

THE NORTH DAKOTA Soybean GROWER MAGAZINE

VOLUME 6 • ISSUE 2
MARCH 2017



INSIDE

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in New Era for
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n the cover

Farmers know that getting their soybeans off to a good start in the spring sets the stage for maximum productivity the rest of the year. There are many factors that can impact yield and long term sustainability. Soil health is one important variable. This issue examines the role of soil health and what farmers can do to maximize it on their farms.

—Photo by Wanbaugh Studios



The North Dakota Soybean Grower is published six times a year by the North Dakota Soybean Growers Association, 1555 43rd St. South, Suite 103, Fargo, ND 58103. Website: www.ndsoygrowers.com.

To update subscription information, please email info@ndsoygrowers.com or call (701) 640-5215.

Send editorial and advertising materials to Nancy Johnson, 1555 43rd St S, Ste 103, Fargo ND 58103, nancy.johnson@ndsoygrowers.com. Publication of editorial or advertising material in the North Dakota Soybean Grower magazine does not imply endorsement by the North Dakota Soybean Growers Association. Check agronomic advice with local sources and always read and follow product labels.

Liaison Position Established by the NDSGA

The beginning of the 2017 legislative session saw veteran NDSGA Legislative Director Scott Rising receive some much-needed help with the hiring of Phil Murphy.

“Phil’s contract position title is government officials liaison, and as a former state legislator, Phil has been an invaluable aid in helping me cover the session for our growers,” Rising said. “His understanding of the process, the width and depth of knowledge he has on so many issues, and his relationships gives us a proven communicator who can move about the session and Capitol with relative ease. Someone totally new would need several years to get to that level. In addition, his respected writing and speaking skills enhanced his career as a legislator and, in his 36 years as an educator, brought to him both state and national awards.”

The primary activities for the position at the state-government level include

- Monitor policy issues of importance to North Dakota soybean farmers
- Attend meetings and hearings for relevant North Dakota legislative and agency organizations
- Attend relevant NDSC and NDSGA board and committee meetings to provide updates on issues
- Write articles on policy issues for educational use in North Dakota soybean publications
- Submit monthly reports on activities and policy-issue updates
- Educate elected and appointed

officials about North Dakota soybean activities and priorities

This liaison position is valuable to North Dakota soybean leaders; Murphy will keep board members and staff apprised of key policy issues that have an impact on soybean farmers. Issues include water quality and nutrient management, and transportation infrastructure.

Murphy also provides regular blog posts to keep farmers and NDSGA members up to date on legislative activities during the session. It is beneficial for the soybean industry to have constant monitoring of the current and potential developments on important agricultural issues.

In addition, the Murphy provides information to elected and appointed officials about the activities and accomplishments of the soybean checkoff in areas such as new use and production research, biodiesel development and marketing, transportation, logistics and international marketing. He also informs officials on the economic impact of North Dakota agriculture and, specifically, soybean farming.

Murphy resides in Viking Township near Portland, North Dakota, with his wife, Shelly. Murphy spent over a decade as a volunteer fireman and 20 years on the township board. They have three grown children who live in various communities around the state. Shelly is a long-time kindergarten teacher in the



Veteran lawmaker and educator Phil Murphy has joined the NDSGA to serve as liaison between legislators and farmers.

MayPort-CG school system. Murphy is a life-long waterfowl, upland game and deer hunter. He also likes to cook, read, golf, play poker and write.

Murphy’s background includes about 10 years as a farm worker, mostly at SB&B in Casselton. He has recently helped host international soybean customers on farm tours and field visits.

Murphy visited Taiwan this past summer at the invitation of the Taiwanese government. Murphy met with high-level agricultural officials, state-department

representatives and others business leaders. He also organized and taught North Dakota public-school teachers who received college credit for a class named Agriculture Behind the Scenes. Participants toured the North Dakota State Mill and Elevator, soil-testing labs, farms and more.

“I have enjoyed helping at the legislature and look forward to doing the best I can to help our soybean growers,” Murphy said.

—Story by staff,
photo by Dan Lemke



Craig Olson, President North Dakota Soybean Growers Association

The Beginning of a New Planting Season Brings the End of Another Legislative Session

As you read this, we are inching closer to the start of another spring planting season, which is an exciting time of year for most farmers. At the same time, lawmakers are nearing the end of this year's legislative session. Since the state legislature only meets every two years, it is important for the North Dakota Soybean Growers Association to keep a presence in Bismarck, and to stay on top of important bills and legislative issues.

We have passed the crossover stage of the legislative session. This is where bills that passed either the Senate or House, cross the hallway over to the other chamber. No more bills can be added. If a bill did pass, it has cleared the first hurdle. Now, either the House or Senate, depending where the bill started, will consider the same bill.

Due to the rapidly changing nature of most bills in the Legislature, it's difficult to comment on specific measures. But it's not hard to reiterate the importance of the NDSGA's presence in the Capitol. As we consider bills of importance, we can ask: how this will affect our industry, both directly and indirectly? What are big priorities in this session?

The state is seeing a major swing in revenues and is now in budget-cutting mode. We must make sure we do not lose programs valuable to agriculture. Along with these cuts, we are watching agriculture research funding, transportation and infrastructure funding bills. Several other topics affecting agriculture in general this year have included water, drain tile and grain warehouse indemnity funds.

I believe our legislators are out there to do what is best for their districts and what is best for North Dakota. But not all legislators fully understand agriculture and how specific bills can impact farmers. We are not only out in Bismarck to make sure our voice is heard, but also to help educate during the process. We want to make sure legislators fully understand a bill and how it will affect agriculture, either positively or negatively. We want to help them understand the ramifications, so they can make an informed vote, whether they vote in our favor or not.

Being a legislator is not an easy task. I would personally like to thank our Senators and Representatives for their work in continuing to make North Dakota a great state.



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To join ASA and the North Dakota Soybean Growers Association, complete and return this application with payment.

Name: _____
Spouse: _____
Date of Birth: _____
Farm/Company Name: _____
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County: _____
Phone: _____
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Do you raise:
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How did you hear about NDSGA? (Please circle one)
Recruited in person; Recruited by phone, Magazine;
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3-Year Membership \$200 1-Year Membership \$75
 Check enclosed (please make checks payable to NDSGA)
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Card Number: _____
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Name on Card (Please print): _____
Signature: _____

Occupation (Please check all that apply)
 Farmer Retired Agribusiness
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Do you currently grow soybeans?
 Yes No
Soybean Acres: _____ Total Acres Farmed: _____

Mail application with payment to:
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A Healthy Determination

Soil Health is a Longtime Focus for Breker



The expansive windows at the Coteau des Prairies Lodge near Havana, North Dakota, offer visitors an

unmatched view of the surrounding countryside. From the family owned facility, Joe Breker points out landmarks from as far as 30 miles away that are visible.

Built four years ago by family members and a few friends, the

lodge is an agri-tourism destination that also provides a panoramic view of Breker's farm fields which sport a decidedly different look from some neighboring ground.

For 37 years, Breker has no-till farmed his family's land in

southeast North Dakota. Even in late winter, the remnants of field and cover crops from the previous year are readily visible, protruding from the trapped, wind-blown snow.

"I made the decision long ago to do what I could to get my soil healthier," Breker says.

As a North Dakota State University (NDSU) student in the 1970s, one of Breker's instructors brought up the concept of no-till farming which wasn't widely practiced then. Breker mentioned the idea to a local extension agent who put him in contact with several no-till farmers. Breker met the farmers, "and that really whet my appetite," he says.

Breker went on a bus tour to northern North Dakota and even up into Manitoba to learn from several veteran no-till farmers.

"I figured if those guys up there could do it, so could I," Breker says.

Not a Hard Sell

Breker says his dad didn't work the ground any more than he had to, so when Joe broached the idea of no-till with his father, the notion wasn't discouraged.

"I feel very fortunate that my dad was very conservation minded," Breker says. "He just said, 'Find out more about it.'"

In 1980, the Brekers put a few fields into no-till. The results were so promising that, by 1981, the entire farm was no-till, "and we've never looked back."

Today, Breker typically raises corn, soybeans, and a cereal crop of either spring or winter wheat. For the last 10 years, he's also raised a specialty Jackhammer radish seed because he is a partner in a company that distributes Jackhammer and other cover-crop seeds.

During drier years in the early 1980s, no-till farming worked very well because it helped the farmers



Breker uses cover crops to manage moisture, reduce erosion and improve soil health.

“I made the decision long ago to do what I could to get my soil healthier.”

to conserve soil moisture. When weather patterns turned wetter, many of Breker's no-till farming neighbors pulled out their chisel plows again and started tilling the ground. Breker stuck with no-till through some admittedly difficult years.

Keeping it Covered

Breker says that he was first interested in no-till farming for yield and conservation reasons. He soon learned that there were advantages from a moisture-management standpoint. A neighbor's field that had been tilled black looked like sludge following a heavy rain while Breker's field, which was covered with rye stubble, easily absorbed the moisture.

As wet weather became a more regular occurrence, Breker shifted some of his practices to a moisture-management focus. In the mid-2000s, Breker drain tiled some of his troublesome fields in order to manage the moisture. He also began incorporating cover crops, such as field peas, radishes and turnips, later adding cereal rye and flax to his operation as a way to manage the soil's water.

"Cover crops are a significant tool for moisture management," Breker says. "If I would have been as aggressive with the cover crops then as I am now, I may not have tiled as much."

Cover crops keep living cover on the fields year round. In addition to reducing erosion and providing the soil with root diversity, the

plants use up moisture, allowing Breker to get into his fields in a timely manner.

"I have not had a difficult time getting my crops in since I started doing cover crops 16 years ago," Breker admits. "Cover crops are absolutely the best thing for wet fields. They're the best thing I've done to get me in the field."

While originally planted for moisture management, Breker's cover crops have yielded some other soil-health advantages. The cover crops help him manage the saline seeps that are present in some fields, and help to increase the valuable soil organic matter.

After years of no-till farming, Breker raised his soil's organic-matter content about 1 percent before it plateaued. After incorporating cover crops, Breker noticed another increase for the soil organic matter. Now, his fields contain between 6 and 7 percent organic matter compared to 3.5 to 4.5 percent for most conventional farmers in the area. The cover crops and no-till practices also deliver better nutrient mineralization from that increased organic matter. Long-term no-till land averages a 50-pound per acre nitrogen credit for cereal crops and about the same for corn, according to Breker.

He's also seen the impacts that his practices have had on soil health.

"Talk to any good soil scientist, and they'll tell you a shovel can tell you a lot about your soil," Breker

says. "We've seen earthworm populations increase, and our fields are mellow."

Outreach Emphasis

Breker is an outspoken and respected voice for soil health. He has presented at state and national tillage conferences, and has received multiple awards for his outreach and stewardship. He's also one of the founders and board members for the Conservation Cropping Systems Project, a conservation-tillage demonstration research farm near Forman, North Dakota, that was started in 2001.

Breker sees other farmers giving more credence to cover crops and reduced tillage as ways to manage their farms for soil health. "People who care about what's under their feet are paying attention," he contends.

Making the switch from conventional to no-till farming or incorporating cover crops can be a challenge for farmers. In February, Breker hosted a class of agriculture students from the North Dakota State College of Science in Wahpeton; there was a day-long session about cover crops and soil health that was done in conjunction with NDSU soil scientist Abbey Wick. The goal was to help future farmers who are interested in soil health so that they know about their management options.

"The old-school way can be tough to overcome," Breker admits. "You have to have a deep-rooted belief in conservation, or nothing will stick."

—Story and photos
by Daniel Lemke



For nearly four decades, Havana, North Dakota farmer Joe Breker has used a combination of no-till farming and cover crops to manage and improve soil health.



Dear Valued Soybean Producers,

Recently, there has been public discussion about the structure and operations of the state commodity groups and whether there is sufficient oversight and internal controls to ensure that each one operates per the rules and regulations established by the state and—where applicable—federal statutes. The North Dakota Soybean Council (NDSC) is regulated by the State of North Dakota and by the U.S. Department of Agriculture (USDA); the NDSC is responsible for collecting and investing soybean farmers' checkoff dollars for the benefit of all North Dakota soybean farmers. We take this responsibility very seriously. Here are some questions that I want to address.

What is the difference between the NDSC and the North Dakota Soybean Growers Association (NDSGA), and is there a separation of duties and funds between the two?

