

SPRING 2020

# SOYBEAN NEBRASKA

A Publication of the Nebraska Soybean Association and the Nebraska Soybean Board

## REINFORCING RESEARCH

The Research Issue: Read the latest in production research, from local soybean gall midge to rural broadband, on **pages 12-21**.

**23** | National Biodiesel Conference & Expo highlights upcoming trends.

**27** | Using CropWatch: Tap into Nebraska Extension's news and research hub.

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The Nebraska Soybean Association (NSA) and the Nebraska Soybean Board (NSB) are proud to share the FY20 Spring edition of this publication with you—members of our shared community.

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The Nebraska Soybean Board is a private, nonprofit checkoff board is responsible for the research and promotion of soybeans in an effort to increase the profitability of the state's 22,000 soybean producers.

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## On The Cover

Aerial photo of diagnostic clinic training plots at the University of Nebraska Eastern Nebraska Research and Extension Center (ENREC) near Mead, Nebraska.  
Credit: ENREC

## Note from the EXECUTIVE DIRECTOR



By Victor Bohuslavsky

This SoybeanNebraska issue reports on some of the research investments made with your soybean checkoff dollars. Production research is at the top of the Board members minds when it comes to solving some of the problems with soybean diseases, pests and tough weeds. Finding management solutions to these challenges is to benefit you, the Nebraska soybean farmer.

This is my last article that I am writing as the executive director of the Nebraska Soybean Board. I am retiring from the position and Scott Ritzman will be taking over as executive director. I have had the pleasure to work for very good farmer leaders as Board members. I enjoyed working with a dedicated and supportive staff for the soybean industry.

Last year the soybean checkoff celebrated 25 years since its inception as a part of the 1990 farm bill. This has been a huge success story for Nebraska soybean farmers. We grow twice as many soybeans today and find markets for them through exports, feeding livestock and poultry operations, energy, industrial uses and the human food industry. I am proud of what this Board has accomplished in biodiesel, Soybean Management Field Days, the See For Yourself program, student education initiatives, export programs with aquaculture, and cutting edge research. Past and present Board members should be recognized for this success story.

## View from the Chair

# DOING OUR HOMEWORK ON SOYBEAN STUDIES

By Eugene Goering  
Nebraska Soybean Board Chairman, Columbus



## A lot goes into vetting and selecting NSB-funded research.

The March Nebraska Soybean Board meeting is focused on selecting this year's research projects. It is one of our longer, busier meetings and definitely requires the most homework beforehand. Our process starts long before March.

The board has previously sent out requests for research projects to the University of Nebraska–Lincoln (UNL) in soybean production, current issues producers are dealing with and new uses. We invest in a large, successful soybean breeding program at UNL. As these requests are sent out, the researchers develop projects. The researchers write a plan and budget, including who the principal researchers are, and while most are one-year projects, some extend to two- or three-year agreements.

As the projects come in, retired UNL professor Dr. Jim Specht helps review and sometimes refine them. The board has also arranged for some industry leaders to evaluate and score each project on relevance, strengths and weaknesses, and they submit their reviews to our staff. Each board member also reviews and scores projects and submits it to staff. The staff compiles all the reviews.

At the March meeting we go through all the projects together—industry leaders, staff and board members—and share our ideas and thoughts. After all these steps, we vote as a nine-member board and select the projects to fund. Some are sent back to be modified and may be acted on at a later meeting.

As a board member, I appreciate the diligent work put in by researchers, Dr. Specht, industry reviewers and our staff and board. It goes to show we are truly investing your checkoff dollars to make soybean producers more productive and profitable!

**P.S.** On a personal note, my wife Sheila and I are volunteering for the 2020 Cattlemen's Ball, a cancer research fundraiser for the University of Nebraska Medical Center in June on a farm just north of Columbus. Tickets are now on sale and donations are being accepted at [CattlemensBall.com](http://CattlemensBall.com).

## Thank You, Victor!

Victor Bohuslavsky has dedicated more than 30 years to the Nebraska soybean industry!

Victor retires as executive director of the Nebraska Soybean Board (NSB), a position he has held for the past 21 years. He first began working for the Nebraska Soybean Program over 31 years ago in 1988.

The NSB members and staff want to thank Victor for his years of leadership and dedication to finding success for Nebraska soybean farmers. We wish you a happy retirement!

From the Association

# SOYBEANS IN THE SPOTLIGHT

By Shane Greving, NSA President



Greetings soybean producers and industry partners,

As a soybean farmer and president of the Nebraska Soybean Association, I realize and fully understand the issues the soybean industry faces from the local level up to a global scale. Having recently returned from the LEAD International study tour, I have seen firsthand our global competition at work in Brazil.

As we reflect on the 2019 growing season, it was one for the record books and one I will never forget. It started with the bomb cyclone and all the flooding, starting in the spring and lasting well into the summer and fall. Many acres of soybeans were never able to be planted in 2019.

Through all the challenges Nebraska soybean farmers faced, I think it turned out better than expected and we worked our way through tough times. Repairs and recovery from the flooding will take some time, but many of the assistance programs out there have helped several along the way to rebuilding.

As we look into 2020 we have many positive things going for soybeans. President Trump signed the USMCA trade agreement, which is good to have with our neighbors to the north and south. Another win for soybean growers was President Trump signing the phase one trade deal with China—it has been a long and tough road but now it is moving forward. We continue to work with the administration and Congress to resolve the outstanding tariff issues with China.

The NSA has worked with our state legislators and other state agriculture groups for many years to get meaningful property tax relief for all Nebraskans. The 2020 legislative session has produced several property tax bills such as LB 974 that would get some property tax relief coming our way. We continue to be engaged in discussions as LB 974 works its way through floor debate. Coming up with the perfect bill to fix our property tax issues will continue to be a work in progress in the years to come. We are very hopeful this short legislative session with our state senators and the governor will get the job done and agree on a property tax bill to bring relief. I encourage you to get involved and stay connected with your state senator—they need to hear from their constituents and understand how the issues will impact your family and farm operation.

I wish you a safe and productive planting season this spring.



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A member-driven, grassroots policy organization that represents U.S. soybean farmers

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Teri Zimmerman ..... Staff Writer

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## NSA Membership Matters

The Nebraska Soybean Association awarded member Mark Petri (pictured left) a certificate towards the purchase of a set of Goodyear Assurance WeatherReady Soybean tires during a membership drawing at the Husker Harvest Days farm show in September. Over the past six years, the soy checkoff worked with Goodyear to develop soy-based technology adding performance to road tires, and this new technology is now used in the Assurance WeatherReady tire.



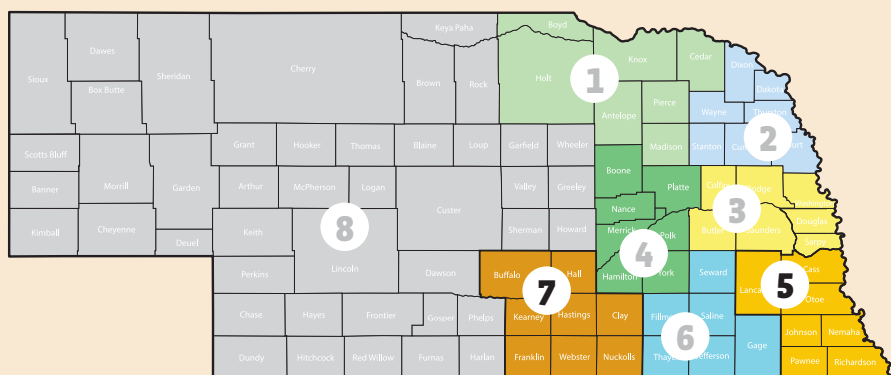


## Soybean Farmers:

# YOU ARE THE VOICE OF YOUR DISTRICT.



## LET IT BE HEARD DURING THE 2020 BOARD MEMBER ELECTIONS.



Nebraska Soybean Board District Map

The election is conducted by mail-in ballot in July for Districts 5 and 7. Soybean farmers who reside in counties that are up for election in 2020 will receive ballots and candidate information regarding NSB's election process via direct mail. The At-Large position on the Nebraska Soybean Board is open to all soybean farmers in Nebraska and will be elected by the NSB members at the July board meeting.

