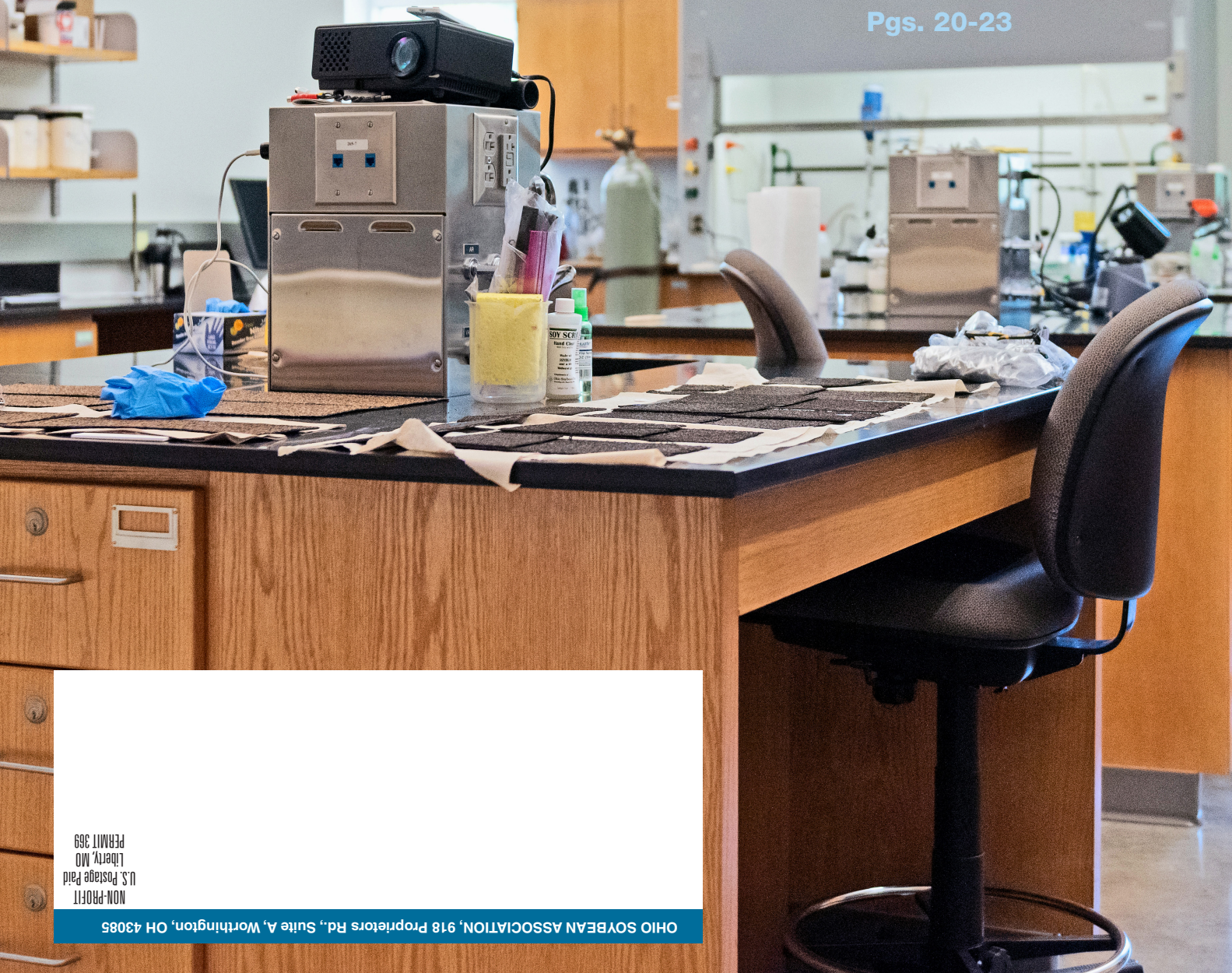


Ohio Soybean NewsTM

NOVEMBER-DECEMBER 2019 A PUBLICATION OF THE OHIO SOYBEAN ASSOCIATION

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COVER STORY:

The Ohio Soybean Council (OSC) has a long history of investing checkoff dollars in new uses. With 10 R&D 100 awards and seven licensed products already in hand, OSC is expanding on its history with its new business line, Airable Research Labs. The lab will ramp up soy-based product invention and streamline the commercialization process so new biobased products can come to market faster, driving more demand for soybeans. Learn more about the new lab on pages 20-23.



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Scott Metzger

Ohio Soybean Association President
Ross County soybean farmer

A Letter From the President

I know most of us were hoping for a long, warm summer to help fill out the pods from such a late planting season and it appears we've gotten that. It's early October as I write this column and it feels like August. Some have started harvesting and the rest are itching to get going.

In this issue of Ohio Soybean News, we've got information about new partnerships and upcoming events that I know will interest you.

We've set the date and location for the 2019 Ohio Grain Farmers Symposium, an event we host every year in partnership with the Ohio Corn & Wheat Growers Association. Save the date on your calendars to attend on December 17th at the Nationwide and Ohio Farm Bureau 4-H Center on the campus of The Ohio State University. This event is free for all to attend, but please RSVP at www.ohiograinfarmerssymposium.org to reserve your spot.

On page 5, you can read more about the newly formed Ohio Agriculture Conservation Initiative (OACI). This group is an unprecedented partnership between agriculture, conservation, environmental, and research communities to recognize farmers who are working to improve water quality, as well as increase the number of best management practices being implemented on farms. One of the ways this group is going to help accomplish that goal is to create a farmer certification program. Watch for more information about this program as it becomes available.

Back in September, OSA farmer leaders attended the 2019 Farm Science Review to talk to attendees about OSA membership and its many benefits. We successfully signed up a lot of new members that week and don't want to lose that momentum. To see the most updated list of membership benefits, or to sign up or renew your membership visit www.soyohio.org/membership. If you believe, belong.

Happy Harvest!

Working Together to Recognize Ohio's Farmers and Protect Ohio's Waterways

The Ohio Agriculture Conservation Initiative (Ohio ACI) is an unprecedented partnership between agriculture, conservation, environmental, and research communities to recognize farmers for their dedication to utilize established methods to improve water quality in Ohio and to increase the number of best management practices being implemented on farms.

Ohio ACI will offer resources and education that farmers need to implement science-based practices on their farms and better show how those efforts are improving water quality over time.

Farmers across the state have put time and financial resources into responsible nutrient management programs to preserve Ohio's water quality. By collaboratively learning and sharing information across environmental and agricultural communities, Ohio's water quality advocates stand as a united front dedicated to identifying solutions and helping farmers implement them.

To achieve this mission, Ohio ACI will:

- Create a universally recognized farmer certification program, with a pilot program beginning in early 2020, that will help increase adoption of best management practices and recognize farmers who demonstrate a commitment to continuous improvement.

- Create a confidential farm practices assessment that will benchmark best management practices adoption and track progress toward our goals.

Ohio ACI complements the work of two other important water quality



Ohio ACI's goal is to assess farm practices in the state, promote continuous improvement, increase adoption of best management practices and create a voluntary certification program.

initiatives in Ohio — the Ag Nutrient Alliance and the OSU CFAES Water Quality Research Consortium.

The Ag Nutrient Alliance facilitates the implementation of effective agriculture best management practices through integration of current research and data, stakeholder education, identification of research gaps and recommendations for funding priorities that can measurably improve the water quality of Ohio's lakes, rivers and streams.

The OSU CFAES Water Quality Research Consortium, which was formed specifically to address

research and educational needs to support knowledge-based water quality solutions and efforts in Ohio, will drive science rapidly from ideas to new approaches by connecting research across multiple disciplines, organizations and boundaries to create a holistic understanding of water quality.

For more information, please visit www.OhioACI.org.

