missouri SOYBEAN FARMER

SUSTAINABILITY, STEWARDSHIP AND SERVICE

A Story of Supply

The partnership between Sipcam Oxon and SOYLEIC will introduce the high-oleic soybean trait internationally.

Grain Bins & Grandkids

Long-time farmer-leader, Robert Alpers, shares his favorite memories of farming and advice for the next generation.

February 2022

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Cover Shot

Madelyn Warren with Missouri Soybeans captured this image of Robert Alpers as the Cooper County producer walked a field of cover crops with his grandkids.

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Contact Dave Larson at (515) 440-2810 or dave@larsonentllc.com for advertising information.

From The Field

Notes from Missouri Soybeans' Leadership Team

We have a lot on the policy plate for this session, and your leadership is eager to get back in Jefferson City to meet with legislators on issues pertinent to Missouri agriculture. At the forefront is biodiesel. As an integral value-added product for soybean growers, it's imperative we maintain a strong market for biodiesel and support the farmers that produce it. With renewable diesel moving fast, we must find a way to stabilize the biodiesel facilities supporting our farmer-investors. We are hopeful we can maintain our production levels in the state, keeping that revenue here where it belongs.

We are working diligently on both the state and national level to do all we can to address the concerns of much-needed herbicide availability as well as the increased price of fertilizer. Producers are still wary because they are unable to purchase their needed inputs due to shortages as well as supply chain issues. The upturn in commodity prices is a blessing; however, we will need to be strategic in our planning for this year's growing season.

As Missouri Soybean Association president for the past two years, I want to extend my thanks to all of you. It has been rewarding leading this association and advocating for much-needed policy, ultimately protecting the Missouri soybean farmer. While I will continue to serve on the board, it's my time to extend the gavel to another farmer-leader. I can assure you that Missouri Soybeans is in the best of hands.

As a lifelong farmer myself, it is a privilege to serve my fellow farmers. Thank you again and know that I will continue to advocate for our great industry at both the state and national levels. There is still much work to be done!

Ronnie Russell - Missouri Soybean Association President

As soybean growers, we know that our crop holds tremendous potential. Separated into its main components, oil and meal, the soybean provides numerous opportunities and positions farmers to access markets and innovations that intersect with our lives on a daily basis.

I'd like to direct your attention to the first of those components, soybean oil. Whether in the edible or industrial oil markets, soybean is quickly becoming the preferred oil around the world.

Through your soy checkoff, SOYLEIC high-oleic soybeans are poised to increase the market share of soybean oil in the baking, frying and salad dressing worlds to levels we haven't seen in almost 20 years. That same trait is garnering high praise in industrial applications where it withstands extreme heat without deteriorating, as in electrical transformers.

Since the days of George Washington Carver and Henry Ford, soybean oil has been accepted widely as an excellent petroleum replacement. You'd be hard-pressed to find a "green" product in the marketplace that hasn't had its petroleum-derived components replaced with soy-based ones. And biodiesel remains a clean, sustainable replacement for fleets and farms across the country.

At the Missouri Soybean Merchandising Council, empowering farmers through innovation means continuing to develop new uses for Missouri's No. 1 crop while pushing the boundaries of what a soybean can do.

Kyle Durham - Missouri Soybean Merchandising Council Chairman

Letter from the Executive Director

There is no better way to kick off the new year than to meet with farmers from across the state. For Missouri Soybeans, the winter season is meeting-heavy. Our staff works diligently to connect with growers to discuss the year ahead and the goals we want to work to achieve.

In 2022, we are excited and eager to be back in-person with farmers after a year of virtual meetings. While we felt accomplished in our meetings last year — and ultimately were able to hear from our producers — nothing beats face-to-face interaction. We missed seeing your families, having coffee, chatting in the combine cab and giving pats on the back as a reminder we are all doing our best for Missouri agriculture.

That brings me to my goal for 2022. I want to meet with you, whether that is at the local coffee shop, grain elevator, seed shed or annual county Farm Bureau meeting. After more than year behind screens, my heart is hungry for a more boots-on-the-ground approach.

Our organization can't be collaborative or representative of the growers and citizens of rural Missouri if we are not creating conversation on a weekly basis. We need to hear from you, and you need to be hearing from us. At Missouri Soybeans, we have a lot to be proud of, and we want to tout how we are leveraging the farmers' dollars and bringing in a strong return on investment.

We want you to be a part of our work at Missouri Soybeans by following our story through outreach and communication. And we want you to feel inclined to give us a call when there's an issue, positive story to tell or a place where you think Missouri Soybeans should be.

We want to be rooted in your community. We want to put more miles on the road. So, pick up the phone, send me an email, connect with our staff and tell us where we need to be to make strides in the soybean industry.

God Bless,

Gary Wheeler
Executive Director/CEO
Missouri Soybean Association
Missouri Soybean Merchandising Council
Foundation for Soy Innovation

Soybean Policy Update

Missouri policymakers are back in Jefferson City for the 2022 legislative session. After a brief congressional break, I am glad to be back in our state's Capitol working on your behalf. When it comes to moving the needle in Missouri policy, nothing beats hallway conversations, Capitol comradery and a grassroots approach supported by our farmer-leaders.

State Legislation

During this legislative session, the Missouri Soybean Association (MSA) will be working hard on several issues, but at the top of the list will be securing tax incentives to reduce the price of biodiesel in Missouri. Sen. Denny Hoskins has filed SB 805, which would establish two tax credits for biodiesel retailers and producers. The bill would authorize a tax credit of 2 cents per gallon for retailers selling B5-B10, a tax credit of 5 cents per gallon for retailers selling B11 and above, and varying tax credits for different types of biodiesel producers in the state.

MSA representatives have outdone themselves the past couple years working with our industry partners and those who were previously working against us to develop this legislation. We're ready to get this one across the finish line.

Additionally, we are focusing on Rep. Brad Pollitt's HB 1720, which will serve as the ag omnibus bill. The bill touches on land surveying, meat-processing facilities, biodiesel and ethanol tax credits, anhydrous ammonia and more. The bill is set to move very quickly and be the go-to vehicle for agriculture legislation. We'll also be pushing for the renewal of tax credits for the Missouri Agricultural and Small Business Development Authority. These credits are critical value-added agriculture in the state and were the key component in our farmer-owned ethanol and biodiesel plants.

In late 2021, MSA testified at the State Tax Commission hearing regarding productive agricultural land values. During a time of unprecedented input costs and devastating weather events, placing an increased burden on producers through an increase in their taxable land values would be insensible. Our position to not increase the taxable burden was made well known.

Pre-filing of bills began Dec. 1, and in the first week, legislators filed more than 500 bills. That's just a fraction of what we'll see in the the new year.

For reference, last year there were more than 2,000 bills filed between

"MSA representatives have outdone themselves the past couple years working with our industry partners and those who were previously working against us to develop this legislation. We're ready to get this one across the finish line."

-Casey Wasser, Director of Policy

the House and Senate before session concluded.