The NDSC and the NDSGA are two different organizations with one focus: to maximize the profit opportunities for all ND soybean farmers. Both groups serve this purpose in different ways. The NDSC collects and invests soybean-checkoff dollars in such areas as production research, domestic and international market development, producer education and consumer awareness. The NDSGA is a statewide, member-driven organization that focuses on state and national policy issues which, by law, the checkoff cannot fund. Each organization has its own board of directors, staff and budget.

What checks and balances are in place to ensure that you are operating per state and federal law and that the funds are being invested appropriately?

The NDSC is audited annually by the State of North Dakota and reviewed every five years by the United Soybean Board (USB) as required by the USDA. These audits/reviews encompass a thorough examination of all our financials, investments, contractual arrangements, policies, procedures, conflict of interest statements, expense reports, procurements and checkoff collections among others. Each area is reviewed to ensure compliance with ND state law and the federal Soybean Act and Order. I am pleased to report that the annual audits and the most-recent USB compliance review are very clean. This reaffirms that the NDSC is a well-run, financially sound and compliant organization.

Some commodities provide refunds on checkoff dollars. What makes the NDSC different?

The soybean checkoff is a federal program. Federal legislation mandated that soybean refunds be discontinued for soybean sales after October 1, 1995.

How are checkoff-investment decisions made?

As stated above, the NDSC invests checkoff dollars in research, market development, producer education and consumer awareness. Individuals and organizations that are seeking funds must complete and submit a written proposal stating how their project will benefit soybean farmers and the industry. Our 12-member board

of directors (elected by soybean farmers) thoroughly reviews each proposal to determine if the project falls within one of these four categories, if it aligns with our mission and strategic plan, if the cost of the project is reasonable and defensible in an open market, and if the project is compliant with ND state law and the federal Soybean Act and Order. The board also looks to see if other commodity groups, industry partners or soybean boards in neighboring states could benefit from sharing the project's cost, all with the goal of maximizing checkoff dollars. The board members make the decision to fund or not to fund based on these criteria.

Why do you have a healthy reserve when you should be spending these funds on projects that benefit the soybean farmers?

We are fortunate to have continued, significant growth in soybean acres across the state, generating more revenue for the NDSC. Eventually, funding will catch up to our reserves, and we need to ensure that we are prepared to manage within that environment when it occurs. Today, we can take a proactive look at how to best invest our dollars given different scenarios. We are working to determine how we can normalize funding and be prepared to weather challenging economic times. We are also working to identify where we can make the greatest impact through our checkoff investments in order to generate the greatest return for you. We have achieved success in this area. A study conducted by the USB concluded that, for every dollar a soybean farmer paid into the check-



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off, he/she received \$5.20 in value through advancements in soybean research, expanded market opportunities and other benefits. We will not spend your money foolishly just to draw down our reserves. As stated previously, the projects that we fund must be compliant with state and federal regulations; be of a reasonable and defensible cost; and, most importantly, bring direct value to you and our industry.

I hope that this information reaffirms your confidence in our organizational structure, financial management and operations. We pledge to continue to be good stewards of your checkoff dollars and to operate not only per the requirements set forth by state and federal law, but also in a highly ethical, reputable and collaborative manner. Thank you for your continued trust and confidence.



Promoting U.S. Soy Abroad

North Dakota farmers played a key role in building relationships with overseas soybean buyers. The U.S. Soybean Export Council (USSEC) hosted the annual U.S. Soy Advantage Buyers Outlook Conference in Seoul, South Korea, and the 2016 U.S. Soy Buyers Market Outlook Conference in Shanghai, China in December.

Valley City, North Dakota, farmer, and USSEC and American Soybean Association (ASA) director Monte Peterson as well as North Dakota Soybean Council director Perry Ostmo traveled to Korea and China to participate in the conferences. More than 60 representatives from Korea's crushing, feed and soyfood industries attended the Seoul conference while more than 100 key importers, crushers and feed integrators participated in

the Shanghai event.

Korea is a sizable importer of U.S. soybeans. Korea imported more than 1.1 million metric tons of soybeans in 2015, half of which originated from the United States. Korea also imported about 1.6 million metric tons of soybean meal, with the U.S. contributing just under 10 percent.

China remains the largest customer of U.S. soybeans. The USSEC identified China's 10 largest and most loyal buyers of U.S. soybeans. The grower leaders awarded those companies with prizes which symbolized the companies' commitment to the U.S. soy industry.

The conferences are held to update Korean and Chinese customers and related industries about the new crop quality and supply situation in the U.S., and to help



Building and maintaining relationships with overseas buyers is a major component of international trade. North Dakota farmers Monte Peterson (center) and Perry Ostmo, (second from right), recently visited customers in China and South Korea.



Valley City farmer Monte Peterson, an American Soybean Association director and U.S. Soybean Export Council director spoke about his farm during the U.S. Soy Market Outlook Conference in Shanghai, China.

customers and U.S. soy delegates increase their connections.

Peterson, Ostmo and other participants presented information about the record crop yield in 2016, overall soybean production as well as farmers' risk management. Other conference topics included the 2016/17 crop quality, the application of the U.S. Soy Sustainability Assurance Protocol (SSAP), the global supply and demand, and the market outlook.

Peterson says that buyers and soybean users were interested in learning about soybean production and the sustainability of his farming practices.

"That is becoming increasingly important all the time," Peterson says. "We didn't talk about sustainability much 5 or 10 years ago when we met with customers. Now, it's a topic of conversation each time because they want to know how we grow our soybeans, how sustainable we are and how our actions are contributing to any environmental impacts."

Feedback from attendees illustrated two major reasons that they believe U.S. soy products are more valuable than from other origins: the reliability and sustainability of U.S. soy.

—Story and photo by USSEC staff



See For Yourself Attendees Discover How Biodiesel Can

Fuel North Dakota's Future

A group of North Dakotans sought to learn more about biodiesel on January's See-For-Yourself trip to the National Biodiesel Board's Conference & Expo in San Diego. This event is the 3rd year that the North Dakota Soybean Council (NDSC) has provided an opportunity for fuel distributors and other interested parties to learn more about the biodiesel industry with the hope of increasing biodiesel use in North Dakota. The theme of this year's conference was "Fueling our Future." After another record year where the U.S. consumed a record-setting 2.9 billion gallons of biodiesel in 2016 and increases in RFS volumes, the industry is poised for continued growth.

Troy Uglem, NDSC director and treasurer, and Suzanne Wolf, NDSC communications director, attended the conference. Guests of the NDSC were Tom Haahr, Farmers Union Oil in Devil's Lake and chairman of the ND Petroleum Marketers Association, and Paul Ostendorf, Allied Energy in Edgely. The group kicked off the confer-

ence with an orientation meeting with See-For-Yourself attendees from neighboring states. The North Dakota group heard from a Minnesota co-op about how the co-op's decision to offer higher biodiesel blends improved its business. The Minnesotans were happy to share the lessons that they learned over the years. The National Biodiesel Board (NBB) staff highlighted NBB activities and provided an overview about the challenges and opportunities facing the industry. Hoon Ge from MEG Corp highlighted the quality-standard improvements that have reduced biodiesel-related problems in the last decade and gave best practices for handling and using diesel and biodiesel.

The conference offered interesting educational sessions on a variety of topics, such as federal policy, market opportunities, research and infrastructure. The "Spotlight on Washington: What to Expect with a New Administration and Congress" highlighted the uncertainties that exist regarding the federal



North Dakota attendees had the opportunity to learn how the U.S. Navy uses biodiesel, biofuels and other environment-friendly procedures in its operations at Naval Base San Diego on January 18.

policies that affect the biodiesel industry. Former U.S. Senator Byron Dorgan was part of the panel discussion; he hoped that President Trump would embrace the biodiesel industry and would look at what it has done to help rural communities by creating jobs and economic expansion. Dorgan said, "Biodiesel is a very strong success story. Donald Trump likes success."

One of the biggest take-a-ways from the conference is how far the industry has come. Today's biodiesel is not the same biodiesel that people were using in 2007. Over 90% of today's biodiesel is produced under the BQ-9000 program, a fuel-quality accreditation program to assure biodiesel quality. According to one NBB speaker, even as U.S. biodiesel production is at its highest level, filter plugging with biodiesel blends occurs at the same rate or less than with straight petroleum diesel. When asked about what he would tell his fellow farmers about using biodiesel blends, Uglem said that he "would reassure them about the use of biodiesel" and that the research and heavy use of biodiesel in other parts of the country demonstrates that

"they can use biodiesel as diesel at lower blends during the winter and higher blends in the summer."

Fuel distributors are the key to making biodiesel more readily available in North Dakota, the reason that NDSC chose to bring this group to the conference. The goal is helping fuel distributors to learn about biodiesel, to get comfortable with it, and to see market opportunities. Tom Haahr, with Farmers Union Oil, appreciated the opportunity and said, "People here are very passionate about what they do. They've got me excited about looking at selling it." Uglem encouraged North Dakota farmers to "start asking questions. Fuel distributors are open to delivering biodiesel, but they aren't getting asked the right questions." Paul Ostendorf, with Allied Energy, encouraged farmers to use biodiesel, too. All the See-For-Yourself attendees learned that biodiesel adds 63 cents to the price for a bushel of soybeans. Ostendorf stated, "Farmers should support their product, know the facts and see the money they are making."

—Story by Lisa Pedderson, MEG Corp., photos by Lisa Pedderson and staff



North Dakota conference attendees met with MEG Corp and national biodiesel-industry experts to discuss the state of biodiesel in North Dakota and to look for opportunities to work together in order to increase biodiesel use in the state.

Production Growth, Overseas Competition Demand Transportation Investment

In the aftermath of another historic soybean harvest, U.S. farmers continue to demonstrate their ability to respond to the growing demand from domestic and international customers. However, this increased production requires a corresponding increase with the transportation capacity in order to ensure that the industry and the individual farmer remain profitable. A recent study funded by the soybean checkoff offers a warning that future production increases, along with infrastructure improvements by South American competitors, could suppress the profitability of the U.S. soybean industry.

“Transportation infrastructure gives U.S. farmers a significant competitive advantage over our international competitors, but without investment, we won’t enjoy that advantage for long,” said Mark Seib, a soybean farmer from Poseyville, Indiana, and a director on the United Soybean Board. “We need to focus on investing in our infrastructure now to position ourselves for a competitive and profitable future.”

The study, “Farm to Market—A

Soybean’s Journey,” is an expansion of the original 2012 report that highlights how soybeans are transported to domestic and international customers. In addition to documenting the total volume of U.S. soybeans transported across various modes, the report provides transportation profiles for 26 individual states, an expansion from the 17 states that were featured in the 2012 study. The 26 profiled states account for 97 percent of the soybeans transported in the country. The research is funded by the soybean checkoff and performed by Informa Economics.

Some of the study’s key findings include

- Rail-car loadings of soybeans will increase 20 percent to approximately 240,000 rail cars by the year 2023. Barge loadings will increase 32 percent to over 21,000.
- China, the leading international customer for U.S. soybeans, will continue to import larger volumes. China’s annual soybean net imports increased by 24 million metric tons (882 million bushels) from 2006 through

2010. From 2010 through 2023, Chinese soybean net imports are expected to increase an additional 74 million metric tons (2.7 billion bushels) to 126 million metric tons (4.6 billion bushels).

- Soybean production in Brazil, the second-leading producer worldwide, is expected to exceed 129 million metric tons (4.7 billion bushels) by 2023, up from 87 million metric tons (3.2 billion bushels) in 2013.
- Soybean exports from Brazil will expand to exceed 74 million metric tons (2.7 billion bushels) in 2023, up from 45 million metric tons (1.7 billion bushels) in 2013.
- Infrastructure improvements in Brazil are estimated to reduce freight costs between 20 and 30 percent: \$40 per metric ton. Such an improvement would make Brazil’s inland transportation costs nearly equivalent to the cost in the U.S.

Lower transportation costs have historically served as a key source of the competitive advantage for the U.S. soybean industry. While many previously planned infrastructure investments in Brazil have not come to fruition, if even a percentage of such investments are realized, the competitiveness of the U.S. soybean industry will be diminished.

