

# PRESENTATIONS

MANURE EXPO 2017 | EDUCATIONAL PROGRAM (AS OF 6/21/2017)

## USE OF NITRIFICATION INHIBITORS WITH MANURE

This presentation will provide an overview of recent research on the efficacy of the nitrification inhibitor Instinct when used with dairy and swine manure. Efficacy is measured both as impact on corn yield and changes in soil nitrate and ammonium status.

**CARRIE LABOSKI**  
Professor & Extension Soil Scientist - University of Wisconsin-Madison



*Dr. Laboski was raised on her family's farm in Lake Winola, Pennsylvania, which resides in the heart of the Endless Mountains. She earned a B.S. in Soil Science from Penn State University and went on to earn both M.S. and Ph.D. degrees in Soil Science from the University of Minnesota. Dr. Laboski was on the faculty of Michigan State University for three years before joining the faculty at the University of Wisconsin-Madison in 2004. Presently she is a Professor of Soil Science and a Soil Fertility/Nutrient Management Extension Specialist. Throughout her career, Dr. Laboski has conducted research on manure nutrient availability. Her research and extension programs focus on the development and evaluation of tools to assist producers, ag professionals, and regulatory agencies in making decisions that help sustain economically and environmentally sound production of grain and forage crops in Wisconsin and the Upper Midwest.*

## DAIRY MANURE APPLICATION METHODS: NITROGEN CREDITS, GASEOUS NITROGEN LOSSES, AND CORN YIELD

The presentation will highlight the results of a 4-year field experiment to evaluate the effect of broadcast and injected dairy manure applied in spring prior to planting or at sidedress on corn yield, fertilizer N credits, ammonia losses, and nitrous oxide emissions.

**CARRIE LABOSKI**  
Professor & Extension Soil Scientist - University of Wisconsin-Madison

*Dr. Laboski was raised on her family's farm in Lake Winola, Pennsylvania, which resides in the heart of the Endless Mountains. She earned a B.S. in Soil Science from Penn State University and went on to earn both M.S. and Ph.D. degrees in Soil Science from the University of Minnesota. Dr. Laboski was on the faculty of Michigan State University for three years before joining the faculty at the University of Wisconsin-Madison in 2004. Presently she is a Professor of Soil Science and a Soil Fertility/Nutrient Management Extension Specialist. Throughout her career, Dr. Laboski has conducted research on manure nutrient availability. Her research and extension programs focus on the development and evaluation of tools to assist producers, ag professionals, and regulatory agencies in making decisions that help sustain economically and environmentally sound production of grain and forage crops in Wisconsin and the Upper Midwest.*

## HOW DOES MANURE APPLICATION TIMING IMPACT PHOSPHORUS LOSS IN RUNOFF?

Agricultural phosphorus (P) management is a research and policy issue due to P loss from fields and water quality degradation. Better information is needed on the risk of P loss from dairy manure applied in winter or when runoff is imminent. We conducted model simulations using measured runoff data from 108 site-years in Wisconsin. Results show long-term strategies of shifting manure applications to low runoff seasons and fields can potentially reduce dissolved P loss in runoff much more compared with near-term, tactical application decisions of avoiding manure application when runoff is imminent.

**PETER VADAS**  
Research Soil Scientist - USDA-Agricultural Research Service-Dairy Forage Research Center



*Peter Vadas is a research soil scientist with the USDA-ARS Dairy Forage Research Center in Madison, WI. His research focuses on farm-scale nutrient management and environmental impacts of different soil and manure management practices.*

## MANURE ANALYSES TRENDS AND SAMPLE COLLECTION TECHNIQUES

Manure analyses data from Wisconsin laboratories are presented showing trends in nutrient content of various manure types over time. Comparisons of lab data with published book values are used to evaluate the accuracy of book values at predicting manure nutrient availability across a range of sample types. Factors influencing the trends observed, research supporting the UW manure nutrient availability guidelines, and techniques for collecting representative manure samples for use in nutrient management planning will be discussed.

