

THE OHIO STATE UNIVERSITY

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News from the College of Food, Agricultural, and Environmental Sciences

Winter 2017

# BUT FOR OHIO STATE

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SECRETS TO  
MAKE FOODS  
HEALTHIER

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# GLIMPSES OF GIVING

The College of Food, Agricultural, and Environmental Sciences received a record \$154,721,751.53 from 33,033 donors during the *But For Ohio State* Campaign, topping a \$150 million goal. The Ohio State University as a whole raised a record \$3 billion.

These extraordinary gift stories are presented to encapsulate the impact—both immediate and everlasting—made by all of our generous donors. Our appreciation is immeasurable.

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✍ MATTHEW MARX

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## The Andersons, Inc. and The Andersons, Inc. Charitable Foundation

With a decades-long dedication to the agricultural industry and a passion for education, The Andersons, Inc. and The Andersons, Inc. Charitable Foundation have given more than \$3.9 million to the college. That philanthropic tradition was exemplified during the campaign with the creation of The Andersons, Inc. Charitable Foundation Scholarship Fund, which supports a four-year scholarship for an undergraduate student who is an Ohio resident and is enrolled in CFAES as part of the Pat and Bobby Moser Scholars Program. Specializing mainly in the purchase, distribution and sales of grain and ethanol, The Andersons, Inc. operates in 16 states and Puerto Rico. Over seven decades, Andersons operated retail stores, including locations in the Toledo and Columbus area.

## Frank and Ginni Bazler

For more than 50 years, The Ohio State University has counted Frank and Ginni Bazler among our most loyal and dedicated alumni (Frank BS 1951 Business, JD 1953; Ginni BS 1954 EHE). Whether advocating on our behalf across Ohio or serving in innumerable roles right here on campus, the Bazlers have been selfless in their support time and time again. The college specifically has benefited from their dedication. At one time, Ginni served as an Extension agent, and she and Frank support Ohio 4-H, the Chester S. Hutchison Scholarship Fund, and established the Virginia Hutchison Bazler and Frank E. Bazler Designated Professorship in Food Science. The current holder, Ahmed Yousef, is conducting food microbiology research.



## JD Equipment Inc.

Through annual gifts-in-kind that exceeded \$2.6 million over the course of the *But For Ohio State* Campaign, JD Equipment Inc. has provided tremendous, loyal support to the college. Based in London, Ohio, the sales dealership has donated new John Deere tractors, sprayers, push mowers, weed eaters, and other agricultural equipment. Among the beneficiaries are the Molly Caren Agricultural Center, which hosts the annual Farm Science Review, as well as the Ohio Agricultural Research and Development Center and the Department of Animal Sciences. The donations are a way to give back to the agricultural community by providing hands-on experience with the latest technology, Chief Financial Officer Norm Murphy has said.



Bruce Kettler of Beck's Hybrids with CFAES students at Farm Science Review.

### Beck's Hybrids

Through a donation in 2015 from Sonny Beck and his family, Beck's Hybrids became one of the first presenting sponsors at Farm Science Review and a key collaborator on the Field to Faucet initiative, a large-scale research project investigating solutions to pressing water quality problems facing the agricultural community. The nation's largest family-owned seed retailer, Beck's Hybrids also has made gifts-in-kind to the college, including the use of property for agricultural research, water samplers and outreach projects. Beck's understands the importance of Farm Science Review and the advancement of agricultural technology and education.

### Lloyd and Lorayne Mambourg

Two campaign gifts from the estate of Lloyd and Lorayne Mambourg are having a profound impact on CFAES students. The college's first full in-state tuition scholarship was made possible by the Lloyd and Lorayne Mambourg Scholarship Fund, created in 2014. Another scholarship, the Lloyd L. Mambourg Agriculture Student Support Endowment Fund, was established in 2012. The couple had lived in Medina County, Ohio, before retiring in Texarkana, Arkansas. Each of them had grown up on Ohio dairy farms, and both spent their lives closely linked to agriculture.



### Delma Roush

When southeastern Ohioans talk about "paying forward," the late Delma Roush deserves mention. When she made her estate plans, Roush decided upon a \$7 million gift to CFAES, the largest in the college's history, to establish a scholarship fund that provides annual, renewable

support to students from Gallia, Meigs or Jackson counties in Ohio. As a hotelier in Gallia County, Ohio, Roush was known for making smart business decisions and offering good advice to those who sought it from her. She had owned and operated the Holiday Inn of Gallipolis for 19 years, earning a sterling reputation that had been recognized by the national hotel chain, before selling it. Believing the way to make a difference is through education, Roush had hoped her scholarship could help students afford to attend college and upon graduating they would return to their home counties, all three of which have felt the state's economic challenges. That's paying forward to make a difference.



### Dr. Rohini Mulchandani

After following her dreams to leave her native India and attend graduate school in the United States, Rohini Desai Mulchandani completed her PhD in dairy technology from The Ohio State University. During a remarkable career at Ross Labs, in the nutritional products division of Abbott Laboratories, Mulchandani helped improve the processes for manufacturing such products as Ensure, Isomil and Similac. Later, she went into the gourmet chutney business. Her transformative gifts to the college have allowed the Department of Food Science and Technology to partially fund activities of the product development teams in her name and during her lifetime, and established a legacy endowment in her parents' names to fund, posthumously, one yearly graduate assistantship.



## Lisa and Dr. Daniel Wampler

A scholarship recipient when he earned his PhD at the college, Daniel J. Wampler remembered the help he had received, not only as a graduate student, but also a few years later when he was starting his own natural products extraction company. The faculty at CFAES let him borrow space on campus for his equipment. His business became a global success, attracting such customers as Starbucks Coffee and AriZona Beverage Co. Upon selling his company in 2011, he and his wife Lisa made a \$1.2 million gift to Ohio State to establish the Lisa and Dan Wampler Vice President's Excellence Fund Endowment and the Lisa and Dan Wampler Endowed Fellowship for Food and Health Research for CFAES. Along with Jack Fisher, Wampler was co-chair of the college's *But For Ohio State* Campaign committee. Wampler serves as treasurer of The Ohio State University Foundation.



## Students First, Students Now Scholarship Fund in FAES

Established in 2009 as part of a university-wide scholarship initiative, the Students First, Students Now Scholarship Fund in FAES has provided renewable need-based support to offset tuition and fees for 20 students. Nearly 300 donors contributed to this current-use fund during the *But For Ohio State* Campaign. The median amount donated was \$75. Every gift makes a difference. Among the beneficiaries is Jade Heizer, a senior majoring in forestry, fisheries and wildlife, who has received this scholarship the last two years. "It is a genuine concern that you will run out of your loan money and scholarship money, and that you won't get that degree that you set out to get in the first place," said Heizer, of Miamisburg, Ohio. "Just that someone is willing to help you out, is just such a relief."

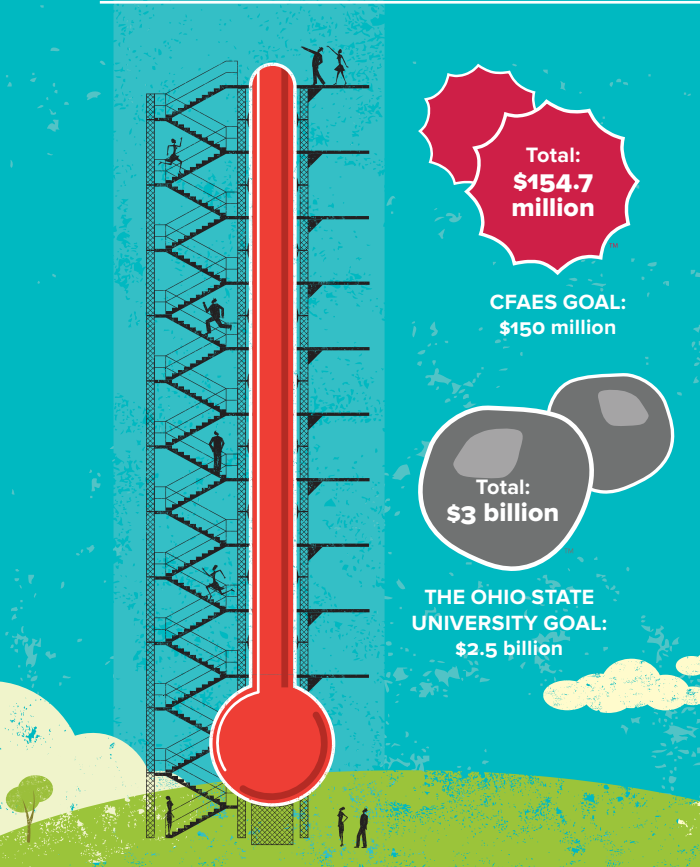
Students in a food lab with Dr. Jennifer Ahn-Jarvis.