“While it is very difficult to establish a precise forecast for our industry in a very uncertain and turbulent marketplace, it is important to scan the horizon to better understand the potential future demands on our transportation system as well as the efforts by our competitors to improve

their efficiency,” explains Mike Steenhoek, executive director of the Soy Transportation Coalition. “The time to plan for infrastructure improvements is before you experience the bottleneck, not after it. Keeping our finger on the pulse of how soybeans get from the farm to our ultimate customers is essential as we promote a transportation system that helps farmers remain profitable.”

In addition to providing a forecast for the future production and transportation demand, the report provides data in the following areas:

- Status and outlook for the livestock industry: both nationally and in the 26 featured states
- Rail transportation: number of car loadings, average distance moved, leading origination and destination areas, and capacity
- Barge transportation: percentages moved by various rivers, commodities transported, average distances moved per commodity and capacity per barge
- Overview of current and future state of Brazil’s infrastructure development
- Storage capacity: both nationally and in the 26 featured states

“Great nations, as well as great industries, continue to invest in themselves,” explains Steenhoek. “Investing in infrastructure should not be an isolated incident. It needs to be perpetual. By issuing this report, it is our hope that we will increase attention and focus on the importance of investing in our economy and industry to enable us to remain competitive in the 21st century.”

The full results of the study can be accessed at www.soytransportation.org or www.unitedsoybean.org.

—Story by Mike Steenhoek,
photo by staff





Tyler Speich, third from right, of Milnor is the chairman of the North Dakota Soybean Council.

Check Out Our New



Livestock Video

The North Dakota Soybean Council collaborated with the North Dakota Corn Utilization Council to produce a short video, highlighting how livestock operations increased the profitability for three North Dakota soy/corn farmers: Tyler Speich, Milnor; Scott German, Oakes; and Jeremy Wanzek, Cleveland. Go to:

bit.ly/benefitsNDlivestock



Scott German of Oakes is the chairman of the North Dakota Corn Utilization Council.



Jeremy Wanzek of Cleveland, left, owns and operates a family dairy operation along with his father, Dwane, right.

Living Ag Classroom 2017

In January, February, March and April, the North Dakota Soybean Council educated over 4,000 fourth graders in Bismarck, Fargo, Jamestown and Lisbon about soybeans' importance to the state, including how soybeans are grown and the array of products made from this "miracle bean." The Living Ag Classroom events are collaborative efforts by many North Dakota agriculture and commodity groups. These events teach fourth-grade students how their food gets from the farmer's field to the grocery store's shelves.



Jamestown soybean farmer Sarah Wilson educates fourth graders at the Jamestown Civic Center on January 11.



SCN Coalition: Take Two

Millions of dollars have been spent to combat the most damaging soybean pathogen in North America. The defense discovered decades ago is beginning to falter, and researchers are concerned about the coming challenges. As a consequence, nearly 40 university, checkoff and private scientists and growers gathered in mid-December to share management information and to discuss the development of the second Soybean Cyst Nematode (SCN) Coalition.

“There’s a long history with the SCN Coalition because, in the 90s when it originally started, SCN was causing a lot of yield loss and growers didn’t have the information to manage it,” said Sam Markell, Ph.D., associate professor and extension plant pathologist for North Dakota State University. “We’re in almost the exact same situation again because resistance is starting to fail. We need to look at it a different way.”

The original SCN Coalition lasted only a couple years, but in that time, thousands of growers across the north-central United States began testing for SCN and actively managing it. However, those management tools are not working as well as they used to, and many growers don’t realize that the pathogen is changing.

This issue doesn’t affect one state or even one region. As of December 2016, SCN had been confirmed in more than 30 states, Puerto Rico and southern Canada. SCN continues to spread within the states, and it is being confirmed in new counties and fields every summer. Unfortunately, the spread isn’t ex-

pected to slow down any time soon.

Not helping the issue are several challenges that are unique to the SCN pathogen and how it has been handled during the last few decades. The most concerning one is the farmers’ apathy toward the situation. As part of a 2015 survey, researchers found that 45 percent of farmers didn’t think that identifying SCN was important, and of these farmers, 69 percent didn’t think that SCN was a serious issue. This means that not only is SCN the biggest yield robber for North American soybean farmers, but also that those same farmers aren’t aware of the damage being caused.

“Growers a generation ago quickly learned about SCN and started managing it with the best tools they had,” said Markell. “Once something is under control and being managed, you don’t tend to actively think about it as much. The problem with SCN is that it’s been changing so the old tools aren’t as good, meaning the growers aren’t managing it as well as they thought.”

Other challenges facing SCN researchers include biology, math exercise and the definition of “resistant”. The way that SCN attacks a soybean plant is through the roots, so until the damage is extremely severe, the leaves and canopy may appear healthy. This means casual scouting would not determine the issue. Soil sampling, testing and egg counts are necessary to determine how severe the problem is.

Math exercise

To explain how severe the SCN problem can get if it is not caught early, Greg Tylka, Ph.D., Iowa State

University, offered a math exercise. If half a cup of soil starts with 100 eggs, around half of those eggs will be female and will each produce 250 additional eggs. Even with a 95-percent egg-mortality rate, after three generations, there would be 24,414 eggs in that same half-cup of soil. Depending on the environment, most north-central states will experience 3-6 SCN generations in a growing season, so that number could be exponentially higher for some farmers.

“Every 24 days, a new generation of SCN is born,” said Tylka. “That means they can go from below the threshold to problematic very quickly.”

Definition of resistance

Many farmers who know they have an SCN issue are planting a “resistant” variety, but what does “resistant” mean? In science, the definition is less than 10 percent reproduction across a single generation, as measured in a greenhouse test. Legally, there is no definition for SCN resistance, so a bag of seed with 75 percent (or higher) susceptibility could be labeled resistant.

Research presented at the coalition showed that, in a greenhouse study examining the level of reproduction on 61 different soybean varieties, 58 of which were labeled resistant, all but one of them allowed reproduction above the 10-percent scientific threshold. With the same varieties in a field setting, 40 of the 61 varieties allowed high rates of reproduction. In other words, the majority of the tested varieties were technically not resistant.

Genetics

Adding to the resistance problem is the fact that the nematode is overcoming the two most common soybean breeding lines, PI 548402

(commonly known as Peking) and PI 88788. Stated another way, SCN populations are becoming resistant to the resistance. Reproduction rates of SCN on both sources of resistance have risen above the scientific threshold in most areas. In the early 90s, there was almost no reproduction on the varieties with Peking and PI 88788 resistance, but overuse is leading to resistance problems for many farmers.

“There is a lack of resistance diversity in a commercially available varieties, leaving farmers with little to no choice in what type of genetic resistance they will use,” said Tylka. “The usefulness of traditional resistant varieties will continue to decline, and unfortunately, new varieties with novel sources of traditional resistance aren’t likely.”

These factors led to the need for the second SCN Coalition. The first part of which was to bring a diverse group of academic, industry and commodity groups together with farmers in order to discuss how to combat this pathogen. The event began with the 2016 National SCN Conference and concluded with the SCN Coalition meeting. Two days of research presentations and discussions led to a greater understanding among all of the groups for the collaboration that will need to take place in order to wipe out SCN.

“We’re all going to have to work together on this,” Markell said, referring to the diverse group in attendance. “It’s critical that growers have a strong voice in the development of the 2nd SCN Coalition.”

All 12 of the north-central soybean research program states are involved in this project along with Kentucky, Oklahoma, Tennessee, and Virginia as well as a university in Ontario, Canada.

—Story by Allie Arp, NCSRP staff



Some Points to Consider with **Dicamba-Resistant Soybean**

The new dicamba-resistant soybean technology will bring another, very effective option to the soybean-

herbicide toolbox. Recent EPA and North Dakota state registrations will allow the use of dicamba on dicamba-resistant soybean in 2017.

This supplemental registration will expire November 9, 2018. Individuals using this herbicide system should use extreme judicious care to preserve the registration after the expiration date. To date, three dicamba products are registered:

- XtendiMax from Monsanto, a 2.9SL dicamba-dga + Vapor-Grip formulation technology
- Engenia from BASF, a 5SL dicamba-BAPMA formulation
- FeXapan from Dupont, a product with the same formulation as Monsanto's XtendiMax + Vapor Grip

The following factors need to be considered when evaluating this technology for use.

1. Label language.

The Xtendimax label contains 40 and the Engenia label contains 25 "Do not....." statements. **The labels' "Do not" statements are enforceable and require growers to strictly follow the instructions.** The labels also indicate that manufacturers do not warranty the result of the products' use and that the buyer or user are solely responsible

for the results. Growers should follow the label with extreme exactness in order to prevent unintended results.

2. The labels list websites that should be reviewed prior to applying the herbicide.

- Monsanto's website is www.xtendimaxapplicationrequirements.com.
- BASF's website is engeniatank-mix.com
- DuPont's website is fexapanapplicationrequirements.dupont.com

The EPA views these websites as label extensions. The websites will be populated with additional information, including application information, approved nozzles, tank-mix options and adjuvant options, as it becomes available. Applicators must check the websites no more than seven days before application to check for additional information that is not on the labels.

3. Low-volatile formulations.

BASF and Monsanto have reduced, but have not eliminated, the volatility of dicamba through formulation changes. BASF's Engenia herbicide is a BAPMA salt of dicamba which is heavier to weight the active ingredient from

volatilizing. The BAPMA salt of dicamba is much heavier than the dimethylamine salt in Banvel or the diglycolamine salt in Clarity. This large salt anchor reduces the volatility potential.

Monsanto has added 'Vapor Grip' to its dicamba XtendiMax formulation. The active ingredient of Vapor Grip has not been released, but because acidifying adjuvants are not allowed, scientists presume it buffers the pH of the spray solution to 5.5 or greater. At a pH of 5.5 or greater, dicamba remains mostly in the less-volatile anionic form. At a pH less than 5.5, dicamba acid, which has a much greater volatility potential, may form.

It has been reported that XtendiMax is 90 percent less volatile and that Engenia is 70 percent less volatile than Clarity, making them low-volatile formulations, not no-volatile formulations.

4. XtendiMax and Engenia rates and timing.

The use rate for XtendiMax is not less than 22 fl oz/A (0.5 lb ai/A), and Engenia is not less than 12.8 fl oz/A (0.5 lb ai/A). A total of four applications can be made in one use season: one at preplant, one at pre-emergence and two applications post emergence

through the soybeans' R1 growth stage. Soil applications may provide short, residual weed control, but applying longer-residual, soil-applied herbicides with different modes of action may result in greater residual, wide-spectrum weed control.

5. Timing of post-emergence applications on weeds.

XtendiMax and Engenia labels recommend application before weeds exceed 4 inches. Application at that stage or earlier may result in controlling most broadleaf weed species. Weeds that are greater than 4 inches tall, including some pigweed species such as waterhemp, may not be controlled. Some broadleaf weeds can grow 1 inch or more per day under ideal conditions. Applying the products to weeds that are shorter than 4 inches requires forward planning and precise execution.

6. Timing of post-emergence applications on dicamba-resistant soybeans.

Dicamba has been used, with minor drift issues, by wheat and corn growers since the mid-1960s. This argument may give growers a false sense of security concerning the limited injury from drifting to susceptible crops. Timing for the



dicamba application on 3- or 4-leaf wheat or small corn is usually in the early spring when most other susceptible broadleaf crops have not emerged. The application timing for dicamba on dicamba-resistant soybean is up to R1, which can be from June 15 to July 15. At this calendar timing, broadleaf crops are actively growing. Scientists have observed that dicamba damage to susceptible broadleaf crops increases as the plant's age increases and in water-stress conditions.

NDSU weed scientists have categorized many crops that are grown in North Dakota with reference to their susceptibility to dicamba drift. Most legume crops have very high susceptibility.

- Low susceptibility: small grains, canola, corn, flax, millet and triticale.
- Moderate susceptibility: alfalfa, buckwheat, potato, safflower and tomato.
- Very high susceptibility: chickpea, dry bean, field pea, grape, lentil, sunflowers, soybeans and sugarbeets.

