las siguientes clases ofrecieron temas de cuidado de herramientas, como prevenir los accidentes más comunes, manejo de carga y del árbol, tipos de portainjertos, manejo del tizón de fuego, reconocimiento de plagas, uso de trampas, y emprendimiento. Este año, las escuelas de fruticultura para los Hispanos se llevaron a cabo en dos ranchos en los condados de Wayne y Orleans del estado de New York, en vez de realizarlas en oficinas de condado de Extensión de Cornell, con trabajo práctico de poda en el huerto. Además, Cornell organizó el primer tour frutícola de verano con empleados Hispanos en el Noreste el año pasado, y organizó un segundo tour frutícola éste verano recién pasado (Fotos 2 y 3).

Los tours han generado un espacio común y un sistema de interacción para los Hispanos en la zona del Lago Ontario de Nueva York. Los participantes completaron una encuesta este año y clasificaron el contenido y calidad de las presentaciones en forma muy positiva. Cuando se les preguntó citar las cosas que aprendieron en la escuela del 2016, sus respuestas incluyeron:

Aprendí a reconocer una yema floral de una vegetativa (Foto 4).

La importancia del riego en las plantaciones de alta densidad.

Porque el control de plagas es tan importante para conseguir fruta de calidad.

### El concepto de añerismo (alternancia floral)

Y como la poda de precisión puede ayudar a mejorar el tamaño de fruta.

Varios de los participantes en este grupo han atendido al menos tres de las cinco escuelas ofrecidas en la zona, y muchos de ellos ahora están más familiarizados con los nuevos conceptos.

El éxito y futuro del programa de fruticultura para Hispanos de Cornell es prometedor. Los resultados preliminares – un aumento en la participación e interés, mayor nivel de comprendimiento del conocimiento entregado, y la solicitud de más conocimiento técnico y aplicado – justifican el desarrollo de más módulos de instrucción en las áreas de horticultura, negocios, liderazgo, y manejo de plagas y enfermedades en el futuro cercano.

Es un modelo que podría usarse en otras partes. ●

*Mario Miranda Sazo es un extensionista que se especializa en el manejo y mecanización de huertos con el Programa de Fruticultura del Lago Ontario, Programa de Extensión de la Universidad de Cornell. Una versión de ésta columna apareció previamente en las Revistas Trimestrales de Nueva York y de Los Pequeños Productores de la Universidad de Cornell.*

TJ MULLINAX/GOOD FRUIT GROWER FOTO DE ARCHIVO

**Melba Salazar-Gutiérrez, de la Universidad Estatal de Washington, habla sobre el uso práctico del AgWeatherNet en huertas en una de las sesiones en español de la Convención Anual de la Asociación Frutícola del Estado de Washington.**

# Presentaciones sofisticadas en español

**El rango de los temas de las presentaciones en español de la convención anual es desde manipuleo o manejo de pesticidas a economía.**

*Por Ross Courtney*

Eladio González, bilingüe, recuerda los días de un pasado no muy lejano cuando se esforzaba para traducir las etiquetas de los pesticidas a sus compañeros de trabajo de mayor edad y con más experiencia. En ese entonces, quizás hace diez años, deseaba que la industria le proporcionara más entrenamiento en español, aun cuando hablaba con completa fluidez ambas lenguas.

"Era difícil tener un lugar a donde ir y encontrar estas cosas", dijo González, de 33 años, mayordomo de huertas de G.S. Long en Yakima, Washington.

Las cosas han mejorado para González y sus compañeros de habla hispana. Actualmente, agencias estatales, grupos sin fines de lucro y su propia compañía llevan a cabo clases y talleres enteramente en español. Además de estos recursos, *Good Fruit Grower* presentó un sitio en español: *www.goodfruit.com/es/*. De hecho, González es uno de los ponentes en español seleccionados para la Convención Anual de la Asociación Frutícola del Estado de Washington, la cual presentará dos sesiones en español.

Las sesiones en español se llevarán a cabo el 6 de diciembre: segundo día de la convención de tres días. La convención está programada del 5 al 7 de diciembre en el Centro de Convenciones de Wenatchee. Una amplia variedad de temas en español incluirá el control del virus de la cereza pequeña, seguridad de los alimentos, cambios al reglamento de pesticidas del estado y temas económicos.

El propósito de las sesiones en español es "eliminar las barreras de la comunicación", manifestó Sam Godwin, agricultor de Tonasket, Washington y presidente del comité de la convención anual.

**Eladio González**

La convención ha tenido sesiones en español por años y no solo en pesticidas y seguridad con los tractores (información que los empleados necesitarían). Muchos hablantes hispanos necesitan más información aún porque trabajan en niveles de toma de decisiones más altos para compañías grandes y son propietarios de sus propios establecimientos agrícolas.

"Mucha de la información económica es realmente para la persona que tal vez fue un encargado para una compañía grande, y que actualmente ha comprado una casa y es dueño de su propia huerta", explicó Godwin. Por ejemplo, una de las presentaciones es "Rentabilidad económica de la producción de manzana Honeycrisp".

González, quien ha trabajado de vez en cuando en huertas de G.S. Long desde la escuela secundaria, está de acuerdo. Él está acostumbrado a dar presentaciones en español, organizadas por su compañía, en el campo y a la junta directiva. En los últimos años, una de sus obligaciones, además de encargarse de una huerta, ha sido dar clases de protección de los trabajadores. Esto le ha dado un estatus inusual de celebridad en la industria. Muchos trabajadores del estado lo reconocen y le preguntan en dónde pueden encontrar más entrenamiento.

Usualmente lo sabe. De hecho, su presentación en la convención anual cubrirá sólo eso: en dónde pueden buscar los hablantes hispanos los próximos seminarios de entrenamiento.

"Yo creo que mientras podamos ofrecer más entrenamiento en español como industria trabajando juntos, esto nos hará más fuertes al final" dijo. ●

# Cosmic insights

**Washington beefs up education ahead of plantings of new variety.**

***by Ross Courtney***

We're getting close. Washington growers will plant the first commercial trees for the much-anticipated Cosmic Crisp apple in the spring.

To keep up with the excitement, organizers of this month's Washington State Tree Fruit Association annual meeting in Wenatchee are dedicating nearly an entire session to the WA 38 apple, sold under the trade name Cosmic Crisp, the latest variety released by the Washington State University breeding program.

**Sam Godwin**

"It's one of the first real releases from the WSU breeding program, so we really wanted people to get a lot of information about it so they can make informed decisions," said Sam Godwin, a Tonasket, Washington, grower and chair of the annual meeting planning committee.

Topics for the Cosmic Crisp session, which is scheduled for Dec. 5, will include recommended horticultural techniques, licensing and marketing.

In addition to the convention, researchers have been holding well-attended field days to share the latest information on growing and storing the variety, while nurseries are ramping up propagation to make their first deliveries later this winter.

"The timing is important because a lot of people are making decisions about whether to get involved with the new variety," Godwin said.

Still, the education will be ongoing as field trials continue to yield more results, orchardist Dave Allan told a group of fellow growers at a September field day near Prosser, Washington. Grade standards are a work in progress, too. "We are trying a number of different systems, and some of them are going to work well and some are not," said Allan, who ran some of the trial blocks at Allan Brothers' orchards. "And we're in the process of discovery."

Count him in as a booster though. He predicts the apple will become one of Washington's most successful. "I think we all agree with that," he said. "If we're wrong we're all going to have to go to dumb school, but we'll all get there together. But I think it's going to be successful." ●

## More Cosmic Crisp tips

Growers continue to glean tips and advice about growing the Cosmic Crisp as they prepare to plant the first commercial trees next spring.

Researchers held two field days in mid-September to give growers a glimpse of Washington State University's newest apple on trees at harvest time. The visits followed similar field days in April shortly after bloom.

The Cosmic Crisp, or WA 38, was developed by the university's apple breeding program and, in the United States, will be grown exclusively by Washington growers for 10 years. Growers will start the first commercial plantings in 2017 with more to follow in the coming years.

Here are several points researchers made during three Washington field days in Prosser, Quincy and Wenatchee:

*—Don't thin Cosmic trees until you have a full crop after three years or so.* The tree tends to thin itself down to single pieces of fruit with few doubles and virtually no triples, while fruit helps control the growth of the vigorous variety. Karen Lewis, a Washington State University regional extension specialist, said she learned the hard way with a hand-held string thinner at the Roza trial orchard in Prosser. "I over thinned because I didn't understand that this variety, this cultivar, tends to thin itself down pretty easy," she said.

*—Avoid Manchurian crab apple pollinizers.* They share an allele in common with Cosmic Crisp, making them 50 percent incompatible. Researchers are searching for recommended pollinators specific to the Cosmic, but until then they advise using multiple sources, including Whitney crab and Snowdrift crab, and commercial varieties such as Granny Smith, Red Delicious, Golden Delicious or Winter Banana. Plant a pollinizer tree every 30 feet in every row.

**To test growth habits, WSU researchers grafted Cosmic Crisp scions onto Granny Smith trees on Malling 9 rootstocks at the Sunrise research orchard in Wenatchee, Washington. They are experimenting with one-, two- and three-leader training systems.**

*—Cooling and shade is recommended but not essential.* The test blocks at Sunrise and Roza research orchards have no shading or overhead cooling and researchers are finding few sunburn problems. Commercial growers Stemilt Growers and Allan Brothers have used overhead cooling in their test blocks, which are several years older than the university's blocks.

PHOTOS BY ROSS COURTNEY/GOOD FRUIT GROWER

**Antonio Quintana of Mt. Adams Orchards discusses the stem length of Cosmic Crisp apples with Juan Piñon of Wilson Irrigation during a field day at test blocks north of Prosser, Washington, in September.**

*—Cosmic Crisp apples color well but sometimes develop green spot (shown above) in the stem bowl and shoulder during the summer heat.* "It's an issue we don't fully understand," said Tom Auvil, a research horticulturist with the Washington State Tree Fruit Research Commission. They noticed the green speckling on fruit from the tops of the tree and on the larger fruit at Sunrise. The blemishes often look somewhat like bitter pit but don't reach as deep into the flesh of the fruit. However, green spot usually colors over and fruit color in general improves by the end of the season and even after harvest in storage. "We dwell a lot on it because it is the only problem we see," Auvil said. Buckskin color from heat stress also goes away, while none of the minor coloring concerns seem to affect the texture or taste of the fruit.

*—Researchers have seen stem punctures, especially with fruit size 72 count and larger.* That's the same threshold where they notice an uptick in bruising, as well, Auvil said. Consider clipping the stems that protrude from the stem bowl. It is frequently the longer stems on smaller fruit that create stem punctures on the big fruit, whose stems are often well contained within the stem bowl.

*—Auvil recommended the following rootstocks for Cosmic Crisp propagation:* Mark, Budagovsky 9, Geneva 41, G.11, G.935, and Malling 9-337. Bud 9 and Mark should be planted closer together than M.9, while G.11 does not like sandy soil.

*—When planting young trees, Auvil recommends* cutting feathers back to four to six buds and cutting the terminal 1 foot from the top of the central leader, "and then leave it alone until we have fruit." Maintenance pruning on a strong bull sucker is good as long as it is only on the two or three strongest upright shoots, he said.

*—Stay tuned for a six-scale starch chart to help plan harvest timing.* Researchers are working on it, said Ines Hanrahan, project manager for the Washington State Tree Fruit Research Commission.

*—The Cosmic Crisp stores well, with or without MCP,* showing none of the common storage disorders, such as internal browning, chilling injuries, superficial scald, bitter pit and late sunburn development. Cosmics tied with Honeycrisps in taste tests throughout the year until the last tasting in the spring, when tasters reported that Cosmics had better flavor, Hanrahan said. It also resists bruising.

*—The Cosmic will split if left on the trees too long during harvest,* which usually lasts about two weeks. Harvest too late and risk up to 15 percent split. "Timely picking is still important," Hanrahan said. "It's not all magic."

*—Stefano Musacchi, WSU horticulturist and endowed chair in tree fruit physiology and management,* suggested growers renew prune with short limbs to keep a narrow canopy and encourage fruit close to the trunk. However, when you need to remove one branch, leave a stub of at least 2 inches or it will dry out.

***—R. Courtney***

# Cosmic to be grown overseas

**Some Washington producers are caught off guard by international propagation plans for WA 38.**

*by Ross Courtney*

The first Cosmic Crisp international licenses have been signed and the first budwood has been shipped overseas.

Last year, Proprietary Variety Management shipped buds of the new apple variety, designed specifically for Washington's fruit industry, to international quarantine facilities and licensed two Italian fruit companies to grow and sell WA 38, which goes by the trade name Cosmic Crisp. The Yakima, Washington, company was contracted by Washington State University to manage the commercialization of Cosmic Crisp, developed by university breeders.

Despite some grower surprise that overseas companies are already involved, the moves mark the university's efforts to protect its breeders' invention in the competitive and complex global marketplace, said university officials and variety managers.

"This has to be done or it becomes an open variety," said Lynnell Brandt, president of Proprietary Variety Management. That would mean anybody could grow it and sell it with any level of quality anywhere in the world.

Acknowledging that the international agreements may not have been known among Washington growers, Brandt and university officials have been speaking at

field days and industry groups over the summer and will present during a Cosmic Crisp session at the Washington State Tree Fruit Association annual meeting Dec. 5-7 in Wenatchee.

"This has come so fast, with so much interest and so forth that we haven't reached out enough to make sure

ROSS COURTNEY/GOOD FRUIT GROWER

**Lynnell Brandt, left, president of Proprietary Variety Management, discusses licensing and grade standards of Cosmic Crisp apples during a field day in September in Quincy, Washington. At right is Ines Hanrahan, project manager for the Washington State Tree Fruit Research Commission.**

that everybody has understood why these moves were made," Brandt said.

Several growers contacted in late October by *Good Fruit Grower* expressed surprise about the Italian licenses but did not object to them.

"This is news to me," said Tom Riggan, CEO of Chelan Fresh. Riggan, a member of a marketing advisory committee for WA 38, who recalled vague discussions about global commercialization a year ago but no timelines or specific countries. However, he supported Brandt's decision to take action on his own due to time constraints, he said. Brandt's management company also has represented Chelan Fresh with other varieties, Riggan said.

Peter Verbrugge, president of Sage Marketing in Yakima, heard about the Italian licenses in October and first thought it was just a rumor. "It was my understanding … that we were not going to license anybody outside of Washington," he said.

Verbrugge sits on a different WA 38 advisory committee created by the university that recommended giving Washington growers at least 10 years of exclusive rights and sending buds overseas for quarantine purposes. He called the lack of communication "a little frustrating."

The Washington Apple Commission, charged with collectively promoting Washington apples internationally, also learned of the Italian licenses in late October.

"Today it's a PR issue for WAC," said Todd Fryhover, president of the commission, in an email. "We have been talking up Cosmic Crisp as Washington's proprietary variety across all export markets. Now we've learned it's not true, and the Italians have the ability to sell into specific markets. A big deal for us. We look foolish."

### Global complexities

Communication aside, Brandt and university officials are making a practical argument about why they've pursued international agreements.

There are two issues at play — international quarantines and grower licensing — and both factor into the protection of intellectual property.

WA 38 is a managed release rather than an open release. Growers in North America but outside of Washington must wait at least 10 years before growing the variety due to its U.S. patent and trademark. Washington growers are scheduled to plant the first commercial blocks in 2017, while growers in Pennsylvania, New York or other apple-producing states will have to wait until 2027 at least.

However, preserving the variety overseas is a different ballgame due to the complexities of global intellectual property agreements.

"There's no such thing as a worldwide patent and worldwide trademark," said Albert Tsui, a patent attorney for the university, at a field day in Quincy, Washington. Instead, the university must seek plant breeders' rights under international treaties, namely UPOV, the International Union for the Protection of New Varieties of Plants, based in Geneva, Switzerland.

In UPOV signatory countries, breeders have six years from the first commercial sale offering of their new variety to apply for plant breeder's rights. In the case of Cosmic Crisp, that six-year clock started in June 2014, when the university held a drawing among Washington growers to decide who would get the first limited supply of start-up wood for 2017 plantings.

To start that plant breeders' rights process, though, those other countries must have plant material to quarantine and keep in their repositories while authorities determine if the variety is truly distinct and stable.

In most UPOV territories, Brandt has no legal obligation to go further, such as licensing a commercial grower, said Steve Hutton, the sole U.S. board member of CIOPORA, an international ornamental and fruit plant breeder advisory group based in Berlin.

"As long as you're within that six-year period then you have complete control of that variety," said Hutton, CEO of Star Roses & Plants, a Pennsylvania ornamental nursery. "Then it becomes a business decision, not a legal decision, what you do with it."

However, as a practical matter, most breeders do offer licenses to international growers to secure the help of a

steward to protect the variety from pirated propagation, Brandt said. Licensing growers to produce and sell the apple gives those growers incentive to be a watchdog for violations.

"They're involved with the everyday commercialization," Brandt said. "They know what's going on. They'll hear real quickly if somebody is infringing on that."

PVM would have trouble keeping tabs on European growers from Yakima. "It's not practical, not realistic," Brandt said.

Also, Brandt does not want to risk legal challenges in other nations, which may want their farmers to have a chance to grow a variety in return for the expense and hassle of screening it and protecting it. He suspects some nations may interpret UPOV's requirements differently than Hutton from CIOPORA.

Applying for plant breeders' rights and sending wood overseas is an expensive process, Brandt said. "WSU has an expectation to receive a return on their investment."

Indeed, universities and other private breeders often license new varieties internationally. "We believe that global markets for perishable goods are often best served by local producers rather than solely U.S.-based producers," said Thomas Hutton (unrelated to Steve Hutton), operations director and chief of staff of the University of Minnesota office of commercialization in an email. Even Honeycrisp, an open variety in the United States, is propagated and sold only through licensed companies in the European Union, South Africa and New Zealand.

All Minnesota growers are eligible to produce the varieties, but the university seeks more production and marketing capacity to commercialize its varieties such as SweeTango and Rave than Minnesota alone can provide.

