

Ohio Soybean News™

MAY-JUNE 2024

A PUBLICATION OF THE OHIO SOYBEAN ASSOCIATION

Little Beans, Big World p. 14

Get To Know OSA's
Scholarship Winners, p. 6

Soy Food Skincare, p. 18



unitedsoybean.org

Ohio Soybean News

May-June 2024
Vol. 14, No. 3



RESEARCHING A BETTER BEAN

Whether you're dealing with drought, flood, heat or other climate-related stress, the soy checkoff is working behind the scenes to diversify U.S. soybean genetics and increase stress tolerance. 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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COVER STORY:
Ohio is unique — our climate and soils enable us to grow high quality beans that are desired by customers all over the world. In fact, around 10 percent of Ohio's soybeans are considered food grade, which is higher than any other state. To market these beans, the Ohio Soybean Association and Ohio Soybean Council work to increase trade opportunities and preference for Ohio soy. Read more about our international marketing efforts on pages 14-17.

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Rusty Goebel
Ohio Soybean Association President
Williams County soybean farmer

A Letter From the President

If you've found time to read this issue of Ohio Soybean News when it was delivered to your mailbox, you're reading it in the middle of planting season. Right now, our crop is just beginning to grow and we don't yet know what this year's production will look like. But before we know it, it will be time to start harvesting and soon our beans will make their way across our state, country and globe.

This issue highlights the importance of specialty beans, from food grade to non-GMO to high oleic. While many of these beans will stay in the U.S., about half of them will be exported overseas, which is why increasing trade opportunities is vital for our industry. You can read about the efforts made by the checkoff-funded U.S. Soybean Export Council to build demand for our beans in international markets on page 14. But we are also working closer to home to create better trade.

When the Ohio Soybean Association (OSA) visited Washington, D.C., in March (more on page 8), trade was a priority for us when talking to legislators. Trade, however, was just one of many topics I and other

representatives from OSA talked about with members of

Ohio's congressional delegation. In addition to trade, we continued to push for an updated farm bill, better biofuels legislation and a better way for farmers to work with the Endangered Species Act.

Biofuels, especially Sustainable Aviation Fuel (SAF), are an exciting opportunity for our industry, especially if we can get the legislation right. At our recent Hometown

Tour stop in Upper Sandusky, we heard from Louis Dreyfus Company's commercial manager Jeremy Mullins, who gave an update on their new crush facility. Between LDC and the Cargill expansion, our state's oil market will be ready to deliver SAF to our customers.

As all of these issues continue to develop, OSA will be there to ensure a thriving soybean industry.

Wishing you all a safe and successful planting season!

Rusty Goebel



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Get to Know OSA's 2024 Scholarship Winners

The Ohio Soybean Association (OSA), the membership and policy arm for Ohio soybean farmers, is pleased to announce the scholarship recipients for the 2024–2025 academic year. The OSA Scholarship Program was created to recognize outstanding student advocates for the soybean industry. It is available to Ohio Soybean Association members and their immediate families.

OSA awarded \$1,000 each to Delaney Moore, a freshman studying agricultural communication, and Sheriden Schuerman, a junior studying sustainable plant systems. Both winners attend The Ohio State University.

1 Tell us a little bit about yourself.

Delaney Moore: I am currently a freshman at The Ohio State University majoring in agricultural communications. I live on a family farm where we raise and show beef cattle. I graduated from Bloom-Carroll High School where I was actively involved in FFA. This year, I have been honored to serve as the Ohio FFA State Vice President traveling around the state and meeting Ohio FFA members.

Sheriden Schuerman: I am currently a third year sustainable plant systems, plant biosciences major at The Ohio State University and am also double minoring in agricultural communications and leadership studies. I am also very involved in on-campus clubs such as Sigma Alpha, Saddle and Sirloin, and Crops and Soils. I also have partaken



Delaney Moore

in research with Dr. Cara Lawson in the Department of Agricultural Communication, Education, and Leadership exploring climate change perceptions across the United States. I have recently presented two specific studies in this topic: An Exploration of Perceptions Related to Farmers' Roles in Climate Change Issues and An Exploration of Climate Change and Climate Self-Efficacy. I obviously have so many different interests but the common theme is agriculture. I am excited to see what my future holds for me in this industry after graduation in May 2025!

2 Why did you decide to apply to the OSA scholarship program?

DM: Being involved in agriculture my entire life has led me to pursue a degree in agricultural communication. I chose to apply for the OSA scholarship program because I am confident that this is an association that is dedicated to benefiting young agriculturalists. I am proud to be a recipient and continue my education in this industry.



Sheriden Schuerman

SS: I applied for the OSA scholarship program because I have heard such great things about OSA in general and as I am nearing graduation, I wanted to get more involved in organizations outside of OSU. Plus, I wanted to learn more about OSA. I visited the OSA booth at Farm Science Review and became a member and have enjoyed receiving the monthly newsletters in which I found the scholarship program. I am so glad that I did because this scholarship will be so helpful for me in my last year here at Ohio State and allows me to focus on preparing for life post-grad.

3 How do you see your future career path positively impacting the soybean industry?

DM: A goal of mine is to share with others the message of why agriculture is sustainable. During my first year in college, I have had the opportunity to work with food safety businesses and companies, as well as other community organizations which allow me to learn more about food regulations and safety. I

As an agricultural communication student, I am learning skills needed to educate the public about food security and sustainability. I will continue to raise awareness to the public about the importance of limiting their food waste.

SS: Speaking of post-grad, I do hope to positively impact the soybean industry when I have joined as a professional. Although I am uncertain of what my career after college will look like, I do know that I want to strive for development and advocacy of the soybean industry. Through internships and research jobs that I have had on campus, I believe that I am well prepared for that task!