7. Buffer areas protecting susceptible crops (sensitive areas) from drift.

The XtendiMax label requires a 110-foot downwind buffer with a rate of 22 fl oz/A (0.5 lb ai) and a 220-foot downwind buffer for rates that are greater than 22 fl oz/A. The Engenia label requires a 110-foot buffer for 12.8 fl oz (0.5 lb ai). Labels indicate sensitive areas in three categories: 1. Threatened and endangered species, 2. Non-specialty crops and 3. Specialty crops. Plants and crops in category 1 require a 110-foot buffer and wind less than 15 mph. Crops in category 2 require a 110-foot buffer and wind less than 10 mph. Dicamba-resistant soybeans cannot be sprayed when specialty crops (category

3) are downwind. Some specialty crops are identified as dry edible, peas, potatoes, fruit trees and flowers. Gardens that may be planted on the edges of properties and adjacent to agricultural fields frequently contain tomatoes which are extremely sensitive to dicamba. Labels do not indicate the maximum distance that specialty crops must be from the application site before the restriction is not valid. Some crops, such as small grains, corn or DT soybeans, may not require a downwind buffer.

8. Meticulous sprayer clean-out.

Labels describe an 11-step, triple-rinse process for sprayers. This task should be done perfectly because the dicamba concentration that causes injury to non-dicamba-resistant soybeans is 0.01 to 0.1 percent dicamba in the spray solution. The 0.01-percent amount is equivalent to 0.05 fl oz or 1.5 ml Clarity, or 1 soda cap from a plastic bottle full of dicamba, in a 500-gal tank.

Sprayer clean-out studies have shown that 0.01 percent is equal to approximately 3/4 cup of spray solution left after 1 pt/A Clarity in a 500-gal tank and that 0.1 percent is equal to 2 quarts of spray solution left after 1 pt/A Clarity in a 500-gal tank.

9. Best management practices (BMPs).

There are several BMPs recommended on the XtendiMax and Engenia labels. One BMP is to use specified nozzles that produce extreme, ultra-coarse droplets (>450 microns). Very large droplets reduce the risk of off-target movement compared to small/fine-spray droplets. Some research suggests that most post-emergence herbicides produce the greatest weed control when applied with fine-to-medium spray-droplet quality. High-use

rates for dicamba may overcome the negative effects of large droplets.

Another very important BMP is not to add ammonium sulfate (AMS) or any adjuvant containing AMS. Growers should refer to the respective websites for the approved adjuvants.

The maximum ground speed is 15 mph. The spray boom should be no more than 24 inches above the target. No aerial application is allowed.

10. A universal principle of chemistry is absorption.

Soil particles and organic matter have many negative charges based on the particles' surface area. Neutral or positively charged compounds, including herbicides, can bind to the negative charges on soil and organic matter. Water also competes for these binding sites. Some dicamba that intercepts dry soil may bind to the soil. Rain events that occur after application may desorb dicamba, allowing the bound dicamba to go into a liquid phase and to possibly volatilize if the dicamba is in the acid form. The source of dicamba drift may be difficult to discover because it takes several days for symptoms to show on non-dicamba resistant soybeans. The Xtendimax label states that it should not be applied if rain is forecast within 24 hours after application due to the potential for increased volatilization.

11. Dicamba-resistant weeds.

There are many examples where overusing a herbicide or herbicide group has resulted in resistance to several weeds. Dicamba may be used each year in a wheat, dicamba-resistant soybean and corn rotation. Rotating dicamba with other herbicides with different modes of action delays resistance. Kochia resistance to dicamba and

fluroxypyr (Starane) has already been documented in North Dakota and some western states. Waterhemp resistance to 2,4-D has been documented in Nebraska. These examples show why strategic planning and careful use should be considered in order to delay weeds' resistance to dicamba.

Weed scientists believe that there is less risk of weed resistance when applying multiple applications in one growing season than by applying one application each year in tolerant crops. Multiple applications during one growing season kill more survivors, preventing plants escaping to reproduce and make seed. The new dicamba technology should not be viewed as a glyphosate replacement nor should it be considered a stand-alone product. Using the dicamba system as one of several weed-control products results in better overall weed control and delays weed resistance.

12. Crop-rotation restrictions.

Follow the crop-rotation restrictions that are listed on herbicide labels. Most crops can be planted the year after application, but labels also show that rates of 33 fl oz/A or less require a delay of 120 days (4 months) to plant any crop. Rates of 33 to 88 fl oz require 180 days (6 months) to plant any crop. Do not count days when the ground is frozen.

In summary, the herbicide labels for XtendiMax and Engenia require careful reading and studying so that growers understand the many restrictions and follow the label guidelines.

If you don't read the label, don't use the technology!

—Story by Dr. Rich Zollinger,
NDSU Extension Weed Specialist,
photo by Mary Morken

Crush Plant To Boost State's Soybean Industry



North Dakota's growing soybean industry got a boost from the recent announcement that a \$240

million soybean crushing facility is planned for Spiritwood, North Dakota.

Minnesota Soybean Processors (MnSP) and its subsidiary North Dakota Soybean Processors (NDSP) have confirmed their intention to build an integrated soybean crush facility and refinery that will crush 125,000 bushels of soybeans per day. The plant would produce soybean meal as well as refined, bleached and deodorized soybean oil and biodiesel.

MnSP is a membership cooperative that currently owns and operates a soybean crush facility and biodiesel operation in Brewster, Minnesota. A 150-acre site has been identified in the Spiritwood Energy Park. The co-op plans to move forward with construction following further due diligence, necessary approvals and a successful engineering study.

MnSP will conduct a preliminary engineering and design study which will be used to determine the feasibility of construction. MnSP is working with the North

Dakota Agricultural Products Utilization Commission to complete the construction-feasibility study.

"The potential for this type of value-added project is great news for our farmers and the entire state of North Dakota," North Dakota Governor Doug Burgum says. "The NDSP plant will create value in the local community and

beyond by creating 55 to 60 full-time jobs; supporting local service companies, vendors, and suppliers; and supporting the soybean price paid to local farmers."

North Dakota soybean farmers have produced about 200 million bushels of soybeans each year for the past few years. Once running at full capacity, the NDSP plant

would process about 42 million bushels of soybeans annually.

"North Dakota was very attractive to us, in part, because of the expanding soybean production," says Bruce Hill, MnSP chair. "We are excited to move forward with this project."

The NDSP plant would be the first of its kind in North Dakota. With over 90 percent of North Dakota soybeans sent outside the state, the potential to process and



Governor Doug Burgum (third from right), MnSP officials and North Dakota soybean industry leaders met with the media following the announcement plans for a crushing plant are moving forward.

utilize more soybeans locally is welcomed by growers.

“This is just what we needed to get us excited about 2017,” says North Dakota Soybean Council Chair and Milnor farmer Tyler Speich. “With all the uncertainty around international markets, this will provide us with a great local market.”

Agriculture experts say that, in addition to offering another market for soybeans, the local demand should help narrow the basis for the state’s farmers.

“This has the potential to revolutionize the soybean industry in North Dakota,” Speich adds.

MnSP General Manager Scott Austin hopes that ground for the facility will be broken by late summer. He says that the construction is a 24-month process, however, he’s hopeful that the NDSP plant would have unloading and storage facilities in place to start accepting soybeans in time for the 2018 crop.

“Our preliminary market analysis shows there are markets this facility would serve that would complement our current efforts at the Brewster facility to reach both global and domestic markets for meal and oil,” Austin says. “We also believe that the biodiesel from this plant would serve both domestic and international markets.”

The NDSP plant will have the capacity to produce 900,000 tons of soybean meal and 490 million pounds of oil. Half of the oil will be used to produce biodiesel while the other half will be for food-grade soybean oil.

Governor Burgum made the announcement during the annual Northern Soybean Expo and Trade Show.

—Story and photos by
Daniel Lemke



A Complex Environment

Just as the ecosystem above ground is an intricate tapestry, the soil is also a complex, living environment that can be impacted by many forces, including farm activity. As with all environments, a healthy soil ecosystem requires balance.

Many researchers and farmers are concerned that U.S. soils are becoming degraded, which has fostered a growing interest in soil health. The exact description of what constitutes healthy soil can be difficult to define. Dr. Caley Gasch, assistant professor of soil health research at North Dakota State University, says that soil health can be considered “the interactivity of biology, chemistry and physics that supports soil function.”

Biological factors that affect soil health include organic matter, root structure, biotic activity and decomposition rates. Chemical factors that indicate soil health include pH levels, salinity and the plant’s nutrient content. A soil’s bulk density, water-holding capacity, porosity and texture are indicators of its physical health.

Researchers say that healthy soil is well aggregated, offering space for water and air to move readily through the soil without being prone to wind and water erosion. Well aggregated soil allows for optimal nutrient cycling and in-

creases the water-holding capacity and provides an environment for diverse microbial activity, helping with nutrient cycling and promoting plant growth. Healthy soil also contains a diverse root structure which supports microbes and reduces erosion.

For North Dakota farmers, the soil’s function is to grow crops. The state has a broad diversity of soil types, each with its own characteristics that require different management strategies. Evaluating the soil’s health can help farmers to make sound decisions that impact productivity and long-term sustainability.

Several tests have been developed to evaluate soil health by measuring different soil-activity functions, including the presence of available nutrients. The tests are designed to give a comprehensive assessment of soil health at a snapshot in time.

“Tests like these can help form a baseline, so if farmers change a practice, they’ll have a benchmark,” Dr. Gasch says.

Dr. Gasch says that a simple way to evaluate soil health is with a spade. “Nothing beats digging a hole,” she contends. “See how the soil crumbles. Where are the roots, and how many are there? Is the soil saturated with water? Just looking at and feeling the soil provides a lot of information.”

Soil is a complex web of physical, chemical and biological factors, so no single measure defines the soil health. Soil is a complex ecosystem that is slow to change. Achieving healthy soil isn’t solely a destination; it’s a continuous process.

—Story by Daniel Lemke,
photos by Wanbaugh Studios





Valuing SOIL Health

Achieving healthy soil affects more than a farm's

environmental impacts and sustainability. Soil health and the management practices designed to improve soil health can also yield positive economic returns.

“For farmers, the importance of healthy soils is primarily in the potential to increase productivity and reduce the need for purchased inputs,” says Dr. David Archer, agricultural economist at the USDA Agricultural Research Service’s Northern Great Plains Research Laboratory in Mandan, North Dakota.

Dr. Archer has researched cropping systems aimed at building soil health for 17 years. Dr. Archer considers soil health in terms of how it functions, including how well the soil allows water to infiltrate as well as how well the soil retains water, cycles nutrients, and promotes root and plant growth. The soil’s organic matter, structure, chemical characteristics and biological function all play a part as well.

Because farmers strive for profitability, most of them look for ways to improve their bottom line. Dr. Archer says that there is an important distinction between the economic value of healthy soil and an overall cropping system that promotes soil health.

“People want to know what the economic value of healthy soil is, but you really shouldn’t separate that from the practices it takes to build healthy soil,” Dr. Archer says. “If your soil is degrading, you can’t build soil health without making changes to your production system. What is important from an economic point of view is the net impact of those changes on your bottom line.”

Research shows that decreasing tillage and increasing crop diversity can positively impact the soil’s health. Because farmers make decisions about those areas every year, management decisions play a key role in affecting how the soils perform. Some of those decisions

come with the cost of inputs such as machinery, chemicals, labor or equipment; those choices will also impact the bottom line.

Long-Term View

Archer and fellow researchers have been evaluating the long-term performance of different crop rotations on a field-scale at the Area IV Soil Conservation District Research Farm near Mandan. Archer says that results from the past 12 years show higher economic returns and lower relative economic risk with more diverse cropping systems that include multiple alternative crops, including cover crops, in the rotation.

To determine the economic value of healthy soils, researchers look for impacts on crop productivity and input needs, both in the short term and the long term.

“You need to actively manage for healthy soils, so you need to look at the whole system and include the costs and benefits of management changes,” Archer says. “In our long-term crop rotation research, the most diverse rotation had higher spring wheat net returns due to yield benefits and cost reductions, showing direct rotation as well as soil-health benefits for this crop. However, differences in rotation average net returns, including all crops in each rotation, were \$10-12 per acre higher when looking at the overall system.”

Farming system-management decisions affect soil health, but the soil health also affects farming system management, which can also magnify the economic impacts. For example, cover crops may take up excess soil moisture, allowing farmers to get into their fields on time and to avoid yield penalties from late planting. The cover crops could also allow growers to plant longer-season crops that have higher value, further increasing plant diversity.

Archer says that soil health and economic returns can be improved by recognizing that it takes a long-term commitment to achieve results as well as a dedication to manage soil in a way that optimizes all functions. Researchers are looking to identify ways that farmers can make positive changes quickly.