**CHRIS BAXTER**  
Professor of Soil & Crop Science - University of Wisconsin - Platteville



*Chris Baxter is a Professor of Soil and Crop Science and UW Extension nutrient management specialist at the University of Wisconsin - Platteville. His research interests include nutrient availability from treated manures, comparisons of alternative and conventional nutrient sources, and use of amendments in soils impacted by historic lead and zinc mining in Southwestern WI.*

## MICROBIAL RESPONSE TO ORGANIC MATTER ADDITIONS TO SOILS: WHAT DO WE KNOW & WHY DO WE CARE?

**THEA WHITMAN**  
Assistant Professor of Soil Science - University of Wisconsin-Madison



Soils are full of life - and not just in the form of plants. Bacteria, archaea, and fungi affect organic matter decomposition, plant growth, and nutrient cycling, to name just a few essential processes. These extraordinarily diverse microbial communities are largely unseen, but control many of the processes that we care about. What is the extent of microbes in soils and is their diversity important for soil health? How do they respond to organic matter additions? Is it possible to manage them? We will address these questions in the context of manure management.

*Dr. Thea Whitman is an assistant professor in the Department of Soil Science at the University of Wisconsin-Madison. She earned her Ph.D. at Cornell University, and is from Nova Scotia, Canada. Her lab studies soil microbial ecology and biogeochemistry, with an emphasis on organic matter cycling in soils.*

## MINIMIZING MANURE & NUTRIENT TRANSPORT TO TILE SYSTEMS

**AARON PAPE**  
Tile Drainage Education Coordinator - University of Wisconsin Discovery Farms Program



Managing manure and nutrients on tile drained lands while protecting water quality can be a challenge. With ten years of tile monitoring data, Discovery Farms has some advice for how to keep manure and nutrients out of tile drains. We will also preview an on-going tile monitoring study that aims to provide more detailed practices to improve water quality when managing tiled lands.

*Aaron Pape is the Tile Drainage Education Coordinator for Discovery Farms Wisconsin. He coordinates tile drainage research on over 20 farms in Northeast Wisconsin and conducts tile drainage outreach across the state. He previously worked for the Sauk County Conservation Department. Aaron received his Bachelor's degree in Land Use Planning from University of Wisconsin-Stevens Point and a Masters in Natural Resource Planning from Purdue University. He and his wife also run a pasture-based farm in Peshtigo, WI.*

## IMPROVING YOUR SAFETY PRACTICES AROUND MANURE STORAGE SYSTEMS

**CHERYL A. SKJOLAAS**  
Agricultural Safety & Health Specialist - University of Wisconsin-Madison & Extension



Too busy. Too expensive. There's work to be done. Safety is common sense. These are reasons that are commonly heard in discussions related to safety programs - until someone is injured or killed. Learn actions steps can you take to improve your safety plans around manure storage systems.

*Cheryl Skjolaas is an agricultural safety and health specialist with UW Madison/Extension. She has focused on safety around manure storage and handling systems for over 10 years. Cheryl has also worked with numerous programs related to OSHA Local Emphasis Programs (LEP) for Wisconsin Dairy Farms and is a certified OSHA instructor for 10/30 hour General Industry.*

## BASICS OF GAS MONITORING EQUIPMENT AND PROCEDURES

**CHERYL A. SKJOLAAS**  
Agricultural Safety & Health Specialist - University of Wisconsin-Madison & Extension

**BRIDGET NELSON**  
Industrial Safety and First Responder Specialist, MSA-The Safety Company.

There has been an increased in manure gas related fatalities in recent years. This session will focus on types of gas monitoring equipment including single gas, multi-gas, pumps and accessories. This equipment will be discussed for monitoring of for confined spaces and open air environments.

*Cheryl Skjolaas is an agricultural safety and health specialist with UW Madison/Extension. She has focused on safety around manure storage and handling systems for over 10 years. Cheryl has also worked with numerous programs related to OSHA Local Emphasis Programs (LEP) for Wisconsin Dairy Farms and is a certified OSHA instructor for 10/30 hour General Industry.*

## CAN COVER CROPS AND TILLAGE HELP REDUCE EROSION AND PHOSPHORUS LOSSES?

**FRANCISCO ARRIAGA**  
Assistant Professor of Soil Science - University of Wisconsin-Madison



Certain soil management practices, such as tillage and cover crops, can help reduce sediment and phosphorus losses from agricultural fields. However, their benefits might not always be applicable under all conditions. Considering when and where specific soil management practices provide the most benefit can help make decision at the farm level.