4 What made you choose your field of study? What do you like most about it?

DM: Agriculture has always played a huge role in my life. I have enjoyed raising and showing beef cattle at the county, state and national level. In addition to showing beef cattle, I have also shown sheep, pigs and goats throughout my 4-H and FFA career. I have experienced firsthand the positive impact the agriculture industry can make in a person's life and for this reason, I spent my high school career promoting agriculture to those in my community and throughout the state. These agricultural experiences have provided me with many wonderful memories that I will take with me as I move into the next chapter of my life. I really enjoy being an advocate for my life passions through my field of study. I am excited to learn how to best be the voice for agriculturalists in our industry.

SS: I chose my field of study sort of on a whim! I changed plans last minute for college and Ohio State for plant sciences was the first thing that caught my attention; however, I am so glad that it did. The thing I

enjoy most about my field of study is the community that it has brought me. I am so grateful for the people I have met at Ohio State and those I have had the pleasure to work with outside of the university. I also enjoy seeing all the potential room for growth that this industry holds. This makes me so excited for the future of ag and what part I can play in it!

5 Where do you see yourself in 5 years?

DM: In five years, I will be giving back to the agricultural industry that has given me many experiences and opportunities. The next chapter of my life is where the new work in agriculture begins for me. Our country relies heavily on the agriculture industry. Today, farm and ranch families make up less than 2 percent of the population, but those same families are responsible for feeding 100 percent of the population. These families need advocates in the industry to be a voice for them. By studying agricultural communication, I am learning the most effective ways to be that voice. In ten years, I will be the one in the fields with farmers talking to them about their production and advocating for them. Many people do not understand where their food comes from and how it is produced, so it will be my long-term goal to increase public awareness.

SS: I feel truly compelled to do the work that I have been learning about. I am very excited to get out into the industry and start working with people who strive for greater understanding and acceptance from those outside of our industry. I don't have an exact picture of what my next 5 years will look like, but I do know that I want to be a resource for support and understanding for those

inside and outside of our industry. One thing that I have become so passionate about from my time researching here at Ohio State is the relationships held between farmers and the agriculture industry as a whole and those that are removed from the industry. Growing up on a farm, I believe I bring a neat perspective to those who have never had any experience with agriculture to help bridge the gap between the consumer and the producer and encourage more education and less media consumption.

6 What does winning this scholarship mean to you?

DM: Winning this scholarship means so much to me. I am the oldest of three children. It is my responsibility to pay for my college education. With rising costs of college tuition, I am relying on scholarships to help alleviate the financial burden that I will incur over the next four years. I am extremely grateful to receive this scholarship as it will allow me to further my education.

SS: Winning this scholarship has meant so much to me! It has allowed me to look forward to my last year of college with more freedom, which is a privilege that I greatly appreciate. I am excited for my last year to focus on preparing myself for the industry and cherishing memories with the people that I have met here and hold very dear to me. This scholarship allows me to do so with less financial stress. I also have greatly appreciated the contact and support I have received from the OSA team after winning this award and it makes receiving this just that much more special! ♦

For more information on OSA and how to become a member, visit www.soyohio.org/association.

OSA Meets with Legislators in Washington, D.C.



In March, Ohio Soybean Association (OSA) board members returned to Washington, D.C., to advocate for issues crucial to the soybean industry. OSA board members who traveled to D.C. included Treasurer Trish Cunningham of Union County, President Rusty Goebel of Williams County, Chairman Patrick Knouff of Shelby County, Scott Metzger of Ross County and Bob Sver of Clark County.

OSA advocated for the following:

Support a New and Improved 2024 Farm Bill

OSA and the American Soybean Association's (ASA) farm bill priorities include, among others: improving the Title I farm safety net for soybeans to make it more responsive in times of economic disruption; protecting crop insurance to assist with volatile weather and crop loss; and protecting the farmer-funded, farmer-led soy checkoff that provides a high return on investment.

Maintain Soy's Largest Export Destination and Invest in Trade Promotion

In marketing year 2022/2023, 60 percent of U.S. soy exports were destined for the Chinese market. Efforts to revoke Permanent Normal Trade Relations (PNTR) status from China or impose additional tariffs would likely have immediate negative impacts on agricultural export markets. Investing in promotion of U.S. commodities globally is needed to expand and diversify trade markets.

Drive Biofuels Markets and New Opportunities

Soy-based biofuels continue to increase in both production and consumption. Improving federal programs and tax credits that support the biofuels industry and expanding market opportunities for soy-based biofuels benefit soybean farmers and jobs across rural America.

Ensure a Science, Evidence-Based Approach to Endangered Species Act

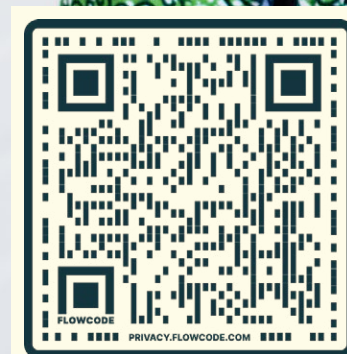
Continued oversight into the Environmental Protection Agency's incorporation of the ESA into its pesticide program is needed. EPA's regulatory approach relies on overly conservative models that

OSA representatives met with Senator Sherrod Brown and Representative Max Miller (R-Wooster), along with other legislators in Ohio's congressional delegation.



vastly overstate impacts on species, which leads to costly, burdensome restrictions on farmers. EPA should adopt a science-based regulatory approach that will protect species while allowing for continued, meaningful use of pesticides. ♦

WISHH leverages partnerships for U.S. Soy to help meet the protein needs of 8 billion consumers



OSA's Hometown Tour Stop at Kalmbach Feeds

On March 21, the Ohio Soybean Association (OSA) hosted the latest stop on the Hometown Tour Series at Kalmbach Feeds, Inc. Over 50 farmers gathered in Upper Sandusky for a day of networking, learning, policy discussion and more.