“An area of current research for us is looking at ways to generate more rapid improvements,” Archer says. “Some practices that we are looking at include cover crops, rotating perennials with annual crops, and integrating crops and livestock.”

While there isn’t a quick-fix solution for healthier soils, Archer says that there are often changes which farmers can make to produce short-term benefits while building healthier soils. For example, using cover crops to fix or retain nutrients reduces the need for fertilizer inputs in the short term.

—*Story and photos
by Daniel Lemke*



Achieving and maintaining healthy soils takes time, but can have both environmental and economic yield.



Managing Salinity with Cover Crops

A soil-health concern of increasing importance for thousands of North Dakota farmers is soil salinity.

A 2010 report from the US-DA-Natural Resources Conservation Service (NRCS) estimates that about 5.8 million acres of North Dakota land are impacted by soil salinity.

Saline soil contains excessive levels of soluble salts in the soil water that are high enough to negatively affect plant growth, reduce crop yields and even lead to plant death under severe conditions. As water tables rise in many areas of the state, salinity has become a growing management challenge for farmers.

Lakota, North Dakota, crop consultant Mark Huso says that the issue is widespread in the region he serves east of Devils Lake.

“It’s the number one soil problem we are dealing with,” Huso says.

North Dakota State University Assistant Professor and Soil Health Specialist Dr. Abbey Wick agrees that many farmers are contending with areas of high salinity.

“Ninety percent of North Dakota farmers deal with some level of salinity,” Dr. Wick says. “It may be in small areas, but salinity will have some cost to yield.”

Excessive soluble salts limit the ability of plant roots to absorb

soil water, even under wet soil conditions. Soluble salts are dissolved in groundwater and are also found throughout the soil profile. Salt levels fluctuate as the groundwater is pulled up through the soil profile via evaporation and then flushed back down through the soil with precipitation. Having groundwater levels close to the surface results in greater salt concentrations in the rooting zone. Soluble salts are also disturbed across the landscape when excess water moves through the soil, resulting in saline seeps.

“We’ve been trying to fix

salinity forever with tillage, and it’s not working,” Huso says, “and in my area, very few farmers have the option of drain tile to move excess soil water.”

Huso says that he works with about 35 farmers. He’s been helping some of them address salinity challenges by reducing tillage in susceptible areas and by planting more salt-tolerant crops such as barley and sunflower.

Huso says that a handful of his clients have begun incorporating cover crops, such as cereal rye, in their management equation. Some farmers plant a mixture of

barley and cereal rye in the saline areas during the fall. Barley doesn’t overwinter, but cereal rye will, giving the ground winter cover. Rye plants will also use up moisture, helping to reduce salinity. As surface water evaporates, it leaves salts at the surface. Plant transpiration keeps those salts deeper in the ground.

Several of Huso’s clients have been utilizing cover crops in saline soils for three years with satisfactory results. Because 2016 was such a wet year, Huso says that it was hard to determine how much of an impact the cover crops had. He’s hopeful that 2017 will offer a clearer picture.

Dr. Wick is working with several North Dakota farmers to remediate trouble spots using cover crops. Those fields have seen gradual improvement and a return to productivity. As is often the case, the farmers heavily worked the wet, saline areas, hoping to dry them out. That activity only made the problem worse.

“We are slowly gaining,” Wick says, “It’s not something we can fix overnight. With salt-affected soils, we need to keep the tillage tools out and incorporate crops like barley and rye to keep something growing.”

—Story by Daniel Lemke, photos by NDSU and Wanbaugh Studios



Salinity can be addressed by reducing tillage in susceptible areas.



Funded by the North Dakota soybean checkoff.

U.S. FARM REPORT



2017 Northern Soybean Expo

The Northern Soybean Expo was held in Fargo on February 7. More than 375 farmers, industry

representatives and researchers packed the Holiday Inn for a day of market information, research discussion and new developments in soybean farming. In addition to the North Dakota Soybean Growers Association's expansive tradeshow, the Northern Soybean Expo featured a live taping of U.S. Farm Report as well as presentations by world-recognized plant geneticist Dr. Pamela Ronald, U.C. Davis, and Clip Flory, an agricultural commodity markets expert. Topics struck a chord with farmers. Participation was strong from start to finish.

In 2018, the North Dakota Soybean Council (NDSC) and the North Dakota Soybean Growers Association (NDSGA) will team up with the North Dakota Corn Utilization Council and the North Dakota Corn Growers Association for a joint event at the Fargodome. The event will be held on Tuesday, February 13, 2018. The Northern Corn and Soy Expo will be a one-day show for farmers. Keynote speakers for 2018 will be Dr. Jay Lehr, economist and futurist, and Public Television's Market to Market host Mike Pearson.



—Story by staff, photos by Daniel Lemke and Betsy Armour



Governor Doug Burgum spoke at this year's expo



More than 375 farmers, industry reps and researchers attended the expo.



Attendees asked questions.



Attendees visited the more than 45 industry exhibits at the trade show.



Attendees of the 2017 expo attending sessions.



Funded by the North Dakota soybean checkoff.



A live taping of the U.S. Farm Report.



The exhibit hall was busy with attendees.



Plant Geneticist Dr. Pamela Ronald spoke on biotechnology.



Joe Ericson presented.



Analyst Chip Flory informed attendees about grain markets.



NDSC CEO Diana Beitelspacher with retiring director Mike Appert



Attendees visiting trade show exhibitors.



CEO Diana Beitelspacher recognizes retiring director Art Wosick.



NDSC Chair Tyler Speich



NDSGA President, Craig Olson



North Dakota Soybean Council Donates Babysoy Bodysuits to Newborns for the Holidays

For the 2016 holiday season, the North Dakota Soybean Council

(NDSC) donated over 250 Babysoy Bodysuits (onesies) to parents of newborn babies across the state. Bodysuit donations were made to Sanford Medical Center, Bismarck; St. Alexius Medical Center, Bismarck; Jamestown Regional Medical Center; Sanford Medical Center, Fargo; and Essential Health, Fargo.

“The onesie donation from the North Dakota Soybean Council is one we always look forward to,”

says Amanda Fehrenbach, Sanford Family Birth Center patient care manager in Fargo. “Not only are they adorable and soft, but they are made with locally grown soybeans, which makes them extra special for the families who receive them.”

“We truly appreciate the North Dakota Soybean Council for these onesies,” says Susan Omdalen, director of development for the Essentia Health Regional Foundation. “The staff (members) at Essentia

Amanda Fehrenbach (middle), Sanford Family Birth Center patient care manager in Fargo, accepts Babysoy Bodysuits for parents of newborns for the holidays on December 21. NDSC Secretary Joe Morken, Casselton, was Santa for the day, and NDSC’s Marketing Communications Intern Elli Lemm, Hillsboro, was Santa’s elf. Far left is Robin Morken, a soybean farmer from Casselton, and far right is NDSC Communications Director Suzanne Wolf.

“The North Dakota Soybean Council was happy to donate Babysoy Onesies to newborns this holiday season,” says Joe Morken, secretary of NDSC from Casselton. “It was the perfect opportunity for the North Dakota Soybean Council to spread holiday cheer, share our industry and promote one of the many uses of soy.”

Soybean fiber is a soft, light and smooth protein fiber. It is smoother than cashmere and has the same moisture absorption as cotton, but with a better moisture transmission, making it more comfortable on the skin. It is hydroscopic, air pervious, soft, smooth, dry and has superior warmth retention that’s comparable to wool.

—Story and photos by staff

Health love having onesies to give to families of a newborn. It is such a special time to celebrate, and these onesies are the perfect gift. Every mom keeps the mementoes from their babies’ birth, and these onesies becomes part of those keepsakes.”

Made from Azlon from soybeans, or what is commonly referred to as “soybean protein fiber,” these colorful and adorable bodysuits are soft and earth friendly. Soybean protein fiber is a sustainable and botanical textile fiber that is made from renewable and biodegradable natural resources, the leftover soybean pulp from tofu and soy milk production.



Babysoy Bodysuits are made from soybean-protein fiber.



New parents Alisha and Preston Nermoe with their newborn Perry Jameson Nermoe of West Fargo, North Dakota, receive a Babysoy Bodysuit from Santa on Wednesday, December 21, at Essentia Health in Fargo.



North Dakota Soybean Council Director Levi Taylor (left) of Ypsilanti drops off a box of Babysoy Bodysuits to the Jamestown Medical Center for babies born during the Holidays on behalf of NDSC.



JOIN THE Conversation WITH CommonGround N.D.

Spring is a busy time on the farm. People are preparing for the planting season, calving, getting ready for spring, as well as feeling a little bit of the winter blues... anxiously awaiting the first bud and longing for longer days and warmer weather.

Spring is also a busy time for CommonGround because conferences take place, training gets planned and other events are scheduled for the winter season. This spring's conference schedule includes several new opportunities for outreach to a diverse audience. CommonGround will be attending the 2017 North Dakota Homeschool Conference in Bismarck at the end of February, as well as several registered dietitian events and a variety of other consumer-outreach activities.

These events allow CommonGround volunteers to have conversations and to make connections with people who have questions about how their food gets to their table. These opportunities don't come without preparation and being able to give volunteers the tools they need to have constructive discussions without frustrations.

April will bring a great training opportunity for new and experienced CommonGround volunteers. In conjunction with marketing and ENGAGE training, CommonGround North Dakota is excited to announce that Carrie Mess,

aka Dairy Carrie, will be sharing her experiences and advice about how to handle tough questions and uneasy situations.

Carrie is known to be extremely transparent in her day-to-day dairy-farm activities. Her blog quickly shot to stardom, and she meets the challenge head on. Carrie will share her tips and tricks as well as walk volunteers through different real-life scenarios that they could face any day, whether it be in an online conversation, responding to a newspaper editorial or just a conversation at the grocery store.

The CommonGround North Dakota training will start at noon on Thursday, April 13, with an event planning walk-through. Dairy Carrie will take over at 1 and will



Meet CommonGround N.D.'s new coordinator, Val Wagner. Wagner farms in Monango, North Dakota, with her husband, Mark. They raise wheat, corn, soybeans and alfalfa/grass hay; they also have a herd of Red Angus/Simmental cross commercial beef. The Wagners have four boys. Val is also a farm blogger at wagfarms.com.

wrap up about 3 that afternoon. See page 35 for more information. Volunteers are encouraged to come prepared for a fun event as well as to come with questions and to be ready to be truly engaged.

For more information about

CommonGround, how to become a volunteer or if you have an event with which CommonGround could assist, email Val Wagner at wagntales@gmail.com.

—Story and photo by Val Wagner



At its December 14, 2016, board meeting, the North Dakota Soybean Council (NDSC) presented Katie Pinke (left) with an appreciation plaque for her dedication and hard work as the CommonGround N.D. coordinator from 2014-2016. NDSC CEO Diana Beitel-spacher (right) congratulated Pinke. In July 2016, Pinke accepted a full-time position as the general manager/publisher of Agweek.



Know Your Numbers

On February 2, more than 100 women gathered at the Sanctuary Events Center in Fargo to

celebrate Go Red For Women at a luncheon designed to raise awareness and funds to help fight the #1 killer of North Dakota women.

The North Dakota Soybean Council (NDSC) was a sponsor for the event which provided important education to women about how to identify their risk of heart disease

and stroke as well as how to prevent the illnesses. The event also featured the inspirational survival story of Lynnette Anderson. As an RN who has worked in the critical-care and quality departments for more than 25 years, she says that she should have realized that the annoying ache in her left arm was more than

a symptom from a weekend's worth of fall chores on the farm near Page, North Dakota.

"I just chalked it up to all the gardening, washing windows and other fall chores we had been doing around the farm all weekend," Anderson said. "I didn't have any other symptoms, risk factors or a family

history—nothing that would make me think it could be my heart."

Anderson's husband, Rick, pushed her to go to the emergency room. He remembered seeing a commercial that outlined how women's heart-attack symptoms were different from men's, but Lynnette stood firm: "I just didn't think it could be me," she said.

Heart disease is the number one killer of women, causing one in three women's deaths each year and killing approximately one woman every minute. However, most women don't recognize their risk. To make matters worse, the symptoms of a heart attack can be different in women and are often misunderstood, even by people in the healthcare field.

