Northern Plains Sustainable Ag
EDUCATION / COMMUNITY / ENVIRONMENT

The Germinator

SUMMER 2025
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This issue of The Germinator has information about crop diversity. This field of mustard taken in South Dakota at Mikkonen Organic. It is the first time this has been grown (on purpose, as a crop, not coming up as a weed) on this organic farm... A variety in crop rotation is beneficial to soil health in many ways. Don't be afraid to try new things.You never know how beneficial it might be to your soil and/or the fiscal health of your farm.

Photo by Krysti MIkkonen

Advertising Directory

Mission Statement

Northern Plains Sustainable Agriculture Society promotes sustainable food systems through education, advocacy, and research.

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President Martin Goter

From the President

Martin here. we are again with another issue of The Germinator out and another article due from me...and here I am getting it in at the last minute again. We have had a bit of severe weather on a regular basis this summer, and I am still cleaning up some of the mess and still waiting on the insurance adjuster to finish up on my bin claim. I have heard that we had the conditions that qualified as a category 3 hurricane, don't quote me on that; but from the bin I lost and the other damage in the area, I don't doubt it! I am sure most of you reading this are dealing with or experienced the same or worse. Let's hope the rest of the summer goes better and as we move into harvest this is the year that everything works just perfect, or maybe next year it will..

That being said, our theme this germinator is on crop diversity. A diverse rotation of small grains, legumes, and broadleaf crops creates a living system where each crop benefits our fields in their own unique way; as well as contributes to a larger diversity in the biology of our soils. Over time, this diversity balances nutrient cycling, prevents disease and pest cycles from taking hold, and builds a soil structure that can handle droughts and heavy rains alike. A truly diverse crop rotation doesn't just produce crops—it produces healthier plants, higher Brix, and a more resilient farm year after year. I personally see the native species as natures way of balancing what is out of balance and providing the diversity where we fail to do so. I know not everyone sees it the way I do, but a perfectly clean field actually makes me a bit uncomfortable, even if it is organic.

The same is true for us as farmers. Just as soil biology thrives on many species working together, our community thrives on many voices and experiences. The Northern Plains Sustainable Agriculture Society is strongest when biodynamic, regenerative, and organic farmers—and those just beginning their journey—come together to share ideas, observations, and help each other out. Diversity in our fields makes us better farmers; diversity in our membership makes us a stronger movement.

From The Exec Director

Executive Director Krysti Mikkonen

Let's talk about crop diversity. One of the enjoyable aspects of living on an organic farm is the diversity of crops that can often be found. Living in corn and bean country, it wasn't out of the ordinary to have a neighbor ask when we were out and about, "What are you growing on the west side of the highway?" While it's possible it was because the weeds were covering what was actually being grown, more often than not, it was because we were growing something that had rarely or never been grown in the area

Often, the new crop was grown because we had a contract, and we were trying something different. That was always an exciting challenge. Growing Kernza was one of those situations. We had a three-year contract to try to grow it for a large cereal company. In case you're wondering, it didn't go very well. This year, for the first time, my son, Jayden, a fourth-generation farmer, has a nice crop of mustard being grown — on purpose, not just coming up around the rest of our crop. While we've had a lot of mustard grown on the farm, it's usually because it's a weed coming up among the intended crop, so much so that it often looks like a mustard field.

Because there's a required crop rotation necessary in certified organic farming practices, you need to have different crops integrated into your program. This helps build good soil health. If the soil is lacking in some nutrients, finding a crop that will help build in what's missing, maybe that means something new. Peas build in good nitrogen, which is a big necessity for healthy crops.

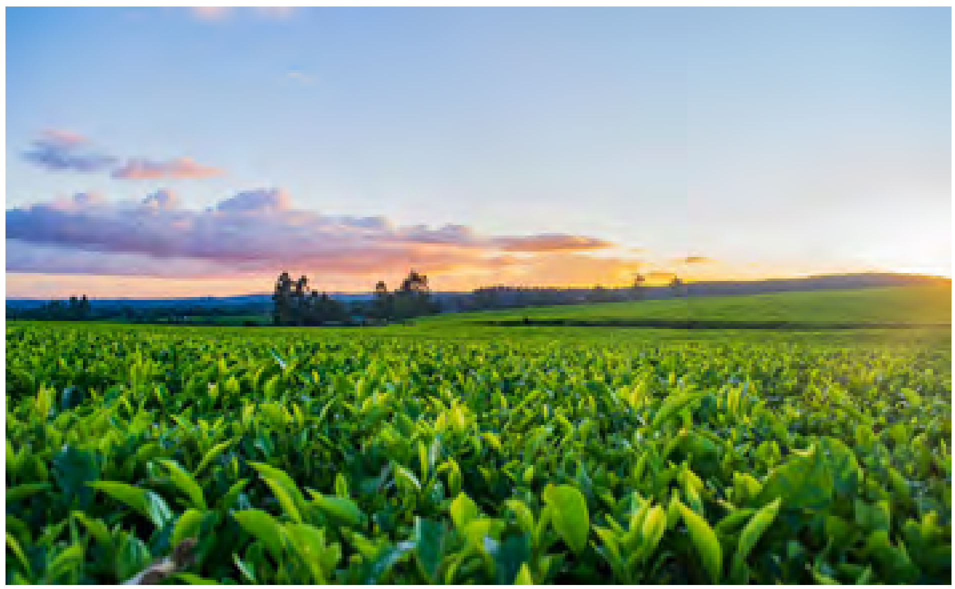
Curiosity can also lead to the incorporation of a crop. That was the case when a couple of years ago Jayden tried hemp. Again, it ended up to be a logistical struggle so the experiment only lasted a year, it was fun to see him take a risk and try something new.