With much anticipation, we will be watching the redistricting process closely as it moves through both chambers. This year's elections will play a big role in agriculture for the next decade.

Federal Legislation

The Environmental Protection Agency (EPA) rolled out three years of Renewable Volume Obligations (RVOs), annual blending targets for refiners to blend into the nation's fuel supply. The figures, which encompass the 2020-2022 calendar years, include reductions to the 2020 RVO but the inclusion of a supplemental obligation in 2022 and the pledge to do the same in 2023. The agency is opening a public comment period on a move to deny all pending waiver requests from the Renewable Fuel Standard and proposing a path for so-called biointermediates to be included in the program. We're looking deeper into the impacts of the pathway for biointermediates and how that could impact the biodiesel industry. The EPA is also considering making electric vehicle power generation eligible for renewable fuel credits when it unveils its 2023 biofuel blending mandates next year, according to Reuters.

MSA has advocated for construction and maintenance at Lock and Dam 25 in Missouri. Many of the locks and dams throughout the upper Mississippi River region were opened more than 80 years ago and provide only a single, 600-by-110-foot lock chamber. Construction at the above-mentioned locks and dams would result in a new 1,200-by-110-foot lock chamber being built adjacent to the existing lock chamber. This would enable a typical 15-barge tow – transporting more than 800,000 bushels of Missouri soybeans or corn – to transit the lock in one single pass compared to disassembling the barge tow into two sections. In addition, a second lock will provide needed resiliency and redundancy,

allowing a key link in the supply chain to remain operational if one of the lock chambers was closed.

"With much anticipation, we will be watching the redistricting process closely as it moves through both chambers. This year's elections will play a big role in agriculture for the next decade."

-Casey Wasser

Several years ago, the navigation industry proposed and achieved a 45% increase in its commercial diesel user fee in order to provide additional investment for improving the inland waterways system. Several farmer organizations, including the Missouri Soybean Merchandising Council, have recently partnered together to raise $1 million to help underwrite the cost of pre-engineering and design expenses to encourage the Navigation and Ecosystem Sustainability Program to proceed. We will continue to advocate for projects that will provide a tangible return to Missouri soybean farmers.

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Casey Wasser serves as the Chief Operating Officer and Senior Policy Director for the Missouri Soybean Association and Merchandising Council. He represents Missouri soybean farmers on policy issues at the state and federal levels.

Want to know more?

MSA will introduce a PAC newsletter this year to send updates on policy and regulatory movement in Jefferson City, Washington, D.C., and anywhere Missouri soybean farmers stand to be affected.

If you've contributed to our state or federal PAC, you'll receive this newsletter with more details on Missouri elections and the role MSA and you can play to impact the outcomes. Visit mosoy.org for details or scan our QR code.

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EPA Considers Pesticide Changes to Set the Clock Back on Improved Tillage, Environmental Practices

By Sen. Jason Bean

State Sen. Jason Bean formerly served on the Missouri Soybean Merchandising Council board and sat on the executive committee for the United Soybean Board.

Agriculture is one of the few industries where America remains the world leader. Our nation is blessed with fertile lands and able hands to work the fields. As a farmer and owner of an agribusiness myself, I understand firsthand how turbulent farm life is. So many factors are constantly working against you – weather, pests, weeds. Of course, farmers are not immune to the challenges facing our entire economy, including the COVID-19 shutdowns and the supply chain crisis.

But despite all these challenges, farmers still get up with the sunrise and go about putting food on the table – for their families and for all Americans. Because of the vital roles that farmers play, the Environmental Protection Agency (EPA) should not change regulations now involving certain pesticides and herbicides. This would only burden both our farmers and the environment itself. The EPA wants to change its regulations on certain pesticides because it wants to go beyond the statutory minimums established by Congress, exacerbating an already unstable supply chain.

Many farmers have already planned the 2022 growing season, and any disruption to the products farmers can use would require them to engage in drastic changes to save their growing season, potentially even resorting to outdated practices that are not the most environmentally friendly. In fact, maintaining access to these herbicides and pesticides is a priority for the Missouri Soybean Association and other agriculture groups around our state.

When working the land, farmers have to be mindful of the environmental consequences of their actions. We have to be. After all, we depend on the land for sustenance, and we care about our impact on our friends and neighbors. We also have to be mindful of the fact that farmers need tools to combat the weeds and pests that threaten to destroy a crop, which is why there is so much research on making pesticides and herbicides more efficient and more environmentally friendly. In fact, pesticides and herbicides have become so efficient that farmers finally began to stop engaging in some practices that were considered harmful to the environment long term, including tilling.

It was only because of modern agriculture products — such as the pesticides the EPA is now threatening to take off the market — that farmers could transition away from tilling. These pesticides already meet the statutory requirements set forth by Congress to be considered environmentally safe, but now the EPA is trying to legislate through the bureaucracies and throw the 2022 growing season into disarray.

The EPA also overlooks the irony that in trying to regulate these pesticides "for the good of the environment," the EPA would be pushing farmers toward engaging in tilling and other outdated practices simply so the farmers can save their growing season. The EPA should rely on the research we have and note that the benefits of these pesticides far outweigh the imaginary harms they may cause. They certainly outweigh the harms caused by tilling. For the sake of our farmers and the sake of our environment, we should maintain the scientific status quo and forgo any bureaucratic change that would harm our environment and further disrupt the supply chain.

A Story of Supply

by Samantha Turner

The partnership between Sipcam Oxon and SOYLEIC will introduce the high-oleic soybean trait internationally and build the supply chain for soy.

Which came first, the chicken or the egg? What came first, supply or demand?

Since its origination, SOYLEIC has been driving demand as a heart healthy, non-GM viable protein source. Today, with growing popularity, SOYLEIC's demand is outgrowing its supply. And, as population and awareness continue to grow, the demand will vastly increase.

In a first-of-its-kind collaboration, Missouri Soybeans and Sipcam Oxon decided to take another approach to the question, "What came first, supply or demand?" Sipcam Oxon is flipping the question on its head and asking what "should" come first, and to them the answer is supply.

With that forethought, the Missouri Soybean Merchandising Council's efforts to grow farmers' return on their soybean checkoff investments has taken another leap forward. In a cutting-edge partnership, Missouri Soybeans has teamed up with Sipcam Oxon to release the first commercial license of the innovative SOYLEIC trait outside of the United States to expand the supply chain.

SOYEIC is an excellent representation of Missouri soybean checkoff research at work. SOYLEIC is a non-GM, high-oleic soybean trait that was patented for use through checkoff funded research. When innovation collides from the cross of two soybean varieties, researchers cannot always foresee how the genetics will combine to produce a new offspring, but by chance with history and knowledge of the parents, researchers found the "potential" of a novel situation and discovered SOYLEIC.

"When farmers think of the soybean checkoff, they should immediately have a vision of the crop growing green in the field. Every part of the soybean plant has been touched in some way by

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"High-oleic soybeans represent a great opportunity to make a substantial step ahead in providing a healthier and more sustainable oil. Combined with good protein levels, high-oleic soybeans can generate multiple benefits to the food market and the environment, to meeting farmers' and processors' needs and the new European guidelines."

