Ohio Turkey Farmers Value High Quality Soy p. 17 Former OSC Chairman Named to Ohio Ag Hall of Fame p. 27

Ohio Soybean News™

FALL 2015

A PUBLICATION OF THE OHIO SOYBEAN ASSOCIATION

Why Water Quality Matters To Me

Page 18

Make soybean cyst nematodes useful. Turn them into fertilizer.

While other seed treatments claim to be effective against soybean cyst nematodes (SCN), Clariva® Complete Beans seed treatment, a combination of separate products, is the only broad-spectrum seed treatment proven to kill them all season long. As it acts to destroy SCN, it also reduces damage from sudden death syndrome (SDS). All this lethal power comes from a tough nematicide paired with the unbeaten insect and disease protection of CruiserMaxx® Beans with Vibrance® seed treatment, a combination of separately registered products. So contact your Syngenta representative or visit ClarivaCompleteBeans.com. And take back your fields.

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Ohio Soybean News

Fall 2015 • Vol. 4, No. 5

A PUBLICATION OF THE OHIO SOYBEAN ASSOCIATION

Perspective

Tommie Price
Ohio Soybean Association Chairman
Putnam County soybean farmer

A Letter From the Chairman

It's been quite a summer and so far harvest numbers seem to be all over the board. As I write this in October, we just began harvesting soybeans. I'm Tommie Price, your new chairman of the Ohio Soybean Association (OSA). I farm soybeans and corn in Putnam County and previously served as OSA president. Like the other OSA board members, I'm passionate about soybean farming and have always had an interest in agricultural policy. I'm proud to represent OSA members here in Ohio and in Washington, D.C. We have come a long way in agriculture, but we still have more to achieve.

November is right around the corner and it's important to remember that every vote counts. The Ohio Bipartisan Redistricting Commission Amendment or Issue 1, is on the 2015 ballot in Ohio. If approved by voters, the bill would create the Ohio Redistricting Commission, a bipartisan group to draw state legislative districts. OSA board members recently met and agreed the measure is positive because it would establish new requirements for district standards, keeping counties, municipalities and townships intact. I encourage you to read more about this issue on page 11 and make sure you know the issues on the ballot this upcoming voting season.

I hope harvest brings you high yields and high protein and oil levels. Stay safe.

Ohio Soybean Association

Ohio Soybean news is published six times a year by the Ohio Soybean Association, 918 Proprietors Rd., Suite A, Worthington, OH 43085. Phone: 614-476-3100. For address corrections contact Ohio Soybean News at 918 Proprietors Rd., Suite A, Worthington, OH 43085.

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LATE-SEASON INSECT DAMAGE CAN BE COSTLY TO OHIO SOYBEAN GROWERS.

Minimizing insect damage over an entire growing season can boost yields and income by up to $90 per acre. Dr. Andy Michel at The Ohio State University recommends scouting pre-emergence, post-emergence and right before soybeans completely dry out before harvest. Late-season pests can damage seeds and pods right up until harvest. Ohio soybean farmers are encouraged to report their findings via e-mail at michel.70@osu.edu or by calling 330-263-3730.

For more detailed information, visit SoybeanRewards.org.

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Ohio Soybean Council

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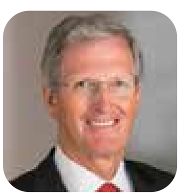

Don't miss Cargill Chairman **Greg Page** on how agribusiness leaders are building resilience to climate change. Learn what new technologies will make weather forecasting more accurate from Schneider Electric's top meteorologist **Jim Block**. Prepare for potential changes in the future of crop insurance from U.S. Senate Agriculture Committee adviser **Keith Coble**.

December 7-9, 2015

Fairmont Chicago Millennium Park Hotel
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Register: **dtnagsummit.com** • Questions? **888.576.9881**

OPTIONAL PRE-EVENT WORKSHOPS

Sunday, December 6

1 p.m.	**DTN University®** Risk Management for Rookies
1 p.m.	**DTN University** How to Exit Ag Without a Monster Tax Bill
5 p.m.	Early Bird registration and reception at The Fairmont

AG SUMMIT AGENDA

Monday, December 7

7:30 a.m.	Registration
7:30 a.m.	Early Bird Profit Sessions
1 p.m.	General session. 2016 America's Best Young Farmers and Ranchers announced
6 p.m.	Private dinner — Harry Caray's 7th Inning Stretch and Chicago Sports Museum

Tuesday, December 8

7 a.m.	Breakfast buffet roundtable discussions
8:30 a.m.	General session
1:30 p.m.	Breakout sessions
5:30 p.m.	Private reception at The Fairmont

Wednesday, December 9

7 a.m.	Breakfast buffet roundtable discussions
8 a.m.	General session
12 p.m.	Adjourn

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IN-KIND Sponsor: Land Investment Expo

An Alliance for Ohio Soybean Farmers

The **Ohio Soybean Council** and the **Ohio Soybean Association** are two distinct organizations that work together to ensure a profitable industry for Ohio soybean farmers.

The Ohio Soybean Council (OSC) manages the soybean checkoff. Your checkoff funds help drive demand and boost your bottom line through research, promotion and education.

On average, for every dollar the checkoff invests, you see a $6.40 return on investment.

Nationwide, the checkoff plans to invest over $9 million in research aimed at increasing yields to 59.5 bushels per acre by 2030.

OSC invests in the following areas:
- Soybean Research
- Soy-based Products/Technologies
- Animal Agriculture
- Global Utilization
- Critical Infrastructure
- Sustainability

Connect with us

- **Facebook.com/ohiosoybeancouncil**
- **Twitter.com/ohiosoycouncil**
- Subscribe to the Ohio Soybean Council e-News letter. Visit **soyohio.org**

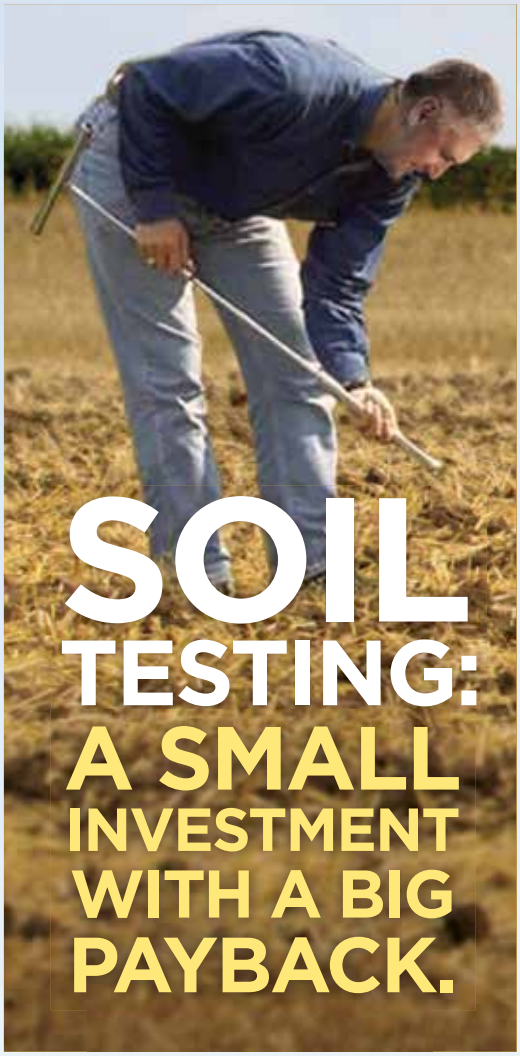
The Ohio Soybean Association (OSA) is a grassroots, membership organization. Because the soybean checkoff is prohibited by law from lobbying, OSA works to ensure that sound policies are in place to enhance the future of soybean farming. We work together to positively impact regulatory and legislative issues on a local, state and national level.

