

Spring Issue 2020

SOUTH DAKOTA SOYBEAN LEADER

A publication of the South Dakota Soybean Association

Planting with 2020 Vision

- ▶ Prevent Plant lessons learned from 2019
- ▶ Growing ag literacy in a new generation of students
- ▶ Repairing field ruts left after a wet year
- ▶ Promoting the amino acids in northern-grown soybeans
- ▶ New study quantifies checkoff return on investment

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Volume 9 Number 2

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More than 8,000 students are experiencing agriculture, thanks to Ground Works and South Dakota Ag in the Classroom

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President's Outlook

Yep, there is an elephant in the room and he is having a hard time finding the door. As I write this, all of our lives have been affected in ways far beyond our wildest dreams. Every day, new challenges arise and we are all learning to cope with this new lifestyle. Let's all do our part by social distancing and limiting unnecessary contacts.

Thanks go out many times over to all our healthcare workers and their commitment to our well-being. Those involved with keeping food in our stores and essential services running also deserve special recognition. Let's stay strong and positive and we will kick this elephant out the door so that recovery can occur.

On a brighter note, looking back we had a busy winter of productive meetings and conventions. The state legislative session started out pretty quiet as the Association monitored the various bills. Once we learned more about them, we took our position of monitor, oppose, or support. The most notable bill we were in support of was SB 157, which was drafted to address the problems and concerns in the livestock and industry zoning regulations. To support this bill as well as a couple of other ones, several of SDSA's board members and our executive director, Jerry Schmitz, traveled to Pierre to testify. The Governor's office also reached out to the Association to participate in the signing of the Phase 1 trade agreement with China, with Jerry Schmitz making this historic trip.

Commodity Classic was held in San Antonio this year, with a number of board members attending and representing South Dakota in the ASA meetings. Classic will return back there in 2021, and I would encourage you to look at this chance to take in the large array of informative meetings and kick some tires on the newest equipment.

SDSA rolled out a new event this winter called "Shop Talks." I was the host for the first one in my farm shop, and Nick Lorang at Mt. Vernon hosted the second one. These gatherings were well received. Each consisted of a 1) Soybean panel discussion, 2) Legislative updates from Joe Bliss with Senator Rounds' office, Ben Ready with Senator Thune's office, and Reid Rasmussen with Representative Johnson's office, and 3) Banker Best Practices by the South Dakota Center for Farm and Ranch Management at Mitchell Tech. Each event concluded with a noon lunch. We are looking forward to conducting more of these Shop Talks this coming year at various locations to make them easily accessible to soybean producers.

As we navigate this new environment, we are learning new ways to stay connected with family, friends, and business. The internet and programs such as Zoom have opened up our stay-at-home lives. Let's all stay healthy and follow the guidelines recommended to us.

Well, spring is here and does seem to be an improvement over last year. Wishing you a safe and productive planting season!



Jeff Thompson

Take care, everyone!
Jeff Thompson
SDSA President

PHOTO COURTESY OF THE SOY CHECKOFF



Changing the **CONVERSATION**

Checkoff Promotes the Essential Amino Acids in Northern-Grown Soybeans

By Kristin Brekke Vandersnick

Cruide protein has historically been considered the best way to gauge the quality of a feed source.

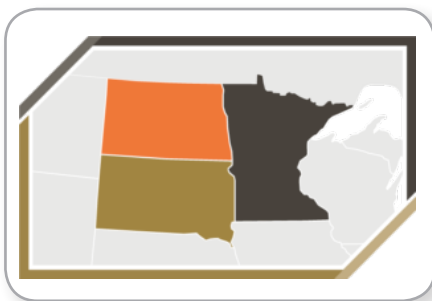
But today, South Dakota soybean growers and their checkoff are working to change that conversation by pointing customers to the essential amino acids in soy, especially the levels naturally found in northern-grown soybeans.

Before international travel halted due to the COVID-19 outbreak, a South Dakota soybean grower had the opportunity to meet

personally with customers in Southeast Asia to tell them about the excellent amino acid profile of soybeans grown in our region.

David Struck, a farmer from the Wolsey area and director for the South Dakota Soybean Research & Promotion Council, visited Sri Lanka, Myanmar, Thailand, and Malaysia in January. The trip was part of Northern Soy Marketing (NSM), a tri-state coalition that works to communicate the amino-acid benefits of northern-grown soy.

“I was a little apprehensive of going on the trip, but meeting face-to-face with the processors and the millers, it really gives a different perspective on it,” Struck commented.



Struck and the other members of the trade team met with soybean end-users to introduce themselves and talk about the benefits of the essential amino acids found in soy. Calculating the sum of the five most critical amino acids – lysine, cysteine, methionine, threonine, and tryptophan – provides the Critical Amino Acids Value (CAAV), a measurement developed by Northern Soy Marketing.

“Crude protein is not the point,” according to Peter Mishek, who serves as Project Coordinator for Northern Soy Marketing. “Soybeans are rich in both energy and protein. We need to do a better job of telling our customers that we have a better source of these in one package.”