-Piero Ciriani

checkoff-funded research, and without research, yield would be abysmal," says Bryan Stobaugh, Missouri Soybeans director of licensing. "Without these critical insights, farmers are looking at beans that are performance negligible, disease ridden and may not even germinate."

The high-oleic soybean trait gives farmers the option of growing soybeans for specific markets. Today, the need for healthy soybean oil has never been greater, and now the traits to produce that oil are available domestically and internationally, thanks to this new partnership with Sipcam.

Sipcam Oxon, headquartered in Milan, Italy, is the first Italian multinational company and one of the world's leading players in the agriculture sector. Founded in 1946, the company is present all over the world both commercially and industrially. It operates in synthesis, registration and development of active ingredients for crop protection products and chemical intermediates. Additionally, the company owns high expertise in formulation, production and distribution of agrochemicals, bio-stimulants and non-GM soybean seed.

"Sipcam has been developing soybeans with unique features — appreciated by farmers and processors — building high value supply chains," says Piero Ciriani, Sipcam's seed business manager. "High-oleic soybeans represent a great opportunity to make a substantial step ahead in providing a healthier and more sustainable oil. Combined with good protein levels, high-oleic soybeans can generate multiple benefits to the food market and the environment, to meeting farmers' and processors' needs and the new European guidelines."

Like Sipcam Oxon, many other feed and food manufacturers are increasingly focused on the sustainability of their operations. SOYLEIC soybeans can fit into these companies' sustainability practices and help them achieve their goals.

SOYLEIC is made from soybeans, grown with advancing sustainability practices. During the past 40 years, soybean farmers have reduced the energy it takes to raise a bushel of soybeans by 35%.

Soybean farmers are committed to raising a sustainable product and continuing to improve their practices to minimize the impact on the environment. SOYLEIC soybeans support farmers' efforts to meet their 2025 goals to reduce land-use impact by 10 percent, decrease soil erosion an additional 25%, increase energy-use efficiency by 10% and lower total greenhouse gas emissions by 10%.

American soybean farmers are using precision agriculture to apply fertilizer only where it is needed; they are increasing soil health by minimizing tillage and adding organic matter to their fields; and farmers are increasing the biodiversity on their farms by incorporating protected acres for wildlife and native plants. Using SOYLEIC helps both farmers and companies, like Sipcam Oxon, meet sustainability promises to customers today and in the future.

Since the beginning of Sipcam Oxon, the main advantage of the organization is its proximity to the world of agriculture and the ability to understand and interpret the needs of customers, using that knowledge to improve, simplify and make the business in agriculture more economic, profitable and productive.

Piero Ciriani with Sipcam Oxom showcases a soybean plant at a field day in Italy.

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Legal Notice To Missouri Soybean Producers

An election will be held to elect four (4) soybean producers to the 13-member Missouri Soybean Merchandising Council, which manages the funds collected through the soybean checkoff program. The terms of office will be for three (3) years and the election will be as follows: four (4) members are to be elected; one (1) each from Districts 1, 2, 3 and 7. Ballots will be mailed by the Missouri Department of Agriculture on March 4, 2022, to each registered producer in the four (4) Districts. Ballots must be returned to the Missouri Department of Agriculture in Jefferson City, by mail, postmarked no later than April 1, 2022.

Any duly registered commercial producer of soybeans is eligible to vote for the Council candidates from his/her District. Producers must be registered to vote. Current registered producers whose address has changed in the last five (5) years should re-register or contact the Missouri Department of Agriculture at 573-751-5611 or P.O. Box 630, Jefferson City, MO 65102 by Feb. 2, 2022, to receive a ballot. Non-registered producers must register prior to Feb. 2, 2022, at the USDA County FSA Office or online at: www.agriculture.mo.gov/councils/ to receive a ballot for this election.

Any qualified producer may be nominated and have his/her name placed on the ballot, provided he/she presents the Director of the Missouri Department of Agriculture a nominating petition signed by at least 100 soybean producers prior to Feb. 2, 2022. Such petitions are available at the Missouri Department of Agriculture in Jefferson City, MO. Please direct any questions to Missouri Department of Agriculture, P.O. Box 630, Jefferson City, MO 65102, or 573-751-5611.

"We are working to involve our partners, farmers, collectors and feed and food processors to explore all the opportunities of the high-oleic soybeans," says Ciriani. "The first goal is to enhance and transfer the quality and benefits of the high-oleic trait along the soy value chain. Our claim is to be a leader in innovation in the non-GM market to support a high-quality, competitive food chain to drive the consumer market."

Consumers are increasingly concerned with knowing what's in their food and where it originated. The identity-preserved systems that help SOYLEIC deliver performance and functionality also enable full traceability from farm to fork.

The discovery of a unique trait in a field of high-oleic soybeans led to the creation of SOYLEIC®. It was not created through gene editing or genetic engineering, making it a non-GM option for high-oleic soybeans. While scientists wholeheartedly agree that GMOs are safe for food use and consumption, consumers want to have choices when making food decisions.

SOYLEIC provides the European Union (EU) a viable non-GM option to remain competitive in the growing food and agriculture sector. SOYLEIC promotes the use of non-GM crops being grown in the EU, which gives Sipcam the opportunity to contract, grow and process SOYLEIC soybean products domestically. Soybean acres are not substantial in the EU, so the acres that are grown need to be planted with innovative technology that can deliver high-quality yields.

"With the growing population around the world, the use of a sustainable crop is pertinent to feed our families, friends and animals," Stobaugh says. "SOYLEIC provides that sustainability, and Sipcam has seen the opportunity and seized it. This is a milestone for Missouri Soybeans as an innovation discovered in the public breeding sector from checkoff funded research."

Additionally, high-oleic soybeans gives the opportunity to regain soybean's part of the oil market for consumption. High-oleic soybean oil carries a qualified Food and Drug Adminastration heart health claim recognizing that it can lower cholesterol and may reduce the risk of coronary heart disease. It also has lower saturated fat and three times the amount of beneficial monounsaturated fatty acids compared to conventional vegetable oils contributing to lower blood pressure and cardiovascular health.

The versatility and neutral taste of soybean oil made it one of the most popular vegetable oils used in food around the world. With bans and regulations around trans fats and partially hydrogenated oils, the introduction of high-oleic soybean oil is a welcomed addition to the food industry. SOYLEIC provides an ideal, easy to incorporate solution for shortenings without partial hydrogenation, eliminating the presence of trans fats. Soybean oil is recognized as a source of omega-3 polyunsaturated fatty acids. Soybean oil is non-allergenic when highly refined – as is common in most food manufacturing applications.

"Without research, education and promotion of our versatile crop would wain and not perform. We have so much to be proud of because of checkoff-funded research that leads to yield and successes. Each time the checkoff collaborates on a project, there is a goal in mind that people have searched long and hard to find the future of soy," says Stobaugh. "Every small item adds up in research, and the checkoff gives us the opportunity to compete, innovate, educate, research and promote one of the most versatile crops on the planet. It is amazing what one session of trial and error in the field can lead to — SOYLEIC."