### Election districts and counties are:

- ✓ District 5: Counties of Cass, Johnson, Lancaster, Nemaha, Otoe, Pawnee and Richardson.
- ✓ District 7: Counties of Adams, Buffalo, Clay, Franklin, Hall, Kearney, Nuckolls and Webster.
- ✓ At-Large: All counties in Nebraska.

### To apply for a Candidacy in District 5 and 7 or the At-Large Position you must:

- ✓ Obtain a NSB Candidacy Petition by contacting NSB's executive director at (402) 432-5720.
- ✓ Complete the petition and collect the signatures of at least 50 soybean farmers in their district.
- ✓ Return petition to NSB office on or before April 15, 2020.

## Nebraska Residents Cast the Deciding Vote

Our shared soybean farmer community determines electoral winners. These voters must be:

- ✓ Nebraska residents.
- ✓ District 5 or 7 residents.
- ✓ Soybean farmers who:
  - Own or share the ownership and risk of loss for such soybeans (by reason of being a partner in a partnership), or
  - Are a shareholder in a corporation or member of a limited liability company during the current or immediately preceding calendar year.

### Election Schedule



**Districts 5, 7  
& At-Large**



**Districts 1, 3 & 6**

### Election Calendar:

#### APRIL 15, 2020

Candidacy petitions due to NSB office.

#### JULY 2020

Ballots mailed to eligible voters.

#### JULY 31, 2020

Final day to return ballots for consideration.

#### OCT. 1, 2020

Newly elected board members' terms begin.

**Reach out to the NSB team  
for more information at  
402-441-3240.**

## Get to Know Your

# BOARD MEMBERS

**JASON  
PENKE**



**District 2 Board Member**  
Craig, Nebraska

### What does your farming operation look like?

I am a fifth-generation farmer, and we have had some land in our family for over 140 years. Our operation consists of soybean and corn acres along with a small cow/calf herd and a few hogs. I farm with my parents, and my wife is the ag instructor at Oakland-Craig High School and we have three boys.

### How has your operation adapted over the years and how is it approaching the future?

Regarding sustainability, we have used no-till practices on our operation for about 30 years. Utilizing new technologies to control weed pressure, along with variable-rate technologies in our planting and fertilizer applications, have helped and will continue to help us in the upcoming years.

### What is an important benefit the Nebraska Soybean Board provides farmers across the state?

Utilizing the checkoff funding to help better soybean

research and marketing in Nebraska is a huge benefit to soybean farmers across the entire state.

### As a board member, what is a goal or area of the checkoff that you are excited about getting involved in?

I am most excited about education for our present and future generations. Soybeans are a phenomenal plant with so many uses that many don't know about, and education is a great way to show the value of the soybean to people.

### In one sentence, why do you farm?

I enjoy working with my family while being out in the country.

### What is one thing that amazes you about the power of soy?

How many ways the soybean can be utilized and the vast amount of products that are being produced from soybeans.

**CLAY  
GOVIER**



**District 8 Board Member**  
Broken Bow, Nebraska

### What does your farming operation look like?

I am the fifth generation on our family's farm and I work with my dad and brother. Our farm consists of growing corn, soybeans, yellow peas and forages.

### How has your operation adapted over the years and how is it approaching the future?

We have transitioned almost completely to no-till and have added different crops into our cropping rotations. We also seed cover crops to improve soil health and suppress weeds. Continuing to increase the diversity on our farm will help make our operation more resilient to market conditions and Mother Nature.

### What is an important benefit the Nebraska Soybean Board provides farmers across the state?

The Nebraska Soybean Board is an advocate on behalf of Nebraska farmers whether it's educating soy consumers or working to build export markets.

The Nebraska Soybean Board builds demand so that Nebraska farmers can focus on building supply.

### As a board member, what is a goal or area of the checkoff that you are excited about getting involved in?

I'm really excited about being a part of our international marketing efforts. I believe that diversifying U.S. export markets will be critical to supporting Nebraska farmers in the long run.

### In one sentence, why do you farm?

I enjoy the opportunity to work with my dad and brother every day and continue what the generations before us built.

### What is one thing that amazes you about the power of soy?

I'm always amazed at the versatility of soy. We can create a variety of foods using soybeans and the oil can improve everything from rubber tires to the diesel we use in our tractors.



