**NCERA 103 – Minutes**

**November 3, 2016, Des Moines, Iowa**

**Meeting called to order at 12:30 pm by Chair Daniel Kaiser**

Attendance:

* Carl Rosen, University of Minnesota (administrative advisor) crosen@umn.edu
* Daniel Kaiser, University of Minnesota (Current Chair) dekaiser@umn.edu
* Matt Ruark, University of Wisconsin (Current Secretary) mdruark@wisc.edu
* Edwin Ritchey, University of Kentucky (Incoming Secretary) Edwin.Ritchey@uky.edu
* John Sawyer, Iowa State University jsawyer@iastate.edu
* Dave Franzen, North Dakota State University David.Franzen@ndsu.edu
* Edwin Lentz, Ohio State University lentz.38@osu.edu
* Dorivar Ruiz-Diaz, Kansas State University ruizdiaz@ksu.edu
* Peter Scharf, University of Missouri ScharfP@missouri.edu
* Richard Ferguson, University of Nebraska rfergusen1@unl.edu
* Emerson Nafziger, University of Illinois ednaf@uiuc.edu
* Kurt Steinke, Michigan State University ksteinke@msu.edu

Absent

* Jim Camberato, Purdue University jcambera@purdue.edu

**Meeting Minutes**

* Administrative report – Carl
	+ Dr. Rosen updated the group on specifics related to the renewal process. The justification section and objectives have been submitted for the renewal. The remaining information needs to be in to NIMSS by December 1. All members should have received Appendix E to add themselves on to the committee.
* State reports – All
	+ See below
* Rotation for the committee chair:
	+ Wisconsin (Ruark) will be chair in 2017 and 2018
	+ Ohio (Lentz) will be secretary in 2017 and 2018 (chair in 2019 and 2020)
	+ Nebraska (TBD) will be secretary in 2019 and 2020
* Membership for states which do not currently have a representative
	+ South Dakota is the only one of note and there is no current contact for a new representative
* Publications
	+ Dave Franzen has accepted edits from several colleagues. The updated regional publication on Nitrogen Extenders will be published through North Dakota State, with authors from the NCERA 103 committee and as a NCERA 103 publication.
	+ The next publication being drafted will be on phosphorus extenders. Dan Kaiser will be working on that publication
	+ There was discussion that developing regional publications may be a key aspect of this committee. Of note were discussions on revisions of current publications which are in need of revision. These two publications are the gypsum publication and the cation ratios publication.
* Compendium update: The compendium web site (Compendium of Research Reports on Use of Non-Traditional Materials for Crop Production (http://extension.agron.iastate.edu/compendium/index.aspx) has 231 research reports, with three new reports added in 2016. There were 2,525 page views of the site in 2016.
	+ Iowa State will continue to support the website. It is in need of updating, however, funds would be needed to have a complete revision. Dr. Sawyer is always accepting reports to add to the compendium.
* Updates to compendium- we are averaging about 3 per year
* A discussion was had related to the future of the maintenance of the product list. The general consensus is that there are too many products, and products changing quickly, to adequately update or maintain a meaningful list.
* Committee website – there was no consensus on a specific need for a separate committee website as long as the compendium site is up and running. All major publications for the committee can be accessed through the compendium website.
* Product list – In the past the committee maintained a list of products and their manufacturers. This list has not been updated for several years. Since most of the information can be located on the internet it was decided to no-longer maintain the list which has been difficult due to rebranding of products and companies selling them. MSDS sheets for almost all products can be easily searched online.

**State Reports**

***Nebraska:*** No new products were brought to our attention in 2016 from growers or advisors – generally questions on efficacy dealt with products we were already familiar with. Questions dealt most often with inhibitors (nitrification and urease) as well as controlled or slow release nitrogen fertilizers. We have observed a steady increase in biological products, often targeted to increase soil health status.

Research studies in 2016 included evaluation of current and experimental urease and nitrification inhibitors. Studies were conducted with fall/spring application of anhydrous ammonia with various nitrification inhibitors, and spring preplant application of UAN solution with various urease inhibitors.

