

EDUCATIONAL PROGRAM

PRESENTATION ABSTRACTS AND SPEAKER BIOS

BIOSECURE ANIMAL MORTALITY COMPOSTING

NESLIHAN AKDENIZ
Clinical Assistant Professor,
Agricultural and Biological
Engineering, University of
Illinois at Urbana-Champaign



Why are these animal diseases keep coming back? Can your composting site be the reason for reoccurring disease outbreaks? How would you compost your animal mortalities in a biosecure way?

Dr. Akdeniz is a Clinical Assistant Professor with an extension appointment at the University of Illinois. Her research and extension programs focus on sustainable livestock production. She develops ways to improve utilization of agricultural wastes. One of her interest areas is diseased animal mortality disposal.

COUPLED IMPACT OF MANURE AND COVER CROPS ON OPTIMAL CORN YIELD

SHALAMAR ARMSTRONG
Assistant Professor of Agronomy,
Purdue University



Cover crops are increasing in popularity among Midwest farmers because of the potential to increase soil health and to reduce nutrient losses and soil erosion. Additionally, there is an emerging interest in mixing winter-kill cover crop species with over-wintering legume species (red clover) to improve the potential of soil N cycling and to determine an N credit. The results of this study will help guide Indiana corn and soybean producers in determining the most appropriate mixtures to maximize potential N cycling.

Dr. Shalamar Armstrong is an Assistant Professor in the Agronomy Department at Purdue University. He has studied soil fertility, and cover crops impact on nutrient fate and availability for a total of 12 years. Through-out the Upper Mississippi River Basin, Dr. Armstrong educates over >4000 farmers, trainers, and governments agricultural agents on the intricacies of sustainably intensified agriculture cropping systems.

OHIO'S EXPERIENCE WITH SIDE-DRESSING EMERGED CORN WITH LIQUID MANURE

GLEN ARNOLD
Associate Professor
Ohio State University Extension



The use of liquid manure to side-dress corn has provided a new window of time for manure application in Ohio, This window from corn planting to the V4 stage of growth allows the manure nutrients to be utilized by a growing crop. On-farm trials indicate liquid swine manure can produce higher grain yields when compared to 28% urea ammonium nitrate fertilizer when applied at similar nitrogen levels and the cost savings on purchased fertilizer can pay for the manure application costs. This subsurface application of liquid manure into emerged corn can reduce nutrient losses from farm fields.

Glen Arnold is an Associate Professor with Ohio State University Extension and serves as a Field Specialists in the area of Manure Nutrient Management Application. His on-farm research focuses on the use of livestock manure as a spring top-dress fertilizer on wheat and as a side-dress 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.

MANURE, COVER CROPS AND IMPROVING SOIL FUNCTIONS

TONY BAILEY
State Conservation Agronomist,
USDA-NRCS



The inclusion of cover crops with manure applications improves nutrient use efficiency, water quality and soil functions. We'll discuss the importance of rejuvenating soils by improving aggregate stability, increasing infiltration, improving nutrient cycling and decreasing compaction and why cover crops should be part of the cropping system.

Tony Bailey is the State Conservation Agronomist for the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) at the Indiana State Office in Indianapolis. His areas of responsibility include nutrient & pest management planning, Comprehensive Nutrient Management Planning (CNMPs) on livestock farms, soil health and water quality. He also serves as the State Technical Service Provider (TSP) Coordinator. He has a B.S. in Agronomy from Purdue University and is also a Certified Crop Adviser (CCA).



**ANAEROBIC DIGESTION:
FROM WASTE TO ENERGY**

ASHLEY BELLE
Extension Educator,
Environmental & Energy
Stewardship, University of
Illinois Extension



Anaerobic digestion technology is promoted to farmers as a mechanism to capture methane emissions associated with the management of liquid manures and utilizing the produced methane-enriched biogas as an on-farm renewable fuel source. This session will cover the digestion process, steps for operating optimal digestion systems, and the current status of anaerobic digestion technology in the US.