Nebraska Soybean Board

# FINANCIAL BREAKDOWN

FOR FISCAL YEAR 2019

## FUNDING REVENUE



Checkoff Assessments

**\$6,089,239**



Miscellaneous

**\$127,599**



Interest

**\$65,109**

Total

**\$6,281,947**

NET ASSETS

Year Beginning October 1, 2018

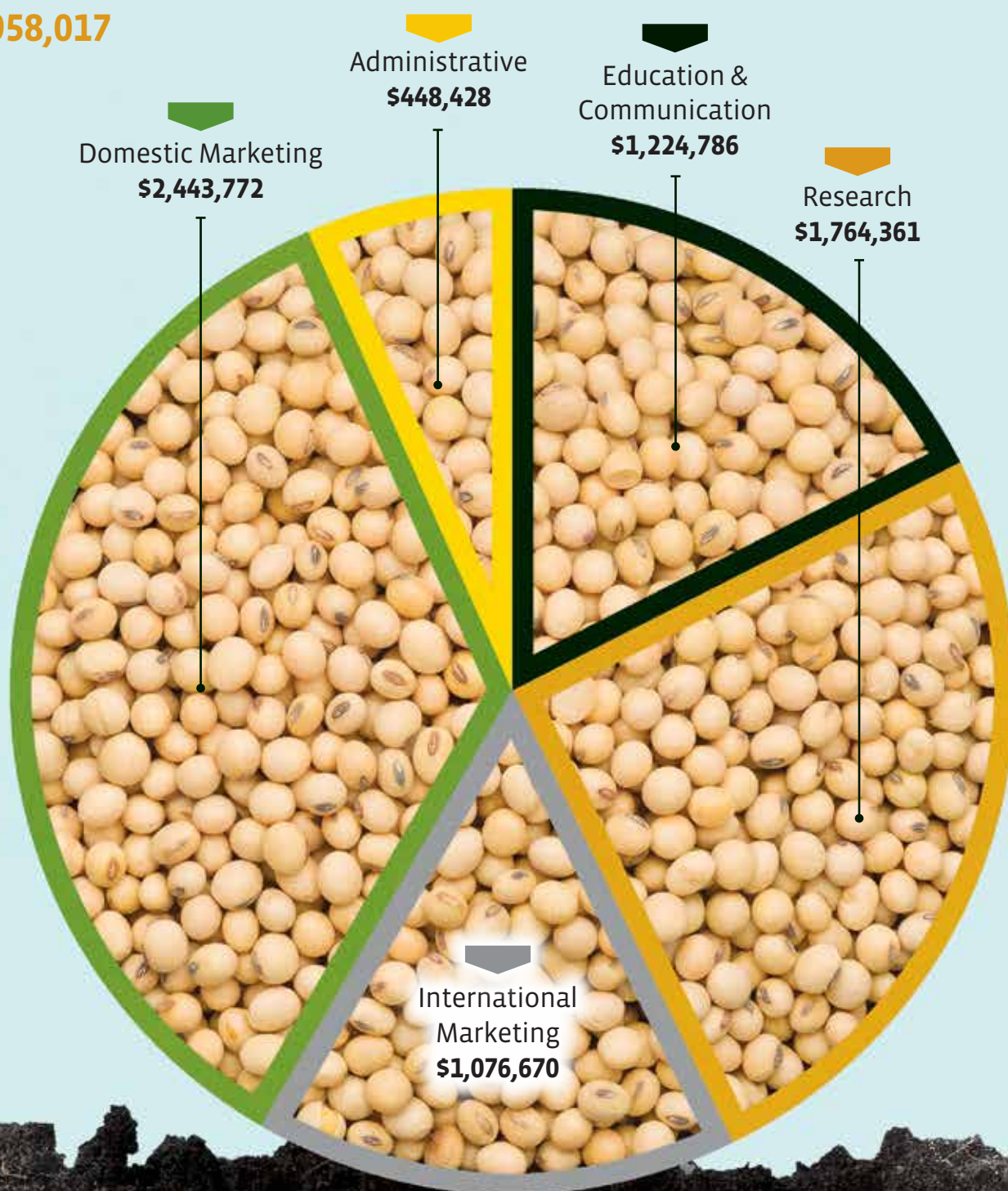
**\$6,790,074**



## FUNDING DISBURSEMENTS

Total

**\$6,958,017**



**NET ASSETS**

Year Ending September 30, 2019

**\$6,114,004**





unitedsoybean.org

# 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](http://unitedsoybean.org)*





# YOUR MEMBERSHIP SUPPORTS YOU HERE.



Visit [nesoybeans.org](http://nesoybeans.org)  
to learn more.

What do Nebraska soybean farmers consistently rank as a top concern? **State and federal regulations.**

The Nebraska Soybean Association (NSA) provides Nebraska soybean farmers with leadership in promoting effective policies and legislation. The NSA represents its members on a state and federal level while working cooperatively with the American Soybean Association.

Soybean checkoff dollars cannot be used to lobby or for legislative activities, which is why your NSA membership is vital to the profitability and sustainability of the industry in Nebraska.



# YOUR CHECKOFF SUPPORTS YOU HERE.



Visit [nebrasikasoybeans.org](http://nebrasikasoybeans.org)  
to learn more.

The Nebraska Soybean Board (NSB) has managed the Soybean Research and Promotion Program, known as the soybean checkoff, since its inception in 1990.

Soybean farmers pay one-half of 1 percent of the bushel price to the soybean checkoff when they sell soybeans.

Half is sent to the United Soybean Board and half is invested right here in Nebraska in soybean production research, marketing and promotion, new product development and education to maximize profit opportunities for soybean farmers.



# REINFORCING RESEARCH



The Nebraska Soybean Board invests checkoff dollars to explore agronomic, pest and weed issues helping farmers stay up-to-date with today's best practices.

**13 | Why We Invest in Research**

Checkoff investments fund important studies to further success and profitability.

**14 | Battling Weed Pressure**

Herbicide resistance means weed management is a season-long priority.

**15 | Soybean Gall Midge Update**

Researchers continue to plug away at finding solutions for the soybean pest.

**16-17 | Your 2020 Growing Game Plan**

Make your checklist from Nebraska Extension's agronomy and plant pathogen insights.

**18 | Studying Nebraska Success**

Get help with issues in your fields through the Nebraska On-Farm Research Network.

**19 | Networking Soybean Solutions**

The revamped Soybean Research Institute Network website is full of farmer resources.

**20-21 | Connectivity Issues**

The United Soybean Board's rural broadband study underscores the need for better internet.

## RESEARCH COMMITTEE

NSB Research Committee: Richard Bartek (Committee Chairman), Eugene Goering, Clay Govier, Nathan Dorn





# Why We Invest in RESEARCH

**By funding critical research exploring topics that matter to Nebraska agriculture, we arm soybean farmers with information to help them find success in their fields.**

It's no surprise that soy sustains.

The multipurpose “miracle crop” is a name earned, not given, because of soybeans’ flexible nature. They can be found in stockyards, diesel engines and kitchens around the world.

But without research funded through Nebraska’s soy checkoff, those purposes aren’t possibilities, says Nebraska Soybean Board (NSB) member and research committee chairman Richard Bartek.

“Farmers delivering soybeans to their local elevator or soybean processing facility without a checkoff would result in nothing being done to make their industry sustainable,” Bartek said.

“You will find soy in a lot of consumer products as the result of research using soybean checkoff dollar investment.

Tires, astro turf, cleaners, paints, carpet, countertops, asphalt treatment products and high oleic cooking oil are just a few of the results of research being done.”

Checkoff funds are also invested in education, communication and international and domestic marketing, but research pays dividends at the ground level for farmers. Through partnerships including the University of Nebraska–Lincoln (UNL), Nebraska Extension and North Central Soybean Research Program, the NSB’s research funds go to scientific studies unearthing new strategies to achieve better growing results.

“The NSB has been extremely supportive of a broad portfolio of research projects that result in important and very positive impacts for soybean farmers in Nebraska,” said Dr. George Graef, a UNL professor and Nebraska Soybean Board Presidential Chair in Soybean Breeding in UNL’s Agronomy and Horticulture Department. “Much of the kind of farmer-focused research that is supported with checkoff dollars are not supported by other funding sources, so the checkoff dollars and support for research are vital to stay on top of important issues and to be able to respond quickly to new challenges facing farmers.”

Staying current with the latest issues is important. Especially when considering farmers are running their own business and working every day for their livelihood.

“Farmers are small business owners and they have a lot of critical management decisions to make,” said Nathan Mueller, a cropping system educator with Nebraska Extension. “There are lots of things to consider, weigh out and keep up with in the ag industry where there’s constantly new innovation and changes. Any way we can make it easier for those producers to keep up on the latest information is always a good effort on our part as educators.”



## Investigating for Real Insights

The Nebraska Soybean Board makes research investments to help growers find success in their fields and discover new uses for soybeans.



### Fighting Pests

Between weeds and insects, growers need to know what kind of invaders they’re dealing with and how to defeat them.



### Maximizing Production

As conditions change and weather patterns shift, knowing the best practices for planting and precision agriculture lead to better yields.



### Creating Utilization

Soy is amazingly versatile already—found in products from astroturf to tires—but that doesn’t stop researchers from looking for new and better ways to integrate it.



Whether it’s new information on effective agronomic practices, new varieties or an emerging pathogen or insect pest, it’s important that farmers have access to the most current and unbiased information so they can apply those things to their operation and improve sustainability and return on investment.

— DR. GEORGE GRAEF, UNIVERSITY OF NEBRASKA-LINCOLN PROFESSOR AND NEBRASKA SOYBEAN BOARD PRESIDENTIAL CHAIR IN SOYBEAN BREEDING



# BATTLING WEED PRESSURE

**With herbicide-resistant weeds becoming more prevalent, farmers need to stay a step ahead by prioritizing weed management all season long.**

**W**hen it comes to weed management, timing is everything. Whether it's applying herbicide early or making sure to stay on top of weeds throughout the growing season, being proactive is critical.