Highlights included:

- Presentations from Neil Doherty and Shane Grime from BASF — an event sponsor — and Ryan Martin from Ohio's Country Journal, who shared valuable insights about optimizing herbicide applications and navigating grain market trends.
- An industry update from Jeremy Mullins about the new Louis Dreyfus Company crush facility.
- A policy roundtable with Ohio



Jeremy Mullins, commercial manager for Louis Dreyfus Company, gives an update on the company's new crush facility in Upper Sandusky.



Several policymakers joined OSA representatives to talk through the latest Ohio ag policy.

Department of Agriculture Director Brian Baldrige, Ohio Rep. Riordan McClain and State Senator Bill Reineke discussing the latest ag policy in Ohio

- Airable Research Lab successes and a tour of the Kalmbach Feeds facility.

A special thank you to Kalmbach Feeds, Inc. for their hospitality as tour hosts. Keep an eye out for additional Hometown Tour meetings later this summer. OSA members will be the first to know about updates. ♦




BECOME A LEADER IN YOUR FIELD

The Field Leader program from the Ohio Soybean Council and the soybean checkoff keeps you informed about the latest technologies, trends and research in the field, all in an effort to keep your operation moving forward and to help you become a leader in your field.

See how we are keeping you at the forefront of innovation by clicking the "Ohio Field Leader" tab at OCJ.com.




Brought to you by Ohio soybean farmers and their checkoff.



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Q&A with the Soil and Water Outcomes Fund New Ohio-Based Field Program Representative

The Soil and Water Outcomes Fund (SWOF), a leading agricultural ecosystem services program, recently launched their fifth year of farmer enrollment and added a field staff member in Ohio to better serve our state's farmers. Please continue reading to learn more about SWOF and Peyton Vest, the organization's new Ohio-based field program rep!



1 Please tell us a little bit about yourself.

I grew up on a small farm in southern Ohio that raised show pigs. I graduated from Wilmington College with a Bachelor of Science in Agronomy and a concentration in Soil Science. After working at an implement dealership for a few years, I'm excited to focus on agronomy and soil health again in my career.

2 What is the Soil and Water Outcomes Fund?

The Soil and Water Outcomes Fund is managed by AgOutcomes, a subsidiary of the Iowa Soybean Association, and we are committed to bringing the best opportunities for farmers looking to implement new or additional conservation practices. We specifically work in scope three insets to help organizations lower the greenhouse gas footprint of their supply chain.

Farmers enrolled in our program implement conservation practices

such as reduced tillage, cover crops, extended crop rotations and fertilization management to improve soil health, reduce erosion and more.

3 SWOF has grown quite a bit in the last few years. Tell us more about that.

Yes, through public and private partnerships, including the U.S. Dept. of Agriculture's Partnerships for Climate-Smart Commodities initiative, SWOF has been able to expand opportunities to farmers across many states in just a few years. In 2023, we enrolled over 300,000 acres of farmland across 14 states and paid farmers more than \$10 million for their positive environmental outcomes.



4 Climate-smart agriculture, carbon markets, carbon intensity—it's a very busy space right now. What do you think sets SWOF apart?

It is a very busy space, but we aim to keep things simple and transparent. And as we grow, support to farmers remains our number one goal. Here are a few unique things about SWOF:

► As a part of the Iowa Soybean Association, we answer to farmers.

► A lot can change from year to year in farming, so we offer one-year contracts.

► You'll know exactly what you'll be paid; we provide a payment estimate prior to contract signing.

► Payments are made in two installments: 50 percent is paid prior to verification, and 50 percent is paid afterward.

► There is no acreage minimum or maximum required for enrollment. You can scale the practice changes at your own pace.

► As the field rep for Ohio, I'm available for technical and agronomic support throughout your time in the program.

5 Why did you choose SWOF as the next step in your career?

For me, it's important to be a part of a company that is committed to leaving the world better than we found it. As mentioned, I like being back on the agronomy side of things. I also like being able to travel the state and work with many different producers. Finally, I believe I have found a place that is tight knit and willing to help the producers anyway we can!

6 If a farmer has questions or wants to enroll, what should they do?

If you are interested or even curious about adopting new conservation practices, please reach out to see how SWOF can help. You can visit our website, theoutcomesfund.com, to learn more and start the enrollment process. You can also email me directly at peyton@agoutcomes.com. ♦

WISHH leverages partnerships for U.S. Soy to help meet the protein needs of 8 billion consumers



Feeding Consumers Around the World with Specialty U.S. Soy

By Katie Reardon, Soy Foods and Oil Manager, U.S. Soybean Export Council

People around the world are developing a growing appetite for soy foods, from traditional products like tofu, natto and soy milk to new convenience foods and plant-based meat alternatives. The global soy food market reached \$49.4 billion in 2023, according to an industry report from IMARC Group. That report estimates the market will grow to \$72.2 billion by 2032, a compound annual growth rate of 4.2 percent.

This creates a promising market for Ohio farmers and exporters. Support from the U.S. Soybean Export Council (USSEC), which is funded by soybean checkoff dollars, helps them take advantage of these opportunities. For example, several specialty crop exporters based in Ohio, like Bluegrass Farms, Schwartz Farms, Scouler, Delong, CGB, and KG Agri Products, have established relationships and export channels to soy food manufacturers in different regions of the world.