Prior to this international agreement, SOYLEIC varieties were available in 14 U.S. states.

"SOYLEIC meets the needs of both Sipcam Oxon and the EU to build and expand a supply chain for soy," says Ciriani. "We are proud to be the first international partner of SOYLEIC amplifying the supply of an innovative, high-quality seed to our farmers and consumers."

So, what came first, the chicken or the egg? Actually, the protein found in the eggshell to make it hard is only found in the chicken. So, this means the chicken came first. Now you know!

Find out more about SOYLEIC at soyleic.com.

Missouri's Claim to 'FAME'

by Ron Kotrba, RonKo Media Productions

The American industry of fatty acid methyl esters (FAME), better known today as 'biodiesel,' owes its storied existence to forward-thinking Missouri soybean farmer-leaders.

Had Kenlon Johannes never had his "feathers ruffled" by a research paper more than 30 years ago, the biodiesel industry of today may have never materialized. So claims Alan Weber, an agricultural economist and M4 Consulting Inc. co-founder and partner, who jokes that the former Missouri Soybean Executive Director reading a research paper about developing canola biodiesel was all it took to start "this whole thing."

What Johannes started, of course, was the U.S. biodiesel industry. It provided soybean farmers with a high-volume, value-added use for the mounting stocks of soybean oil accumulating across Missouri and the broader Midwest in the late 1980s and early 1990s. Voluminous oil surpluses were a drag on the whole soybean market, depressing farmgate prices. Food uses for soybean oil — mayonnaise, salad dressing, deep-frying oil and the like — only consumed so much. Something had to be done. And Missouri Soybeans, with Johannes' leadership, did it.

The use of vegetable oil fuel in compression-ignition engines goes all the way back to the late 1800s and Rudolf Diesel himself. However, the U.S. crude oil boom in the early 20th century led to cheap and abundant distillates, sidelining the development of vegetable oil for fuel.

Not until the energy crisis of the 1970s would curiosity in fuel alternatives be reinvigorated in America and abroad. At the University of Graz in Austria, Martin Mittelbach esterified rapeseed and, later, used fryer oils showed promise as better pathways to new diesel fuel alternatives. In the U.S., researchers including Chuck Peterson at the University of Idaho and Carroll Goering at the University of Illinois also began to better understand how vegetable oils could be used as fuels.

The central problem with vegetable oil was that it gummed up engines after prolonged use. Transesterification with alcohol and a catalyst produced fatty acid methyl esters (FAME) or fatty acid ethyl esters (FAEE). This eliminated the problem of gunked-up engines while providing lubricity, an attribute that would greatly benefit the movement in years to come.

Research persisted throughout the 1980s. In 1991, when Johannes heard about this new canola-based "biodiesel fuel," he had a vision of what could be possible for his constituents and their soybeans: soy diesel. With a $22,000 investment, Missouri Soybeans funded a research project by Leon Schumacher at the University of Missouri. The researcher would test and demonstrate this new esterified soybean oil as a diesel fuel replacement in a new Dodge pickup. Although Goering in Illinois had been testing esterified soybean oil, the fuel hadn't been tested in real-world conditions.

Next, Johannes approached serial entrepreneur Bill Ayres, who had been tinkering with biodiesel in Kansas City, and his longtime friend and partner Doug Pickering to see if they'd be interested in making fuel for the project. Ayres ultimately agreed, and the seeds of an American biodiesel industry took root in a trash-can reactor, sump pump and cone-bottom drums.

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OUR SOY CHECKOFF™

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MAINTAINING OUR REPUTATION TO DELIVER

Whether shipping by river, road or rail, *the soy checkoff is committed to ensuring America's infrastructure is a significant advantage for U.S. soybean farmers. We're looking inside the bean, beyond the bushel and around the world to keep preference for U.S. soy strong. And it's helping make a valuable impact for soybean farmers like you.*

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

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An Organized Effort

In 1992, with funding from members of Qualified State Soybean Boards, Missouri Soybeans formed the National Soy Fuels Advisory Committee to further investigate what was needed to get a U.S. soy diesel industry off the ground. Information Resources Inc. was contracted to provide a plan to develop markets and the technical proof, specifications and education needed to build an industry. An important takeaway from this report was that a trade association must be formed to establish the soy diesel sector in America.

In less than a year, the National Soy Fuels Advisory Committee was disbanded to form the National SoyDiesel Development Board. The NSDB was organized with more than a half-dozen states as charter members, each contributing $10,000. Johannes stepped down from Missouri Soybeans to chart the course for the new association, which was tasked with creating a new fuel industry, markets, technical specifications, policy support, and all the testing and demonstrations to buttress these developments.

The new NSDB, which formed in late 1992, didn't spread its wings and fly the nest, though. Rather, it occupied office space in the basement of Missouri Soybeans and was co-located with its "parent" organization for many years in Jefferson City. Johannes continued to secure funding, a major portion of which came from the United Soybean Board.

Early-Producer Nexus

Interest in soy diesel was growing at a fast clip. Ayres and Pickering secured demonstrations with the St. Louis Lambert International Airport, cooperatives, city bus fleets, boaters and even the Sunrider expedition that circumnavigated the globe. Ayres and his company, Interchem, had plans to build a production facility in Kansas City. Scaled at 2.1 million gallons per year, it would have been the nation's first dedicated soy-diesel plant. However, when Ayres learned a nearby Proctor & Gamble plant was already making methyl esters, plans for the new facility were scrapped. P&G began providing FAME for testing and the growing list of demonstrations.

It was around this time that a great nexus took place as those who would become major players in biodiesel would connect. Gary Haer — who would later become a superstar with Renewable Energy Group Inc. (REG), renowned for door-to-door sales of 5-gallon pails of biodiesel — was hired by Interchem. John Campbell of Ag Processing Inc. (AGP), who greatly influenced biodiesel policy, attended Ayres' plant kick-off ceremony for the facility that never came to be. Interchem and what became Midwest Bio-Fuels eventually struck deals with both AGP and West Central Cooperative, the roots of REG, to build what are considered the first dedicated U.S. soy-diesel plants in Iowa.

Another important person in the biodiesel community also intersected with Ayres and Interchem early — Missourian Steve Howell. Working for STRATCO at the time, Howell became immersed in biodiesel. He shared ideas, engineering plans and a FAME pilot plant with Interchem and Ayres. Eventually, Howell and Weber formed MARC-IV (now M4), which stands for "market analysis, research and consulting." Howell worked to secure a fuel specification, a yearslong battle that eventually culminated in ASTM D6751 in the early 2000s.

Ayres also did business in the mid- to late 1990s with Gene Gebolys, founder of World Energy, one of the largest pureplay biobased diesel producers in North America. Gebolys, who many considered tenacious and relentless, was a young up-and-comer in the biodiesel world. He respected what soybean farmers brought to the biodiesel table. According to Ayres, he was selling Gebolys biodiesel and fronted the young go-getter volumes when he was struggling.