Are these issues affecting your operation?
- Farm Bill
- Water Quality/Nutrient Management
- Crop Insurance Concerns
- Transportation
- EPA Regulatory Oversight
- Foreign and Domestic Market access

When our membership grows, so does your voice in Columbus and Washington, D.C.
Join today: **www.soyohio.org/membership**

Connect with us

- **Twitter.com/ohsoybeanassoc**
- Subscribe to the Ohio Soybean Association e-News for policy updates and more. Visit **soyohio.org**



SOIL TESTING: A SMALL INVESTMENT WITH A BIG PAYBACK.

A small investment in soil testing yields information that can help you manage nutrients which can be up to 10%-20% of your overall crop budget for the year.

Testing as soon after harvest as possible gives the most accurate readings for fall nutrient application. Fall testing also gives you time to think about and analyze your results. You will have more time to seek out expert advice and make the best economic decisions for your fields.

FALL APPLICATION CAN MINIMIZE SOIL COMPACTION.

Fields tend to be drier in the fall than in the spring, so traffic from heavy equipment has less potential to cause compaction or ruts in the field. If damage does occur from fall application, there is opportunity for winter freezing and thawing to help reduce the effects before the next crop season.

Making nutrient applications in the fall rather than waiting until the rush of spring can also save valuable time, while lowering your risk of heavy spring rainfalls washing away nutrients. The Ohio State University Extension recommends that farmers practice the 4Rs of nutrient management – right source, right place, right time, right rate – or consult your extension agent.

YOUR SOYBEAN CHECKOFF DOLLARS AT WORK The Ohio Soybean Council was founded in 1991 to manage the Soybean Promotion and Research Program, more commonly known as the soybean checkoff. This report is the first in a series on soybean management best practices designed to get information from university researchers to soybean growers across the state as quickly as possible.

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SOY TALK

Selecting soybean varieties for 2016

When selecting seed for 2016, you can do much of the work by paying attention during harvest.

To help you manage your soybean acres, Justin Dillon, Mycogen Seeds commercial agronomist for Ohio, recommends focusing on these five important factors:

1. **Consider performance across maturity groups.** Compare local and statewide yield performance of varieties from different companies, sourcing university Extension data where available.

2. **Understand soil types.** Analyze your soil textures during harvest this year, and work with your Mycogen agronomist to determine what adjustments you might need to make.

3. **Diversify your maturities.** This will help minimize weather-related risks and maximize your harvest window.

Variety	Relative Maturity
5B264R2	2.6
5N293R2	2.9
5N354R2	3.5
5N374R2	3.7

New Mycogen® brand soybean varieties

4. **Select appropriate varieties for your row width.** Whether drilling or planting in 15" or 30" rows, choosing the right variety for each system will help ensure easy harvest and high yields. To reduce weed pressures, favor a more upright plant in narrow rows and a bushier plant in wider rows.

5. **Address disease and insect pressures.** As witnessed this year, untreatable plant disease pressures can hurt yield. It is essential to properly diagnose which diseases are impacting your yield. Then, focus on varieties with high ratings for disease tolerance against pressures such as sudden death syndrome, white mold and Phytophthora root rot.

"At Mycogen Seeds, our access to soybean germplasm allows us to develop top-performing and diverse soybean products that growers need for successful yield," Dillon says.

Dillon urges farmers to work with their local Mycogen Seeds commercial agronomist to build a customized cropping plan that puts the right varieties on their acres next year. For more information, visit Mycogen.com/Agronomy.

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OSA Hosts Congressman Pat Tiberi

The Ohio Soybean Association (OSA) recently hosted Congressman Pat Tiberi (R-Genoa Township) as part of an ongoing effort to engage soybean farmers across Ohio. The event was held at the farm of Bret Davis, OSA board member from Delaware County.

"A total of five regional meetings will be held this year to educate OSA members and non-members about the policies that impact Ohio soybean farmers," said Tommie Price, OSA chairman and soybean farmer from Putnam County. "The meetings also serve as a way to get prospective OSA members more involved with the advocacy side of the organization."

During the series of meetings, farmers will become more aware of the fight to protect farmers' ability to operate without government regulations and creating access to new markets.

Over 50 farmers attended the meeting and heard OSA's message to farmers about the importance of foreign trade. Congressman Tiberi supported an effort to pass Trade Promotion Authority, which will allow the President to negotiate trade deals that will benefit soybean farmers. ◆

2015 Ohio Grain Farmers Symposium

Save the Date: Thursday, December 17

Hear from business and industry leaders and join your fellow farmers for:

- Top-level speakers—on the most critical topics for farmers
- Powerful discussions—to get new insights for 2016 and beyond
- Annual Meetings—Make your voice heard
- Visit with representatives that service the agriculture industry

More details coming soon.

OSA Leaders Back Ohio Issue 1

During the September meeting of the Ohio Soybean Association (OSA), the farmer leaders of OSA voted to support Ohio ballot Issue 1. Issue 1 will be on the Ohio ballot in November of 2015, and Ohio Soybean leaders believe it's critical because it creates a bipartisan, public process for drawing legislative districts. Supporters of the amendment state that it would:

▶ End the partisan process for drawing Ohio House and Senate districts, and replace it with a bipartisan process with the goal of having district boundaries that are more compact and politically competitive.

▶ Establish the bipartisan Ohio Redistricting Commission, composed of 7 members including the Governor, the Auditor of State, the Secretary of State, and 4 members appointed by the majority and minority leaders of the General Assembly.

▶ Ensure a transparent process by requiring public meetings, public displays of maps, and a public letter explaining any plan the Commission adopts by a simple majority vote.

▶ Require a bipartisan majority of 4 members in order to adopt any final district plan, and prevent deadlock by limiting the length of time any plan adopted without bipartisan support is effective.

"Ohio deserves the best government possible," said Adam Graham, OSA president and soybean farmer from Logan County. "By passing Issue 1, we can ensure better legislative districts determined by a bipartisan and transparent process, resulting in competitive and more compact, legislative boundaries." ◆

Ryan and Nikki McClure, of Grover Hill, are part of the third generation to operate McClure farms, and they are hoping the fourth generation will include their children Caleb, Drew and Brianna.

McClure Named Beck's Young Farm Leader

As the average age of the American farmer increases, it becomes more imperative that young people step up and step into the role of providing food for an ever growing population.

In Paulding County, Ryan McClure recognizes that need and has become an integral part of his family's farming operation as well as an advocate for the industry. His efforts have led him to be named a Beck's Young Farm Leader — an honor created to showcase young farmers who take the lead in their industry and community.

"Beck's feels it is important to recognize young farmers who are stepping up in the industry. We know they are the future of agriculture and that we need to foster their enthusiasm and encourage their involvement," said Bruce Kettler, Director of Public Relations at Beck's Hybrids.

McClure Farms was started by Ryan's grandfather in 1955 and has been a family tradition ever since. Ryan grew

up farming alongside his father, Terry McClure, and the thought of making a career doing anything else never crossed his mind.

"It's the only thing I know, from the time I was young, that was what we did; we farmed. If we weren't in school or doing chores at home, we were farming," said Ryan. "It was just part of our blood and I couldn't imagine doing anything else. I enjoy being outside and being my own boss. I get to take a seed, plant it in the dirt and watch it grow into something we can use."

Primarily a cash grain operation until 2005, McClure Farms began to diversify and added a contract wean to finish operation that has grown over the years to hold 9,000 head of pigs that they grow for Cooper Farms. This year, they've also grown their cattle operation, now called West Branch Cattle, and will finish approximately 180 head of Holstein cattle annually.