"Minnesota is not a large-volume producer of apples and so cannot supply the necessary quantities to support a national or international program," Thomas Hutton said.

Leith Gardner, a private cherry breeder in Modesto, California, uses international licenses to maximize sales of her varieties but tries to work only in nations that have a track record of respecting intellectual property and don't compete directly with California. Even with licensees, her company, Zaiger Genetics, struggles sometimes to stamp out piracy.

"There's no 100 percent in anything," she said.

David Cain, another California cherry breeder, echoed Brandt's cost concern. Hiring attorneys overseas costs money, so breeders naturally want to work with a licensee to generate sales.

"Patent attorneys aren't cheap," he said.

### Cosmic so far in the world economy

So far, Proprietary Variety Management has sent between 10 and 20 Cosmic buds to quarantines in the Netherlands to satisfy European Union requirements for the Italian licenses, as well as Argentina, Chile, New Zealand, Australia and South Africa. The facilities are rough equivalents to the United States' Clean Plant Network. Plants typically spend one or two years in quarantine, Brandt said. Then begins a "grow-out" period to boost the supply of stock trees in the nurseries, as well as the trees for repositories, Brandt said.

Last year, PVM signed an agreement with VOG and VI.P, two closely related fruit cooperatives in South Tyrol, Italy, the first and only license holders outside the state of Washington so far. Commercial plantings may still be five years away, Brandt said, with the first harvest a few years beyond that.

The two Italian companies will operate under strict rules, Brandt said, though he declined to reveal specifics. They may only grow a certain acreage under certain conditions and sell the apple only in Europe and North Africa, regions in which they already market. PVM and the university have chances to "reconsider" the contract each time the companies reach certain "milestones," Brandt said.

If they meet the requirements, they will remain the exclusive European Union licensees of Cosmic Crisp, Brandt said.

PVM is actively seeking similar license arrangements in other parts of the world on behalf of the university, Brandt said.

"The size of scope of this project does present a learning curve for all of us," Brandt said. ●

# Mega-trends in produce

**Growers are now serving "purposeful" consumers.**

*by O. Casey Corr*

In the produce industry, when Wal-Mart talks, growers listen. And this time the Wal-Mart word comes from a son of the industry, Mike Hulett, who grew up on a 40-acre farm at Lake Chelan, Washington, and who today makes orchard fruit merchandising decisions for more than 4,500 stores.

Hulett, senior fresh merchant for Wal-Mart, is a featured speaker Monday, Dec. 5, at the annual meeting in Wenatchee of the Washington State Tree Fruit Association, an event themed around continuous change. His topic is "Mega-Trends in Retail for Fresh Produce."

In an interview with *Good Fruit Grower* previewing his talk, Hulett discussed how two generations of buyers are transforming the selling of food — and therefore the growing of food by farmers wanting to remain competitive.

In a nutshell, younger buyers are looking for food that aligns perceptibly with certain values and can be located, received and eaten in a manner that is both sensitive to their time-conscious lifestyle and sustainability beliefs. Hulett called their approach to meal preparation "purposeful eating." For these consumers, growers have to produce fruit using horticultural techniques and retailers have to carry products that show "sustainability" or care for the planet in total. Retailers like Wal-Mart increasingly are looking for these growers, a trend driven by young consumers who trumpet their tastes and values to friends on social media.

It is not difficult to find growers who see this dynamic and live by it. Ed Kershaw, the chief executive officer of Yakima, Washington-based Domex Superfresh Growers, gave a talk in 2015 to the Yakima Downtown Rotary about how the industry has been changed by younger consumers. In the past, the public ate what farmers grew. Today, consumers decide which apple varieties are grown and not grown, Kershaw said. They effectively function as the sales desk by telling friends via social media what to buy. Another grower, Kyle Mathison, co-owner of Stemilt Growers of Wenatchee, Washington, can be seen on a company video, dressed in blue coveralls and talking about his passion for building "memory and trust." Mathison sends exactly the message young consumers are looking for: They want a grower who shares their values and who will provide fruit so good, it's a must-have experience, the "memory."

Hulett calls Stemilt's marketing of such a message on point with the Millennial Generation born in the 1980s and the Centennial Generation born in the mid-1990s. Both buy products that reinforce their sense of values. Millennials tend to have more disposable income than their brethren because they are further along in their careers.

Hulett sees five trends in younger buyers.

First, they are looking for what he calls food integrity. They want to know the food they eat and serve their families is safe. This sentiment helps drive the growth in sales of organic fruit, Hulett said. Farmers must show care in areas such as food safety and security, employ ethical practices and support transparency and authenticity.

The second trend, purposeful eating, can be found in how young consumers do snacking or "scratch" cooking. No, the young are not doing what Grandma did,


COURTESY OF MIKE HULETT

**Younger consumers "want to buy products where they know the origin and that the farmer is taking care of the land, taking care of the people," says Mike Hulett, senior fresh merchant for Wal-Mart. He is one of the featured speakers at the Washington State Tree Fruit Association annual meeting in Wenatchee this month.**

making things from individual ingredients rather than from packages. (Who can forget Hamburger Helper?) But the difference is, young people also want food quicker; they don't want to take hours making a meal. Hulett said in the 1940s, a cook at home spent 150 minutes on average making dinner. Today the average is 15 minutes. So how does the scratch cook today make things fast? By using fewer ingredients, "pre-prepped" foods, simple recipes and cleaner living, said Hulett.

The third trend is fresh food. Today's shopping cart has a much higher percentage of fresh produce rather than packaged food. Freshness is key. "Local" is an important part of fresh perception. Serving both "local" and "value" sentiments is a small movement called Ugly Produce. To serve this niche, Wal-Mart is trying this category where there is availability and value to customers with "imperfect" apples and gnarly potatoes called "Spuglies."

Hulett's fourth trend is the time factor, getting quality food quicker. How does that play out? One way is the "grocerant," the mini restaurant you can find inside a supermarket such as Whole Foods. Hulett said a further evolution is the grocery store that enables online ordering of groceries and a near-instant pickup by the consumer. Technology coordinates the customer order, the gathering of items and delivery to the customer whose arrival is "announced" by, say, the consumer's smart phone. Wal-Mart and Amazon have both launched services like this, which appeals to a parent who may have a sleeping baby along and doesn't want to get out of the car. This trend is one reason you'll see a slowdown in construction of new stores, said Hulett.

Hulett's fifth trend is the foodie culture. Younger consumers may not have a lot of excess income but they insist on quality food where taste is an experience. This helps explain the added popularity of an apple variety such as Honeycrisp versus Red Delicious, as well as the club variety explosion. Honeycrisp fetches a premium price even though it's not the best looking apple. The crunch, taste and experience of a Honeycrisp excites people. Hulett said Honeycrisp has brought more people back to eating apples.

Foodies will also pay more if a purchase resonates with values. Certainly, Starbucks makes a fortune by marketing their $3 lattes as the product of sustainable agriculture. Hulett said while earlier generations focused on cost, younger consumers have different motivations. "They want to buy products where they know the origin and that the farmer is taking care of the land, taking care of the people," said Hulett. They are willing to pay a premium to get that.

"If they know that a farmer is doing a good job contributing to the environment, is concerned about water use, labor, health and future generations — that means something to them," he said.

Hulett's message to growers is to think how their own practices meet the new demands. Growers will need to make sure horticulture practices match this ethic in provable ways, because if consumers find out they aren't getting the truth, they can punish via social media. This is one reason why Wal-Mart and others conduct audits to verify growing practices. Growers also need to help tell their own stories, working even more with marketing people, so consumers know how food is grown, who grows it and feel a connection to the farm. For growers, it certainly means work, but it pays off with a powerful connection between grower and buyer.

"Everyone has to move in that direction because we all want new customers and repeat purchases," said Hulett. ●

# Orchards under cover

**In early study results, WSU researchers find multiple benefits to netting fruit trees.**

*by Shannon Dininny*

Washington State University researchers are finding that photo-selective, anti-hail netting can provide additional benefits, particularly in orchards that receive intense sunlight, in just the first two years of a multiyear study.

In previous studies, orchard netting has been shown to protect against hail, wind and intense light. Researchers now are examining the long-term effects of netting on not just tree growth, but also photosynthesis, responses to tree stress and fruit quality in terms of color, maturity, size and storability.

Red, blue and pearl netting have been installed at a research orchard in Wenatchee, Washington, and at a 12-acre McDougall and Sons block of Honeycrisp trees on Budagovsky 9 rootstock in their fourth leaf near Quincy, Washington. Remotely monitored sensors measure air temperature and humidity just under the netting as well as inside the tree canopy, wind speed, light intensity and soil

Lee Kalcsits, Washington State University assistant professor of WSU has installed red, blue and pearl netting at this fourth-leaf

SHANNON DININNY/GOOD FRUIT GROWER

**tree fruit physiology, talks about his research results into the benefits of anti-hail netting during a field day in August. Honeycrisp orchard owned by McDougall and Sons near Quincy, Washington.**

SHANNON DININNY/GOOD FRUIT GROWER

**A control block without netting, above, shows poor return bloom compared with a block under blue netting, at left.**

moisture and temperature at depths of 8 and 16 inches.

In the first two years of study, all three colors of netting reduced overall light in the canopy up to 25 percent when compared with a control orchard with no netting. In addition, although overall and direct light were reduced, netting increased the scattered or diffused light, resulting in an increase in canopy volume by 15 percent.

That is a significant finding for the project, particularly for varieties like Honeycrisp that can be difficult to grow, Stefano Musacchi, WSU endowed chair and associate professor of tree fruit, said during a field day at the Quincy site in August. "The net can increase the way you can fill up your space in a fast way in the beginning," he said. "Net is really effective in manipulating the capacity of the tree to grow."

Lee Kalcsits, WSU assistant professor of tree fruit physiology, said the researchers thought they would see a reduction in temperature under the netting, in part because it feels cooler than outside the netting. But they discovered that overall air temperature and humidity did not change. What did change was the amount of energy reaching the surface.

As a result, they found that trees were more productive for longer during the day under the netting, with photosynthesis occurring a little longer into the day past noon.

In addition, while leaves can transpire to regulate their temperature, fruit doesn't have that ability, resulting in sunburn. The research showed that the fruit surface temperature was only 7 degrees Fahrenheit higher than the air temperature under the netting, compared with 20 degrees higher outside.

The result: In 2015, between 5 and 8 percent of the fruit underneath the netting experienced sunburn, compared with 25 percent of the fruit outside the netting. No evaporative cooling was applied. In 2016, although the incidence of sunburn was reduced in the control through evaporative cooling, sunburn severity was still reduced in the netting compared to evaporative cooling.

The soil also absorbs a lot of energy, and Kalcsits said the researchers were

*"The net can increase the way you can fill up your space in a fast way in the beginning. Net is really effective in manipulating the capacity of the tree to grow."*

***— Stefano Musacchi***

interested in the impact of netting on soil temperature and moisture. Overall, they found that netting decreased soil temperature by as much as 4 degrees, which he noted was substantial when soil temperatures can reach 88 degrees (31 degrees Celsius) in some places during the summer. "Eighty-eight degrees Fahrenheit is a pretty stressful environment for roots to grow. We're doing some work to see what impact those temperature changes have on root growth in the soil and how that translates to overall tree growth and tree performance," he said.

The researchers found that netting also reduced wind speed by 40 percent, which could help reduce wind damage, especially close to harvest, Kalcsits said.

### Effects on the fruit

Kalcsits said he saw a 15 percent increase in fruit size last year underneath the netting and an overall improvement in return bloom regardless of net color. "Color just fine-tunes the differences. They may be significant, but it will take two to three years of data to really examine those differences," he said.

After two years of fruit quality results, they have found no significant differences in fruit quality under the netting compared to the uncovered control. However, because of the different light environment and changes in fruit growth and slight changes in maturity, the management of orchards under netting will need to be different than an uncovered orchard. The final year of the project will seek to identify some of these factors.

Grower Scott McDougall noted one specific preference among the colors. "Pickers don't like working under the red netting," he said. "It's a brighter environment, and it feels hotter. They like the blue because it feels cooler."

The cost of netting is about $3,000 per acre, just for the material alone, plus the cost of installing the structure and labor. The $410,000 project is being funded through grants from the Washington Tree Fruit Research Commission and the U.S. Department of Agriculture's Specialty Crop Block Grant Program.

Kalcsits will present the findings from the first two years of his study at the Washington State Tree Fruit Association's annual meeting. ●

# Beyond the board

**Industry groups lend plenty of opportunities for growers to get involved.**

*by Ross Courtney*

In Washington's tree fruit industry, three state commissions, four federal marketing orders, numerous nonprofit associations and a few advisory committees all intertwine to create a network of industry organizations to support growers.

All that representation, with their acronyms, subcommittees and meeting schedules, provide places for growers to get involved and learn — and similar opportunities can be found in other regions. That's what Jeff Pheasant likes about his role as a board member for the Washington State Tree Fruit Association. "You get a better feel for what's going on and keep up with the changes," said Pheasant, owner-operator of Pheasant Orchards in Soap Lake.

But there's more than board memberships. The groups usually have committees, subcommittees and volunteer roles that also need grower participation.

TJ MULLINAX/GOOD FRUIT GROWER

**Washington Apple Education Foundation scholarship winners receive care packages — put together by volunteers — that include gift cards and treats.**

The organization with the most variety of volunteer opportunities is probably the Washington Apple Education Foundation, the educational charity for the fruit industry. The Wenatchee-based group relies on volunteers to mentor students, provide job shadows, select scholarship recipients and send care packages to students. A quick look at the group's volunteer page on its website shows the diversity of roles.

The foundation is overseen by volunteer board members, most of them growers, but the committees frequently need more bodies, said Jennifer Witherbee, executive director of the foundation. For example, up to 60 people participate on the scholarship selection committee, spending about 30 hours each during the spring reviewing applications. Volunteers on the student stewardship committee help steer students toward career opportunities by arranging job shadows and connecting them with internships. Members of the investment committee help monitor activity and oversee the investment advisor.

"Most of our volunteers would say it's very personally rewarding," Witherbee said.

Pear Bureau Northwest often recruits growers to help distribute samples at in-store promotions, discussing the pears they nurture, said Kevin Moffitt, president and CEO of the Portland, Oregon, nonprofit that represents Washington and Oregon pear growers.

Likewise, the Washington State Tree Fruit Association, which represents the industry in state issues, often would like more help bending the ear of state legislators and regulators about agricultural issues during the annual Tree Fruit Day in Olympia, scheduled for Jan. 31. Staff members will set up appointments but would prefer farmers themselves do the talking. They make a stronger

## Getting involved

*Fruit growers have numerous opportunities to be involved in everything from policy setting to marketing decisions. Here's a rundown of some places to get involved. For those outside the Northwest, look for similar opportunities in your region.*

**STATE COMMISSIONS** are created and funded by growers but codified by state law. All are led by elected commissioners and have subcommittees that rely on volunteers.

*Check for upcoming research reviews, where commissioners evaluate how to dole out grower money on research.*

**WASHINGTON TREE FRUIT RESEARCH COMMISSION**
Promotes and funds research projects.
*www.treefruitresearch.com*

**WASHINGTON APPLE COMMISSION**
Promotes Washington apples internationally.
*www.bestapples.com*

**WASHINGTON STATE FRUIT COMMISSION**
Promotes Washington stone fruits domestically and internationally.
*www.wastatefruit.com*

**NONPROFIT ASSOCIATIONS**

**WASHINGTON STATE TREE FRUIT ASSOCIATION**
Represents growers and packers on state issues, compiles industry statistics and stages the annual meeting. Growers are generally eligible for free membership if their fruit is packed by a member warehouse.
*www.wstfa.org*

**CHERRY INSTITUTE**
Stages the annual gathering of the same name, scheduled for Jan. 20, 2017, at the Yakima Convention Center. Administered by the Washington State Fruit Commission.
*www.wastatefruit.com*

*Volunteers always needed.*

**YAKIMA POM CLUB**
Holds monthly networking and speaker meetings, 6 p.m. the third Wednesday of every month, at Zesta Cucina, 5110 W. Tieton Dr., in Yakima. Meetings open to nonmembers.

*Informal gathering, often over drinks.*

**WASHINGTON APPLE EDUCATION FOUNDATION**
The educational charity organization of the state's tree fruit industry. The foundation's website includes an entire page about volunteer needs and opportunities: *waef.org/volunteer*

*Good place if board meetings aren't your style.*

**NORTH CENTRAL WASHINGTON FIELDMAN'S ASSOCIATION**
Likewise, holds monthly networking and speaker meetings. Meets at 7 a.m., third Tuesday of every month, Smitty's Restaurant, 1621 N. Wenatchee Ave., in Wenatchee. Meetings open to nonmembers.

*Arrive early if ordering breakfast.*

**NORTHWEST HORTICULTURAL COUNCIL**
Lobbies on behalf of the industry in matters of international trade and federal policy. Several other industry groups have a seat on this organization. *www.nwhort.org*

*Check out **www.nwhort.org/trade-associations-commissions-links** for a comprehensive list of links to regional and international industry organizations.*

**FEDERAL MARKETING ORDERS**
Created by federal law to collectively and generically promote fruit products.

**WASHINGTON CHERRY MARKETING COMMITTEE**
Administered by fruit commission.
*www.wastatefruit.com*

**WASHINGTON APRICOT MARKETING COMMITTEE**
Administered by fruit commission.
*www.wastatefruit.com*

**PROCESSED PEAR COMMITTEE**
Administered by fruit commission.
*www.wastatefruit.com*

**FRESH PEAR COMMITTEE**
Administered by Pear Bureau Northwest. *www.usapears.org*

**WASHINGTON STATE UNIVERSITY**

**CHERRY BREEDING PROGRAM ADVISORY COMMITTEE**
Gives input to WSU breeders about experimental varieties. *treefruit.wsu.edu*

**ENDOWMENT ADVISORY COMMITTEE**
Sets priorities and allocations for the state's tree fruit growers' $32 million research endowment, created in 2013.
*treefruit.wsu.edu*

**PEAR BUREAU NORTHWEST**
Promotes fresh pears grown in Washington and Oregon through the brand USA Pears.
*www.usapears.org*

**WASHINGTON-OREGON CANNING PEAR ASSOCIATION**
Negotiates prices with canners on behalf of growers. Administered by the fruit commission.
*www.wastatefruit.com*

**NORTHWEST FRUIT EXPORTERS**
Implements trade protocols with a special export trade certificate.

ROSS COURTNEY AND JARED JOHNSON/GOOD FRUIT GROWER

impact because they put a face on an issue and don't mince words, said Jon DeVaney, the group's president. "Growers are their own best advocates."