*Francisco is an Assistant Professor and Extension Specialist in the Department of Soil Science at the University of Wisconsin-Madison. Dr. Arriaga has a B.S. Soil Science from the University of Puerto Rico-Mayaguez, a M.S. in Agronomy & Soils from Auburn University, and a Ph.D. in Soil Science from the University of Wisconsin - Madison. His research supports the development of management systems that promote crop productivity, as well as soil and water conservation. Interests include tillage, soil compaction issues, crop residue management, cover crops, soil health, water quality and quantity issues.*

## MAXIMIZING NUTRIENT VALUE FROM MANURE STORAGE

**BECKY LARSON**  
Assistant Professor  
of Biological Systems  
Engineering - University of  
Wisconsin-Madison



Manure storages are useful for increasing flexibility in the application timing of manure. However, manure nutrients can stratify or be lost during this process. This presentation will cover management practices that will minimize losses and improve the precision in nutrient application.

*Dr. Larson is an Assistant Professor and Extension Specialist focusing on manure and agricultural by-products in the Biological Systems Engineering Department at the University of Wisconsin-Madison. Becky completed her B.S., M.S., and Ph.D. in the Biosystems and Agricultural Engineering Department at Michigan State University. The main component of her work focuses on livestock manure systems where her research and extension efforts aim to increase the profitability and sustainability of food production systems while simultaneously reducing the environmental impact.*

## MANURE DURING WINTER: HOW TO MANAGE

**AMBER RADATZ**  
Co-Director - University  
of Wisconsin Discovery  
Farms Program



Winter in Wisconsin is the reality for several months out of the year. However, weather conditions are not uniform throughout the winter. Knowing how to manage manure through variations in early and late winter weather is critical for environmental sustainability and fertility management. There are new elements of state and federal regulations that may impact your management decisions. UW Discovery Farms data has zeroed in on manure management strategies that are easy to implement that will protect water resources and production goals from harm during those frosty months.

*Amber Radatz is Co-Director of the UW Discovery Farms Program, based out of Pigeon Falls, Wisconsin. She received BS and MS degrees in Soil Science at UW Madison. Amber and her husband, Tim, reside outside of Pigeon Falls with their two young sons, who are already learning the finer points of farming, and that their parents attend a lot of meetings.*

## WISCONSIN'S RUNOFF RISK ADVISORY FORECAST

**SARA WALLING**  
Section Chief - Nutrient  
Management & Water Quality  
- Wis. Dept. of Agriculture,  
Trade & Consumer Protection



Wisconsin's Department of Agriculture and the UW-Soil Science Dept worked with the National Weather Service to develop a first-of-its-kind Runoff Risk Advisory Forecast (RRAF) tool which models the risk of surface runoff occurring on any given day. The RRAF serves as a decision support tool to help farmers and nutrient applicators decide if "today is a good day to spread." Come and learn about the RRAF, how it models runoff risk, and how it can help you make more informed nutrient application decisions!

*Sara Walling is the Chief of the Nutrient Management and Water Quality Section at the Wisconsin Dept. of Agriculture, Trade and Consumer Protection (aka DATCP). In this role, Sara directs the department's soil and water conservation programs and regulations, including nutrient management planning, the new Producer-Led Watershed Protection Grant Program and the Wisconsin Manure Management Advisory System's Runoff Risk Advisory Forecast.*

## NITROGEN DYNAMICS IN MANURED SYSTEMS

**KEVAN KLINGBERG**  
Outreach Specialist -  
University of Wisconsin  
Discovery Farms Program



UW Discovery Farms has conducted a three-year nitrogen use efficiency project with more than 50 WI farmers. This talk summarizes nitrogen contribution from livestock manure, as managed by farmers for corn production. We will discuss nitrogen use efficiency, as well as locations and conditions within the N-cycle where nitrogen enters, leaves, and changes relative to amounts desired for corn production.