"Where farmers know they have high weed populations or difficult-to-control weeds, using residual herbicides is critical," said Dr. Chris Proctor, an educator with Nebraska Extension who specializes in weed management. "This prevents weeds from getting established and provides more herbicide options for control."

After the soggy spring last year, farmers may need to spend extra time working in fields that got too wet too early. One of the biggest issues carrying over from last year's flooding were those fields too waterlogged to have herbicide applied before or at planting.

When herbicide can't be applied as weeds are germinating, it can be a significant setback for farmers.

"Many residual products for soybean need to be applied before soybean emergence," Dr. Proctor said. "So if this application was missed due to weather, it becomes more difficult to catch up on weed control as the season progresses."

Pigweed, Palmer amaranth and waterhemp have proven especially difficult to deal with. The former two can emerge anywhere from May through

August, and that extended window means multiple strategies for mitigating weeds is required.

Dr. Proctor suggests narrow row-spacing since soybeans will canopy sooner. If 30-inch rows are used, a second residual herbicide application may be in order to help eradicate weeds over the course of the season.

"If weeds are able to establish in a soybean field, the options for control become more limited and are often less effective," Dr. Proctor said.

As far as new weeds go, Dr. Proctor has heard reports out of Kansas of Palmer amaranth resisting 2,4-D and Dicamba, two important tools for post-emergence weed control. If that resistant strain becomes widespread, it could make fighting the weeds much tougher as the season goes on.

Herbicide-resistant populations continue to be a common thorn in farmers' sides, and to make matters worse, the science hasn't caught up yet.

"Given our limited herbicide resources, herbicide resistance is removing effective tools from our weed control 'toolbox,'" Dr. Proctor said. "Development of new herbicide technologies has not been keeping pace with the development of herbicide resistance, so making sure we manage weeds in ways that limits resistance developing is critical."

“

Where farmers know they have high weed populations or difficult-to-control weeds, using residual herbicides is critical. This prevents weeds from getting established and provides more herbicide options for control.

— DR. CHRIS PROCTOR, NEBRASKA  
EXTENSION EDUCATOR

”

## Post-emergence Weed Control Plan

If weeds are spotted in your fields, try these strategies.

- ✓ Increase application rates (15+ gallons per acre).
- ✓ Calibrate nozzle, pressure and boom height according to herbicide being applied.
- ✓ Treat roadside ditches and field edges for weeds.
- ✓ Hand rogue potential resistant populations before they affect an entire field.



Stay up to date with the latest weed management news and tactics at [CropWatch.UNL.edu/weed](http://CropWatch.UNL.edu/weed).



# SOYBEAN GALL MIDGE UPDATE

Research still has a long way to go, but ways to get a handle on the crop's worst pest are emerging.

Even with a few years of studying under his belt, Justin McMechan says the emergence of soybean gall midge, an insect that could pose the greatest threat to Nebraska soybeans—has been hard for researchers to get their arms around.

Since being spotted in Nebraska in 2011 and triggering alarm bells for farmers in 2018, soybean gall midge has been recorded in 95 different counties across five states: Iowa, Minnesota, Missouri, Nebraska and South Dakota.

It can be frustrating for researchers on the frontlines—often making them feel like they're in the dark.

"The best way I can describe to farmers what we face is if you took a cardboard box, put it over your head, grabbed a screwdriver and then poked holes in it," said McMechan, an assistant professor of entomology with the University of Nebraska–Lincoln. "Every time we conduct research we poke a new hole and we learn something, but we don't have the good foundation to know what's happening beyond that. We get these little glimpses, but we're just missing a lot of the biology and ecology of the insect to make sense."

Researchers and farmers alike have their work cut out for them for the foreseeable future.

For context, consider the story of Raspberry Cane Midge. The pest was discovered in Europe in the 1920s, grew to wreak havoc in the 1940s and was still being fought in the early 2000s.

"With soybean gall midge, we have

known its existence as a major pest for 20 months—not even two years," McMechan added. "Right now we're really looking at four states that are dealing with this issue and we have excellent entomologists in every state, but we're dealing with questions that will take several years to answer to feel confident."

For now, the best method of combating the pest is through a combination of pest-management strategies. In 2019, the maximum duration of adult emergence for soybean gall midge was documented at 23-days but it averages 15–17 days. To protect crops reaching different developmental stages in that long of a period, McMechan suggests multiple management practices for farmers with high risk fields such as seed treatment insecticides and well-timed foliar insecticides.

Another strategy—which risks losing yield—is delayed planting because of soybean gall midge's inability to infest a soybean plant before the V3 stage.

"Asking farmers to delay their planting as a way of mitigating gall midge comes at a cost, but we've seen some very promising results," McMechan said. "When farmers delay their planting, they can possibly extend the crop's susceptibility beyond when the adults emerge, which means they have no way of surviving on that crop."

In the future, researchers are hoping to find better answers so farmers won't have to make such sacrifices.

That's why the Nebraska Soybean Board, North Central Soybean Research Program, North Central Integrated Pest



“

If you are in eastern Nebraska and you're a farmer and you've experienced soybean gall midge, managing this pest is probably one of your top priorities.

— DR. JUSTIN MCMCHAN, UNIVERSITY OF NEBRASKA-LINCOLN ASSISTANT PROFESSOR OF ENTOMOLOGY

”

Management and United Soybean Board (among others) have diverted significant funds to start finding answers for farmers. University of Nebraska researchers as well as researchers in neighboring states have more than two dozen biology and ecology research objectives for this summer focused on this pest alone.



## Additional Pests

Watch your leaves for these defoliators:

Bean Leaf Beetle

Japanese Beetle

Thistle Caterpillar and Painted Lady Butterfly



For updates on soybean gall midge research, subscribe to CropWatch at [CropWatch.UNL.edu/cwsunsubscribe](https://CropWatch.UNL.edu/cwsunsubscribe).

# YOUR 2020 GROWING GAME PLAN

After last year's flooding, use this agronomy and plant pathology roadmap from Nebraska Extension experts.

## AGRONOMY WITH CROPPING SYSTEMS EDUCATOR NATHAN MUELLER

Best practices need to go in every acre for your best yield, but the proper timeline—from pre-planting to post-harvest—keeps you on track for continual success.

Dr. Nathan Mueller laid out his recommended agenda for soybean producers for the 2020 growing season.

### Before Planting

#### Scouting and Soil Sampling

Last year's flooding could have altered soil composition in your fields. Scouting for emerging issues and soil sampling—to compare affected and unaffected parts of a field with flooding—will give you a quality check of what's going on beneath the surface.

"Soil sampling is going to be one critical piece because we know if there were disruptions or changes in top soil—and composition of that top soil either through additional deposition or removal—that the soil fertility levels have likely changed," Dr. Mueller said.

Soil sampling can also identify Soybean Cyst Nematode (SCN).

#### Inoculating Seeds with Bradyrhizobium

If soil has been deposited or removed from your fields because of flooding, nitrogen issues could arise. Inoculating seeds with Bradyrhizobium can help mitigate it.

"It's kind of like the starter fertilizer situation to reduce that risk," Dr. Mueller said. "That might be something that farmers consider as a seed treatment or an in-furrow application of an inoculation just to cover some of those areas of fields that might see a higher likelihood of a response in portions of fields."

#### Covering for Wind Erosion and Crusting

Flooding sometimes leads to wind erosion and crusting in fields, but planting a short-term cover crop can counteract both.

"If we're low in residue because we didn't have much growing there last year, the risk of both crusting and wind erosion are going to increase," Dr. Mueller said. "Planting a cool-season cover crop, like oats, would be another before-planting decision."