The pieces of the puzzle of what would become a uniquely American biodiesel industry were being put into place.

A Feedstock-Neutral Board

In 1994, just two years after its formation, the NSDB made the difficult decision to change its name to the National Biodiesel Board. It did not come without a fight or the possibility of major backlash from soybean farmers, some of whom were skeptical about becoming a feedstock-neutral organization. Those who approved the move realized that if biodiesel took off, they would need everyone and every feedstock onboard to provide the membership funding, political influence, marketing and, of course, the raw materials to see it through.

Johannes eventually stepped down from NBB leadership. Jeff Horvath led the organization for a few years until another Missourian, Joe Jobe, NBB's chief financial officer, took the helm and guided the organization for 15 years.

It was about this time that the all-important health-effects testing was underway, a necessary step toward biodiesel becoming a legitimate fuel in the U.S. per Environmental Protection Agency requirements. After rigorous testing and millions of dollars, biodiesel obtained its legitimacy. Biodiesel producers could either go through the time and expense of doing the same or join NBB and be given access to the data. This began a period of expansive growth for the Missouri-born national trade association and the industry it represented.

Enter the LCA

In the late 1990s, the U.S. Department of Agriculture, in cooperation with the National Renewable Energy Laboratory, performed a lifecycle analysis (LCA) on biodiesel that turned out to be one of the most comprehensive LCAs ever performed. The study cemented biodiesel's position as a sustainable, "green" fuel that significantly reduces greenhouse gases, criteria pollutants such as particulate matter and provides a positive energy balance.

This was an important milestone. When soybean farmers set out to develop biodiesel, carbon reduction wasn't even on the radar. Now, the most comprehensive LCA in existence showed biodiesel significantly reduced carbon emissions compared to petroleum diesel.

continued on page 20...

The Gold Rush

Still, the industry of biodiesel production was largely undeveloped. After nearly a decade of lobbying, a $1 per gallon tax credit was implemented in 2005, and everything changed. In 2007, the second installment of the federal Renewable Fuel Standard was signed into law. It included categories for advanced biofuels and biomass-based diesel. Although it took a few years to go into effect, the policy provided domestic demand after Europe imposed hefty tariffs on U.S. biodiesel, which was the major market for American biodiesel at the time.

Since then, the biodiesel industry has grown to a national capacity of roughly 2.5 billion gallons annually. Missourians including Johannes, Weber, Jobe, Howell and others helped fulfill a vision that soybean leaders had to develop, grow and sustain a high-volume, high-value commercial industry to provide an outlet for soybean oil.

Changing Dynamics

Interestingly, when biodiesel was being developed in Missouri, increasing energy independence and bolstering rural economies and farmgate prices were definite goals. When the fuel's ability to reduce criteria emissions such as carcinogenic particulate matter was discovered, it was seen as a tremendous benefit to urban communities in fleets like transit buses.

Once the comprehensive LCA was completed in the late 1990s, another important societal attribute was added to biodiesel's repertoire. Its ability to cut greenhouse gas emissions from the hard-to-decarbonize heavy-duty sectors was recognized. Today, whole sectors, such as the heating-oil industry, are relying on biodiesel to sustain existence in a carbon-constrained world.

In 2022, the National Biodiesel Board celebrates its 30th anniversary. With the milestone comes a new name and an expanded vision. As Clean Fuels Alliance America, the association will further grow its reach into Canada and now include biodiesel, renewable diesel and sustainable aviation fuel (SAF).

Virtually all growth and interest in the biobased diesel sector during the past few years has been in renewable diesel and SAF. The U.S. Energy Information Administration forecasts that the U.S. renewable diesel sector alone will hit more than 5 billion gallons of productive capacity by 2024. That doubles what the biodiesel industry took 30 years to build — and only in just a fraction of the time. Meanwhile, through its SAF Grand Challenge, the federal government is pushing for domestic SAF production of 3 billion gallons a year by 2030 and 35 billion gallons a year by 2050.

The ability of renewable diesel and SAF to grow would not have been possible without the three decades of groundwork laid by biodiesel, NBB and the vision of Missouri soybean farmers. Where the next 30 years will take the Missouri-based association and the industry it built is unknown. However, the future appears to be one that will leverage the significant environmental, health, economic, agricultural and security benefits of biodiesel, renewable diesel and SAF for the betterment of society and the climate.

To celebrate its 30th anniversary, NBB commissioned Kotrba to write "The Birth of American Biodiesel: Biographical Accounts Celebrate 30 Years of Pioneers, Leaders, and the Bold Vision of the National Biodiesel Board." The history book made its debut at the 2022 National Biodiesel Conference & Expo.


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Sustainability Crossword Puzzle

Play the Sustainability Crossword Puzzle below and watch for the Missouri Soybeans' Activity Book, coming to schools in early 2022!

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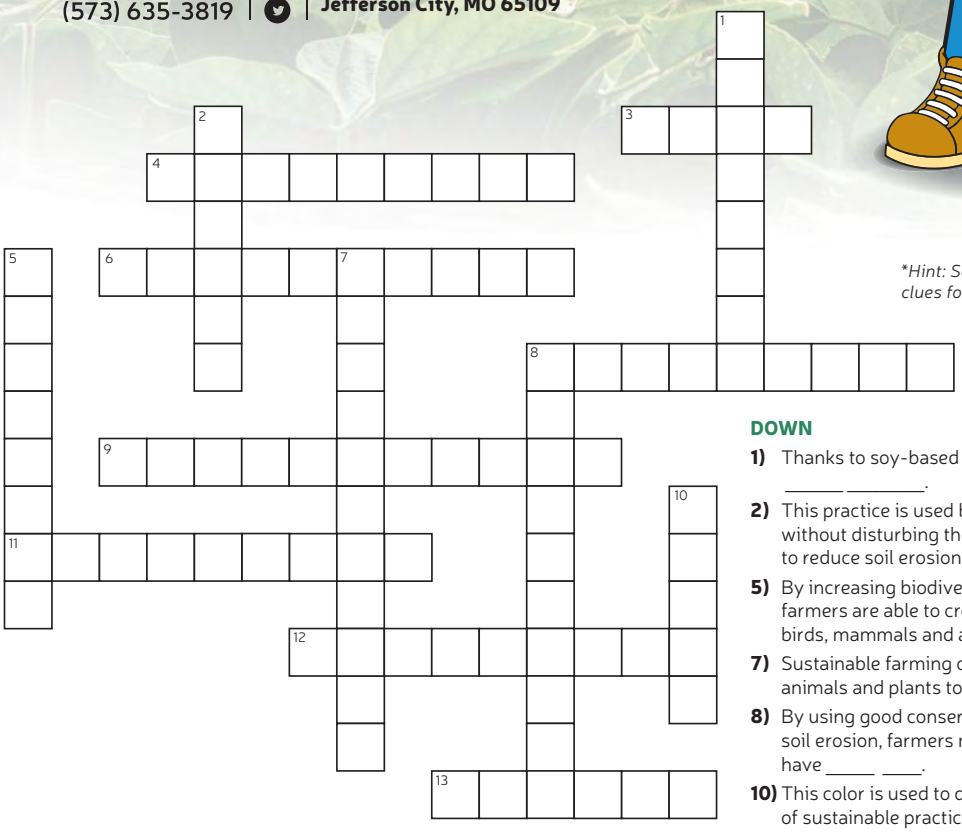

**Hint: Some answers are two words, the clues for those will show two spaces.*

ACROSS

3) Pollinators known for making honey, creating quite the "buzz" for farmers.

