**Individual state reports provided by committee members**

**Minnesota State Report – Daniel Kaiser**

I have no new requests for product information that came to me last year. Most questions have been centered on biologicals and past research that I have completed previously.

Accomplishments: I have two field trials comparing different inhibitors and urea products (ESN). One study on sugar beet comparing fall versus spring urea application which was conducted at two locations in 2023. I have an additional 5 locations comparing fall and spring urea on hybrid rye. Dr Fabian Fernandez also has two long term studies that are on-going that focus specifically on ESN use in corn production. Dr Paulo Pagliari had two field trials evaluating inoculation using bacterial strains developed in Brazin on dry beans in Minnesota.

 Impact Statement:

I presented twice at the Crops and Pest Management Short Course held in Minneapolis, MN in December of 2022 to a total of 250 people presenting information related to on-farm testing of biological products.

I authored a blog post through the Minnesota Crop Nes block on the regional publication on biostimulants organized by Dr David Franzen.

<https://blog-crop-news.extension.umn.edu/2023/04/nitrogen-fixing-biological-products-new.html>

As of July 11, 2023 that post earned over 2300 page views and lead to a feature article published in DTN/Progressive Farmer.

<https://www.dtnpf.com/agriculture/web/ag/crops/article/2023/05/03/university-research-casts-skepticism>

This post also led to an interview with the Columbia Missourian for an article on biofertilizers and a second article with Canary media.

<https://www.columbiamissourian.com/priceofplenty/futures/can-technology-help-find-a-better-fertilizer/article_94a1edd8-fa55-11ed-b84d-57f16383d07c.html>

https://www.canarymedia.com/articles/food-and-farms/chemical-fertilizer-is-a-climate-disaster-can-high-tech-biology-fix-it

**Nebraska State Report - Bijesh Maharjan**

*General Comments:*

There are more questions surrounding biologicals such as SoundAg and PivotBio products. Growers are asking more questions on sulfur, micronutrients, and nitrogen stabilizers.

*Accomplishments:*

Nebraska has an on-farm research program and had several on-farm trials on various products this year. The final report is being drafted and is planned to be submitted to the Compendium.

There were a few plot-scale field evaluations of the new products in the market. A biological product, Source, from SoundAg, and micronutrient (B, Mn) products from the Andersons were evaluated in a sugar beet experiment this year. These products did not affect sugar beet yield and quality compared to conventional nutrient management.

*Impact Statements:*

University evaluation of biological products generates much-needed research-based data to inform growers in their decisions about non-traditional products. Particularly, on-farm trials on non-traditional products involve growers directly, providing them with first-hand knowledge of products.

**Missouri State Report - Kelly Nelson**

**Accomplishments:**

* Presentations:
1. Nelson, K.A., & G. Singh. 2023. Nitrogen Fixing Biological Products. In-Service Extension Training. 6 July.
2. Nelson, K.A., G. Singh, & G. Kaur. 2023. Agronomy Research Update: In field BMPs, Biological N-fixing Products for Corn, Industrial Hemp, and Cover Crop Grazing. Monroe Co. Young Farmers. 20 Feb.
3. Nelson, K., G. Singh, & H. Kaur. 2023. Biological Nitrogen Management Systems. Missouri Crop Management Conference. 7 Dec.
4. Nelson, K.A. 2023. Northern Missouri REEC Research Update. Missouri Farm Bureau. 1 June.
* Publications:
1. Franzen, D., J. Camberato, E. Nafziger, D. Kaiser, K. Nelson, G. Singh, D. Ruiz-Diaz, E. Lentz, K. Steinke, J. Grove, E. Ritchie, L. Bortolon, C. Rosen, B. Maharjan, and L. Thompson. 2023*.* Performance of Selected Commercially Available Asymbiotic N-fixing Products in the North Central Region. NDSU Extension, SF2080. pp. 14. [https://www.ndsu.edu/fileadmin/snrs/Files/SF2080\_Performance\_of\_Selected\_N-fixing\_Products.pdf](https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ndsu.edu%2Ffileadmin%2Fsnrs%2FFiles%2FSF2080_Performance_of_Selected_N-fixing_Products.pdf&data=05%7C01%7CNelsonKe%40missouri.edu%7Ca73b05ce2215490463a708dbe88bf9fe%7Ce3fefdbef7e9401ba51a355e01b05a89%7C0%7C0%7C638359460436241910%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=aoxMfgIXPlj79C3%2BJv1mpc4%2F6JOjrK%2FNzwjwfpg6Yg0%3D&reserved=0)
2. Steinkamp, D.J., K.A. Nelson, G. Singh, G. Kaur, & H. Kaur. 2023. Corn Response to Nitrogen Fixation Technology in Upstate Missouri. North Central Soil Fertility Conference. pp. 213-218. <https://northcentralfertility.com/files/NCSFC_2023_Proceedings.pdf>.