DeVaney also recommended growers just stay informed as much as possible.

An easy place to start would be the Yakima Pom Club. The group meets once a month in a relatively casual setting over drinks at a Yakima, Washington, restaurant. Past programs have included discussion about thinning or soil monitoring, researchers talking about their work and political analysis. DeVaney himself shared his take on the upcoming elections with the Pom Club at the September meeting.

The Pom Club's Wenatchee sister group is called the North Central Washington Fieldman's Association, usually the NCW Fieldman's Association. "But we have women, too," said Dawn Milne, the group's event coordinator. Membership is not limited to field representatives, either. Warehouse workers, industry officials, growers and others participate.

The meetings for both groups are open to nonmembers. Despite the unofficial settings, the groups play a critical role in the industry, teaming up each year to stage the Northwest Hort Expo, the trade show held during the Tree Fruit Association's annual meeting, and use the proceeds to fund scholarships and grants. (*The Washington State Tree Fruit Association Annual Meeting and NW Hort Expo is Dec. 5-7 at the Wenatchee Convention Center.*)

The Washington Apple Commission is led by elected commissioners, but the Wenatchee group that oversees international promotions has committees open to other growers and industry members, such as the Market Access Committee, involved with opening the Chinese markets two years ago. All commission meetings are open. "Growers don't have to be committee members to attend," said Commission President Todd Fryhover. "All of our meetings are posted and available to anyone who wishes to attend."

As for industry board members, most are recruited by people already involved with the groups, sometimes an outgoing position holder looking for a replacement.

TJ MULLINAX/GOOD FRUIT GROWER

**Washington State University research associate, Bernardita Sallato, right, talks with Dena Ybarra and Jeff Cleveringa, members of the university's Cherry Breeding Advisory Committee at WSU's cherry breeding test blocks in Prosser, Washington, earlier this year. The committee gives input to WSU breeders about experimental varieties.**

But that doesn't mean they're always full. Some of the federal marketing orders require alternates in case the board member can't attend.

"It is hard to fill all the alternate spots," said B.J. Thurlby, president of the Washington State Fruit Commission, contracted to manage three marketing orders. The Cherry Institute, an annual January gathering in Yakima, always needs help.

Grower participation in the industry beyond just the orchard is in everybody's best interest. "Collectivity … is the only way to keep your strength," Thurlby said.

The growers get a lot out of it for themselves, too. "Some of it's kind of self-serving," said Pheasant. As an independent grower in a remote area, he sometimes feels isolated and relishes the opportunity to rub shoulders with people who understand different parts of the industry, such as packing, food safety and human resources.

Morgan Rowe of Rowe Farms in Naches felt the same way. "I'm not a packer," he said. "...I don't know the business side as much." Rowe is board member for the Tree Fruit Association and the Cherry Institute.

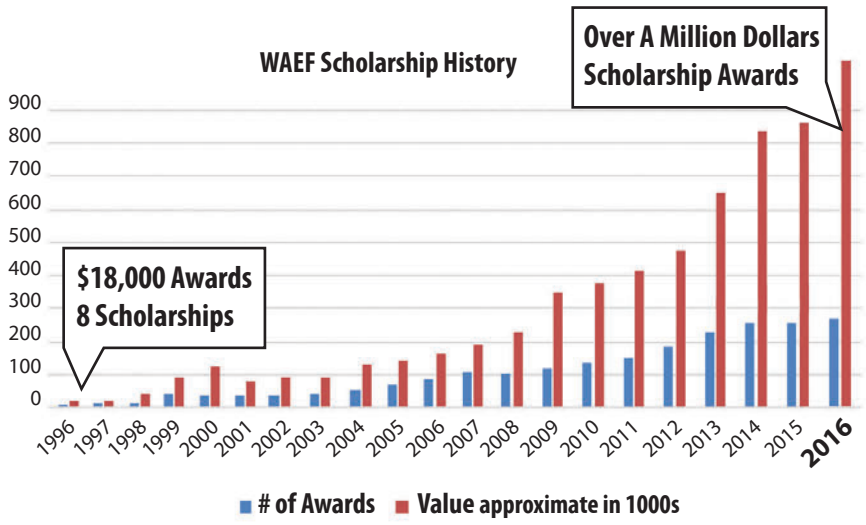
Even the big guns learn something from their involvement. Executives from Stemilt, the Wenatchee industry giant, hold three key board positions — president West Mathison is on the Apple Commission, vice president for sales and marketing Mike Taylor is on the Pear Bureau Northwest and sales director Tate Mathison is a member of the Fruit Commission. They do it to stay aware of the industry outside their own company.

"Kind of giving us a higher level view of where the industry is at and where we need to go," Tate Mathison said. ●

# Growing together


WAEF was founded in 1994 by members of Washington's tree fruit industry to advance the industry's charitable work.

Today, WAEF invests in student achievement, promoting education and support for university, technical and vocational training. WAEF nurtures a network of grass-roots local community services offering ESL programs, citizenship outreach, and Farmworker Family support. WAEF connects the values of tree fruit industry members with good works in the community.




This is a milestone year for the tree fruit industry: over One Million Dollars in scholarship awards. More than 200 young men and women shared in the $1,060,000 awarded in WAEF scholarships.

In 2016 WAEF expanded efforts to identify and assist students pursuing a technical/vocational education aligned with work in the tree fruit industry.

Volunteering is up in 2016: industry member support increased for WAEF student programs and industry charities through committee work, board service and hours spent mentoring and encouraging students.

# with your support

Please join Rears and our family of dealers in supporting the Washington Apple Education Foundation. Drop by the WAEF booth at the Washington Horticultural Show, December 5,6 & 7; purchase a raffle ticket to win this year's prize centerpiece: a 2017 400 gallon TTN Powerblast sprayer.

Rears has also donated a 750 series 6' OMF orchard flail for silent auction; all proceeds to benefit WAEF.

For details contact the WAEF: their offices are listed below or visit their booth during the show.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REARS

# Vineyard mechanization: Is grape quality impacted?

**New research has the potential to save wine grape growers millions in labor costs.**

*by Melissa Hansen*

Technology exists for an almost completely mechanized vineyard, but there's often hesitation by growers and winemakers concerned about the potential impact on wine quality. The Washington State Wine Commission is supporting new research to address these concerns, comparing wine quality in hand-pruned, mechanically pruned and mechanically thinned grapes. This has the potential to save the Washington wine industry millions in labor costs and also help address labor shortages.

Preliminary results are encouraging, says Jim Harbertson, Washington State University associate professor of enology, who is leading the research. "It appears that the outcome is not how you get there (in terms of yield), but that you get there."

The Washington wine industry is focused on the premium wine market. Because changes made in the vineyard can positively — or negatively — impact wine quality, the state's wine industry is mindful of potential wine quality effects when new viticulture practices and technology are considered.

Vineyard mechanization, while not new, is becoming increasingly relevant with today's tightened supply of skilled labor. It may be romantic to think that each vine is carefully tended by human hands, but for many farmers it's just not realistic. More than 55,000 acres of wine grapes in Washington need to be pruned, thinned and picked each year at the same time horticultural tasks must be done in other labor-intensive crops like cherries, apples and hops.

### Potential savings

Mechanical harvesters, introduced in the 1960s, now pick more than 80 percent of Washington's wine grapes and save the wine industry nearly $20 million each year in labor costs. Hand harvesting can

TJ MULLINAX/GOOD FRUIT GROWER

**Vineyard managers are looking to reduce hand labor and increase mechanization in their fields. Some very specific tasks, like how Ignacio Silva is pruning Cabernet Sauvignon back to eight spurs per cordon, may be more difficult to mechanize.**

cost $500 to $1,000 per acre compared with $200 to $400 per acre for mechanical harvesting. Hand labor is still important in vineyards not conducive to machines or where winemakers prefer the human touch.

Many growers have added mechanization to their pruning by using tools like pneumatic pruners and hedging implements that work like pre-pruners but still require some hand labor as a follow-up. Hand pruning costs range from 18 to 25 cents per vine or $150 to $200 per acre, based on 807 vines per acre; hand thinning costs depend on crop load and variety, but range from $20 to $200 per acre. If the 80 percent of the acreage (44,000 acres) currently picked by mechanical harvesters were mechanically pruned and thinned, around $10 million could be saved annually in labor costs.

*"If growers are to adopt machine pruning on a large scale, we have to show that they can do so without adversely impacting wine quality."*
***— Jim Harbertson***

### Mechanization study

Previous studies on mechanical pruning have looked at the impact on yield and fruit quality and measured basic fruit ripening parameters, like total soluble solids, pH, and titratable acidity, but few have looked at the impacts on wine, according to Harbertson, research enologist based at WSU's Ste. Michelle Wine Estates Wine Science Center in Richland, Washington.

"There is much interest in mechanization and mechanical pruning of vineyards, however, there's some reluctance because of questions about the impact of mechanization on vineyard performance and grape and wine composition," he said. "If growers are to adopt machine pruning on a large scale, we have to show that they can do so without adversely impacting wine quality."

The project takes place in a commercial Syrah vineyard block near Paterson, Washington, in cooperation with Ste. Michelle Wine Estates. WSU viticulturist Markus Keller, project collaborator, is collecting vine performance data from mechanically pruned and manual spur-pruned wine grapes.

The vineyard, with vines trained to a bilateral cordon, is drip irrigated and was converted to mechanical pruning in 2013. When the project began in 2014, four blocks of three adjacent rows were converted back to manual spur pruning to serve as the control, with mechanical pruning conducted in the same number of rows. The grapes are made into wine, with samples collected each year at pressing and throughout the winemaking process. The research wine is bottled for later evaluation.

The mechanically pruned vines have basically no hand follow-up or bud adjustment, explained Keller. "They look like they've had a short, messy haircut with a lot of spurs left."

In the first year of the study, because there was no bud count adjustment, the mechanically pruned vines had more than double the number of clusters per vine than the hand-pruned treatment (98 clusters per vine compared to 41). Yield was also higher at 6.8 versus 4.2 tons per acre. Not surprisingly, considering that all treatments were harvested the same day, the hand-pruned grapes were riper at harvest than the mechanically pruned treatment. Also, wines from the lower yielding hand-pruned vines were more concentrated in most of the important wine characteristics, including alcohol and phenolics.

To ensure the project compares apples to apples and that yields from the machine-pruned vines match those of the hand-pruned vines, Keller said they decided to make two adjustments, if necessary, to the mechanically pruned vines:

—Mechanically thin the crop with a mechanical harvester.

—Harvest later than, and at the same Brix level, as the hand-pruned vines to compensate for the delay in ripening.

### Preliminary results

In the second year of the study in 2015, yield in the hand-pruned vines was

TJ MULLINAX/GOOD FRUIT GROWER
**Workers prune a Cabernet Sauvignon block at Mercer Canyon Estates vineyard north of Alderdale, Washington.**



much higher than the desired target and reached 7.7 tons per acre, compared to the mechanically pruned vines of 6.8 tons per acre, which was consistent for both seasons. The mechanically pruned fruit had much greater soluble solids, berry weight, anthocyanins and pH than the hand-pruned fruit. Wines made from the mechanically pruned vines had greater amounts of phenolics than the hand-pruned wines. The adjustments were not applied because they were not needed.

During 2016, Keller used the mechanical harvester to remove some of the crop. The harvester ran at a high speed with only a little beating action. The mechanical thinning took place around the lag phase stage of growth. He estimated that about 15 percent of the crop was removed. A late harvest treatment was also applied.

Thus far, Harbertson has not observed significant differences between the mechanically pruned, plus mechanically thinned fruit and the fruit that was only mechanically pruned. In 2016, measurements of cluster temperatures and tannin extractability were also collected.

At press time for *Good Fruit Grower,* wines from the treatment vines were in secondary fermentation. The WSU researchers hope to extend the trial for at least another year to confirm results and assess vineyard productivity. Once the project is finished, details will be reported to the industry.

## Serendipity

"It's obvious that the results of this experiment were skewed in the second year by high yields in the hand-pruned treatment — yields that were twofold greater than we targeted," Harbertson said.

But the mishap provided interesting results. The serendipitous higher yields seem to suggest that wine quality is not impacted by mechanical pruning per se.

"The results suggest that as long as the mechanical pruning does not lead to overcropped vines, the wines produced will have high concentrations of phenolics," he said. Preliminary data indicate that for certain tiers of wine styles, mechanical pruning and thinning are not detrimental.

With a looming shortage of skilled workers and continued growth in the industry, data from this trial will be welcome science to the state's wine industry. The ability to more fully mechanize vineyard tasks like pruning and thinning could help the Washington wine industry continue its rapid growth despite labor shortages and help growers stay competitive in the premium wine market. ●

*Melissa Hansen is the research program manager for the Washington State Wine Commission.*

# Growing smoky vintages

**Nearly 10 hours into the first day of a new research trial on wine grapes, Washington State University Assistant Professor Tom Collins writes harvest notes on a Riesling grape sample collected from a smoke-filled row at the WSU Prosser, Washington, research vineyard in July. Collins, with the assistance of research technicians Chris Sorenson, left, and John Ferguson, center, is studying how wildfire smoke may impact wine grape flavors.**

# Researcher tests the effects of wildfire smoke on grapes and wine.

*by Shannon Dininny / photos by TJ Mullinax*

The catastrophic wildfires of recent years raise obvious, immediate concerns for growers to protect people, equipment and orchards and vineyards from damage. In premier grape-growing regions, wildfires can have a longer lasting effect: the possibility of a wine vintage being tainted by smoke.

Researchers have already established that grape cultivars can take in contaminants from wildfire smoke, resulting in undesirable sensory expressions in the wine — smoky, ashy, burnt. It's known as "smoke taint." However, researchers don't yet know exactly how much smoke must be present in the vineyard, or for how long, to experience perceptible taint in the resulting wines. More also needs to be known about how to alleviate severe taint in wine to salvage it.

It's a tricky study question, because wine is also a function of how the winemaker produces it, says Tom Collins, assistant professor in Washington State University's Wine Science Center in Richland, Washington. Collins is researching the issue of smoke taint — both in the vineyard and in the winery — with funding from the Washington Wine Commission.

"I don't think we're going to see the issue of wildfires going away any time soon," he said. "And as we continue to plant more vineyards in the state and elsewhere, the likelihood that we're going to have this intersection of vineyard and wildfire smoke is only going to get greater."

### Smoke in the air

In 2008, a severe lack of rainfall and windy conditions made for a tough summer wildfire season in California. At that time, Collins had just assumed a position in research and development for Treasury Wine Estates, a role that ended up requiring him to assess the resulting wines from that vintage for taint. Cabernet Sauvignon was most affected and, to a lesser extent, Merlot and Cabernet Franc, he said.

It was clear there was an impact to the grapes. In the years since, researchers in Australia and the U.S. have been examining the issue of smoke taint, leading to development of some tests for smoke taint in wine.

What is less clear is the relationship between the smoke intensity and time, or as Collins puts it, "at what point do you say this fruit is not going to be salvageable." Better understanding that relationship will help growers who find themselves in that situation, because taint is invisible on the leaves or fruit and only appears when the wine is produced.

The other goal of the project is to better understand all the markers, the compounds, that should be measured to establish the severity of the smoke taint in a wine. Smoke taint is created by smoke compounds that bind with sugar molecules to form glycosides. These glycosides break down in the acidic wine, releasing the smoke compounds and creating a smoky aroma or taste.

**In his research project, Collins is using a customized smoker and exhaust hoses with attached fans to evenly distribute smoke and a one-of-a-kind vine enclosure to help mimic smoke levels common in wildfires. Below, the researchers smoked post-veraison Riesling grapes the first night of the trial. They carefully selected clusters at different time intervals through the 18-hour marathon, wrapped them in aluminum foil, then bagged them in coolers before taking them to the university winery the next day.**

## Where's there's smoke...

As part of a study on the effects of wildfire smoke on wine grapes, Tom Collins, assistant professor in Washington State University's Wine Science Center, also needs to examine grapes from control blocks of Riesling and Cabernet Sauvignon that have not been exposed to smoke. But, as always, Mother Nature is the one in control.

Collins had just finished smoking the Riesling block on a Friday afternoon. The next day, two wildfires started to the south and east of the vineyard, and Collins awoke Sunday to the smell of smoke at his home some 30 miles east.

"We still had the smoke monitoring system in our trial, so I had those set up in our vineyard so I could monitor whether we were getting any wild wildfire smoke, if you will, as opposed to the domestic stuff," Collins said with a chuckle. Fortunately, the vineyard didn't get much "wild" smoke. "As it turned out, it didn't compromise our trial, but it certainly got everyone's attention," he said.

However, Collins collected wines from nearby vineyards that were affected by the wildfires. He intends to analyze those wines, along with the wines from the control vineyards and the intentionally smoke-tainted wines from the study, to compare the results.

***—S. Dininny***

"It's clear from all the previous research, both what we did in California and what has come out of Australia, is that it's not sufficient to just measure the free smoke compounds," Collins said. "We also need to know something about the pool of sugar-bound compounds as well."

For this study, Collins and his team constructed hoop houses to cover some 60 vines each of Cabernet Sauvignon and Riesling grapes in research orchards at WSU's Irrigated Agriculture Research and Extension Center in Prosser, Washington. Using a smoker, he pumped fumes into the house, monitoring the results with particle counters. His team will analyze leaves, fruit and wine to determine the impacts of the smoke.