## Geraldine and Arthur Winfough Jr.

Well known throughout Pickaway County, Ohio, for their big hearts, successful farm and thriving supply store, Geraldine and Arthur Winfough Jr. helped to transform the agricultural community with their \$2.8 million estate gift to the college. Neither attended The Ohio State University, but they believed in the college's role in preparing future farmers, friends have said. Proceeds of the sale of their 387-acre donation initiated construction of the CFAES Library and Student Success Center, which is available to thousands of students on the Columbus campus. In addition, their gift led to the establishment of three endowed funds bearing their names. One fund provides assistance to undergraduate students from Pickaway County while the other two funds benefit Pickaway County Extension education.

# BUT FOR OHIO STATE CAMPAIGN—SUCCESS!



## CFAES PRIVATE SUPPORT IN FISCAL YEAR 2016

(July 1, 2015 through June 30, 2016)

FISCAL YEAR	2016	2015
Cash and Securities	\$5,050,470	\$4,550,250
Real Estate	\$1,250,000	-----
Gifts-In-Kind	\$2,340,660	\$1,978,811
Pledges	\$5,458,311	\$2,593,552
Revocable Planned Gifts	\$2,794,080	\$3,179,084
Irrevocable Planned Gifts	\$15,000	\$3,000
Philanthropic Grants	\$10,721,384	\$12,202,833
<b>Total Support</b>	<b>\$27,629,905</b>	<b>\$24,507,530</b>



# Room to Extend

 MATTHEW MARX

A \$5 million gift to CFAES is allowing Ohio State University Extension to build a state-of-the-art facility at Waterman Agricultural and Natural Resources Laboratory. Franklin County Extension will move to Waterman, enhancing its community-service programming and expanding its reach to better serve central Ohio residents.

An outdoor education pavilion will support youth development and family wellness. The **Three-season Education Pavilion** will have running water, electricity, restroom facilities and garage doors that will enable the space to be used nearly year-round for a variety of youth and community programs.

Creation of the **Gardens of Opportunity** will help support food-insecure families, demonstrate innovative fruit and vegetable gardens in small

urban spaces, house plots of Franklin County soils for vegetable research led by the Master Gardener Volunteers, and train area residents in food waste recycling.

The **Kitchen of Opportunity**, a large multistation demonstration kitchen, will connect residents with Family and Consumer Sciences educators and faculty from the Food Innovation Center. Residents will be able to test products and research ideas as well as obtain

training for home food preservation.

The **Urban Farm Business Incubator** program will provide in-ground growing space for new and aspiring urban growers, offer technical support for skill development, and help guide the transition to production on urban land outside of Waterman Farm.

**Urban Market-Ready Workshops** will offer advanced strategies for urban producers interested in marketing to restaurants, schools and other institutions.

A formal **Urban Farm Internship** program will train undergraduate and graduate participants and link them to urban farms in Columbus. Internship opportunities will also be made available to graduates of the Master Urban Farmer program.

Extension will be able to enhance support services like **SNAP-Ed** and **EFNEP** nutrition classes and Urban Agriculture/Food Security **STEM Day Camps** through Ohio 4-H.

Want to get involved? Three funds from the **#RoadtoWaterman** initiative will support 4-H youth development, family wellness and urban agricultural programming:

- **Franklin County Three-season Education Pavilion Fund (315720).** This fund provides facility and operations support for the Three-season Education Pavilion at the Waterman Agricultural and Natural Resources Laboratory.

- **Franklin County Columbus Food Opportunity Center Fund (315722).** This fund gives facility and operations support to a collection of educational, research and demonstration agricultural assets. The assets are designed to teach families, businesses and communities how to grow food, market food and develop sustainable farm and food-based businesses.

- **Franklin County First-generation 4-H Outreach Program (315723).** This program seeks to enhance the outreach to first-generation 4-H audiences (youth and families who have never been involved in a 4-H community club). Outreach involves enrichment workshops and year-round programming for STEM and financial literacy activities held in conjunction with local schools, after-school programs, summer day camps, youth leadership and conference retreats, and other youth-oriented programs.

Learn more by calling **614-247-7606**.

# Meet Catalpadale Bristol Dairy Scholarship Winner Kyle Daugherty

✍ SARAH ANNE JOHNSON

"I was blown away when I got the letter. The scholarship is almost half my tuition for the year."



**Q: What are you studying at Ohio State ATI?**

**A:** My major is dairy cattle production and management technology.

**Q: Tell us about life on your family farm.**

**A:** I currently farm with my father and grandfather where we raise 1,400 acres of crops and milk 120 cows in a 46-year-old double-four parlor. We are constantly looking for more land, but it is just really hard to come by around home. That is the main reason I would like to expand the dairy. I lost my right leg up to 6 inches below my knee when I was 6 in a grain cart. Thankfully, God decided that it wasn't time for me to go yet and I am still here today. Growing up with one leg I have adapted to it and am super-involved on the farm.

**Q: How has receiving the Catalpadale Bristol Dairy Scholarship shaped your future?**

**A:** This scholarship will allow me to focus on my classes and really take advantage of them instead of having to worry about paying my tuition. Then, after my two years at ATI, I can return home and fulfill my goal of expanding the family farm.

I don't think I could thank my donors enough. I can always remember driving past their farm when I was younger and was blown away at the size of it. There was a time when I thought I wanted to be as big as them, but as I grew, I figured out what all it took to be that big and I didn't want to deal with it all. I'm very impressed with people who can run operations of that size and I hope to be as good of a manager as them someday. **Q**

**Find more information about how gifts to the College of Food, Agricultural, and Environmental Sciences can change lives at [advancement.cfaes.ohio-state.edu](http://advancement.cfaes.ohio-state.edu) or call 614-292-0473.**

## ➔ WENZ SCHOLARSHIP PROVIDES MORE OPPORTUNITIES TO OHIO STATE ATI STUDENTS

Stephanie Wuebben plans to teach high school agriculture, preferably near her hometown of Xenia, Ohio. Wuebben's career pursuit has been greatly assisted by The Glenn C. and Janet Wenz Scholarship Fund, said the junior majoring in agriscience education. **✍ MATTHEW MARX**



After two years at The Ohio State University Agricultural Technical Institute in Wooster, Wuebben transferred to the Columbus campus last semester. There she is balancing two jobs and school.

"I would like to thank the donors for their generosity and helping students go through college. Alumni and donors play a huge factor whether or not some kids get to attend," she said. "Ohio State is the school of my dreams. There is a lot of diversity here and plenty of opportunities to be had. I feel like it will look pretty good at a job interview if you say you graduated from Ohio State."

Coming from a single-income family, Wuebben said she has paid her own way through college, but only with the help of grants, loans and scholarships.

"Not just the Wenz scholarship, but for any scholarship or organization that is willing to give a student money towards their college tuition and further their education is really a selfless act."

Over the years, The Glenn C. and Janet Wenz Scholarship Fund has given almost 30 awards to eligible students of Ohio State ATI, Interim Director Thom Janini said. Proceeds from the Glenn C. Wenz Trust's recent property sale, considered the second largest single scholarship gift in the history of ATI, will provide many more and greater opportunities in the future.