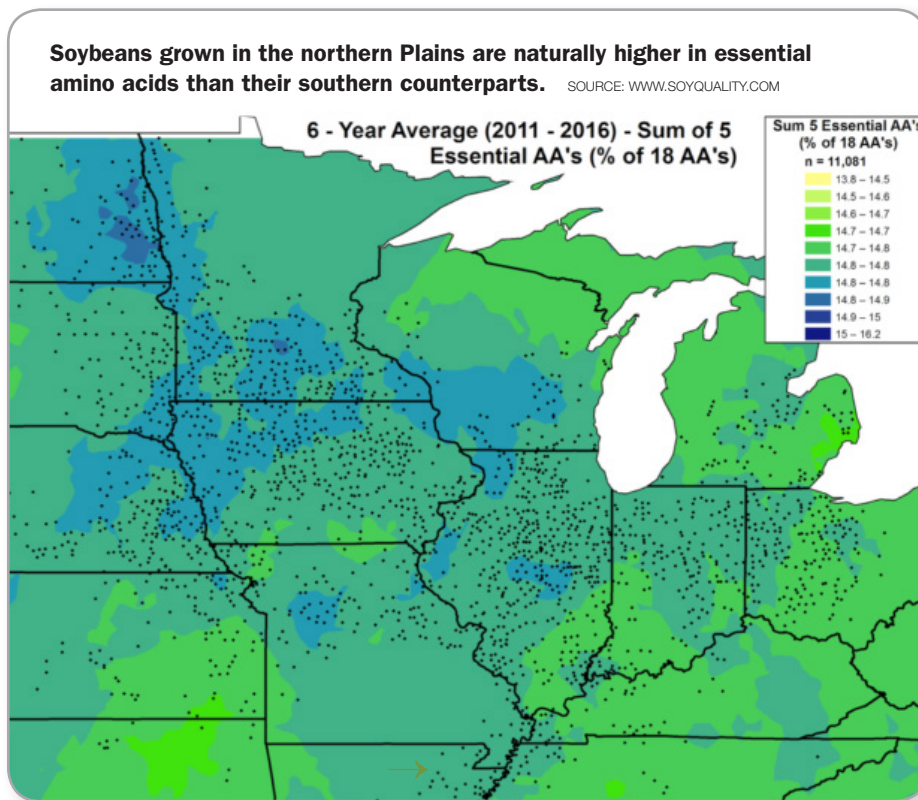
Changing the Measurement

Because crude protein is an estimate based on nitrogen content, a higher CP content does not necessarily equate to higher protein quality or better nutritional value in feeding monogastric animals. True protein quality is based on the presence and balance of essential amino acids.

When these five EAAs are not present in sufficient quantities in feed ingredients, nutritionists must supplement with synthetic amino acids, increasing production costs and often resulting in “hot” rations which potentially lead to excess nitrogen excretion and negative environmental consequences.

Soybeans grown in cooler climates, such as here on the northern Plains, often have lower crude protein content than beans grown farther south. However, while cooler weather does limit nitrogen fixing in the soybean plant causing lower CP, it has the opposite effect on CAAV. Research shows that in northern-grown soybeans, this increased level of CAAV occurs naturally and thus limits the need for feeders to add synthetic amino acids to their feed rations.

Northern Soy Marketing is the grower leader board formed by the three states: South Dakota, North Dakota, and Minnesota. South Dakota has been a partner in this effort for many years, conducting work on essential amino acids with North Dakota and Minnesota back as far as 2012, even before Northern Soy Marketing, LLC was officially formed in 2017.



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“Crude protein is not the point. Soybeans are rich in both energy and protein. We need to do a better job of telling our customers that we have a better source of these in one package.”

Peter Mishek, Project Coordinator for Northern Soy Marketing

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Changing the Perceptions

This January trip to Southeast Asia is one way northern soy growers can reach out to global buyers. Soybean checkoff funds are invested to conduct research on soybean quality and CAAV levels in northern-grown soybeans, and then sessions like the one David Struck participated in are held in countries where U.S. soybeans and soybean meal are purchased.

These sessions teach buyers to look at CAAV as a complete assessment of soybean quality, rather than just looking at CP levels. →



David Struck, third from left, traveled to SE Asia in January to promote the quality soy grown in our region.

“We have to prove the feed value of our northern-grown soybeans, and in-person is one of the best ways to do that,” Struck said. “Meeting in-person gives a face to the product.”

Struck said he learned a lot on the trip and felt they were able to make a good impression on buyers.

“Our farming styles are so different, so our farmer presence was really good,” Struck added. “We’re not a faceless corporation. We’re still family farmers, even though it’s on a different scale than how they farm over there.”

.....

“I was a little apprehensive of going on the trip, but meeting face-to-face with the processors and the millers, it really gives a different perspective on it.”

David Struck, director for the South Dakota Soybean Research & Promotion Council

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Mishek agrees that having personal contact is key.

“Having the farmer along is really important,” he says of these trips, especially when the size of U.S. farms is difficult for global buyers to understand. “Most people in the world have a difficult time picturing what a thousand hectares looks like, when they maybe farm just two or three.”

In addition to meeting the Midwestern farmers in person, Mishek says global buyers get the opportunity to see photos of their farms and their families. Seeing how clean the farms are, how carefully run they are, and seeing the faces of the family members all paints a picture of who is growing the soybeans.

“It’s the human experience,” comments Mishek.

Changing Our Market Access

Struck says his visit gave him a lot of insight into how our global soy customers prefer to receive our product.

Because of local supplies of palm oil and coconut oil, countries in Southeast Asia do not desire imports of whole soybeans. In fact, unlike China, many of these nations do not even allow whole-kernel imports. Instead, Struck noted, these countries import the soybean meal and, on the corn side, distillers grain.

“Southeast Asia wants the meal in a shipping container so it’s easily moved from the ports to the millers. To take advantage of these markets, we’re going to have to think differently about how they want the product,” Struck added.

This may not change how we do things on the farm, Struck said, but it does arm us with information as we work with those in our supply chain to package our products to our customers’ preferences.

Learn more about Northern Soy Marketing at www.soyquality.com. ■



Growing Together

Developing new seed varieties is of little use if those new products don't deliver value to farmers. Mustang Seeds relies on a network of growers to help deliver quality products that meet the needs of their fellow farmers.

Rocky Schreurs of Baltic, S.D. is one of those growers. Schreurs farms with his brother-in-law and father, raising corn, soybeans, and alfalfa. They also have a cow-calf operation.

"We have been a grower for Mustang Seeds for around 20 years," Schreurs says. "We have been planting Mustang products for about 30 years."

Schreurs says he likes working with Mustang Seeds because the seed is regional and the company is family owned. Those factors are important, but the seed still has to perform.

"We even buy our equipment from a family-owned company because that's how much it means to us," Schreurs admits. "Mustang is not just a sales pitch; they have good quality products."

Schreurs says the corn hybrids he grows range between 95- to 105-day corn including Mustang 4296, 5700, 6800.

Soybean varieties range between 1.3 and 2.1 maturity.

"At the end of a year, yield is the measure of the choices made during the season," Schreurs says. After all, "we're just trying to make a living."

Mustang Seeds Row Crop Production Manager Dale Nelson says the relationship with growers around the region is an important part of the company's strategy to deliver quality seed that farmers need.

"We do extensive internal trials at several locations throughout our sales footprint," Nelson says. "As a regional, independent company, we rely on and pay much attention to our growers' comments and yield information that they feed back to us. They have the opportunity to see the seed in many different soil types and yield environments, and with today's technologies, they deliver very reliable information."

Nelson says Mustang Seeds has added several new corn hybrids to its strong lineup for the 2020 growing season. Soybean trait and offerings also continue to expand including conventional, XtendFlex, E-3, XTend, LLGT27, RR2Y, and GT varieties. Four new exclusive conventional soybeans

will be added to the Mustang conventional lineup including 0.5, 1.6, 1.8 and 1.9 maturities. The newest soybean trait offering will be the XtendFlex trait. Mustang will have four new offerings. Nelson expects many new E-3 options will be added to the lineup as E-3 was first released in 2020.