“USSEC plays a critical role by linking the soy food supply chain from growers to food manufacturers and consumers,” explains Will McNair, director of oil and soy foods for USSEC. “Our trade missions, events and tools help maintain and strengthen these relationships.”

Simplifying Sourcing for Customers

Soy food manufacturers need

different characteristics for soybeans used to make tofu compared to those used to make natto. And, just like McDonald’s customers expect a similar experience eating a Big Mac no matter where they get it, soy food consumers expect consistency from every package of tofu or other products from their favorite manufacturer.

“Historically, buyers of U.S. Soy food beans have researched specific soybean varieties for specific uses by reaching out to each supplier individually,” McNair says. “This time-intensive process of

provides a comprehensive source of qualities and attributes for specific U.S. soybean varieties used in foods like tofu, soy milk, natto and miso, as well as high oleic soybean varieties. It provides a one-stop shop for buyers interested in identity preserved (IP) soybeans.

The database was USSEC’s response to feedback from domestic and international members of the soy food supply chain.

“They told us there wasn’t a good tool available to highlight the different specialty soybeans grown in the U.S.,” McNair remembers.

“Buyers were looking for more information about the different types of IP soybeans grown in the U.S.”

Development started nearly five years ago and the site launched in 2021, with content, capabilities and reach expanding since then.

“We have created the most comprehensive catalogue for soy food beans, thanks to our collaboration with farmers, exporters, seed companies, universities, international buyers and

other stakeholders and soy checkoff support,” he says. “Featuring nearly 300 soybean varieties, it allows for research-based, data-driven marketing decisions.”

The Soy Specialty Database saves time for customers. It includes data on quality attributes such as oil and protein content, amino acid content, origin and more.

Soy food company users filter to narrow soybean variety selections by intended use, size, protein content, hilum color, growing

system (e.g., GMO, non-GMO or organic) and more. Each database entry includes a photo, quality markers, composition, information on growing region, estimated tofu or soy milk yields, and other details.

“This tool matches buyers with the perfect soybean varieties for their end uses,” McNair explains. “They can share the specifics with exporters, who will contract with farmers to grow those varieties.”

Regular updates and enhancements continue to add value to the Soy Specialty Database. It includes the ability to compare samples from different years, multiple language capabilities and data on isoflavones.

“Use of the database among customers is growing, even in non-traditional soy food markets like Latin America and Europe,” McNair reports.

Determining Fit for U.S. Soy Farmers

The Specialty U.S. Soy Database also can be a tool for farmers growing food-grade soybeans or considering that market. It provides clarity for farmers and lowers the barrier of entry to improving seed selection for soy food beans.

For example, farmers can learn about the specific varieties contracted by a buyer. Variety information includes details on soybean growing locations and variety maturity groups. That allows everyone in the supply chain to determine what varieties for a specific end use grow in a specific region, like northeast or central Ohio.

Farmers considering the market can explore the types of specialty soybeans grown in their region. It can serve as a starting point to research specialty soybeans that might fit into their operation.

“We shifted to raising soy food beans nearly 15 years ago for several reasons,” says Jeff Magyar, an Ohio Soybean Council board member and United Soybean Board director. “For example, the weed control program required for our non-GMO food beans helps us manage problems with weed resistance. They also offer a price advantage.”

Magyar and his wife Marybeth farm with one of their daughters and her family near Orwell, in the northeast region of the state. They raise about 3,000 acres of food-grade soybeans, corn and winter wheat or barley. They contract with nearby Schwartz Farms,

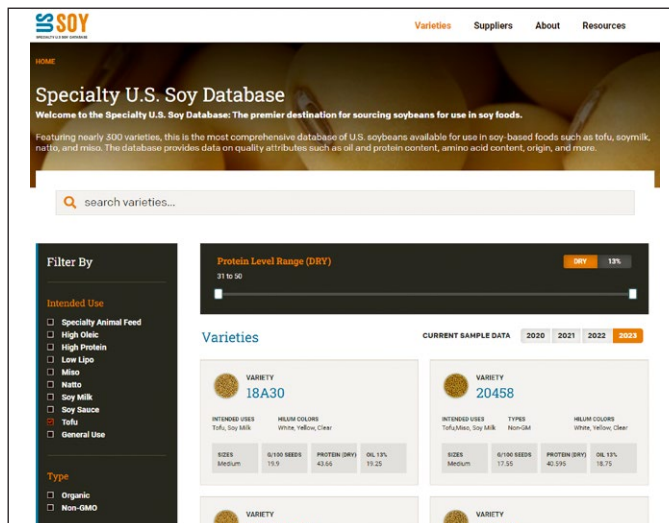
primarily to raise soybeans for tofu production in Japan.

The soy food varieties they raise any given year can be found in the Specialty U.S. Soy Database, helping them understand customer needs. This background supplements and strengthens supply chain relationships.

“I make an effort to meet with customers when they visit our area, and I visited Japan just last winter to present at a U.S. Soy Outlook conference,” he says. “Getting to know these customers helps me better meet their needs. For example, I understand why the customers I grow for require clean, snow-white soybeans with a clear hilum and no seed coat damage for their tofu production.”

That knowledge informs his production practices. But it can also help exporters and farmers use the Soy Specialty Database to recommend new varieties to customers over time.

“Future USSEC plans for the Soy Specialty Database include expanding to include specialty animal feed soybeans, varieties for aquaculture and more,” adds McNair. “It has proven to be a very practical tool to increase preference for U.S. Soy in soy foods.” ♦



USSEC developed the Specialty U.S. Soy Database, available at soydatabase.ussoy.org

comparison and evaluation was based primarily on price, instead of soybean characteristics and quality attributes.”