The American Heart Association recommends that all women—and men—"Know your Numbers." To take control of their heart health, individuals should know their total cholesterol, HDL (good) cholesterol, blood pressure, blood sugar, and body mass index (BMI). Knowing these numbers, along with understanding your family history of heart disease and stroke, can help individuals work with their healthcare providers to determine their risk for developing cardiovascular diseases and stroke.

—Story by Chrissy Meyer,
American Heart Association,
photo by staff



The NDSC sponsored and attended the Go Red for Women luncheon in Fargo February 2. From left to right: Soybean farmer and NDSC Communications Committee member Kristi Schultz, Embden; NDSC Director of Market Development Stephanie Sinner; NDSC Communications Director Suzanne Wolf; NDSC Director of Finance Molly Fern, Fargo-area food columnist Sarah Nasello; and soybean farmer Robin Morken, Casselton. In front: North Dakota Corn Council Finance Director Jean Henning and Banquet in a Field event coordinator Jakelle Cornell, Fargo.



Heart Healthy Soyfoods Promoted During the Holidays

Along with the American Heart Association, the North Dakota Soybean Council (NDSC) visited Fargo-area media, including television and radio stations, over the holidays, promoting the heart-health benefits of soyfoods. The NDSC reminded viewers that consuming 25 grams of soy protein a day, as part of a diet that is low in saturated fat and cholesterol, may reduce the risk of heart disease. In 1999, the U.S. Food and Drug Administration (FDA) announced that incorporating soy protein into the daily diet helps fight coronary heart disease.



Along with KVLV's North Dakota Today hosts Kristi Larson, far left, and Chris Berg, far right, NDSC Communications Director Suzanne Wolf, second from left, and Sanford Health Registered Dietician Elizabeth Meyer, second from right, sample a slice of delicious pumpkin-tofu pie.



Sanford Health Registered Dietician Elizabeth Meyer, middle, and NDSC Communications Director Suzanne Wolf, right, visit with KVRR Morning News Anchor Emily Welker, left, to discuss tips on how to eat healthy during the holidays, including the addition of soyfoods to holiday meals.

New Soybean Disease Library

In March 2017, Dr. Berlin Nelson, Jr., a professor of Plant Pathology at NDSU, will move into a newly remodeled laboratory in Walster Hall; the lab will be dedicated to the biology and management of soybean diseases. Part of the current laboratory and part of the new laboratory are shown in the photos. In 1997, Dr. Nelson began his research on plant diseases in the current laboratory. Over the years, research has changed, and laboratory space has become more important to investigate soybean diseases. Just one aspect of the investigations, the use of DNA technology, requires better space and more sophisticated laboratory equipment. The new laboratory will enhance Dr. Nelson's research to understand and manage important soybean diseases, such as root rots, and will allow him to use new technology in order to identify host resistance and to use it to combat diseases in the future.



OLD LAB: Part of the current soybean-disease lab at NDSU.



NEW LAB: Part of the new soybean-disease lab.



April is Soyfoods Month

April is the month to celebrate soyfoods. Soyfoods are fascinating and delicious to explore and understand. Many people did not eat soyfood as children, so they are unfamiliar with it. Most people wrinkle their nose when soyfoods are mentioned and only think of tofu. Let's be honest; 20 or more years ago, some soyfood products were not as tasty as they are today. The technology and flavor profiles have changed dramatically. Today, there are many kinds of soyfood that are in a variety of forms and foods.

A little history is needed. In 1999, the FDA gave soy protein a health claim that states, "If you consume 25 grams of soy protein/day, in the context of a healthy diet, it may reduce the risk of coronary heart disease." Coronary heart disease is the # 1 killer of both men and women in North Dakota and across the USA. This health claim started the interest in soyfoods. Vegetarians and health fanatics knew about soy protein long before the health claim because soy protein is a complete protein (all the essential amino acids needed, equivalent to meat). The health claim got the attention of mainstream consumers as well as food manufacturers.

Here are 5 reasons to include soyfoods in your daily diet.

1. Soyfoods provide high-quality protein, are low in saturated fat and high in polyunsaturated fat, and are one of the few good sources of both essential fatty acids.

2. Consuming as little as one serving of soyfoods per day during the childhood and/or teenage years may reduce the breast-cancer risk by as much as 50% later in life.
3. The isoflavones in soyfoods may alleviate menopausal symptoms. Just two servings of soyfoods per day provide the amount of isoflavones shown to be efficacious.
4. New evidence suggests that soybean isoflavones may function as antidepressants and may actually enhance the efficacy of antidepressant drugs.
5. Soyfoods may reduce the risk of developing prostate cancer and may even be helpful for prostate-cancer patients.

April is the perfect month to include 1 or 2 servings of soy protein in your diet every day.

It is easy to do. Here are a few ways.

- Use 1 cup of soymilk (vanilla or plain) in the morning with cereal or smoothies.
- Eat ¼ cup of soy nuts in the mid-morning and afternoon to curb mindless snacking.
- Include 2/3 cup of shelled edamame in salads; soups (homemade or prepared); or vegetable mixes, such as corn and edamame.
- Add dry TSP/TVP to soups and chili in order to increase protein. Try replacing ½ the oatmeal with dry TSP/TVP in cookie recipes.
- Add drained and rinsed, canned black soybeans to salsa, soups,

chili and vegetable mixes.

- Have frozen edamame in the pod in the freezer for a quick after-school or work snack.
- Make your own salad dressing with soft, silken tofu. For recipes go to www.thesofoodsouncil.com. It is fast and easy.
- Have a bottle of soybean oil in your pantry. It works perfectly to sauté, bake with, use in

salad dressings and more. It is an all-purpose oil.

Start today. It is easy to include 1 or 2 servings of soy protein a day for a healthier lifestyle.

Celebrate soyfoods month in April!

—Story, recipes and photos by Linda Funk of The Soyfoods Council

Wonderful Sour Cream Cookies



Ingredients

- 11 tablespoons unsalted butter or soy margarine, softened
- 1 ½ cups sugar
- 1 egg
- ¼ cup soft tofu
- 1 teaspoon vanilla extract
- 3 drops almond extract
- ½ cup dairy sour cream
- ½ cup soy sour cream
- ¾ teaspoon baking soda
- 2 cups all-purpose flour
- ¾ cup soy flour

Vanilla Icing Ingredients

- 1 ½ cups sifted powdered sugar
- 2 tablespoons vanilla soy milk
- ¾ teaspoon vanilla extract
- ¼ teaspoon almond extract
- Candy sprinkles, if desired

Directions

Preheat oven to 325°F. In large mixing bowl, cream butter and sugar at medium speed until light, about 3 minutes. Add egg, tofu and extracts and beat until blended. In a small bowl, stir together the sour creams and baking soda (the mixture will foam a little). Add the flours to the butter mixture alternately with the sour cream mixture, beginning and ending with the flour. Do not over mix. Drop by level tablespoonsful onto lightly greased baking sheets, spacing them about an inch apart. Bake until lightly browned around the edges, 10 to 12 minutes. Transfer to a wire rack to cool slightly.

Vanilla Icing: In a small bowl, stir together the powdered sugar, soy milk, and vanilla and almond extracts until smooth. Spread icing on cooled cookies. Sprinkle with candy sprinkles, if desired. Makes 4 dozen (2-inch) cookies



Black Soybean Salsa



Ingredients

- 1 can black soybeans (15 ounces), drained and rinsed
- 1 small tomato, diced
- ¼ small yellow onion, minced
- 2 large cloves garlic, minced
- 1 Tbsp. cilantro, chopped
- 1½ jalapeños, minced
- 1½ limes
- 1 teaspoon smoked tomato powder
- Salt to taste
- Blue chips or crackers

Directions

In a medium bowl, mix the black soybeans, tomato, onion, garlic, cilantro and jalapeños. Juice the limes, and add the juice to the soybean mixture. Add tomato powder, and salt to taste. Mix gently, and let the salsa set for two hours before serving. Serve with chips or crackers.

Yield

Approximately 2 cups

—Chef David Garcia,
Dubuque Golf and Country

Western Tofu Black-Bean Cheese Dip



Ingredients

- 8 ounces soy cream cheese, softened
- ½ cup firm silken tofu
- ½ cup soy milk
- 1 egg
- 1 tablespoon taco-seasoning mix
- 1 cup shredded, cheddar-flavored soy cheese
- ¼ cup salsa
- ¼ cup black soybeans, mashed
- Soy sour cream
- Soy crisps and/or blue soy chips

Directions

Preheat oven to 350 degrees. Combine soy cream cheese, tofu, soy milk, egg and seasoning mix until well blended. Stir in the shredded soy cheese, salsa and mashed black soybeans. Pour into a 6-inch spring-form pan or a 1-quart casserole. Bake in a 350°F oven for 30-35 minutes, or until browned around the edges and a knife inserted near the center comes out clean. Cool. Refrigerate. Garnish as desired with soy sour cream, salsa, and black beans. Serve with soy crisps and blue soy chips.

Chocolate Chip Oatmeal Soy Cookies



Ingredients

- 1¼ cups oatmeal
- 1¼ cups textured soy protein
- 1¾ cups all-purpose flour
- ¾ cups soy flour
- 1 teaspoon baking powder
- 1 teaspoon baking soda
- 1 cup butter
- 1 cup packed brown sugar
- ¾ cup granulated sugar
- 2 teaspoons vanilla extract
- 8 oz. water-packed soft tofu, well-drained and cubed
- 12 oz. semi-sweet chocolate chips

Directions

Preheat oven to 375°. In a food processor or blender, process oatmeal to consistency of coarse flour. Add flours, baking powder and baking soda, process until combined. Set aside. In food processor, combine butter, sugars and vanilla; process until smooth. Add tofu, process until smooth. Pour mixture into a large bowl; add flour mixture, 1 cup at a time, stirring until combined. Stir in chocolate chips. If the dough is too soft, chill until stiff or add 2-4 tablespoons all-purpose flour. Drop dough by rounded teaspoons on ungreased baking sheet, 2 inches apart. Bake at 350° for 8 to 10 minutes or until golden around edges.

Mexican Veggie Salad



Ingredients

- 1 cup fresh (or frozen) sweet corn, cooked
- 1 cup diced celery
- ½ cup diced red onion
- ½ cup sliced black olives
- 1 cup broccoli florettes
- 1 cup cauliflowerettes
- 1 can black soybeans (15 oz.), rinsed and drained
- 2 cups grape tomatoes, cut in half
- 1 package shelled edamame (16 ounces), prepared according to the package directions

- 1 package of zesty Italian dressing mix, prepared according to the directions on the package, set aside. (You may also use your favorite prepared Italian salad dressing.)

Directions

In a large mixing bowl, add all the vegetables, and toss together. Add the dressing, and toss lightly. Cover, and place it in refrigerator to marinate overnight.

Yield

6-8 servings

Sowing the Seeds of Yield

PLANTING DECISIONS KEY TO MAXIMIZING POTENTIAL

Once soybean seeds are in the ground, there isn't much farmers can do to add yield. From then on

management becomes a matter of plant protection and yield preservation.

North Dakota farmers produced record soybean yields in 2016, thanks in no small part to favorable weather conditions. Because not every year is ideal, management decisions play a significant role in squeezing the most out of every soybean field. That starts with decisions made before soybeans are even planted.

Greg Endres is North Dakota State University (NDSU) cropping systems specialist in Carrington Research Extension Center and has years of research data that points to the value of good pre-plant decisions.

"If things can be done up front to get a good stand established, that sets the stage for a good year," Endres says.

Tillage and Rotation

Some keys for soybean success are implemented the previous

season. Endres says the correct crop sequence is important to maintain yields. Because of economics, farmers may be tempted to plant soybeans on the same fields for multiple years, but for nutrient and disease management, that isn't recommended.

Tillage practices play a role in determining yield. Managing soil moisture through tillage can have an impact throughout the season. For example, Endres says no-till systems may help hold in moisture that can be critical during July and August, which are typically drier months.

Seed Selection

One of the key pre-plant decisions farmers make each year is choosing the right variety. Yield potential, maturity date, and seed traits are important factors impacting seed choice. Farmers have options for varieties that are tolerant to herbicides like glyphosate, dicamba and Liberty.

"Farmers need to do their homework on variety selection," Endres says. "Yield potential is at the top of the list, but there are choices that go beyond yield."