I envision many of our readers have diversity in their crops for many of the same reasons I've listed. Whatever the case, one of the best results is it keeps the work life of an organic farmer from getting stagnant and predictable.

"Growing season in a jar: These are all of the crops grown in one season several years ago at the Mikkonen Organic Farm where my kids grew up."

Producers and Landowners Can Now Enroll in USDA's Grassland Conservation Reserve Program

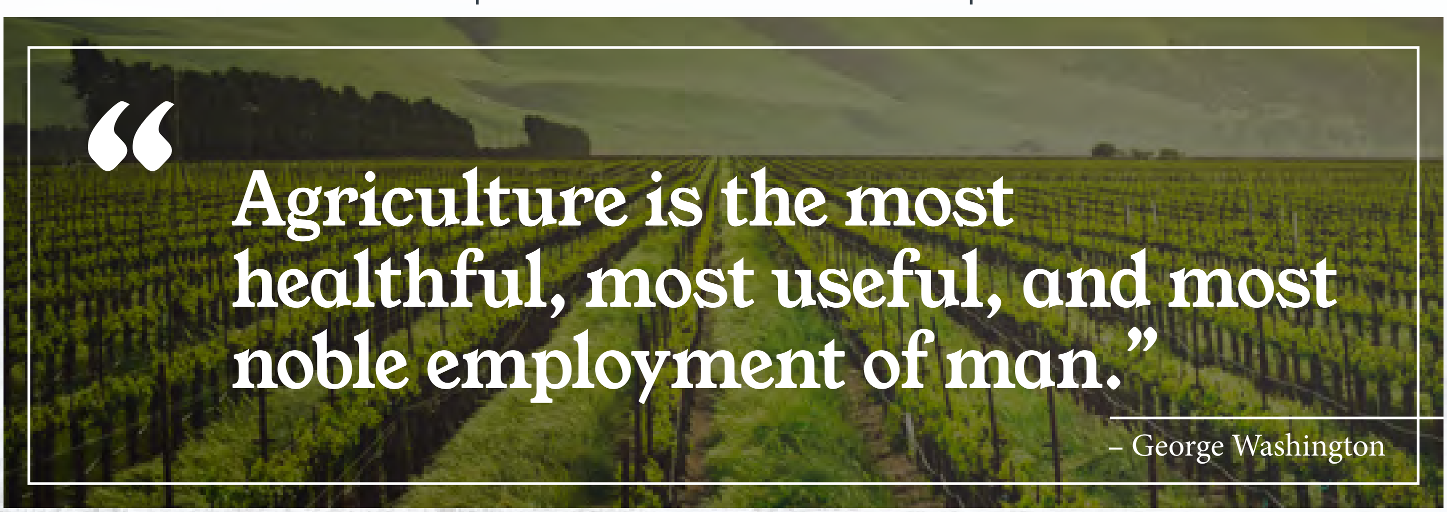
The U.S. Department of Agriculture (USDA) announced that agricultural producers and private landowners can now enroll in the Grassland Conservation Reserve Program (Grassland CRP). The sign-up runs from, July 14, to Aug. 8, 2025. Grassland CRP, offered by USDA's Farm Service Agency (FSA), is a voluntary working lands conservation program that enables participants to conserve grasslands while also continuing most grazing and haying practices.



Grassland CRP emphasizes support for grazing operations, plant and animal biodiversity, and grasslands and land with shrubs and forbs under the greatest threat of conversion.

"Through the conservation of America's essential grasslands, Grassland CRP supports continued agricultural productivity while at the same time prioritizing private lands stewardship," said FSA Administrator Bill Beam. "By offering landowners the best of both worlds — economic viability and working lands preservation — Grassland CRP provisions support USDA's commitment to Farmers First."

CRP, USDA's flagship conservation program, celebrates its 40th anniversary this year. For four decades, CRP has provided financial and technical support to agricultural producers and landowners whose accepted acres are placed under contract for 10-15 years and who agree to voluntarily convert the land to beneficial vegetative cover to improve water quality, prevent soil erosion and support wildlife habitat. The American Relief Act, 2025, extended provisions for CRP through Sept. 30, 2025.



"Agriculture is the most healthful, most useful, and most noble employment of man."

– George Washington

Iowa Grain Indemnity Fund Now Covers Global Processing Clawback Payments Urgent Claim Deadline: Aug. 29, 2025

There is new Iowa legislation that has extended the Iowa Grain Indemnity Fund to cover clawback claims. This is significant relief for farmers who have been caught in the difficult situation following Global Processing's bankruptcy. The new Iowa legislation covers grain buyer bankruptcies that occurred on or after October 24, 2022, which includes coverage for the Global Processing bankruptcy.

Critical Deadline:

For repayment of losses incurred prior to July 1, 2025, claims must be filed by August 29, 2025, through the Grain Warehouse Bureau of the Iowa Department of Agriculture & Land Stewardship website. (There is an online tutorial about how to complete your claim.)

Who is Eligible:

- Any farmer who received a clawback letter regarding Global Processing's bankruptcy
- Farmers who were required to pay money back in response to the clawback letter (including full payments, settlement payments, or other direct payments to the trustee regarding the preference claim)

Note: The claim cannot cover any legal fees paid to achieve the settlement or respond to a lawsuit regarding the clawback

- This includes farmers located outside Iowa who delivered grain into Iowa

How to File a Claim:

- Contact the Grain Warehouse Bureau of the Iowa Department of Agriculture and Land Stewardship (Phone: 515-281-5324)
- Claim forms are also available online

What to Do Now:

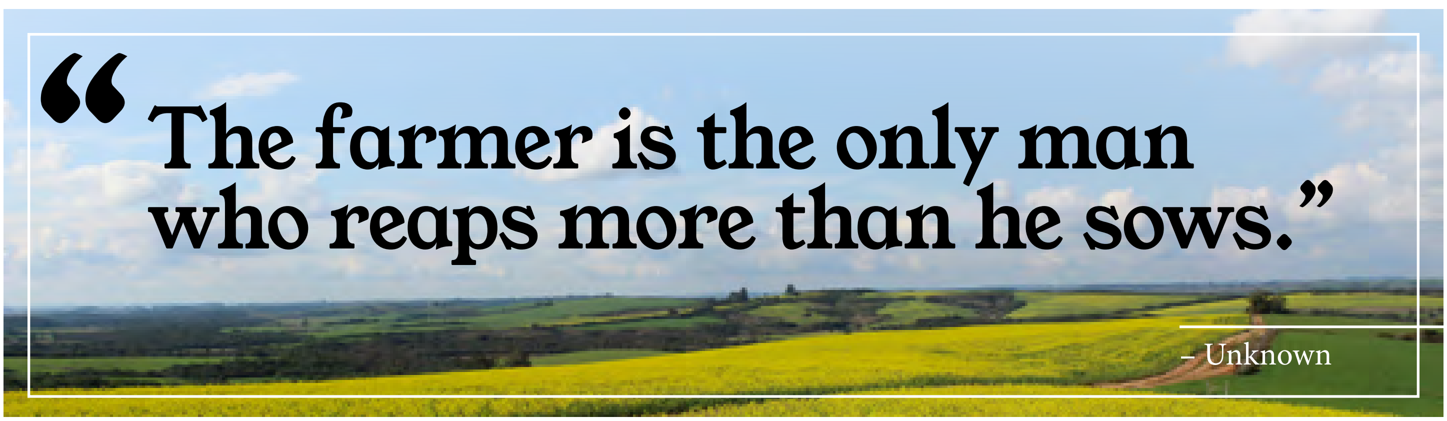
- If you received a Global Processing clawback letter and made any payment, contact the Grain Warehouse Bureau immediately
- Gather all documentation related to your Global Processing transactions and any clawback payments
- If you feel your situation is more complicated, consider consulting an attorney before proceeding
- File your claim before the August 29, 2025, deadline

How Did We Get Here?

On October 24, 2022, organic and non-GMO grain buyer Global Processing, Inc. filed for Chapter 11 bankruptcy. Many farmers who delivered grain but hadn't been paid were left without compensation, and the Iowa Grain Indemnity Fund had already been depleted by the Pipeline Foods bankruptcy claims in 2021.

Making matters worse, beginning in September 2024, over 90 farmers across Iowa, Minnesota, and other states received "clawback" letters demanding they return portions of payments they received from Global Processing during the 90 days before the bankruptcy filing. These legitimate but devastating letters required farmers to pay back money they had already earned and spent.

Organic Farmers Association and other organizations like the American Farm Bureau Federation, worked to connect affected farmers to resources, legal professionals, and state and federal legislators. OFA's work and the power of our members helped make progress on the issue of protecting organic farmers from buyer bankruptcies, but more work is needed to secure long-term, federal protections.



Thank you to our 2025 Field Day Sponsors

NPSAS invites you to participate in our 2025 Field Day events. It's a great summer of learning, networking, inspiring, and teaching. Thank you so much to our 2025 Sponsors.

You'll find more information on each event on the NPSAS website at www.NPSAS.org

ND Agri-Tech AI and Robotics Showcase
Forbes, ND & McClusky, ND - June 17-18

NDSU Carrington Research Center Field Day
Carrington, ND - July 22

Johnson Farm Tour Celebrating 50 Years Organic Production
Johnson Farm, Madison, SD - Aug. 7

Pathways To Organic Beef
Carl Poss Ranch, Philip, SD - August 22nd

Dakota Organic Academy Road Show (OARS) Field Day & Organic Transition Training
Kevin & Sara Falk, Tappen, ND - August 27th

Dakota Organic Academy Road Show (OARS) Field Day & Organic Transition Training
Rocking Z Acres, Wessington, SD - August 28

Unlocking Organic Success -
Menoken Farms, Menoken, ND - September 10

2024 Field Day Sponsors

- Ag Country
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- ND SARE - NDSU
- Bio Flora
- Grain Millers
- Healthy Food Ingredients
- Soil First
- Stengel Seed
- Sunrise Foods
- Organic Valley

PLAINS
TRANSITION TO ORGANIC PARTNERSHIP PROGRAM

United States Department of Agriculture
Agricultural Marketing Service
National Organic Program
Transition to Organic Partnership Program

USDA ORGANIC

Robotics & Tech Field Day

On June 17 & 18, the first event for the Northern Plains Robotics/AI Field Day (NPRFD) Series took place in North Dakota. With robotics technology and AI entering the mainstream of agriculture, farmers throughout the region were able to see the latest in weed mitigation and crop mapping using robotics, drones, and precision agriculture technology over two consecutive days in corn, soybean, and sunflower fields.

A good crowd attended the Tech field day in McClusky at the Kim Saueressig farm.

Randy Stratton, of SecurCrop Agri-Tech Intl. addresses the crowd about the changes of tech in ag at the Pudwell/Zundel organic farm in Forbes, ND.

This drone is spraying water to demonstrate how liquid organic fertilizers like fish emulsion can be used as an efficient way to spray crops.

Carrington Field Day Review

Research, innovations, and best practices in organic farming were among the topics featured during the Organic/Sustainable Agriculture Production Field Tour held on July 22 at North Dakota State University's Carrington Research Extension Center (CREC).

NRCS gave a great demonstration on the value of minimal or no-till and cover crops to save our topsoil from rain run-off.

The rain gave way to a break for the crowd at the organic tour to watch the outdoor demonstrations.

Celebrating 50 Years of Organic Production at Johnson Family Farm Field Day

Celebrating 50 years!