*Kevan Klingberg is an outreach specialist with the University of Wisconsin - Discovery Farms Program. He collects water quality samples, maintains monitoring sites, conducts farm walkovers, and supports research efforts of Discovery Farms by working closely with farmers and delivering information back to the public. Kevan has several decades of experience working with farmers, first as a crop consultant in Eau Claire and later as an agronomist for the Chippewa County Land Conservation Department. Before joining Discovery Farms in 2001, Kevan taught agribusiness and farm business for the Wisconsin Technical College System. Having grown up on his family's farm near Orfordville, WI, Kevan has a strong understanding and personal connection to the issues that farmers face. Kevan received his BS in Agronomy and Soil Science from UW-Madison and his MS in Professional Agriculture from Iowa State University.*

## REPLACING COMMERCIAL SIDEDRESS NITROGEN WITH LIQUID LIVESTOCK MANURE ON EMERGED CORN USING A MODIFIED MANURE TANKER

**GLEN ARNOLD**  
Associate Professor of  
Manure Nutrient Management Systems - Ohio State  
University Extension



On-farm research plots were completed in Ohio using liquid swine, liquid dairy, and liquid beef manure to provide sidedress nitrogen to emerged corn. A 5,250 gallon Balzer manure tanker and Dietrich toolbar were used to incorporate manure into corn at the V3 stage and compared to similar amounts of sidedress nitrogen in the form of 28% Urea Ammonium Nitrate in more than 45 replicated plots over five years. Yield results were similar when comparing the corn sidedressed with manure to the corn sidedressed with commercial fertilizer. Using liquid livestock manure with growing crops can capture more of the manure nutrients and reduce the need for purchased fertilizer.

*Glen Arnold is an Associate Professor with Ohio State University Extension and serves as a Field Specialist in the area of Manure Nutrient Management Application. His on-farm research focuses on the use of livestock manure as a spring topdress fertilizer on wheat and as a sidedress fertilizer for corn. His research goal is to move livestock producers toward applying manure during the crop growing season instead of late fall application window. His more recent research has focused on sidedressing emerged corn with a soft drag hose system.*

## REPLACING COMMERCIAL SIDEDRESS NITROGEN WITH LIQUID LIVESTOCK MANURE ON EMERGED CORN USING A DRAG HOSE SYSTEM

**GLEN ARNOLD**  
Associate Professor of  
Manure Nutrient Management Systems - Ohio State  
University Extension

A drag hose and manure incorporation toolbar was used to sidedress emerged corn with swine finishing manure at the V2 to V3 stages of growth for three crop seasons in Darke County, Ohio. The corn sidedressed with manure out yielded the corn sidedressed with 28% urea ammonium nitrate by 13 bushels per acre. The manure application rate was 6,500 gallons per acre and contained the same amount of available nitrogen as the commercial fertilizer used. The use of liquid manure to sidedress corn can provide a new window of time for manure application in Ohio and apply manure when a growing crop could utilize the nutrients.

*Glen Arnold is an Associate Professor with Ohio State University Extension and serves as a Field Specialist in the area of Manure Nutrient Management Application. His on-farm research focuses on the use of livestock manure as a spring topdress fertilizer on wheat and as a sidedress fertilizer for corn. His research goal is to move livestock producers toward applying manure during the crop growing season instead of late fall application window. His more recent research has focused on sidedressing emerged corn with a soft drag hose system.*

## SLURRY SEEDING OF COVER CROPS

**TIM HARRIGAN**  
Associate Professor of  
Biosystems and Agricultural  
Engineering - Michigan  
State University



Slurry seeding of cover crops.

*Tim Harrigan's research and Extension programs focus on mitigating of farming systems impacts on sediment and pollutant transport on the landscape. His research includes cropping and nutrient management impacts at the field and watershed level; precision agriculture; manure management and land application, tillage and planting. Tim has developed an innovative process that combines low-disturbance tillage, the seeding of forage and cover crops, and manure land application in one sustainable operation.*

## MANURE SAFETY

**RICK MARTENS**  
Executive Director -  
Minnesota Custom  
Applicators Association



Safety is a daily routine. Identifying the importance of keeping equipment up to date with the proper shielding and lighting. How to recognize dangerous situations and proceed with caution. How to react if there has been a mishap.