"We continue to see added interest in the conventional soybeans and strong interest in the E-3 soybean trait," Nelson explains. "The XtendFlex will be a new trait I feel will have strong interest in our western sales area."

Delivering what works for farmers in the region is Mustang Seeds' mission. That effort is aided by working closely with farmers like Rocky Schreurs.

"It helps us on making sound judgments on the demand that may be needed the next production year for that particular seed need. Being a regional independent seed company allows us to be in touch and have a better pulse on the needs of our customers," Nelson says.

To learn more about Mustang Seeds 2020 offerings or to connect with a company representative, visit mustangseeds.com.

Lessons Learned From Prevented Plant 2019

By Kurt Lawton, Ag Writer, NRCS / Photos Courtesy of NRCS-SD

The wet weather cycle and saturated soils have some farmers and ranchers seeking solutions to make their soils, and their farms, more resilient against frequent rain events.

Seeking solutions, South Dakota USDA Natural Resources Conservation Service (NRCS) and SDSU agronomists shared Prevented Plant field management results from 2019. They compared five different field scenarios, with and without cover crops, to compile lessons learned from this challenging year.

To expand on the topic, NRCS State Soil Health Specialist Kent Vlieger led two roundtable discussions with agronomists and local farmers near Crooks and Mitchell. The overriding theme of the lessons learned from Prevented Plant 2019 was that no-till soils saw the highest planting success, and cover crops provided numerous benefits like erosion control and water infiltration on PP fields.

Farmer Roundtable Lessons

Craig Stehly, who farms near Mitchell, says 2019 was the most stressful year since he began farming in 1984. “Fortunately, we were able to seed a lot of cereal rye cover crops and winter wheat in September, so we’ll have spring growth to use up the excess moisture.”

Crooks area farmers met with NRCS and SDSU soil specialists in February to discuss 2019 challenges and possible solutions for 2020. (L to R) Kurt Stiefvater (farmer, Salem); Ryan Larson (farmer, Garretson); Nate Stroschein (farmer, Crooks); Kent Vlieger (NRCS soil health specialist); Ross Hanson (farmer, Garretson); Anthony Bly (SDSU soils field specialist).



“What I’ve found with long-term no-till is we don’t have ruts across a whole field, and the driest soils we had were on wheat stubble, or where I put a cover crop,” he said. “The cover made the trafficability much better, proving we do learn things in this wet environment.”

Anthony Bly, SDSU Extension soils field specialist agronomist, talked to a lot of farmers during the season and, while no-till farmers also struggled, those building soil health saw the best results. “I think they won the battle, and I believe others are going to pay attention to that, and adoption is going to increase further,” Bly said.

When you see black snow, and ditches, culverts, and roads impacted by silt from fields, you really see the value of no-till and cover crops, according to Nate Stroschein, who farms near Crooks. “After heavy rains, you can really tell that water infiltration is a big deal on our no-till fields, thanks to better soil biology, compared to conventional tillage,” Stroschein commented.

Cover Crop Plans

Farming west of Mitchell, Charlie Edinger said knowing what you want to accomplish with cover crops helps select the best species. “We like a wide variety of smaller-seeded species because they’re less expensive,” Edinger said. “But if you want to reduce compaction or add nitrogen, there’s a whole range of specific cover crop traits to meet your needs.”

The multiple-species cover crop mixes offered by seed retailers in 2019 were designed to deliver optimum plant biomass and root diversity. The mixes were created to increase biomass accumulation and soil organism diversity. For example, NRCS worked with some seed companies to formulate multiple species cover crop blends for Prevented Plant acres containing a legume, brassicas, and cool and warm season broadleaves and grasses: e.g., oats, barley, sudangrass, rapeseed, radishes, turnips, flax, buckwheat, and common vetch.

Five Field Scenarios

Here are five Prevented Plant (PP) field scenarios along with lessons learned from each, compiled by agronomists and soil scientists from USDA Natural Resources Conservation Service (NRCS) and SDSU Extension, with involvement from South Dakota's Conservation Districts, South Dakota Soil Health Coalition, South Dakota Grassland Coalition, and South Dakota Corn.

PP FIELD SCENARIO 1

Seeded to cover crops; left standing through winter.

- ▶ The best scenario to optimize soil structure and health. Great seeding environment for no-till cropping.
- ▶ Avoid tillage this spring on the cover crop as that leads to platy soil structure, reduced water infiltration, and nutrient uptake. Be patient and reap Mother Nature's benefits of healthier soil with more stable aggregate and structure formation.
- ▶ Provides soil armor, erosion control, soil structure and organic matter improvement, plant and root diversity, improved water infiltration, nutrient cycling, and soil carbon capture from increased photosynthesis—all work together for higher soil health benefits.
- ▶ Provides optimal seeding conditions for spring cash crops after control of any surviving cover crop species.

PP FIELD SCENARIO 2

Seeded to cover crops; grazed, baled or chopped for feed.

- ▶ A good scenario for soil microbial and livestock feeding. (Grazing preferred over forage removal)
- ▶ Grazing provides excellent results with initiation after 6-8-inches of cover crop growth. Overgrazing causes exposed soil due to a lack of regrowth. Grazing can provide savings toward hay/forage feeding and harvest costs. Avoid grazing excessively wet soils. When soils begin to thaw, do not graze until soil frost dissipates and soil moisture lowers.
- ▶ Soil health is greatly improved compared to bare soil with weeds, but not as great as non-grazed, living cover crops. Grazing should increase nutrient cycling of plant nutrients back to the soil from manure; check with a soil test before the following year's crop.
- ▶ Baled cover crops were not successful because species in cover crop mixes remained too wet to bale.

PP FIELD SCENARIO 3

Seeded to cover crops; killed with herbicide or tillage in fall.

- ▶ Considered an "okay" scenario, as it provides more soil armor than bare soil or weeds. However, it reduces an opportunity to improve soil aggregation, structure, organic carbon, microbial activity, and improved water infiltration that is achieved by allowing cover crop development over a full season of growth.

PP FIELD SCENARIO 4

No cover crops seeded; weeds grew unchecked.