Join us for the 2025 Johnson Family Farm Field Day in Madison SD. While this is an annual event and a staple in the NPSAS line-up of field days, it is also a great celebration this year. Come and congratulate the Johnson Family and their rich history in organic agriculture. It is one of the longest standing certified organic farms in the state, if not the longest. Fifty years of soil fertility, innovation, trial and error, hard work, team work, and family is a well-deserved recognition.

Registration will begin at 8:30 am and concludes with a lunch at 1 pm.

Johnson Farms Organic Tour

Open House

JOHNSON JF FARMS
Organic Farming

Thursday, August 7, 2025
St. Peter on the Prairie
Madison, S.D.
8:30 am to 1 pm

Join the Johnson Family on recognizing 50 years of organic farming!

Round Table Discussion with Johnson Family Members
Johnson Farms Field Tour & Stops
Free Lunch!

Schedule

8:30 Coffee, registration and welcome
9:00 Round table discussion with Johnson family
10:00 Johnson Farms Field Tour & Stops *(no bus)*
12:00 Return to The Prairie, noon lunch

Free Event!

RSVP

Please contact:
Charlie at 605-270-2665 or Aaron at 605-695-0847
or e-mail: cjorganic81@gmail.com if you plan to attend.

Location

St. Peter on the Prairie, 24311 452nd Ave, Madison, SD

Directions From Pizza Ranch: 8 mi south, 2 mi west, 2 mi south

PLAINS

United States Department of Agriculture
Agricultural Marketing Service
National Organic Program
Transition to Organic Partnership Program

DAKOTA ORGANIC ACADEMY ROAD SHOW

THIS SUMMER - 2 SESSIONS ONE IN NORTH DAKOTA AND ONE IN SOUTH DAKOTA

Don't miss your opportunity to explore and learn about certified organic production systems for livestock, grains, oilseeds, and pulses!

These workshops are **FREE** and are geared for farmers and ranchers who want to learn more about organic farming and what it takes to transition your operation to organic production.

Join us to learn and talk about organic.

August 27th, - Tappen, ND - Kevin and Sara Falk Farm

August 28th - Wessington, SD - Rocking Z Acres

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Learn More at www.npsas.org

Free Training And Field Day Set For Organic Farmers And Those Interested in Transitioning to Organic

The Dakota Organic Academy Roadshow explores regenerative, certified organic production systems for grains, oilseeds and pulses.

Beginning and current farmers interested in organic production or transitioning to certified organic production of livestock, grains, oilseeds or pulses are the target audience for a training presented by Northern Plains Sustainable Ag Society and USDA Transition To Organic Partnership Program.

The organic academy roadshow training is set with two separate events, one in North Dakota and one in South Dakota., August 27 at the Kevin and Sara Falk farm in Tappen, ND and another on August 28 at Rocking Z Acres with BJ McNeil in Wessington, SD. They run from 10:00 am - 4:00 pm each day and include an informative hands'-on walk through fields grown on each farm.

"This is our 3rd year running these training programs. Through our participants we've learned they really enjoy the conversation and information gained from these events" said Krysti Mikkonen, Executive Director for NPSAS. "We've had seasoned farmers participate and they too got a lot out of great insights."

During the workshop, expert speakers and experienced farmers from the Northern Great Plains region will cover a range of topics, including:

- The value of data in your decision making
- Developing an organic system plan.
- Economics and markets for organic products.
- Considerations when transitioning an operation.
- Working with an organic consultant.

Participants will have plenty of opportunities to ask questions and share ideas with seasoned organic farmers and ranchers, There is no registration fee, but registration is required. Register online at www.npsas.org.

UNLOCKING ORGANIC SUCCESS

A SOIL HEALTH FIELD DAY

FREE Field Day

Menoken Farm
1107 171st St. NE
Menoken, ND

Wednesday,
September 10th

10:00AM - 4:30PM

Tour Includes:

- High Tunnel Production
- Vegetable Gardens
- Composting
- Livestock Integration
- Cover Crops
- Perennials in Crop Rotation
- Catered Lunch

Scan the QR code or go to bit.ly/organic_fieldday

REGISTER NOW

This is a great opportunity to gain valuable soil health knowledge and connect with the organic farming community in North Dakota!

This event is supported through the United States Department of Agriculture (USDA) Transition to Organic Partnership Program (TOPP). TOPP is a program of the USDA Organic Transition Initiative and is administered by the USDA Agricultural Marketing Service (AMS) National Organic Program (NOP)."

Boost Diversity, Yield, and Pest Management Through Intercropping

In recent years, organic farming has gained popularity as a sustainable approach to agriculture that prioritizes environmental health, soil fertility, and the use of natural pest control methods. One of the most effective techniques within organic systems is intercropping, the practice of growing two or more crops simultaneously on the same piece of land. Intercropping not only promotes crop diversity but also offers tangible benefits for crop yield and pest prevention, making it a vital component of resilient organic farms.

Crop diversity is a cornerstone of sustainable agriculture, and intercropping is a practical way to achieve it. By planting different crops together, farmers create a more complex and resilient ecosystem. Diversity encourages a broader range of soil microorganisms, enhances nutrient cycling, and reduces the risk of crop failure due to pests or diseases targeting a single crop type. For example, blending legumes with cereals can improve soil nitrogen levels naturally, reducing reliance on external inputs and fostering a healthier farm ecosystem.

In organic systems, where synthetic fertilizers and pesticides are avoided, crop diversity acts as a natural buffer against economic and environmental vulnerabilities. It encourages biodiversity not just above ground, but also within the soil, supporting beneficial organisms that contribute to plant health and soil fertility.

While diversification is often associated with ecological stability, it also translates into tangible yield benefits for organic farmers. Intercropping can optimize land use by increasing per-area productivity. Certain crops, when grown together, complement each other by exploiting different soil nutrients or ecological niches.