#### Start Weed Management Early

Identify weeds before seeds are in the ground. With pre-plant herbicide applications, you'll begin a season-long rhythm of scouting for and fighting weeds.

"A pre-plant herbicide and early post application gets ahead of some potential weed flushes versus trying to get on top of those after weeds have emerged," Dr. Mueller said.



Dr. Nathan Mueller

### At Planting

#### Adjust Planting Depth on the Fly

It's important to get out into the fields and watch if conditions change early in the season. Locate any spots where your seed planter will need to be adjusted for proper planting depth and closing up the furrow.

### In-season

#### Scouting, Scouting, Scouting

As your soybeans are growing, it's up to you to keep a close eye on emergence as well as weeds and herbicide applications. It will also help you see water-holding capacity in different areas and if it's changed from the past, ultimately affecting irrigation scheduling.



## Know the Symptoms

Watch for warning signs. Nutrient deficiencies and plant diseases, especially Sudden Death Syndrome, could crop up in new places this year as an aftereffect of flooding.

“Look for SDS if there wasn’t a history of it in your field,” Dr. Mueller said. “If that’s something that appears this year, that could’ve been brought in with the soil.”

## After Harvest

### Dig into the Details

If soil samples weren’t able to be taken in the spring, take them in the fall. Getting a good composite (10–15 cores to represent that entire area) will help toward a stronger, more focused fertilizer recommendation for the spring.

“Starter fertilizer is one way to add a little bit more consistency in nutrient availability across the field,” Dr. Mueller said.

For those into precision ag, look at Electrical Conductivity soil maps. They’ll give you a read on soil texture and organic matter and could be important in prescription for seeding rate or variable rate nitrogen. Plus, comparing yield maps to previous years can help uncover new patterns.

### Enrich Life Beneath the Surface

Erosion and deposition can hinder the structure and life of microorganisms in the ground. Studies have shown a combination of cover crops and manure can fuel growth.

“We have quite a bit of resources through the University of Nebraska on the benefits of manure application,” Dr. Mueller said. “We know that manure can help increase infiltration, soil structure and stimulate microbial activity.”

# PLANT PATHOLOGY WITH PROFESSOR TAMRA JACKSON-ZIEMS



Dr. Tamra Jackson-Ziems

The warm, wet conditions forecasted this spring can set the stage for plant pathogens, so farmers need to make key disease management decisions early. Scouting, sampling, seed treatments and fungicides are all critical early decisions—especially if last year’s flooding carried pathogens.

“Movement of pathogens to new areas is one of the biggest concerns I would have,” said Dr. Tamra Jackson-Ziems, a professor with the University of Nebraska–Lincoln. “In particular we know that nematodes, like soybean cyst nematode (SCN), can be moved to new areas by flooding or any way that can also move soil.”

SCN is one of the usual plant disease suspects, and though it shouldn’t be taken lightly, lots of research and management tactics (including crop rotation) have helped farmers manage it.

It’s the increasingly fungicide-resistant Frogeye Leaf Spot (FLS), however, that Dr. Jackson-Ziems is worrying about more this season.

“Frogeye leaf spot also is not a new disease,” she said. “In some parts of the state it may be more common than in

others, and so it might be a surprise to people to learn that this is as important as it’s been the last couple of years when it’s been warm and wet.”

Recent samples taken in Iowa and South Dakota have pointed toward widespread FLS resistance to QoI Group 11 (formerly known as the strobilurin) fungicides, which had historically been the most effective at fighting the disease.

“The real problem is that those products target a single site in the fungus. It makes it vulnerable,” Dr. Jackson-Ziems said. “So that fungus only has to mutate at one location to overcome that product, and this is the exact same scenario that we see with glyphosate, the herbicide products, where we’ve got widespread resistance in a number of weed species.”

As researchers dig deeper into the resistance, Dr. Jackson-Ziems recommends switching to a multi-pronged approach to fight FLS:

- ▶ Switching to a fungicide with two or more active ingredients.
- ▶ Avoiding continuous soybean growing in their fields and rotating with non-host crops like corn.
- ▶ Planting FLS-resistant soybean varieties.

“Management should start now, when we’re selecting seed to position in the fields where we’ve got that disease, and select resistant soybean varieties when they’re available,” Dr. Jackson-Ziems added. “The challenge here will be finding resistant varieties in the maturity groups that some people are going to want to plant, because they are less common and harder to find. And so they should talk to their seed company representative about that if they have that disease.”

# STUDYING NEBRASKA SUCCESS

The Nebraska On-Farm Research Network is working with Nebraska's producers to address critical production, profitability and natural resources questions.



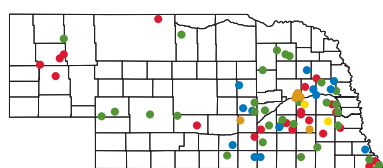
Harvesting an on-farm research study with farmer, Daryl Obermeyer. Photo Credit: Laura Thompson

**N**ebraska On-Farm Research Network (NOFRN) provides an opportunity for farmers to get questions and answers about their own fields. On-farm research can provide a great avenue to accelerate learning about topics that impact farm productivity and profitability.

It is research that you do on your field, using your equipment, with your production practices. This means the research is directly applicable to your operation.

NOFRN approaches topics that are critical to farmer productivity, profitability and sustainability. This network builds upon efforts of the Nebraska Soybean Board's (NSB) partnership with Nebraska Extension to establish an on-farm research network in 1989 and the partnership with the Nebraska Corn Board (NCB), Nebraska

## 2019 STUDY LOCATIONS



- COVER CROPS
- CROP PRODUCTION
- CROP PROTECTION
- EQUIPMENT
- FERTILITY AND SOIL MANAGEMENT
- PLANT GROWTH REGULATORS, STIMULANTS, BIOLOGICALS

Corn Growers Association (NCGA) and Nebraska Dry Bean Commission (NDBC) to build NOFRN since 2012. In 2019, more than 100 studies were completed, a 59% increase from the previous year.

Studies and topics include nutrient management, pest control, irrigation strategies, conservation programs, new technologies, soil amendments, cultural practices and hybrid and variety selection. Research comparisons are identified and designed to answer producers' production questions. Projects' protocols are developed first and foremost to meet individual cooperator needs.

Farming is a complex business that demands lifelong learning and a systems approach to solving problems. On-farm research is an important, timely and powerful part of providing systems-based solutions.



## 2019 Nebraska On-Farm Research Results

Apply last year's findings to this year's growing with the 2019 Nebraska On-Farm Research Results report. Read up on:

- Impact of Foliar Applied Fungicide and Insecticide on Soybeans (*Page 53*)
- Soybean Maturity Regarding Planting Date (*Pages 56–59*)
- Soybean Row Distance: 15" vs. 30" (*Pages 60–61*)
- Data-Intensive Farm Management: Soybean Seeding Rate (*Pages 62–75*)
- Irrigated & Non-Irrigated Soybean Planting Population Study (*Pages 76–80*)

Download or read the report at [cropwatch.unl.edu/farmresearch/farm-research-result-publications](http://cropwatch.unl.edu/farmresearch/farm-research-result-publications).

Nebraska farmers, consultants, advisors and industry employees who attended the 2019 on-farm research update meetings valued the information gained at \$14 million.

If you are interested in participating in NOFRN, contact your local Nebraska Extension educator or Laura Thompson, extension educator and on-farm research coordinator, at 402-245-2224 or [laura.thompson@unl.edu](mailto:laura.thompson@unl.edu).