In addition to more detailed small plot studies, growers in Nebraska participate in the Nebraska On-Farm Research Network to evaluate various products and practices in on-farm studies, using replicated, randomized field-length treatments. Some of these evaluations include products of interest to NCERA-103. (http://cropwatch.unl.edu/farmresearch/resultshome)

***Indiana***

New products:

SYMTRX by ANUVIA – 16-8-0 Enhanced Efficiency Homogeneous Multi-Nutrient Fertilizer – Enhanced Efficiency derived from protein hydrolysate.

http://www.anuviaplantnutrients.com/product/agriculture/

AgNutrition company – distributor of Ergo products. Array of fertilizers including additives such as micro flora, amino acids, fulvic acids, and folic acid.

http://www.ag-nutrition.com/products.html

People are asking about various humic acids, plant growth regulators, and microbials.

We tested Accomplish, Ascend, Nutrio, and Sabrex in-furrow for corn in large plot replicated strip trials at 4 locations in Indiana. Measurements include ~V6 plant dry matter and nutrient concentration, earleaf nutrient concentration, and grain yield and moisture. In general few effects of the products were detected.

***Ohio***

List of products being promoted in Ohio

• NRCS pushing soil health and gypsum

• Nutrisphere-N being pushed by retailers in southern Ohio

• Micronutrients being packaged with other non-traditional products such as Avail. Common micronutrients include Zn, Mn, and B

• Several seed companies said their on-farm research showed increased yields using sugar

• Organic carbon and humic acid being pushed by several retailers

• A new company called Zero Gravity Solutions, Inc., is setting up distribution in Ohio to sell a product called BAM-FX (Bio Available Minerals – Formula X. Product appears to be a combination of several nutrients that include Cu and Zn). Claim their new cell wall transfer mechanism allows the plant to absorb nutrients more efficiently and will allow farmers to reduce their N, P, and K rates. Directly promoting their technology and products to policy makers involved with water quality issues.

What products did you testing in 2016?

 Corn starter study that included Nachurs G24 (6-24-6), Nachurs Rhyzo-Link (9-15-3-1-.25), Nachurs imPulse (10-18-4), and Nachurs Triple Option (4-13-17-1)

***Kentucky***

Suma Groulx made the rounds in some of the southern tier counties. I don’t think it gained much traction, but made some unbelievable claims.

Amway has a series of products that was being marketed and included:

APSA-80 Adjuvant – not only an adjuvant for pesticides, but also aids in soil penetration in compacted soils and minimizes evaporation and runoff.

NUTRIPLANT SD, NUTRIPLANT SL, and NUTRIPLANT AG. The main differences that I saw were that SD was a granular product for planter box application, the SL was the liquid formulation of the SD, and the AG was a nutritional product designed to be used at specific growth stages.

My father who lives in TN received a flier from a place that he has purchased limestone in the past. They are also selling Ag Gypsum. They marketed to for a calcium and sulfur product, but also to flocculate or loosen soil if clay compaction is an issue. They also listed the gypsum as % CaO, which can be misleading if you think you are buying a lime source.

We are also getting some push for sulfur products in KY. I don’t really have a big problem with this, if they need it. The problem is that we are not able to find much need at this point yet. Sul4-Plus is trying to gain market in the state.

Agxplore – ContaiN. A rep was trying to push this through KY NRCS but were having trouble because they don’t state the amount of NBPT present on the label. The rep said 21%. Our Regulatory services guy in fertilizer division said that it is Nzone Max with NBPT and that it does not have any ingredients recognized by AAPFCO.

Some companies are trying to get approval by NRCS as approved practice standards but not really gaining much traction.

Soil health is still around, but not as much. Local NRCS is more aligned with UK and land grant data than the National NRCS agenda at present. The Haney test has not been discussed much here in the past year.

***Kansas***

What products did you testing in 2016?

Recent work with non-conventionals:

• Factor (NBPT).

• Levesol

Extension activities included consultations on multiple non-conventional products during 2016:

In general, we had very few questions on non-traditional products during 2016 compared to previous years in Kansas. Some particular products in 2016 were:

• Nutrisphere,

• N-Zone,

• Avail,

Short-term Outcomes: 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.