In addition to the responsibilities on the farm Ryan and his wife Nikki have three children; 6-year-old Caleb, 3-year-old Drew, and 1-year-old Brianna. They also dedicate a portion of their time to agricultural advocacy, but Ryan admits that time commitment is a challenge a lot of young farmers face when asked to serve within the industry or in a leadership role in their community.

"The problem we're running into is as there are fewer and fewer farmers who are farming more and more acres time really starts to be a factor. Trying to find good people and getting them to devote a fair amount of their time to run these organizations is a challenge," said Ryan.

Ryan currently serves as a director on the Ohio Pork Producers Council and as the Paulding County Farm Bureau President. He and Nikki have been active in the Ohio Farm Bureau Federation for many years and served a two year term on the American Farm Bureau Federation's Young Farmer and Rancher committee. They're also active members of Middle Creek United Methodist Church.

"It's very beneficial to be a member or be involved with the commodity groups, like the Ohio Soybean Association, to expand demand in foreign and domestic markets and have a voice to help you legislatively move some of our beliefs ahead," said Ryan. "If you're not expanding markets and continuing to push demand — if there's nobody to buy our beans, or to process them or use them, it doesn't do me any good to grow them."

"If you're not expanding markets and continuing to push demand — if there's nobody to buy our beans, or to process them or use them, it doesn't do me any good to grow them."

McClure Farms has adapted over the years to meet the changing demands of the industry and currently fill part of the niche for non-GMO soybeans in foreign markets. After finding a soybean that does very well on their soils they cultivated a relationship with a buyer who has been purchasing most of their crop for the past 15 years. Non-GMO soybeans from the U.S. are primarily exported for food grade use in products such as tofu and soy milk.

Looking to the future, Ryan knows that getting more young people involved in the industry is essential. He also understands that things have changed a lot since his grandfather started and to come into the industry as a new farmer involves major challenges with finances and acquiring land.

"Farmers are getting older; we need to get entrepreneurs and young farmers, find those people and put them together with older gentlemen who don't really have a transition plan or know where their farming operation is going to go. The farms where the next generation hasn't gotten involved, we need to find a way to get them back to the farm, or find someone to take that role," said Ryan.

"Ryan is a great representative of Ohio's young farmers and we are proud to honor him as a Beck's Young Farm Leader," said Tommie Price, OSA chairman and soybean farmer from Putnam County.

"OSA appreciates farmers like Ryan who recognize the importance of continuing to advocate for the industry and work to increase demand for domestic and foreign markets. We also want to continue to showcase young people in Ohio agriculture and encourage other farmers to apply or nominate someone they know for the Beck's Young Farm Leader program." ◆

Verhoff Earns USB Fellowship Award

USB Fellowship recipient, Stephanie Verhoff, of Columbus Grove, Ohio, is also a past recipient of the Ohio Soybean Council Foundation's undergraduate scholarships.

While The Ohio State University is most often noted for its football team, the United Soybean Board (USB) is much more interested in the team of researchers working in the lab to find solutions for Ohio farmers.

Stephanie Verhoff, a graduate student in the translational plant sciences PhD program at Ohio State, was recently selected as a USB Fellowship recipient. The fellowships are awarded each year to graduate students who hold a great potential to advance the research and science of soybean improvement.

Verhoff has had a strong interest in genetics since high school, but when she first enrolled at Ohio State as an undergraduate she was leaning toward human genetics. Once on campus, she discovered the crop science major and her passion for plants began to take root.

"My freshman year I switched majors into crop science and that got me more interested in plant breeding specifically," said Verhoff. "Having my family farm background it seemed like an appropriate fit between genetics, biology and farming."

After graduating with a bachelor's degree in 2014 Verhoff interned with Monsanto's soybean breeding facility in Findlay, Ohio, working in their variety development department. She returned to Ohio State in January to begin working on her doctorate degree with a research focus in soybean breeding.

Verhoff joined a team of soybean researchers that includes Dr. Anne Dorrance, Dr. Leah McHale and fellow grad student Anna Stasko, who received one of the 2014 USB Fellowship awards. A large focus of their recent research has been partial resistance to Phytophthora sojae, a soil-borne pathogen that causes root rot and is a prominent problem in Ohio.

"Our research team focuses on identifying genes that contribute to disease resistance in soybeans," said Verhoff. "Armed with this information, breeders can use marker-assisted selection to select for desired traits more efficiently and develop more robust varieties for growers."

Neal Hageman, who serves as the research director for USB said they design the fellowships to "support PhD graduate students who are actively involved in research to advance an area of soybean science. We select students who intend to pursue a career in soybean sciences, production research or breeding."

While financial support is an obvious benefit, the benefits of the fellowship go much further. Students receive access to additional resources that will help further their research and the networking opportunities can be the most valuable part of the package.

"The award helps financially to cover my costs as a student, but what I'm more excited about is that I get to interact with the USB, present my research to them this winter and work with them throughout my four years of my fellowship. It's unique that I get to work with the board and talk to the growers face to face about my research. I'm looking forward to that experience and being able to network with them and learn from them," said Verhoff.

Verhoff hopes to one day be a commercial soybean breeder or hold a position as a professor with an extension appointment.

"It's an exciting time to be in agriculture, there is a lot of innovation and technology being integrated, especially for breeding and genetics. I think there are going to be a lot of new tools to use coming up in the next decade and beyond," said Verhoff. "It would be exciting to develop a variety and see that sign on a farmer's field and know that it did well for them and helped boost their return." ◆

Partially Hydrogenated Oil to be Phased Out

The food industry has been under increased scrutiny in recent years as Americans have taken a stronger interest in knowing what is in their food, where it comes from, and how it is produced.

One item of particular concern for the FDA over the past two years has been partially hydrogenated oils as the process to make them also creates trans fats. After a debate that began in 2013 and an open comment period in 2014, the FDA has announced its intentions to phase out partially hydrogenated oils over the next three years.

With an estimated 2 billion pounds of partially hydrogenated soybean oil currently used in food processing, the phase out provides a chance for food processors and soybean growers to come together and find a solution.

"While the announcement means changes for food processors, it creates another opportunity for the industry to innovate and showcase the versatility of the soybean," said John Motter, Ohio Soybean Council board member from Hancock County who also serves as Treasurer on the United Soybean Board (USB). "USB has already been looking at possible replacements, including high oleic soybeans which produce a stable oil without the need for hydrogenation."

Some farmers, including Motter already grow high-oleic soybeans, but if adopted as a wide spread replacement for hydrogenated oil, the industry expects to need 18 million planted acres to meet demand by 2023. High-oleic soybeans have a different composition then traditional commodity soybeans and can provide better stability and a longer shelf life for food products without the added trans fats.

Another possibility is interesterified soybean oil. Made from commodity soybean oil, interesterification produces a hard fat that is similar to margarine and may help meet the demands of the baking industry. These solutions provide food companies with options that maintain a consistent taste consumers prefer and utilize a domestically sourced, sustainable oil. ◆

Bioproducts Introduce Students to Agriculture

A pebble may seem relatively small, but drop it into a pond and it sends out a circle of ripples that grow larger with each step. A little pebble can have a big impact on the surface of the water.

When the Ohio Bioproducts Innovation Center (OBIC) hosted its first Bioenergy and Bioproducts Education Programs (BBEP) workshop at the 2011 Ohio State Fair, they dropped a pebble in a pool of educators and created a wave that Springfield, Ohio teacher, Rachel Sanders, has been riding ever since.