Efforts to restore and protect Ohio's water quality have been an ongoing goal of all partners in the Ohio Agriculture Conservation Initiative. Ohio ACI is led by a diverse group of organizations including:



H2Ohio – A Plan for Ohio’s Watersheds



H2Ohio is the water quality initiative Governor DeWine introduced to invest in targeted, long-term solutions to ensure clean and safe water in Lake Erie and throughout Ohio.

Through collaboration among the Ohio Department of Natural Resources, Ohio Environmental Protection Agency, Ohio Department of Agriculture, and Ohio Lake Erie Commission, H2Ohio will address critical water quality needs and support innovative solutions to some of the state’s most pressing water challenges. Some of these needs include: harmful algal blooms (HABs), nutrient pollution, failing septic systems and lead contamination.

The H2Ohio Fund will help ensure safe and clean water across Ohio by providing the resources necessary to plan, develop, and implement targeted long-term water solutions.

PREVENTION — Land-Based Strategies to Protect our Waterways

The H2Ohio fund will support efforts to minimize the introduction of nutrients and other things that wash off from land that can damage our water. It will also provide funding for more aggressive action to repair failing septic systems and other water treatment needs across Ohio.

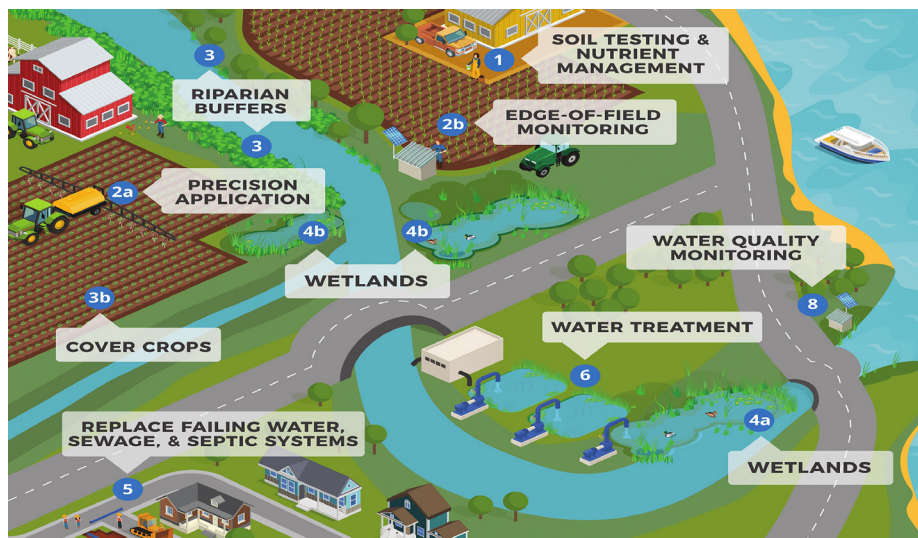
1. Support efforts and build capacity to promote soil testing and fertilizer application best management practices, designed to reduce excess nutrient runoff into streams, rivers, and lakes.

a. Additional staffing at Soil & Water Conservation Districts for technical support

b. Support for nutrient management planning on farms

c. Support for nine-element watershed planning

d. Support and promote the use of the



“4R” Nutrient Stewardship Certification program

2. Support best management practices and precision agriculture for farmers, including funding for equipment and technology that facilitate more targeted application and an overall reduction in the use of fertilizers on farm fields.

a. Support equipment purchase/ retrofits to assist with nutrient placement

b. Support investments in “edge of field” monitoring

c. Support conservation practices and structures to keep fertilizer, manure and soil on fields and reduce nutrient loading into Ohio’s waterways

1. Support and promote conservation and preservation practices to create more stream buffers to reduce nutrient loading into our waterways including adding permanent buffers.

Water-Based Restoration Through Natural Remedies, Treatment, Technologies, and Innovation

Despite best efforts at prevention, some excess nutrients and runoff will continue to enter our waterways. Wetlands are nature’s solution to assist with naturally filtering these waters and trapping nutrients. Additionally, there are emerging technologies to minimize water quality problems and treat the polluted water

flowing through our waterways, similar to point source pollution strategies.

4. Wetland Creation for retention and water filtration

a. Create additional wetlands to naturally filter out nutrients and sediment

b. Support statewide grant program for upland wetland creation

5. Support failing wastewater and water supply systems across Ohio, particularly in economically disadvantaged areas throughout the state

6. Build on successes with agricultural drainage modifications

Science, Research, and Measurement — Monitoring and Protecting our Waterways

7. Support continued scientific research and data collection

a. Ensure decisions are being made with the best available information

b. Establish metrics and measurable goals

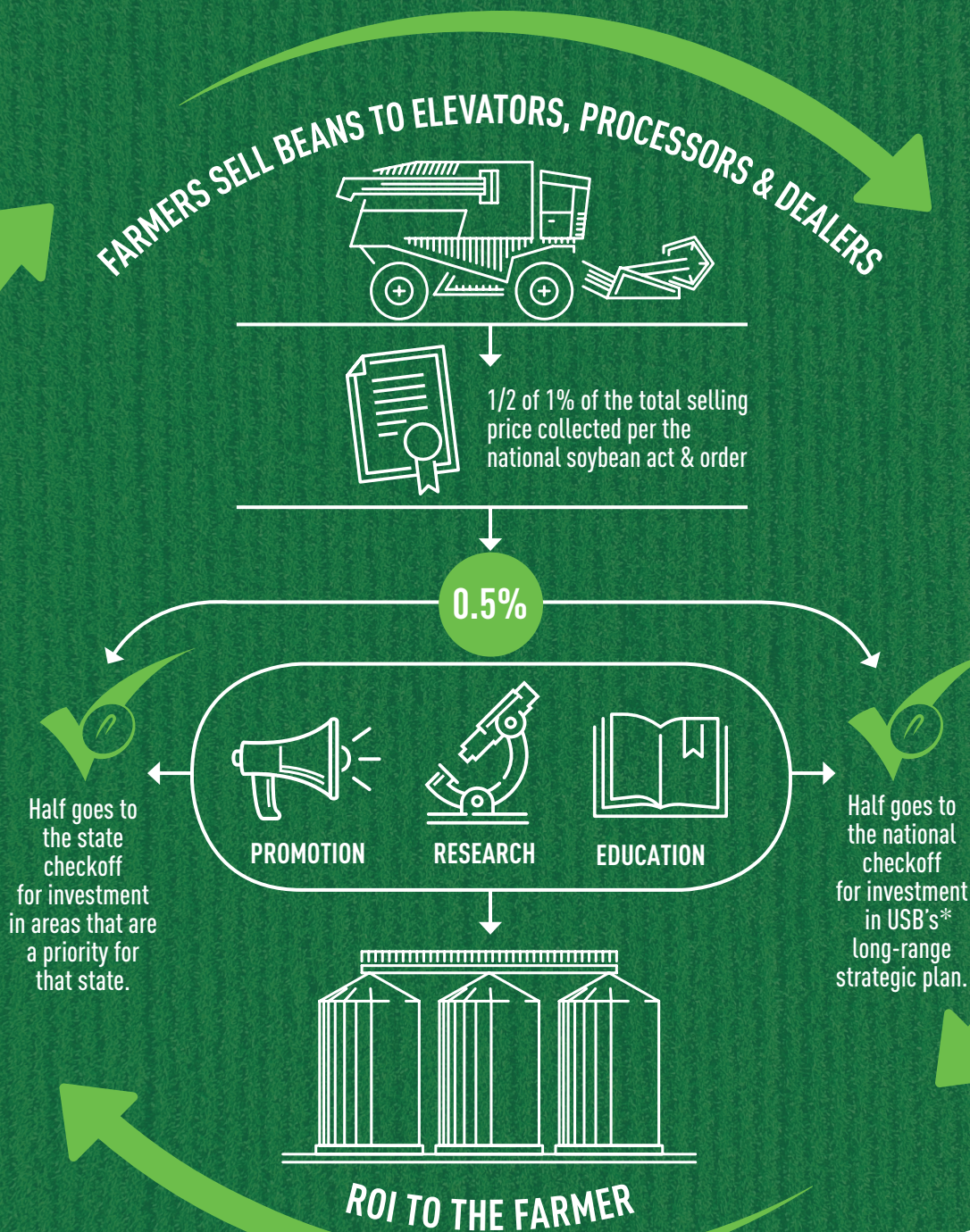
c. Remain apprised of and make use of new prevention and treatment technologies

8. Invest in additional water quality monitoring

For more information about H2Ohio, visit h2.ohio.gov. ♦

FULL-CIRCLE RETURN

HERE'S HOW THE SOY CHECKOFF WORKS. The national soy checkoff was created as part of the 1990 Farm Bill. The Act & Order that created the soy checkoff requires that all soybean farmers pay into the soy checkoff at the first point of purchase. These funds are then used for promotion, research and education at both the state and national level.