Outputs: Reports and research progress update were developed.

***Missouri***

List of new products this year that you've come across, with short description of what they are and any potential concerns you may have.

No new products

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

Some continued questions about treatments for urea, especially Agrotain vs Nutrisphere (but less than previous years)

What products did you test in 2016?

Several products sold by AgXplore; mainly NZone, also some products added to glyphosate as foliar treatments for soybean

Information for annual reports:

Accomplishments:

1) 2016 product trials – (with short description of experimental design)

Broadcast urea with and without NZone, 6 replications, soil samples for nitrate and ammonium when corn is thigh-high and chest-high

Broadcast glyphosate on soybean with various products

2) Report submitted to the compendium--none

3) Presentations given—none with covered products as the main point, but several that included the importance of treating surface urea with NBPT

4) Reports (proceeding papers, industry reports, etc.)

One industry report to AgXplore, no proceedings papers.

5) Peer-reviewed publications none

6) Grants (non-gifts) none

***Illinois***

List of new products this year that you've come across, with short description of what they are and any potential concerns you may have.

 None to report specifically; there are a lot of microbial products many making similar claims.

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

 “Inhibitors” and related products such as N-Zone and Nutrisphere, plus the “usual” lignin-based products and gypsum. “Microbials” for soil/seed application are heavily publicized but

What products did you test in 2016?

• AfriKelp (seaweed extract from South Africa kelp beds) on corn and soybean

• BiOWiSH “biocatalyst” seed treatment on corn and soybean

• XiteBio PGRP (microbial plant growth regulator) on corn and soybean

• Nutrisphere-N is in one of my studies along with N sources and recognized known nitrification inhibitors.

Information for annual reports:

None to report

Accomplishments:

1) 2016 product trials – tested the above products at several sites; each experiment is replicated and in small plots, with number of reps ranging from 4 to 12 depending on number of treatments, arranged as RCBD.

2) Report submitted to the compendium - no

3) Presentations given – none using 2016 data to date; will provide the report on Nutrisphere-N to the funding agency where it will be public information; privately-funded trials will probably not be released or used in presentations.

4) Reports (proceeding papers, industry reports, etc.) – none to report

5) Peer-reviewed publications – none to report

6) Grants (non-gifts) – large N source/timing/inhibitor study is funded by the Nutrient Research & Education Council (Illinois fertilizer checkoff funds); 2016 grant for this study is $57,590.

Impact Statements:

Producers continue to look to the land-grant university for opinions on novel (or repackaged) products, though creative marketing efforts continue, with some success, to encourage formation of such opinions away from reliance on neutral sources. Although we do not test a very large fraction of novel and repackaged products, the fact that we have some actual data on some of these provides legitimacy to L-G scientists as neutral sources.

***Wisconsin***

What products did you testing in 2016?

Testing the BASF product Limus and its impact on corn yield and ammonia emissions.

Information for annual reports:

Accomplishments:

1) 2016 product trials

a. Ammonia emissions from Limus. Comparing ammonia emission following application of urea with and without Limus. PVC and acid traps (sponges) were used.

2) Reports (proceeding papers, industry reports, etc.)

3) Peer-reviewed publications

a. Siemering, G., M. Ruark, F. Arriaga, E. Silva, and H. Johnson. 2016. Understanding the value of arbuscular mycorrhyizal fungi for field crops. UWEX publication A4144-01.

b. Siemering, G., M. Ruark, and A. Gevens. 2016. Understanding the value of trichoderma for crop production, in press.

Impact Statements:

Extension publications were developed to review several common biological soil additives to address their mechanism, provide evidence that claims made are true, and provide recommendations for their use. Across all products, it is clear there is no soil test or definite set of publications that these products serve as a basis for University of Wisconsin-Extension to broadly recommend their use. After presenting the information to crop consultants and farmers, they will be able to make more educated decisions regarding the use of these products.