- ▶ Very few soil health benefits, potentially significant soil erosion and losses, and potential for increased weed pressure if weeds produced seed. This scenario could lead to Fallow Syndrome in a 2020 cash crop.
- ▶ Weeds are not cover crops. Prolific weeds such as marestail, waterhemp, and other amaranth species lack the positive soil structure benefits of cover crops. The harmful competition from weeds on crops and increases of weed seed banks (especially herbicide-resistant weed seeds) greatly outweighs the small potential soil carbon capture or slight erosion benefits.

PP FIELD SCENARIO 5

No cover crops seeded; used tillage or herbicides to control weeds.

- ▶ Absolutely no soil health benefits. Potential for significant erosion and soil loss is very high. This scenario supports the most significant probability of Fallow Syndrome for 2020 cash crops.
- ▶ Multiple tillage passes did not control all weeds and caused more significant soil erosion and degraded soil structure. Tillage and herbicide effectiveness were reduced because weeds were often too large for full control.

(This story continues on page 14)

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Soy Industry NEWS

Tim Ostrem Elected to National Biodiesel Governing Board

Tim Ostrem from Centerville, SD has been elected to the National Biodiesel Governing Board for a two-year term. Tim is a District 2 director for the SD Soybean Research and Promotion Council and has served as a member of the National Biodiesel Board for the past 5 years.



“Over the past five years representing South Dakota on the National Biodiesel Board, Tim Ostrem has been a strong advocate for research and communication that expands the nearly three-billion-gallon

U.S. market for biodiesel. It is critical that NBB is led by a strong team from all sectors of the industry, and our membership eagerly welcomes Tim to that team,” said NBB CEO Donnell Rehagen.



Shop Talk Events Draw Crowds

In March, South Dakota Soybean hosted its first-ever “Shop Talk” events. Between the two events, held at Jeff Thompson’s farm near Colton and Nick Lorang’s farm near Mount Vernon, more than 65 producers were in attendance. The groups learned more about the state and national associations and checkoffs, received updates from the offices of our D.C. representatives, learned about banking best-practices from experts at Mitchell Tech, and heard from Low Mu Tech, our new member benefit. The Shop Talk events were deemed a success and the SD Soybean team received positive feedback.

Dawn Scheier Re-elected to USSEC Executive Board

Dawn Scheier, who farms near Salem and represents District 3 on the SDSR&PC, has been re-elected as Secretary of the U.S. Soybean Export Council (USSEC). The USSEC board is comprised of 15 members from across the U.S. soy industry, with 4 chosen for the Executive Board.

Shown here are members of the USSEC Executive Committee for 2020-21 (L to R): Chris Arnold, treasurer, representing The Scoular Company; Monte Peterson, chairman, a grower leader representing North Dakota; Doug Winter, vice chairman, grower leader representing Illinois; and Scheier.



Teach Science at Home Using Soybeans

Whether you’re teaching kids at home due to COVID-19 or looking for supplemental ideas for your classroom, visit “Soybean Science” at sdsoybeanscience.org. This new resource from South Dakota Soybean is a collection of instructional resources for science and agri-science teachers in all grades and can also be used for at-home learning. Lessons, labs, and hands-on activities are available for elementary and high school ages.



South Dakotans Attend Phase One Signing at White House

Two South Dakota farmers were invited by Governor Kristi Noem to attend the U.S. – China Phase One Trade Agreement signing ceremony in Washington in January. Jerry Schmitz, a soybean producer from Vermillion, and Craig Andersen, a pork producer from Centerville, joined Governor Noem in representing South Dakota producers at this event.

Schmitz, who also serves as executive director of South Dakota Soybean, is excited to see progress in the development in trade negotiations and deals. “Fair trade agreements offer farm and ranch families the opportunity to do what we do best; produce safe, renewable and abundant food, feed, fiber, and fuel for a growing world population,” Schmitz commented.



Corteva Young Leaders Continue Training at Commodity Classic

Two from South Dakota were among the Corteva Agriscience™ Young Leaders from across the country who completed their training at Commodity Classic, held in late February in San Antonio. Jesse King of Toronto and Drew Peterson of Salem joined young leaders from 17 other states for the opportunity.

“The ASA Corteva Agriscience™ Young Leader Program helps provide the soybean industry and all of agriculture with strong and forward-thinking grower leaders,” commented Bill Gordon, President of the American Soybean Association. “The program focuses on leader development and emphasizes collaboration, providing us with growers who are working together to amplify the voice of the farmer. We are grateful to Corteva for their longstanding support of this program and for helping to secure the future of the soybean industry.” ■

Check Out the HFT Recipe Page

Cooking at home and out of ideas? Hungry for Truth can help! Visit hungryfortruthsd.com/recipes for ideas like Spanish-style pork tenderloin, chicken cordon bleu bites, chipotle lime shrimp tacos, mini ham and cheese egg bakes, and more. Share this website with friends who may appreciate the recipes, as well as the opportunity to learn more about the farmers behind the food.



Hungry for Truth is an initiative of the South Dakota Soybean Research & Promotion Council, designed to open conversations about food between South Dakotans and the farmers who grow it.



Good soil structure is shown on Brent Wood's farm near Parkston, a PP field that was seeded to a seven-way cover crop mix last summer.

The seed blends that resulted in tall and heavy biomass concerned new cover crop growers about potential difficulty planting 2020 cash crops. Some producers chose to use tillage or herbicides to reduce the biomass, rather than wait for natural winter decomposition. The tillage of cover crops negatively impacted the soil structure forming benefits of living roots, and significantly reduced the cover crop biomass that used photosynthesis to fix atmospheric carbon into the soil reserves.

Grazing cattle on cover crops is one of the goals of Daniel Harnish, who farms near Clayton. "We like to put in oats, radish and field pea mix, trying to keep our costs under \$20 per acre. To get additional growth to graze, we haul manure over the live crop when it's 4-5 inches tall." Harnish continued, "In spring, the canopy of brassicas and oats has broken down the manure, making it easy to plant into while continuing to build soil organic matter and improve water infiltration."

Fallow Syndrome and Fertility

If no cover crops were seeded on your conventional-tilled or minimum-till PP field (or only brassica cover crops like radish, turnip, mustard or rapeseed), the soil might lack key beneficial organisms, e.g., mycorrhizal fungi, that support early corn growth. For more details, visit extension.sdstate.edu and search "Fallow Syndrome."

To overcome this potential soil biology challenge, some agronomists recommend the addition of phosphorus (P) and chelated zinc in-furrow as a pop-up starter or a banded application to minimize early-season growth challenges and potential yield loss from Fallow Syndrome. If that's not an option, broadcast application

rates that include an additional 15-20 lbs. P/acre will also help, according to Antonio Mallarino, Iowa State University Extension.