"We covered a significant piece of real estate with these hoop houses

*"I don't think we're going to see the issue of wildfires going away any time soon. ... The likelihood that we're going to have this intersection of vineyard and wildfire smoke is only going to get greater."*

***—Tom Collins***

**Above, Collins closely monitors frequently changing smoke levels within his trial enclosure about 10:30 p.m. July 28, 2016. Sensors set up throughout the enclosure, in the smoker and outside of the enclosure provided a minute-by-minute appraisal of air quality conditions. In a long-exposure photo at right, Collins is seen in three areas because when smoke levels dipped, Collins would move from his monitoring station, right, to the smoker, left, to add cut lumber to the smoker, then back again to watch the smoke levels increase inside the enclosure. The research team would continue this work for nearly 18 hours.**

so that we have enough grapes to make enough wine for us to do follow-up work to understand how these compounds are extracted from the fruit, and to start to do trials looking at how we might be able to remove these compounds or diminish the effects in the resulting wines," he said.

The goal of the first year of the three-year study was to establish methodologies for the research. Collins is still conducting a preliminary analysis of the fruit, leaves and resulting wine and hasn't gotten through enough samples to draw any conclusions yet. He expects to have some initial results to present at the Washington Association of Wine Grape Growers annual meeting in February. ●

# A SUCCESS

**Bill and Mark Zirkle credit teamwork for company's growth and fruitful legacy.**

***by Shannon Dininny / photos by TJ Mullinax***

When the leaders of Zirkle Fruit Co. want to share the story of the company's history and vision, they take visitors up a dusty lane to a Yakima Valley hilltop.

On one side of the lane sits a trellised block of 6-year-old Honeycrisp trees. The high-density block, planted in 1-foot spacing, replaced a longtime orchard of Red Delicious trees that were an old strain and needed to be replaced.

On the other side: a traditional orchard of freestanding Golden Delicious trees. Some 60 years old, with massive trunks each spaced 20 feet apart, the orchard produces only about two-thirds the crop of the Honeycrisp block. Yet the trees produce as good a Golden as any other tree, and no one at Zirkle can bear to tear them out just yet.

Together, the orchards represent Zirkle Fruit, past and future — the way things have always been and the way they need to be going forward. A respect for tradition, but a refusal to fear change.

Thanks in large part to those traits, Zirkle Fruit and its sales arm, Rainier Fruit Co., are among the world's premier growers and packers. They also have earned Bill and Mark Zirkle recognition as the Good Fruit Growers of the Year for 2016.

Both men credit the company's growth and success to the people who grow fruit or work for the company and buy its products. "This is a huge effort for a lot of talented people," Mark said. "Dad and I may strategize for the future, but it's the team, it's the people who run this place."

Bill agreed. "It's how you treat your customers, your employees, your coworkers, the neighbors, their families. It makes no difference. It seems like if you do the right thing, it all works out, and in our case, it did," he said. "That's why it's been such a fun ride."

## A RICH HISTORY

The Good Fruit Grower of the Year award is bestowed annually by *Good Fruit Grower* magazine to an innovating and inspiring grower or family in North America and is presented during the Washington State Tree Fruit Association Annual Meeting in December. The magazine's advisory board makes the selection.

Often, those recognized are growers with long ties to the fruit industry, but to say farming is a Zirkle family tradition would be an understatement.

The family grew fruit for more than a century in Virginia's Shenandoah Valley until the Civil War effectively drove Perry Luther Zirkle, Bill's great-grandfather, west to begin anew. He settled in Washington's Yakima Valley, where the family thrived for nearly four decades. The Great Depression forced Bill's grandfather to start over again, first working for other farmers, then buying a 60-acre apple block and growing from there.

Father and son, Bill and Mark Zirkle of Zirkle Fruit Co., talk under a canopy of Golden Delicious ap from this block a new trellised block of Honeycrisp stands.

# ION STORY

**pples in one of their older blocks in Selah, Washington. Bill says the trees are 60-some years old and are consistent producers, prop wood and all. Across the road**

Bill joined his father, Lester, at the company when he got out of college in 1964 and ran the company for two decades until Mark assumed control in 2003.

Bill recognized early on the benefits of youth. Aging happens slowly. Perhaps you aren't quite as aggressive, or maybe you stick with older ideas because they're comfortable to you, he said. Soon, things start to pass you by.

"You don't lose it at 75. You lose it a lot earlier than that, and you better pass the torch. Sometimes that's difficult for some folks to do," he said. "I was blessed with Mark being here. He started in the orchard, ran packing lines, did it all, and it became an easy decision because you can pass it on with confidence that everything is going to be all right and even better."

Third-generation grower Mark Tudor of Columbia Valley Fruit has watched what the Zirkle family has built over the years. "Between the farming operation and the marketing operation, they're one of the top and very impressive," he said. "They are cutting-edge on most things."

Succession planning is never easy, and representing both generations with the award is telling, Tudor said, when the statistics of farm succession are considered: Second-generation growers have about a 50 percent success rate, and those numbers fall further by the third generation.

Today, Zirkle Fruit is a major supplier of 16 of the 20 largest U.S. retailers. The company handles sales for six other shippers, and its own acreage has expanded to include some three-dozen sites in Central Washington and multiple crops: apples, cherries, pears, blueberries and wine grapes, as well as a custom-crushing facility that sells to some of the state's biggest wineries.

Mark credits his dad for a fearlessness that moved the company forward all those years. "We're not afraid to change things up in this company, whether it's planting new varieties, getting new equipment or changing roles," he said. "He built his career on trying to identify the trends in planting and taking advantage of those things."

At the same time, a team with fresh perspectives will drive the company into the future. The management team now is largely youthful, mid- to late 40s. "That's good," Bill said. "That's tempering youth and enthusiasm with some experience, and that's the sweet spot."

Mark's best quality is that he's reflective; he weighs alternatives and doesn't make a knee-jerk decision, Bill said. When asked what qualities he inherited from his father, Mark is equally complimentary.

"The desire to do right to others, whether it's consumers or your employees," Mark said. "We might be demanding employers, but I think we're pretty fair."

Bill Zirkle at a Lady Alice apple block in Selah in late September.

Over the years, Bill and Mark Zirkle have volunteered their time and energy, and held leadership positions, for numerous industry boards and commissions:

**Bill**
- Washington Apple Commission (former chair)
- Northwest Horticultural Council (former chair)
- US Apple Association
- Yakima Valley Growers-Shippers Association

**Mark**
- Washington Apple Commission (former chair)
- Northwest Horticultural Council (former chair)
- Northwest Fruit Exporters (former chair)
- Washington State Fruit Commission

## A PEOPLE PLACE

It all started with a pop machine.

Back in the 1960s and '70s, when the employees needed money for something — a potluck, an employee lunch — Bill pitched in to help pay for it. But the employees wanted to raise the money on their own, so Bill bought what they requested: a soda-pop machine. Proceeds go into a fund for employee needs that reaches far beyond lunches. Over the years, thousands of dollars have been raised to help someone whose home burned down or fly an employee to Mexico for a family member's funeral.

Later, the employees wanted to ensure every worker had access to a healthy, inexpensive lunch. Zirkle Fruit bought the machinery and the stoves and turned a room off one of the warehouses into a cafeteria. Lunches sell for between $2 and $3.

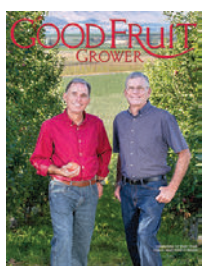
"Once that gets going and the right people are in place, it feeds on itself," Bill said. "Mark and I don't teach culture here. It's taken off on its own, and that culture is reaped and expanded on by the employees themselves. It transcends into the workplace."

In addition to health insurance, retirement plans and Spanish- and English-language classes, Zirkle provides

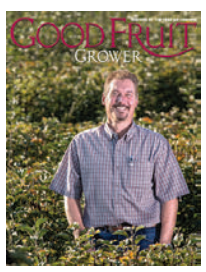
## GOOD FRUIT GROWERS OF THE YEAR

**2016** *Bill and Mark Zirkle* — Selah, WA

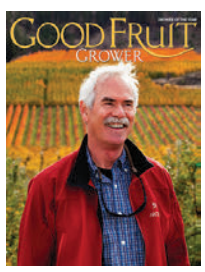
**2015** *Brenton Roy* — Prosser, WA



**2014** *Craig and Mike O'Brien* — Prosser, WA

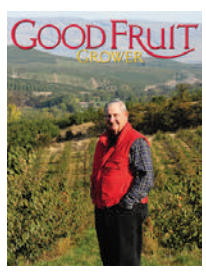


**2013** *Jeff Colombini* — Lodi, CA

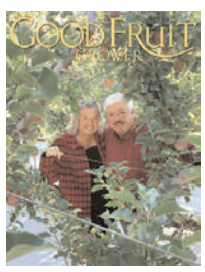


**2012** *Scott Smith* — Tonasket, WA

**2011** *John Rice and family* — Biglerville, PA

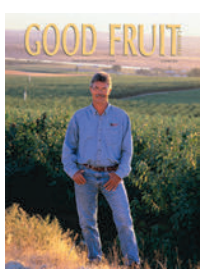


**2010** *John Carter* — The Dalles, OR

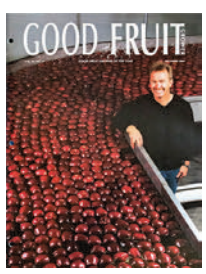


**2009** *Jim Doornink* — Yakima, WA

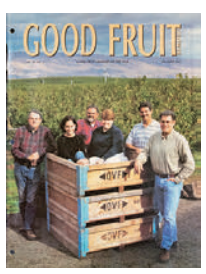
**2006** *Norm Gutzwiler* — Wenatchee, WA



**2005** *Denny Hayden* — Pasco, WA

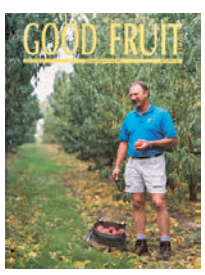


**2004** *Warren Morgan,* — Quincy, WA

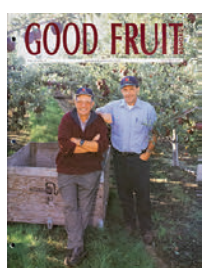


**2003** *Tom Bailey* — The Dalles, OR

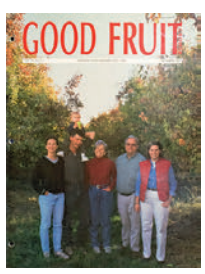
**2002** *Tom Mathison* — Wenatchee, WA



**2001** *Gip Redman* — Yakima, WA



**2000** *Dave and George Allan* — Yakima, WA



**1999** *Peters family* — Yakima, WA

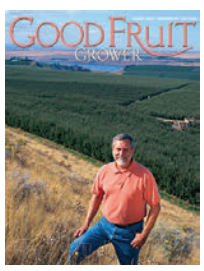
Mark Zirkle talks with Noe Castillo above one of the apple packing lines at Zirkle's Selah packing facility.

on-site medical clinics for employees and their families at its main warehouse in Selah, Washington, and about a half-dozen orchards across the state, including some places that are "pretty far flung, where people just don't have access to health care," Mark said.

Zirkle Fruit also created a scholarship at the Pacific Northwest University of Health Sciences to assist students who are committed to providing medical services in rural areas and funds college scholarships through the Washington Apple Education Foundation.

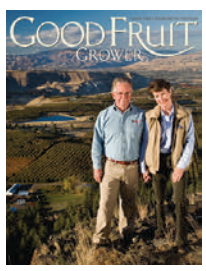
That culture, along with growing high-quality fruit, forms the basis for the company's success, Mark said.

"It's not the shiny new technology that anybody can buy, it's not the high-tech orchards that, truthfully, any investment company could put in — and they are — it's the people that run them. And that goes from the orchards to packing to administration to sales," he said. "The success and growth of our company is tied to people. Even though some people don't work here anymore or passed on, they are the legacy of the company." ●




**2008**

*Ralph Broetje*
PASCO, WA

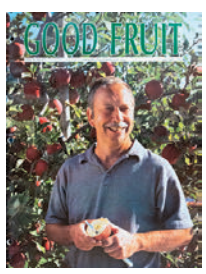



**2007**

*Mike and Laura Mrachek*
WENATCHEE, WA


**1998**

*Fleming family*
ORONDO/QUINCY, WA




**1997**

*Bruce Allen*
YAKIMA, WA

# DIVERSITY WINS

**Blueberries, wine grapes are among Zirkle Fruit's most recent endeavors.**

*by Shannon Dininny*

*photos by TJ Mullinax*

Diversification has been key to many fruit growers finding success in recent years, whether it's planting new apple varieties or expanding to include new crops.

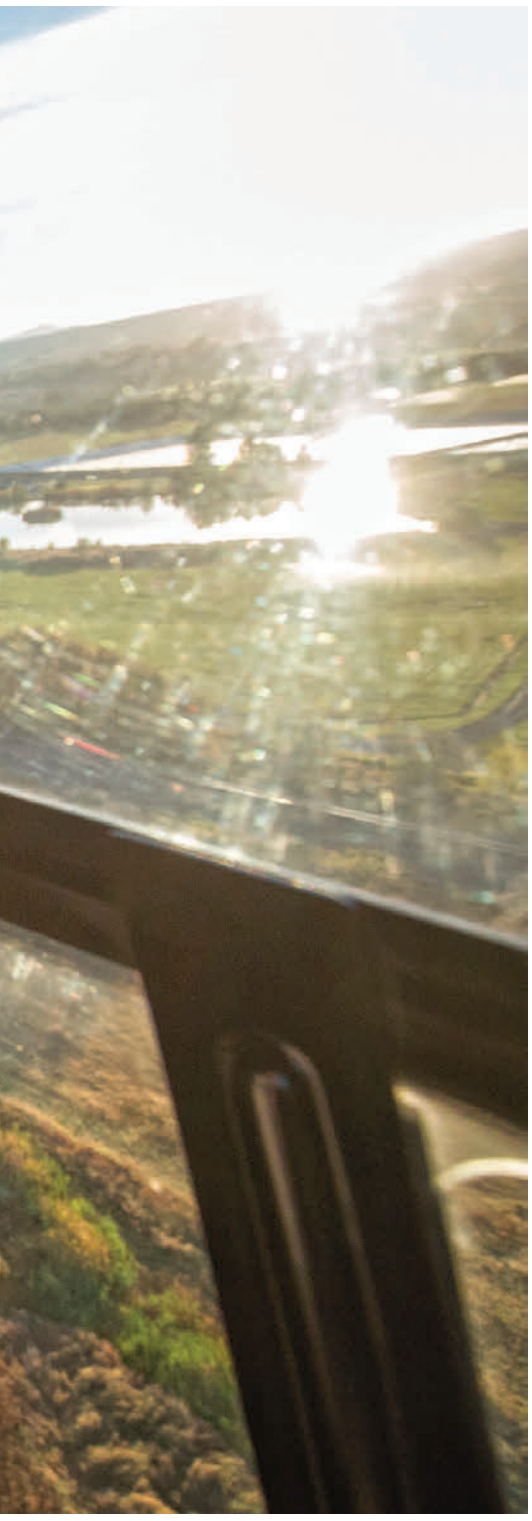
Count Zirkle Fruit among the devotees. The company continues to find a spot for itself in new, evolving niches of the industry.

New varieties are regularly being evaluated, including the new Washington State University apple variety, Cosmic Crisp, of which 100 acres will be planted this spring. When a long-term lease with an orchard group included a roughly 400-acre block of wine grapes — something that was not a part of the company's strategic plan — the Zirkles ended up expanding acreage and, seeing a need, building a custom-crushing facility. More recently, the company planted and is growing organic blueberries for the fresh market.

"It's an exciting time to be in the fruit business," Mark Zirkle said. "We're trying to find as many niches as we can."

Mark or members of his team visit the company's roughly three-dozen orchards scattered across Central Washington almost daily during harvest to examine the

A Zirkle organic and fully covered blueberry farm in Mattawa.



Mark Zirkle looks out over Selah after taking off from the Zirkle main office on his way to check on the apple harvest in Mattawa in late September. With ranches scattered up and down the state, Zirkle can substantially cut down travel time by commuting by air to monitor crops, projects and ongoing ranch upkeep during critical times in the season.

Mark Zirkle takes a photo of Lady Alice apples waiting to be shipped to their packing facility.

fruit and assess potential sales avenues, going block by block to check return by acre. But it isn't just about sales, he said; harvest is his best opportunity to examine strategically, for the long term, how fruit looks for the company.

"Over the course of the year, over a few years, we can determine the future of that planting," he said. "Is that block going to need to come out in a few years? Maybe it's turning around and doing well. You reacquaint yourself every harvest to what that tree or that block can do, if it's going to continue to be a profitable enterprise."

For many years, success went to those who grew fruit well, said Mark's dad, Bill. Today, with all the new varieties, growers need to be smarter. "If you're an excellent grower of the wrong varieties, that will be tough," he said. "A good grower who's a smart grower, growing the right things, will be just fine. But they have to have their antennas up and do their research to figure out which varieties to choose."

There's nothing static about it either, he said, because there are new varieties coming and going all the time. "That means you've got to be aggressive," he said.

Eighty percent of the company's business is in apples, in terms of both acreage and sales dollars, followed by cherries. Only about 100 acres of pears is currently planted.

The plethora of amazing tasting apples in the pipeline mean that, 25 years from now, consumers might not see a lot of the traditional apple varieties on display at the retail market, Mark said. "The retailers are looking for variety, and we're trying hard to identify the exceptional ones and bring them to market."

Today, Zirkle grows only 15 acres of conventional Red Delicious, which is very, very little compared with other varieties in its orchards. The company was among the first to plant Honeycrisp in Washington

"I think every shipper has their own variety they're propagating and selling, and they're all good," Mark said. For Zirkle, that would be its propriety Lady Alice variety, which was a chance seedling in a nearby farmer's orchard. "I would hope this would mean the apple category will grow and there will be more people buying apples. It's fun going out there to see what new market is going to do well, where."