For instance, the classic example of intercropping maize with beans leverages the nitrogen-fixing ability of legumes to supply essential nutrients to the cereal crop, reducing the need for external fertilizers. Similarly, the use of root vegetable crops alongside shallow-rooted herbs can maximize space and resource efficiency, leading to higher overall yields.

Moreover, intercropping can buffer against weather extremes and pest outbreaks, which can otherwise devastate monocultures. When one crop fails or suffers due to pests or diseases, the presence of other crops ensures the farm's productivity remains more stable. This risk mitigation is vital in organic farming, where crop rotation and natural pest management are integral to crop success.

Perhaps one of the most compelling advantages of intercropping in organic farming is its role in pest prevention. Monocultures tend to attract pests because they provide a large, uniform target for insects, fungi, and other pests. By contrast, diverse cropping systems can disrupt pest life cycles and reduce the likelihood of widespread infestations.

Intercropping employs tactics such as trap crops, companion planting, and allelopathy to deter pests. For example, planting marigolds alongside vegetables can repel nematodes, while basil near tomatoes can deter aphids. Certain crop combinations also attract beneficial insects such as predatory beetles and parasitic wasps, which naturally keep pest populations in check.

Furthermore, intercropping can create physical barriers that hinder pest movement. Tall crops like sunflowers or maize can shield more vulnerable plants from pest exposure. These natural pest-prevention methods reduce or eliminate the need for chemical interventions, aligning perfectly with organic principles.

While the benefits of intercropping are numerous, it requires careful planning and management. Selecting compatible crop combinations that do not compete excessively for nutrients, water, or sunlight is essential. Additionally, farmers must understand the growth habits, maturation times, and pest susceptibility of each crop involved.

The success of intercropping also depends on proper spatial arrangements and timing of planting and harvest. Properly designed intercropping systems can be labor-intensive initially but often lead to long-term benefits in sustainability and productivity.

Intercropping stands out as a strategic practice that enhances crop diversity, boosts yield potential, and provides natural pest management solutions in organic farming. By creating a more complex and resilient ecosystem, farmers can improve soil health, decrease dependence on external inputs, and reduce pest pressures—all while maintaining productive, healthy crops. As organic agriculture continues to grow, adopting intercropping practices will be instrumental in building sustainable, productive, and environmentally friendly farms for the future.

Perennial Crops on the Plains: Enhancing Crop Diversity in Organic and Regenerative Farming

The vast plains of North America and other regions have traditionally been associated with annual grain crops such as wheat, corn, and soybeans. However, the integration of perennial crops into these landscapes offers promising pathways to improve soil health, promote biodiversity, and bolster the resilience of agricultural systems—especially within organic and regenerative farming practices.

Perennial crops are plants that live for multiple years, maintaining their root systems year-round and regrowing each season without requiring replanting. Unlike annuals, which complete their life cycle in one growing season, perennials develop extensive root systems that stabilize soil, facilitate nutrient cycling, and support diverse microbial communities.

Historically, in the plains regions are dominated by annual monocultures due to their high yields and ease of cultivation. Yet, the adoption of perennial grains such as Thinopyrum intermedium (intermediate wheatgrass) and Kernza (a perennial wheatgrass) is gaining attention. These crops can be integrated into existing farming systems, providing sustainable alternatives to annual grains.

Benefits to Crop Diversity and Soil Health

1. Enhanced Biodiversity

Incorporating perennial crops diversifies the plant landscape, supporting a wider array of insects, pollinators, soil microbes, and other wildlife. This increased biodiversity can lead to healthier ecosystems and more resilient farmland.

2. Soil Conservation and Erosion Control

Perennials' extensive root systems improve soil structure, reduce erosion, and increase organic matter content. They hold the soil in place during storms and droughts, maintaining productivity over the long term.

3. Reduced Input Requirements

Perennial systems often require fewer fertilizers, pesticides, and herbicides because they establish ongoing biological balances that suppress weeds and pests naturally—making them well-suited for organic and regenerative practices.

4. Carbon Sequestration

Deep-rooted perennials contribute to long-term carbon storage in soils, helping mitigate climate change. Their constant root activity enhances soil organic carbon levels, providing a climate-friendly farming option.

5. Climate Resilience

Perennials are typically more drought- and pest-resistant than annuals due to their deep root systems and established ecosystems, offering stability against climate variability.

Perennials align perfectly with these principles by promoting soil fertility, reducing external inputs, and encouraging biodiversity. Their integration on the plains could diversify cropping systems, reduce dependency on monocultures, and foster more sustainable land stewardship.

Expanding the cultivation of perennial crops requires research, breeding, and incentives for farmers to adopt these systems. As awareness of their benefits grows, perennial crops could become a cornerstone of sustainable agriculture in prairie regions, safeguarding ecological integrity while supporting resilient food systems.

Let's keep building a sustainable future together.

Join NPSAS or renew your membership today!

Growing nutrient dense food, using environmentally sound farming methods that support the long-term sustainability of human communities, soil, and water resources has been the focus of NPSAS for 40+ years. When we started, there were few others interested in our ideas, and markets for our products were hard to find. All that has changed. Your new membership or membership renewal will help us continue to build our community of support as we work to meet the increasing demand for knowledge and tools to build a more sustainable way of life.

Not sure of your membership status? Email info@NPSAS.org with questions

Northern Plains Sustainable Ag

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Card number ____________________ Expires _______ CVV _______

Return this section to: **NPSAS • PO Box 444 • Frederick, SD 57441**

Renew or join NPSAS

☐ Student $40 ☐ Family $75

☐ Business $300 ☐ Lifetime $1500 $ _________

☐ Single $50

Optional: Please accept my generous gift of:

☐ $35 ☐ $50

☐ $100 ☐ $150

☐ $1,000 ☐ Other $_____ $ _________

Designate my gift to go toward:

☐ Beginning farmer training

☐ Farm Breeding Club

☐ Food & Farming Conference scholarships

☐ General operating support

☐ Matching gift for online giving programs/ year-end appeal

TOTAL $ _________

Thanks for your continued support of **NPSAS**!