Some agronomists and long-term no-till farmers believe that no-till fields are probably less susceptible to fallow syndrome due to better soil health. "We know that mycorrhizal fungi are greatly reduced in tilled systems, and I think our soil health systems [no-till, strip-till] are going to show more resilience," Bly says.

Stehly said it's hard to predict fallow syndrome. "If you've got a cover crop on, it probably won't happen, but the pop-up does so much good anyway on corn and small grain, then I split the N with stabilizer to manage volatilization."

"We also use a pop-up in-furrow for the P issue," Harnish said. "I think that could be critical this spring to prevent fallow syndrome, especially on fields that didn't get cover crops or were saturated for long periods, as that can decrease microbial populations, too."

Regarding weeds, most farmers had issues with timely spraying if they could spray at all due to the continued rains. Those farmers who achieved good cover crop stands kept weed populations down. Stroschein said he had a field with marestail problems, but his cover crops that produced heavy biomass provided pretty decent control. Other farmers mentioned they shift to small grains and cover crops in the rotation to eliminate marestail.

Reducing Future Risks

While no one can control precipitation and large rain events, the no-till farmers around the tables all said that their decisions to build soil organic matter levels and soil structure have dramatically improved water infiltration. By investing in cover crops following cash crops, the additional root and plant biomass produced by the cover crops improve the formation of humus that aids soil aggregation.

Reduced input costs, like fertilizer and chemicals, to less equipment needed, less fuel, and less tractor time were benefits listed by farmers who switched to no-till. Ryan Larson, farmer from Garretson, added, "One thing I never realized was that you could trade your high horsepower tractor and all your tillage equipment and buy a no-till set-up and still have money left over. It's been really eye-opening when you examine your break-even prices and compare to other operations."

Such plans help aid future planting under wet conditions, reducing PP acres. It's the best option to minimize water and wind erosion, decrease nitrate runoff and leaching, and reduce weed pressure for increased productivity in subsequent years.

Videos from these roundtable discussions can be viewed at www.nrcs.usda.gov. ■



Best Practices for Forage and Cover Crops

Looking back on the challenges of 2019 can help producers make informed decisions for 2020. With last year's extremely wet conditions and abundance of PP acres, cover crops and forages rose to the top of the list of solutions that worked.

Justin Fruechte, Forage + Cover Crop Specialist with Millborn Seeds, shares his thoughts here on lessons learned from last year and best practices farmers can follow moving forward.

First, when planting forage crops, timing is key.

“One of the biggest takeaways from last year is to stick to the basics of proper planting windows,” Fruechte said. “Know your species types and follow the planting window that’s appropriate for them.”

Your cool-season forages – oats, barley, triticale, ryegrass, peas – are ready to plant early spring, with some even tolerating light frost. When June and July roll around, it’s time for the warm-season annuals: millet, sorghum, sudangrass, Teff grass. Outside of those planting windows, Fruechte notes, your results will suffer from yield loss and/or disease susceptibility.

Second, he advises having a realistic eye for field conditions. “If it’s not fit to go, don’t force it,” Fruechte commented. Know when it’s ok to try fieldwork and when it’s better to leave it.

Turning now to cover crops, the experts at Millborn Seeds have several examples of what did indeed work well last year.

“One of the cover crops that shined was millet for hay,” according to Fruechte. “Millet yielded well that was planted at the right time. Also forage sorghum, planted in June, did really well.”

Producers who planted cover crops for soil benefits, like legumes and radishes, gained a noticeable advantage in their field conditions. Fruechte has observed that many of these fields are in good shape now, thanks to living roots that help with water infiltration.

Teff grass used on PP acres for quality hay

“Those fields are prepped,” he describes, calling cover crops a “win” for helping those areas shape up before 2020 planting. “If you do get that window of opportunity for planting, broadcast some seed and get a living root out there.”

Another success story from 2019 was Teff grass. It’s a strong performer that can be planted in late May, or when soil temps reach 60 to 65 degrees, allowing for as many as three harvests in a year. If planted later, there’s still time for one large cutting of hay that will dry down easily and is high in crude protein.

“Teff grass produces a high-quality, high-value feed that is marketable to sell,” Fruechte described. Teff grass worked well last year for those who sold the hay, and Japanese Millet worked well for those who fed their own livestock.

Fruechte shared his advice for those trying cover crops for the first time. “If you’re planting cover crops for soil health, follow the key principle of having a diversity of species,” he said, noting that it doesn’t have to be complicated. “Try a mix with a legume, a brassica, and a grass.”

A diverse cover crop mix hedges your bets against pathogens and weather, plus gives your acres a jump start on building better soil quality over time.

Justin and his team at Millborn Seeds in Brookings are here to supply your forage and cover crop seed needs, plus the expertise to walk you through the entire process. Visit them at Millbornseeds.com or call (605) 697-6306.



Diverse cover crop with legumes, brassicas, and grasses to improve soil quality.

Soybean Checkoff Continues to Provide Return on Farmer INVESTMENTS



A recent independent study shows that the soy checkoff continues to translate farmer investments into significant benefits for U.S. soybean farmers. The study, required by the U.S. Department of Agriculture, found that American soybean farmers received \$12.34 in added value for every dollar they invested in the soy checkoff.

This return-on-investment (ROI) study was conducted by Dr. Harry Kaiser of Cornell University, a leading researcher in the field of ag economics and its application to commodity checkoff programs. The research analyzed

the demand- and supply-enhancing activities funded by the soy checkoff between 2014 and 2018.

The study observed and analyzed the four main activities of the United Soybean Board, which include domestic soybean and soy-product promotion; foreign market development; demand-enhancing research for soybeans and soy products; and production-enhancing research for soybeans and soy products.

“The study finds that USB’s activities have had a positive and significant impact on soybean demand between 2014 and 2018,” Dr. Kaiser said.

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“The soybean checkoff program has many success stories like these, and it continues to work at adding value to our industry even through these tougher times that we are currently experiencing,” — Craig Converse, chairman of the South Dakota Soybean Research & Promotion Council

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Key findings included:

- ▶ U.S. soybean farmers received \$12.34 in added value for every dollar they invested in the soy checkoff over the last five years.
- ▶ Every dollar U.S. soybean farmers invested in international promotion activities produced \$17.95 in return value.
- ▶ Soy checkoff investments made toward demand-enhancing research and promotion returned an average value of \$18.18.
- ▶ Collaborative soy checkoff investments in production research that leverage industry and academic partners continue to provide promising returns to U.S. soybean farmers, returning an average value of \$9.42.