**Impact Statement:** Over 400 farmers, agronomists, and industry personnel in Missouri were trained on asymbiotic N-fixing products.

**Kentucky State Report – Edwin Ritchey**

The University of Kentucky has officially participated in the NCERA 103 since 2011. The office of the Associate Dean for Research fully supports participation and covers travel expenses associated with this meeting. The Compendium is utilized and referenced multiple times throughout the year regarding questions associated with non-traditional products. The majority of the questions come from county extension agents, ag business and agricultural producers in the state.

A statewide research project was conducted in 2022 – 2023 to test the effectiveness of a “liquid calcium” product (Advance-Cal, Agri-Tek International, LLC) with claims to neutralize acidity with a use rate of 2-5 gallons of product per acre. Further, they claimed to be cheaper and more effective than traditional ag lime. There were 15 county agricultural extension agents/producers/ag experiment station sites that participated in the study. There was also a laboratory incubation study to supplement the findings of the field research. The field study and laboratory incubation study supported fundamental chemistry foundations – neither calcium or chloride are responsible for neutralizing soil acidity. The study and associated presentations, posters and publications were posted, reposted, and viewed in multiple venues. The data was presented at two international conferences represented by 60 plus countries (abstract and proceedings paper), two national conferences represented by 50 states (along with associated proceedings papers), three regional meetings (500+ attendees), and over 15 presentations in Kentucky (500+ attendees). A movement, started in South Carolina, was initiated to have these products pulled from the shelf based on false claims. This is an ongoing process.

UK provided Kentucky specific data that was included in the collaborative NCERA-103 publication “Performance of Selected Commercially Available Asymbiotic N-Fixing Products in the North Central Region” ([https://www.ndsu.edu/fileadmin/snrs/Files/SF2080\_Performance\_of\_Selected\_N-fixing\_Products.pdf](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ndsu.edu%2Ffileadmin%2Fsnrs%2FFiles%2FSF2080_Performance_of_Selected_N-fixing_Products.pdf&data=05%7C02%7Cedwin.ritchey%40uky.edu%7C8f3fab379c2b4dcf1fc908dc0cae1aae%7C2b30530b69b64457b818481cb53d42ae%7C0%7C0%7C638399189102465697%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=pojQCf8Pervz%2BV7zrk0sXwuTSElvxv0tEfnVkKFQ3ps%3D&reserved=0)

This publication was shared with the UK Extension listserve which reaches 120 Kentucky counties. Agents were appreciative to have this information available for their use.

I regularly share the NCERA 103 website with agents, producers and other interested parties when I receive questions related to non-traditional or questionable products. I send the link to the website with the UK Extension listserve (120 counties) annually and probably another 10-15 times throughout the year. This website is extremely useful for investigating little or unknown products making unrealistic claims. Just having access to the website is worth participating in the NCERA 103 committee.

**Wisconsin State Report - Matt Ruark**

Accomplishments: Conducting multiple field trials to identify potential N credit and yield gains from biological additives.