"Ohio State ATI is extremely grateful to the family and estate of Glenn and Janet Wenz for their generous donation and gift to Ohio State ATI students for all these years as well as the future funding for continuing this scholarship," Interim Director Thom Janini said. **Q**



## Investment in Leadership

 MATTHEW MARX

Having come from a long line of Extension agents, Mariah Stollar plans to extend tradition by becoming an Ohio 4-H educator.

"I have always loved teaching people and helping people. It all comes together in Extension," said Stollar, a junior majoring in community leadership at The Ohio State University College of Food, Agricultural, and Environmental Sciences.

Her grandfather and two uncles were agricultural and natural resources educators, all of whom graduated from the college.

Growing up in Marietta, Ohio, Stollar was involved in 4-H. Through that experience, she has been eligible to receive several scholarships, including the Jean W. and Clarence J. Cunningham 4-H Leadership Fund and The George W. Broughton 4-H Scholarship Fund.


Stollar is grateful to all of her donors for their investment in her career, which she calls a sacrifice on behalf of agricultural education's future.

"The scholarship helps me because I don't have to worry about funding my education. This is the best school in the state that has the program I want to do," she said.

Stollar is making the most of her opportunity. She is conducting undergraduate research through ACEL, investigating instruments of evaluation for the CFAES peer mentoring program.

"I went to IUPUI (Indiana University–Purdue University Indianapolis) and presented a poster at the conference. I feel very lucky."

Stollar serves as a CFAES peer mentor herself, advising freshmen on campus resources, course requirements and professors' expectations.

She also is president of Alpha Sigma Upsilon ag sorority and induction chair for Towers Agricultural Honorary. 

*"This is the best school in the state that has the program I want to do."*— Mariah Stollar



Ohio 4-H raised more than \$10 million from over 7,800 unique donors during the *But For Ohio State* Campaign.



To help support Ohio 4-H, which has youth development programs in all 88 counties, go to [ohio4h.org/give-now](http://ohio4h.org/give-now).



# Grants Add Up to More Relevant Research Data



 MATTHEW MARX

The Ohio Soybean Council and soybean checkoff combine to form the largest CFAES donor during the *But For Ohio State* Campaign, providing \$12 million of support through various funds. Those donations benefit Ohio State research that has specific significance to the very same Ohio soybean producers.

With a collective historical support of \$20.8 million, the Ohio Soybean Council and soybean checkoff comprise the largest donor group in the College of Food, Agricultural, and Environmental Sciences.

The result of that support—from soybean producers through checkoff grants—is a collection of research initiatives that specifically help Ohio farmers, said Anne Dorrance, professor of soybean pathology at The Ohio State University.


“If you think of it as one gift, it’s a heckuva big gift then,” Dorrance said. “We have a great integrated interdisciplinary group that would not have existed without the support of the checkoff grant.”

Along with Dorrance, CFAES faculty members whose research is at least partially fueled by checkoff grants include Steven Culman, Libby Dayton, John Finer, John Fulton, Greg LaBarge, Laura Lindsey, Mark Loux, Leah McHale, Andy Michel, Terry Niblack, Feng Qu, Chris Taylor and Kelly Tilmon. Many other Extension educators provide programming statewide.

“The power of the team has been able to expand the number of sites and the number of situations that we will be able to evaluate,” said Dorrance, who studies soybean disease management. “Each one of us has a council grant and we are working interdependently.”

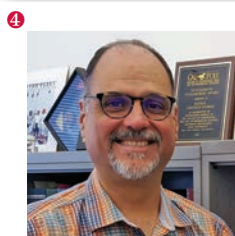
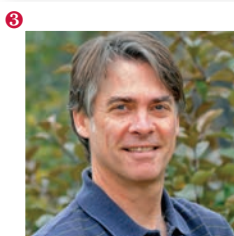
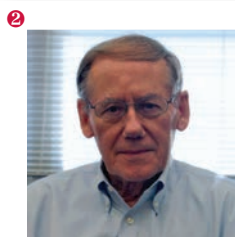
“We have a lot of different challenges to production here, but it takes money to find how to address them,” she said. “It is important for the checkoff too that the farmers get Ohio data that comes from an unbiased source and not from other states where conditions are different and the recommendations do not always transfer to Ohio conditions.”

It’s considered an unofficial soybean research center that Dorrance is trying to make official.

“Having a center is really critical because it allows us to have a voice at the table for some of these efforts. It’s important for Ohio growers to have us represent them nationwide,” she said. 

## CHECKOFF GRANTS FROM SOY AND CORN PRODUCERS ARE FUELING CFAES FACULTY RESEARCH THAT HELPS OHIO FARMERS:

- **Steven Culman**, professor of soil fertility and plant nutrition, is studying more precise methods of determining soil fertility as well as the impact of soil disturbances caused by pipelines.
- Research scientist **Libby Dayton** is revising the state’s phosphorus runoff risk index, a key to farmers forming a nutrient management plan.
- **Greg LaBarge**, a field specialist with Ohio State University Extension, is investigating nutrient management as it relates to crop production and water quality to increase Ohio farm profitability.
- **Laura Lindsey**, professor of crop and soil sciences, is examining early wheat harvest for profitability in Ohio.
- **Leah McHale**, professor of horticulture and crop science, is investigating soybean breeding for disease resistance and quality.
- **Andy Michel**, professor of entomology, has been examining stink bug infestation.
- **Kelly Tilmon**, professor of entomology, is studying ecology and management of insect pests.



# Endowments of Excellence

SARAH ANNE JOHNSON

Endowed chairs and professors strive to achieve the core goals of the College of Food, Agricultural, and Environmental Sciences. They bring knowledge to life through their research and scholarly pursuits.

Among the objectives of the *But For Ohio State* Campaign were elevating faculty research and fostering innovation. During the campaign, The Ohio State University raised more than \$852 million for faculty academics. This resulted in the creation of 96 endowed chairs university-wide; some are under President Michael V. Drake's Discovery Themes Initiative.

At the college level, many of CFAES's endowed chairs and professors are international leaders in their fields. They provide guidance to their students and peers, and their research findings allow individuals, communities and organizations to better understand and overcome challenges.

Campaign contributions supported cutting-edge research, teaching excellence and innovative outreach programs for many faculty members, including the individuals profiled below.

1

**Katrina Cornish** is an Ohio Research Scholar and the **Endowed Chair in Bioemergent Materials** in the Department of Horticulture and Crop Science and Department of Food, Agricultural and Biological Engineering. Her work is in research and commercialization of alternative sources of natural rubber and other bioproducts. Cornish is internationally recognized as a principal authority on alternative natural rubber production, properties, and products, and on natural rubber biosynthesis.

2

**Dennis R. Heldman** is the **Dale A. Seiberling Endowed Professor of Food Engineering**. His research focuses on process design to achieve maximum efficiency and optimum food product quality. Before completing his doctoral degree at Michigan State, he received his undergraduate and graduate degrees in dairy technology from Ohio State and remembers having Dale Seiberling as a professor.

3

**Casey Hoy** currently teaches graduate-level courses that include systems analysis and quantitative methods in environmental research. Hoy's current appointment to the **Kellogg Endowed Chair in Agricultural Ecosystems Management** involves interdisciplinary leadership and work with scientists in many disciplines devoted to simultaneous ecological, economic and social improvements in agricultural ecosystems, toward advancements in agroecosystem health and sustainable communities. Hoy is also director of the Discovery Themes' Initiative for Food and AgriCultural Transformation.

4

**Rafael Jimenez-Flores** is the **J.T. "Stubby" Parker Endowed Chair in Dairy Foods**. He actively participates in teaching, research and outreach focused on dairy foods. His focus is on milk proteins, interactions of milk proteins with other components during processing, biotechnology and dairy microbiology. He collaborates across the university and supports the Discovery Theme Initiatives.

5

**Ani Katchova** is the **Farm Income Enhancement Chair** and an associate professor in the Department of Agricultural, Environmental, and Development Economics. Her work has been published in leading journals such as the *American Journal of Agricultural Economics*, *Agricultural Finance Review* and the *Agribusiness*. Katchova has been funded by over \$2.3 million in grants. She teaches courses in agribusiness finance.