* Led by 73 volunteer soybean farmers, the United Soybean Board (USB) invests and leverages soy checkoff dollars to MAXIMIZE PROFIT OPPORTUNITIES for all U.S. soybean farmers.

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Stay on the leading edge. See all the ways the Ohio Soybean Council and soybean checkoff work for you at OhioFieldLeader.com.

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Brought to you by Ohio soybean farmers and their checkoff.




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KEEPING THE FUTURE OF SOYBEANS BRIGHT

From researching new uses for soybeans to identifying new markets for U.S. soy, the soy checkoff is working behind the scenes to create new opportunities and increase profits for soybean farmers. We're looking inside the bean, beyond the bushel and around the world to keep preference for U.S. soy strong. And it's helping make a valuable impact for soybean farmers like you.

See more ways the soy checkoff is maximizing profit opportunities for soybean farmers at unitedsoybean.org

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3 Reasons Why I Won't Quit Membership

By Ryan Rhoades, OSA
Membership Co-Chair

Between an ongoing trade war with China and the record-setting rain this spring, it's been tough to catch a break. And I get it — when you're looking at your budget and you have to make cuts, your memberships are probably going to be one of the first things to go. I serve as the Membership Committee Co-Chair for the Ohio Soybean Association (so I may be a little biased) but let me tell you why YOU are important to OSA and why your membership matters.

1. STRENGTH IN NUMBERS

Let's face it: one person, acting alone usually has limited impact in any situation (unless you're Bill Gates, Joanna Gaines or the President). But power and strength come from numbers. Your membership gives OSA the tools and resources to be able to mobilize Ohio's soybean farmers. Here's a recent example — earlier this summer, the Mayor of Toledo made comments about Ohio farmers' response to phosphorus runoff in



the Western Lake Erie Basin. These comments didn't sit well with a lot of farmers so OSA took action. We created a coordinated campaign inviting Mayor Kapszukiewicz to visit a farm and see best management practices firsthand. Unsurprisingly, the mayor declined our invitation, but the campaign gained significant attention on social media,

various news media and even among some legislators. Your membership helps bring together people on specific issues and give them access to resources and advocacy.

2. A UNIFIED VOICE

Membership doesn't only provide strength in numbers, but it's also a unified voice when it comes to advocating for public policy. In 2018, the initial payment Market Facilitation

Program (MFP) payment for soybeans was \$1.65 per bushel. Almost every other commodity received a payment under one dollar. This was because of the pressure our members and the American Soybean Association (ASA) in Washington, D.C., put on Congress and the Administration. Now, I know you're thinking, "But this trade war is still going on." That's why it's more important now than ever for a strong membership base. We need that strength in numbers and a unified voice to continue to apply and ramp up the pressure to get our markets back.

3. RAISING VISIBILITY

While we figure out the current situation, we also need to keep an eye on the future. Are we positioned for the next challenge? I'm a dad to four kids and I want to secure a future for them. As a fourth-generation farmer, I want them to have the opportunity for my kids to become the fifth generation. Your membership helps us build a solid foundation for the next generation



of soybean farmers by allowing us to advocate for policies and legislation that ensure a growing and profitable soybean industry. We represent our members at both the state and federal levels to raise the visibility of Ohio's soybean farmers.

Sometimes what DOESN'T happen is just as important as what does. Think back to the end of last year — the outgoing governor wanted to enact water quality regulations that placed an undue burden on Ohio's farmers. OSA responded by teaming up with our agriculture friends and put a stop to it. We went to every stakeholder involved, every hearing, every meeting to make sure soybean farmers were heard. We reinforced that Ohio farmers have already taken many steps toward helping solve this issue and remain committed to being partners in improving water quality in Ohio. You know what happened? The regulations didn't pass. Instead, agriculture started

working with researchers and environmental groups on a solution.

YOUR MEMBERSHIP MATTERS

I know all those free hats are great and who doesn't love a coupon? But what do your membership dollars really get you? Time. Your time is limited. Farmers are some of the busiest people I know. I, along with other farmer leaders from across the state, serve on the Board of Trustees for OSA to represent you and your interests. We take time away from our families and businesses to travel to Columbus and Washington, D.C., to advocate for you and we're happy to do it. We do it because we know what it means to our industry and our fellow



farmers about making sure our voices are heard in Washington, D.C.

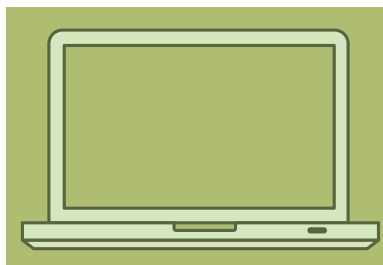
It's been a bumpy ride and I can't tell you when things are going to get better. What I do know is that we need members like you to be engaged in the process. Help us raise the bar for what it means to be a member. Help us give a voice to Ohio's soybean industry. You can visit www.soyohio.org/membership to learn more about becoming an OSA member. ♦

DID YOU KNOW?



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—RAM LALGUDI, ARIES SCIENCE
AND TECHNOLOGY, DELAWARE, OHIO

Here in Ohio, We Grow Demand.

The Ohio Soybean Council and soybean checkoff conduct research, make strategic business connections and build demand for Ohio soybean farmers. These new opportunities allow researchers to create new soy-based products and create partnerships with companies, like Eleventh Candle Company, to improve and increase the demand for soybeans.

Learn more at SoyOhio.org/HereWeGrow.



"Partnering with us to grow and increase our sales increases the need for soybeans. So we really believe in the mission of the Ohio Soybean Council and what they're doing, and the farmers that produce the great product we use."

—AMBER RUNYON,
ELEVENTH CANDLE COMPANY, COLUMBUS, OHIO



OHIO SOYBEAN
COUNCIL



Brought to You by Ohio Soybean Farmers and Their Checkoff.

NCSRP Farmers and Researchers Visit Ohio

By Julia Brown

In August, farmers, researchers, and state checkoff staff members gathered in Wooster at the Ohio Agricultural Research and Development Center to see the checkoff-funded research being conducted by researchers at The Ohio State University (OSU), several of which are funded by the North Central Soybean Research Program (NCSRP).

NCSRP was established in 1992 by state checkoff organizations in 12 North Central states, including Ohio, as a way to leverage checkoff dollars across state lines and prevent duplicate research. Led by farmers, the organization invests soybean checkoff funds in university research and Extension programs to better understand and manage plant stressors that reduce soybean yield and farmer profitability.

“At NCSRP, we’re doing a tremendous amount of work with universities, which allows researchers to talk to each other and share ideas,” explained Keith Kemp, a soybean farmer from Preble County who serves on the NCSRP and Ohio Soybean Council (OSC) boards. “It’s



really helping the American farmer because we’re taking this money and working together much better than separate projects. We can manage a project better when it’s a bigger, more collaborative project.”

Farmer leaders were welcomed to Ohio by Kelley Tilmon, associate professor of entomology and director of OSU’s Center for Soybean Research; David Benfield, associate vice president of agricultural administration at OSU; and Gary Pierzynski, associate dean for research and graduate education at OSU. All three expressed their gratitude for checkoff funding for research and stressed the importance of university research to support soybean farmers.