The NPSAS Board & Staff are committed to honoring and building on what the founders created and previous boards and staff nurtured. We will serve the mission of the organization to the highest standard to ensure NPSAS is here to serve for generations to come.

Scan to start your NPSAS Membership Today!

Heine Farms NPSAS Member Feature

Can you tell us about your farm?

Our farming operation is split between Frederick, SD and Forbes, SD. We rent all our ground and have grown a variety of crops so far finding what works best for us including millet, oats, corn, soybeans, winter wheat, barley, buckwheat, sunflowers, milo, field peas, and black beans. Wyatt runs the operation and while I used to be more involved

Can you tell us a little about your family?

We are Wyatt and Mariah Heine and we have two kids Oliver (3) and Holland (1) and our dog Wrigley. We both grew up in Frederick, SD and got married in 2017. We live on Mariah's family farm near Frederick.

What year were you first certified organic?

We began renting ground from a neighbor in 2021, who has been certified organic since 1995 and added acres from the family farm Mariah grew up on, which has been certified since 1989.

What is the best advice you've gotten that helped your operation?

The best advice I have gotten is to look at your weeds not as a pest to get rid of, but to use them to find what your soil needs.

Do you have anything new you're working on or a goal for the operation next 5 years?

Our goals for the next 5 years include continuing to learn and expanding the farm, whether that be through land or alternative ventures. We recently bought a color sorter to clean our grain and are looking into ways to create new markets for our grain.

Do you have any great advice for new and transitioning farmers?

Find a group of people to talk to and get advice from in every aspect. Gather an advisory board of some kind that includes people you trust in agronomy knowledge, financial advice, and experience in farming to bounce ideas off of.

Do you have a change you have made in your operation that made a big difference for you?

The biggest change we have made on the farm is finding what crop will give us the best rate of return and adjusting the crop rotation according to that. We plant our best rate of return crop one year and the other two years in the rotation are focused around improving soil nutrients while still growing a cash crop for the next time we grow our best crop. Our current cash crop in Forbes is oats and in our second and third years of the rotation we grow peas then a late season crop before going back to oats.

Why are you part of NPSAS, and how does it help your operation?

NPSAS is a good community of farmers and people in the organic world. It's great for networking, building relationships, staying in contact with buyers, and keeping up with the new technologies and strategies.

Continued on page 26

By Mariah Heine

Rhubarb Torte

Crust

Ingredients

- ½ cup shortening
- ½ cup cold butter (substitute butter for shortening if needed)
- 2 cups flour
- 2 tbsp sugar

Instructions

Preheat the oven to 350º. Combine flour and sugar in a mixing bowl or food processor and mix until combined. Cube butter into ½" pieces or smaller and add half to the mixer or processor. Mix until mostly combined and add remaining butter. Mix again until the smallest butter pieces are pea sized. Add 4 tbsp ice water and mix briefly. Slowly add remaining 4 tablespoons of water, mixing briefly in between additions. Pat into a 9x13 pan and bake for 15 minutes.

Filling

Ingredients

- 6 egg yolks (save the whites)
- 2 ½ cups sugar
- 1 cup heavy cream
- 4 tbsp flour
- ½ tsp salt
- 4 cup cut up rhubarb

Instructions

Combine all ingredients exept the rhubarb in a mixing bowl and combine. Add rhubarb and mix until incorporated. Add filling to crust and bake at 350º for 45 minutes.

Meringue

Ingredients

- 6 egg whites
- ¾ cup sugar
- 1 tsp vanilla
- ¼ tsp salt

Instructions

Beat egg whites until soft peaks form. Add sugar, vanilla, and salt and beat until stiff. Pour over filling and add peaks with a spatula or spoon. Bake at 350º for 15 minutes or until golden brown. LET COOL for AT LEAST 30 minutes before serving.

Seriously? A Court Case About Rhubarb?!?

In 1947, a peculiar legal battle took place that captured the attention of both botanists and food enthusiasts alike, centering on one simple question: is rhubarb a fruit or a vegetable? To the casual observer, it might seem trivial—after all, isn't it just a tart, leafy-stemmed plant often used in desserts? But this question had significant implications, especially from a legal and economic standpoint. Legally speaking, rhubarb was classified as a fruit, a decision that might seem obvious given how it's used in pies, jams, and cakes. However, the case was not about culinary tradition but about tariffs—the taxes applied to imported goods. The United States imported rhubarb from Canada, and the tariff rates differed significantly for fruits and vegetables. To determine how rhubarb should be taxed, the government needed an official classification, and so, a court case was born.

Continued on page 23

Baked Creamed Sweet Corn for Freezing

Ingredients

- 10 cups Fresh sweet corn kernels (scraped from the cob)
- ½ cup of butter melted
- 1 onion, finely chopped
- 1-2 red or green bell peppers finely chopped
- 1 ½ - 2 ½ cups Heavy cream or half-and-half (depending on your desired creaminess
- 2 -4 T Sugar
- Salt and pepper, to taste

Instructions

1. *Prepare the Corn: If using fresh corn, shuck the corn and either cut the kernels off the cob or blanch the corn first.*
2. *Combine Ingredients: Add the fresh corn kernels and any corn milk (from scraping the cobs), butter, heavy cream or half-and-half, sugar, salt, and pepper to the pan. Stir to combine.*
3. *Bake the Creamed Corn: Transfer the mixture to a large baking dish. Bake at 325°F (160°C) for about 1 hour, stirring every 15 minutes,*
4. *Cool the Creamed Corn: Allow the creamed corn to cool completely before freezing.*
5. *Freeze the Creamed Corn: Once cooled, package the creamed corn in freezer-safe bags or containers, leaving about 1 inch of headspace for expansion. Ensure to remove as much air as possible from freezer bags before sealing. Label and date the containers or bags. Freeze for up to 6 months or even a year.*

Mariah Heine blanching corn at her grandma's house for frozen corn

Seriously? A Court Case About Rhubarb?!?