Zirkle is moving toward a 13-foot V-trellis for new plantings, with tree spacing depending on the rootstock used. "That doesn't mean we don't have every tree structure known to man over the last 25 years," Mark said with a laugh.

The structure may lend itself to automation some day, and while Mark said he looks forward to mechanical harvest, realistically, "some of our varieties will have to have hand labor, which means maybe just fewer tractor drivers and support people."

The company also is gradually moving everything


When new apple varieties were starting to hit the market, Zirkle Fruit knew it wanted something all its own that was local and unique. The company decided on Lady Alice, a chance seedling from a nearby grower's orchard that was eventually named after Bill's mother, Alice.

Its growing technique is something "right out of the '50s," Mark Zirkle said: a precocious yet consistent producer that has had never shown problems with cropping, and it carries a sweetness that develops quickly, just prior to picking. "It's a challenging apple, not so much to grow but to harvest, because it's picking window is literally hours — four times in the month of September," he said.

Zirkle said it's also probably the most light-sensitive variety he's ever seen. For that reason, Lady Alice has been planted on Tatura with Extenday, and he's not afraid to plant it on a south or southeast slope for added sunlight.

to Geneva rootstocks, though like many growers, they can't get them fast enough. However, the hope is that the Geneva rootstocks will eliminate disease concerns, such as fire blight, which poses particular problems in their organic blocks.

Almost 50 percent of Zirkle's tree fruit is in organic production, and all of its blueberries are either organic or transitioning to organic. Blueberries were an area of expansion that was first proposed by Mark's brother, Lester, who is also an owner of Zirkle Fruit while managing his own farm.

On the wine side, about two-thirds of what Zirkle's Four Feathers Winery crushes is sold under contract to the larger wineries in the state. The winery operates very much as a separate business entity and doesn't currently sell anything in the bottle. If and when it does, that would be another business endeavor that will have to be pursued by someone else, Mark said.

"If my daughters want to go to the glass, that's a whole other, complicated endeavor," he said. "That's another chapter that's not going to be written by me." ●


Mark Zirkle above one of the apple packing lines at Zirkle's Selah facility.

# STAYING AHEAD

## Communication is key for Zirkle sales team.

*by Shannon Dininny*

*photos by TJ Mullinax*

*"A good grower who's a smart grower, growing the right things, will be just fine.*
*—Bill Zirkle*

When Bill Zirkle's father, Lester, was running the company, one of his primary customers was a Portland, Oregon, retailer that had one store with a large grocery department: Fred Meyer.

"They had a unique relationship. Whenever Dad had a load of 280 boxes of exceptional stuff, he'd say, 'Bring it down, Lester,'" Bill recalled.

Communication with the customers is just as important today as it was then — perhaps more so. Success requires meeting the demands of an ever-changing market.

Flexibility at the packing house level is crucial. "We never pack the same thing two days in a row anymore. That cuts into the packing house's profitability and effectiveness probably, but that's the way it is now," said Mark Zirkle, Bill's son.

At the same time, Zirkle Fruit's sales desk, Rainier Fruit Co., has given the company front-row seats for watching industry trends and allowing the company to act on them, he said. "We've made our share of mistakes for sure, but it's simply planting what the consumer wants."

Zirkle and the growers it packs for all take a long-term look at the market, he said. "How we pack, what we pack, when. The customer doesn't care if you are waiting for the market to go up on a specific variety. They just want it now. They want a supply. That takes a lot of teamwork, a lot of trust in each other."

Earlier this year, Rainier Fruit signed on as a multi-year sponsor to the Boston Marathon, supplying some 75,000 organic apples to the event, and has since worked to expand the marketing effort to the entire running community with additional events and a #RunWithRainier social media campaign. Roughly 85 percent of the company's business is in the domestic market.

Zirkle Fruit has worked to stay ahead of consumer demand in part by installing the latest in packing technologies in its warehouses.

A dedicated organic line, built in 2015 and featuring an eight-lane sizer and color and defect sorter, reduced the potential for cross-contamination from conventional fruit. A year later, the company built a new cherry warehouse that includes 85,000 square feet of packing area, a 48-lane sizer with defect sorting, and flexibility for different packaging options.

The warehouse with the organic line also has increased energy efficiency with insulated concrete walls, upgraded roof insulation, LED lighting and 336 solar panels that generate over 134,000 kilowatt hours annually. Meanwhile, the cherry warehouse features 483 LED light fixtures for roughly a 40 percent reduction in watt usage, as well as 15 miles of underground conduit and piping and an underground glycol refrigeration system for a safer, cleaner work environment.

Several years ago, Zirkle Fruit replaced propane-powered forklifts with electric ones. However, the new buildings were designed to eliminate forklift traffic from the floors entirely, both to improve food safety and employee safety. Box-making equipment also now sits in a mezzanine above the packing room or off to the side — a decision that also improves food and employee safety, but was market-driven.

"I don't think, 15 years ago, we would have envisioned that because, frankly, we didn't need it," Mark said. "Then, we had a box and maybe two or three lids. Now, there's 15 different boxes, different-sized cartons — not

**This Zirkle packing facility in Selah can run multiple varieties at the same time.**

only ours, but other private labels. We've had to face that this is a lot bigger operation and it needs to be in a much bigger area, not just on the packing room floor."

## BUILDING A FOOD SAFETY TEAM

Ten years ago, Mark said he probably had never heard of *Listeria monocytogenes*. A recall of California apples in 2014 quickly raised awareness for the entire industry. "The silver lining is that I think we'll all be better and much more aware," he said. "We've learned a lot."

In terms of food safety, the company's focus over the past year has been on improving practices and training, said Will Strand, director of regulatory compliance. Particular areas of concern: brush pads, sort tables with soft surfaces that can be tough to clean without damaging them, and the water quality within the dump tanks, where water is changed daily.

The company has also recognized the need to recruit sanitation workers — a difficult task that requires communication, higher pay and rewards for experience and time on the job.

"The best way to recruit, and we're still practicing and improving, is demonstrating the importance of the function to the whole process," Strand said. "You can remove some of the human touches in packing, but sanitation is still one of those areas that takes a lot of hands-on work. You need workers who take pride in the work and know they're part of the team."

Mark agreed. "Cleaning the lines at 1 in the morning is probably not the most glamorous job in the industry, and until the last few years, we didn't really give it much thought. Now that person is almost the most important in the company," Mark said. "We have recognized it as a very critical position and are staffing for it." ●

*"It's an exciting time to be in the fruit business. We're trying to find as many niches as we can."*
***—Mark Zirkle***

PHOTOS COURTESY OF BILL MAYO

**Laden with bittersharp apples, this chance-seedling tree, called the Franklin Cider Apple after its location in Franklin, Vermont, is drawing interest for its possibilities in hard cider.**

# Bittersharp discovery

## Cold-hardy variety draws interest for hard ciders.

*by Leslie Mertz*

Sometimes good things come in large packages. For the owner of a small orchard in New England, that "good thing" came in the form of a big and beautiful chance-seedling tree that so happens to produce just the kind of apples that are in high demand by the rapidly expanding hard cider market. The fruit is called the Franklin Cider Apple after the orchard's location in Franklin, Vermont.

The discovery of the one-of-a-kind bittersharp apple tree actually heralds back to 2008, but at that time orchard owner Bill Mayo only saw its potential for the sweet cider that he and his wife Sue sell in their country store.

"I used to walk by this tree, which is right on the edge of my small gentleman's orchard, as I like to call it, and I'd pick apples off of it. They were always very high in sugar and had an astringency that would leave this wonderful dryness in my mouth, so I thought it would be a really nice ingredient to put into the sweet cider in our store," he said.

He devised a sweet-cider blend that included about 5 percent juice from the Franklin Cider Apple, and his customers took to it right away. "I make all I can, and I cannot keep it in the store. People say it's the best they've ever had anywhere," he said.

**Bill Mayo, shown here harvesting one of his 300 Honeycrisp trees, discovered the Franklin Cider Apple at the edge of his orchard in northern Vermont.**

As Mayo continued to make and sell the sweet-cider blend, his appreciation for the tree's other attributes also grew. For one thing, it was a survivor. Estimated to be at least 60 years old, the only care it had ever received was a bit of pruning, but it still stood strong in the Zone 3 temperatures on his farm.

"This tree doesn't show any dead wood or other signs that it's unhealthy," he said. "It's just an incredibly vibrant tree, and that says a lot about its winter hardiness."

It also shows some disease resistance, Mayo said. "I've always marveled at the fact that there was no foliar scab and no scab on the fruit, which is very russeted and thick-skinned. That's pretty amazing

for a tree that didn't have any chemicals used on it. That scab resistance caught my interest as a grower."

In addition, the tree is a heavy producer of apples and juice. Last fall, Mayo harvested 30 bushels off the parent tree and squeezed 2.74 gallons per bushel, "which is incredible throughput for a cider apple," he said.

To top it off, harvesting was a simple affair, with those 30 bushels harvested in just a couple of hours. "We laid these big tarps under the tree and literally just shook the tree. It was just unbelievable how the apples rained down on the tarps," he said, noting that this feature makes the tree perfect for mechanical harvesting.

### Hard cider

In 2013, a friend of Mayo's decided to dabble in hard ciders, and since Mayo owns a store, he thought maybe he could put in a growler system and do some of his own hard cider branding. He ended up fermenting about 150 gallons blended with the chance-seedling apple. "What it did to hard cider was wonderful. I realized we had something I considered very special," he said.

Mayo then sent out samples for analysis to Terence Bradshaw, tree fruit and viticulture specialist with the University of Vermont, and to cideries. The analyses showed that the Franklin Cider Apple exceled in the three major cider-apple qualities: sugars, tannins and acidity. Sugars came in at between 16.9 and 19 Brix. "That's really sweet for any apple," Mayo said. Tannins in the Franklin Cider Apple measured up well against traditional cider apples at 0.36 percent, and also exhibited high acidity.

Armed with those results, he approached Steve Stata at Hall Home Place, which is known for its ice cider and hard cider. Stata didn't jump on the bandwagon until he and Mayo attended a cider-makers meeting, and he heard a speaker expound about bittersharps' importance to making a good brew.

"Everybody started bemoaning the fact that there were almost no good bittersweets or bittersharps around, and Bill says to me, 'This is what I've been telling you!'" he said. Stata tried Mayo's hard-cider samples and was impressed enough to join Bradshaw at Mayo's orchard for the fall harvest of that lone Franklin Cider Apple tree.

"Terry took a couple of bushels and I took the rest, and it made a very nice cider. In fact, I put up about 1,000 liters of it this past fall," Stata said.

Stata named his hard cider the Blen Franklin, debuting the blend at the Farmhouse Tap and Grille restaurant in nearby Burlington, Vermont. "Everybody liked the astringency, and they liked the fact that we were able to keep the apple flavor as well. We actually also had our other variety there, and it seemed like people liked the Blen Franklin a little bit better," he said.

His only lament is that commercial production of the Franklin Cider Apple tree is at least four years away.

Likewise, Steve Cummins of Cummins Nursery in Ithaca, New York, is looking forward to more trees after tasting the "excellent" juice from its apples.

"So far, all the info is from one tree on one farm," Cummins said. "It's generally not a good idea to make too much of a new variety until test plots with many different growers and cider makers report back." Nonetheless, he said, "I think it has the potential to be a great variety because the claim is that it is an annual bearer and is very cold hardy. Time will tell."

**Growing to about 1.75 inches in diameter, the Franklin Cider Apple is a thick-skinned apple with the hallmarks of a potentially excellent hard-cider apple: high sugars, acidity and tannins.**

More trees are coming, according to Elmer Kidd, chief production officer of Stark Bro's Nursery and Orchards Co. of Louisiana, Missouri. After working with Mayo to patent the tree, the nursery began developing scion trees in the greenhouse from "about a cigar box full of wood of various sizes" that Mayo delivered, Kidd said. "From that wood, I've developed a production block and we will have about 1,500 for sale this year." It's progressing well so far, he added. "Most of the scion trees were developed in the greenhouse, and they seem to have very vigorous roots, and the tree stem seems vigorous."

The nursery has already received many inquiries about the Franklin Cider Apple, Kidd said, and plans to produce quite a few trees in the next few years.

In the meantime, Mayo continues to be impressed with the tree and its apples. "When you pull all the feedback together, everything looks excellent," he said. "I think it has tremendous merit for the hard cider industry. It really is a beautiful tree." ●

*Leslie Mertz, Ph.D., is a freelance writer based in Gaylord, Michigan.*

# Cider insider report

## More cider apples are needed to meet soaring demand.

*by Marcus Robert*

Marcus Robert

Why should anyone bother growing cider fruit?

Let's start with what cider fruit is. There are more than 7,000 varieties of apples in the world and most have the potential to make some quality of cider. In the world of cider, apples are divided into four distinct categories: Sweet, Sharp, Bittersweet and Bittersharp. The differences in the categories are based on acid and tannin levels.

Sweets could be apples you can find every day in the supermarket: Galas, Honeycrisp and Red Delicious, for example. These are apples that have low amounts of acid, which make them taste sweet. Good examples of sharps would be Granny Smith and Newtown Pippins, very high acid apples. Take those two categories, Sharps and Sweets, and add tannins and you have Bittersweet and Bittersharp apples. Although there are some heirloom varieties of apples like Golden Russet and Ashmead Kernel from which people make cider, these Bittersweet and Bittersharp apples are really what we are talking about when we say "cider fruit."

Cider fruit has been grown for centuries in different parts of the world. In these cultures, ciders made from bittersweets and bittersharps are commonplace or even expected. Here we can make a correlation to why someone would grow table grapes versus wine grapes. One has been

bred to produce fruit that has qualities suitable for fresh eating, while the other grape has been bred to produce qualities that can translate into great wines when placed in the right hands. Cider fruit can be looked at the same way we look at wine grapes. They produce qualities that dessert apples (Gala, Honeycrisp, etc.) will typically not provide. These include tannins, aromas and other characteristics that are important in producing complex and interesting ciders. Making complex and interesting cider will translate into greater market demand, which, in turn, will create more opportunity for the grower. When researching these apples, you will find unfamiliar names that are a great departure from the highly marketed dessert fruit we see every day. Some of the more available varieties include Yarlington Mill, Dabinette and Kingston Black.

Back to the initial question. Why consider cider fruit? Currently there is very little cider fruit being grown in the U.S. when compared to demand. The U.S. cider industry has taken off since 2011 and is expected to see double-digit growth over the next five years. With the relative shortage of cider fruit in the industry, cider makers are left utilizing dessert fruit, concentrates or imports to supplement their production. There has been more and more competition to find that fruit as more cideries are emerging. This is why, in 2008, apple growers Craig and Sharon Campbell started planting cider fruit on Harmony Orchards near Yakima, Washington. At that time, cider fruit was even more scarce. The Campbells viewed it as a necessity to make the investment and to supply Tieton Cider Works with the appropriate fruit to make their quality cider.

Although most cider fruit can produce lower yields and are typically more biennial than commercially grown dessert fruit, the price to the grower has been good. Returns have been in the range of $800 to $1,200 per ton. Moreover, cider fruit is not scrutinized under costly third-party, grower-practice audits. Cider fruit is also not subject to packing charges and other processing fees to get fruit to market. This means that the whole of the crop is returning revenue to the grower.

We're lucky to have industry support. There has been some ongoing research in cider fruit developed by Washington State University with sponsors from organizations like the Northwest Cider Association (NWCA). NWCA was started by a handful of cidermakers in Oregon and Washington in 2010. It now has 75 cider maker members in Oregon, Washington, Idaho, Montana and British Columbia, with an overall membership of 300. The goal of NWCA is to share knowledge and promote regionally crafted artisan ciders. Tieton Cider Works was a founding member of NWCA, as we saw a need to pool our efforts in support of a burgeoning industry. Many of the NWCA members are also growers and as a community are more than willing to share information about growing cider fruit and producing good cider.

*The U.S. cider industry has taken off since 2011 and is expected to see double-digit growth over the next five years. With the relative shortage of cider fruit in the industry, cider makers are left utilizing dessert fruit, concentrates or imports to supplement their production.*

If you would like to know more about the national industry, I strongly suggest attending some of the courses at this year's CiderCon in Chicago in February 2017. This event, which began in 2011, has grown from 30 attendees to more than 1,000 in 2016. The conference offers many classes and roundtable discussions in orcharding, cider making and general industry knowledge. Come see what all the bother is about. ●

*Marcus Robert is a fourth-generation Yakima Valley farmer and is Tieton Cider Works' operations manager.*

TJ MULLINAX/GOOD FRUIT GROWER

**Noah Gizdich walks through the north part of the family ranch in Watsonville, California, where the family has planted Newtown Pippins between older trees. The older trees, with prop wood stored between the branches, were planted with a much larger spacing.**

# A history together


TJ MULLINAX/GOOD FRUIT GROWER

**Martinelli's has two production centers in Watsonville, which is surrounded by apple and berry farms. This facility sits downtown.**

## Coastal California apple growers hold on through relationship with sparkling cider maker Martinelli's.

*by Ross Courtney*

One hundred years ago, Watsonville, California, was one of the apple leaders of the world, shipping fruit around the globe, supporting dozens of local packing sheds and giving rise to Martinelli's, arguably the most famous sparkling apple cider producer in the United States.

Nowadays, Martinelli's is practically the only reason there are any apples at all in the temperate Pajaro Valley, wedged between Monterrey and Santa Cruz, while Watsonville is better known for strawberries.

Martinelli's "is what keeps apples here in the valley without a doubt," said Vince Gizdich, a third-generation Watsonville grower.

Martinelli's buys about 95 percent of the apples grown in the Pajaro Valley. "If we suddenly disappeared, those growers would have nowhere to go with their fruit," said Gun Ruder, vice president of Martinelli's.