6

**Mark Partridge** is the **C. William Swank Chair of Rural-Urban Policy** and a professor in the Department of Agricultural, Environmental and Development Economics. His current research interests include investigating rural-urban interdependence, why regions grow at different rates, and spatial differences in income equality and poverty.



» The Flavor Research and Education Center is online at [frec.osu.edu](http://frec.osu.edu).  
For details, see [go.osu.edu/flavor](http://go.osu.edu/flavor).

# Focus on Flavor

 MARTHA FILIPIC

## New Ohio State center aims to unearth secrets to make foods healthier

What if commercially made whole-wheat bread tasted just as good as its refined-wheat counterpart? What if you could enjoy the guilty pleasure of eating a bag of potato chips with a third less sodium but all the flavor?

.....  
*Although it's well-known that whole-grain foods are healthier than refined grains, only 10 to 12 percent of the population eats the recommended amount. The Flavor Research and Education Center, supported by food companies, aims to improve healthful foods for mass appeal.*  
.....

These are the types of questions being tackled by the Flavor Research and Education Center, newly arrived to The Ohio State University.

"Dietary guidelines provide a basis to promote a healthy lifestyle, but they are not well followed. People tend to select foods they enjoy, they can afford, and that are convenient," said Devin Peterson, director of the center and professor in the Department of Food Science and Technology. Both the center and department are part of the university's College of Food, Agricultural, and Environmental Sciences.


The center focuses on research geared to find commercially viable ways of making mass-produced foods healthier and still meet the high standards of consumer acceptability. "We want to provide food solutions

that have a populationwide impact," Peterson said.

"Flavor is a primary driver of food choice. So to increase the consumption of healthier foods, we need to make those foods taste good."

As a partnership between industry and academia, the center's 16 member companies make an annual contribution. The funds support graduate students to conduct research that benefits the entire industry.

"The industry has been chasing these holy grails—to reduce salt, reduce sugar and reduce fat—for a long time now, and new challenges include developing more 'whole foods' with simple labels and from sustainable ingredients," Peterson said. "But there's just not that much public funding available to help us understand the underlying aspects of food quality and food chemistry."

The center fills that gap, conducting basic research to provide fundamental knowledge to help companies broaden their understanding of ingredients to help meet the needs of the future. 



FREC identified enzymes in whole grains that generate bitter compounds; now industry can pinpoint what type of wheat would make better-tasting products.



FREC found we perceive only 15 to 20 percent of sodium in foods. If products released more salt in the mouth, they could contain much less sodium without affecting flavor.







Jacob Shuman's world took flight with 4-H beekeeping projects and his outreach program, TEACH B's.

# How He Flew With Bees

MARTHA FILIPIC

As a child, Jacob Shuman sometimes ripped up his homework in frustration. Adopted from Guatemala, he was eventually diagnosed with fetal alcohol syndrome, which explained but couldn't fix his learning disabilities.

Then his mom, Jo, got him involved in Ross County 4-H. Jacob took projects in meteorology and insects, and felt comfortable with hands-on learning. He became a club officer, practiced public speaking, and started doing better in school.

"He kept trying, figuring it out, and started to excel," Jo said. At 13, Jacob started 4-H's beekeeping project. "It just sparked an interest," he said. "And now, I don't know where I'd be without it."

Jacob developed an outreach program, TEACH B's: Teens Educating Adults and Children about Honey Bees, which earned him the National 4-H Council's

2016 Youth in Action Award. He plans to use its \$5,000 scholarship to attend Ohio State's Agricultural Technical Institute, then later will pursue studies on the Columbus campus.

"He has won awards, but 4-H isn't really about awards," Jo said. "The important thing is that he was learning when he didn't realize he was learning—that he was capable of it, and that's what 4-H did for him."

## BUZZ ON BEES AND CROPS

How do field crops affect honey bees? And honey bees affect field crops? CFAES scientists are finding answers. For example, entomologist Reed Johnson and colleagues discovered that honey bees, when foraging, can accidentally pick up dust from insecticide-coated corn seeds. They carry the dust back to their hives. There, it can harm their young. The scientists now are suggesting ways to limit bees' exposure to the dust. Also, the scientists found nearly half the Ohio honey they tested had soybean pollen in it, despite soybeans being self-pollinated. It seems honey bees are visiting soybean flowers, the visits are raising soybean yields, and soybeans are aiding honey production. Further research awaits. Says Johnson, "It's a valuable opportunity to have these two sides of agriculture—field crops and beekeeping—come together and explore mutual benefits."

MAURICIO ESPINOZA

### NAME THAT BEE

Ohio's bees are more than honey bees. They're bumble bees, carpenter bees, cuckoo bees and others. And you can tell which are which using a new pocket guide from CFAES. "Common Bees of Ohio," a 4-by-6-inch laminated card, was created to raise awareness of pollinators—bees and their buddies—and the good they do for farms, gardens and food. It's \$9.99 for 25 copies at [go.osu.edu/BeelD](http://go.osu.edu/BeelD).



## POLLINATORS' FLOWER POWER

A project on Ohio State's Mansfield campus wants to see how power line rights-of-way could help pollinators, including bees and monarch butterflies. Its partners include experts from CFAES.

Called "A Monarch Right-of-Way: A Pollinator Demonstration Plot," the project is evaluating four different wildflower collections, all four growing under a power line crossing the campus. Goals include documenting the plants' pollinator benefits and showing landowners—especially ones with rights-of-way on their property—how to grow them.

Pollinator populations have plummeted recently—monarchs alone by 90 percent—largely due to habitat loss.

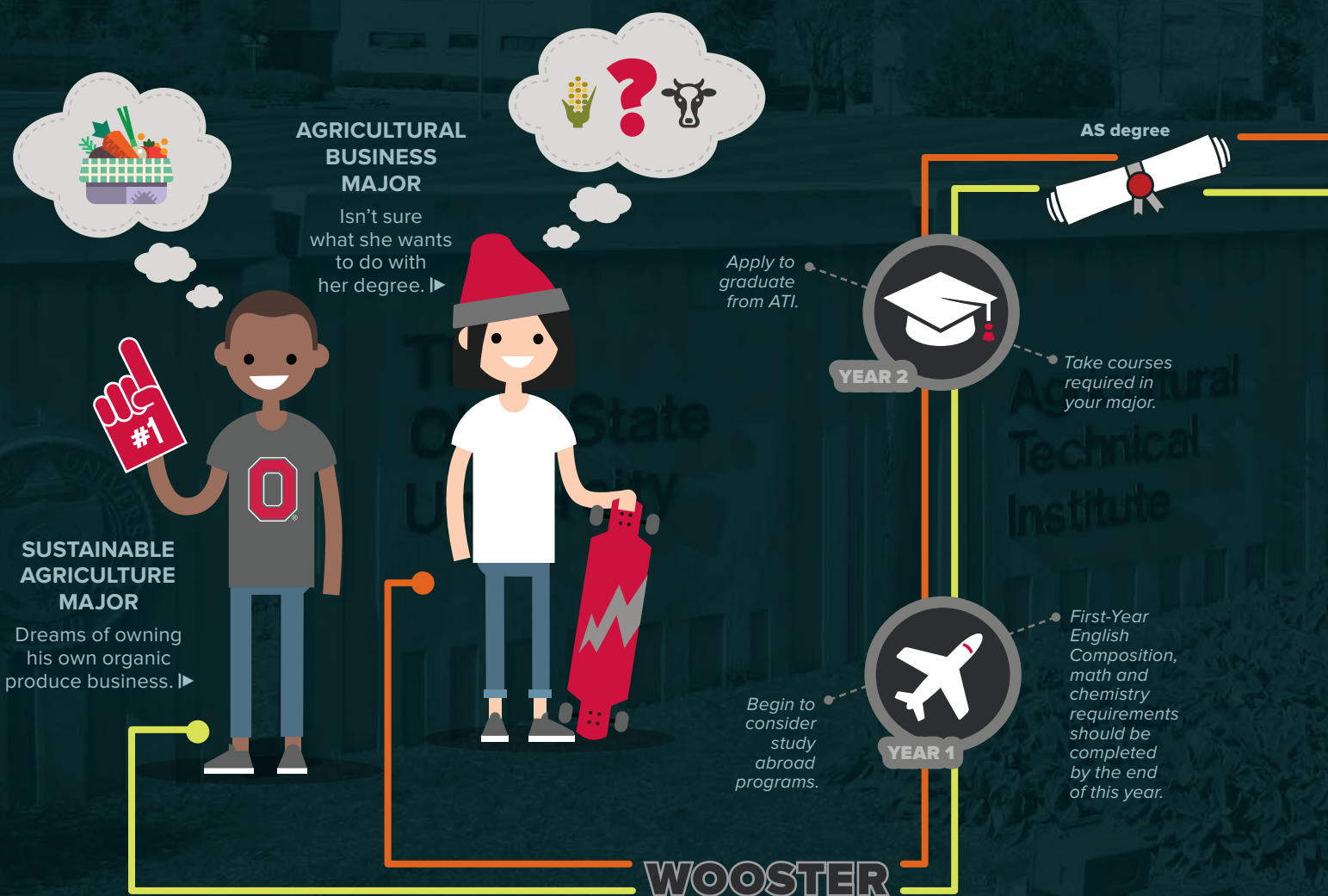
Typically, power line rights-of-way are kept free of trees to help prevent damage to the lines. The project could show a use for the land that still protects the lines. The plot's wildflowers, which include monarch-friendly milkweeds, grow only about waist-high—a height that, in this case, you could call the bee's knees.