Depending upon soil conditions and pressures, disease-tolerant varieties may be necessary. Planting varieties that are resistant to yield-limiters like soybean cyst nematode, iron deficiency chlorosis, and phytophthora root rot, can

help farmers get the most out of areas impacted by those pests and diseases.

Planting Date

For many farmers, soybeans have been treated as a secondary crop seeded after corn planting was done. Because current farm economics point to soybeans as one of the more profitable crop options for 2017, Endres says farmers would benefit by making timely soybean planting a priority.

"Our data shows that if the soil is ready and farmers aren't



Tillage is important in determining soybean productivity.

The Leader
Richland
IFC, Inc.

*in bringing
food grade soybeans
to market*

- Total production contracts
- Industry leading premiums
- Flexible pricing options
- Wide range of maturity options available

Contact: **Matt Bohn**
Crop Production Manager
100 N 10th St
Breckenridge, MN 56520
218-643-1791 | 701-640-2279
matt@richlandifc.com
www.richlandifc.com

mudding the crops in, even if it's cool we've had good response to early planted soybeans," Endres says. "We've seen yield increases if soybeans are planted in early May instead of late May or early June."

Rate and Space

Endres says optimal soybean stands appear to be 150,000 established plants per acre. Because not all seed germinates or reaches maturity, seeding rates may need to be adjusted accordingly.

Research data also shows yield potential is maximized when soybeans are planted in 15- or 22-inch rows as compared to 30-inch rows.

"I feel confident that if farmers

plant narrow rows they will see increased yield," Endres contends.

Fungicides

Over the long term, Endres says treated seed and the use of seed-applied fungicides will elicit a positive yield response. Dry years may minimize their impact, but fungicides can be a factor in getting soybeans off to a good start, particularly if seed is planted early and weather conditions are cool and wet.

Weed Management

Endres is a proponent of early season weed control. He strongly advises farmers use soil-applied, pre-emerge herbicide to control



Early season decisions such as seed variety, population and when to plant set the stage for the entire year.

weeds right away. The early control helps to combat weed herbicide resistance and sets the stage for increased yield.

"Farmers can see a 5 percent yield increase by starting weed control at planting and not waiting until post-emergence," Endres says.

Yield won't be evident until fall when combines clear the fields and the results of the year's efforts are known. Setting the stage early can help farmers put themselves in the best possible position.

—Story by Daniel Lemke,
photos by Wanbaugh Studios

Reality Matches Research

SURVEY RESULTS IN LINE WITH RECOMMENDATIONS

Dozens of North Dakota farmers are participating in an eight-state benchmarking survey designed to identify trends that can limit soybean production. North Dakota State University Extension Agronomist Dr. Hans Kandel is heading up the project for North Dakota and will be analyzing results of growing seasons from 2014-2017.

Information has come in from nearly 500 soybean fields across North Dakota and northwestern Minnesota for 2014, 2015 and part of the 2016 growing seasons. Dr. Kandel and fellow researchers are analyzing the data to get a clearer picture of factors that influence yield. Although the project is still a work in progress, information Dr. Kandel has collected so far reveals some early trends that closely follows research recommendations.

Crop Rotation

Rotating crops appears to make a difference in yield. Results show that soybeans planted following corn averaged over 4-bushels more per acre than fields planted to soybeans in consecutive years.

Planting Date

In 2014, farmers who planted the first week in May saw the best yields. In 2015, the first and second weeks in May were the best numerical

dates for achieving maximum yields.

"As planting is delayed, yield potential goes down," Dr. Kandel says "Our data shows that if you plant later, you will get lower yields. On average, early planting has a yield advantage. Too early is not good because you still need the right soil temperature, but if you can get in and the conditions are right, you will see a benefit."

When planted at the right time, the first soybean blooms typically appear around July 4, although the plants will continue to add leaves, blooms and pods. Kandel says the more of the plant that is developed by the time the first blooms appear, the greater the opportunity for reaching full yield potential.

Row Spacing

Row spacing impacts yield potential. While 30-inch rows were the most commonly used by survey respondents, 15- to 20-inch rows performed better. Narrower rows mean more evenly distributed plants resulting in earlier canopy closure and better sunlight capture.

Seeding Rate

About 5 percent of planted soybean seed never germinate. Survey data shows that planting a population of 165,000 seeds per acre performed best. Dr. Kandel says there can be a 10 to 18 percent difference between the number of

seeds planted and the number of actual plants. Some plants don't reach maturity because of disease, flooding or a host of other reasons. It appears that 150,000 plants per acre is optimal for achieving highest yields.

Other Factors

As soybean production has stretched farther north, farmers have a widening range of seed maturity groups from which to choose. Farmers planted soybeans ranging from 00.6 to 1.2. Dr. Kandel says later maturing varieties run the risk of being impacted by frost, while earlier maturing soybeans may leave yield on the table.

Dr. Kandel is still collecting data for the 2016 growing season, but excess water and weed pressure have already been identified as factors that hampered farmers in 2016.

Farmers who have not yet provided information are still encouraged to participate in the survey. Personal information will not be shared, but soybean cropping details will be used to develop an aggregated data set. Each individual participant will receive their own data, which they can use to compare with trends.

"A lot more answers will develop as we get more data points," Dr. Kandel says.

Farmers interested in participating in the survey should contact Dr. Kandel at (701) 231-8135 or Hans.Kandel@ndsu.edu.

The Role of Tillage

Dr. Abbey Wick cringes nearly every time she watches a video that shows wind-driven topsoil

blowing across open fields and ditches like a black North Dakota blizzard. As an Assistant Professor and Extension Soil Health Specialist at North Dakota State University (NDSU), those images are about the last thing Dr. Wick wants to see happening in farm country.

Dr. Wick says that losing valuable topsoil from open fields due to erosion is a major indicator of unhealthy soil. She says that it's sometimes stark examples such as soil blowing off the field that spur farmers to look differently at their operations and management.

"Farmers' concern for soil health sometimes begins when they realize what they've been doing wasn't working and they needed to do something differently," Dr. Wick says. "There's often a moment when something clicks."

Multiple factors can influence soil health, including crop rotation and diversity. One of the biggest influences is tillage.

In addition to reducing tillage, Dr. Wick says that adding crop diversity and increasing the rotation are positive moves to enhance soil health. Even taking the first step of reducing tillage can pay dividends.

"Decreasing erosion is the number one thing farmers can do for soil health," Dr. Wick says. "Keep the soil in the field."

To Till or Not to Till

Tillage happens for many reasons. It's done to improve the

seedbed before planting; to manage residue; to reduce the number of weeds; and to incorporate fertilizer, herbicides, or manure. Tillage can also be used to control insects and other pests as well as to manage moisture. Some farmers use tillage to manage moisture and to promote spring soil warming.

Regardless of the soil, the tillage's type and intensity play a major role in soil health. Researchers say that reducing fall tillage is the first step to build soil health.

"Fall tillage is tough on soils," says Dr. Caley Gasch, NDSU assistant professor of soil-health research.

"Tillage is hard on soil because it's telling the soil where to fracture," Dr. Wick adds. While the process does mix surface topsoil with subsoil, diluting valuable nutrients and bringing more clay to the surface, "intensive tillage destabilizes the structure, so soil erodes with wind and water more easily."

Factors that determine the impact which tillage passes have center around intensity and timing. Dr. Wick says that no-till farming best promotes soil health while less-invasive practices, such as vertical tillage and strip-till, are the next most promising. Wide-pointed chisel plow shanks, disks and moldboard plowing have the greatest effect on the soil's structure, which can negatively affect soil health.

Tillage and Compaction

Over time, the more a field is

cultivated, the more likely it is that compaction will occur. Tillage and wheel traffic are key soil-compaction contributors. Compacted soils restrict air and water movement. They also tend to have greater bulk density and less pore space.

Working fields that are saturated is a recipe for compaction. However, Dr. Aaron Daigh, NDSU assistant professor of soil physics, says that water is the most import-

ant factor for wheel compaction. However, "A soil doesn't have to be fully saturated to compact the most. If 85 percent of pore spaces are full of water, that soil will be prone to compaction."

Compaction can go beyond visible ruts. Surface compaction is an issue, but so, too, is what lies beneath the surface.

"Surface compaction can usually be taken care of in a few years," Dr. Daigh says. "But if you have deep compaction, you could be stuck with it."

Tillage impacts the soil structure, which can limit aggregation. Well-aggregated soil is full of compartments that give microbes areas to live and thrive. As soil is compacted and homogenized, those compartments are diminished, and biological diversity is reduced because some microbes outcompete others, which can impact yield.

"Aggregates may protect vulnera-

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ble microbes that are involved with nutrient cycling,” adds Dr. Daigh.

Tillage and Salinity

Soil salinity is a growing issue for farmers throughout North Dakota. Because salts are carried to the surface by water, moisture management is crucial. Farmers often use tillage in an attempt to dry fields more quickly. When the soil dries out, the evaporation leaves salts at or near the surface, contributing to increased salinity. High-salinity soils put plants under conditions that are similar to drought stress.

Aggregated soils have numerous wide channels that allow for water and air flow. Tillage can break or constrict those channels and can contribute to compaction. Compacted soils have smaller pores than well-aggregated soils. Dr. Daigh says that, the smaller the pore, the higher the water will rise in those pores. Compacted pores can move compounds such as salt higher in the soil profile.

“Compacted soil is more likely to bring salts to the surface,” Dr. Daigh says.

Wick says that many farmers are looking at ways to improve the soil health on their farms, but they often need more opportunities to interact informally with experts and to learn from other farmers who are implementing these practices. Participation in the annual Conservation Tillage Conference is growing, with one of the most popular sessions being small-group discussions or table talks. Dr. Wick also conducts Café Talks around the state in order to discuss soil-health and conservation-tillage issues; these talks are well attended by curious farmers.

“I think we’re going to see a lot more interest from farmers because they’ve been hearing and reading about these practices, and I think they’re getting more comfortable with them,” Dr. Wick says.

Wick, Daigh and Jodi De-Jong-Hughes of the University of Minnesota are collaborating for some on-farm research trials that compare chisel plow, strip-till with shanks, strip-till with coulters, a

shallow vertical till and no-till at three farms from Mooreton, North Dakota, to Fergus Falls, Minnesota. The project examines factors such as soil temperature and moisture. More information about

this project and other soil-health resources is available at www.ndsu.edu/soilhealth/.

—Story by Daniel Lemke,

Heart of Soil Health

As State Conservationist for the USDA-Natural Resources Conservation Service (NRCS), Mary Podoll is passionate about protecting the state’s natural resources while helping North Dakota’s farmers maintain and improve productivity.

“More people are starting to understand that there’s as much going on beneath our feet as there is in the space above it,” Podoll says.

Podoll says that the concept of looking beyond erosion to include other soil-health considerations began in North Dakota nearly 20 years ago, with a group of farmers and conservationists in Burleigh County. NRCS and the Burleigh County Soil Conservation District (BCSCD) formed a soil-health team in the early 1990s. The team concentrated on moving the cropping and grazing systems toward greater sustainability. In 2009, the BCSCD acquired the Menoken Farm, a 150-acre farm that is now owned and operated by the district with the goal to restore soil health.

The Menoken Farm is one example of North Dakota’s leadership in paying attention to what’s happening below ground.

“North Dakota really is the heart of soil health,” Podoll contends.

While greater emphasis on soil health is encouraging, Podoll knows that there is room for improvement. She would like to see more measurement metrics developed, including ways to measure the soil’s biological activity as well as the development of mechanisms to map nutrient cycling.

“We know that, like every living body, soil needs a variety of nutrients from more than one root,” Podoll says. “Diversity and rotation are important because, the more we can reduce tillage and keep fields covered, the better.”

While soil health is a broad topic, actions to improve the soil often happen with individual choices. Podoll would like farmers to consider a conservation plan for their land.

“Farmers are so knowledgeable about production,” Podoll says. “If they’re open to a stewardship plan, they can identify areas where they are doing well and areas where they could improve.”

Podoll says that the NRCS can help with individual farm-conservation plans. The NRCS also administers several conservation programs, including the Environ-

mental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP). The Regional Conservation Partnership Program (RCPP) offers new opportunities for the NRCS, conservation partners and agricultural producers to work together in order to harness innovation, to expand the conservation mission, and to demonstrate the value and efficacy of voluntary conservation on private lands.

“We really want to work with local people to address local needs,” Podoll adds.