SOURCE: GOOGLE MAPS

MARCUS MICHELSON/GOOD FRUIT GROWER

ROSS COURTNEY/GOOD FRUIT GROWER

**Newtown Pippin apples await processing by the juicer in the background at the Gizdich Ranch.**

### Decline of apples

Swiss immigrant Stephen Martinelli founded the company in 1868 with his first cider press. The historic building still operates downtown, though the bulk of the processing, warehousing and shipping now happens at a newer, larger facility toward the edge of Watsonville, population 52,000. Martinelli's now has 450,000 square feet of processing space and 200 employees.

However, the Watsonville area lost apple favor as Washington's production soared in the second half of the 20th century, while new varieties — namely the Granny Smith — surged past the Pajaro's staple Newtown Pippin in popularity. Meanwhile, farmers in the area began switching to the more profitable berries, which reach production sooner and often yield multiple crops in one year.

In 1909, the Pajaro Valley had 14,000 bearing acres in apples — roughly 1 million trees — and produced 2.5 million boxes for 40 packing houses, according to a history published in 1994 by the San Jose *Mercury News*. In 2013, Santa Cruz County — home of Watsonville and the Pajaro — had just over 2,000 acres, third behind San Joaquin and Sonoma counties, according to the California Apple Commission. Most of the decline has happened in the past 30 years, Ruder said, mirroring the trend of California overall.

### Preserving the region

Martinelli's executives still consider the Pippin the "backbone" apple for all their blends and insist the variety tastes best when grown at home. So, they protect their backyard supply with deals only available to local growers. Not including production incentives, Martinelli's offers contracts to Santa Cruz County growers that range from $200 to $300 per ton, way above the spot market prices hovering around $100 for bulk apples from Washington.

"We wouldn't have the diversity in apples (without Watsonville)," Ruder said. "We believe very strongly our flavor profile would be affected."

**Noah, left, and Vince Gizdich and their Watsonville, California, neighbors hang on in the once thriving apple region with a pie shop, their own juice press, U-pick, Bay Area fresh markets and a reliance on cider giant Martinelli's.**

ROSS COURTNEY/GOOD FRUIT GROWER

The company also extends incentives for local growers to continue planting more Pippins and a companion cider variety, the Mutsu, by setting a floor for prices for the first 10 years of production for new blocks and simply giving growers replacement trees for free. The manufacturer also extends long-term leases to retiring farmers and hires its own orchard managers to run them. The company owns no farm land.

### A farmer's adaptation

Growers like the Gizdiches and their neighbors specialize in the Newtown Pippin, an heirloom variety known for tart crisp flavor that holds up under cooking and months of storage. However, it eventually lost out to the prettier Granny Smith due to its inconsistent shape, color and russeting.

Vince's son Noah, 25, walked through his family's 60-acre orchard in early March —white blooms dampened by recent rains and surrounding green hills obscured by fog tendrils. He described the Gizdich Ranch's ever changing patchwork of old and new. Some blocks are brand new with drip irrigation and high density planting, while others push 60 years old, spaced 30 feet apart. Bundles of old prop wood lean against a few of the trunks ready for the weight of fall.

"Nobody really plants them like that anymore," Noah said with a laugh.

TJ MULLINAX/GOOD FRUIT GROWER

**Gizdich Ranch is experimenting with several techniques to maximize growing space. Newtown Pippin trees grow amid Olallieberry blackberries, which are used in pies sold at the Gizdich Ranch Pie Shop.**

Some Pajaro Valley growers produce apples exclusively for Martinelli's, though a few — such as the Gizdich Ranch — have diversified and even fewer grow for the fresh market. "Most of the growers here now aren't fresh market producers," Vince said. "There's just a couple of us left in town."

The Gizdiches mix commercial cropping with U-pick, a pie and gift shop, a juice press and seasonal fresh market sales to San Jose and San Francisco grocers. In the past few years, they also have been filling 250-gallon containers with juice for hard cider companies. Also like other growers in the Pajaro Valley, they don't have controlled atmosphere or refrigerated storage facilities, though they are one of the few who have their own packing lines. Few farms in the area are bigger than 100 acres.

Old Newtown Pippins grow at Gizdich Ranch surrounded by berry farmers in the Pajaro Valley. The Valley, which rests about 20 was once one the state's top apple producing areas.

TJ MULLINAX/GOOD FRUIT GROWER

**miles southeast from Santa Cruz, is a coastal community that**

Martinelli's takes about 20 percent of their volume, much lower than most of their neighbors. But the company provides them stability for apples that wouldn't sell anywhere else.

"They probably don't have to give us what they do because they purchase from other places in high volumes," Vince Gizdich said.

### History of the farm

Vince Gizdich I — Noah's great-grandfather — started the farm in the 1920s after moving from Croatia, the ancestral homeland of many Pajaro Valley families. Vince II set the family's course of slowly converting to semi-dwarf varieties, including new Pippin, but also Winesap, Red Delicious, Honeycrisp and Mutsu, hitting the high-density trend earlier than many neighbors.

"My grandfather, he was a clever man," Noah said.

They do it piece by piece, sometimes lopping off branches of the older trees to give the new plantings their share of sunlight.

Vince III steered the family through the addition of the juicer in 1971 and other changes. Vince IV, Noah's older brother, works off the farm right now, while Noah oversees most of the mechanical and farming chores.

The Gizdiches have gotten creative in places, co-growing — so to speak — Ollalieberry blackberries in the same place as young Pippin trees. When the Pippins get bigger, they will take out the Ollalies, which they now use in their pie shop.

They both see a future in fresh apples in California and the Watsonville area. For one thing, apple orchards require less water than berries, which makes them more attractive after years of drought and increasing water costs, Vince said. No large orchards have been removed in the past several years that Vince knows of, and a few are even planting new blocks with varieties coveted by hard cider makers, such as Newtown Pippins and Black Twig, he said.

"It's not like they've ruled out orchards," Vince said. ●

**ONLINE**
***See a chart of disease threats and affected crops targeted by the RosBREED 2 project at goodfruit.com***

# RosBREED, part II

## Scientists build on DNA-informed breeding efforts with research into disease resistance.

*by Shannon Dininny*

Consumers want great tasting fruit with few or no blemishes. Growers want that, too, but they also need fruit trees to be easier to grow and, specifically, to be resistant to diseases that can decimate an orchard.

A national team of scientists aims to tie those goals together by applying modern genomics to deliver new cultivars that carry both the disease resistance desired by producers and the horticultural qualities demanded by the marketplace.

It is no simple task, but researchers have some success with which to build upon their efforts: The RosBREED project enabled researchers to develop the infrastructure to conduct DNA-informed breeding to improve the efficiency of the breeding process. By using molecular markers, researchers are able to identify and keep plants that contain multiple desirable traits — a process called gene pyramiding — and discard those that don't.

From that project, researchers now have access to genetic markers for some ideal horticultural traits, such as fruit color or crispness, and are using these DNA markers to select for those traits early in the breeding process.

The next generation of the project, called RosBREED 2, goes a step further by combining those efforts with new research to increase the efficiency of breeding new cultivars that have excellent horticultural traits and disease resistance. Two years into the five-year project, many of the researchers have finished phenotyping, which means they've established which trees are disease resistant in their respective research blocks for different crops. The next step is to gather genetic data from those plants and use this information to locate the positions of the genes responsible for the disease resistances on the plant's chromosomes.

"The goal is to, in future generations, use DNA information to choose parents more effectively and choose seedlings more effectively," said Amy Iezzoni, cherry breeder for Michigan State University and the project's co-leader. "And ultimately, to choose seedlings that are resistant for not just one disease but two."

Pyramiding disease resistance is most efficiently done using DNA markers, Iezzoni said. "Many times you can't subject the same seedlings to multiple diseases. Then if it is a fruit disease you are breeding for, with DNA markers you don't have to wait for the seedling to flower and fruit to know whether it is disease resistant. Using DNA information to predict its phenotype is the next step."

COURTESY KRISTEN ANDERSEN

**The tree on the left is an MSU breeding selection where one of its great-grandparents was sweet cherry, which has a tolerance for cherry leaf spot. The tree on the right is a susceptible Montmorency tart cherry.**

### RosBREED history

A $14 million grant from the Specialty Crop Research Initiative created the first RosBREED project, which involved nearly three dozen scientists from 14 U.S. institutions to focus on five crops: apple, peach, strawberry, sweet cherry and tart cherry. RosBREED 2 has been expanded to include blackberry, pear, rose and prunus rootstock, as well as the efforts of a team of plant pathologists to help research diseases. As with the first project, information gleaned from individual projects will be shared across crops.

Jim McFerson, director of Washington State University's Tree Fruit Research and Extension Center, said the standardized approach allows researchers for each crop to benefit from the synergies in their research techniques.

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"We really have had to build a network in the national and international community so that our growers are benefiting from the antennae that are out in the world trying to get information and translate it to something meaningful," he said. "Breeding takes forever, but we're making rapid progress because of RosBREED. We're not all trying to build our own disease factory and breeding program. We're sharing a lot of information."

In the future, once DNA markers associated with disease resistance are identified, people in the field will be able to screen seedlings for disease by conducting a DNA test rather than by challenging the plant to the disease to determine if it carries resistant traits, said Jay Norelli, a plant pathologist at the U.S. Department of Agriculture's research station in Kearneysville, West Virginia.

"We won't rely on the DNA tests 100 percent in the end, but the big cost in the breeding program is growing material out in the field," he said. "This way, we can start out with a much, much larger number of seedlings, screen them by DNA tests, and then have fairly good confidence that the plant materials we're taking out in the field and spending the money on are going to have the traits we want."

### Practical applications

The genomic information gained from the RosBREED project is already being used to enhance breeding efforts for targeted crops across the country. Breeders now routinely use genetic testing to verify parentage — some programs have even discarded individuals in their programs after these tools showed unintended parentage. Parents are being selected using genetic tests in RosBREED breeding programs, for such things as fruit texture, firmness and size, storability, acidity and color, and some programs are already using genetic tests to cull seedlings.

Researchers are trying the same approach to identify tolerance to 16 diseases in seven different crops, as well as prunus rootstock. Among them: *Erwinia amylovora* (fire blight) in apple and pear *(see "Tracking fire blight" on opposite page)*, *Podosphaera clandestina* (powdery mildew) in sweet cherry and *Blumeriella jaapii* (leaf spot) in tart cherry.

Iezzoni, who is leading tart cherry research, noted that while most tart cherries are highly susceptible to leaf spot, sweet cherries are tolerant. The fungus still enters the leaves of sweet cherry; however, the leaves simply do not yellow or fall off the tree as quickly. "There definitely is, in this genetic background, a cherry leaf spot tolerance, and the plant can continue photosynthesizing. It's just been remarkable," she said. She said she altered her breeding strategy this year to include the gleaned information.

Ultimately, cultivars resistant to cherry leaf spot could translate to fewer sprays for a grower and less of a negative impact if they miss a spray for some reason. "Sometimes, this disease is not very forgiving if you miss a spray as the fungus gets well established in the tree," she said. "And this impact from disease resistant cultivars could be repeated again and again thanks to help from RosBREED."

RosBREED has provided breeders a new path forward to make breeding more effective and efficient, she said. "We've learned about genetics, how to make changes in how we're breeding, and we're making progress that we would not have made without the grant."

The results achieved already are proving the project very worthwhile, said Bill Dodd, an Ohio peach and apple grower and president of the Ohio Fruit Growers Marketing Association who serves on the RosBREED industry advisory panel.

"I look at it from the big picture. We're headed down this highway, and our destination is better apples. We're making better stops along the way and gathering data along the way and gathering tools along the way, and from an overall view, it's doing what it's intended to do," he said. "The work they're doing is incredibly exciting." ●

**UPCOMING**

***The RosBREED research group provides its next update in January. Stay tuned for more about RosBREED in future issues of Good Fruit Grower.***

ROSS COURTNEY/GOOD FRUIT GROWER

**An apple tree shows the ill effects of fire blight at WSU's Columbia View orchard, where researchers challenged the trees with the fire blight pathogen to determine their resistance to the disease.**

# Tracking fire blight

## Researchers work to identify DNA markers of fire blight resistance to step up breeding efforts.

*by Shannon Dininny*

This past summer, a team of researchers armed with scissors walked through a North Central Washington apple orchard and did the unthinkable: They inoculated 1,600 trees with fire blight.

They're not aiming to wipe out an orchard. Rather, they're trying to identify the genes responsible for fire blight resistance in different apple cultivars and, ultimately, employ that information to develop new fire blight-resistant varieties.

Pear growers have long known about the challenges posed by fire blight, caused by the bacterial pathogen *Erwinia amylovora*, and it's become more of an issue for apple orchardists as the number of new planted varieties grows.

"It wasn't a problem when we were growing Red Delicious, because Red Delicious is pretty well resistant to fire blight," said Kate Evans, Washington State University apple breeder who is leading this fire blight study. "But as other varieties are coming in and growers are planting them, it's becoming more of an issue."

### Expanding the genotyping

Researchers across the country have been working several years to establish genotypic information on different cultivars of different crops. Called the RosBREED program, its aim was to improve and speed up breeding programs by identifying the DNA markers for desirable fruit qualities.

PHOTOS BY ROSS COURTNEY/GOOD FRUIT GROWER

**Above, Jamie Coggins, a graduate student, and Bonnie Schonberg, a research technician, measure the effects of fire blight on apple trees during a trial at Washington State University's Columbia View research orchard near Orondo, Washington, in June. Right, ooze drips from an apple tree affected by fire blight.**

The RosBREED 2 program aims to maximize the output from the first program by adding disease resistance markers to the search.

For instance, Evans and her team already had gathered genetic and fruit quality information for 1,600 trees — 350 cultivars — in that research orchard. But if she could determine the fire blight resistance of the trees, she could get new information from the same trees.

"First, we might be able to identify some other sources of resistance we weren't aware of," she said. The trees largely represent normal dessert apple germplasm, rather than more small fruited crabapple types, some of which are

## Targeting for tolerance

Jay Norelli, a plant pathologist at the U.S. Department of Agriculture who is leading the disease research for the RosBREED project, has been working to characterize the underlying basis of disease resistance in fruit trees and to develop novel control strategies for specific diseases, including fire blight.

Specifically, he and others are targeting specific cultivars that they know are fire blight tolerant and have good fruit quality, including Splendor, a New Zealand cultivar that isn't grown in the United States and never really made it onto the commercial market due to storage issues. "It has excellent flavor though and has been used in many breeding programs," he said.

Outside of the RosBREED project, Norelli and Kate Evans of Washington State University also have identified some individuals of the wild progenitor of apple, *Malus sieversii*, that are highly resistant to fire blight. "We are trying to do that directed genetic analysis by making crosses," he said, which would introduce into the breeding program a much higher level of resistance, but because it involves breeding new varieties, rather than identifying resistance in existing varieties, "that approach will take a lot longer."

"Even when starting out with good cultivars, like Splendor, the development of a new cultivar for fruit trees still takes a long time, and it takes a long time for it to be accepted by the industry," he said. "It's a major undertaking." ***—S. Dininny***

resistant to fire blight. "It would be great if we could identify some germplasm with some level of resistance that we could then use in the breeding program."

The other potential gain: Because researchers already have genotypic information for these trees, they may be able to identify some linked markers in their DNA associated with fire blight resistance, which would enable them to use DNA screening to predict which trees in the breeding program will be resistant to fire blight.

Taken together, newly identified resistance genes and development of DNA markers enable researchers to pyramid multiple resistance genes, thereby improving the durability of the resistance and the efficiency of the breeding program.

### The research

Evans and her team couldn't really inoculate her original research orchard, because the risk was too high that it would destroy the trees. Instead, she had to establish a new planting to conduct the experiments.

"For a lot of diseases, like apple scab, the disease is usually widespread and uniform. It won't kill the tree. With fire blight, it's a much more sporadic disease and unless you do actually challenge the tree with the pathogen, you don't get reliable data on susceptibility," said Jay Norelli, a plant pathologist at the U.S. Department of Agriculture's research station in Kearneysville, West Virginia. Norelli, who is leading the disease research for the RosBREED project and collaborating with Evans on this trial, has been working to characterize the underlying basis of disease resistance in fruit trees and to develop novel control strategies for specific diseases, including fire blight.

Thus, the scissors to the trees. So far the trees have shown a range of responses in the first year of study. "We had great infection," she said with a laugh. "By seeing symptoms, you know there wasn't a problem with your inoculation, but we certainly saw some individuals that weren't showing any symptoms either."

The results have provided a great data set for the first year, Evans said, and she intends to continue the work next year. "You can't do this kind of study on just one year's data; it's not informative enough," she said. "There will be some trees that won't make it to next year, but for those that weren't showing any symptoms, we really need to repeat the process so that we're confident with the data set that we're going to use going forward." ●

TJ MULLINAX/GOOD FRUIT GROWER

**Karen Lewis, WSU tree fruit regional extension specialist, gives Rob Blakey, the extension's most recent hire, a tour of several orchards around Pasco, Washington, in mid-October.**

# Finding the right people

**The hiring and development process is inherently lengthy with growers' $32 million gift to WSU.**

*by Ross Courtney*

Orchards and packing houses aren't the only places in the fruit industry with a labor shortage. Universities also are struggling to hire researchers and educators needed to keep the industry ahead of pest pressures, prepared for food safety requirements, growing new varieties and in tune with emerging technology.

That requires people with a high level of training and expertise to carry the industry to the future. Such people can be hard to come by.

This is playing out at Washington State University, where, nearly four years after tree fruit growers gave the college its largest donation ever, the university is still working to fill positions the $32 million gift helped create.

But there's progress there, too: The latest hire, a tree fruit extension specialist in postharvest information and technology transfer, started in August.

In 2013, the state's fruit growers promised the funds to help create one of the top three tree fruit universities in the world by improving facilities and hiring top researchers and extension specialists. The effort was designed to make up for shrinking state and county budgets that have whittled away extension programs and keep up with the growing complexity, sophistication and competition of the global fruit industry for the coming decades. Orchardists across the nation are making similar moves by creating commissions and directly funding university research.