***Michigan***

Fewer inquiries with low commodity pricing. Seems to be a bit of an upswing in products aimed at more specialty crops (sugarbeets, potatoes) and newer products appears focused more on these markets at the moment. Scrutiny on P applications in the Western Lake Erie Basin continues to increase so any products focused on improving P efficiencies or uptake are being marketed or discussed or cost-shared through NRCS. Annual applications of gypsum now labelled as BMP via NRCS which has again raised discussion on Ca:Mg ratios (despite a pile of evidence proving otherwise).

Planttuff aglime or silica-based fertilizer. Labelling depends on whether listed as fertilizer or soil conditioner for a specific state. CCE of product quite high but ECC appears quite low due to particle size. Reported that company in the process of attempting to label silica as a “critical” plant nutrient. Non-significant field data thus far across wheat, soybean, corn, and sugarbeet.

Slow-release K fertilizer from ICL (0-0-58) with 4-5 month release window at 70 degrees F. First year working with this product on potato so no results to report yet.

Nu-Trax P fertilizer from Compass. N, P, Mn, and Zn powdered material that can be dry-coated onto granular fertilizer prior to application for increased uniformity and earlier plant uptake. No results to report yet.

Increase in questions on PermaMatrix product line. Appears to be biochar with specific nutrients added for low analysis fertilizer or microbes added for soil biological inoculant. Lots of questions and interest on biologicals perhaps due to poor sales in other nutrient areas.

Stimulate in-furow microbial inoculant (GarrCo products). Product contains 29 strains of “highly beneficial microbes”; data acquisition in process.

What products did you testing in 2016?

• Agrocote N and Agrocote K

• Stimulate microbial inoculant

• Planttuff silica fertilizer

• Instinct, Agrotain Dry, and SuperU

• Crystal Green

• Levesol

• Nutrisphere (Verdesian)

• Titan

• SabreX

Accomplishments:

1) 2016 product trials – See above list with partial list of yield data available at soil.msu.edu

2) Eight presentations involving at least some product testing data given to commodity focused or extension meetings in MI.

***Minnesota***

List of new products this year that you've come across, with short description of what they are and any potential concerns you may have.

AgZyme –appears to be a proprietary blend of enzymes that is marketed by Ag Concepts. The question I received from an individual was about setting up trials with this product as it claims it can reduce nitrate leaching.

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

Product testing and questions about products have lessened due to the low commodity prices. I still get questions every once and a while about Ascend. Another product we tested in the past is Agnition’s product generate. We still are conducting research with Levesol which is a fertilizer additive that consists of Na-EDDHA mainly in the o-o isomer. I currently am testing the efficacy of naked chelates increasing the uptake of nutrients in soil. We still have trials with Levesol but the supplier will not supply information related to the concentration of EDDHA in the product. West Central Inc. was going to offer a guarantee to users of Levesol of the products efficacy. Our studies have not shown an increase in corn or soybean yield with the product. The primary effect I have seen with this product is the chelation of Fe when the product is mixed with liquid fertilizer sources.

Information for annual reports:

Report submitted to the compendium – 1 report on Accomplish LM

Presentations given – 2 presentations given which utilized product testing data

Impact Statements: the low commodity prices are having a greater impact on product sales. Some marketing is still out there but the majority of products I have seen are chelated micro-nutrient sources and not specifically fertilizer additives. Whenever possible I have been citing the compendium website for people to

***North Dakota***

The only new product of significance in our area is Levesol, an ortho-ortho-EDDHA without the Fe ion of Soygreen. The company marketing touted amazing trial results by several Universities, when I knew that there was none. After meeting with officials from the company in March, they were very embarrassed that their marketing team had run with some speculative goals with no research data to support them. Although some Levesol was sold in North Dakota, the ads were removed and the company ceased to actively promote it until research trials were completed. I had Levesol treatments at two locations in Northwest North Dakota this summer, with results not yet analyzed.

The product most questioned was NZone by AgXplore. The marketing team for this product is extremely aggressive and apparently ignores numerous research results that show the product has no value as a nitrification inhibitor or available-N extender.

What products did you testing in 2014?

