

The meeting of the South Dakota Nutrient Research and Education Council (NREC) was called to order by Chairman Ryan Wolf at 10:00 AM, December 1, 2022 at the SDSU Student Union, Brookings, SD.

In attendance were council members Ryan Wolf, Ryan Schuchhardt, Colin Nachtigal, Kevin Bachmeier, Jerry Runia, Kyle Gustafson, Bruce Haines, Tavis Strasser, Bill Gibbons, Tom Gere, and Paul Wegleitner. Also, in attendance was Angela Loftesness, Assistant to the Dean, College of Agriculture, Food and Environmental Sciences. The Council members absent from the meeting were Jim Loken and Bryan Jorgensen.

Ryan Wolf opened the meeting by asking for corrections or additions to the July 7, 2022 minutes. Bruce Haines moved to approve the July 7, 2022 minutes as presented. The motion was seconded by Jerry Runia and the motion carried.

Ryan Wolf and Angela Loftesness reviewed the Financial Reports dated November 22, 2022. Kevin Bachmeier moved to accept the Financial Reports dated on November 22, 2022. The motion was seconded by Ryan Schuchhardt and the motion carried.

The financials for 2020 have all been closed out. SDSU is working with new personnel and hopes to have 2021 closed out by December 31st. The Council determined that there will be no more extensions of current projects and that all accounts needed to be closed out by the end of 2023.

Ryan Wolf led a discussion about the approval of requests for no-cost extensions. Bruce Haines moved that all the projects be voted for at the same time in one motion. The motion was seconded by Kevin Bachmeier. The motion carried approving the following projects for no-cost extensions:

- Development of an Inexpensive Y-drop System Combined with a Cover Crop Planter to Improve Nitrogen Use Efficiency While Inter-Seeding Cover Crops.; Ali Nafchi.
- Evaluating Selected Soil Health Indices for Predicting Nitrogen Fertilizer Requirement for Winter Wheat in Western South Dakota, Christopher Graham.
- Application of biosolid-based nitrogen control release fertilizers to improve nitrogen use efficiency of corn production and soil health in South Dakota, Lin Wei.
- Breeding for improved nitrogen use efficiency (NUE) in South Dakota winter wheat under regenerative agriculture management, Sunish Sehgal.
- Precision Controlled Drainage for Reducing Nutrient Loss through Tile Drainage and Improving Yield, John McMaine.
- Engaging, Educating, and Empowering Agriculture through an NREC Focused Podcast Season, John McMaine
- Investigating fertilizer response and requirement in high protein soybean varieties, Peter Kovacs.
- Investigating Impact of Starter Fertilizer Placement on Plant Development, Grain Yield, and Nutrient Uptake, Peter Kovacs
- Influences of manure and fertilizer application in corn-soybean-spring wheat/cover crops rotation on Water availability and quality, Soil Fertility, and Crop Yield, Peter Kovacs
- The impact of phosphorus soil test level differences on crop response, phosphorus leaching, and phosphorus runoff under long-term no-till management in South Dakota, Sam Ireland
- Combining Soil fertility and Soil Health to improve Corn Potassium, Phosphorus, and Sulfur Fertilizer Recommendations, Jason Clark
- Building Potassium Fertilizer Guidelines to Include Soil Classification Information, Jason Clark

- Influence of Interseeding Cover Crops on Nitrogen Fertilizer Rate Requirement for Optimal Corn Grain Yield in a No-till System, Jason Clark
- Fertilizer N Rate Recommendation Update for Corn, Jason Clark

Ryan Wolf led a discussion about the approval of previously funded projects that were ranked for consent in an email vote. Kevin Bachmeier moved for approval of the consent votes for previously funded projects. The motion was seconded by Bruce Haines and the motion carried. Colin Nachtigal moved to table the previous motion. The motion was seconded by Kyle Gustafson and the motion carried.

Colin Nachtigal moved to approve the nine previously funded projects that received the consent vote. The motion was seconded by Bruce Haines and the motion carried. The following previously funded projects were approved for 2023:

- Jason Clark: Nitrogen fertilizer recommendation Update for Corn (3SF535), year 3 of 3, \$99,933.
- David Clay: Influence of nitrogen stabilizers and application dates in no-tillage corn production on nitrogen use efficiency and N losses to the atmosphere and groundwater (3SB437), year 3 of 3, \$92,725.
- Peter Kovacs: Investigating Impact of Starter Fertilizer Placement on Plant Development, Grain Yield, and Nutrient Uptake (3SB435), year 3 of 4, \$97,695.
- Robert Miller: Evaluation of Zinc and Boron Micro-nutrients on Corn Nutrition and Grain Yield in Eastern South Dakota (1847), year 2 of 3, \$42,900.
- Sunish Sehgal: Breeding for Improved Nitrogen Use Efficiency (NUE) in South Dakota Winter Wheat Under Regenerative Agriculture Management (3SA175), year 2 of 3, \$79,582.
- Peter Kovacs: Investigating fertilizer response and requirement in high protein soybean varieties (3SB434), year 3 of 4, \$83,942.
- Jason Clark (Robert Miller): Evaluation of Soil Test Potassium and Side Dress Application of Potassium and Biochar on Corn Nutrition and Grain Yield in Eastern South Dakota (1848), year 2 of 3, \$97,442.
- John McMaine: Identifying Nutrient Loss Hot Spots in Tile Drainage, (3SC431), year 4 of 4, \$68,972.
- Lin Wei: Application of biosolid-based nitrogen control release fertilizers to improve nitrogen use efficiency of corn production and soil health in South Dakota (3SA175), year 2 of 2, \$115,019.