So far at Washington State University, two people have been hired out of upward of more than a dozen positions created by the endowment, while half of the promised money has been collected. Growers make their endowment payments through assessments, a self-imposed tax approved by a vote, collected at the time of packing. Rates differ by commodity. The university has collected $16 million of the full $32 million endowment.

The process is by necessity slow, said Sam Godwin, a Tonasket grower and member of the Endowment Advisory Committee. For one thing, the university is seeking only the top qualified job candidates with the highest level of specialization in the world. They're hard to find and lure, especially with other fruit regions vying for the same people.

"We're fishing in very shallow water," he said.

Meanwhile, as a state agency, the university's hiring process is slow, while the candidates and their spouses sometimes have research projects they need to finish before moving to Washington. Also, the endowment is intended to create a perpetual fund, paying some salaries


Stefano Musacchi

and operating costs only with interest earned from the principal donation. Interest takes time to accrue. And visa applications for international hires can take months.

However, once the university starts hiring, the endowment provides a strong recruiting tool.

"The endowment definitely made an impression on me when I applied for the position," Rob Blakey, the most recent hire, said in an email. "A researcher or extension officer can do so much more when there is support from the industry; $32 million is serious support of research and extension in general and WSU in particular."

Based at the university's Irrigated Agriculture Research and Extension Center in Prosser, Washington, Blakey spent most of his early days just getting to know the industry's needs. He is now working on project proposals to develop a statewide extension program, identifying handling steps that cause fruit quality loss and developing modern educational programs and resources, such as defect guides, podcasts and online videos. He is specifically interested in improving pear ripening; he focused on ripening at his previous position as a research horticulturist in the avocado industry in South Africa.

The only other endowment-related, full-time hire so far has been Stefano Musacchi, the first endowed chair, one of six such positions created by the endowment. The endowment title got his attention, too, he said.

"From the academic point of view, it is the highest academic award that the university can bestow on a faculty member," he said in an email. "Endowed faculty professorships and chairs are fundamental for recruiting and retaining the highest-quality faculty."

Musacchi, a research horticulturist specializing in physiology and management at the Tree Fruit Research and Extension Center in Wenatchee, started in 2013. He leads the effort to educate growers on the horticulture of Cosmic Crisp, the university's new apple variety, and manages the national NC-140 Apple Rootstock Evaluation project. He also is leading a research effort to recommend new varieties of apple pollinator trees based on pollen compatibility.

The endowment has provided seed money for Musacchi's work with the Cosmic Crisp and a preliminary apple rootstock study that helped him land

a Specialty Crop Research Initiative grant for more than $400,000 to take the research further. It's called "Accelerating the Development, Evaluation, and Adoption of New Apple Rootstock Technologies to Improve Apple Grower Profitability and Sustainability." In all, Musacchi is the principal investigator or co-principal investigator of projects with a collective value of more than $7.5 million.

Endowed researchers also are able to attract collaborators, like Musacchi already has. He is organizing a 2020 International Society for Horticultural Science symposium in Wenatchee named "Integrating Canopy, Rootstock and Environmental Physiology in Orchard Systems." The Belgium-based group, one of the leading horticultural science organizations in the world, holds this large symposium once every four years and has been in the United States only twice — Wenatchee hosted in 1996 and Geneva, New York, in 2008.

### Structure of the endowment

The endowment is divided into three sections: Endowed chairs, extension information and technology transfer, and research facilities and operations. They all work a little differently.

A total of $12 million of the endowment is allocated for the work of six endowed chairs, including Musacchi. The university pays the salaries, benefits and moving costs of the endowed chairs, while the interest from the endowment covers the cost of their projects, such as laboratory equipment, travel or hiring graduate students as assistants. Searches for an endowed chair of soil and rhizosphere ecology and a chair for postharvest systems are underway, while other potential areas of specialty for future endowed chairs may be engineering, automation and molecular biology. The chair slots are funded for up to $2.5 million. Musacchi's is at $1.5 million. Assuming 4 percent interest, that funding would provide him $300,000 in seed money over five years, the term of his position, available quarterly as long as the investments perform positively. If they don't, the money freezes until the original value is restored. The university has the option of renewing his endowment after five years, though a review could come anytime, he said.

Another $12 million goes to information and technology transfer. The endowment interest directly pays for the salaries in this category, such as extension specialists like Blakey, web designers and others. Their jobs involve taking the conclusions of the endowed chairs and getting them into the hands of growers, packers, field representatives and supply chain representatives. Other outreach areas of expertise in the future may include food safety, integrated pest management, entomology and web development, to name a few. The position of tree fruit team leader also is on the slate and is currently filled on an interim basis by Karen Lewis, though hers is not an endowment position.

That leaves $8 million for research operations, which may mean improving orchards and facilities. For example, the university could use the interest from that portion of the endowment money to put wind machines or netting in a research orchard.

Activities of the endowment are governed by the university's College of Agricultural, Human and Natural Resource Sciences and the Endowment Advisory Committee, a group of growers that meets four times a year. The committee takes a direct role in overseeing the work, too. The endowed chairs face an annual review from both the university and the committee.

"This certainly increases the pressure on my shoulders," Musacchi said.

Throughout the nation, crop industries often ante up for researchers and research projects. The tree fruit industry's endowment was the first to set up such a three-pronged approach, Godwin said. The structure allows flexibility to move money around and gives the researchers and extension staffers the ability to use endowment funds to attract other grants by proving the industry has skin in the game and guarantees seed money each funding cycle.

In short, it gives growers some ownership of the university's work.

"It's great to have a partner who is willing to vote with money," Godwin said. ●

# The GMO apple

PHOTO COURTESY SALLY TONKIN

**Neal Carter at his orchard in Summerland, British Columbia, is unshakeable in his belief that the GMO apple will change the fruit industry for the better. He plans to introduce more GMO apple varieties and later GMO cherries and pears.**

## "It's not going away," says Neal Carter of Okanagan Specialty Fruit.

*by O. Casey Corr*

In 1999, Neal Carter got a decidedly unpleasant taste of the controversy he would ignite in the fruit industry.

That year, while vacationing abroad with his family, he got a call that a news crew had showed up at his orchard in Summerland, British Columbia, a verdant, mountainous place where orchards, vineyards and evergreens plunge toward Lake Okanagan. Carter's apple orchard normally would contribute to the beauty, but not on this day. Vandals had crudely severed 652 trees just steps in the snow from his front door.

The vandals wanted to make a point against genetically modified (GMO) fruit, which they knew was Carter's business, and they alerted the news media to their action as a means of showing solidarity with protestors in Seattle at the World Trade Organization meeting. The vandals were never caught.

Carter not only felt a sense of personal violation, but he also recognized what he sees as the ignorance of his critics. None of the vandalized trees were genetically modified; the protesters instead had hacked ordinary Galas. Carter's modified trees were elsewhere. But in his mind, his critics just refused to recognize that science was on his side. He is unshakeable in his belief that genetic modification will change the fruit industry for the better, creating a profitable new category for fruit growers and nutritious, delicious food for consumers.

Carter today presides over an expanding company, Okanagan Specialty Fruits, that has gained government approval in the U.S. and Canada for sale to the public of genetically altered Arctic nonbrowning apples. (Arctic Granny Smith and Golden Delicious already have been deregulated in the U.S., and a similar application for Arctic Fuji has just been approved.) Arctic apple plantings have expanded; his company is preparing to develop other GMO varieties and later seek approval for GMO cherries and pears. Progress accelerated in 2015 when Intrexon Corp. bought Okanagan Specialty Fruits, adding resources to Okanagan's development and marketing. Carter now runs Okanagan as a 10-person wholly owned subsidiary of Intrexon, a public company based in Germantown, Maryland. Intrexon calls itself a leader in "synthetic biology" with investments in health, environment, food, energy and consumer products.

For all the progress, however, Carter and his products remain intensely controversial. Development of GMO food has triggered voter initiatives in different states, relentless criticism from environmental and consumer groups, and legislation in Congress. In July, President Obama signed into law a measure that would require labelling of GMO ingredients. Within the fruit industry, prominent growers such as Ralph Broetje of Prescott, Washington, unsuccessfully pleaded with the U.S. Department of Agriculture to decline deregulation of Carter's Arctic apples, whose polyphenol oxidase, the enzyme that causes apples to brown, has been "silenced" by manipulation. In a 2013 letter to the USDA, Broetje expressed fear of a consumer backlash that would

damage sales of all apples. He also feared that organic apple crops would have unintended contact with genetically engineered pollen. The USDA rejected those arguments.

### Looking to the future

Given such bruising controversy, I expected to meet an individual who was either combative or defensive. Carter was neither, though he is definitely energetic, typically working a 100-hour week. His idea of vacation is going someplace dry, like Utah, Arizona or Colorado, and rising at dawn for a brisk day of mountain biking.

Carter, 59, is a bioresource engineer who spent 30 years working for Agrodev Canada and others on consulting projects in more than 50 countries. He served as manager of the Middle East region from 1985 to 2001, at times commuting from Canada. "You name the crop, I've grown it," he said. He ended his consulting practice in 2007.

Carter grew up in British Columbia, where his parents farmed. He and his wife, Louisa, bought their 22-acre apple and cherry orchard in 1995 and later named it Laughing Coyote Orchards, a company separate from Okanagan Specialty Fruits. Counting his own and leased land, he and his family farm about 60 acres of apples and cherries, "which is nothing in Washington terms but in B.C. terms actually makes us a sizeable orchard." He uses seasonal workers for thinning and harvesting, but he, his son and his nephew do most of the spraying, mowing, weed spraying, much of the pruning, and other chores. At home, he raises Gala, Ambrosia and Honeycrisp apples, all of which are packed and marketed by Washington companies. His cherries are packed in Oliver, B.C.

Carter's home in the hills above Summerland is hardly the lair of a Dr. Evil, as his most ardent critics might imagine. It's decidedly normal, complete with a big dog to greet visitors. Carter explained that Okanagan's high-tech work and staff are elsewhere. Research and gene manipulation is done at a lab in Saskatoon, Saskatchewan, the epicenter of ag-bio commercial and university research in Canada. Other staff and consultants work out of offices in Manitoba, Saskatoon, Vancouver and North Carolina. The GMO apples are grown at undisclosed locations in New York and Washington. As of June, an estimated 80,000 trees were growing Arctic apples in commercial orchards, with another 325,000 trees in nurseries.

The underlying concept for Arctic apples is quite simple and should not be alarming, he said. They insert a duplicate copy of the browning gene into the apple which, because it doesn't want two copies of a gene, shuts down the gene that causes browning. In all other respects, it's an ordinary apple, he said. "We think that a lot of anti-GM discussion out there is due to a lack of education," said Carter. "It kind of plays into the anti-science movement. People aren't believers in science any more. The anti-vaccine folks are a great example of it."

Carter said he expects sales of Arctic apples to consumers to occur in stages as volume builds, starting in fall 2016 — about 50 bins of sliced product will be sold in regional markets west of the Rockies. The first year will involve testing packaging, pricing and other factors. Packaging of Arctic apples was unveiled in October at the Produce Marketing Association meeting in Orlando, Florida.

Part of his optimism about GMO apples stems in part from what he sees as the service industry's unhappiness with typical sliced apples. Some companies won't develop new products with apples as an ingredient because of perishability issues, he said. By contrast, he says, you can slice Arctic apples, rinse them with chlorinated water for control of bacteria, and they will keep in a Ziploc bag in a cooler for two to three weeks. For commercial applications, more treatment might be needed for sanitation. "They won't go brown, but they might get mold," he said of the slices. Even after an extended period, when you open the bag the contents will smell like apples, not additives, he said. "Arctic apples eat well and look good."

To a large extent, the debate over GMO apples now resides with consumers.

Jim Bair, president of the industry group USApple,

says the market will decide if it wants Arctic apples. It remains to be seen whether Arctic apples will create new food categories and therefore increase overall demand for apples, as is predicted by Okanagan Specialty Fruits. "The magic hand of the free market will determine the success of their product," Bair said.

USApple will meanwhile continue to support and promote research that shows the health benefits from eating apples, he said.


COURTESY OKANAGAN SPECIALTY FRUITS

**Packages of Arctic Golden Delicious.**

A page on USApple's website addresses the Arctic apple, saying in part: "Arctic apples offer the same nutrition benefits as non-GMO apples. … To continue discovering new and valuable benefits from apples, USApple supports advancements from technology including genetics and genomics research. … All other apples are non-GMO and will remain in the market for shoppers to continue buying. And, the company that developed Arctic apples asserts its Arctic brand will be clearly marketed and sold under the Arctic label, allowing consumers to make informed purchase decisions."

Arctic apples may have a pathway to success, but threats remain for Okanagan Specialty Fruits. Pirates might try to steal the company's intellectual property. For that, Okanagan Specialty Fruits has lots of lawyers, and DNA testing would easily uncover any trade theft, said Carter. The bigger threat would be what Carter would call fear mongering by critics on social media. Even on that front, Carter isn't overly concerned. A serious campaign against Arctic apples would require organization and connections, he said, and Okanagan Specialty Fruits and Intrexon would respond with a rapid-reaction public relations team, following a crisis communication plan. Critics should not underestimate the organization or the people behind the Arctic apple. "We're not a bunch of hicks in Summerland, thinking, let's do this," said Carter. "I like to think we are pretty sophisticated in what we are doing."

If there's a whiff of defiance in how he talks, that's because Carter thinks there are those in the apple industry who don't get it. "There are still people who think we are going to go away. We're going to go broke, or something, right? In the next three years, there will be a thousand acres of Arctic apples in Washington. And a few years after that, there'll be (another) thousand acres of Arctic apples in the U.S. And from there, we'll keep going. It's not going to go away. People better get used to it." ●

# Looking for new invaders

**B.C. pest management strategies build on deep roots.**

*by Peter Mitham*

Traps throughout Fred Steele's orchard in Kelowna are the first line of defense against a horde of new pests that growers in British Columbia's Okanagan Valley face.

The traps have yet to capture an apple maggot fly or apple clearwing moth, but Steele isn't resting easy.

"It's not if, it's when," he said of the moth, first discovered in North America in the neighboring Similkameen Valley in 2005. "It's everywhere around me, it just hasn't got here yet. You want to make sure that you're prepared for that situation and ready to go. You can't afford to leave it."

But if the pest is a major threat to Steele's orchard, an 11-acre, family-run operation typical of the B.C. industry, knowing that the traps are backed up with expertise developed as part of the province's fight against codling moth is reassuring.

Steele is president of the B.C. Fruit Growers Association (BCFGA), which has contracted monitoring for apple clearwing moth to the Okanagan-Kootenay Sterile Insect Release (SIR) program. The province established the program in 1990 to breed sterile insects to ensure unfruitful couplings among codling moths.

COURTESY MICHELLE COOK, OKANAGAN-KOOTENAY STERILE INSECT RELEASE PROGRAM

**A surveillance trap hangs amid apple trees as part of a monitoring effort for new pests in British Columbia.**

SIR is now the basis for a surveillance network and reporting protocols that promise to help B.C. growers manage new and emerging pests, including apple maggot, apple clearwing moth, and other threats.

Codling moth remains a focus both in apple orchards, where more than 90 percent of the acreage meets the target of less than 0.2 percent damage, and cherries, for which Japanese import requirements demand assurances that orchards are moth-free.

However, apple maggot, first detected in B.C. in 2006, was discovered on a single residential lot in West Kelowna last year and is now on the surveillance team's watch list.

The fly isn't yet established in the Okanagan, Similkameen and Creston valleys, and trapping verifies that a Canadian Food Inspection Agency quarantine on fruit entering the region is working.

The B.C. Ministry of Agriculture has granted the BCFGA funding to add 220 traps across the region, but because the association doesn't have staff to undertake the trapping, they've contracted SIR to conduct surveillance. SIR works with Canadian Food Inspection Agency staff to ensure surveillance meets protocols developed by Howard Thistlewood, an entomologist with Agriculture and Agri-Food Canada and former coordinator of the SIR program.

SIR is also tracking apple clearwing moth, with mating disruption occurring in some areas, too. With funding through the Investment Agriculture Foundation of B.C., the BCFGA has contracted SIR to expand the project across the Okanagan and Similkameen valleys.

"The nice thing about SIR is it's an integrated approach where conventional growers and organic growers and others can participate," Steele said. "It's area-wide with the protections and the teeth we need. … This may be the avenue to dealing with invasive pests."

Discussions over the past decade have focused on the future direction of the program, which, as a creature of legislation, is limited to controlling codling moth. Residents in areas under its jurisdiction as well as orchardists fund the program through property levies and assessments, which must fund codling moth control.

However, the program is allowed to undertake new programs on a cost-recovery basis, and both the program board and industry have endorsed a broader mandate for the program to address emerging pests.

"The pest management reality is different than when the program was started in the early '90s, but it doesn't make us any less relevant," said Melissa Tesche, acting general manager for the program. "Pests don't respect property boundaries, … and so that's really why I think SIR is being looked to. We're the organization that has that body set up to take an areawide approach."

To determine how growers feel the program should evolve to address new pests, the BCFGA contracted Kellie Garcia of Associated Environmental Consultants Inc. to conduct a series of workshops this spring. Consultations will continue through the summer via an online survey.

However, at least one species doesn't lend itself to areawide management: spotted wing drosophila.

The fruit fly is a major pest of cherries and a top concern of growers, in large part because it's difficult to control. There are simply too many alternative hosts, even if orchards are kept free of debris.

"There's just not a good solution to it," Tesche said. "I would never presume to say that we're going to be able to come up with an areawide approach for spotted wing drosophila. I think people are looking for a silver bullet, and we certainly don't have it."

However, the mandate of SIR has given the program the teeth needed to address backyard trees and other noncommercial plantings, something that ensures effective pest control and benefits industry but is beyond the scope of most local governments.

Most municipalities simply don't have the resources to manage pests, said Duane Ophus, a council member in West Kelowna who represents the Central Okanagan Regional District on the SIR board. SIR does, making it an ideal partner for municipalities, and in turn taxpayers, who — regardless of their knowledge of agriculture — stand to benefit.