4) Something harmful to the environment, commonly by air or water. Farmers are able reduce this by using biodiesel, conservation practices and abiding by the 4Rs.

6) Farmers use no-till and cover crops to improve ____ _____ on their farm.

8) Farmers plant these to keep nutrients in the soil before and after their cash crop.

9) These important pollinators give farmers an indication about their biodiversity based on their presence and population on the farm.

11) Farmers are able to reduce their carbon _____ by a number of ways, including making fewer passes in the field.

12) A type of resource that is created from another resource, or one that can be continually replenished without using all of it.

13) Farmers are improving air quality and soil health by taking this element from the air and putting it back into their soil.

DOWN

1) Thanks to soy-based biodiesel, we breathe more _____ _____.

2) This practice is used by farmers for growing crops without disturbing the soil through tillage. It's a great way to reduce soil erosion and create organic matter.

5) By increasing biodiversity habitats around their fields, farmers are able to create more abundant opportunities for birds, mammals and all types of _____.

7) Sustainable farming creates a healthy _____ for people, animals and plants to live and enjoy in the future.

8) By using good conservation practices and reducing soil erosion, farmers make sure rivers and streams have _____ ____.

10) This color is used to describe all types of sustainable practices, on and off the farm.

ANSWERS
Across
3) Bees
4) Pollution
6) Soil health
8) Cover crop
9) Butterflies
11) Footprint
12) Renewable
13) Carbon
Down
1) Clean air
2) No-till
5) Wildlife
7) Environment
8) Clean water
10) Green

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FLOUR POWER

by Jason Jenkins, Mill Creek Communications

Tiger Soy turns Missouri-grown soybeans into protein-packed food.

Soybean producers don't always know their crop's final destination. Once those beans are unloaded at the local elevator or river terminal, there's no telling where they'll end up or what they'll become.

However, for farmers within a 30-mile radius of Mexico, Missouri, there's a good chance that some of their soybeans are being turned into protein-packed food destined to help nourish the world's most vulnerable populations.

Since the spring of 2020, Tiger Soy LLC has produced high-quality, food-grade soy flour at the Missouri Plant Science Center, located just off Highway 54. Most of that flour currently is used in the formulation of Corn Soy Blend Plus, a fortified food product distributed by the U.S. Agency for International Development (USAID).

According to the United Nations' Food and Agriculture Organization, between 720 and 811 million people worldwide faced hunger in 2020. Nearly one in three — some 2.37 billion people — didn't have access to adequate food. Helping those people while simultaneously expanding markets for agricultural commodities has been the goal of Public Law (P.L.) 480 since the legislation was signed by President Dwight D. Eisenhower in 1954.

"Tiger Soy is really a direct result of our participation in the P.L. 480 program and the production of Corn Soy Blend Plus," says Adam Thomas, commercial director for Tiger Soy and SEMO Milling LLC, a food-grade dry corn mill located in Scott City, Missouri. "We identified the need to vertically integrate our business and produce our own soy flour."

SEMO Milling initially considered building a soy flour mill in Scott City before learning that the Missouri Plant Science Center was available. The University of Missouri, Missouri Technology Corp. and the city of Mexico opened the center in 2011 as a joint venture business incubator. SEMO Milling invested roughly $4.5 million in the facility, adding the equipment necessary to turn soybeans into food-grade soy flour.

Currently, Tiger Soy is producing two types of soy flour, which Thomas says are distinct in the industry because they contain higher percentages of fat. Most commercially produced soy flour contains less than 1% fat and is referred to as "defatted."

"They use a solvent extraction process to pull out all of the oil that they can, but we don't do that," Thomas explains. "Our low-fat soy flour contains 5%-6% fat, and our full-fat flour has 11%-12% fat. Both products still have total protein that's 40% or higher. That extra fat allows us to make a better mix for Corn Soy Blend Plus."

Every 100 pounds of soybeans processed at Tiger Soy produces 72 to 74 pounds of soy flour. "When you add in the oil we process, our total yield is roughly 92 to 94 pounds of sellable product," Thomas adds.

In the future, Tiger Soy plans to expand its offerings to include low-fat and full-fat soy flours processed from conventional, non-GM soybeans as well as organic soybeans. The goal is to source 100% of the company's soybeans directly from farmers.

"Eventually, in the food-grade space, traceability will be the issue," Thomas says. "So, we'll want to know where exactly those beans came from and be able to trace the finished flour all the way back to the farm."

While the P.L. 480 program represents an important component of Tiger Soy's current business, the company intends to continue to expand its reach into the private marketplace.

"There are so many things being done in the baking industry right now as consumers seek out gluten-free options," Thomas says. "They're taking different flours — whether it's corn, soy, rice or chickpeas — and blending those together to create products that still taste like traditional wheat products. Soy flour demand is growing faster than supply, so it's exciting to have the ability to make that high-quality soy flour here at Tiger Soy."

Tiger Soy employee Thomas Blackburn uses a forklift to move a 1,000-pound sack of soy flour.

Adam Thomas, Tiger Soy's commercial director, stands on the floor of the processing facility in Mexico, Missouri. The mill processes roughly 5,000 pounds of dehulled soybeans per hour.

SPOTLIGHT ON SOYBEANS

Dylan Anderson Joins the Missouri Soybeans Team

Missouri Soybeans welcomed Dylan Anderson to the team full time after a year of service to the organization as an intern. Anderson is taking the role as the new field services coordinator, working to establish relationships with farmers across the state.

"Dylan will prove to be a valuable asset to the Missouri Soybeans team," said Gary Wheeler, Missouri Soybeans CEO and executive director. "With Dylan, our organization can put more miles on the road, meeting farmers where they are at – whether that is in the field or at an industry meeting. Dylan will work strategically to anticipate and gauge farmer needs, concerns and more."

Anderson will serve as a liaison to Missouri soybean growers and work to promote a greater awareness of Missouri soybean farmers and their checkoff. Anderson will manage the Missouri Soybean Association's membership and grassroots network, with a goal of continued growth in both areas.

Anderson will build out the newly developed outreach and education program under the guidance of that program's director, Baylee Siegel.

"Dylan is the prime example of checkoff dollars at work," Siegel said. "His primary role is working to serve the Missouri soybean grower and amplifying the role the checkoff plays for our producers from state line to state line."

Anderson is a recent graduate of the University of Missouri, where he received bachelor's degree in agribusiness management. He grew up in Centertown, Missouri, on his family's produce farm where they grow tomatoes, melons and onions.

