

People in Produce

Ranging from a biosystems engineer to a children's nutrition expert to a specialty crop container grower, meet seven people pushing the produce industry forward.

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By Douglas Guth, Patrick Williams and Chris Manning

The produce industry relies on exceptional people to advance the processes of growing food, improving it and getting it to consumers' plates. In this month's cover story, meet seven of the leading People in Produce.

Dr. Amy Bowen

Director of consumer insights, Vineland Research and Innovation Centre

Bowen researches consumer sensory perceptions of produce.

Human perception of flavor involves the integration of taste and smell, and forms part of a discipline called sensory science.

Researcher Dr. Amy Bowen has dedicated her career to advancing this field.

To further this work, Bowen joined the Vineland Research and Innovation Centre in 2009. As director of Vineland's consumer insights team, she harnesses sensory evaluation best practices to meet consumer expectations of fruits and vegetables grown in controlled environments. In practice, Bowen's research focuses on understanding the intrinsic (appearance, aroma and taste) and extrinsic (price and packaging) drivers that impact consumer preference for horticultural products.

"Doing this type of work with fresh products is unique," says Bowen, a Ph.D. in biological sciences with a specialization in plant science, oenology and viticulture. "It's creating value for people growing in greenhouse environments."

Bowen's current activities at the Vineland facility in Canada's Niagara region include deep-dive studies into tomatoes and edible flowers.

Edible flowers are surging in popularity as a garnish or to give dishes a signature flavor. Bowen's team partnered with an Ontario-based grower of fresh herbs to gain insights into the booming market, splitting consumers into groups based on their preferences.

Results showed that edible flowers such as nasturtiums and candy pop mint are favored by fans of bold flavor, while impatiens and dianthus are approved for their



*Photo courtesy of
Vineland
Research and
Innovation
Centre*

smooth texture. The findings would help outline a business plan for Vineland's herb-distributing partner, should it expand into the edible flowers market, Bowen says.

Meanwhile, Vineland scientists are busy developing two hybrid varieties of greenhouse tomatoes, creating two new flavor profiles that should be ready for distribution by 2020. Bowen's group studied 56 varieties of tomato, digging into attributes including sweetness, bitterness, firmness and smokiness. A selection of fruits was passed onto a consumer panel, allowing researchers to compile a list of aroma-producing chemical compounds that the test group associated with liking or disliking a particular tomato.

Texture and consistency became additional important characteristics in how test consumers shaped their opinion, Bowen says.

"It's a bit like Goldilocks," she says. "People don't want a tomato that's too soft or too hard. They want it to be just right."

Once texture is determined, tomatoes with the right consistency can be crossed with preferred chemical compounds to breed the "perfect" tomato, or at least its closest approximation. For Bowen, the pleasure is in researching a diversity of products derived directly from the greenhouse.

"I love the reactions we get from consumers, and the whole value chain in producing something people are excited to consume," Bowen says. — *Douglas J. Guth*

Douglas is a Cleveland Heights, Ohio-based freelance writer and journalist. His work has been published by Midwest Energy News, Crain's Cleveland Business and Fresh Water Cleveland.

Mollie Van Lieu

Senior director of nutrition policy, United Fresh Produce Association

Van Lieu promotes policies that are focused on increasing fruits and vegetable consumption.

Mollie Van Lieu has spent much of her career advancing school food policies, a commitment that continues today in her role as senior director of nutrition policy at the United Fresh Produce Association.

Van Lieu joined United Fresh last September, bolstering a Washington, D.C.-based policy team meeting national regulatory challenges in bringing healthy foods to kids. Among other duties, Van Lieu champions policies to ensure fruits, vegetables and other nutritious goodies are integrated into school meals daily. The United States Department of Agriculture's Fresh Fruit and Vegetable Program, for example, introduces students at 7,600 schools nationwide to a variety of produce they otherwise may not have the opportunity to sample.



*Photo
courtesy of
United Fresh
Produce
Association*

“Fruits and vegetables are served in the classroom, and the teacher eats with the children, too,” Van Lieu says. “There’s an educational component to the program.”

Van Lieu has worked closely on kid-centric nutritional issues for over a decade, including a stint on the staff of Rep. Todd Platts (R-Pa.), where she helped foster sponsorship of the House’s 2010 Child Nutrition Reauthorization program.