Continued from page 22

What makes this case especially entertaining is the spirited debate and expert testimony provided during the proceedings. Botanically, a fruit is the mature ovary of a flowering plant, typically containing seeds. By this definition, rhubarb is a "false fruit," because it's actually a leaf stalk or petiole. Yet, the question was less about botany and more about culinary usage. Many argued that since rhubarb is predominantly used in desserts—think pies, crumbles, and jams—it should be classified as a fruit. The opposition contended that because rhubarb's botanical classification is different, it should be considered a vegetable. The debate echoed the famous 1893 Supreme Court case involving tomatoes, which, despite being botanically fruits, were ruled as vegetables based on their common culinary use. The court's decision often hinges on practical use rather than strict scientific classification, highlighting how language and tradition shape legal rulings.

This case is a charming reflection of how the law often intersects with everyday life—how something as simple as a plant can become a matter of international trade and tariffs. It also reveals the passionate arguments that can arise over food classification, blending science, law, and cultural norms. While on a botanical level, rhubarb is technically not a fruit, the legal classification ensures that consumers and importers alike know how to navigate the complex world of tariffs. So next time you enjoy a rhubarb pie, remember that this tart, bright-red vegetable—by law—embodies the sweet, fruity tradition of dessert, all thanks to a 1947 legal case that made sure it was classified correctly for the curious world of commerce.

Satellite Technology Revolutionizing Soil Sampling: An Eye-Opening Innovation in Agriculture

In recent years, technological advancements have drastically transformed numerous industries, and agriculture is no exception. Among the most promising innovations is the use of satellite technology combined with artificial intelligence (AI) to revolutionize soil sampling and fertilization strategies. This cutting-edge approach offers farmers unprecedented accuracy, efficiency, and cost savings—ultimately helping to shape a more sustainable and productive future for farming worldwide.

The Genesis of Satellite-Driven Soil Analysis

The roots of this technology trace back to a mineral exploration company that developed sophisticated tools for identifying mineral outcroppings like gold and silver. These instruments relied heavily on satellite imagery and AI, enabling explorers to locate resources more swiftly and cost-effectively. Recognizing parallels in the agricultural realm, the team, led by CTO Pieter Duplessis—a highly educated South African military satellite computing expert—began adapting their technology for farm use approximately six years ago.

Duplessis's journey exemplifies innovation born from diverse fields; his military background in satellite computing and AI laid the foundation for an agricultural application that now assists farmers in analyzing their soil health with remarkable precision. "The technology was created to save clients significant time, money, and effort in resource exploration; applying it to agriculture is a natural extension," explained Rob Friesen, President of Xact Agriculture, based in Saskatchewan, Canada.

From Concept to Market: A Six-Year Evolution

After years of research, partnership with universities and farm research facilities, and rigorous testing, the technology transitioned from concept to commercial product just last year. "We've been doing this for about six years, testing and validating our methods," said Friesen. Their platform utilizes high-resolution satellite imagery, particularly 10-band multispectral data obtained from Sentinel-1 and Sentinel-2 satellites, capable of capturing the soil's reflective properties from space.

Satellites observe the Earth continuously, with a new image of a given location captured approximately every six days. "Think of the satellite as the eyes for the AI brain, we then use soil samples and chemistry to train the brain to interpret what it sees." Friesen details. This AI is trained using actual soil samples collected from fields, enabling it to recognize various soil conditions and translate spectral data into detailed fertility profiles.

How Satellite-Based Soil Sampling Works

The process combines satellite imaging with soil sampling to develop comprehensive fertility profiles. First, satellites capture spectral data across multiple bands, breaking down the light reflected by the soil in ways our eyes cannot see. Then, AI algorithms analyze this spectral data against soil sample benchmarks, identifying patterns linked to soil nutrients, salinity, pH levels, and other critical factors.

This method offers a granular view—down to 10 yards by 10 yards—providing a detailed fertility map of entire farms. "Every 10-yard square you walk across can be analyzed, giving you high-resolution data that used to require costly and time-consuming grid sampling," points out Friesen. Compared to traditional methods—where farmers might spend upwards of $30 per acre on grid sampling—this satellite-driven approach costs start around $2.85 per acre, significantly reducing expenses.

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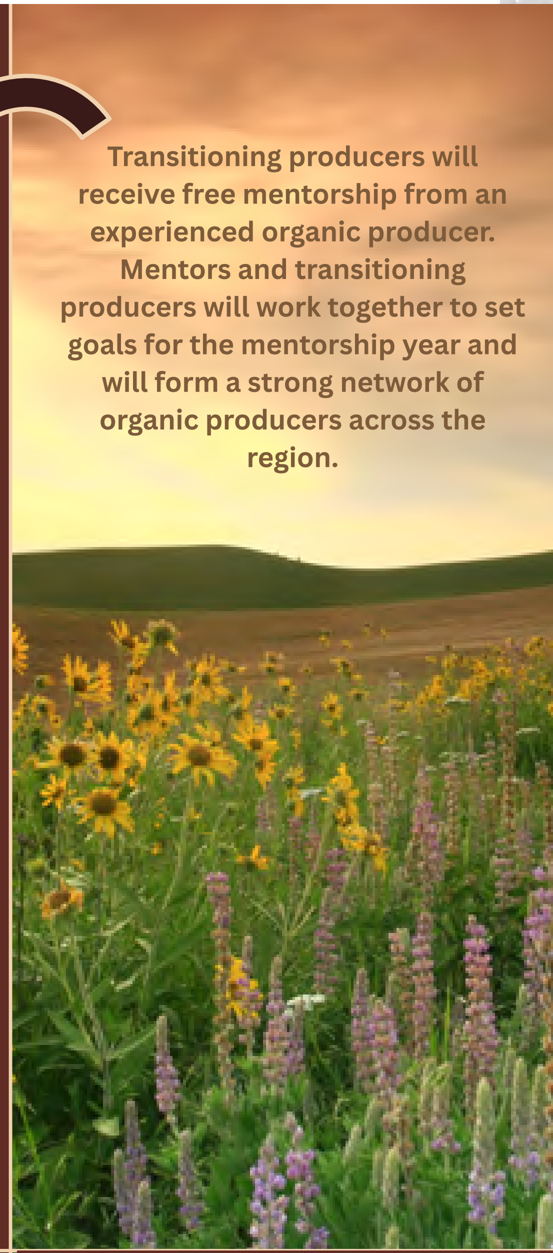