The morning focused more on applied research (using the knowledge to create practical solutions to problems) by visiting research plots in the surrounding area. This research included pest management with Kelley Tilmon and Andy Michel, how pollinators affect yields with Reed Johnson, how cover crops affect continuous and double crop soybeans with Keeley Overmyer and Laura Lindsey, disease resistance with Anne Dorrance, and weed resistance with Mark Loux.

The afternoon consisted of presentations surrounding basic

research (asking why, what, and how to expand knowledge). Leah McHale spoke about her work breeding new soybean varieties, including several new specialty varieties. Elizabeth Hawkins presented OSU’s research around new precision ag technologies. Feng Qu spoke about using Virus-Induced Gene Silencing (VIGS) to develop better disease resistance. Finally, John Finer addressed the group to discuss his research on improving the efficiency of using genome editing to create new varieties of soybeans. Interested in learning more about checkoff-funded research in Ohio? Visit ohiofieldleader.org.

“We really believe it’s important to show farmers and researchers from other states how Ohio is using its checkoff dollars to help farmers succeed in the field,” said OSC Research Committee Chair and Henry County farmer Todd Hesterman. “We’re very proud of the research that we’ve funded and the difference it will make on farms across Ohio.”

The trip concluded with the NCSRP summer meeting, where farmer board members from all 12 North Central states voted on funding for upcoming projects. To learn more about NCSRP or the research being funded by your checkoff investment, visit ncsrp.com or soybeanresearchinfo.com. ♦





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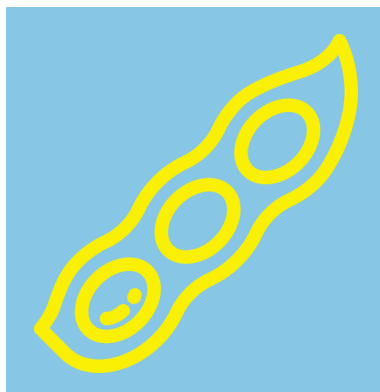
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QUESTIONS? CONTACT JULIA BROWN AT JBROWN@SOYOHIO.ORG

Does Soybean Feed Value Meet Livestock Customer Needs?

Swine and poultry producers consume nearly 70 percent of U.S. soybean meal, yet livestock producers use less soybean meal per ton of feed today than even 10 years ago — and a lot less than 30 years ago. For example, soybean meal in swine rations has decreased 70 percent since 1990, according to leading livestock nutritionists.

Three major factors were highlighted as reasons why livestock feed inclusion rates have fallen to where they are today:

- ▶ Decline in soybean meal feeding value due to focus on traits other than amino acids/quality
- ▶ Availability of other natural amino acid feed ingredients, namely dried distillers' grains with solubles (DDGS)
- ▶ Introduction and rapid adoption of synthetic amino acids

In other words, soybean meal — while highly esteemed as an excellent feed ingredient — isn't exactly delivering as much of the amino acids livestock customers need it to deliver.

"We routinely analyze nutrient concentration of soybean meal sources we use in our feed and keep a database that is used to make purchasing decisions based on quality and our ability to capitalize on the components of the product and improve our cost of production," explains Dr. Omarh

Mendoza, director of nutrition for The Maschhoffs, a hog production company based in Illinois. "We have observed a downward trend in the quality of soybean meal over the years. It's become concerning."

Dr. R. Dean Boyd, Technical Director Emeritus, Hanor Company and Triumph Foods Group; Adjunct Professor of Animal Nutrition at North Carolina State University and Iowa State University, shares similar findings.

"We sample and measure protein and amino acids," he says. "In 2017, the average protein was 46.2 percent, but it ranged from 48.6 percent to 43.6 percent. Digestible lysine was also variable, ranging from 3.04 percent to 2.68 percent. This difference at the lower end of soybean protein (based on amino acids) has a lesser value of about \$15/ton of complete feed than the soybean meal at the higher end."

"As swine feeders, we know the difference in value by soybean processing plant and prioritize sourcing our loads from the facility with greatest-value meal," Dr. Boyd adds.

As soybean quality slowly sank over the years, livestock producers and nutritionists found substitute ingredients to maintain animal needs and meet target dietary amino acid levels at the lowest cost. It became more

economically efficient to maintain animal productivity through the inclusion of other feed ingredients and synthetic amino acid sources.

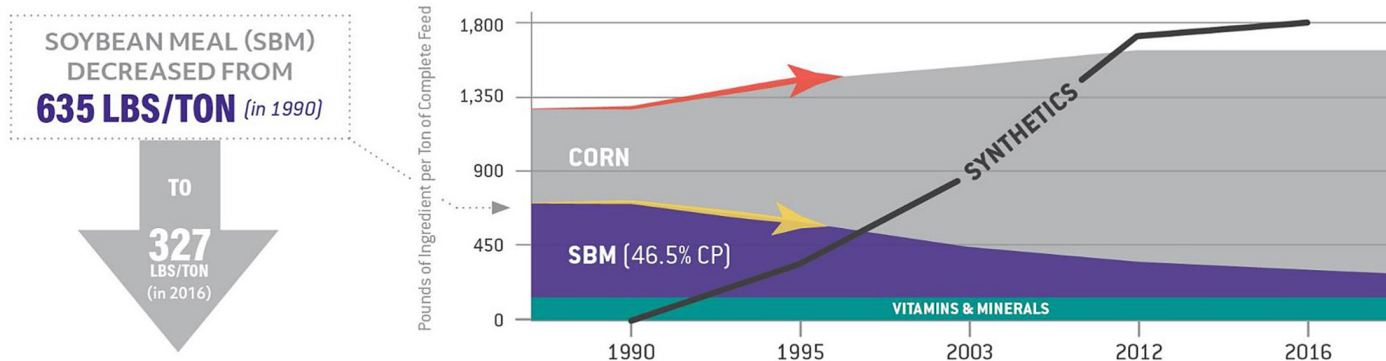
"I'm a recipient of what's coming out of the processing plant. I have the ability — and obligation to sort through available amino acid options for the ration I'm building as I determine which source to utilize," explains Dr. Bart Borg, director of nutrition for Standard Nutrition Services. "In the end, it comes down to the cost of the ingredients that supply the amino acids our pigs need."

Ultimately, quality is defined by your customer. "We ask our packers — our customers — what they need and want, then work to deliver to these specifications," says Dr. Mendoza. "It takes everyone working together. It should be no different for soybean producers or any other industry." All things considered, the value chain should deliver the quality customers want.

This information originally appeared on **SoyValue.com**, the website for High Yield PLUS Quality (HY+Q), a program funded by the Illinois soybean checkoff to improve the livestock nutritional value of U.S. soybeans. ♦

Soybean Meal Decreasing

SOURCE: DR. BART BORG, DIRECTOR OF FEED OPERATIONS, STANDARD NUTRITION SERVICES



Animal Ag Roundtable Highlights Challenges, Opportunities

By Julia Brown

With its creation, the Ohio Soybean Council's (OSC) Soy Tomorrow program set out to drive collaboration among industry leaders to ensure the success of the soybean industry for future generations by bringing together industry leaders and stakeholders to enhance the value of the soybean industry.

In August, stakeholders from across the animal agriculture value chain sat down at a Soy Tomorrow roundtable to discuss the role animal agriculture plays in the soybean industry, and how to secure that market share to ensure the longevity of the soybean industry. As OSC's farmer board leaders begin to plan for a new strategic plan to begin in 2020, these conversations help inform the types of projects that OSC board members choose to fund with checkoff dollars.

"Over the last decade, we have seen a decline in protein content in soybeans across the grain belt, and while Ohio still has a reputation for high-quality

soybeans, we are not exempt from this trend," explained Kirk Merritt, OSC executive director. "We invited a panel of industry experts to review this issue and provide OSC with advice on how the soybean checkoff should address it, especially as it relates to the animal ag industry."