From 2011 to 2014, Van Lieu campaigned for healthy eating as a strategist for the National PTA, working with United Fresh to boost various nutritional programs. Her advocacy for youth food programming continued in 2014, when Pew Charitable Trusts named her a senior associate of government relations.

After years of cultivating relationships with stakeholders on Capitol Hill, Van Lieu is pushing improved health standards for efforts like the Supplemental Nutrition Assistance Program (SNAP), also known as food stamps, which offers food assistance to millions of low-income citizens nationwide. She’s also advocating for a farm bill currently being considered by Congress.

“Having been on the Hill when changes were made to school meals, I see it as making sure these policies are implemented successfully,” Van Lieu says. “Policy is only as successful as folks working on it on the ground, and the industry stepping up to provide [nutritious] products.”

United Fresh represents growers and suppliers as well, introducing them to school service directors as a means of bringing new products into cafeterias. While most decisionmakers Van Lieu meets understand the benefits of produce, many don’t realize how heavily unconsumed fruits and vegetables still remain.

“We’re trying to find a tipping point in policy to include produce consumption,” Van Lieu says. “We need to make sure there are opportunities for people who are struggling.” — *Douglas J. Guth*

Ricardo Hernandez
Chief scientific officer and co-founder, Grafted Growers

The North Carolina State University professor will use his research expertise to grow grafted tomato and watermelon seedlings for wholesale, and possibly retail.

Dr. Ricardo Hernandez performs research and teaches as assistant professor of horticultural science at North Carolina State University, and previously studied and conducted research at the University of Arizona. His research background points to plant grafting as a crucial tool contributing to agricultural production. Beginning this fall, Hernandez will be working within a high-tech toolbox to explore the commercial creation of specially grafted produce.



Photo courtesy of Ricardo Hernandez

Grafting is a horticultural technique used to join parts from two or more plants so that they appear to flourish as a single plant. As chief scientific officer and co-founder of Grafted Growers, a vertical farm in Raleigh, North Carolina, Hernandez

will harness years of horticultural experience to grow grafted tomato and watermelon seedlings in a precisely controlled environment.

Unlike working in a greenhouse where unpredictable natural light is a critical growth regulator, the vertical farm allows Hernandez to experiment with temperature, air velocity and various artificial light wavelengths, producing hardy plants that carry potentially higher drought tolerance and disease resistance than his nearest competitors.

"In a greenhouse, you're depending on the outside weather, and you're only getting high-quality plants during certain times of the year," Hernandez says. "We have the same environmental conditions the entire year, so the quality of plants is always going to be consistent."

Hernandez founded Grafted Growers alongside business partner John Jackson with help from a United States Department of Agriculture (USDA) innovation grant. The pair is currently building out a 6,000-square-foot facility set to open later this fall.

Once up and running, the operation will sell to greenhouses and field growers. Hernandez also expects Grafted Growers to have a retail presence, both on site and through the company website, graftedgrowers.com

"Our end goal is to produce plants faster, and ensure they grow well and have good morphological characteristics," Hernandez says. "This isn't a smoking gun, as there's still a need for field and greenhouse production. But using a controlled environment is one more tool we have to keep producing food."

Additionally, Hernandez hopes to educate a new generation of farmers and scientists on what he deems an innovative means of plant production.

"Right now we have a need for talent in agriculture," Hernandez says. "We're not just showing acres of grain, but how plants can be grown through technology." — *Douglas J. Guth*

Heather Szymura **Grower/owner, Twisted Infusions**

By catering to a niche market, Twisted Infusions grower/owner Heather Szymura has built a thriving hydroponics business in Arizona.

Heather Szymura, the grower and owner of Twisted Infusions in Glendale, Arizona, started growing produce professionally two years ago in a Freight Farms-brand container farm after a career in corporate America. Although she had been a gardener for more than a decade, it was her first experience with controlled environment agriculture (CEA).



Photo courtesy of Heather Szymura

"I started with kale and lettuce because that's just what everyone starts out with," she says. "It was really beautiful and it came out really well. And I took it to some chefs because I didn't want to go to farmer's markets — I have two kids and don't want to give up my Saturdays. But the lettuce and kale wasn't enough for them, so

I started to grow some things that they couldn't get good quality. And it led me down the path of research and finding things that don't necessarily grow well outside in Arizona."