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Heine Farms NPSAS Member Feature...

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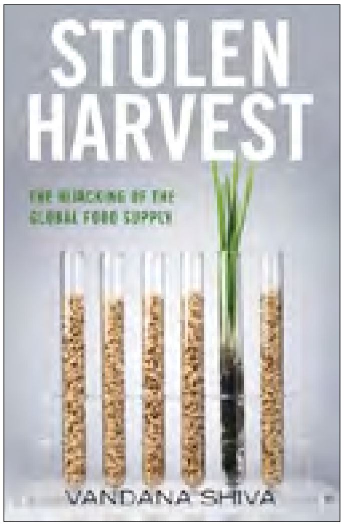
What is the most impactful success or lesson learned in your operation?

The biggest lesson we've learned so far is to learn your soil and what will grow best there. Our farm is split between two counties. What works in Brown County doesn't always work in McPherson County. When Wyatt first started renting from a neighbor, he wanted to grow corn and soybeans because it was familiar. We had a complete failure that year. The next year, we took more advice from our landlord and implemented a new crop rotation that was suited for that ground.

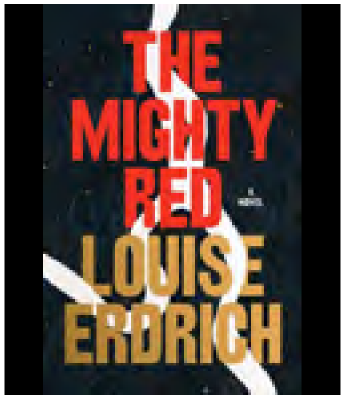
"Farming is a family affair and kids become involved young. Oliver Heine's brushing up on his farming knowledge."

Good Reads for Better Farming



Stolen Harvest: The Hijacking of the Global Food Supply by Vandana Shiva

Stolen Harvest presents a compelling and eye-opening examination of the complex and often hidden forces that shape our global food system. Through insightful analysis, author Vandana Shiva uncovers how corporate interests, monopolies, and agricultural policies threaten local food traditions, biodiversity, and sustainable farming. This thought-provoking book challenges readers to rethink where our food comes from and highlights the urgent need for change to protect food sovereignty and ecological health. A must-read for anyone concerned about the future of food and the planet.



The Mighty Red by Louise Erdrich (an Ojibwe author from North Dakota)

Louise Erdrich's The Mighty Red is a captivating exploration of community, resilience, and connection. What truly sets this novel apart is its compelling integration of organic farming as a vital element of the storyline. Erdrich beautifully captures the essence of sustainable agriculture, showcasing how organic farming is intertwined with the community's identity and respect for the land. It's more than just a backdrop—it's a symbol of renewal, hope, and harmony with nature. The detailed depiction of planting, tending, and harvesting organic crops reflects a reverence for the earth that resonates deeply in today's world looking for sustainable solutions.

Satellite Technology...

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Advantages Over Traditional Soil Sampling

Traditional soil sampling involves physically collecting soil from various locations across a field, often in a grid pattern, then sending samples to laboratories for analysis. While effective, this method is labor-intensive, time-consuming, and expensive, especially for large farms. Furthermore, the spatial resolution of samples may be too coarse, missing localized variations critical for precision agriculture.

In contrast, satellite-based sampling offers several advantages:

Cost Efficiency: At a fraction of the price per acre, farmers can assess their entire land more frequently.

Speed and Frequency: The platform can generate soil fertility snapshots post-harvest when bare soil conditions are available, providing timely data to inform fertilization decisions every season.

High Resolution: With 30 ft. by 30 ft. resolution, farmers gain the ability to target fertilization precisely where needed.

Data Management: The platform consolidates billions of data points into a visually accessible dashboard, simplifying complex data analysis.

Limitations and Considerations

While revolutionary, the approach is not without limitations. Satellite imagery requires a clear line of sight; cloud cover and water reflections can hinder data collection. "Even in cloudier regions, as long as there is minimal cloud cover and sufficient bare soil exposure, the system performs well," notes Friesen. Additionally, the spectral analysis primarily assesses surface soil conditions, so subsurface variability might still necessitate traditional sampling for certain applications.

The company's technology acknowledges these limitations upfront, emphasizing transparency. "We tell people what we can and cannot do, because accurate data is vital," stated Friesen. Fresh technological advances could further improve the system, such as integrating drone imagery for supplementary data in less accessible areas.

Global Applicability and Trust

This satellite-based soil analysis is not limited to a specific region. Xact Agriculture has tested this technology across multiple regions, including Saskatchewan, Montana, British Columbia, and South Africa. The key to success lies in establishing trusted partnerships and ground-truthing soil data—collecting initial samples to calibrate satellite

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