These estimates were reached using econometric models of domestic and international soybean markets that allowed the research team to net out the impacts of other important factors — such as other crops, substitute commodities, income, exchange rates and economic conditions in importing countries — to determine the estimated impact of the soy checkoff’s work and investments.

The soy checkoff provides significant value to farmers by leveraging checkoff funds in investments and programs to build preference for U.S. soy across the country and around the world.

Craig Converse, farmer from the Brookings area and chairman of the South Dakota Soybean Research & Promotion Council, highlights how the checkoff adds value to the soybean industry by creating new markets and new demand.

“We leverage these checkoff dollars by working with other national organizations such as the North Central Soybean Research Program (NCSRP), to conduct research efforts against pest and disease and increasing yields. We create new demand by working in developing markets around the world through the World Initiative for Soy in Human Health (WISHH), which accesses funds through USDA grants as well as maintaining the existing markets around the world through the U.S. Soybean Export Council,” Converse said.

He also pointed to research conducted by SDSU that was instrumental in helping Prairie Aquatech develop a high-protein fish meal replacement utilizing soybean meal.



“The study finds that USB’s activities have had a positive and significant impact on soybean demand between 2014 and 2018.”

“The soybean checkoff program has many success stories like these, and it continues to work at adding value to our industry even through these tougher times that we are currently experiencing,” Converse added.

Nationally, the United Soybean Board’s 78 volunteer farmer-directors work on behalf of all U.S. soybean farmers to achieve maximum value for their soy checkoff investments. In South Dakota, a 9-person board of farmer-directors invests checkoff dollars to research new production techniques, markets, and uses for soybeans that benefit South Dakota farmers.

For more information on the soy checkoff, visit unitedsoybean.org and sdsoybean.org. ■

GROWING ROI IS WHAT WE DO

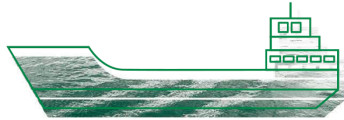
How do we turn farmer investment into ROI? Let us count the ways.

OUR MISSION IS SIMPLE: TO GROW RETURN ON INVESTMENT (ROI) FOR U.S. SOYBEAN FARMERS. ACCORDING TO RECENT ECONOMIC ANALYSIS, THE SOY CHECKOFF IS DOING JUST THAT. HERE'S HOW IT ALL BREAKS DOWN:



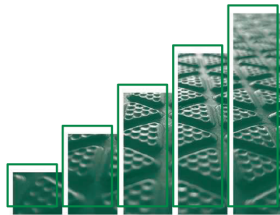
\$12.34 ROI

U.S. soybean farmers received \$12.34 in added value for every dollar they invested in the soy checkoff over the last five years.



\$17.95 ROI

Every dollar U.S. soybean farmers have invested in international promotion activities produced a \$17.95 return in added value.



\$18.18 ROI

Soy checkoff investments made toward demand-enhancing research and promotion returned on average \$18.18 in added value.



\$9.42 ROI

Collaborative soy checkoff investments in production research that leverages industry and academic partners produced a \$9.42 return in added value to U.S. soybean farmers for every dollar invested.

For more information on the soy checkoff and its work on behalf of farmers, visit unitedsoybean.org

Source: "An Economic Analysis of the United Soybean Board's Demand and Supply Enhancing Programs (2014-2018)", Kaiser, 2019. ©2020 United Soybean Board. [59810-16 2/20]



Managing for Better Soil Structure: Repairing Field Ruts

Written by agronomists and soil scientists with USDA-NRCS South Dakota and South Dakota State University Extension, with support from South Dakota's Conservation Districts and South Dakota Soil Health Coalition.

Field ruts from last year's harvest equipment are of concern to many South Dakota producers. The following suggestions are designed to help mitigate field rut issues this spring.

Assess the damage.

How deep are the ruts, and how large is the affected area? All ruts deeper than planting depth should be leveled. Leveling the ruts may be all that is necessary to restore the field to planting condition. In no-till fields, where ruts are often shallow, many growers choose to let nature, not steel, rebuild ruts, i.e.: living roots, improved biological activity, and freeze/thaw/wet/dry cycles.

Wait for drier soil.

The top 2-4 inches of soil need to be dry before mechanical leveling occurs. Grab a handful of soil from the area between ruts and 2 inches above the operating depth of tillage. Form a ball and throw like a baseball; if the ball stays mostly intact when hitting the ground, it's still too wet. After soil has dried adequately, use secondary light tillage (vertical tillage tool, light disk, soil finisher, or harrow) only in the width of the impacted areas, not the entire field.

Avoid deep tillage.

It's a myth that deep tillage is the best fix for ruts because any tillage causes compaction in wet soils. Compaction caused by tillage breaks down soil structure, reduces root growth, slows water infiltration and cuts water availability for growing plants.

Deeper ruts need more time.

For 5-inch or deeper compacted ruts, multiple light tillage passes will be necessary, with a week in-between passes to dry the tilled layer. If needed, a chisel plow set to depth just below the ruts could work, but only till in the rutted area to avoid further compaction.

Preventive Actions: Focus on long-term soil structure.

Growers using no-till, especially with diverse rotations and cover crops, are achieving improved soil biological activity and increasing soil organic matter--



Ruts created during harvest in southeast South Dakota.

PHOTO: SD SOIL HEALTH COALITION AND SD PHEASANTS FOREVER

leading to fewer ruts, less compaction, quicker access to wet fields, and reduced inputs to produce equal or greater yields as conventional-tilled fields. Seeding cover crops such as cereal rye after harvest, with its fibrous root system, can also help alleviate soil compaction in these rutted areas, and build a healthier soil. Manure and residue cover help build soil structure as well by increasing soil biological activity.

Although these practices can make fields passible, expect yield losses of 10-25% in rutted areas depending on soil type and compaction severity. Improvement of yield should occur in time (3-5 years). For more details, see "Stuck in a Rut: How to Deal with Field Ruts This Spring" at extension.sdstate.edu. ■



ABOUT SDSHC: The South Dakota Soil Health Coalition is a producer led, non-profit, membership organization, governed by a nine-member board of farmers and ranchers from across the state. Promoting improved soil health through innovative projects, education, and outreach, all designed to provide agricultural producers and decision makers with the information they need to increase the stability and profitability of their operations. Visit www.sdssoilhealthcoalition.org for more information.