Impact statements: Field trials were successfully conducted to test biological products and develop a rigorous research program in this area.

**Ohio State Report – Edwin Lentz**

*General Comments:*

More marketing push on biostimulants. Farmers continue to ask questions about starter fertilizers, sulfur, and micronutrients in Ohio. Information requested on the efficacy of nitrogen biologicals and enhancers.

*Impact Statements:*

Ohio in cooperation with other North Central states investigated Utrisha-N in corn. Data on Utrisha-N and other products was included in the NCERA publication: *Performance of Nitrogen-Fixing Products.* As one of the authors, Ohio producers and Extension personnel expressed their appreciation for the timely publication to me, including the Ohio State University Ag Managers and the Agronomic Crops State Extension Teams, the Ohio Corn Growers, the Ohio Soybean Growers, and the Ohio Wheat Growers. Ohio data was also shared in two Ohio State University publications: eFields Extension Bulletin, and the digital Agronomic Crops Team On-Farm Reports. The study was repeated this past growing season and will be shared in Ohio publications and the NCERA compendium. Ohio also presented data on nitrogen extenders at the North Central Extension-Industry Soil Fertility Conference in Des Moines, IA this year. Many members of the NCERA103 Committee presented data on non-traditional products and alternative nitrogen management program at this meeting.

The NCERA103 Committee has been heavily involved in developing the program for the North Central Extension-Industry Soil Fertility Conference. This year, presentations were primarily on non-traditional products. Ohio was responsible for the meeting this year by chairing the program committee that developed the presentation topics and recruiting appropriate speakers for the topic. The program committee consisted of many members from the NCERA103 committee as well as providing the chair for the committee.

Research completed and shared by the NCERA103 committee has assisted Ohio growers in determining the efficacy potential of non-tradional products for their production systems and assisted them in their purchasing decisions for these products.

**Michigan State Report - Kurt Steinke**

*General Comments:*

Due to the influx of marketing materials regarding several categories of biological products with special focus on free-living N-fixing organisms, MSU and Purdue partnered on a trial looking at some of these products including Pivot-Bio, Utrisha, and Envita. Collaboration is due in part to the NCERA-103 joint publication on this topic that was released in 2022. Results will be shared publicly when available.

*Activities:*

Other products including the use of struvite as a slow release P source have been tested this last year across multiple field cropping systems. Results are currently being analyzed.

*Impact Statements:*

Unbiased, science-based research and extension information that promotes crop production and efficiency through university evaluations of a multitude of products and nutrient management strategies generates needed data for grower on-farm decision making. Growers learn from university scientists and data and in turn university scientists learn the grower’s perspective, viewpoint, or strategy towards a specific product or amendment.

**Indiana State Report – James Camberato**

Most of the questions I received were about Proven40 and Utrisha and whether they could use these products and cut back on their nitrogen rate. The bulletin produced by the 103 group was very helpful in convincing them that 3rd party research did not support the claims being made by the manufacturers of those products and it would be unwise to reduce their nitrogen rate (assuming it was not excessive to begin with).

It appears that my position may be filled sometime in 2024. Until then Dan Quinn would be the best choice to serve instead of me.

**Kansas State Report – Dorivar Ruiz Diaz**

We continue to see new products defined as “biologicals” that might include inoculants applied with the seed, or with starter fertilizers, in-furrow.

What products are people asking about (current or new products) and if there specific questions asked about a product.

* Many of the questions are related to the “biologicals” currently offered in the market.
* Also “enhanced” fertilizers with the addition of humic acids.
* Many questions on “liquid calcium” as a source of Ca for crops.

Accomplishments:

Ongoing study evaluating urease inhibitor (ANVOL), and collaboration with Kansas State University colleagues for research on biologicals

Impact Statements:

Results from our research on non-conventional products were used for extension educational programs providing local information to producers to improve efficiency and reduce cost. This information also helps to adapt new technologies and products for local produces.