*Rick Martens has been applying manure commercially for over 34 years. Rick and his family have been pioneers in the industry of custom application, helping others in getting started in the business. His father Gary saw the importance of an association of applicators and started one in MN. Rick and Gary worked together along with other dedicated manure applicators to form the MN Custom Applicators Association and also traveled to other states promoting the industry and the need to have a collective voice. Rick is presently the Executive Director of the MN Custom Applicators Association.*



## PUBLIC PERCEPTION

**RICK MARTENS**  
*Executive Director -  
Minnesota Custom  
Applicators Association*

Public perception may become public policy. How we interact with our neighbors and the general public is important. We need to promote and educate how and why we apply manure. Understanding the importance of having a good working relationship with local and state agencies.

*Rick Martens has been applying manure commercially for over 34 years. Rick and his family have been pioneers in the industry of custom application, helping others in getting started in the business. His father Gary saw the importance of an association of applicators and started one in MN. Rick and Gary worked together along with other dedicated manure applicators to form the MN Custom Applicators Association and also traveled to other states promoting the industry and the need to have a collective voice. Rick is presently the Executive Director of the MN Custom Applicators Association.*

## NUTRIENT MANAGEMENT PLANNING FOR ALL WISCONSIN FARMS: AN OVERVIEW OF SNAPPLUS SOFTWARE

**JIM BEAUDOIN**  
*Programmer Analyst - Uni-  
versity of Wisconsin-Madison  
Dept. of Soil Science*



The majority of the nutrient management planning in Wisconsin for farms of all sizes and types is done with SnapPlus nutrient management planning software. Developed at the University of Wisconsin with support from state agencies and NRCS and first introduced in 2006, it is freely available. The software keeps field-by-field records of crop nutrient needs and planned and completed manure and fertilizer applications. It helps producers follow the standards and guidelines relevant to their operation when planning manure applications. It includes a web-based mapping component that allows farmers to map where on their fields they can spread manure.

*James Beaudoin has been creating online GIS applications for more than 15 years. Most of those years were spent with the Applied Population Lab developing tools to help people use and understand U.S. census data. Presently he works for UW-Soil Science creating tools that help farmers, consultants, and agronomists create nutrient management plans that meet the Wisconsin 590 and NR 243 standards. He tends to use open source technologies over proprietary software. He is interested in making GIS easy for non-professional GIS folks and creating tools that help to visually display data in way that help users make better decisions based on patterns and relationships in the data.*

**SARAH SEBROSKY**  
*Programmer Analyst -  
University of Wisconsin-  
Madison Dept. of Soil Science*



*Sarah Sebrosky is a programmer analyst for SnapPlus, Wisconsin's nutrient management planning software. She has mastered reporting, field grouping, and a number of SnapPlus' other wonderful features.*

## MANURE APPLICATION UNIFORMITY: AGRONOMIC AND MACHINERY CONSIDERATIONS

**DAN ANDERSEN**  
*Assistant Professor of  
Agricultural & Biosystems  
Engineering - Iowa State  
University*



Uniformity of liquid manure application across the tool-bar points is important to ensure proper nutrient supply for crop growth, to maintain producer confidence in nutrient availability, and for addressing water quality concerns. In this project, six commercially-available, tank mounted manifolds for liquid manure distribution were tested for coefficient of variation. Testing was performed using water and coefficients of variation were determined for application rates ranging from 2000 to 8000 gallons per acre. Tests were performed under three different slope conditions of 0, 3, and 6 percent to simulate cross-slope manure application. Coefficient of variation, calculated for the average application rate as measured across the tool-bar, was less than 20 percent for three of the six manifolds tested for the five application rates for all three slope settings. Results of the testing indicate that caution should be exercised to select the appropriate manifold when applying manure such that the lowest possible coefficient of variation is achieved.

*Dan Andersen is an Assistant Professor at Iowa State University. His research and extension work focuses on developing and promoting methods that help farmers better utilize their manure. He works on topics ranging from anaerobic digestion, nutrient separation, and the economics of manure utilization. He grew up on a dairy farm and is passionate about promoting practices and knowledge about manure. You can follow him on Twitter @drmanure.*



## NUTRIENT SEPARATION OR IMPROVED HAULING LOGISTICS: MAKING SENSE OF WHICH OPTIONS FIT YOUR OPERATION

**DAN ANDERSEN**  
Assistant Professor of  
Agricultural & Biosystems  
Engineering - Iowa State  
University

The perspective of whether manure is a waste or resource is often based on the perception of if the cost to utilize (transport and land apply) the manure as a fertilizer is more or less expensive than purchasing commercial, mineral fertilizers. One method that has been proposed for improving the transportability of manures is to perform a treatment where nutrient enriched and nutrient depleted fractions are created. In this work, information on how different manure nutrient partitioning strategies of differing effectiveness would impact the costs of manure application was evaluated. This analysis provides information on the amount of money an operation could potentially put towards implementing the manure treatment technology as it must be equal to or less than the reduction in manure application costs to be an economically viable option.