Dr. Belle is an Environmental and Energy Stewardship Educator for the University of Illinois Extension. Her educational programs primarily focus on energy conservation and solutions for diverting waste materials from landfills by implementing waste to renewable energy, recycling, and composting programs. She completed her doctoral studies at the University of Maryland-College Park, where her research focused on coupling anaerobic digestion technology and forage radish cover cropping to optimize methane production of dairy manure-based digestion.

**THE ROLE OF MANURE
MANAGEMENT IN
DISEASE CONTROL:
KEEP BIOSECURITY ON
YOUR CHECKLIST!**

MARIA COOPER
Director of Biodefense and
High-Consequence Disease
Preparedness, Indiana State
Board of Animal Health



Livestock and poultry producers are more concerned than ever about the potential impact of high-consequence diseases, such as highly pathogenic avian influenza and African swine fever. Learn about the long list of biosecurity measures used to protect poultry and swine operations including manure handling and management practices. In a major disease event, disposal of animal waste is critical to preventing spread. Creative and innovative ideas are needed to ensure manure is not a factor in spreading a disease that can devastate our livestock and poultry sectors.

Dr. Maria Cooper completed both her undergraduate work and veterinary degree at Purdue University graduating with her DVM in 2011. Dr. Cooper is a past president of the Indiana Veterinary Medical Association, a graduate of Indiana's Agricultural Leadership Program and a USDA certified Foreign Animal Disease Diagnostician.

**PANEL DISCUSSION
PRECISION APPLICATION:
WHAT'S IN USE, WHAT'S
COMING NEXT**

MEGAN DRESBACH
Vice President,
W.D. Farms LLC



Variable rate based on real-time nutrient sensors. Varying solid application based on manure moisture and density. Automated shutoffs near streams and setbacks. Hear from manure applicators across the Midwest about what precision technology they're using today and what's in the near future. Moderator: Kevin Erb.

Megan Dresbach has worked for W.D. Farms LLC for 23 years. She has followed her father, Eric Dresbach, around since before she could talk. She started as a pump operator and worked her way up to Vice President. She is the human resource manager, payroll manager, truck driver, tractor driver and site supervisor. She has her CDL and is a Certified Livestock Manager. She has a passion for the industry, and thoroughly enjoys sharing her story to the legislators and regulatory personnel, so common sense laws and rules can be put in place. She owns MD Ag Services LLC. MD Ag leases the semi-trucks and tanker trailers to W.D. Farms. She also does consulting with livestock producer's and can write their manure management plans. She is a graduate of The Ohio State University with a bachelor degree in agricultural business and an associate degree in agronomy.

**PANEL DISCUSSION
PRECISION APPLICATION:
WHAT'S IN USE, WHAT'S
COMING NEXT**

JESSE DVORACHEK
Owner, Dvorachek Farm and
Industry LLC



See Abstract under Megan Dresbach

Jesse Dvorachek describes himself as a "Conservation Tillage Manure Applicator". Through innovations like sidedress application, real-time nutrient sensing and ultra-low disturbance application, Jesse's goal is to improve his customer's soil health and move them to a more environmentally and economical sustainable farming system. Based in Forest Junction, WI, Jesse's team applies >200 million gallons of manure annually.



MANURE APPLICATION REGULATIONS FEDERAL AND STATE LEVEL

What are the federal rules for manure applications? Does your state differ from the federal rules? This presentation will provide a brief summary of federal and a variety of state rules regarding manure applications

TRISH DUNN
Fertilizer Control Specialist,
Office of Indiana State Chemist



Trish Dunn is originally from southern Indiana. She graduated from Purdue University with a B.S. in Animal Science and an A.S. in Chemistry. Trish started working for the Office of Indiana State Chemist, Indiana's regulatory agency overseeing fertilizer, seed, feed and pesticides, over twelve (12) years ago. In her current position, she is responsible for investigating fertilizer complaints as well as leading the containment of fertilizer and pesticide programs.

DEVELOPING A PREPARED COMMUNITY WITH THE COLLABORATION OF LOCAL, STATE, AND UNIVERSITY RESOURCES

While there are some calls we hope we never need to make or receive, developing a framework to react to emergency situations allows for quicker mitigation and overall lessened impact on the farming operation, employees, and environment. This presentation focuses on potential hazards of manure storage and transport, as well as the development of a collaborative emergency preparedness Extension program to enhance training resources for rural communities and first responders.