Sanders, who currently serves as the BioScience Instructor for Springfield's Global Impact STEM Academy, became inspired to use bioproducts as a way to introduce her urban students to new opportunities in agriculture, bioscience, technology and engineering.

That year, Sanders students from Springfield High School explored the BBEP activities and adapted them to be used as outreach activities with local elementary school students. One week after reaching out to their former fifth and sixth grade teachers, the students had lined up three schools to present their program to and in the process gained a partnership with the Ohio Soybean Council (OSC) to conduct their bio-based outreach activities with fairgoers at the Ohio State Fair.

From 2012–2013 the group reached an audience of approximately 400 elementary students and hundreds of people at the Ohio State Fair. In the fall of 2013, Sanders took on her current role at Global Impact STEM Academy which had 47 students enrolled.

In 2014, "Women in STEM" was developed with Sanders' female students reaching out to 100 middle school girls with a bio-based cosmetics activity. With the diverse student body at the STEM school, and its enrollment currently at 260, Sanders now has students making waves of their own by carrying out bioproduct outreach activities in multiple communities and school districts throughout the state. ◆

Soybean Farmers Well Represented at Ohio State Fair

Thousands of people walk the grounds each day of the Ohio State Fair, held every summer in Columbus, Ohio. They come from every corner of Ohio, and beyond its borders; they represent diverse cultures, occupations, beliefs and varying levels of knowledge about agriculture.

The Ohio Soybean Council (OSC) recognizes both the number and diversity of people who attend the Ohio State Fair and have made it a priority event for consumer outreach. OSC's extensive presence, with the help of Ohio soybean farmers, allowed fairgoers to get engaged and have positive interactions regarding agriculture and even have meaningful conversations with a farmer. For many, it was likely a rare opportunity and will have a lasting impact on their view of agriculture.

The second Saturday of the fair put Ohio soybean farmers in the spotlight as they hosted Soybean Day. Ohio farmers and OSC staff gathered at a main entrance to the fair and greeted guests with samples of soy-based products, grocery bags and interactive games. Farmers spent the day sharing their story with fairgoers and helping to bridge the gap between farmers and consumers by explaining what they do on their farms to be sustainable and responsible in the way they raise crops.

OSC's presence was visible as a presenting sponsor of the 2015 Junior Livestock Shows as well as the O'Neill Swine Building, Voinovich Livestock and Trade Center and Rabbit and Poultry Pavilion.

The Ohio Soybean Farmers' booth was also featured in the Nationwide Donahey Ag and Hort Building for the duration of the fair. At the booth, visitors had the chance to take a virtual reality tour of soybean fields and the Ohio River — a unique way to highlight soybean exports and international markets. Many examples of soy-based products were on display and a mechanical pig race showcased animal agriculture as the number one customer of the soybean industry. ◆

Ohio Turkey Farmers Value High Quality Soy

As the temperatures cool off and leaves drift from the trees, many people begin planning their Thanksgiving dinner. Although each group's meal is as unique as those seated around the table, the iconic turkey remains the centerpiece of the traditional Thanksgiving dinner.

While consumer demand for turkeys is at its peak during the fall, the folks at Bowman and Landes farm have turkeys at the forefront of their thoughts for much of the year.

The Bowman and Landes partnership came together by chance 67 years ago, and has been a successful venture for both families. Now run by second generation owner operators — Carl Bowman, Anita Bowman-Hamber, Stan Landes and Steve Landes — the farm produces around 80,000 birds a year.

"Our fathers started the operation, they're not related at all, but it's a success story. We have the third generation working here now," said Carl Bowman. "Our primary business is to produce, process and market turkeys."

Turkey production is a seasonal operation at Bowman and Landes. Day-old turkey pullets arrive at the farm each year in July and August and are grown to market weight ranging from 10–30 pounds on a vegetable based diet that includes primarily soy meal and corn.

"The turkey's diet is made up of corn and soy meal, vitamins and minerals. The amount of soy and corn vary by the bird's age. We start them off on a high protein diet and then switch to higher carbohydrates as they near market weight," said Bowman.

Corn, soybeans and wheat are also grown on the Bowman and Landes farm, giving them a thorough understanding of the relationship between grain and livestock farmers and the dependency both market sectors have on one another.

"Soy is a wonderful protein; it's been such a vital part of a turkey's diet in the 67 years we've been in existence. It would be really hard to grow turkeys without soy," said Bowman. "I think it's very important that the livestock and grain industries stay in communication and show that we can react to each other's growing needs as new trends come along because we all need each other."

Each year, approximately 80,000 turkeys are raised on the Bowman & Landes Farm, consuming a diet of soy meal and corn.

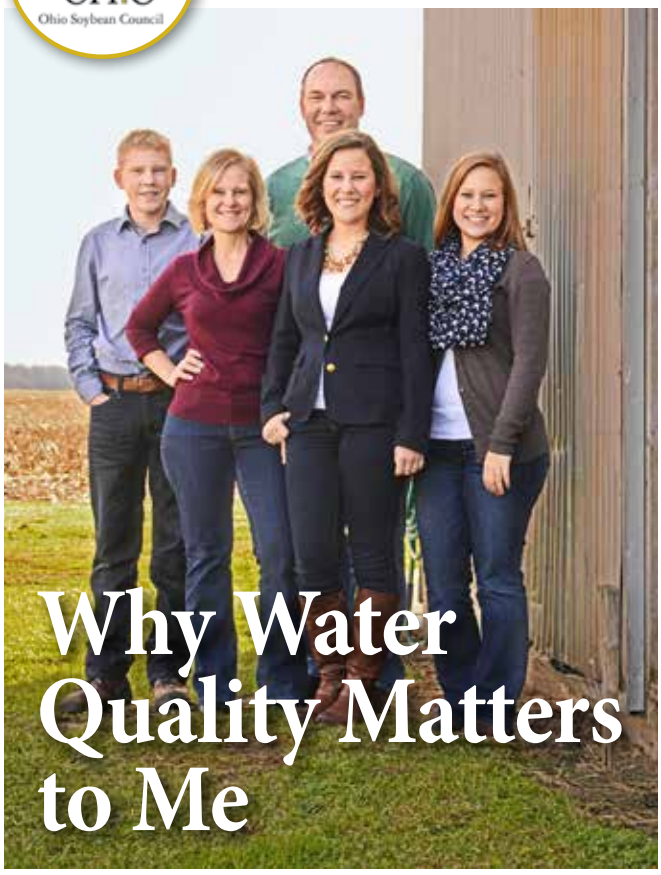
The Bowman and Landes families understand that on a farm, the decisions they make impact more than their own operation. Striving to be good stewards of the land they practice no-till planting, leaving crop residue on the ground to hold the soil in place and participate in Pheasants Forever efforts by planting some field borders to grasses.

Steps are also taken to ensure they are doing their part to preserve water quality at their farm. The farm has waterways, drainage tile and performs water testing to make sure the water that leaves their farms isn't taking anything with it.

"We strive to be good stewards of our land to ensure our nutrients do not leave the farm. It takes very effective nutrient management and we accomplish that with soil testing and water sampling," said Bowman. "When you're feeding a lot of animals, you want to have very clean fresh water for them. And we live here, so we're drinking it as well."

Consumer demand for poultry products, such as turkey, makes the poultry industry one of the top customers for U.S. soy.

Bowman and Landes Turkeys sells more than twenty percent of their birds in their on-site retail store with the remainder being distributed through wholesale. What attracts many customers to their retail store is the connection of meeting the people who have a hand in raising their food. And enjoying safe, locally produced, high quality food — no matter what time of year — is something anyone can be thankful for. ◆



Why Water Quality Matters to Me

OSC, OCMP and OSGMP Launch Why Water Quality Matters Campaign

The following is the first letter in a series dedicated to giving the perspectives of Ohio grain farmers on water quality issues in the state. The series is part of a broader initiative, Why Water Quality Matters, launched by the Ohio Soybean Council, Ohio Corn Marketing Program and Ohio Small Grains Marketing Program to highlight the organizations' water quality research and education programs, as well as share the insights and perspectives of Ohio grain farmers.