The meeting had three primary goals: increase awareness and understanding of issues related to the decrease in utilization of soybean meal in livestock feed, better understand the drivers and benefits of utilizing soybean meal in livestock feed, and identify potential opportunities to increase the utilization of soy in livestock feed. Participants came from across various industries and parts of the value chain, including agronomists, livestock production managers, animal science experts, swine nutritionists, veterinarians and grain and livestock farmers.

The decline of soybean use in animal feed is twofold, according to John Osthus, who works with the Illinois Soybean Association on their High Yield Plus Quality program. First, soybean quality is declining — a two percent decrease occurred between 2000 and 2017. Second, soybean inclusion rates in livestock feed are declining, about 48 percent between 1990 and 2016. With animal agriculture as soy's number one customer, this decline in quality and



usage should be on the radar of soybean farmers across the country.

While it was clear there is no silver bullet to solve the decrease in soy utilization in animal feed, the discussion inspired several potential opportunities for maintenance of current soy utilization or even an increase in soy use. Some preliminary research has been done that suggests a diet with more soybean meal helps with disease prevention, curbs livestock animal bad behavior and could provide more energy. These studies are still in their preliminary stages, but they point to places where checkoff dollars could be invested to reaffirm soy's place as a vital ingredient in feed.

"I was fascinated by the conversations that took place at the round table and I hope we continue to have those conversations as we move into strategic planning for the next three years," said Bill Bayliss, OSC board member and Logan County farmer.

For more information about Soy Tomorrow, including links to past webinars, visit www.soyohio.org/for-industry/soy-tomorrow. ♦



Global Trade Exchange Bridges Gap Between Buyers and Farmers

In August, the Ohio Soybean Council (OSC) participated in two events designed to connect local farmers and businesses with international trading opportunities. Nearly 800 soy and grain industry leaders, buyers and suppliers from more than 50 countries attended the U.S. Soybean Export Council's (USSEC) annual U.S. Soy Global Trade Exchange and Specialty Grains Conference and Trade Show (GTE).

This year Bill Bayliss from Logan County, Jeff Magyar from Ashtabula County, and Bob Suver from Clark County, all soybean farmers and OSC board members, attended the GTE. The purpose of the event is to build relationships, share knowledge and do business with traders from all over the world.

The three board members participated in the Trade Team Invitational, buyer/seller speed meetings that help to build personal



A group of Korean soybean buyers visited Steve Reinhard's soybean farm in Crawford County.

relationships between buyers and sellers. Trade teams are broken up by country and buyer type. Exporters then meet with and privately present to these trade teams for 30 minutes. All three farmers jokingly compared it to speed dating.

"It's a short period of time," admitted Suver, "But it really allows you to meet a wide variety of people and make personal connections with them." The personal connections made at meetings like the GTE can really make a difference — as the result of another USSEC meeting in 2018, an Ohio supplier exported 10,000 metric tons of soybean meal crushed in Ohio to Oman.

But the Global Trade Exchange doesn't represent OSC's only effort to connect with global traders. Earlier in the month, trade teams from several Southeast Asian countries, including Japan, Taiwan and South Korea, visited Ohio farms and businesses to see the quality soybeans that are grown here. In 2018, the U.S. exported \$947 million worth of whole soybeans to Japan, \$803 million worth of whole soybeans to Taiwan and \$214 million worth of soybean oil to South Korea.

Over the course of four days, the groups visited Bill Bayliss' farm in Logan County, Steve Reinhard's farm in Crawford County, Dan Schwartz's farm in Trumbull County, CGB, Rogers Grain, KAPI and Bluegrass Farms. After their tours were finished in Ohio and some surrounding states, some of the trade teams went on to attend the GTE to further their U.S. Soy experience.

"I enjoy hosting trade teams on my farm because we can talk with buyers face-to-face and prove to them what a great product is grown here in Ohio," said Bayliss. "The relationships that we form help keep the U.S., and Ohio specifically, top of mind when it comes time to buy"

At both larger conferences and smaller trade team visits, OSC promotes Ohio's high-quality, high-protein commodity and non-GMO soybeans. Farmer leaders also promote Ohio's effective logistics and infrastructure for exporting. Learn more about the checkoff-funded work OSC is doing to promote international exports at www.soyohio.org/council/international-marketing. ♦



At the Global Trade Exchange, international buyers met with U.S. exporters and farmers in meetings designed to build relationships.



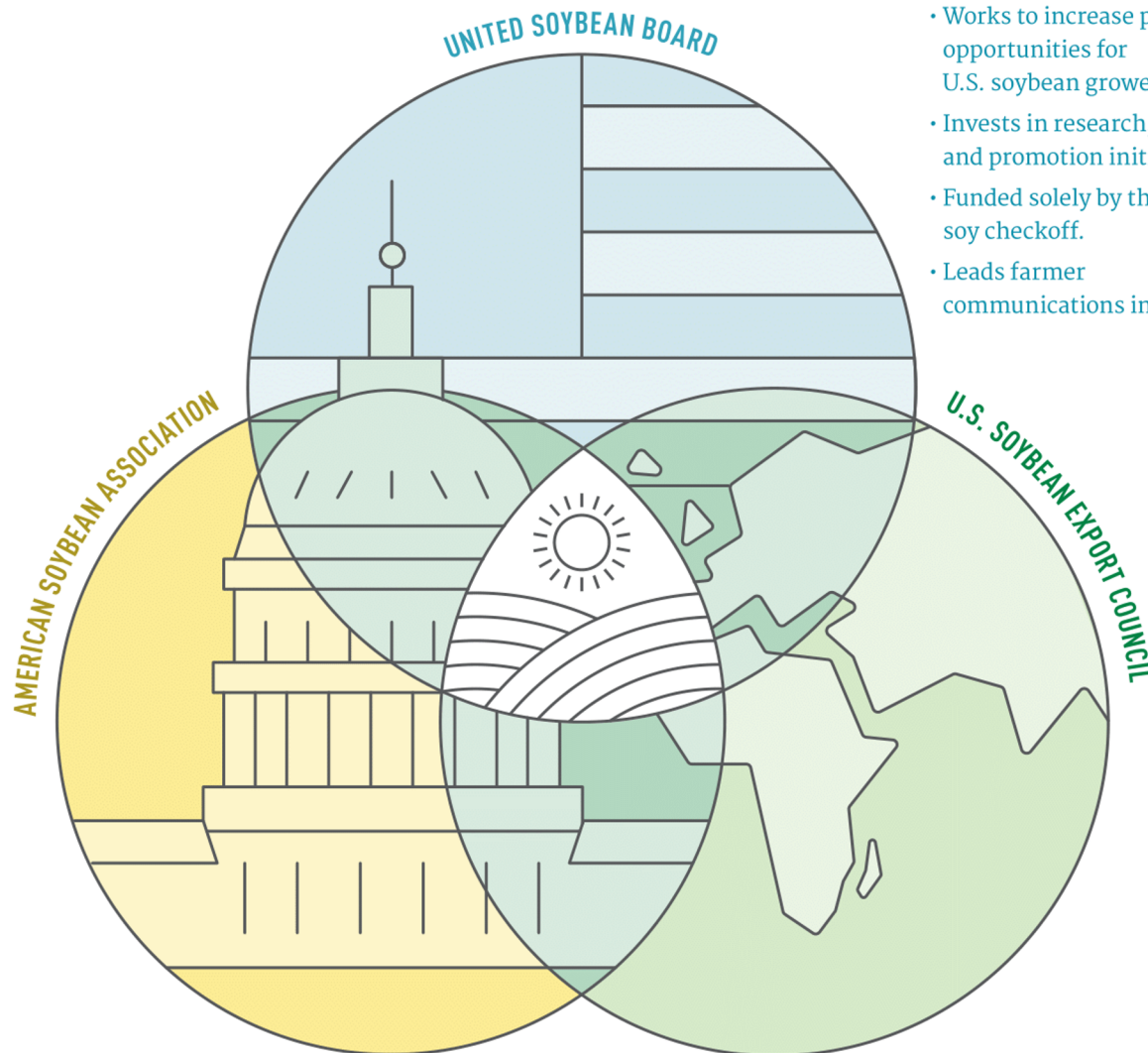
THREE OBJECTIVES. ONE MISSION.