Fast forward to today, and Szymura co-owns Twisted Infusions with her husband, Brian. In the vertical hydroponic system, Szymura primarily produces unique products such as oyster leaf, salad burnet and some greens for the same local restaurants she met when she was still exclusively growing greens.

"I try to look for things that people have never heard of," Szymura says.

The key to Twisted Fusion's business model is that Szymura understands her clientele — a group of 10 to 15 different restaurants in the Scottsdale and Phoenix areas. When looking for new clients, Szymura prefers to work with chef-owned establishments when possible, as well as taking custom orders from restaurants or other customers. Not only does it allow her to grow the type of plants that interest her the most, but it also makes business sense. Most households aren't shopping for unique garnishes; chefs are.

"The alternative is going to farmers markets or going to distributors," Szymura says. "If I go to a distributor, I won't be making enough money to make farming worth my time. It's a commodity market and I'm not selling stuff that's high commodity because nobody else has it." — *Chris Manning*

Dr. Joel Cuello
Professor of biosystems engineering at the University of Arizona

Cuello designs controlled-environment technologies in an effort to feed a growing population.

The idea that originally drove Dr. Joel Cuello to pursue a career in controlled environment agriculture (CEA) keeps him going to this day — the concept that as the global population grows, so does the need to produce safe, nutritious and high-quality food.

"The motivation behind my research is to be able to help meet the increased food demand by the planet and do so in a sustainable way — in a way that would not deplete the essential resources, which are vital for food production," he says. "To me, that's the grandest challenge [of] this century."

The professor of biosystems engineering at the University of Arizona grew up in the Philippines. He acquired his bachelors degree from the University of the Philippines at Los Baños before moving to the United States and attending The Pennsylvania State University, where he earned two masters degrees and his Ph.D. in agricultural & biological engineering. Cuello then took his talents to NASA, where he worked on developing a hybrid lighting system for possible crop production on the moon, Mars or asteroids.



*Photo courtesy of
Joel Cuello*

Since 1995, Cuello has worked at the University of Arizona, where he has designed new technologies, such as the Vertical Green Box Solution. Cuello's prototype of a modular vertical farm consists of containers, which he says could make use of electric or natural light, or be constructed of solid walls and roofs or transparent ones. Because it is different than a warehouse or skyscraper farm, Cuello dubs it "Vertical Farming 3.0" (formerly "2.0"). "I'm championing that because it's a competitive alternative to the warehouse, and it's efficient; and it could be potentially lower-cost in terms of construction and operation," he says. None have been built yet, though, so he is looking for partners.

Another one of Cuello's inventions is the patented Accordion Photobioreactor. The zigzag-shaped device produces microalgae, which can then be used in pharmaceuticals, nutraceuticals and biomass. The invention comes in three types, he says — one that supports photoautotrophic (photosynthetic) production and recirculates liquid; another that enables photoautotrophic production and doesn't recirculate; and a third that carries out heterotrophic production, meaning it doesn't use light.

Cuello also has other projects in the works. He serves as a member of the Governing Board and will help with the technology at Cobre Valley Indoor Farm, a nonprofit community-based organization in Claypool, Arizona, that is opening up a vertical farm in an abandoned school. He has also started growing carrots through a process called cellular agriculture, which is comparable to when meat is grown in a lab.

During his global travels, Cuello says he has found public demand for controlled environment agriculture, and he believes that more companies will use renewable energy sources. He is committed to sustainability, introducing his own "Cuello's Law." "It's an industry aspiration, or goal, that productivity per unit resource used will double every four to five years," he says. — *Patrick Williams*

Kim Hookway **President, Buckeye Fresh**

After a career in the manufacturing industry, Kim Hookway partnered with a former colleague to open a local vertical farm that now sells its product to major grocery chains in Ohio.

When Kim Hookway, president of Medina, Ohio-based vertical farm Buckeye Fresh, sold the brand's produce by going into different Northeast Ohio grocery stores — first Buehler's Fresh Foods, then Giant Eagle and Heinen's — she had to connect directly with each store's produce managers. It took some work, but Hookway did what was necessary to help get the business going.

"Before we even went into business, we checked with Buehler's to see if they would be interested in locally grown produce," she says. "At the beginning, it was also talking to produce managers and getting them on board."