Farmers are encouraged to read the entire series at www.ohiowaterquality.org. Share your own pictures and stories about why water quality matters to you on social media with the hashtag #whywatermatters.

Hot summer days recall memories of kids playing in the yard with sprinklers, watering the garden, drinking lemonade and fishing at the lake. Our country has not had to worry about water and seldom has there been a time in our history when safe water wasn't abundant and inexpensive. Today we hear about pollution in the Chesapeake Bay, hypoxia in the Gulf of Mexico, algae blooms in Ohio, water lawsuits in Iowa, and drought in California.

Many are quick to place blame and sources claim that 'this' or 'that' is the problem. Please do not misunderstand me. The science is important. I'm proud of the checkoff investments our corn, soybean and wheat organizations have made in research and education, along with other stakeholders such as The Ohio State University and Ohio Farm Bureau. But as I sit in my farm office on a rainy day, I admit that kind of work seems really far away from my farm. What should I be doing here, today, right now? After considering that question, I believe there are three thoughts that will guide my farm and hopefully yours now and in the future.

First, water issues are not going away and it won't always be about phosphorus and nitrogen. Experts have been warning for years that demand and cost for clean water will continue to increase. Water rights will be questioned and actions that affect its quality will be scrutinized. We need to take actions now that will protect our families and our farms future.

Second, agriculture will be a big part of the solution. Every farmer I know is committed to not only growing a bountiful crop or raising the best livestock but making our piece of the world a better place. While Ohio Agriculture can't be the only ones at the table in order to address this challenge, the stage is set for us to take the lead. Now we need to get it done.

Start by getting your fertilizer certification license. Ask your fertilizer retailer to be 4R certified. Develop a nutrient management plan, test your soil and know your runoff risk. Pay close attention to the results coming out of the most current research and know what it means to your farm. Challenge yourself to adopt one new conservation practice on your farm this year. These simple first steps have helped reduce my farm's environmental impact and improve its profitability.

Finally, remember the reason we do this. Getting caught up in all the negativity is easy. The focus for me on my farm is to remember that my motivation for growing healthy food AND protecting the soil and water has not and will not change.

This is why water quality matters to me.

Bob Peterson
Fayette County
Ohio Grain Farmer

$3.5 Million Invested by Ohio Grain Farmers in Water Quality Research and Education

Since 2011, Ohio's leading corn, soybean and wheat checkoff organizations have invested nearly $3.5 million dollars in research and education to address the water quality challenges faced by farmers and all Ohioans. That investment continues as the Ohio Corn Marketing Program (OCMP), Ohio Small Grains Marketing Program (OSGMP) and Ohio Soybean Council (OSC) have recently approved a fourth year of program funding.

"Water quality has been and will continue to be one of our top priorities," said Patrick Knouff, OSC chairman and grain farmer from Shelby County. "This issue is complex and requires a comprehensive approach to find solutions. And make no mistake, our organizations are working to find real answers and develop practical actions that can help mitigate runoff. It's an investment in the future of Ohio agriculture and we expect a return. This is what we're good at."

With algae problems in Grand Lake St. Mary fresh on their minds and the growing problem of algae in Lake Erie, the farmer leaders of all three checkoff organizations put their heads together in late 2011 and made the strategic decision to partner and begin investing in research. As more was learned, a variety of educational programs for farmers were added to the portfolio.

Thanks to this early leadership, the On Field Ohio research project was awarded a $1 million match from the U.S. Department of Agriculture in 2013. Led by Dr. Elizabeth Dayton at The Ohio State University, this program is monitoring runoff at the field level and will help identify best management practices for farmers.

Partnership began in 2011 and continues to yield results.

In August 2014, the organizations' strategic direction shifted again when Toledo shut off water to 500,000 of its residents.

"We knew we needed to do more than talk to researchers and farmers. Now, we must talk to our neighbors about the importance of water quality," said John Linder, OCMP chairman and Morrow County grain farmer. "People had questions and they wanted answers. In many cases, they were asking the same questions farmers were asking. Speaking to large groups and media isn't typically in the job description of a farmer, but we can't remain silent. This is too important."

The organizations worked to identify opportunities for farmers from around the state to answer questions and tell their story. They provided information about the ongoing research and educational programs funded by the three checkoff organizations and helped make connections with researchers. That work continues as more farmers speak to local groups.

"We're proud of the work done so far, but we're not finished," said John Hoffman, OSGMP chairman and Pickaway County grain farmer. "The recent nitrate issue in Columbus highlights the need to stay fully engaged. Ohio farmers have and will continue to demonstrate their commitment by increasing conservation practices, investing in vital research and participating in educational programs. We do this because water quality matters to each and every one of us."

Four years ago, Ohio was not the most talked about state with regards to water quality. Now it arguably is. While the attention that water is getting in the Buckeye State has increased dramatically, Ohio's corn, soybean and wheat farm organizations are staying on the course they started back in 2011. ◆

Ohio Grain Farmers Support Edge-of-Field Research to Update Ohio P Risk Index

The Ohio Phosphorus (P) Risk Index is used to calculate the risk of losing phosphorus from farm fields by looking at multiple variables such as soil type and flow. Due to increased attention being paid to water quality in recent years, this index has also been getting a lot of attention. The question, however, is how accurate is the index?

Dr. Elizabeth Dayton with The Ohio State University (OSU) has been working toward an answer to that question since she began her edge-of-field research project, On Field Ohio, in 2012 after receiving a significant farmer investment from the Ohio Corn Marketing Program, Ohio Small Grains Marketing Program and the Ohio Soybean Council.

"With increased concern about water quality throughout the country, agriculture has constantly been targeted," said Patrick Knouff, Ohio Soybean Council chairman and soybean farmer from Shelby County. "A robust functioning →

P Risk Index will help us reduce the risk of runoff and protect water quality without sacrificing productivity."

The goal of On Field Ohio is to update and revise the Ohio P Risk Index so it more accurately reflects the risk of runoff through the evaluation of transport (surface runoff, erosion, subsurface flow) and source factors (soil, fertilizer, manure). The more accurate the risk calculation, the more accurate farmers can be when making nutrient management decisions for every individual field.

"On Field Ohio will bring value back to our farmers by making the P Risk Index more accurate and precise," said Patrick Knouff, OSC chairman from Shelby County. "This effort is unprecedented and has caught the attention of a lot of people not only in Ohio, but in other states as well.

Soon after the corn, soybean and wheat organizations made their commitment, other top Ohio agricultural organizations came on board. In total, Ohio agriculture has provided over $1 million toward this effort. That funding was matched in 2013 when it received a matching $1 million grant from the U.S. Department of Agriculture.

The project is currently in its third year. Data is being collected throughout the state with a total of thirty fields monitored in the Upper Scioto, Upper Wabash, Grand Lake St. Marys, and Western Lake Erie Basin watersheds. In addition to revising the index, the project will promote the new version to Ohio farmers.

"No farmer wants to lose nutrients," said John Hoffman, chairman of the Ohio Small Grains Marketing Program. "Updating the Ohio P Risk Index will help identify issues and provide guidelines for keeping nutrients on the fields." ◆

Putting Research Results to Work on the Farm

Information being gathered by research projects focused on water quality in the state is only helpful if farmers are able to implement the results on their farms. Thanks to support from the Ohio Corn Marketing Program, Ohio Small Grains Marketing Program and Ohio Soybean Council, one tool that farmers use to make decisions will be getting a much needed update.