# NETWORKING SOYBEAN SOLUTIONS

**Revamped website connects farmers to research.**

*By Carol Brown, NCSRP Communications Liaison*



**T**he Soybean Research & Information Network (SRIN) website has been revamped to focus on the farmer.

The website—formerly the Soybean Research & Information Initiative (SRII)—got a makeover this winter to expand content, improve navigation and update visuals. The site is a product of the North Central Soybean Research Program (NCSRP), of which the Nebraska Soybean Board is a member. The 13 member states invest checkoff funds for research to improve soybean quality, and the website originally included projects conducted only in these states.

But soybean research goes far beyond the Midwest. To expand collaboration and reduce duplication, the NCSRP group

has partnered with the United Soybean Board (USB) and the SRIN is a reflection of this partnership, encompassing checkoff-supported research projects across the country.

The website is greatly expanded but remains rooted in communicating the benefits of soybean research and practical solutions to the farmer.

“The updated SRIN website enables farmers, crop advisers and researchers to see how their checkoff dollars contribute to improving soybean development, production and quality,” said Ed Anderson, NCSRP executive director. “The soybean research community keeps this overarching goal in mind as they conduct their studies.”

## On the SRIN:

- Users can search by state, region or organization, as well as by pest or disease.
- The resources section includes highlights, project summaries, links to other soybean organizations, and a library of publications available for downloading.
- Content is updated continuously as it is developed and research projects progress.
- Helpful articles written alongside research publications.

“

The SRIN website is one way to elevate basic and applied work that brings value to farmers.

— ED ANDERSON, NCSRP EXECUTIVE DIRECTOR

”

Farmers, crop adviser and researchers are encouraged to visit frequently and subscribe to the weekly digest email to learn about updates to the site.



**Visit the SRIN today at  
[SoybeanResearchInfo.com](http://SoybeanResearchInfo.com).**



# CONNECTIVITY ISSUES

**New study discovers rural broadband issues are hindering farmers' productivity.**

**A**griculture is a data-intensive U.S. industry, but slow, unreliable internet is the norm according to the United Soybean Board's study "Rural Broadband and the American Farmer: Connectivity Challenges Limit Agriculture's Economic Impact and Sustainability."

Like any business in the U.S., farms rely on internet connections in their offices, but with today's technology, they also need connectivity in their fields. American farmers get online for everything from market and weather information to banking, and they need connectivity to process soil fertility data, use autosteer and much more.

The study results underscore why greater internet access is needed in rural areas.

## Missed Opportunity

Nearly 60% of U.S. farmers and ranchers do not believe they have adequate internet connectivity to run their businesses. Their productivity

contributes nearly \$133 billion to U.S. gross domestic product, according to the U.S. Department of Agriculture Economic Research Service. That means farms that contribute nearly \$80 billion to GDP run on limited internet connections.

## Slow Speeds

Slow, unreliable internet connection is common, regardless of connection type and location. The study investigated fixed, satellite, cellular and hotspot connections and found that farmers do not agree that their internet access provides value for the cost either in their offices (65%) or in their fields (77%). And because their farms can't move, 78% do not have another viable option to change service providers.

## Barriers to Growth

The study also found that most farmers plan on (59%) or are considering (28%) incorporating more data into making

day-to-day decisions within the next year. These daily decisions support their economic and environmental sustainability. However, they face internet-related barriers, including slow speeds (21%), costs (20%), reliability (16%) and lack of access (15%). In the 18 months before being surveyed, nearly one-third said internet connectivity has impacted purchase decisions to upgrade farm equipment.

American farmers feel the impact of poor connectivity, including limitations on improving farm economic and environmental sustainability and reinvesting in their businesses. They want to do the best things to preserve and improve their farms and natural resources, but lack of clear data to make decisions hampers their continuous improvement. Plus, farmers' needs for internet access are projected to grow. The value they bring to the U.S. economy could multiply significantly with fast, reliable internet.

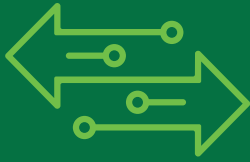


**Read the entire study at [UnitedSoybean.org/ruralbroadband](https://UnitedSoybean.org/ruralbroadband).**  
Study completed by the United Soybean Board.





## LEADING REASONS WHY FARMERS USE DATA:



37% BETTER DECISIONS  
19% BETTER EFFICIENCY  
10% COST SAVINGS



60% OF FARMERS DON'T HAVE  
ENOUGH CONNECTIVITY TO RUN  
THEIR BUSINESS.



50+% OF FARMERS WANT TO  
INCORPORATE MORE DATA IN  
THEIR OPERATIONS BUT LACK  
THE CONNECTIVITY TO DO SO.

### About the Study

More than 2,000 primary and secondary farm operators responded to a combination of online and mail-in surveys to participate in the study, sponsored by the United Soybean Board. Participants represent a cross-section of U.S. agriculture throughout the country, including field and row crops such as corn and soybeans (86%), livestock (55%) and specialty crops such as fruits and vegetables (21%).

## 5 QUESTIONS WITH AFBF'S *RJ KARNEY*

**S**erving as the American Farm Bureau Federation's director of congressional relations, RJ Karney advocates for rural broadband deployment and precision agriculture technology. Recently, he shared his thoughts on issues surrounding rural broadband with the Nebraska Soybean Board (NSB).

**NEBRASKA SOYBEAN BOARD (NSB)** How is rural broadband a necessity for Nebraska soybean farmers?

**RJ KARNEY (RJK)** Farmers and ranchers depend on broadband (fixed and mobile) just as they rely on highways, railways and waterways to ship food, fuel and fiber across the country and around the world. Many of the latest yield-maximizing farming techniques require broadband connections for data collection and analysis performed both on the farm and in remote data centers.

**NSB:** What kind of data and technology are farmers trying to incorporate in their operations?

**RJK:** Farming produces trillions of bits of data. This data allows farmers to be more efficient, economical and reduce environmental impact. The data collected is utilized by the farmer and the certified crop advisor who will write the "prescription" for the farmer. This prescription will allow the farmer to apply more fertilizer on the most productive land while reducing the application on less productive land. Livestock producers utilize data to monitor the health of each individual animal they are raising, analyze markets and communicate with their veterinarians.

**NSB:** What are the economic implications of broadband connection for agriculture?

**RJK:** According to USDA's "A Case for Rural Broadband," if access to broadband and adoption of digital agricultural technologies matched producer demand, U.S. agriculture would realize benefits amounting to nearly 18 percent of total U.S. market production, or \$64.5 billion annually, based on 2017 levels.

**NSB:** How far has rural broadband access come in the past 10 years and how far does it still need to go?

**RJK:** While the data suggests rural access to broadband has increased in the past 10 years, there are serious concerns with the accuracy of broadband access maps to make this conclusion. Farmers and ranchers need broadband access in their fields, at their dairies and on their ranches to take full advantage of precision agriculture equipment. Gaining broadband access in these areas is the next evolution of rural broadband deployment and will directly benefit farmers and ranchers.

**NSB:** How do we educate others on the need and access of rural broadband?

**RJK:** Share your personal story on the positive or negative impacts of having or not having access to broadband with policymakers. There is a great opportunity to create momentum to build universal broadband coverage and educating policymakers along with the general public on the importance of broadband access is critical to sustaining this momentum.

# GIESLER RECEIVES SOY PROMOTER AWARD

University plant pathologist honored at Nebraska Soybean Day and Machinery Expo.