New field services coordinator, Dylan Anderson, meets with farmer-leader Robert Alpers at his operation.

SPOTLIGHT ON SOYBEANS

United Soybean Board Elects Meagan Kaiser as Vice Chair

Farmer-leaders of the soy checkoff elected Meagan Kaiser as the new Vice Chair for the United Soybean Board (USB). Meagan will serve alongside 10 other farmers on the executive committee for the board.

"I'm honored and look forward to serving on the national checkoff in this role, proudly representing Missouri," Kaiser said. "As we launch into our new strategic plan and review proposals that expand markets for U.S. soy, from animal diets to energy sources to plastic, I'm eager to move our vision forward of delivering sustainable soy solutions to every life, every day."

Key successes from USB in 2021 include U.S. soybeans being used as an ingredient in more than 1,000 different products. Notably, Goodyear Tire & Rubber Co. announced a new sustainable soybean oil procurement policy increasing market potential for soybeans. Additionally, a checkoff-funded rural broadband report led to 15 recommendations for delivering high-speed internet needed by farmers and rural communities. This on top of record export volume for the 2020/21 marketing year, because of strategic efforts to diversity international markets.

"Generations of U.S. soybean farmers will benefit from this progress and investment decisions made by the checkoff's volunteer farmer-leaders," said Polly Ruhland, USB CEO. "The foresight of this board is reflected in its collective efforts to continue mapping a production and delivery path for sustainable U.S. soybeans globally on behalf of more than 515,000 U.S. soybean farmers."

The mission of the soy checkoff is to create value for U.S. soybean farmers by investing in research, education and promotion of U.S. soybeans.

ASA Elects Ronnie Russell to 2022 Executive Committee

The American Soybean Association (ASA) elected leaders who will steer the organization through a new year of soybean policy advocacy, including planning for the 2023 U.S. Farm Bill and other soy priorities.

During the annual meeting, ASA leadership selected Missouri farmer-leader, Ronnie Russell to serve as an at-large member on the committee. Ronnie served in this position previously and led the Missouri Soybean Association as its board president.

"The ASA Board of Directors has voted for a strong executive committee going into 2022, and Ronnie will be a key part of that body that guides ASA's direction throughout the course of the year," said Stephen Censky, ASA CEO. "He brings with him great enthusiasm for soy advocacy and also the experience of having served on this committee in years past."

Brad Doyle, a farmer from Arkansas, will serve as 2022 ASA president. Doyle previously served as ASA vice president, secretary and as an at-large member of the ASA Executive Committee. He has been on the ASA board of directors since 2017.

"I am always looking to give back to an industry that has given me so much," Russell said. "I am honored to be a part of the executive committee and certainly look forward to representing the state at the national level.

ASA is leading the leading soy policy advocate and most sought-after partner and adviser advancing the success and prosperity of U.S. soybean farmers.

Creating a Sustainable Legacy Through Biodiversity

by Samantha Turner

With words like biodiversity and carbon markets trending, farmers are working to implement traditional methods of sustainability to foster environmental development.

Producers and consumers alike are always searching for ways to create a more environmentally friendly ecosystem. For producers, this often starts with improving soil health. Soil is the key to maintaining ecosystem function and biodiversity on farmland, both from a plant and animal standpoint. The ecosystem and natural resource benefits that farmland provides also directly benefit our local communities and society. Improving carbon footprints, water quality, water use conservation, biodiversity and wildlife habitat all fall into place when we take an ecosystem-focused approach to conservation. With approximately 70% of U.S. land in private ownership, America's farmers and ranchers are key to creating solutions to address challenges to our nation's natural resources.

Agriculture's role in ecosystem markets and carbon is a hot topic for discussion as new opportunities emerge. Like many, soybean growers want to create a sustainable legacy to pass on to future generations. To ensure farmers leave their land in better condition than they received it, Missouri soybean and corn farmers are spearheading a new opportunity to expand pollinator and wildlife-friendly landscapes through a first-of-its-kind pilot project, quantifying and certifying biodiversity credits as part of the Ecosystem Services Market Consortium's (ESMC) national ecosystem services market program.

"This project is critical to not only Missouri agriculture, but our state's natural resources for decades to come," says Tim Gottman, a Missouri soybean farmer from Monroe City and Missouri Soybean Merchandising Council demand committee chair. "Biodiversity provides a healthy, functioning operation supplying oxygen, clean air, fresh water, pollination of plants and pest control."

Ecosystem credits can come in different forms, including carbon, water quality and biodiversity. All are a non-tangible ecosystem-based asset generated from quantifying the environmental benefits resulting from conservation improvements made on the farm. Through ESMC's ecosystem market program, credits can now be earned, deposited, sold or traded. For example, carbon credits can be generated by farmers who implement management practices on the farm that increase soil carbon sequestration and/or reduce greenhouse gas emissions from their farms. This exchange presents farmers with an opportunity to be compensated for adopting farming practices that create real change and produce environmental benefits.

For this pilot project, Missouri farmers whom are interested or already working to create or enhance pollinator habitat within existing or new field borders, buffers, waterways or other non-productive agricultural ground are eligible and encouraged to contact Missouri Soybeans staff.

Once credits are quantified, verified and certified, ESMC makes the credits available for purchase to interested buyers.

Who are the interested buyers you ask? Private and publicly traded companies from all industries are seeing strong pressure from the public, shareholders, competitors and public officials from around the globe to improve their environmental footprints. Greater focus from investors on environmental, social and corporate governance (ESG) goals are pushing companies to look more closely at the carbon footprint of their operations as well as their supply chains. For food and beverage companies, this hits home quickly as it requires them to assess and address challenges about how agriculture production and the commodities they buy impact the carbon intensity of the products they sell to consumers.

"Credits are most often thought of as any tradable certificate that represents a unit of pollution reduced," says Clayton Light, Missouri Soybeans conservation programs manager. "With a biodiversity credit, it is not so much a unit of pollution reduced, but more of a certificate that represents a measured positive benefit of a conservation practice that benefits the ecosystem. For this pilot, we have focused the biodiversity credits on pollinators."

This innovative project was launched in partnership with Missouri Soybean Merchandising Council, Missouri Corn Merchandising Council, Missouri Department of Conservation, MFA Incorporated, Pheasants Forever/Quail Forever and the Ecosystem Services Market Consortium. These powerhouse organizations are providing farmers with an opportunity untapped by even some of the largest Fortune 500 companies. This collaborative partnership opens doors and expands upon ongoing work with carbon markets.

"This two-year biodiversity credit pilot project will benefit

continued on page 28...

the natural resources of our state while recognizing the efforts of farmers working to improve sustainability practices on their farms," says Light. "Many of the conservation practices also provide soil health benefits, reduce erosion, improve water quality and capture carbon in the environment. It is exciting to offer farmers the opportunity to participate in a new, voluntary private market program designed to help improve the land and wildlife habitat for future generations."

Corn and soybeans are the most widely grown crops in North America. Though not essential to corn and soybean production, pollinators like native bees commonly forage in these fields. As more farmers continue to adopt precision technology to better utilize productive acres, information from the biodiversity pilot project can help make informed decisions on land management in less productive areas.