"They don't put that money in to support farmers, they put that money in to make the environment better," Ophus said of ratepayers.

The environmental benefits are also important to Steele, who sees better monitoring and prompt control complementing the integrated pest management protocols adopted as broad-spectrum pesticides have been phased out.

"Without SIR I think we would be in a considerable amount of difficulty," Steele said, arguing that new pests need to be detected early and addressed promptly.

"We have to be very vigilant about what is happening and spotting things in the orchard itself," he said. "Once it's there, you've got to deal with it quickly because chances are you're not going to eradicate it, but you have to find something to control it." ●

*Peter Mitham is a freelance writer based in Vancouver, British Columbia.*

# Good Stuff

*A selection of the latest products and services* **for tree fruit and grape growers**

## Van Well Nursery observes 70th anniversary in 2016

Van Well Nursery celebrated its 70th anniversary in 2016.

In 1946, Peter Van Well Sr. had two sons returning from military service in World War II who would soon be entering the workforce in the Wenatchee, Washington, area they called home. He, too, wanted a business of his own that he could build and turn over to his sons.

Van Well had been nursery superintendent for a prominent nursery firm for nearly 30 years, so he built a nursery of his own. He "bought an old mule and 10 acres of open land" and with the help of sons, Jack and Joe, set out some apple grafts. A year later, the trio was making peach and pear grafts, in addition to the apple grafts, and was ready to deliver 23,000 finished fruit trees to commercial orchardists in the area.

Over the past 70 years, Van Well Nursery has been responsible for the testing, propagation, patenting, introduction and marketing of many notable fruit tree varieties particularly, early on, Red Delicious sports such as Red King, Oregon Spur, Scarlet Spur, Super Chief and Adams Apple. As the fruit industry turned away from Red Delicious, Van Well sought out other exclusive apple varieties such as Auvil Early Fuji, Gale Gala, Red Jonaprince, Redfield Red Braeburn, and Red Cameo.

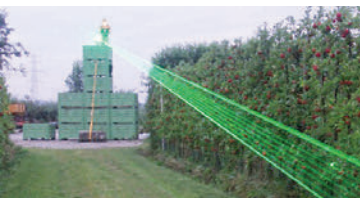
The list of new apple, cherry, pear, peach and apricot varieties continues to grow as the company seeks to identify, produce and market the needs of the next generation of commercial orchardists.

Today, the company operates 120 acres of orchard and about 700 acres of nursery stock in three different Columbia Basin areas: Wenatchee, Quincy and Moses Lake. Its corporate headquarters are in East Wenatchee, where it also has storage capacity.

## Laser fence program begins in Europe

In an effort to curb rodenticide use, the European Commission has allocated 1.77 million euros ($1.93 million) to fund a three-year laser fencing program.

LIFE Laser Fence is an environmentally friendly solution to keep animals away from farms. In addition to reducing rodenticide use, the effort is aimed at decreasing crop losses by half and creating awareness of the negative impacts on the environment in Europe.



COURTESY LIFE LASER FENCE

"There is a strong European desire to eliminate poisons entirely," said Alex Mason of Liverpool John Moores University. "Coming up with a solution that fits both national and European policies means massive impact for the European economy and environment."

Field trials are set to begin in 2017 in the United Kingdom, Spain and the Netherlands. The total budget for the program is 3.14 million euros ($3.42 million).

The project is a collaboration between Liverpool John Moores University, Bird Control Group of the Netherlands, Angel Camacho of Spain, the Game and Wildlife Conservation Trust of the United Kingdom, IRIS UAV Services of Spain and Volterra Ecosystems of Spain.

## WSU Extension plans 2017 winter tree fruit programs

Tree fruit producers and industry professionals are invited to five WSU Tree Fruit Extension Programs in North Central Washington on Jan. 16, 17, 18, 19 and Feb. 7. Co-sponsored by the Washington State Fruit Comission, Pear Bureau Northwest, North Central Washington Fieldmen's Association and the Okanogan Horticultural Association, these events provide the latest research based information on horticulture, pest and disease management. Pesticide update credits will be awarded for program attendance.

—**Chelan Horticultural Meeting**, Jan. 16, Chelan High School. Co-sponsored by WSU Extension and Chelan High School. Topics include tips for successful grafting; economic considerations for orchard renewal; a soil quality survey of Central Washington; brown marmorated stink bug; best practices for weed management; psylla and mite IPM; sunburn control and more .

—**North Central Washington Stone Fruit Day**, Jan. 17, Wenatchee Convention Center. Co-Sponsored by WSU Extension and the Washington State Fruit Commission. Topics include detecting and managing little cherry disease; cherry powdery mildew; cherry horticultural update and more.

—**North Central Washington Pear Day**, Jan. 18, Wenatchee Convention Center. Co-sponsored by WSU Extension and Pear Bureau Northwest. Topics include integrated management of pear psylla and mites; fire blight management; irrigation water sensors that work and more.

—**North Central Washington Apple Day**, Jan. 19, Wenatchee Convention Center. Co-sponsored by WSU Extension and North Central Washington Fieldmen's Association. Topics include mechanization in apples; choosing the right Geneva rootstock; sunburn management; brown marmorated stink bug; fire blight; managing post harvest diseases of apples in the field; coddling moth trap counts, timing and what it means.

—**Okanogan Horticultural Association Meeting**, Feb. 7, Okanogan County Agriplex, Omak. Co-Sponsored by WSU Extension and Okanogan County Horticultural Association. Topics include matching your rootstock to your site and your system; choosing a training and pruning system for medium to high density plantings; sunburn management; coddling moth; minor pests; managing post harvest disease in the field; Retain & Harvista.

Visit *treefruit.wsu.edu* for agendas and event information.

# Good to Go

*For a complete listing of upcoming events, check the Calendar at* **www.goodfruit.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.*

**December 5-9:** Irrigation Show and Education Conference, Las Vegas, Nevada, *info@irrigationshow.org; www.irrigationshow.org.*

**December 6-8:** Great Lakes Fruit, Vegetable and Farm Market Expo, Grand Rapids, Michigan, *www.glexpo.com.*

**December 9-10:** The Orchard Bee Association's Annual Pollinator Symposium and Expo, Hood River, Oregon, *www.orchardbee.org.*

## January

**January 5-6:** Yakima Ag Expo, SunDome, Yakima, Washington, *www.yakimaagexpo.com.* For information, contact Laurie Hammermeister, 509-248-2900.

**January 9-10:** Kentucky Fruit and Vegetable Conference, Lexington, Kentucky, *www.kyhort.org.* For info, contact John Strang, 859-257-5685.

**January 9-11:** Northwest Food Manufacturing and Packaging Expo, Portland, Oregon, 503-327-2200, *expo@nwfpa.org, www.nwfpa.org.*

**January 10-12:** Indiana Horticultural Congress and Trade Show, Indianapolis, Indiana, *www.inhortcongress.org.*

**January 11-13:** Illinois Specialty Crops, Agritourism and Organic Conference, Springfield, Illinois, 309-557-2107, *www.specialtygrowers.org.*

**January 16:** Chelan Horticultural Meeting, Chelan, Washington, *treefruit.wsu.edu.*

**January 16-18:** Ohio Produce Growers & Marketers Association Congress, Sandusky, Ohio, *www.opgma.org.*

**January 17:** North Central Washington Stone Fruit Day, Wenatchee Convention Center, Wenatchee, Washington, *treefruit.wsu.edu.*

**January 17-19:** Empire State Producers Expo, Syracuse, New York, *nysvga@twcny.rr.com, www.nysvga.org.*

**January 18:** North Central Washington Pear Day, Wenatchee Convention Center, Wenatchee, *treefruit.wsu.edu.*

**January 19:** North Central Washington Apple Day, Wenatchee Convention Center, Wenatchee, Washington, *treefruit.wsu.edu.*

**January 20:** Cherry Institute, Yakima Convention Center, Yakima, Washington, 509-453-4837, *www.wastatefruit.com.*

**January 24:** G.S. Long Winter Ag Academy Series, Yakima Convention Center, Yakima, Washington. For more information and registration, contact Maegen or Salvador at G.S. Long Company, 800-338-5665, *www.gslong.com.*

**January 24-26:** Unified Wine & Grape Symposium, Sacramento, California, *www.unifiedsymposium.org.*

**January 24-26:** Northwest Ag Show, Portland, Oregon, 503-769-8940, *www.nwagshow.com.*

**January 25-26:** Apple Horticulture/ Postharvest Research Review, Yakima, Washington, *www.treefruitresearch.com.* For more information, contact Kathy Coffey, 509-665-8271, ext. 2.

**January 26-27:** Apple Crop Protection Research Review, Yakima, Washington, *www.treefruitresearch.com.* For more information, contact Kathy Coffey, 509-665-8271, ext. 2.

**January 31-February 2:** Mid-Atlantic Fruit & Vegetable Convention, Hershey, Pennsylvania, 717-677-4184; *pvga@pvga.org, www.mafvc.org.*

## 2017 Cherry Institute will be held Jan. 20

The 74th annual Cherry Institute is set for Jan. 20, 2017, at the Yakima Convention Center in Yakima, Washington.

The program, which begins at 8:30 a.m., will highlight trellis engineering, platform use, powdery mildew, the breeding program, nutrient diagnostics, reducing post-harvest cracking and splitting, costs of establishing and producing sweet cherries, food safety and a review of the 2016 cherry season.

Nominations and elections will be held for the Washington Cherry Marketing Committee and the Washington State Fruit Commission Board of Directors (*see following items for more details*).

The noon luncheon program will feature guest speaker Matt Whiting, Washington State University Extension specialist. It will also include the announcement of the 73rd Cherry King in recognition of outstanding service to the cherry industry.

Registration fees at the door are $20 for the meeting only, $25 for lunch only and $40 for the meeting and lunch. For more information, call 509-453-4837 or email *cherryinstitute@wastatefruit.com.*

## Cherry Marketing Committee representatives to be selected

Nominations for grower and handler positions on the Washington Cherry Marketing Committee will take place during industry meetings in January. The committee establishes grade, size and pack regulations for fresh sweet cherries from designated counties in Washington.

Nominations for District 1 will be held at the North Central Washington Stone Fruit Day at the Wenatchee

## 2017 Empire State Producers Expo

The 2017 Empire State Producers Expo will take place on January 17-19 at the OnCenter Convention Center in Syracuse, NY. This annual show combines the major fruit, flower, vegetable, and direct marketing associations of New York State in order to provide a comprehensive trade show and educational conference for New York producers, as well as neighboring states and Eastern Canada. In years past, over 100 presentations were given by Cornell Cooperative Extension personnel and highly regarded speakers from across the country. Panel discussions feature some of the top industry experts and growers in New York. Between educational sessions, attendees can visit the trade show featuring over 150 commercial vendors and non-profit exhibitors.

• 2017 Becker Forum: Good Agricultural Practices (GAPs)/Produce Safety Alliance (PSA) Training. The New York State Vegetable Growers Association in conjunction with the Produce Safety Alliance (a collaboration between Cornell University, FDA and USDA) are pleased to announce that one of the first producer trainings to meet the requirements of Food Safety Modernization Act (FSMA) will be offered during the Becker Forum on January 16, 2017 in Liverpool, NY. This 7-hour training will provide the required training for farms to meet the Produce Safety Rule.

• Berry Grower Protected Culture Workshop on Tuesday, January 17.
• GAPs Day 2 - Writing Your Own Food Safety Plan Workshop on Tuesday, January 17.

**Join us for the Expo at the Oncenter in Syracuse, NY and the Becker Forum hosted at the Holiday Inn in Liverpool. Visit our website to register www.nysvga.org and to see the complete program, lodging information, and directions. For more information visit www.nysvga.org or email NYSVegetableGrowers@gmail.com**

Empire State PRODUCERS EXPO

**January 16-19, 2017**

Convention Center on Jan. 17. Growers whose terms expire in 2017 are Ed Clark (Dennis Berdan, alternate) and Casey Collins (Marc Egerton, alternate). Handler positions that will expire in 2017 are Jim Colbert (Ron Gonsalves, alternate) and Tate Mathison (Michael Taylor, alternate).

Nominations for District 2 will take place during the Cherry Institute meeting at the Yakima Convention Center on Jan. 20. Growers whose terms expire in 2017 are Bob Harris (Donnie Olmstead, alternate), Gary Ormiston (Ed Skelton, alternate) and Camille Smith (Dennis Jones, alternate). Handlers whose terms expire in 2017 are Cindy Alarcon (Robert Ball, alternate).

All positions expire as of March 31, 2017.

## Processed Pear Committee nominations approaching

Nominations for grower and handler positions on the Processed Pear Committee, which is administered by the Washington State Fruit Commission, will take place during industry meetings in 2017. The committee manages federal marketing order provisions relating to the handling of pears for processing.

Nominations for the Washington grower and handler positions will take place during the North Central Washington Pear Day on Jan. 18 in Wenatchee, Washington. The expiring grower position is held by Ron Ball (first alternate position is vacant, second alternate is Bob Ball). The Handler position is held by Dan Kenoyer (both alternate positions are vacant).

Nominations to fill the expiring processor position will be held at the Washington-Oregon Canning Pear Association annual meeting on a February date to be determined. The position is held by Jon Holt (Dusty Edler is first alternate; second alternate position is vacant).

The Oregon handler position will be nominated at the Columbia Gorge Fruit Growers Association annual meeting in Hood River, Oregon, on a February date to be determined. The position is held by Rob Peterson (first alternate is Gary Wells, second alternate is Jason Moore).

The public member position will be nominated at the Processed Pear Committee annual meeting, which has yet to be scheduled. The position is vacant (first alternate is Steve Castagnoli, second alternate is Ken Severn).

The two-year terms begin July 1, 2017, and expire on June 30, 2019.

For more information, call 509-453-4837.

## Upcoming meetings will include WSFC nominations

Nominations for positions to the 17-member Washington State Fruit Commission Board of Directors will take place during public meetings scheduled for early 2017.

Nominations for District 1 will be held during the North Central Washington Stone Fruit Day on Jan. 17, in Wenatchee, Washington. Terms that expire in 2017 are held by producers Ed Clark and Ed Kenoyer and dealer Doug Pauly.

Nominations for District 2 and District 3 will take place during the Cherry Institute meeting on Jan. 20 in Yakima, Washington. Terms expiring in 2017 are held by Don Olmstead Jr. (producer, District 2), Jill Douglas Sanchez (producer, District 2) and Jim Kelley (producer, District 3).

Nominations for a processor position will be held in February at the Washington-Oregon Canning Pear Association meeting in Yakima. The date has yet to be determined. The position is held by Doug Field.

The three-year terms begin May 1, 2017, and expire April 30, 2020.

For more information, call 509-453-4837.

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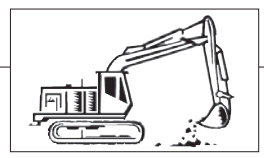

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## EMPLOYMENT AVAILABLE

**REGIONAL TREE FRUIT EXTENSION SPECIALIST** | South-central Washington (#123814). Washington State University (WSU) is seeking a full-time, 12-month, tenure-track faculty position located at the WSU Irrigated Agricultural Research and Extension Center in Prosser, WA. Required: M.S. in horticulture / plant science, agricultural and biological engineering or other agriculturally related field at the time of hire; relevant knowledge in agriculture and experience working with commercial producers and demonstrated ability to communicate clearly and effectively, both verbally and in writing with industry stakeholders. Preferred: Knowledge, training and experience in agricultural field research and problem solving applied to tree fruit horticulture, orchard management, automation and mechanization in perennial crops or specialty crop horticulture. Application screening begins Monday, November 7, 2017. For a full description of the position and to apply, please visit: *https://www.wsujobs.com.* For questions about the position contact Karen Lewis, 509-754-2011 X 4307, kmlewis@wsu.edu. EEO/AA/ADA.

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# Last Bite

*More Young Growers at* **goodfruit.com/yg**

## Jesus Ramos

**grower** / *Originally from Royal City, Washington*

**age** / *25*

**crops** / *Wine grapes, apples, cherries*

**business** / *Production supervisor at Ste. Michelle Wine Estates*

**family background** / *Jesus, son of Javier and Irma Ramos, is the first in his immediate family to attend high school and college. He earned an undergraduate degree in plant sciences, viticulture and enology from Washington State University. He is currently working on a master's degree in agriculture sciences, focusing on plant health management.*

**How did you get your start?**

"With my dad, I got to do a little bit of everything. I had opportunities to go out midwinter, when it would actually snow quite a bit. I remember one year being knee-deep in snow pruning trees, learning about everyday operations, things like how to manage crews and how to prep for the next day. Some of the most interesting aspects were going with dad and seeing the love and passion for what he did. It motivated me to be the best worker who gets the best results by the end of the day.

**What were your interests on the farm?**

"I was interested in what anatomical parts you can remove and what you shouldn't remove, and what would the end result be. One of the things I've learned is if you don't have the right tools and nutrients for the plants, then you can't really expect the greatest result at the end of the day. Having the correct balance of chemistry in the soil will help the plant live longer, all the while it produces the best grapes possible in that growing season.

**Was higher education always part of your plan?**

"I think it's definitely a family thing. I'm the oldest son, the first to graduate from high school then first to get my undergraduate degree. Everything was riding on my shoulders to make sure I was making the right steps to help guide my brothers down the right path. My parents, who came from a pretty humble background, are a motivation for me. I think all growers, in the long run, should enrich themselves in plant sciences, soils and water management. At the end of the day, having that background will make their lives easier and we'll be able to get the best produce out to the consumer.

**What did you gain from interning over the summers?**

"When you're an intern, they really throw everything at you. Some summers I remember thinking how horrible the work was. That work convinced me that I needed to go on through school and higher education to land the job that I really wanted. Looking back now, I'm in a position where I'm glad I had those internships, because it taught me to value being a hard worker.

"*One of my goals is to be one of the most prepared growers in the future.*

*by TJ Mullinax*

*More from this interview and other Young Growers at goodfruit.com/yg.*

## Play

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