Dr. Steve Culman with The Ohio State University (OSU) has begun work to revise the Tri-State Fertilizer Recommendations, a tool that farmers use to help determine how much of a nutrient to apply in order to grow a crop and minimize runoff risk. The recommendations were originally developed in 1995, but have not been updated since that time.

"The Tri-State Fertilizer Recommendations were the culmination of 40 years of field studies," said Culman. "It looks at the soil test results of phosphorus levels, as well as other nutrients, and tells a farmer what level of fertilizer they should have in their soil to see optimum yield without over applying the nutrient. It helps the farmer be as efficient with nutrients as possible without sacrificing production."

Revising the Tri-State won't happen in a vacuum. Dr. Culman is working closely with other researchers and using the most recent data available from multiple sources. One of those sources is On Field Ohio, an edge-of-field monitoring program that began with initial funding from grain farmers in 2012.

The unprecedented On Field Ohio, led by Dr. Elizabeth Dayton of OSU, is measuring what nutrients are leaving farm fields and what practices do or do not help keep those nutrients where they belong. The results will be used to revise how runoff risk is calculated, while Dr. Culman's work will take it one step farther. He will combine it with relevant crop yield data to develop precise recommendations to grow the best possible crop without over applying fertilizer.

Ohio Grain Farmers Invest in Updated Nutrient Management Tool

"We are investing in this project to help farmers be as efficient as possible with their nutrients," said Steve Reinhard, Ohio Soybean Council board member and soybean farmer from Crawford County. "This not only helps save farmers money, but it also helps them grow a good crop and minimize runoff at the same time. We don't have to sacrifice one for the other, we can achieve both."

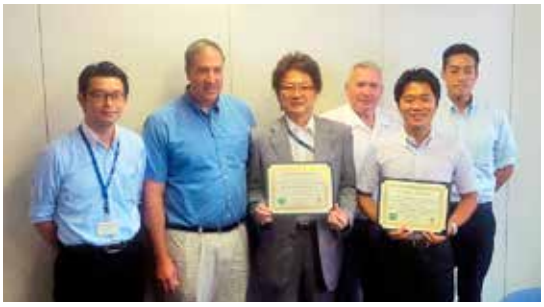
Why now? Dr. Culman explains that farmers aren't farming the same way they did 20 years ago and the Tri-State needs to reflect those changes to be useful to them.

"Farming has changed significantly over the past two decades. A larger number of farmers are using conservation tillage and cover crops on their farms. They use precision technology such as GPS and grid sampling. The crops have been bred to be stronger and more resistant to pests and diseases. We must keep an open mind and look at this from a fresh perspective. It's a possibility that we'll find some recommendations are now too high. Some may be too low."

The work to update these valuable recommendations is only one of many programs currently supported by the state's corn, soybean and wheat organizations, which represent all Ohio grain farmers.

"The addition of Dr. Culman's project to our water quality research and education portfolio closes an important gap in the process of finding solutions," said Reinhard. "We want real, long-term solutions. This means it needs to be science-based and applicable to real world scenarios that farmers are seeing at the farm level." ◆

OSC Reps Explore Asian Market



OSC board members, Steve Reinhard and David Dotterer, present certificates of appreciation to the second largest Ohio food grade soybean importers in Japan, TOHO BUSSAN KAISHA, LTD. General Manager, Koji Kondo and Tatsuya Okubo, Chief Trader food grade soybeans, MITSUI & CO., LTD.

Good customer service can go a long way and create valuable returns, whether it is a restaurant, an airline or even foreign trade. International markets play an important role in the supply and demand chain for U.S. soybeans and the best way to maintain and grow those markets is with happy customers.

In late July, a group of representatives from the Ohio Soybean Council (OSC) spent a week in Asia to meet with current consumers of U.S. soybeans and explore potential opportunities for new partners. Those involved were Steve Reinhard, OSC board member and Treasurer from Crawford County; Dave Dotterer, OSC Board Member and Demand Committee Chair from Wayne County; Tom Fontana, OSC Director of Research and Education; and Kirk Miller, a global consultant contracted with OSC.

The group began their journey in Tokyo where they were joined by Paul Burke, who serves as the North Asia regional director for the United States Soybean Export Council (USSEC). USSEC serves as an international marketing partnership for stakeholders in the U.S. soybean industry. They work closely with foreign partners to create and expand the uses of U.S. soybeans.

While in Tokyo the group visited a number of customers utilizing Ohio soybeans including a container port facility that handles soybeans coming into Japan and a tofu manufacturing facility. While non-GMO, or food grade, soybeans are considered a niche market, they represent around 10 percent of Ohio's soybean crop — a significant amount compared to other states.

"We met with customers in Japan who already purchase Ohio food grade soybeans to thank them and encourage them to continue importing our soybeans," said Dotterer. "They indicated they have been pleased with the quality of our soybeans and expressed interest in the possibility of new varieties being developed in the future."

Japan is a very important customer of Ohio food grade soybeans. Being high in protein with a desirable sugar profile, Ohio farmers produce high quality food grade soybeans desirable for making tofu and soymilk. Keeping up with the demand for new varieties is one of the reasons OSC works closely with researchers at The Ohio State University including Dr. Leah McHale, who heads up the soybean breeding program.

In China, there continues to be some opposition to approving specific traits developed with biotechnology, including high-oleic varieties and those with 2,4-D herbicide resistance.

"Approval of biotechnology will be very important to the future and continued growth of the sale of U.S. and Ohio soybeans to China. We met with several groups to listen to their concerns and work toward an understanding of this issue," said Dotterer. "USSEC has been working on biotechnology approval and other projects to increase China's demand for U.S. soybeans."

Japan is a very important customer of Ohio food grade soybeans for tofu and soy milk.

One of those projects focuses on the Chinese aquaculture industry and technology that will allow them to raise fish more efficiently and more intensively with less of an environmental impact. Intensive pond aquaculture utilizes feed derived from soy and integrates in-pond raceways, or simulated rivers. Increasing aquaculture production is a necessity to feed China's growing population and an opportunity to increase market share for U.S. soybean farmers. →

OSC Team and USSEC North Asia Regional Director, Paul Burke and USSEC aquaculture experts, Joe Zhou Enhua and Jim Zhang with Beijing Fishery Extension leadership

Tokyo Container Port

"Much of the soybeans exported to China are actually used for animal feed. We visited a swine processing plant and feed mill while we were there. It's great to be so far away from home and see Ohio soybeans being processed for feed," said Dotterer.

The group also met with leaders at the American Embassies, in both China and Japan, who briefed them on the current political and economic outlook and the impact on the future of soybean imports.

"Overall, we had a lot of good conversation about the future of the market in the next 3-5 years and the type of protein and oil content, as well as quality, they are looking for in soybeans. There are a lot of companies that want to buy U.S. soybeans and that translates to great opportunities for Ohio farmers." said Reinhard.

The USSEC predicts China should be importing 4-5 million more metric tons of commodity grade soybeans per year for the next 3-5 years, primarily for feed, as the rural population moves to urban areas. In that time span, it is also possible their demand for food grade soybeans will exceed their domestic production of soybeans for human consumption and open doors for more imports.