To help these customers, USSEC developed the Specialty U.S. Soy Database, available at soydatabase.ussoy.org. This innovative, interactive database



Boosting Dairy Rations with High Oleic Soybeans



By Matt Reese

High oleic soybeans have been highlighted for their benefits in human food, but more evidence is being compiled about their benefits for dairy rations.

“High oleic soybeans are a biotechnological innovation that resulted in a higher portion of the oleic acid relative to linoleic acid. Most soybeans are high in linoleic acid. Bringing that oleic acid up better serves frying applications on the food side, but we’ve had this opportunity on the dairy side that also emerged,” said Keenan McRoberts, vice president of strategic alignment for the United Soybean Board. “It’s an opportunity to increase profits to get a little bit more fat in the dairy ration and to increase butterfat yield. By feeding whole high oleic soybeans, you can get more out of the ration without depressing milk fat.”

Traditionally, roasted soybeans have been a common ingredient in dairy diets as an important

source of fat and protein, but those commodity soybeans are also high in polyunsaturated fatty acids. These acids are toxic to rumen microbes and can disrupt normal rumen function. This leads to the production of bioactive fatty acids that cause milk fat depression, which limits the benefits of traditional soy inclusion in dairy rations.

A 2020 study conducted by Kevin Harvatine at Penn State University, funded by the Pennsylvania Soybean Board, compared normal roasted soybeans to high oleic roasted soybeans fed at 5 percent and 10 percent of the dairy diet. Soybean type and level did not impact milk production, but high oleic soybeans resulted in 0.17 units higher milk fat concentration and 0.2 pounds higher milk fat yield. The increase was explained by a decrease in diet-induced milk fat depression. Increasing roasted soybeans from 5 percent to 10 percent of the cows’ diet increased milk fat 0.2 units. This translates into more profitability for dairies, McRoberts said.

“That’s a great opportunity on the dairy side to get more fat in that ration and increase profitability. Multiple studies, mostly at the university level, have indicated strong performance benefits based on milk fat yield and increased profit potential if you can get roasted high oleic soybeans into those rations,” McRoberts said. “The economic analysis we’ve run based on five studies that were completed over the past several years has indicated that under all economic conditions between 2014 and 2020 — which is a period of considerable variation in milkfat price — that you would have increased profit if you were to feed those cows 5 percent roasted whole high oleic soybeans in that ration relative to what you would have been feeding otherwise. It’s significant. On a 2,000-cow dairy that could be a difference of \$130,000 a year in profit given typical butterfat prices over that period.”

The current limited acreage of high oleic soybeans and the lost opportunity cost of the market premium they command do present some challenges. High oleic soybeans are now grown on over a million acres nationwide, with more expansion potential in the future, opening up more possibilities for inclusion in dairy rations.

“This is still on the early end of adoption, but we’re seeing an increase in high oleic acres going toward dairy, especially in the upper Midwest and the Northeast. We’re anticipating approximately 300,000 acres going to dairy rations for the 2024 planting

Continued

season, so it’s significant. That is getting close to a third of the overall high oleic soybean acreage footprint today,” he said.

Looking forward, McRoberts sees more supply chain benefits and increasing possibilities for future high oleic soybean inclusion in dairy rations.

“Feeding the whole soybeans enables a couple things. You can do more of a direct farm-to-market type application. They can be grown on the same dairy where you’re feeding the soybeans if you’re roasting on site, so the soybeans do not have to go through the typical processing entity. It is kind of a hyperlocal value chain. Even though there could be some increased cost, it’s an opportunity cost relative to what the other end-use for those beans might be, which would be to have it go to a processor and have that oil extracted for food use,” he said. “Further research will need to look at the opportunity cost with those acres and putting the production toward a dairy, but you could see it being produced on the same dairy or contracted with local farmers in the area. There are still some things to figure out, but we do know there’s an advantage from a digestibility standpoint of roasting the beans onsite versus feeding them raw. If you’ve got that infrastructure available and you can pull it off, there are profit advantages to getting those high oleic beans into dairy rations.”

For more recent research on this topic see “Economic Analysis of High-Oleic Soybeans in Dairy Rations” in the *Journal of Dairy Science* at: [journalofdairyscience.org/article/S0022-0302\(24\)00002-X/fulltext](https://www.journalofdairyscience.org/article/S0022-0302(24)00002-X/fulltext). ♦

What Does It “Bean”?

Defining specialty soybean terminology

Identity Preserved

According to the Specialty Soya and Grains Alliance, identity preservation (IP) “is a practice of maintaining segregation of a field crop raw material from pre-planting during the growing season, into handling/storage/delivery through to processing and distribution in order to deliver a specific contracted trait or quality to the end market.”

Traceability is at the core of the IP process, allowing a transparent communication between supplier and customers. Typical practices used for IP beans include segregated storage, controlled cleaning, shipping and documentation.

Non-GMO

Non-GMO soybean varieties are grown for feed and food purposes. However, most non-GMO varieties of soybeans are used for human consumption. They are typically used to make miso, soy milk, natto, tofu and soy sauce. Ohio and the U.S.’s largest customers for non-GMO soybeans are in the Asian countries where these foods are included in daily diets.

Non-GMO soybeans are more susceptible to weed damage and yield loss. Farmers are offered a premium to grow non-GMO varieties due to the elevated risks and efforts it takes to raise the crop. Premiums on non-GMO soybeans in Ohio range from \$2.40 to \$4.00, variety dependent.