On a mission to improve the lives of 569,998 U.S. soybean farmers, these highly committed, specialized organizations have helped make soybeans America's No. 1 crop — proudly working as hard as the farmers we represent.



RESEARCHING. PROMOTING.

- Works to increase profit opportunities for U.S. soybean growers.
- Invests in research, education and promotion initiatives.
- Funded solely by the soy checkoff.
- Leads farmer communications initiatives.



REPRESENTING. NEGOTIATING.

- Works with legislators and government officials in Washington, D.C.
- Represents U.S. soybean farmers on domestic policy matters, such as the farm bill.
- Funded by individual farmer memberships.
- Partners with USB (domestic) and USSEC (international).



MARKETING. DEVELOPING.

- Builds reputation of and preference for U.S. soy around the world.
- Pursues new and expands existing U.S. soy export markets.
- Funded by the soy checkoff and U.S. Department of Agriculture.

Airable Labs to Create Products and Demand

For over twenty years, the Ohio Soybean Council (OSC) and soybean checkoff have been leaders in developing and commercializing new soy-based products that increase the demand for soy. Taking this work to the next level, OSC has launched Airable Research Lab, a new business line and brand that will capitalize on current research and find new opportunities to expand the use of soy in household and commercial products.

OSC has a long and successful history of working directly with partners in the research, university, non-profit, and commercial industries to upgrade products and create new ones. Many of these products have won numerous national and international accolades, including ten R&D 100 Awards, the most prestigious research and development award in the world.

Airable Research Lab will increase OSC's reach and ability to market their services to potential partners. Through every commercial development stage, the lab's chemists and inventors will work hand in hand with clients to develop solutions tailored to their needs.

"For our current partners, they will still receive the same attention to detail and creative thinking they have come to expect from us," said Barry McGraw,



OSC Director of Product Research and Airable Research Lab CLO. "Companies all over the world, large and small, are hungry for green technology that is easy to adopt — we can provide them that. Soybean farmers are looking for new markets — we can create them."

McGraw has had a busy year, spending the majority of 2019 focused on transitioning OSC from its old method of soy-based product development into its new model.

The new model builds upon OSC's almost 25 years of experience in funding and creating new biobased products, but allows OSC more flexibility. When OSC first began investing in new uses research, the organization primarily relied on Battelle, a Columbus-based R&D company, to develop new soy-based products with checkoff funding. Then six years ago, McGraw joined the staff and helped diversify OSC's contacts while maintaining the relationship with Battelle. This second phase of new uses research opened up collaboration to work with not only R&D companies, but other organizational types, including

The lab is located in Delaware, Ohio, at Ohio Wesleyan University.

commercial entities within the surfactant and coating industry.

Soon it became apparent that some companies didn't necessarily need checkoff dollars for research but needed ideas on what soy-based products to develop and how to create them. With the opening of Airable Research Labs, that R&D process becomes internal, meaning that companies can now contact Airable Labs directly to develop new products, instead of OSC working strictly in an investor role.

McGraw explained that in the past, OSC was really only able to provide one factor: funding. "Now we're approaching companies with two variables: funding and ideas. The ideas for soy-based products can really help their company," he said. He noted that in the past, if OSC identified a gap in the industry, they could only fund another company to fill it. With Airable Labs, OSC can more proactively fill gaps in the industry where a soy-based product can be developed.



“We’re really excited to see where this new lab will take us in terms of new uses research,” said Todd Hesterman, chair of OSC’s Research Committee. “Ohio has always been a frontrunner in this area, and we look forward to staying on the cutting edge of soy-based research.”

McGraw explained that now is a perfect time to start a lab like this one because in a time of lower prices and trade uncertainty, it allows for more diversified demand opportunities for farmers. He also explained that opening a new lab allows for the R&D process to

“We’re really excited to see where this new lab will take us in terms of new uses research.”

TODD HESTERMAN

be done more economically, making it a smarter investment of checkoff resources. By cutting out the middleman, Airable Labs is able to do more research for the same amount of money.

“The Ohio Soybean Council has been investing in the development of

new products made from soybeans for decades and we’ve had tremendous success,” said Steve Reinhard, OSC chairman and Crawford County soybean farmer. “We hold multiple patents on products we’ve developed with partners and received multiple awards. But the most important part of this work is the value and return on investment we’re bringing back to Ohio soybean farmers.”

The new lab is “in-house,” OSC has more flexibility in what and how they develop, with the ability to change things up in the middle of a project to try something new.

“We now have a direct connection to you guys, which means the process is streamlined and we’re able to move at light speed,” said Mike Feazel, CEO of Roof Maxx, a product which Airable Labs is currently working to improve with cleanliness and fire retardant functions. “It’s helpful that with that direct connection, we’re able to know where we stand at all times with our project.”

His brother and business partner, Todd Feazel, executive vice president of Roof Maxx, agreed. “I have the people of Airable Labs at my disposal. Whenever I have a question or a need, I can email,



Airable Research Labs will work on a wide variety of products, including anti-corrosion products like this one.

text or call and they’re always very quick to respond to my needs.”

As the demand for green products only continues to grow, it made sense to expand. Recent polling shows that 71% of Americans would prefer to purchase a bioproduct rather than a petroleum- or chemical-based product if the cost is equivalent.

“For consumers, these soy-based products are safe, environmentally friendly and don’t use any toxic materials, and they’re more sustainable. So more and more consumers looking for using sustainable bio-based material and the soy-based products are the solution,” explained Ram Lalgudi, inventor and CTO for Airable. Lalgudi has worked with OSC for many years through his work at Battelle.

The possibilities for soy-based products really are endless. OSC has won 10 R&D for products ranging from floor coatings to aquaculture feed. Currently, OSC is also working on developing a more stable soy wax with the Eleventh Candle Co.

“The new lab has been a great asset to us,” explained Amber Runyon, founder and CEO of Eleventh Candle Co. “This is the first year that we’ve worked with the soybean checkoff, and they’ve really been able to help us drive marketing. →

Airable Research Labs will help make a more stable soy wax, which will help businesses like Eleventh Candle Co. succeed and drive demand for Ohio soybeans.



which increases the demand for soy candles and increases the demand for soybeans in general.”

The lab also has its sights set on international markets, starting by working with an Australian company to create a surfactant for agricultural adjuvants and a coating for concrete roofs, which are popular in Europe and Australia. The lab is also in talks with a U.S. company and a Brazilian company about creating an anti-static plasticizer for PVC.

Airable started as just one lab on Ohio Wesleyan University’s (OWU) campus but has quickly expanded to three labs as OSC plans to ramp up its work. “By having our own lab, we’re kind of in charge of our own destiny and can get these products to market quicker,” said McGraw. To date, OSC has licensed seven products.

The partnership is mutually beneficial, according to OWU’s Associate Provost for institutional Effectiveness Dale J. Brugh, who said, “The partnership between Ohio Wesleyan University and the Ohio Soybean Council/Airable Research Labs provides Ohio Wesleyan students with unique opportunities to apply what they learn in the classroom through on-site internships. The partnership highlights how a background in the liberal arts prepares a person for entrepreneurship.”



This entrepreneurship is echoed in the farmers who help direct and fund the new lab. “The unique thing about Airable Labs is that we’re governed and supported by soybean farmers and their primary objective is to create demand for their product,” McGraw said. “Inherently farmers are entrepreneur-type people. Because of the farmer support, we are able to work on new ideas that are maybe a little riskier than other R&D companies. It allows us to think a little differently about these new technologies.