"These opportunities are possible because of relationships that have been built over the last 10-20 years between Ohio soybean farmers and international customers. OSC has been funding projects for a number of years to help grow the market and more recently USSEC has expanded the efforts," said Reinhard. "But when all is said and done it comes down to the fact that Ohio grows good quality soybeans. We have the right climate, the right soils, and the right people involved. The quality is consistent, transportation and logistics are stable. It's relationships, good quality and good service." ◆

Brown Attends USB's See For Yourself Trip

The fact that American farmers depend on foreign markets to drive demand for their soybean crop is no secret. They've been told many times how their soybeans are used for livestock in China and that non-GMO soybeans are in high demand for food products in Japan. But with customers that live on the other side of the planet, it is a rare occasion when they come face to face.

"See for Yourself" is a United Soybean Board (USB) initiative which provides young farmers a first-hand experience of the impact their soybeans make when they leave the farm and the importance of driving demand with checkoff programs. This year, Nathan Brown, of Hillsboro, Ohio, was one of 10 participants, selected from a pool of 66 applicants, to take part in the eye-opening trip.

Brown, who had never traveled outside the U.S. before, described the trip as a once in a lifetime experience and a great opportunity to see the global impact U.S. farmers have.

Nathan and his wife Jennifer have a unique story as they are first generation farmers who started their farm based on a dream and a passion for agriculture.

"I started out working for a neighbor when I was young and during high school," said Brown. "He offered to get me started farming if I would stick around."

Today, Nathan and Jennifer farm more than 1000 acres of row crops and manage an expanding herd of 30 cattle while Jennifer works at USDA Rural Development and they raise their children — 4-year-old twin boys and a 3-year-old girl.

Amidst their other responsibilities, Nathan and Jennifer have become very active in the agricultural community and currently serve as Ohio Farm Bureau's Young Ag Professionals Committee Chairs. Through their involvement, Nathan had heard about "See for Yourself" a few times and finally decided to apply, thinking he may need to do so a few times before being selected.

He was surprised and excited to be selected for the 2015 trip that took participants to St. Louis for a day and then on to China and Vietnam to gain a better understanding of international agriculture and the important role U.S. farmers have in the world marketplace.

"It was a lot crammed into eight days," said Brown. "The first day in St. Louis we learned about research being done and toured test kitchens where companies can come in and formulate products using soybean protein. It was interesting and very fast-paced."

From there the group traveled about 15 hours by plane to Shanghai, China, which boasts a population of 24 million people. Brown was astounded by the construction and transportation improvements that are happening in the city as they work toward moving another 25% of their population from the countryside to the cities in the next ten years.

"It was an eye-opening experience, I've never been to a city that big. Their middle class is getting bigger and they're wanting better protein — they want fish and they want pork — it's going to be really interesting in the next few years to see who can get the best foothold in China's marketplace," said Brown. "There's competition between the U.S. and South America to export soybeans and soy byproducts."

China imports GMO soybeans to be used in livestock feed, however, their food grade soybeans come from domestic production of non-GMO.

"The average farm is less than an acre in China; and they're moving people into town so the farmers that are there can get bigger and hopefully advance and adapt new technology. We drove a long time to get out of the city, but once we did everything was cultivated — the ditches, the yards — there was no grass, everything had food growing on it," said Brown.

Arriving in Vietnam, the group departed the plane to be greeted by buses which happened to be using soy biodiesel.

"In Vietnam we saw more of the country side. We went to a couple import terminals and saw container ships being unloaded," said Brown. "There was lots and lots of rice, but their pork and aquaculture production is increasing because they want more protein and they need soy meal."

Conversations with buyers at the many stops indicated they believe the quality of U.S. soy is number one and always will be, but pricing sometimes makes other sources a better option.

"It's not something we can really control, but if the U.S. can continue to invest in the infrastructure to move commodities — by barge, rail or truck — that's the area we need be competitive in. There's not a lot of wealth in Vietnam, the average income is around $1300 a year, but the economy is growing," said Brown.

The differences in economy and access to protein was noted by the stature of the population. Brown noted that in China people are beginning to reflect the change in diet and are growing a bit bigger. In Vietnam, the population is physically still very small, generally shorter and very thin. Another interesting glimpse into their culture was provided by a visit to a wet market.

"When we went in there were nice displays of fruits and vegetables and there were people working on meat counters with whole hogs or chickens they were cutting up. They go to the market every day to get a piece of meat and vegetables because they have no refrigeration," said Brown.

Nathan Brown (front row, third from left) gained valuable knowledge of international agriculture during a trip to Asia with nine other young farmers selected for the honor by the United Soybean Board.

The group also toured a fish farm on the Mekong River to see how they are using soy in their feed and a special coating that allows it to float for a time to improve the feeding process. As a fully integrated operation, they also toured the processing facility where fish come in alive and are processed and frozen in around 10 minutes. Quality standards are high as most of the product is exported with much going to the U.S.

While the trip is a valuable experience, taking extended time away from a young family and a growing farm is a big commitment. Brown participated because he believes it is important to be involved and gain new perspectives.

"In the U.S., farmers are less than two percent of the population and the ones under 40 are a very small portion of that. Having opportunities to be involved whether it's at the county, state or national level is something we need to be doing. There's going to be a change of leadership. When the time comes, hopefully my experiences, or experiences of anyone who's involved, will help them become better leaders down the road," said Brown.

Learning more about consumer concerns in China and Vietnam, re-affirms Brown's conviction that farmers and consumers need to have better dialogues. A majority of the U.S. population is several generations removed from the farm and many do not know where their food comes from, how it is produced or why farmers do things the way they do. Brown also believes farmers need to talk to their legislators and make sure they understand the impact that international trade agreements can have for farmers.

"I'm close enough to the river, I always knew my soybeans go down the river, get put on a boat, and they go overseas. I knew it was a big deal, but to go over there and experience it — hear them talking about wanting better lives. That's what it all comes down to; if they can get soybeans and get access to better proteins, they can have better lives," said Brown. "It makes you really realize that what we do on one little farm here in Ohio really does effect somebody on the other side of the world."

"As a country we are blessed to have adequate resources to be able to feed ourselves and have extra to feed the rest of the world. It's something that we already do take seriously, but to see the growing populations in other parts of the world makes it more real." ◆

Soybean Cyst Nematode and Charcoal Rot Threat to Ohio Farms

Heterodera glycines (soybean cyst nematode) eggs and juveniles

Researchers at The Ohio State University know that when a farmer finds an issue in one of his fields, it is usually not alone. In turn, they are taking a holistic approach when studying pests and pathogens that threaten crops for Ohio farmers.

Horacio Lopez Nicora is nearing the end of his PhD program studying under Dr. Terry Nilback, a nematologist at Ohio State, and his research has focused around the soybean cyst nematode, specifically the impact it has when in a field where the Macrophomina phaseolina fungus is also present.

"We did a survey of Ohio and the distribution of pathogens. We looked at more than 150 fields over the course of two years with approximately 85% having soybean cyst nematode and 95% having the fungus (Macrophomina phaseolina). Around 77% had both," said Lopez Nicora. "It is unfortunate for the farmers, but was a great opportunity for our research to evaluate the interactions between both pathogens."

Soybean cyst nematode is a parasite that infects the roots of a soybean plant with the female nematodes becoming small cysts on the roots. Charcoal rot, cause by Macrophomina phaseolina, causes the plant stem and tap root to turn grayish black and the plant to wilt and die prematurely.

Three years of research was conducted in fields in southern Ohio where warmer and drier conditions, especially in 2011 and 2012 have contributed to the damage done by the pathogens. The research process quantified the pathogens, calculated end of season yield, and then used spatial regression analysis to compare the yield reduction in scenarios where one pathogen is present to scenarios where both pathogens are present evaluating their interaction.

"Fields where the levels of organisms were above threshold for economic impact we detected a significant interaction," said Lopez Nicora. "We also wanted to corroborate these findings in a more controlled environment where we could actually infect the plants with a fungus to see the results and not harm a farmer's crop. We will finish evaluating the controlled experimental fields this year."