Nebraska Soybean Association Vice President Doug Bartek presents Dr. Loren Giesler (left) with the 2019 Soybean Promoter Award at the Nebraska Soybean Day and Machinery Expo Dec. 19, 2019, in Wahoo.

The Nebraska Soybean Association (NSA) honored Dr. Loren Giesler, professor and head of the University of Nebraska–Lincoln (UNL) Plant Pathology Department, with the 2019 Soybean Promoter Award at the Nebraska Soybean Day and Machinery Expo held Dec. 19, 2019, in Wahoo.

Dr. Giesler's primary area of support has been through crop disease identification and management. His program efforts have focused on working with industry partners such as the NSA and Nebraska Soybean Board (NSB) to develop programs for soybean farmers to manage diseases affecting their crop production.

For more than 19 years, he served as an extension specialist in soybean plant pathology, and his programs addressed the top disease issues affecting Nebraska producers. He served as a key team leader

for the Nebraska Soybean Management Field Days and actively participated in the first 20 years of the program.

In the plant pathology department, Dr. Giesler worked with management of the Soybean Cyst Nematode, Phytophthora Stem Rot and was a leader in the development of the National Monitoring Network for Soybean Rust in 2004. He led the development of all North Central Soybean Research Program (NCSRP) grants for the rust monitoring program. Dr. Giesler has coordinated the Plant and Pest diagnostic clinic and been a familiar face on the Backyard Farmer program.

In his current role at UNL, he ensures faculty work toward goals of significant impact for Nebraska farmers and delivering a safe and secure food supply for the world.

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# BIODIESEL: BETTER, CLEANER, NOW!

Biodiesel conference highlights growing trends with carbon and protein.



**W**ith a new vision and an ambitious strategic plan, the biodiesel industry is pushing the future into clearer focus in 2020. The National Biodiesel Board (NBB) introduced the themes behind its new strategic plan during the National Biodiesel Conference & Expo held January 20–23 in Tampa.

For soybean farmers, that plan highlights two very relevant trends—carbon and protein—and the aggressive goals hold many opportunities for future market growth.

“Biodiesel set an ambitious-but-realistic goal to double production by 2030,” said Greg Anderson, a farmer and board member on both the NBB and Nebraska Soybean Board. “The relationship between biodiesel and the soybean industry will continue to grow as biodiesel expands to more markets and produces billions of gallons more for existing customers.”

The industry plans to exceed 6 billion gallons of biodiesel and renewable diesel annually by 2030, more than doubling current production. This benchmark follows growing trends throughout the country to reduce carbon footprints through vehicle improvements. At 6 billion gallons per year, the industry will eliminate 35 million metric tons of CO<sub>2</sub>-equivalent greenhouse gas emissions annually.

What’s great: biodiesel is already readily available and easily substituted for No. 2 diesel.

“There’s a lot of buzz about electric vehicles and they certainly will play a part in carbon reduction in some markets,” Anderson said, “but biodiesel is as close to carbon neutral as you can get today from a broad implementation standpoint. It’s here now, and it’s meeting the needs of freight companies throughout the country with cleaner, better fuel. Electric can’t do that right now. Biodiesel has a clear opportunity to continue expanding.”

“Biodiesel is soy’s largest-growing oil customer in the last decade. Biodiesel production has increased demand for our soybean oil by 300% in the last 10 years, now using the oil from one third of our domestic crush. We’re excited to see what comes next.”

— GREG ANDERSON, NEBRASKA SOYBEAN BOARD AND NATIONAL BIODIESEL BOARD MEMBER

The expansion will come with a very real need for more fats and oils, which aligns with other trends throughout the globe.

“As biodiesel production grows, our demand for fats and oils will also grow. That need will align well with growing trends around the world regarding protein demand. The two will most certainly complement each other,” says Alan Weber, senior feedstock advisor for the NBB and a soybean farmer in central Missouri. “As global demand for protein rises, the world will see a rise in available vegetable oils. That rise will far outpace our needs from a human diet perspective, leaving available oil for biodiesel production and leaving nothing to waste.”

Soybeans will play a major role in providing both protein and oil. According to Don Scott, NBB director of sustainability, no other plant offers more protein per acre than soybeans. With that protein, comes the co-product of soybean oil and continued opportunities for U.S. soybean farmers.

# THE MORE SUPPLY CHAINS, THE BETTER

**For Nebraska farmers, more supply chains—like the lower Mississippi River—means more opportunities in international markets.**

*By Mike Steenhoek, Executive Director, Soy Transportation Coalition*



Photo credit: American Soybean Association

**F**or the majority of Nebraska soybeans destined for international customers, the predominant route is a journey by rail to export facilities in the Pacific Northwest. While this particular supply chain will arguably continue to accommodate the overwhelming majority of Nebraska soybean exports, the Nebraska Soybean Board (NSB) has realized the importance of understanding and highlighting alternative routes to international markets.

In the spring of 2019, the NSB organized and hosted a tour of soybean and grain export facilities along the lower Mississippi River. This 256-mile stretch of the river from Baton Rouge, Louisiana, past New Orleans and into the Gulf of Mexico accounts for 60% of soybean exports—the No. 1 launching point into the international marketplace. The Pacific Northwest, meanwhile, is the second-leading export region at 23%.

“One of the rules of supply chains is to never put all your eggs in one basket,” says Doug Saathoff, board member on both

the Soy Transportation Coalition (STC) and NSB. “Even though most Nebraska soybean exports are destined for the Pacific Northwest, it is important to understand and highlight the importance of alternative routes like the Mississippi Gulf region.”

The Army Corps of Engineers recently announced that the lower Mississippi River would receive the necessary funding to be deepened from 45 feet to 50. A deeper river will allow both larger ships to be utilized and current ships being utilized to be loaded with more revenue-producing freight. Research conducted by the STC found shipping costs for soybeans from Mississippi Gulf export terminals would decline \$0.13/bushel if the lower Mississippi River is dredged to 50 feet. Average vessel loads will increase from 2.4 million bushels of soybeans (66,000 metric tons) to 2.9 million bushels (78,000 metric tons)—a 21% increase.

While those states located in close proximity to the inland waterway system will realize the most benefit from the

deepening project, Nebraska and other states further removed will also benefit from the increased modal competition between rail and barge. When modal competition increases, a downward pressure on shipping rates often occurs.

With barge transportation becoming more viable for a larger percentage of the soybean-producing areas of the country, there will be a greater degree of overlap between areas served by railroads and barges. The STC research estimates Nebraska soybean farmers will see an annual benefit of \$8.8 million due to this increased modal competition.

“

Soybean farmers depend upon our multi-modal transportation system to connect with our customers. We must continue to promote every opportunity to make the system more cost-effective and therefore increase our competitiveness.”

— DOUG SAATHOFF, NEBRASKA SOYBEAN BOARD AND SOY TRANSPORTATION COALITION BOARD MEMBER

”

Because of the significance of this project to the soybean industry, the farmer leaders of the United Soybean Board recently invested \$2 million to help underwrite the cost of the deepening.



# MAKING HIGH OLEIC HISTORY

Versatile high oleic soybeans are making their way into kitchens and cars.

Photo courtesy: United Soybean Board



**H**igh oleic soybeans continue to pave the way as an innovative product beneficial to consumers and farmers in a number of different ways. A large portion of the oil is used in the restaurant and food service industry, but it has also made its way into other products as well. The soybean checkoff has been instrumental in research and promotion and continues to expand new uses for the oil.

High oleic soybean oil is attractive for restaurants and consumers because it contains less saturated fat and no trans fat without altering the taste of the final product.