I continued to test Limus from BASF, a urease inhibitor containing NBPT and NPPT. Covered cylinder in-field trials again showed its activity to be at least as effective in slowing ammonia volatility from urea as NBPT tech or Agrotain materials. The yield results from the larger spring wheat and corn plots were inconclusive, as native mineralization at both locations was very great, with spring wheat yields achieving over 70 bushels per acre in 0-N plots and corn yields about 180 bushels per acre in 0-N plots, both sites with low beginning residual N levels to 2 feet in depth. We also tested a proprietary nitrification material on a crop-destroy basis with BASF, because the material is not yet labeled for use by US-EPA. No results to report.

Impact statement-

 Growers and their consultants were directed many times to use the Iowa-State housed search engine for non-conventional additives and amendments. Growers were therefore either saved the expense for non-performing amendments, or assured by positive research results that the products performed as advertised.

***Iowa***

List of new products this year that you've come across, with short description of what they are and any potential concerns you may have.

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

Main question about these products are their potential usefulness/efficacy for crop production.

Mammoth P (from Growcentia) - Natural beneficial bacteria that liberate phosphorus and other nutrients to a form for plant uptake. Concern - added microorganisms typically are not competitive with those naturally occurring in the soil.

Grower’s Secret – Amino acid based product that can be applied foliar, through irrigation, or to soil. Concern - low use rate does not supply adequate N to influence plant growth or replace common fertilizer N.

Sul4R-Plus (Charah) – Gypsum by-product from energy production. Could be a good source of calcium and sulfur, but nothing different that other gypsum by-products. Concern - as a by-product, may have issue with metals content.

IgniteS2 and FoliarBLend (AgriGro) – Marketed as a “prebiotic” technology of microbially derived material but no live microbes. Concern – unknown what such technology is and how it might impact nutrient uptake by plants.

Halo and Komodo (Solutions 4Earth) – Nitrogen and potassium fertilizers, with added multi-sourced carbon. Concern – unknown organic materials that supply the carbon, effect on nutrient supply to crops, and need for micronutrients.

Cargo (Miller) – Carboxylic acid liquid fertilizer. Concern – unknown mode of action and influence on nutrient supply or crop uptake.

Optify/Stretch and Toggle (Winfield) – Biostimulant and biologically active compounds. Concern – the general area of biostimulant materials lacking research to document effectiveness for crop production.

What products did you testing in 2016?

None

Information for annual reports:

Accomplishments:

1) 2016 product trials – (with short description of experimental design)

2) Report submitted to the compendium

3) Presentations given

4) Reports (proceeding papers, industry reports, etc.)

5) Peer-reviewed publications

6) Grants (non-gifts)

Impact Statements:

The compendium web site (Compendium of Research Reports on Use of Non-Traditional Materials for Crop Production, http://extension.agron.iastate.edu/compendium/index.aspx) has 231 research reports, with three new reports added in 2016. There were 2,525 pageviews of the site in 2016.

4:00 pm meeting adjourned

Minutes submitted by Matt Ruark

**Relevant Publications from 2016**

Maharjan, B. and R.B. Ferguson. 2016. Polymer-coated urea improved corn response compared to urea ammonium nitrate when applied on a coarse-textured soil. Agronomy Journal 108:509-518.

Peng, X., B. Maharjan, C. Yu, A. Su, R. Ferguson. 2015. A Laboratory Evaluation of Ammonia Volatilization and Nitrate Leaching Following Nitrogen Fertilizer Application on a Coarse-Textured Soil. Agronomy Journal 107:871-879.

**Meeting agenda – Des Moines 2016**

1) Administrative report - Carl

2) State reports - All

3) Rotation for the committee chair. - Wisconsin was set next in line but Matt was not able to attend the last meeting. I will be done after this year, or should be so we need to put a plan in place. I think we may have just skipped WI and went straight to Kansas.

4) Membership for states which do not currently have a representative

5)Publications

-slow release N (Dave)

-P extenders (Dan)

6)Compendium update - John

7)Updates to product list - Dan

8)Committee website - all

9)Committee renewal - Dan

10)Any other business