KURT KNEBUSCH

# PATHWAYS TO COLUMBUS

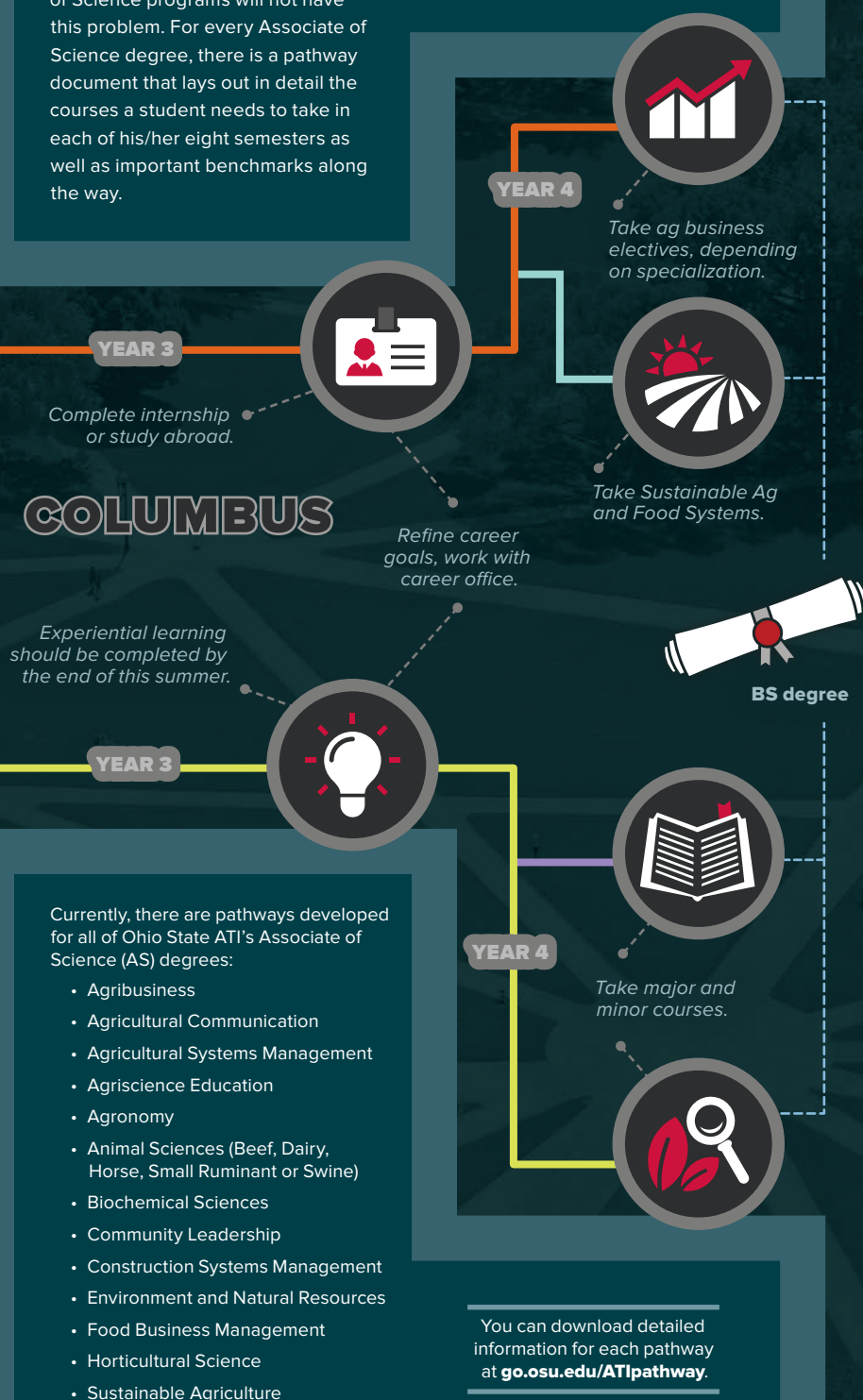
FRANCES WHITED

When you're trying to get from Point A to Point B, it's helpful to have a path to follow. That's the idea behind the curriculum pathways that have been devised for every Ohio State ATI program that transitions to a CFAES bachelor's degree. Pathways give students a clear plan to follow for the four years of their program—two at ATI and two in Columbus.





Since their inception in 1996, Ohio State ATI's Associate of Science degrees were designed to provide a "seamless transition" from Wooster to Columbus. Over the last 20 years, however, programs and requirements have changed, and new AS programs—sustainable agriculture, for example—have been developed. Without a clear plan to follow from the outset, students could hit some stumbling blocks that made the transition (and the ability to graduate on time) a challenge. Students who enrolled in autumn of 2016 in Associate of Science programs will not have this problem. For every Associate of Science degree, there is a pathway document that lays out in detail the courses a student needs to take in each of his/her eight semesters as well as important benchmarks along the way.



## MAKING THE TRANSITION

For Brianna Gwartz, the decision to start her bachelor's degree at Ohio State ATI was an easy one. "It made more financial sense to me," Gwartz said, referring to the nearly \$3,000 per year tuition difference between Wooster and Columbus. The Shelby, Ohio, native also admits she was a little afraid of the big city of Columbus. Her campus visit to Wooster sealed the deal. "I felt like I fit in," she said.

A junior agricultural communication major, Gwartz's goal is to work in communications with a company that specializes in animal agriculture. She found the transition process to be trouble-free. "I was kind of worried that I'd be behind students who started in Columbus, but I was pretty much in the same spot," she said.

While in Wooster, she took advantage of some of the "transition day" programs offered by Ohio State ATI and CFAES. "That helped because I knew where things were when I got here."

Gwartz, who was recognized last year with the Director's Award, given to Ohio State ATI's most outstanding student, has some advice for Ohio State ATI students who will soon be in her shoes. "Make connections at Ohio State ATI that will transition with you, and get involved when you come to Columbus, even if it seems a little scary at first." **O**



*“You don’t change your behavior if you don’t realize there’s a problem in the first place.”*

# Saving Tons of Food Waste

 MARTHA FILIPIC

U.S. consumers throw out an estimated 80 billion pounds of food annually. What’s more, only half are aware that food waste is a problem, and some mistakenly perceive that pitching food can be beneficial.