“I’m thankful for the vision of our farmer-led board — for their

entrepreneurial way of thinking and their willingness to think outside the box.”

For more information about Airable Research Lab and examples of current research projects, visit www.airableresearchlab.com.

To learn more about the Ohio Soybean Council and the soybean checkoff, visit www.soyohio.org/herewegrow. ♦

For Mike and Todd Feazel, the co-founders of Roof Maxx, the new Airable Research Labs will help streamline their R&D process.



Meet the People of Airable Labs



Barry McGraw

Founder and Chief Laboratory Officer

Highlights:

- Spearheaded OSC product RDD&D and the creation of

Airable Research Lab, from concept to founding

- Escalated total OSC royalty payments to \$1.2M

- Led OSC in product development that attained 10 R&D 100 Awards and the 2018 Bio-Based Material of the Year Award

- Brings breadth and depth of experience and expertise in the soybean industry and soy-based R&D

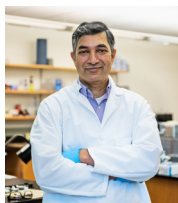
Experience:

- Ohio Soybean Council (OSC), Director, Product Development and Commercialization
- Battelle, Program Manager / Deputy Director of IR&D / Research Scientist

- Education:
- BS Plastics Engineering, Shawnee State University
- MBA Certification, The Ohio State University, Fisher College of Business
- Project Management Professional, Project Management Institute

Expertise:

- Engineering
- Advanced materials research
- Bio-based R&D
- Intellectual property
- Manufacturing
- Product development
- Product marketing
- Program and project management



Ram Lalgudi

Inventor and Chief Technology Officer

Highlights:

- 2015 Battelle Inventor of the Year
- Developed CO₂-to-

chemicals platform

- Invented a novel concept for making

bio-based polyurethane and polyamide spherical particles via dispersion and suspension polymerization techniques

- Developed bio-based self-healing coatings
- Played key role in development of bio-based aqueous polyurethane dispersions as binders for automotive coatings

Experience:

- Battelle, Research Scientist
- Rensselaer Polytechnic Institute, Postdoctoral Fellow
- National Chemical laboratory, India, Research Fellow
- Asian Paints, India, Research Chemist

Education:

- PhD Polymer Chemistry, National Chemical Laboratory, India
- MS Chemistry, Bharathidasan University, India

Expertise:

- Bio-based products
- Polymer membranes
- Nanotechnology



Rachid Taha

Director and Research Leader

Highlights:

- Led biofuel project at Battelle; new technology led to

spin-off company Versa

- Led \$5M project to commercialize microchannel technology, advancing TRL from 3–4 to 7–8 and decreasing cost by 50%

- Developed a new technology by converting coal to liquid products
- Accrued hundreds of invention disclosures and trade secrets related to materials development, reactor designs, corrosion, and synthesis processes

Experience:

- Taha Consulting LLC, Principal
- Battelle, Senior Research Scientist
- Velocys, Senior Scientist
- Apyron Technologies, Project Manager

Education:

- PhD Physico-Chemistry, Poitiers University, France
- MA Applied Chemistry, Poitiers University

Expertise:

- Materials development
- Materials analysis and characterization
- New systems for chemical reactions
- Hazard analyses
- Project management



Matt Nye

Solver and Chemist

Highlights:

- Experienced in a range of test methods
- Record of rapid advancement

- Understanding of business practices

Experience:

- Manager and instructor, various

Education:

- BS Chemistry, The Ohio State University

Expertise:

- Materials characterization and analytical techniques



Josh Queener

Analyzer and Junior Chemist

Highlights:

- Passion and ambition in both organic and

inorganic chemistry

- Dexterity with high-tech equipment
- Well-versed in primary chemistry literature

Experience:

- Ohio Wesleyan University, Chemistry Department, Teaching Assistant

Education:

- BS Chemistry–ACS, Ohio Wesleyan University

Expertise:

- Technology and equipment ♦

Franklin County Engineer's Office Makes the Switch to Biodiesel

Not many people think of Franklin County as a powerhouse in soybean production — only 27,000 soybean acres were planted in 2017 according to the United States Department of Agriculture statistics. Recently, however, the Franklin County Engineer's Office has become a powerhouse in soybean consumption.

Back in April 2019, the Franklin County Engineer's Office switched their fleet of vehicles from diesel to B20 blended biodiesel. Since then, their fleet has used about 60,000 gallons of B20 biodiesel. For December through March, the office plans to use a B5 blend, but they are open to the possibility of using B20 year-round.

"Twenty percent of Franklin County's land is farmed, and we all rely on farming each and every day," said Cornell Robertson, who has served as the Franklin County Engineer since 2017. Page Thorsen, CEO of Benchmark Biodiesel, a Columbus-based company that supplies the fuel to the Engineer's Office, agreed with Robertson, saying, "Biodiesel is a business that has everything to do with Ohio."

Robertson emphasized how important it is to consider the environment and explore ways to protect it. "We realize how important it is to be green. It's not easy," he said with a smile, making a reference to Kermit the Frog. "But it can be done."

The Engineer joined the Municipal Equipment Maintenance Association (MEMA), which helped introduce them to Clean Fuels Ohio (CFO) and the Midwest Green Transportation Forum and Expo. The Ohio Soybean



Council (OSC) is a member of CFO and invests checkoff dollars into their fleet outreach. According to the National Biodiesel Board, biodiesel uses 300 percent more soybean oil than it did 10 years ago, making it a key market for soybean oil.

"We're happy to see the Franklin County Engineer's Office making the commitment to using biodiesel," said Mike Heffelfinger, Van Wert County farmer and OSC's representative on the National Biodiesel Board. "Biodiesel is often an easy switch to make for these large fleets so we hope more fleets in Franklin County and around the state will follow their lead."

Heffelfinger is right about biodiesel being an easy switch — according to Fleet Manager Jeff Markusic, the Engineer's Office had to make zero technical changes to their fleet in order to start using B20 blend biodiesel. This easy switch is one of the reasons they were drawn to biodiesel in the first place.

In October, OSC board members and staff attended the Engineer's annual Snow Fighters Rodeo, which prepares plow drivers for the coming winter. (L-R) Mike Heffelfinger, Cornell Robertson, Steve Reinhard, Kirk Merritt

"Biodiesel was the lowest hanging fruit. We cleaned out all of our tanks, educated our mechanics on it, spoke with industry personnel then in April we started with B20," Markusic explained. "We didn't have to change our fleet so we could do it without a big investment."

He said that they did hear some negative stories surrounding biodiesel, but decided to make the switch anyway after getting the facts. "We have had no identifiable issues related to B20 at all," he said. "We have plans to go to B20 year-round hopefully," Markusic explained that they are being cautious for this first winter, but he knows of several fleets that use B20 year-round and hopes to follow their example. ♦

GrowNextGen Ambassadors Educate 24,000 on Ag and STEM

Just because it's summer doesn't mean that learning has to stop. Just ask the GrowNextGen ambassadors involved in the Exploration of Modern Farming program, funded in part by a grant from Battelle Foundation and the Ohio Soybean Council Foundation. The program, now in its second year, provided opportunities for students, parents and community members to learn about modern farming through STEM activities.

10 college-age ambassadors from four Ohio colleges, including Heidelberg University, The Ohio State University, the University of Dayton and Wilmington College, visited after-school programs, STEM summer camps and county fairs. This summer, GrowNextGen ambassadors reached over 24,000 people. Five topics were included during the outreach events: thermal light, biodiesel fuels, soil compaction, agricultural engineering and plant structure. Hands-on activities and experiments let students engineer and operate a design, and observe and draw conclusions.

In May, the Ohio Soybean Council Foundation was awarded a grant from Battelle's STEM Grants program which aims to provide funding to organizations that provide quality STEM education experiences for the next generation of innovators. At a ceremony to recognize and celebrate the 2019 STEM Grant program awardees, Aimee Kennedy, Senior Vice President for Education, STEM Learning and Philanthropy at Battelle, spoke about the importance of making STEM accessible to all students. "We value partners," she said, emphasizing the value of working together for better education. Battelle president and CEO Lou Van Thaer talked to the group about the



importance of having an education and teachers' roles in creating "meaningful learning experiences". Battelle gave 19 STEM awards this year.