The terms of Council members were reviewed with Ryan Schuchhardt and Colin Nachtigal completing terms in July 2023 and Kevin Bachmeier, Bruce Haines, and Bryan Jorgensen completing terms in July 2024. The term dates for new members to the Council will be reviewed and discussed at the next meeting.

Project updates for previously funded projects were provided and the following action was taken:

- Christopher Graham: Evaluating Selected Soil Health Indices for Predicting Nitrogen Fertilizer Requirement for Winter Wheat in Western South Dakota, (3SA173), year 2 of 3, \$41,132. Bruce Haines moved to continue to fund this project and the motion was seconded by Kyle Gustafson. The motion carried.
- John McMaine: Precision Controlled Drainage for Reducing Nutrient Loss through Tile Drainage and Improving Yield (3SA176), year 2 of 2, \$30,692. Bruce Haines moved to stop funding this project and the motion was seconded by Travis Strasser. The motion carried.

- Jason Clark: Influence of Interseeding Cover Crops on Nitrogen Fertilizer Rate Requirement for Optimal Corn Grain Yield in a No-till System (3SD417), year 3 of 3, \$83,674. Bruce Haines moved to continue to fund this project and the motion was seconded by Kyle Gustafson. The motion carried.
- Ali Nafchi: Development of an Inexpensive Y-drop System Combined with a Cover Crop Planter to Improve Nitrogen Use Efficiency While Inter-Seeding Cover Crops (3SA172), year 2 of 3, \$103,907. Colin Nachtigal moved to stopfunding this project and the motion was seconded by Kevin Bachmeier. The motion carried.

Proposals for new projects were presented and the Council took the following actions for projects that were not funded:

- David Clay: Does adopting practices that increase soil organic matter alter N fertilizer requirements? Travis Strasser moved that this project should not be funded. The motion was seconded by Kyle Gustafson and the motion carried.
- Peter Sexton: Yield Potential and N Response of Hybrid Rye in Eastern South Dakota. Colin Colin Nachtigal moved that this project should not be funded. The motion was seconded by Kyle Gustafson and the motion carried.
- Kristopher Osterloh: Optimal Soil Sampling Locations Using Deep-Learning and Landscape Analysis: On-Farm Trials. Bruce Haines moved that this project should not be funded. The motion was seconded by Colin Nachtigal and the motion carried.
- Xufei Yang: Implication of LoRaWAN IoT-enabled soil monitoring for nutrient management. Bruce Haines moved that this project should not be funded. The motion was seconded by Kevin Bachmeier and the motion carried.
- Cheng Zhang: Greenhouse Tests of Low-Cost Controlled Release Fertilizers with A Coating Material Derived from Agricultural Wastes. Bruce Haines moved that this project should not be funded. The motion was seconded by Ryan Schuchhardt and the motion carried.

Proposals for new projects were presented and the Council took the following actions for projects that were funded:

- Peter Kovacs: Investigating P and K Fertilizer Application Timing and Management Strategy on Crop Yield, and Nutrient Uptake – Equipment Acquisition and Research Initiation, \$103,078. Bruce Haines moved to approve this project and the motion was seconded by Kyle Gustafson. The motion carried.
- Cody Moret (Peter Kovacs): Acquisition of nutrient applicator package on planter. Collin Nachtigal moved to fund this project for \$48,000 and the motion was seconded by Bruce Haines. The motion carried.
- Jason Clark: Impact of Phosphorus Soil Test Level Differences on Crop Response in No-Till Soils in Central South Dakota, \$89,691. Bruce Haines moved to approve this project and the motion was seconded by Ryan Schuchhardt. The motion carried.
- Jason Clark: Acquisition of a Combine for Soil Fertility Research Trials Crop Harvest. Collin Nachtigal moved to fund this project at \$48,000 the first year, \$38,000 the second year and \$30,000 the third year. Bruce Haines seconded the motion. The motion failed. Jerry Runia moved to fund the project for \$50,000 in the first year. The motion was seconded by Collin Nachtigal and the motion carried.

The total amount of previously funded projects to receive continued funding in 2023 was \$903,016. The total amount of new projects funded were \$290,769 for a total of \$1,193,785 funding allocated in 2023.

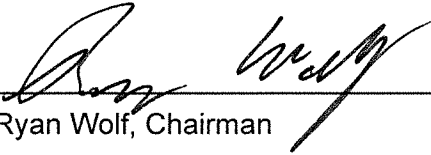


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Water quality projects approved totaled \$750,669 or approximately 63%, exceeding the 10% required by law.

The next meeting will be held in-person in July 2023 and Angela Loftesness will send out a request for possible meeting dates. Kevin Bachmeier moved for the meeting to adjourn, and the motion was seconded by Travis Strasser. The motion carried and the meeting adjourned at 3:45 PM.

Submitted by:



Ryan Wolf, Chairman