In a study published in PLOS ONE, Ohio State researchers found that 68 percent of Americans believe discarding food after the package date has passed reduces the chance of foodborne illness, although experts disagree. Only 58 percent understand food waste is bad for the environment; but it is the most destructive type of household waste in terms of greenhouse gas emissions.

The findings provide the data required to develop targeted efforts to reduce the amount of food that U.S. consumers toss into the garbage each year, said study co-author Brian Roe, the McCormick Professor of Agricultural Marketing and Policy.

“If we can increase awareness of the problem, consumers are more likely to increase purposeful action to reduce food waste,” Roe said. “You don’t change your behavior if you don’t realize there’s a problem in the first place.”

He and co-author Danyi Qi, a doctoral student, see several areas in which to focus educational and policy efforts, particularly to chip away at the perceived benefits of wasting food—myths that were revealed by their study.

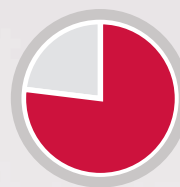
For example, removing “Sell by” and “Use by” dates from food packages could significantly reduce the amount of good food that is trashed, the researchers said.

“Consumers often believe that they should throw food away if the date on the package has passed,” Roe said, “but in most cases those products remain safe and wholesome.” 

**The Ohio State researchers are working with scientists at Pennington Biomedical Research Center in Baton Rouge, Louisiana, to develop an app consumers can use to measure food waste. The idea is for consumers to take pictures of their plate before and after a meal. The app will upload the images to a server, where analysts will examine what’s left to estimate food waste. They also hope to be able to use the app to measure leftovers that never get eaten and other types of household food waste.**

## AWARENESS OF, ATTITUDES ON FOOD WASTE

*Percentages indicate those who agree somewhat or strongly with the statement*



**77%**

Feel guilty when throwing away food



**70%**

Throwing away food if the package date has passed reduces the chance someone will get sick from eating the food



**58%**

Throwing away food is bad for the environment



**13%**

Your household wastes more food than other households of your size

Portable infrared sensors made by leading developers, including Agilent Technologies and Thermo Fisher Scientific, were initially designed for the Department of Defense, the Drug Enforcement Agency and the pharmaceutical industry. CFAES is the first to use the instruments to study how they could apply to the food industry.

# Improved Food Testing Could Be ‘Game-Changer’

 MARTHA FILIPIC

Food adulteration and counterfeiting cost the food production industry an estimated \$10 billion to \$15 billion a year and sometimes pose safety risks. In 2008, baby formula tainted with the chemical melamine killed six infants in China and made 300,000 babies sick. Since then, the authenticity of olive oil, honey and other foods has been questioned.

But lab tests, whether they're checks of imported foods at the dock or production-line quality testing at U.S. facilities, can be time-intensive and costly, undermining efforts to conduct widespread tests of imports or to allow processors to make swift quality control adjustments when needed.


Today, an Ohio State researcher is using portable infrared scanners to conduct tests on-site and on various foods with almost instantaneous results.

"This is a game-changer for the industry. It allows you to get out of the lab and test in the production line or even in the field," said Luis Rodriguez-Saona, professor in the Department of Food Science and Technology.

The process seems deceptively simple: A small sample of the product is scanned with a handheld spectrometer or with a scanner. Thanks to approaches the researcher has developed, attributes can be analyzed in less than a minute. This

measurement could eliminate the need for lab tests that traditionally take hours or days to complete.

"With tomato juice, we can look at 12 different attributes in less than a minute," Rodriguez-Saona said. "All this would take multiple hours, if not days, to collect and test one sample the traditional way."

In addition to the processed tomato work, Rodriguez-Saona and his team of graduate students have studied different attributes of potato chips, including an assessment of oil quality and the presence of acrylamide. 



*Among other collaborations, for the past five years Luis Rodriguez-Saona has contracted with the California League of Food Processors to test tomato juice and tomato paste. California produces more than 90 percent of the nation's processed tomatoes and nearly half the processed tomatoes grown worldwide. Currently, the industry is using the technology to supplement traditional monitoring, but the work of Rodriguez-Saona could be instrumental in getting approval to use it as its primary testing method. So far, Rodriguez-Saona has published five scientific papers on using infrared technology for processing tomatoes.*



► Ohio State specialists recommend growers use free Ohio Department of Agriculture testing of all cover crop seed for the presence of Palmer amaranth seed before planting. More: [u.osu.edu/osuweeds](http://u.osu.edu/osuweeds).

## IMPROVING OHIO WATER QUALITY BY LESSENING HARMFUL ALGAL BLOOMS

Several researchers and educators from the College of Food, Agricultural, and Environmental Sciences were among a group of scientists from agencies, universities and environmental organizations who gathered during the fall to discuss their latest research on fighting harmful algal blooms and protecting water quality in Ohio. During the Understanding Algal Blooms: State of the Science Conference held in September in Toledo, Ohio, researchers presented information on how to prevent and predict harmful algal blooms and how to remove their toxins from drinking water. Harmful algal blooms are caused by a combination of warm water temperatures and high concentrations of phosphorus in the water. The blooms can produce dangerous toxins, such as microcystin. Toledo residents lost access to drinking water for two days in August 2014 due to high microcystin levels. The conference included: highlights from recent modeling studies; the latest edge-of-field results; rates and rationale for adoption of management practices; monitoring and tracking algal blooms in Lake Erie; and water treatment methods to reduce cyanobacteria. Several units within The Ohio State University, including Ohio Sea Grant, Stone Laboratory, CFAES, Ohio State University Extension, and the U.S. Department of Agriculture, hosted the conference. Ohio State on-farm research to lessen algal blooms and improve water quality includes: fertilizer trials for crop utilization, led by Steve Culman, OSU Extension soil fertility specialist; new technology for manure application, led by Glen Arnold, state field specialist for manure nutrient management systems and associate professor for OSU Extension; edge-of-field water testing, led by Greg LaBarge, agronomic crops field specialist for the college and OSU Extension; variable-rate nitrogen studies, led by John Fulton, precision agriculture specialist for OSU Extension; and water table management led by Larry Brown, an agricultural engineer in CFAES. **TRACY TURNER**

## STOPPING PALMER AMARANTH IN OHIO

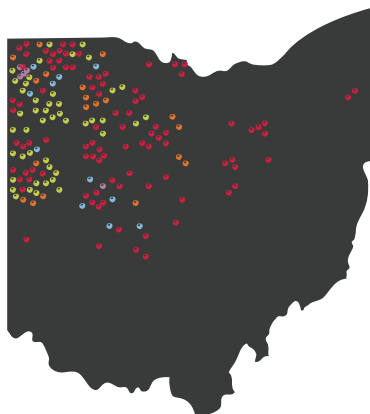
Palmer amaranth—two words that can instantly cause worry for many crop growers. The glyphosate-resistant weed that has devastated many cotton and soybean fields in Southern states



has been found in at least 13 Ohio counties as of late 2015. That's a marked increase from 2012, when the weed was found in only one county in the Buckeye State. Also known as "pigweed on steroids," it has, in many cases, caused entire fields to have to be mowed down. But Ohio State weed scientists are working hard to stop its spread throughout Ohio crop fields.

Because of its fast growth, herbicide resistance and ability to destroy entire crops, Ohio growers have to be vigilant to prevent its spread statewide. Palmer amaranth seed entered Ohio through fields spread with contaminated manure from Southern animal operations that used cottonseed products as feed. It can also be spread by water and farm equipment previously used on contaminated fields. Ohio State is helping to stop Palmer amaranth's spread by educating dealers, agronomists and farmers about its identification and management. Farmers are being advised to scout their fields for Palmer amaranth, and if it's found, to eradicate it before it goes to seed. Grain and animal producers, as well as feed and equipment dealers, are being advised to stop importing combines from Palmer amaranth-infested areas, and to stop using cotton-based feed products from these areas. **TRACY TURNER**

### On-Farm Research



● Fertilizer trials for crop utilization are ongoing on 96 sites. The trials involve testing fertilizer rates for crop utilization based on the crop—soybeans, corn and wheat—and crop inputs including phosphorous, potassium and nitrogen. The results will help farmers determine crop needs and utilization rates to fine-tune crop recommendations.