Ohio farmers are typically among the top producers of non-GMO, food-grade soybeans in the U.S. In the last 5 years, non-GMO acreage has made up 6 to 12 percent of Ohio’s annual soybean crop. Thanks to Ohio’s favorable climate

and soil quality, customers favor Ohio’s consistent quality and high protein soybeans.

Organic

According to the USDA, Organic soybean farmers must abide by the standards set forth by the National Organic Program (NOP), and therefore cannot use any biotech seeds. Organic soybeans are non-GMO soybeans. There are some fertilizers and pesticides that can be used under NOP guidelines. Organic farmers also rely on other methods of pest control, such as crop rotation to minimize pest infestations, Bt sprays, sticky traps to trap pests, and hand-weeding or flame weeding to control weeds.

High Oleic

High oleic soybeans are a specialty bean with high oleic, low linoleic fatty acid profile ... what does this “bean”? The oil from these specialty beans is healthier, when consumed in moderation, improves product shelf life and extends fry life. These characteristics make high oleic soybean oil a competitive option for food processors.

High oleic soybean varieties were launched commercially in 2012. Research from the United Soybean Board predicts over one million acres will be dedicated to high oleic soybean oil production. Ohio and Indiana are two major producers. Premium opportunities can reach \$2 or more over conventional soybean prices due to IP protocol, agronomic practices and comparable yields.

More information on high oleic soybean opportunities can be found on the United Soybean Board’s website: unitedsoybean.org. ♦

New Clinical Trial Supports that Consuming Soy Protein Can Benefit Skin Health

Results of a new clinical trial involving postmenopausal women show that consuming soy protein containing isoflavones benefits skin health, building on a body of existing literature. Women who consumed 30 grams of soy protein daily for six months experienced a decrease in wrinkle depth and pigmentation and an increase in skin hydration. This peer-reviewed research was conducted by scientists from Integrative Skin Science and Research in Sacramento, California, commissioned by Soy Nutrition Institute (SNI) Global, and funded by the United Soybean Board.



underscore the significance of making soy foods part of diets aimed at promoting skin health.

For this trial, women were randomized into two groups: one consumed soy protein daily and the other an equivalent amount of casein, which is the predominant protein in cow's milk. Neither the study participants nor the researchers were aware of which group consumed which protein until the results were analyzed.

Summary of key findings:

► **Wrinkle Reduction:** Women in the soy group experienced a significant reduction in wrinkle severity. By weeks 16 and 24, wrinkle severity decreased by -4.8% and -6.5%, respectively, compared to casein group.

► **Pigmentation Improvement:** Pigment intensity was significantly reduced in the soy group compared to the casein group, with a 2.5% reduction observed at week 24.

► **Hydration Enhancement:** Among women in the soy group, skin

hydration increased by 39% in the left cheek and 68% in the right cheek, compared to measurements at the beginning the trial. No improvements were noted in the casein group.

In addition to observed changes in the skin, soy consumption may exert other health benefits in postmenopausal women.

For example, evidence suggests that soy isoflavones can alleviate menopausal hot flashes and may improve memory in older women.

In addition, the amount of soy protein provided in this study has been extensively tested and (consistently) demonstrated to support heart health by lowering blood cholesterol levels.

“When considering the nutrition that soy foods provide and the many possible health benefits, it certainly makes sense to add these foods to the diet. The wide range of soy foods available makes doing soy quite easy,” said Mark Messina, Ph.D., Director of Nutrition Science and Research, Soy Nutrition Institute Global.

Soy foods can be included in the diet in many ways and provide a variety of vitamins and minerals that can be part of a healthy diet. Soy protein is a high-quality protein, providing all nine essential amino acids in amounts needed by the body. For recipe ideas, visit soyconnection.com/recipes. ♦

Mark Messina, Ph.D., recommends aiming for two servings of soy foods per day (like two glasses of soy milk or a cup of tofu) to ensure you're consuming enough isoflavones to reap the skincare benefits of soy.

I Farm in Ohio, I Want to Grow for a Premium!

Ohio is home to some of the best soil and weather conditions to grow soybeans for specialty markets. The average size farm in Ohio is 171 acres, compared to the national average of 446 acres. Smaller field and farm sizes offer opportunities to

segregate specialty varieties and maintain IP protocols. Premiums in Ohio range from \$1.75 to \$4.00 per bushel depending on variety and contract.

Hooked by all this premium talk? There are opportunities out there, find what is best for your operation.

Programs, contracts and premiums vary by location, contact or visit their websites for more information. Think your company should be on the list? Email Madison Layman at mLAYMAN@soyohio.org. ♦

Non-GMO, Food-grade:



High Oleic



Scan the QR code or visit unitedsoybeanboard.org/high-oleic-soybeans/delivery-locations. Enter your zip code to find local elevators and processors taking high oleic soybean. Then talk with your seed rep about which high oleic varieties are right for your farm.



Ohio Soybean Council Foundation Awards \$46,500 in Scholarships



The Ohio Soybean Council Foundation (OSCF) is pleased to announce the scholarship recipients for the 2024–2025 academic year.

This is the 17th year for the OSCF Scholarship Program, which was created to encourage undergraduate students to pursue degrees in one of the many academic fields that support the future of the soybean industry including agriculture, business, communication, economics, education, science and technology, as well as to support ongoing graduate-level research. Since 2008, the OSCF scholarship program has awarded over \$640,000 in scholarship funds to students studying agriculture or a related field at Ohio colleges or universities.