Lopez Nicora was surprised to find the fungus reduced stem count at emergence when it is typically considered a late season problem. Now, they know both organisms are causing performance

Macrophomina phaseolina colony-forming units

Controlled field trials allow pathologists to purposefully study the interactions of multiple pathogens.

reduction early in the season. While the number of soybean cyst nematodes can fluctuate drastically throughout the year, the threshold used for eggs is in the hundreds at planting.

"Every time you take soil samples they can be sent to our lab for nematode analysis. We will tell them if they have it or not and how much they have of it. We have guidelines for thresholds of nematodes that may reduce yields so we can easily determine that when they submit a sample," said Lopez Nicora.

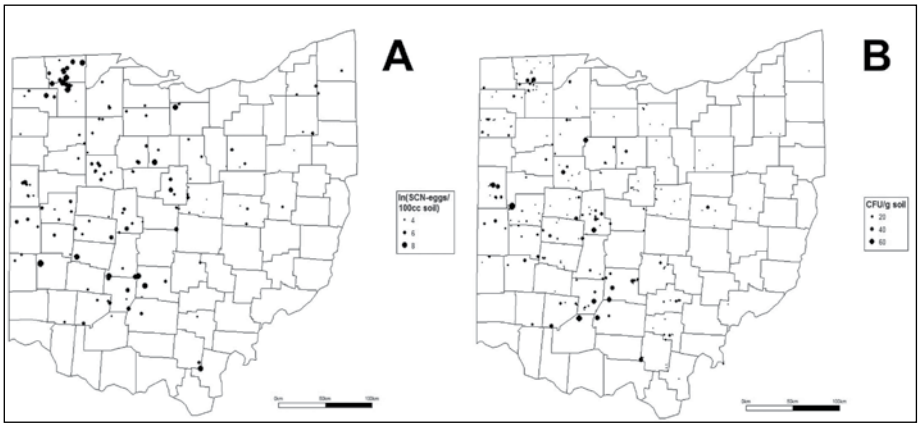
If a grower has a high threshold of nematode, it is first recommended they plant corn in that particular field. However, if plans for the farm do not allow, resistant varieties of soybeans can be planted.

Lopez Nicora's work in nematology has earned him some prestigious recognition including the 2015 John M. Webster Outstanding Student Award from the Society of Nematology — the highest student award given. He has also been awarded a university Presidential Fellowship, and the North American Colleges and Teachers of Agriculture graduate teaching award for his efforts as a graduate teaching assistant.

"I've been fortunate to work with two well respected scientists — nematologist Dr. Terry Nilback, and soybean pathologist Dr. Anne Dorrance. Their co-advising of my research in their respective areas of expertise was extremely important to the success of my project," said Lopez Nicora.

While Lopez Nicora is finishing his current research project, he plans to write extensively during the current semester and set a date to defend his thesis in the spring of 2016 to graduate from the PhD program.

"I really enjoy research and teaching, academia would be a great career, but I've also realized extension is as rewarding as teaching in classes because you can listen to growers and their concerns. I see extension as two way communication - we learn from each other and do research based on the grower's needs to improve production that will benefit everybody." ◆



Map A shows distribution and abundance of soybean cyst nematode in sampled fields. Map B shows distribution and abundance of M. phaseolina in sampled fields.

PHOTO: URSULA REUTER-CARLSON

Life cycle of soybean cyst nematode from egg to females laying eggs

OSC and Battelle Work to Develop Soy-Based Carrier for Agrochemical Formulations

In the agricultural marketplace, farmers can find themselves in the position of being both a supplier and a consumer of their given commodity. Soybean farmers encounter this situation a lot as soybeans are a versatile crop. The Ohio Soybean Council (OSC) and the soybean checkoff has had great success in replacing petroleum-based products for a variety of uses.

Recently, OSC partnered with researchers from Battelle to determine the feasibility of using soybean oil as a carrier, or solvent, for agrochemical formulations. If successful, commercial formulations could replace a petroleum-based carrier for use in any one of the popular herbicide, fungicide, or insecticide used in Ohio.

Vegetables oils, largely soybean oil, have already experienced growth as adjuvants in crop protection to help formulations work more effectively by sticking to the plant and improving penetration of active ingredients through the plant's barrier. This project demonstrates the feasibility of soybean oil crop by taking advantage of recent advances in oil dispersion.

Oil dispersion methods allow active ingredients to be suspended in oil, rather than needing to be distributed as granules or as a water based solution; and utilizing soybean oil provides a built in adjuvant.

"The chemical composition of soybean oil based formulations has the potential to increase the adhesion of solid pesticides on the target surface and would significantly reduce the amount of active ingredients washed or carried away during irrigation or rainfall," said Dr. Ram Lalgudi, Scientist at Battelle Columbus.

The benefits of this approach would provide an environmentally friendly and safer alternative to current agrochemical carriers. Ohio's soybean farmers could potentially benefit as both a consumer of an agrochemical formulations utilizing this soy-based carrier and the increased demand for soybeans for producing this soy-based carrier.

One bushel of soybeans can yield around 4.6 liters of oil. If soybean oil is adopted for use in just one of Ohio's top herbicides it would take more than 64,000 bushels to supply enough oil for one year of application.

"This was a successful project where we found that soybean oil can indeed be used as a green carrier for agrochemical formulations," said Dr. Roger Kemp from Battelle's United Kingdom formulation development laboratory. Dr. Kemp recently presented the work at the 2015 American Chemical Society conference in Boston, Mass.

Researchers at Battelle found soybean oil can be feasibly incorporated into agrochemical formulations as either an emulsifiable concentrate or through oil dispersion. Next steps for the work involve testing soybean oil-based formulation under longer storage durations and evaluating the economic viability of new products. ◆

PHOTO COURTESY OF CHRIS KICK/FARM AND DAIRY, SALEM, OHIO

Former OSC Chairman Named to Ohio Ag Hall of Fame

Each year, during the Ohio State Fair, the Ohio Agricultural Council holds a special breakfast to induct new honorees into the Ohio Agricultural Hall of Fame. This year marked the 50th anniversary of the event and brought four more outstanding candidates who were inducted.

The honor is bestowed on those who have been dedicated to their work in agriculture as well as promoting and advocating for the industry. This year's honorees included William Haddad of Danville, Gerald Mast of Millersburg, the late Don Loudenslager of Morral, and Roy Loudenslager of Marion — who has held significant roles in the development and leadership of the soybean industry including the Ohio Soybean Council (OSC) and United Soybean Board (USB).

Roy and his brother, Don, grew up working alongside their dad on the family farm feeding livestock, and doing miscellaneous chores that grew with their abilities. When they joined the FFA — then known as the Future Farmers of America — in their high school years, their father let them start farming some land on their own.

Roy quickly became an active member of the FFA and did well enough with his farming operation to be named Ohio's first FFA Star Farmer. After high school, he was drafted into the military and spent 18 months in Germany.

Upon his return he attended an Ohio Soybean Association meeting with his father and that was the spark that led him to be more of an influence in agriculture. He played key roles in the establishment of the Ohio Soybean Council and held the offices of chairman, vice chairman, and secretary. In addition, Roy served as a founding member of USB and participated in many international trade tasks. He is passionate about the industry and was proud to play a role in establishing biodiesel, soy-based plastics and soy ink as new markets for the commodity.

It is quite an honor to be inducted into the hall of fame, but Roy's induction is a little extra special as he and his late brother, Don, have now joined a list of top agriculturalists that includes their father, Forest Loudenslager, who was inducted in 1978. ◆

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