Photo: Chris Manning

Hookway's background is not in horticulture; she spent 20 years at a manufacturing company alongside Buckeye Fresh principal investor Tim Remington before founding Buckeye Fresh in 2014. As the company's president, she has utilized the skills she developed in her previous role to help Buckeye Fresh find success.

According to Remington, Hookway's ability to accurately approximate order sizes has been essential to making the business successful. When Buckeye Fresh sells its greens and basil to its customers, it must do so based on estimates instead of fixed order amounts. In her previous job, Hookway managed multiple components of cushioning components for shoes and varying order sizes from different customers. Just like growing, it required understanding and organizing several factors all operating on different schedules. With growing, it took some trial and error, but Hookway can accurately estimate and book the farm's towers for specific crops based on past order trends.

"Without her doing the scheduling, we couldn't manage the harvesting and growing," Remington says. "And this is more difficult [than what she used to do]."

As Buckeye Fresh continues to expand, its basil and greens are sold in stores as far south as Columbus (115 miles) and as far east as Pennsylvania (a minimum of 276 miles). Late in 2018, it will also debut greens with Giant Eagle's Market District — the grocery chain's branding for local suppliers — that will be sold in roughly 200 locations. Hookway says the business is already turning a profit. "It's about understanding the business," Hookway says.

And its success started with her. — *Chris Manning*

Ray Solotki

Executive director at Inuvik Community Greenhouse

The Vancouver Island native aspires to improve food access in the Arctic.

Located north of the Arctic Circle in Canada's Northwest Territories, the Inuvik Community Greenhouse — a converted ice hockey arena — is one of the most remote greenhouses in the world. "Even though we're in the Northwest Territories, the only road out goes into the Yukon, and we can't even get to our capital city by road," says Ray Solotki, executive director. Solotki originally came to this icy abode — where temperatures regularly dip to -20° F in the winter — to feed herself. Three years ago, she committed to helping feed the rest of the community.

Solotki is from Vancouver Island, British Columbia, ("the south," according to her), but moved north near Inuvik in 2015, when she took a job at a hotel. She chose to live in Inuvik because of the greenhouse. "I knew I could grow my own food for at least part of the year and have some local food production of my own," she says. Solotki became the first executive director at the greenhouse, which had previously been managed by a volunteer board of directors and summer employees since it first opened in 1998.



Photo: Ray Solotki

The nonprofit Community Garden Society of Inuvik runs the greenhouse; the government of the Northwest Territories funds the gardening society and others in seven surrounding communities: Aklavik, Fort McPherson, Paulatuk, Sachs Harbour, Tsiigehtchic, Tuktoyaktuk and Ulukhaktok.

Solotki's job, which includes financing, human resources and public relations duties, was created to provide food access to all eight communities, which have limited access to fresh food due to the climate. This includes indigenous people, who make up roughly 64 percent of Inuvik's population and approximately 50 percent of the population of the Northwest Territories, according to the 2016 Canadian Census.

Local indigenous populations have land to hunt and trap, but a lot of them don't eat many vegetables, Solotki says, noting how the produce that is flown up from the south loses its freshness. "But when [vegetables are] fresh, you can barely get them from the greenhouse to the house because they're eaten so quickly," she says. "No one has ever put a pea on a plate in the Arctic because they were gobbled up in the greenhouse because it's so exciting to have such fresh, local produce."

Currently, the 16,000-square-foot, passive solar greenhouse is only open from April until September, and with high daylight and heat in the summer, its soil-grown lettuce and leafy greens can bolt if not harvested quickly. The greenhouse hires experienced growers from out of town every summer, but Solotki wants to change that. She aims to work with Modular Farms of Ontario to build a year-round facility, which will cost \$350,000, and work with a partner in the community to find a location to install it and hook it up to that partner's electricity. (Electricity costs are high at 79 cents per kilowatt-hour.) This approach would allow locals the opportunity to grow their own produce year-round.

In the same vein, Solotki hopes to grow a wider variety of crops to accommodate local diets and preferences. "We want to see some heavier items, so beans, peas, tomatoes." She would also like to grow tomatoes, onions and carrots — ingredients in the popular Canadian dish, caribou stew. Adds Solotki: "These are the staples of an Arctic diet." — *Patrick Williams*

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