Undergraduate scholarships of \$3,000 each were awarded to **Chloe Anderson, Dylan Bambauer, Jacob Lansing, Nicholas Mazurowski, Adam Meyer, Bryce Schott and Ashley Tate**. The annual \$5,000 Bhima Vijayendran Scholarship, named in honor of a Battelle research scientist who has made tremendous contributions to the soybean industry, was awarded to **Clint Johnson**. The Robinson W. Joslin Scholarship was awarded to **Sarah Hoak**. The annual \$3,000 scholarship was created to honor a long-time leader in the soybean industry both in Ohio and nationally, who passed away in May 2016.

Graduate scholarships of \$2,500 were awarded to **Scott Brooks, Taylor Dill, Richard Gonzalez Aquino, Angel Haller, David Merckle, Prabath Senanayaka Mudiyansele and Maria Sholola**.

Undergraduate Winners

Chloe Anderson of Kenton, OH, is a sophomore at The Ohio State University studying agriscience education.

Dylan Bambauer of New Bremen, OH, is a sophomore at the University of Dayton studying mechanical engineering.

Sarah Hoak of Shelby, OH, is a freshman at The Ohio State University studying sustainable agriculture.

Clint Johnson of Urbana, OH, is a junior at Ohio Wesleyan University studying chemistry and mathematics.

Jacob Lansing of Midland, OH, is a junior at The Ohio State University studying animal sciences and biosciences.

Nicholas Mazurowski of Delta, OH, is a junior at Ohio University studying chemical engineering.

Adam Meyer of Cygnet, OH, is a freshman at The Ohio State University studying agribusiness and applied economics.

Bryce Schott of Fredericktown, OH, is a junior at The Ohio State University studying agricultural engineering.

Ashley Tate of Shreve, OH, is a junior at The Ohio State University studying agricultural communications.

Graduate Winners

Scott Brooks is pursuing a PhD in mechanical engineering at Ohio University. Brooks' research attempts to design soy-based, 3D printable polymers to be used for degradable orthopedic medical devices, specifically bone tissue scaffolds and long bone plates.

Taylor Dill is pursuing a PhD in agronomy at The Ohio State University. Dill's research evaluates best management practices regarding planting date and seeding rate for soybeans to determine optimal planting practices.

Richard Gonzalez Aquino is pursuing a master's degree in plant pathology at The Ohio State University. Gonzalez Aquino's research looks at improving automated soil sampling for soybean cyst nematode testing.

Angel Haller is pursuing a PhD in entomology at The Ohio State University. Haller's research analyzes the genetics of resistant aphids to understand how to better address them with pesticides and plant genetics.

David Merckle is pursuing a PhD in translational biomedical science at Ohio University. Merckle's research focuses on the development of a soy-based degradable shape memory polymer that mimics adipose tissue and promotes tissue regeneration and can be used for void filling in patients who have had significant tissue loss.

Prabath Senanayaka Mudiyansele is pursuing a PhD in horticulture at The Ohio State University. Senanayaka Mudiyansele's research examines moisture timing and harvest date as management decisions to protect yield and seed quality.

Maria Sholola is pursuing a PhD in food science at The Ohio State University. Sholola's research investigates how foods enriched with soy germ powder can have anti-inflammatory effects in obese individuals. ♦



HELPING YOU DELIVER ON DEMAND

Whether it's improving soybean meal to outperform the competition or promoting the sustainability of U.S. soy, the soy checkoff has been working behind the scenes to help farmers satisfy their customers' needs. We're looking inside the bean, beyond the bushel and around the world to keep preference for U.S. soy strong. And for U.S. soybean farmers like you, the impact is invaluable.

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



Do We Always Lose Protein When We Increase Oil?

Leah McHale and Tu Huynh

The value of soybeans is driven by the products of their processed seed: oil and high protein meal. The long-established negative relationship in the percentage of oil and protein in soybean seed has created a challenge as well as an opportunity for breeders to maximize the processing value of soybean seed. On average, for every 1 percentage point increase in oil, protein decreases by just under 2 percentage points to 3 percentage points. While we see this relationship consistently in soybean cultivars as well as more diverse soybean germplasm, there is some variation in these trends creating an opportunity for improvement in the processing value (Figure 1).

To investigate the genetic variation controlling the relationship between seed protein and oil contents, we evaluated the seed from three populations of soybean breeding lines. The populations were developed by crossing combinations of an Ohio-adapted high yielding cultivar, an advanced breeding line with high seed protein content, and one of two advanced breeding lines with high seed oil content. The total of 355 soybean breeding lines were grown in four environments and harvested seed were measured by Near Infrared Spectroscopy (Figure 2).

Following analysis of almost 3000 seed samples, we were able to identify six genetic regions associated with seed protein and oil contents. These regions matched and confirmed regions identified in previous studies. Alleles, different versions of the DNA or genes, in each of these genetic regions affected the relationship between seed oil and protein contents differently. In two genetic regions (on chromosomes 1 and 8), the alleles which increase oil content, decrease protein content