Firebirds Wood Fired Grill—a collection of 49 restaurants known for classic American wood-fired grilled cuisine—started using high oleic soybean oil to test its performance when compared to conventional cooking oil.

“From the minute you put the high oleic soybean oil in the fryer to the last

“  
High oleic soybeans provide another market for our beans, give us more options and a new demand with our supply—plus a premium.

— HERB MILLER, MICHIGAN SOYBEAN FARMER

”  
time you use it, it produces food with a consistent rich color,” said Steve Sturm, Firebirds corporate executive chef.

Soybean farmers are also benefiting as high oleic varieties have offered premiums to growers since it was launched commercially in 2012. It offers the same agronomic trait and disease packages that farmers can expect in their other soybean varieties without compromising yield. In 2018, 310,000 acres of high oleic soybeans were planted

in the U.S., and it is projected to reach 2.2 million acres by 2022.

The market for high oleic soybean oil continues to grow and has expanded into new uses such as motor oil. Indianapolis-based Biosynthetic® Technologies now offers a bio-based synthetic motor oil for 5W-20 and 5W-30 that utilizes high oleic soybean oil from U.S. soybeans.

This new and sustainable motor oil, made available by the partnership between the United Soybean Board and Biosynthetic® Technologies can be found on Amazon.



Credit: United Soybean Board/ Biosynthetic® Technologies



For more information on high oleic soybean oil, visit [SoyInnovation.com](http://SoyInnovation.com) or [QualiSoy.com](http://QualiSoy.com).



[unitedsoybean.org](http://unitedsoybean.org)

# INVESTING IN NEW MARKETS FOR U.S. SOY

*From promoting the profitability of using high-quality soybean meal in India to training animal producers on nutrition in Colombia, the soy checkoff is working behind the scenes to develop more market opportunities for U.S. soy. 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](http://unitedsoybean.org)

Brought to you by the soy checkoff. 

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# STAYING UP TO DATE WITH CROPWATCH

Nebraska Extension's crop production and pest management news hub offers farmers a wealth of insights and research.

Since 1992, CropWatch has become a one-stop shop for all things related to cropping.

The University of Nebraska–Lincoln Extension's electronic newsletter and website, CropWatch is written by extension educators and specialists across Nebraska for farmers, crop consultants and agribusiness. It's produced by UNL's Institute of Agriculture and Natural Resources.

Read CropWatch at [CropWatch.UNL.edu](http://CropWatch.UNL.edu) or by registering to receive the newsletter via email.

## ONLINE

More than 25 individual websites were rolled into CropWatch in 2009 to become a hub for all crop-related information. The website has crop-specific production and pest management sections, with additional sites for whole farm and production systems. Specific crop, management and related topics can be accessed through the overhead navigation bar.

### TOPICS INCLUDE:

- ▶ **Weather:** Weather GDD & ET, NERAIN reports, precipitation maps and soil temperature maps.
- ▶ **Featured Crops:** bioenergy crops, corn, cover crops, dry beans, forages, fruits and vegetables, organic, potatoes, sorghum, soybeans, sugar beets and wheat.

- ▶ **Management:** economics and marketing, farm real estate, grain storage, "Hail Know," insect management, plant diseases, precision agriculture, resistance management, soil management, tillage/no-till systems, variety testing, water management and weed management.

- ▶ **Related Topics:** genetic improvement, military resources, on-farm research, storm recovery, soil health, strengthening Nebraska's ag economy and youth and youth activities.

The CropWatch homepage features a calendar of events and programs, daily news, decision-aid tools and resources from Nebraska Extension as well as Twitter updates from @UNL\_CropWatch.

## IN YOUR INBOX

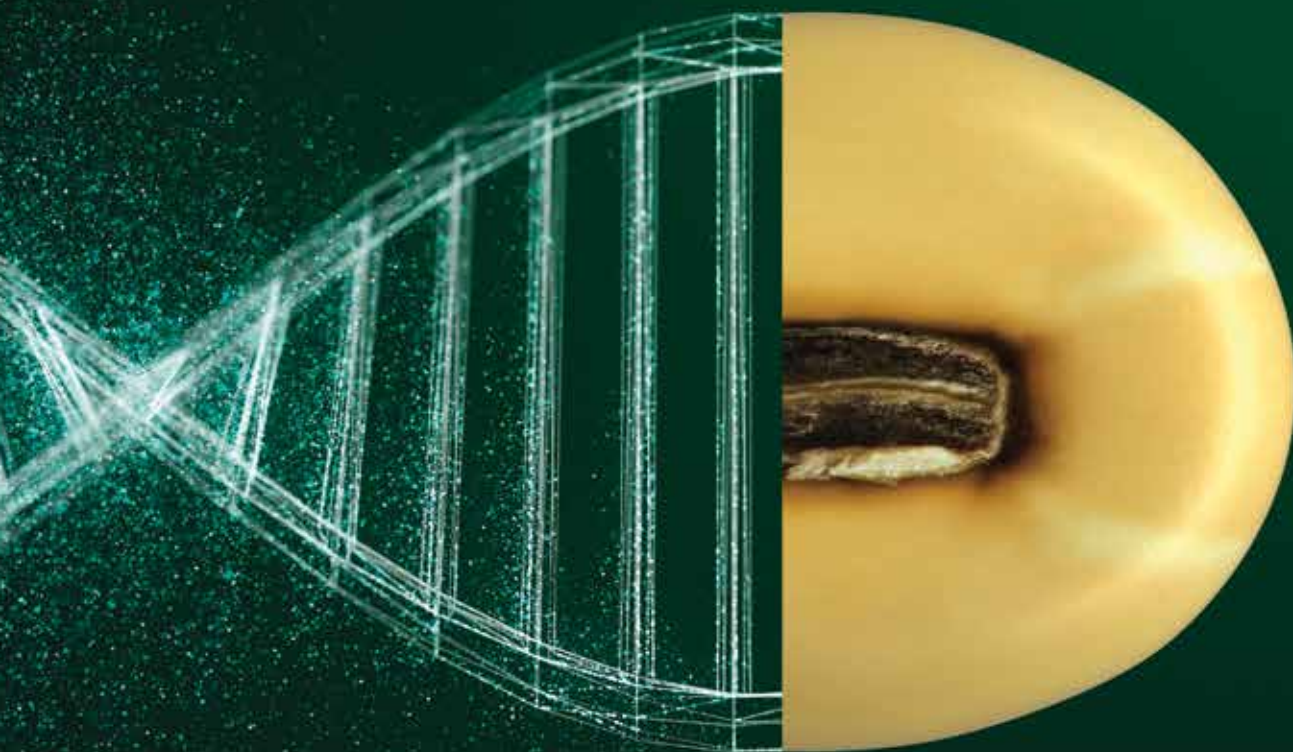
New issues, shared via email, are published weekly during the heart of the crop production season and generally biweekly during the remainder of the year. Each issue contains a batch of timely articles and past ones are archived.

Readers can subscribe on the website homepage to receive CropWatch newsletters via email. Content tags, the search box and archives help readers locate hundreds of articles released since April 2016. View articles written by specific authors by clicking on their names or searching for them.

CropWatch has been a trusted source of research-based information since its first incarnation, a six-page printed letter in 1992. A special thank you goes to Lisa Jasa, longtime CropWatch editor for her dedication and service.

Visit CropWatch today at [CropWatch.unl.edu](http://CropWatch.unl.edu).

**N** EXTENSION



# WHERE DNA MEETS ROI.

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