"Agriculture can play a key role in increasing the diversity, quality and quantity of pollinators and wildlife," says Bill White, community and private land conservation branch chief with the Missouri Department of Conservation. "By incorporating certain practices on areas of the farm otherwise not used in production, farmers can help provide for species such as monarch butterflies, bobwhite quail, migrating grassland birds and native bees while supporting sustainable agricultural systems."

The Missouri biodiversity pilot project is the latest in a portfolio of more than 10 projects ESMC has launched to test and refine its market program for full market launch in 2022. The pilots test ESMC's processes for credit generation and sales, ensuring all other program aspects are operational and meet grower and buyer needs.

"Our members have asked for opportunities to invest in increasing biodiversity through their agricultural supply chains," notes ESMC Executive Director Debbie Reed. "Through ESMC's unique nonprofit public-private-partnership, we're creating an opportunity to increase biodiversity while adding to the current demand for carbon, water quality and water conservation credits. Our ability to stack credits and compensate farmers and ranchers is a value-added opportunity for all our members."

If we are looking to create a sustaining impact on our ecosystems, look no further than production agriculture. Farmers can play a vital role in increasing diversity, quality and quantity of pollinators and wildlife. And, in return, support a strong, prosperous agricultural system.

"This program not only helps us build a lasting legacy and thriving operation, but it aids in shifting the narrative that farmers are in fact focused on cultivating the best practices on their land with an environmentally conscious mind," says Gottman. "Having fields enrolled in the ESMC's carbon pilot and making practice changes such as cover crops is highly important to our soil-health goals on the farm. Now, using conservation practices such as field buffers planted to diverse pollinator seed mixes continues to strengthen our soil health and can increase biodiversity around our fields."

For this program, there are no minimum acreage limits, although it is recommended that the farmer enrolls on continuous acres across a set of fields. Farmers can choose to phase in more acres over time, but during this biodiversity pilot, there will be a limited number of total acres that can be enrolled. In the pilot project, the farmer contracts with ESMC for the length of a two-year project. At the conclusion of the pilot, farmers may have the option to enroll into a five- or 10-year contract. There is no cost to the farmer to enroll in the pilot.

The two-year pilot project began in November 2021 and is slated to continue through 2023.

Missouri farmers interested in learning more about the pilot biodiversity project and creating pollinator-friendly landscapes in tandem with the current carbon pilot program are encouraged to visit www.mocarbonpilot.com.

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Grain Bins & Grandkids

Long-time farmer-leader, Robert Alpers, shares his favorite memories of farming and advice for the next-generation.

Q: Tell us a little about yourself.

A: I'm a generational farmer and grew up farming with my dad and two brothers. Today, I farm with my son, Nathan, who operates the family business. I'm happily married to my wife, Kathy, and have three children, Shanna, Nathan and Heather. I am a proud grandpa to Austin, Dillon, Paige, Ethan and Kaylee.

Q: Tell us about your farm.

A: My family raises corn, soybeans and mama cows.

Q: What is your involvement in agriculture?

A: I currently serve as a board member on the Missouri Soybean Merchandising Council, where I was previous chairman. I was also in the Agriculture Leaders of Tomorrow (ALOT) program. In my rural community, I am a member of the First Baptist Church, Lions Club and the Cooper County Ambulance Board.

Q: Tell us about your favorite memory on the farm.

A: I enjoyed the simplicity and slower pace of farming in the '60s and '70s. We worked harder, but the days were simpler – I miss it.

Q: What is your favorite planting or harvest snack?

A: Chex Mix

Q: How do you take your coffee?

A: With cream and sweetener

Q: What are you listening to while working?

A: Talk radio

Q: Should tractors be red or green?

A: Anymore, I am just glad they start in the morning, but I prefer the green ones.

Q: Who is your biggest influence?

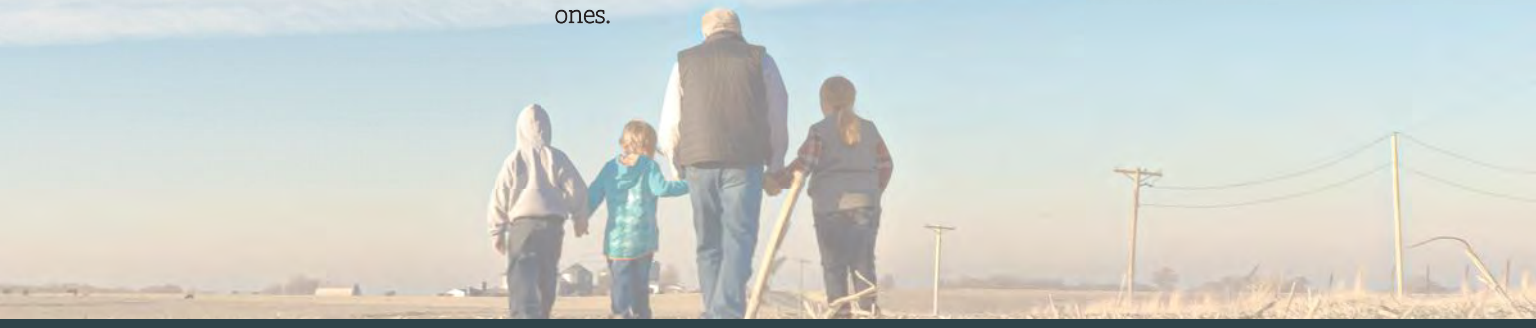
A: I lean heavily on my faith, wife and family.

Q: What would you tell your kids, or other next-gens to encourage them to be involved in agriculture?

A: Being involved in agriculture is laborious but rewarding. Next-generation farmers need to establish a good work ethic early in life and be willing to learn. I encourage young farmer-leaders to think outside of the box and be willing to change or change will pass you by.

Q: Do you incorporate any sustainable practices on your operation?

A: Yes, sustainability is an integral piece of our operation. We implement cover crops, no-till, terraces and waterways. Additionally, we rotate crops each season. This year, we are going to start incorporating some border work.

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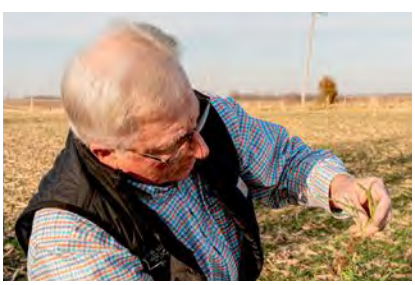

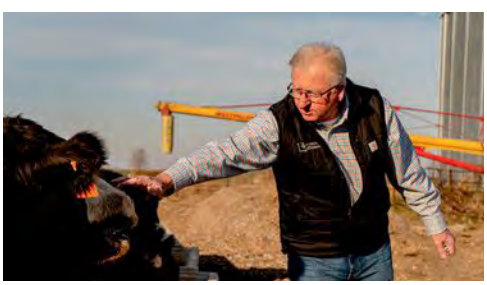

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