Wilmington College student Shaye Creamer, who heads up the Exploration of Modern Farming outreach, talked to the audience about "the power of informal education" and how it engages the audience in a variety of places and ways.

Back in February, ambassadors received specialized training at The Ohio State University's STEAM Factory in the following activities to share with audiences all across Ohio:

GrowNextGen's Shaye Creamer, Abby Motter, Mary Buehler and Jane Hunt helped these ambassadors practice their presentation skills and get ready to present to thousands of Ohio's consumers about precision agriculture, soy food science, eggs and animal agriculture, biofuels and soybean seed necklaces.

"I am honored to have worked with an amazing ambassador team this year," Creamer said. "These are hardworking individuals dedicated to agriculture and to reaching Ohio consumers through their passion of educating and advocating." Creamer, who is studying agriculture education and animal science, said the program has helped her grow as a leader and facilitator, and gave her the skills she'll need in her own



classroom. "My favorite part of being a lead ambassador has been working with our team to create and facilitate over 45 outreach events that have reached over 21,000 individuals," she explained.

GrowNextGen is the Ohio Soybean Council's checkoff-funded program that brings agriculture science to the classroom by providing real-world educational tools to engage the next generation workforce. GrowNextGen helps expose students to different career fields in a thriving industry. To learn more about this program and other ways GNG is preparing the next generation for careers in agriculture, visit grownextgen.org. ♦

Sonnenberg Joins OCJ Staff to Head Up Field Leader



Dusty Sonnenberg is excited to join the staff of Ohio's Country Journal and Ohio Ag Net with Field Leader, an Ohio Soybean Council and soybean checkoff program. Sonnenberg will be providing Ohio Field Leader content about soybean agronomics, production research, and nutrient management, among other topics. The goal of Ohio Field Leader is to bring the most up-to-date agronomist, research, and best management practice information to Ohio soybean farmers.

Sonnenberg will also be a regular contributor to Ohio's Country Journal and Ohio Ag Net in his role. Ohio Field Leader content will be distributed to other state and national media outlets as well.

"Dusty brings tremendous on-farm, agronomic and communications experience to this position and we are excited about moving this project forward," said Bart Johnson, owner of Ohio's Country Journal and Ohio Ag

Net. "Dusty will be a real asset to our team and Ohio agriculture."

Sonnenberg is a Certified Crop Advisor and Technical Service Provider writing nutrient management plans. Dusty received his Bachelor of Science Degree from The Ohio State University in Agriculture. He earned his Master's Degree in Business from Defiance College.

Sonnenberg and his wife Cheryl, with their sons Cody and Bailey, own and operate Sonnenberg Farms, which is a cash grain and freezer beef operation in Henry County. They raise soybeans, corn, wheat and hay. They also own and operate Jay Calf Ranch, where they start replacement heifer calves for a local dairy. Sonnenberg is a member of the Board of Directors for Ag Credit, ACA. He is a part owner and Operations Manager of Tri-State RTK Network, LLC. He is a Trustee and currently vice president for Tricounty Rural Electric Cooperative. He serves as Executive Director for the Henry

County Community Foundation. Sonnenberg is a member of the Henry County Dairy Producers, Henry County Cattlemen's Association, and Holgate FFA Alumni. He is a past trustee for the Henry County Farm Bureau Board.

In 2002, Sonnenberg was the National Winner of the American Farm Bureau's Discussion Meet, and in 2005, the Sonnenbergs placed second nationally as runners-up in the American Farm Bureau's Excellence in Agriculture contest.

"We are so excited to have Dusty working on Field Leader," said Wood County farmer and OSC Board Member Nathan Eckel, who serves as the Communication and Education Committee chair. "We really wanted a local person who understands the way Ohio farmers think and talk, and Dusty does just that."

See Dusty's work around conservation, research and agronomy at ohiofieldleader.com. ♦



Precision Ag Reviews Launches Web Resource for Farmers

Precision Ag Reviews launched a new website to serve as a non-biased resource for farmers, with peer insights on precision ag equipment.

Precision Ag Reviews, a program started by the Ohio Soybean Council (OSC) and soybean checkoff in 2017, is a public site that strives to create a "farmers helping farmers" community by collecting reviews for all brands and models of precision ag equipment. The site is building a reliable source of information about precision technology so farmers can educate themselves without a bias of brand or product.

"We are thrilled to have our new

website ready to serve as a resource to all farmers. Our team has been traveling to farm shows across the U.S. asking farmers for their input on the precision equipment they are utilizing on their farms. We have a strong and diverse set of reviews and look forward to continuing to grow this resource," said Stacie McCracken, project manager of Precision Ag Reviews.

"Information is everywhere, but non-biased information is harder to find. Ohio soybean farmers made the investment in Precision Ag Reviews to benefit all farmers. The goal of this platform is to better the industry," continued McCracken.

Farmers can complete and read reviews on PrecisionAgReviews.com. All reviews collected are placed online for farmers to access when researching precision ag products. Farmers can see the collective average review, in addition to all individual reviews, to aid in educated decisions on the best equipment for their operation. The website also includes an active blog, with content authored by farmers and independent precision ag experts.

Visit PrecisionAgReviews.com to learn more, and follow us on Facebook and Twitter for regular updates. ♦

Farm Tours Help Students Better Understand Soybean Farming



As the old saying goes, show — don't tell. For the Ohio soybean checkoff-funded program, Future Eats, this saying is useful when trying to educate students at The Ohio State University (OSU) about modern agriculture. The best way to educate students about how today's farmers grow crops is to bring them on a farm tour. Since October 2018, Future Eats has held three farm tours with students from OSU, with participants ranging from people who grew up in rural Ohio to students who grew up 30 minutes outside of New York City.

To gauge the farm tours' impact on students, pre- and post-tour surveys were distributed on the bus rides to and from farms. Beforehand, students generally had neutral perceptions about farming. They ranked their perception of farming at a three on a scale from one to five (with five being strongly positive). Before visiting the farms, many students had concerns about GMOs, the use of chemicals on farms and how farming will support the growing population.

One of the groups included students from the W. K. Kellogg Foundation and Bobby Moser Food Security and Sustainability Learning Community, which is a group of students on campus who are all interested in issues related to creating secure, resilient and sustainable food systems in environmentally and



socially responsible ways. Another group was comprised of the Citation Needed club, which focuses on educating students on how to effectively communicate about science and agriculture to a consumer audience. Though both of these groups have an

interest in food and food systems, few of the students involved had set foot on a grain farm before.

Students in the different tour groups visited three different farms in Clark, Logan and Delaware Counties, ranging in size from a few hundred acres to over 3,000 acres. Tours focused on sustainability, trade and technology. Students also participated in agriculture career exploration activities, which showed them that there are endless possibilities for careers in agriculture, even for majors that might not seem ag-related at first.

For Logan County soybean farmer and Ohio Soybean Council board member Bill Bayliss, the tour on his farm was a fun opportunity to share modern farm practices with people who know very little about farming. "I really enjoy being able to open my farm up to these students and give them an inside look at what life is like on my farm," he said. "Many misunderstandings surrounding agriculture just come from a lack of experience on farms. If we can get students on farms to see what farmers are doing every day, that makes a big impact."

After the tour, students' ranking of their perception of farming jumped to 4.5. Students enjoyed learning about the technology used on farms, how and why farmers use chemicals and appreciated the open, honest conversations that were had.

According to one student survey, "By learning more about the details and struggles that come along with farming, I can now say it is more sustainable than I originally thought."

To learn more about how the Ohio Soybean Council is using checkoff dollars to engage with OSU students, visit futureeats.com. ♦

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