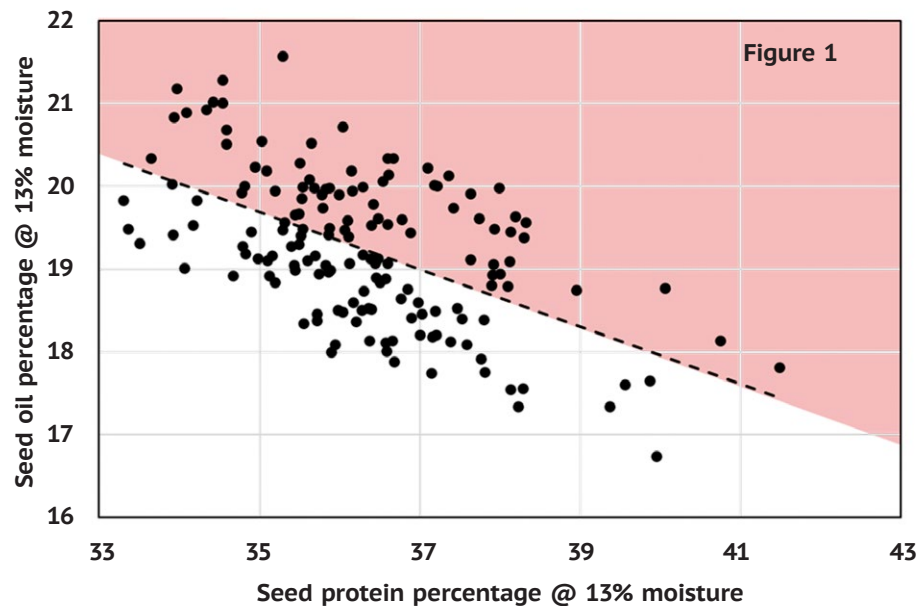


Figure 1. Correlation of seed oil and protein contents as measured by Near Infrared Spectroscopy from The Ohio State University soybean breeding program trials in 2021 and 2022 (3 locations, 3 replicates). For each percentage seed oil increases, seed protein decreases by 3 percent.

by a factor of 4-5x. Yet, in four other genetic regions (on chromosomes 6, 15, 19 and 20), the alleles which increase seed oil content, decrease protein by a factor of only 0.4 to 0.7. In other words, an increase of 1 percent in seed oil, decreases protein by only 0.5 percent. These results tell us that when we select for an allele that increases oil we might lose some protein, and vice versa. Yet, there is variation in *how much* protein or oil is lost, in some cases it may be an insignificant amount. Within a breeding program, selecting and combining these types

Figure 2. Layne Connolly, Research Lead Technician in the McHale laboratory at The Ohio State University, measures composition of soybean seed with a PerkinElmer DA 7250 Near Infrared Spectrometer purchased by the Ohio Soybean Council in 2023.

of alleles creates the potential for increased oil, high protein meal, and overall processing value of soybean seed. Over the 2024 and 2025 growing seasons, we will be taking the next step to look at the impact of these genetic regions on yield. ♦



Behind the Beans: Premium Opportunities for Ohio Soybean Farmers

By Madison Layman, Manager of Demand and Market Development

The soy foods market is the biggest customer for specialty soybeans grown in Ohio. In 2023, 6 percent of Ohio soybeans planted were non-GMO food-grade soybeans. Common foods produced from these soybeans are tofu, miso, natto, soy milk, tempeh, soy sauce and more. The largest markets for these beans are Korea, Japan, China, Thailand, Malaysia, Taiwan and others in the southeast Asian region.

The Ohio Soybean Council (OSC) partners with the U.S. Soybean Export Council (USSEC) to maintain relationships and market opportunities for farmers. A successful program funded by OSC is the Korea Soy Food Masters which is entering its third year of programming. The objective of this course is to increase the use of soy foods in the food service industry such as hotels, restaurants, institutional food service, and home meal replacement sectors as the food

Sahmyook Foods, a soy milk processor in Korea, unloads a U.S. soybean delivery in April 2023.



service market continues to grow. We have had over 193 participants qualify to become “Soy Food Masters” and work as strong advocates for U.S. Soy usage in industry.

Moreover, USSEC released a study in 2022 analyzing soy food markets in China, Japan, Korea and Taiwan. This report was partially funded by the soybean checkoff and offers market insights into regions where soy is considered a staple food. Key findings from the report include:

- Increasing tofu consumption drives overall soy food demand in China, where interest in plant-based yogurt, including soy yogurt, is also growing.
- Japanese consumers show increasing focus on sustainability, while the local soy food industry adheres to specific standards for soy products.
- In Korea, trade policy directly influences opportunities for U.S. Soy, as production of major soy food categories like tofu and soy milk remains strong.
- Soy food bean production in North America reflects demand in North Asia. Nearly half the soy food beans grown in the U.S. become tofu, and more than a quarter of them are destined for soy milk.

The full report can be accessed on USSEC’s website ussec.org.

Your soybean checkoff and USSEC continue to invest in these markets to create premium opportunities for your operation. Advantages to growing non-GMO soybeans are being able to diversify your income and reduced seed costs. However, herbicides used for non-GMO soybeans can be more costly and require special applications. Consider all your options when looking for ways to diversify income revenue.

New markets for soybean farmers extend beyond the non-GMO soybean as well. The high oleic soybean variety is mostly grown for its oil profile but also has benefits in the dairy industry. The oil profile of this specialty crop allows for less oxidation in fryers, a heart-healthier oil option and extended shelf life. The soybean checkoff has been heavily involved in the development of this new market opportunity for soybean farmers and is working with food companies to increase usage.

So, why do all of these specialty markets matter? Because they offer a farmer a way to diversify their portfolio, bring in more on-farm revenue without purchasing additional land and create an avenue for future generations to continue farming and feed the world. ♦

"Researching soybeans is a really interesting line of work. There's always something new going on every day. And **it's exciting to be at the forefront of this push for more bio-based products.**"

-ALEX SHAND, INNOVATION ENGINEER
AIRABLE RESEARCH LAB

HERE IN OHIO, WE GROW POSSIBILITIES.



OHIO SOYBEAN COUNCIL

Innovation helps drive soy demand and benefits your operation. By investing in the Ohio Soybean Council, farmers get a firsthand look at the new products and research that is revolutionizing the industry, helping to further global demand, improve yields and create new opportunities for future generations.

Learn more at SoyOhio.org/HereWeGrow

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