Guest Editorial

Raising Agriculture LITERACY

By Reverend Tim Olsen,
Executive Director, Ground Works & South Dakota Ag in the Classroom

Following my dad's death, I sorted through one of his many boxes of keepsakes. In one box was a yellowed newspaper picture and article from 1972. The picture shows my dad smiling as he leveled a wagon load of soybeans. His yield was 35 bushels of soybeans to the acre. The yield was one of the highest reported in Cottonwood County, Minnesota that year.

I'm sure those soybeans were his beloved Chippewa 64 variety. Like many of his contemporaries, Dad saved seed from his best-yielding fields. I remember Dad being conflicted when he bought a few bags of registered Hodgson soybeans. It was like he was cheating on the Chippewa 64s.

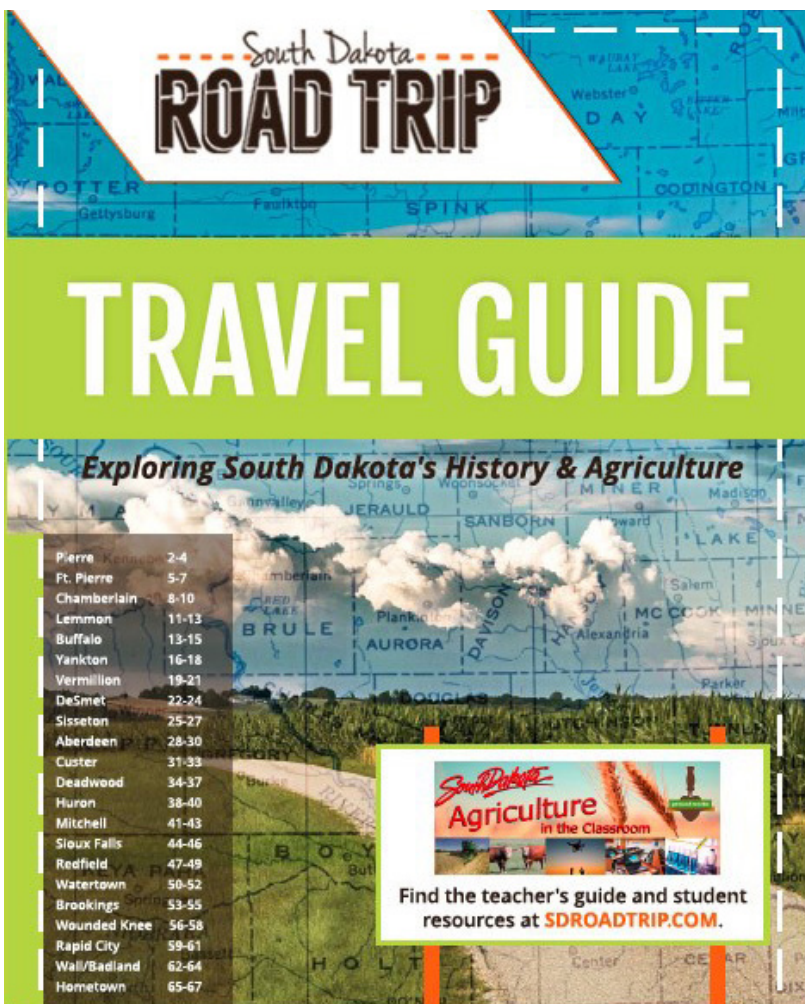
In the 1970s my dad would have thought it a fantasy that in 2016, three producers broke the 100-bushel yield mark in the South Dakota soybean yield competition. Current soybean production techniques are beyond what I could have imagined as a farm kid and later as a County Extension Agent in Minnesota and New York State during the 1970s and 80s.

Telling the current and emerging success stories of South Dakota agriculture production practices is one of the goals of the 501(c)3 nonprofit, Ground Works & South Dakota Agriculture in the Classroom (GW & SDAITC). Since the year 2000, the "home-raised" education nonprofit Ground Works has focused on partnering with schools and nonprofits to launch teaching garden programs that enhance STEAM (Science, Technology, Engineering, Art & Math) education. During summer, at YES! (Youth Eating Smart) camps, students learn the sciences for ensuring healthy soils, crops, livestock, people, and communities.

In 2017, Ground Works assumed responsibility as the lead agency for South Dakota Ag in the Classroom (SDAITC). The goal of GW & SDAITC is to inspire students in grades 4-6 to become agriculture-literate consumers and leaders as adults.

SDAITC is guided by six values:

1. To follow STEAM education principles;
2. To fulfill South Dakota education standards;
3. To enhance agriculture literacy;
4. To honor South Dakota production agriculture and agribusiness;
5. To promote careers in the South Dakota agriculture industry; and
6. To empower students to become agriculture literate consumers and leaders.



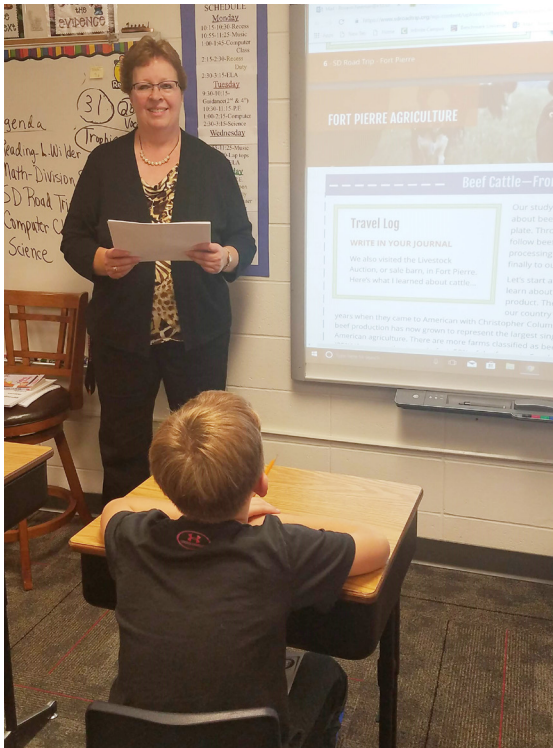
The image shows the cover of a travel guide titled "South Dakota ROAD TRIP TRAVEL GUIDE". The cover features a map of South Dakota with various counties labeled. A green banner across the middle reads "TRAVEL GUIDE". Below the banner, the text "Exploring South Dakota's History & Agriculture" is visible. On the left side, there is a table of contents listing cities and their corresponding page numbers. At the bottom, there is a small inset image of a sign that says "South Dakota Agriculture in the Classroom" and a text box that reads "Find the teacher's guide and student resources at SDROADTRIP.COM."

| | |
|--------------|-------|
| Pierre | 2-4 |
| Ft. Pierre | 5-7 |
| Chamberlain | 8-10 |
| Lemmon | 11-13 |
| Buffalo | 13-15 |
| Yankton | 16-18 |
| Vermillion | 19-21 |
| DeSmet | 22-24 |
| Sisseton | 25-27 |
| Aberdeen | 28-30 |
| Custer | 31-33 |
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| Watertown | 50-52 |
| Brookings | 53-55 |
| Wounded Knee | 56-58 |
| Rapid City | 59-61 |
| Wall/Badland | 62-64 |
| Hometown | 65-67 |

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“Current soybean production techniques are beyond what I could have imagined as a farm kid and later as a County Extension Agent in Minnesota and New York State during the 1970s and 80s.”