● New technology for manure application is being used on 55 sites. Applying

manure to growing crops enables the plants to utilize the nutrients immediately, reducing nutrients that exit the field with water. Farmers are also able to reduce the amount of manure stored and provide a natural alternative to commercial fertilizer.

● Edge-of-field water testing is ongoing on 20 sites using real-time monitoring of water leaving farm fields through drainage tile and other structures. Data

generated from the sites include recognition of new water table management structures that will create strategies for reducing water volume leaving the field, resulting in lowered amounts of nutrients entering surface water.

● Variable-rate nitrogen studies are ongoing on 11 sites, utilizing new technology to deliver nitrogen based on individual plant needs rather than broadcasting one rate on

an entire field. Farmers will be able to use less nitrogen and deliver nutrients based on individual plant needs.

● Water table management is also ongoing, using new technology to manage the water table in the field to reduce total water leaving the field annually. Farmers not only benefit from lower amounts of nutrients leaving the field, but also gain the ability to retain water for crops during the growing season.



# Planting With Precision

 MARTHA FILIPIC

## Research helps farmers decide what's right for their operations

### Brutus Buckeye must love corn.

During 2016, The Ohio State University mascot was seen (from the air) in a cornfield north of London, Ohio, from mid-June until harvest.

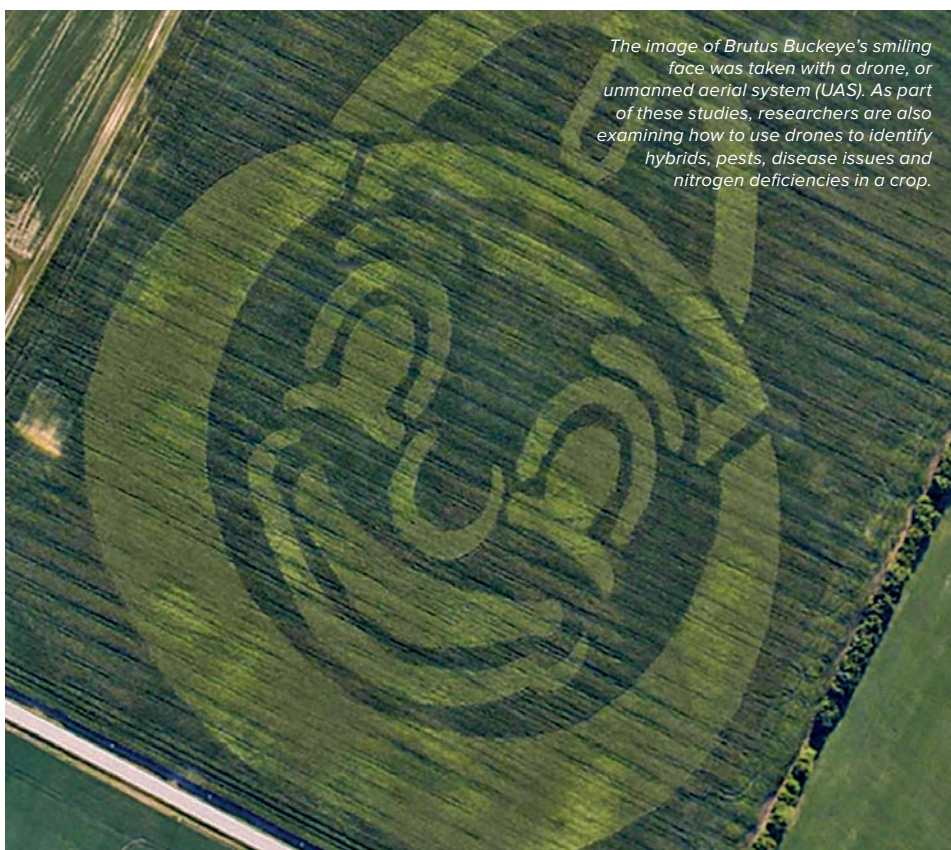
The image, created by prescription planting the field with two hybrids with different maturity dates, helped draw attention to research of multihybrid planting technology, said Andrew Klopfenstein, project coordinator in the Department of Food, Agricultural and Biological Engineering.

"It's part of a larger-scale effort to inform farmers how far the technology has come, and how to utilize the technology to maximum potential," Klopfenstein said. This was the second year of research by the department on multihybrid corn planting, and its first on soybeans, he said.

In 2016, Ohio State researchers tested prescription planting protocols on approximately 600 acres across central Ohio.

Planting is the most critical operation of crop farming, Klopfenstein said. Improperly placing seed or working a poor seedbed could cut a crop's yield potential by half. In farm fields, particularly in central and southern Ohio, soil type can vary significantly within a matter of 50 feet. Multihybrid planters allow farmers to simultaneously plant different seeds at different rates to produce the highest yields or generate the highest returns for their operations.

But on some fields, especially in northwest Ohio where soil tends to be more uniform, high-speed planters may be more beneficial, Klopfenstein said. Speeding up




*The image of Brutus Buckeye's smiling face was taken with a drone, or unmanned aerial system (UAS). As part of these studies, researchers are also examining how to use drones to identify hybrids, pests, disease issues and nitrogen deficiencies in a crop.*

planting by 40 to 60 percent allows farmers to get their crop in even when weather narrows the planting window, as it did in spring 2016.

"Farmers who got their corn in during a planting window in early April had good temperatures along with good emergence and early season growth," he said. "Corn that was planted later, around Mother's Day, had to withstand a late frost and then a cold rain. This later-planted corn had poor

emergence and stands.

"As hybrids continue to advance, it's critical to get corn in the ground at the right time," Klopfenstein said. "That's why planting capacity matters so much."

The department's research is aimed to help farmers determine the right equipment for their operation, whether it's high-speed, variable-rate, multihybrid or some combination. 

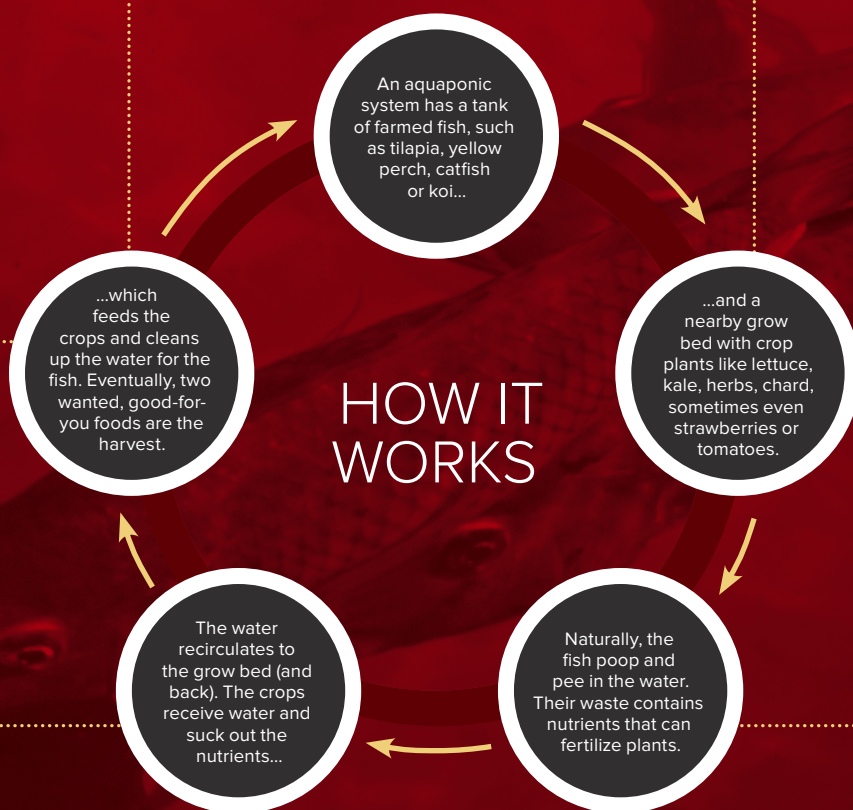


Software uses data on a field's terrain, past yields, soil organic matter, remote-sensed imagery and soil productivity to maximize yields.