*Dan Andersen is an Assistant Professor at Iowa State University. His research and extension work focuses on developing and promoting methods that help farmers better utilize their manure. He works on topics ranging from anaerobic digestion, nutrient separation, and the economics of manure utilization. He grew up on a dairy farm and is passionate about promoting practices and knowledge about manure. You can follow him on Twitter @dmanure.*



## INTEGRATING EROSION AND PHOSPHORUS RUNOFF ASSESSMENT WITH NUTRIENT MANAGEMENT PLANNING IN SNAPPLUS

**LAURA WARD GOOD**  
Assistant Scientist -  
University of Wisconsin-  
Madison Dept. of Soil Science



Wisconsin's nutrient management planning software, SnapPlus, contains field-scale models for erosion (RUSLE2) and runoff phosphorus (Wisconsin P Index). Farms throughout the state routinely use the software and it provides a powerful tool for producers to examine how they can reduce sediment and phosphorus losses from their own fields. Agricultural watershed projects use it for locating fields needing conservation efforts. This software also has adaptations to support water quality trading programs.

*Laura Ward Good is a soil scientist and the lead developer of the Wisconsin P Index, a model for quantifying the risk of runoff phosphorus losses from cropland. She has worked with integrating the P Index and erosion estimates into SnapPlus nutrient management planning software SnapPlus in the UW Madison Soil Science Department since the software project began in 2003. Her goal is to make sure the software can be used and understood by everyone who does farm nutrient management planning in Wisconsin.*



## SECONDARY & MICRONUTRIENTS AVAILABLE IN DAIRY MANURE

**RICHARD HALOPKA**  
Crops & Soils Agent  
University of Wisconsin-Ex-  
tension-Clark County



Manure supplies secondary and micronutrients. There is an increasing interest in knowing the approximate secondary and micronutrient content of dairy manure. From 2013 - 2015, the UW-Extension-Nutrient Management Team funded testing of 300 randomly-selected dairy manure samples. The samples were tested for total amount of secondary and micronutrient content. Liquid manure samples were characterized as having a dry matter (DM) content less than or equal to 11%. Samples with more than 11% DM were considered solid manure. Of the 300 manure samples, 195 were liquid and 105 were solid. This presentation will cover the results of the three year survey and the value of the secondary and micronutrients that are applied in a normal manure application. The result is the probability of farmers not required to purchase secondary or micronutrients with normal dairy manure application.

*Richard with other county colleagues and UW-Extension specialists provides research-based information to educate farmers and residents in Clark County, WI. His focus is the crediting of available farm nutrients to reduce input cost to provide profitable crop production. Farmers crediting available farm nutrients will contribute to the sustainability of the farm-along and potentially improve soil and water quality in Clark County WI. Richard received his BS from UW-River Falls in Broad Area Agriculture, a MS in Agronomy from Iowa State University, and is a Certified Crop Advisor with over eighteen years of work experience in agronomy.*

## EVALUATING THE ENVIRONMENTAL BENEFITS AND ECONOMIC OPPORTUNITIES OF WINDROW COMPOSTING SOLID DAIRY MANURE

**ANDREW SKWOR**  
Agricultural Services Team  
Leader, PE, CPESC, MSA  
Professional Services, Inc.



Evaluating the environmental benefits and economic opportunities of windrow composting solid dairy manure

*Andy is a Project Manager with MSA Professional Services. He is a certified professional of erosion and sediment control. His experience includes erosion control planning, design, implement and inspection. He serves private and public clients in the agriculture industry. He provides manure management, WPDES/NPDES permitting, livestock siting and anaerobic digestion funding, planning and design. Andy is a licensed professional engineer in Wisconsin, Iowa, Illinois, Michigan, Minnesota and North Dakota.*