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The mission and work of GW & SDAITC is fulfilled by empowering effective teams. Volunteers serve on the SDAITC Program Advisory Team with a diverse membership of elementary and agriculture educators; representatives of the South Dakota Department of Agriculture and Department of Education; agri-business; agriculture commodity representation; and South Dakota agriculture advocates.

Important tasks of the team are to review agriculture lessons and activities prior to inclusion in SDAITC curriculum and to guide the three paid staff. Our staff includes: Marsha Kucker, Director of Curriculum & Technology, the genius behind the 4th grade “South Dakota Road Trip” curriculum, and SDAITC State Contact; and Cindy Larson, Associate Executive Director, who tells the SDAITC story to the media and stakeholders and is a networking extraordinaire; and me, who is the SDAITC program leader and agriculture liaison.

The SDAITC Program Advisory Team and staff are accountable to the GW & SDAITC Board of Directors. Mr. Walt Bones, former South Dakota Secretary of Agriculture, is Board President.

To date, more than 8,200 students, representing 102 school districts and 14 private schools, are enrolled in the 4th grade South Dakota Road Trip digital curriculum.

By using electronic technologies, the SDAITC program is accessible to every elementary school in South Dakota. This unique curriculum is turn-key for teachers by offering lesson plans, activities, and evaluations for nine agriculture commodities that emphasize math, science, writing, social studies, history, and agriculture literacy. Because the curriculum is digital, it can be constantly updated to reflect ever-changing agriculture management practices. A Spanish version of the Road Trip is also available.

To review the curriculum, visit www.sdroadtrip.org.

GW & SDAITC’s top priority is to offer teacher training that demonstrates best practices for using the SD Road Trip curriculum in classrooms. One of the annual training options are Western SD and Eastern SD teacher tours of farms, ranches and agribusinesses. To reach more teachers, a distance learning lab has been established at the GW & SDAITC office. This will provide a statewide electronic forum for teacher training and online SDAITC college classes for educators.

Next year, June 16-17, 2021, GW & SDAITC will host an event called “Bridging the Gap.” The conference to be held at the Morton Center on the AgPhD Field Day grounds near Baltic, SD. This conference has two goals. One goal is to demonstrate to teachers creative techniques for teaching →



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Call: (605) 227-5919

“To date, more than 8,200 students, representing 102 school districts and 14 private schools, are enrolled in the 4th grade South Dakota Road Trip digital curriculum.”



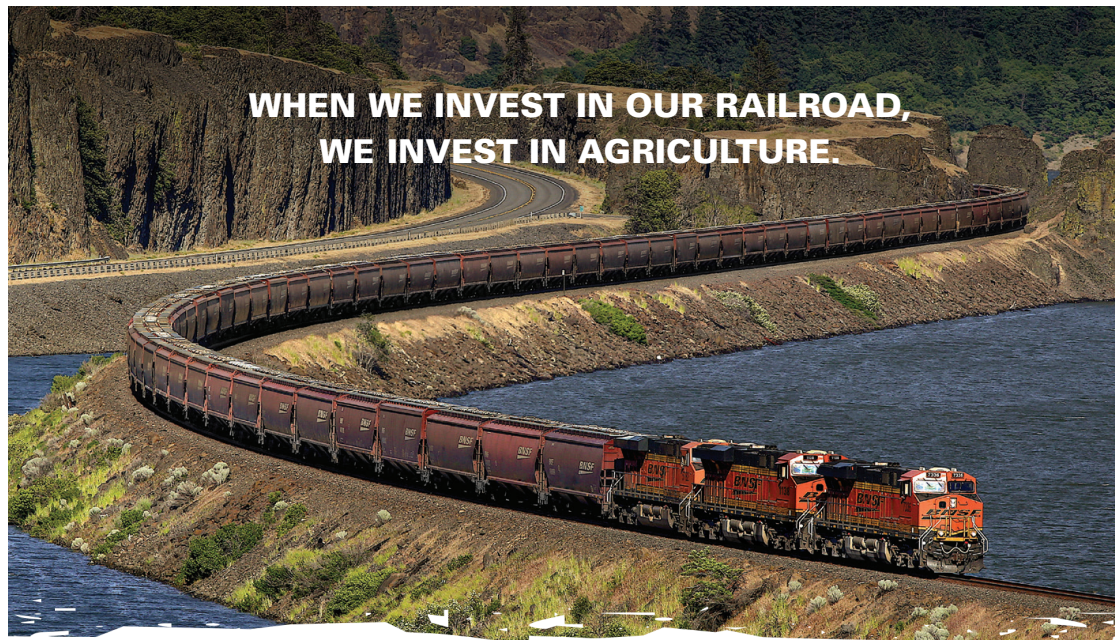
ABOUT THE AUTHOR:
Rev. Tim Olsen is Executive Director of Ground Works and South Dakota Agriculture in the Classroom.

the principles of STEAM using agriculture. A second goal is for the conference to be a forum for educators and agriculturists to talk together over good food and music. We look forward to the possibility of the SD Soybean Association becoming a conference partner.

The SD Soybean Association leadership is a wonderful friend of GW & SDAITC. We thank the SD Soybean Research and Promotion Council for funding the High-Tech Farmer project that will engage students in learning the new technologies of precision agriculture. The project will be showcased at the Bridging the Gap conference.

GW & SDAITC will be counting on the SD Soybean Association to join other commodity organizations to speak into the development of fifth and sixth grade SDAITC curriculum during the next 3 years.

Yep, my dad would definitely be impressed with the outstanding work of South Dakota soybean producers to feed a hungry world. ■



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