Podoll admits that, at times, there have been rocky relationships between farmers and agencies such as the NRCS regarding perceived goals.

“It’s unfortunate that some saw the perception as anti-corn and soybean farming,” Podoll says. “Soil health isn’t about permanent grasses; it’s about looking at what we can do in rotation. Now, many ag groups are on board, and a lot of good ideas have come from them. We’re seeing a lot of movement by farmers to do things that fit, including reduced tillage, rotation and cover crops. We’re in a good place.”

—Story by Daniel Lemke,

RCPP Deadline Nears

The USDA-NRCS invites potential conservation partners to submit project applications for fiscal year 2018 federal funding through the Regional Conservation Partnership Program (RCPP). Project pre-applications are due on or before April 21, 2017.

The RCPP is designed to bring a wide array of local and national partners together, including Indian tribes, nonprofit organizations, state and local governments, private industry, conservation districts, water districts, universities and others. So far, more than

2,000 partners are engaged in locally led conservation efforts through the RCPP.

NRCS will award up to \$252 million dollars to locally driven, public-private partnerships that improve water quality, combat drought, enhance soil health, support wildlife habitat and protect agricultural viability. Applicants must match or exceed the federal award with private or local funds.

To learn more about the RCPP, visit www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/farmbill/rcpp/.

Join Us For the Fifth Annual “See for Yourself” Program July 11-14, 2017



Are you interested in learning more about how your checkoff money is used for North Dakota's soybean industry? Where do your soybeans go after you leave them at your local elevator? Participate in the 5th Annual See For Yourself Program with the North Dakota Soybean Council and have your questions answered!

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Northwest to learn more about the journey our North Dakota soybeans take to the end customer. Learn about checkoff investments in rail and water transportation, soy biodiesel, new uses of soy, and tour shipping ports where North Dakota soybeans leave for world markets. Experience first-hand the systems in which the North Dakota Soybean Council farmer leaders invest to ensure market stability for your soybeans.

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- Open to North Dakota soybean producers
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Soy-Industry Leaders Troubled by Trade Moves

The nation's soybean farmers have expressed significant concern following an executive order from President Donald Trump that withdraws the United States from the 12-nation Trans-Pacific Partnership (TPP). American Soybean Association (ASA) President Ron Moore pointed out the high stakes for soybean farmers, and urged the Trump administration to disclose how it intends to engage and to expand market access in the Asia-Pacific region.

"Trade is something soybean farmers take very seriously. We export more than half the soy we grow here in the United States, and still more in the form of meat and other products that are produced with our meal and oil," said Moore who farms near Roseville, Illinois. "The TPP held great promise for us, and has been a key priority for several years now. We're very disappointed to see the withdrawal."

Soybeans are the nation's largest agricultural export, and markets in southeast Asia and Latin America continue to grow with their potential as U.S. soy buyers. The biggest beneficiary from TPP, however, was the American livestock industry which represents the largest domestic market for soybean meal.

The TPP represents 40 percent of the world's gross domestic product (GDP) and, according to the Peterson Institute, would have increased overall U.S. exports by \$357 billion by 2030. Specifically, for U.S. farmers, TPP would have increased the annual net farm income by \$4.4 billion according to the American Farm Bureau Federation. Additionally, TPP was the

first regional trade agreement that addressed the need to coordinate international trade policy in the products of agricultural biotechnology, a benefit that ASA will push to see in any future agreements with TPP partner nations.

North American Free Trade Agreement in Jeopardy

The American Soybean Association and a diverse group of more than 130 other agriculture organizations have contacted President Trump to express an eagerness to work with the administration in order to improve the North American market and the U.S. economy.

Agriculture leaders emphasized the need to re-evaluate the North American Free Trade Agreement (NAFTA) in ways that preserve and expand upon the gains achieved.

The groups say that a key part of the industry's success is the result of collaboration with our closest neighbors. Leaders contend that, with a few exceptions that still require attention, North American agriculture trade is free of tariff and quota restrictions, which helps to expand exports.

U.S. Produces Biodiesel Record, but Imports Are Also Increasing

The Environmental Protection Agency (EPA) recently released the final 2016 biodiesel and renewable diesel production and consumption numbers. The numbers show that the U.S. is producing record gallons of American-made biodiesel, however, foreign biodiesel imports and renewable diesel are capturing over a third of the market, limiting the potential for additional economic benefits to U.S. producers.

U.S. domestic biodiesel production reached 1.8 billion gallons, up from 1.4 billion gallons in 2015. Total biodiesel and renewable diesel utilization in the U.S. reached 2.9 billion gallons, up from 2.1 billion gallons in 2015. Imports increased to over 1 billion gallons of biodiesel and renewable diesel, up from 670 million gallons in 2015.

The American Soybean Association (ASA) is actively engaged with industry partners on the EPA's implementation of the Renewable Fuel Standard (RFS) and urges Congress to extend and to restructure the biodiesel tax credit in order to promote more domestic biodiesel production. These efforts will continue in 2017 with the new administration and Congress, which are seeking to enact comprehensive tax reform.

Milk by Any Other Name

The American Soybean Association (ASA) and the Soyfoods Association of North America (SANA) have objected to draft legislation that would restrict the marketing of soymilk.

Legislation referred to as the Dairy Pride Act would prohibit the term "milk" from being used with soymilk and soymilk-based products under the premise that the term "milk" is misleading consumers.

Supporters contend that the term "soymilk" has been in commercial use since 1947 and say that consumers clearly understand the product is derived from soybeans rather than bovine milk, with a large percentage of consumers selecting soymilk due to dietary choices or restrictions.

A 2006 SANA study that found that, from more than 800

respondents, no one believed cow's milk to be an ingredient in soymilk. Soyfood proponents say the soyfood market created more than \$4.5 billion of value in 2013.

Biotech Labeling Law Revisited

Congress passed the National Bioengineered Food Disclosure Standard, which preempts a patchwork of state laws that mandated the labeling of food products which contained genetically modified organisms (GMOs), in July 2016.

The law set a deadline for the U.S. Department of Agriculture (USDA) to release rules for complying with that law by July 29, 2018. The USDA took steps toward implementing the law, and while a proposal for the rule was not expected until later this year, the USDA was working to publish an Advance Notice of Proposed Rulemaking (ANPR) to pose questions to the public and stakeholders in order to obtain feedback about the best way to approach the labeling law. The ANPR, along with other actions that were in process at the end of the Obama administration, was withdrawn by the Trump administration. In addition, under a new executive order aimed at reducing regulations, the USDA may need to find two regulations to eliminate before it finalizes the rule in 2018.

It's unclear how the executive order will impact the implementation of the GMO labeling law and other rules that are required by statute, but more direction is expected after the anticipated confirmation of Sonny Perdue as the Secretary of Agriculture.

—*Stories by Staff*



Austin Langley
Warwick, North Dakota

Tell us about your farm.

My wife, Katie, and I farm with my dad, Preston, and my two uncles, Gene and Jim. We grow a variety of crops and raise cattle just south of Devils Lake. Our main crops are soybeans, corn, wheat, barley, and alfalfa.

What do you like best about farming?

I like getting to work alongside my family day-in and day-out. Sitting around dad's kitchen table drinking coffee and planning out the months ahead with my uncles and dad is better than any board meeting I've been a part of - besides the North Dakota Soybean Council, of course. Seeing a newborn calf grow and watching a tiny kernel of corn grow into a huge stalk are awe inspiring.

Did you always know farming was something you wanted to do?

Since I was little, I played farm with my small-scale toys in the dirt outside and during all my sisters horse shows and rodeos. There was never a question in my mind of what I wanted to do.

What's most exciting about last year's soybean season?

The amazing yields that we were so blessed with last year were definitely a record. I hear older farmers say we'll never see yields like that again and all I can think is 'what about next year?' That must be the eternal optimist in me.

How and why did you get involved with the North Dakota Soybean Council?

Charles Linderman from Carrington contacted me about a year ago. He asked if I had any interest in the North Dakota Soybean Council. I had no idea what the Council was or did before he approached me. He explained the good things the Council does in building international relationships with buyers and the very in-depth research projects that the Council is involved with at NDSU. Listening to how passionate he was about the Council is what really got me to put my name on the ballot. I'm forever grateful to Charles for getting me involved.

Has serving on the North Dakota Soybean Council been beneficial to you? And why?

Seeing the logistical process of moving our product all over the world and seeing the potential of value added products in our state has opened my eyes to just how important soybeans are to our economy and how we help feed the world.

If you could change something about the current operating

climate for North Dakota farmers, what would it be?

I would wave a wand and raise prices if I could. I hope my work on the Council can continue to build demand because I know farmers in our state will continue to raise an amazing crop of soybeans each year.

What do you like to do outside of farming?

My wife and I love to go hiking with friends. We also like to travel. Flying with my dad and hunting take up a lot of my time when I'm not farming or working with the Council.

What's the one piece of farm equipment or technology you wouldn't want to be without?

I was asked once what do I think is the most important thing on my farm and finally decided that it was faith. On a farm and ranch you have to have faith in the weather, in your soil, in your animals, in your family and in God. Most importantly you have to have faith in yourself. I have a lot of faith in myself and the future of soybeans. Soybeans are the shining light in this down economy, and with the yields that we can now attain here in the northern prairie, they are extremely attractive to plant. Soybeans have become one of the most important components for profitability on our farm and for many other farms in the region.

— Story by Staff, photo by Wanbaugh Studios



North Dakota Soybean Growers Association (NDSGA) director David Hartz (left) was honored at the Northern Soybean Expo for his years of service to the NDSGA. Hartz, from Cavalier, is retiring from the board. NDSGA President Craig Olson presented Hartz with a plaque recognizing his contributions to the state's soybean industry.



Sarah Lovas
Hillsboro, North Dakota

Tell us about your farm.

I farm with my husband and better half, Jason, as well as my father-in-law and man of wisdom, Pete. We raise corn, soybeans and wheat.

Tell me about your education.

I have a BS in Ag Systems Management and MS in Soil Science from NDSU. I have been a CCA certified agronomist since 2005. I have worked in various roles throughout the industry and for different companies. My focus is currently farming, but I do some independent crop scouting for a few neighbors. My favorite part of my business is soil sampling for precision agriculture.

What are you most looking forward to in the 2017 growing season?

My favorite part of the growing season is when the crop emerges. I just love seeing the new crop emerge in the spring. It's so neat because you go through the time, effort and

planning to get the crop started. Once you see it emerge, you know you've set the stage for the year ahead. It's so exciting to see that new life in the spring.

Did you always know you wanted to farm?

I started college in music education at NDSU before I switched to agriculture. I was spending a lot of time working on our farm near Hoople, North Dakota, and it grew into something I loved. Later, I had an internship in agronomy and got to scout fields. I thought it was amazing. I remember standing in the middle of a field, looking around and wondering why would I want to do anything else?

If you could pick one dream vacation destination where would it be?

Iceland. I've already been there, and I can't wait to get back there again!

What most concerns you about the year ahead?

The weather. The last couple of years, we have had some pretty bad hail storms. I'm ready to take a break from that.

What do you like to do outside of farming?

I like to read books and play music. This winter I decided to try something new and took a few guitar lessons. I'm still pretty terrible, but it's a lot of fun.

—Story by Daniel Lemke, photo by Wanbaugh Studios

Advancing Women in North Dakota Agriculture

April 12—13, 2017

Soybean Marketing Seminar for Women

April 12 NDSU Commodity Trade Room in Barry Hall in Fargo

Women involved in marketing and risk management decisions on North Dakota farming operations are invited to attend a one-day seminar with Naomi Blohm. Ms. Blohm is an expert at advising farmers how to manage their cash marketing needs, the basics of properly using futures and options and understanding the importance of managing basis, delivery point consideration, cash flow and contracts. This program is designed specifically for women involved in North Dakota agriculture. Come learn and network in a friendly environment with your colleagues making the same decisions on their farms.



Women Advocating for North Dakota Agriculture

April 13 Fargo Holiday Inn

This empowering day-long program will focus on conversations—in person and online—to build trust and engage consumers. Learn and hear from Dairy Carrie, dairy farmer and blogger on how she navigates and interacts with today's consumers about food, farming and agriculture.



Both events are free, but registration is required. Contact Stephanie Sinner at ssinner@ndsoybean.org or (701) 239-7194.



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