In addition to farmers, project partners include Precision Planting, Beck's Hybrids, Case-New Holland, Airscout, Climate Corporation, 3-D Aerial and the Ohio-Indiana UAS Center.

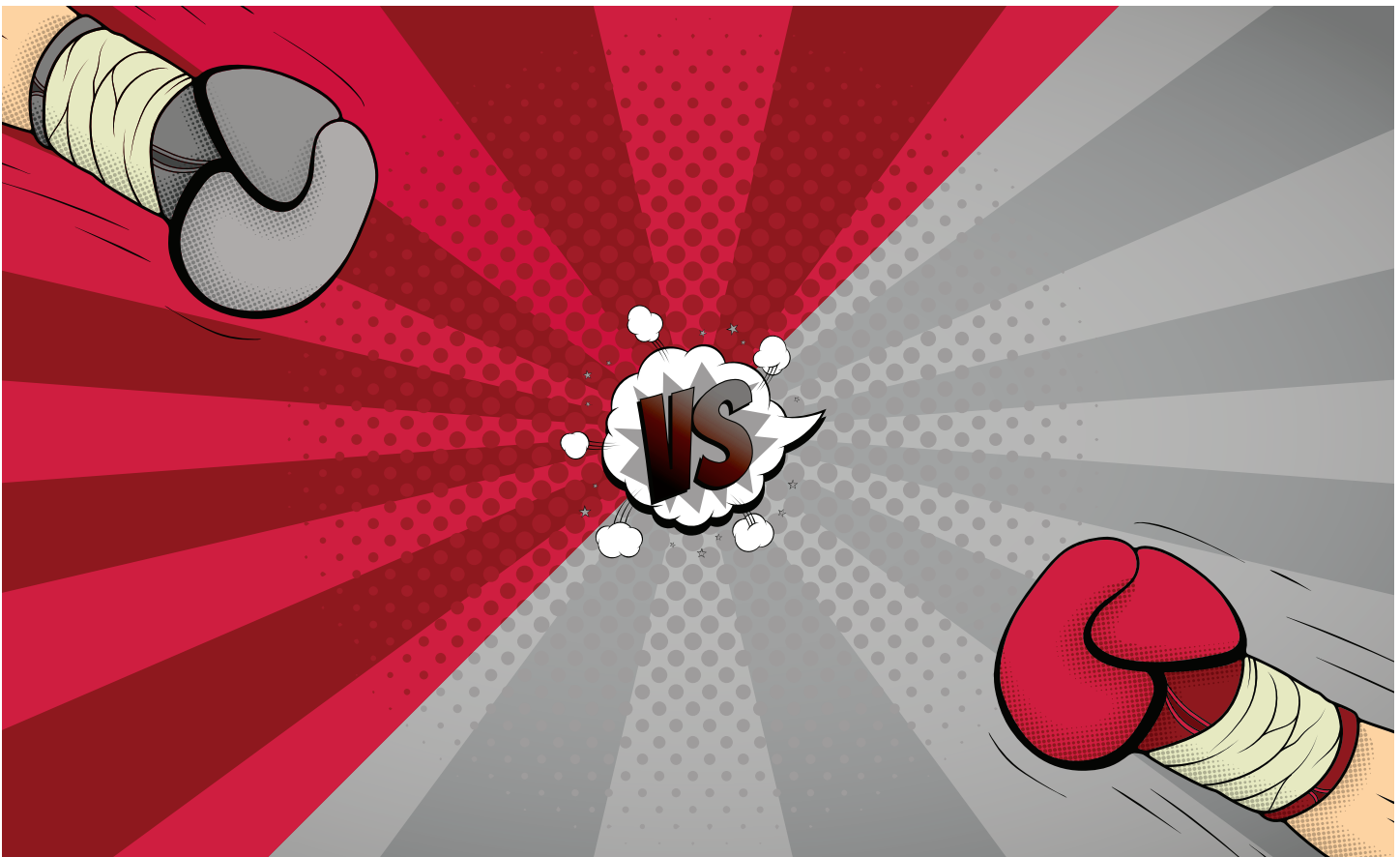
# GET FISH WITH YOUR SALAD WITH AQUAPONICS

"There's growing interest in aquaponics in the Midwest," says CFAES's Matthew Smith. "People like the idea of the marriage between fish and plants." Smith is OSU Extension's specialist in aquaculture. His work entails growing the success of Ohio's fish farms—their food production, profits and sustainability. He says one way to do it is with aquaponics. Aquaponics combines three components—aquaculture, hydroponics and wastewater management—into integrated, closed-loop systems. It raises fish like yellow perch and tilapia together with high-value veggies like lettuce. Water and waste from the system's fish side are recirculated to irrigate and fertilize the plants. The practice nets several benefits, Smith says. The farm expands its product line. Water leaving the farm is cleaner. People get more local food choices. "There's a noticeable trend throughout agriculture for local, sustainable produce and fish," he says. Aquaponics "lets consumers know exactly where their food is coming from." ✍️ KURT KNEBUSCH





Citation Needed is supported by alumnus Bill Hildebolt, who developed Prego pasta sauce when he was with Campbell Soup Co. Then and now, much of the criticism he hears of food and agriculture stems from “junk science or urban mythology,” he said. The “Show Me the Data!” fund (#315252) sponsors speakers on topics such as using storytelling in communicating science.



# Citation Needed

 MARTHA FILIPIC

As with many scientists, when Michael Dzakovich describes his research, the conversation could easily get dragged into the weeds. But it doesn't.

"I've learned to take things to a more approachable level," said the CFAES doctoral student who studies tomato genetics. "And that ties in really well to


what Citation Needed does."

Dzakovich is on the executive board of Citation Needed, a new student group centered on how to communicate about science, with a particular focus on food and agriculture.

Composed primarily of students majoring in Food Science and Technology and

Agricultural Communication, Education and Leadership, the idea is to find ways to shed light on food myths without alienating people who might have a different view, said Annie Specht, assistant professor in ACEL and

one of the group's advisers.

"For a lot of people involved in science, the end product is a journal article," Specht said. "But we should embrace the idea that we need to talk to the public in an informal but impactful way." 

 To learn more about Citation Needed, see the group's webpage at [u.osu.edu/citationneeded](http://u.osu.edu/citationneeded) or like the group's Facebook page.



## THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,  
AND ENVIRONMENTAL SCIENCES

### Continuum

#### Winter 2017

The Ohio State University Alumni Association, Inc.

College of Food, Agricultural, and Environmental Sciences Alumni Society

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John C. "Jack" Fisher  
(*'67 & '69, Animal Sciences*)

Dan Wampler  
(*'80 & '83, Food Technology,  
Horticulture*)

Jill Pfister  
(*'76 & '83, Agricultural  
Education*)

#### INTERNATIONAL ALUMNI AWARD

Albert T. Modi  
(*'99, PhD, Crop Science*)

#### YOUNG PROFESSIONAL AWARD

Katy Endsley  
(*'04, BS, Agricultural  
Communications*)

Chanun Mo Somboonvechakarn  
(*'07, BS, & '09, MS, Food Science  
and Technology*)

#### DISTINGUISHED ALUMNI

William Hildebolt  
(*'66, '67 & '69, Food Science  
and Technology, Horticulture*)

The Honorable Brian Hill  
(*'84, AAS, Agricultural/Industrial  
Power Equipment Technology &  
'86, BS, Animal Sciences*)

Lewis R. Jones  
(*'65, Agricultural Economics*)

Isaac "Ike" Kershaw IV  
(*'93, Agricultural Education*)

Kurt Loudenback  
(*'83, Agricultural Economics*)

John O'Meara  
(*'78 & '83, MS, Environment  
and Natural Resources*)

Ron Overmyer  
(*'66 & '72, Agricultural Education*)

Lawrence "Larry" Piergallini  
(*'77, Animal Sciences*)

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