SHAWN EHLERS
Assistant Professor,
Department of Agricultural
and Biological Engineering,
Purdue University



Dr. Ehlers is an Assistant Professor in the Department of Agricultural and Biological Engineering at Purdue University and the sixth generation to own and operate his family farm. His Extension appointment tasks him with the development and implement of a state-specific rural disaster preparedness program (IN-PREPARED). Indiana PREPARED (Purdue Rural Emergency Preparedness) is a collaboration between university and county extension staff and state agencies (Board of Animal Health, Department of Homeland Security, and the National Extension Disaster Education Network (EDEN)) as well as first-responders.

PLANNING FOR THE UNEXPECTED: MANURE STORAGE AND NATURAL DISASTERS

While we can't prevent a lightning strike that ignites a manure stockpile or a ten-inch rain or flood that threatens your barns or manure storage, there are steps you can take in advance that both reduce the chances of a catastrophic problem and make sure that the actions you take don't create an even riskier situation. Learn how other livestock farmers have taken steps to both be prepared and reduce the risk.

KEVIN ERB
Director of the Conservation
Professional Development and
Training Program, University of
Wisconsin-Madison
Division of Extension.



Kevin holds an MS in Environmental Science and Policy from the University of Wisconsin-Green Bay. Erb has worked for UW Extension for 27 years, focusing on manure management, nutrient management plan implementation and conservation. Kevin initiated one of the nation's first manure spill response training using actual manure, and has created more than 20 live spill response demonstrations around the US and Canada.

ENHANCING THE SAFETY AND HEALTH OF MANURE STORAGE AND HANDLING FACILITIES

Manure storage and handling have been associated with hundreds of fatal and non-fatal injuries. The most frequent include exposure to toxic gases, drowning, and entanglement in mechanical components. Presentation will provide a brief overview of critical risks and address a variety of prevention strategies, including the need for each facility to have formal emergency action plans

BILL FIELD
Professor, Purdue's
Agricultural Safety and Health
Program, Purdue University



William E. Field received his Ed.D from the University of Minnesota. He began as extension safety specialist and assistant professor in Agricultural Engineering at Purdue in 1977. Bill provides leadership for both the department and Purdue University's agricultural health and safety program that includes teaching, research and extension education components. He also supervises the Breaking New Ground Outreach Program which provides assistance to farmers with physical handicaps. He has received many honors related to the field of agricultural safety and health education.

LIVESTOCK WASTE APPLICATION SETBACK REQUIREMENTS FOR UNPERMITTED LARGE CAFOS

DAVID GINDER
Environmental Protection Specialist, Illinois Environmental Protection Agency



The Illinois CAFO rules were revised in August 2014. Setbacks for livestock waste application from surface waters, potable wells, and other protected resources are included in the new revisions. To claim the Agricultural Stormwater Exemption and preclude the need for National Pollutant Discharge Elimination System (NPDES) permit coverage under the Clean Water Act, an unpermitted Large CAFO must meet the setback provisions for the land application of livestock waste found in the revised Illinois CAFO rules. This presentation will outline the applicable setback requirements an unpermitted Large CAFO must follow when land applying livestock waste.

David Ginder started his work at Illinois EPA in 1994 and is currently an Environmental Protection Specialist. Since 2006, he is a field inspector for agricultural matters in the Springfield Regional Office. His job duties include the investigation of complaints at livestock facilities and land application fields relating to the storage, handling and land application of livestock waste and the investigation of odor complaints associated with livestock facilities. He also conducts site inspections to assess whether livestock facilities need to obtain coverage under the NPDES general CAFO permit. His additional duties include aiding in the implementation of the revised 2014 CAFO rules, including assisting Illinois EPA staff members and public education and outreach efforts.

ODOR MANAGEMENT: WHAT TO DO!

ALBERT HEBER
Professor and Agricultural Engineering Extension Specialist, Purdue University



Odor nuisance around livestock facilities and land application of manure continues to be an issue for some producers around the country and has been highlighted with major lawsuits against swine producers in North Carolina during the last 12 months. This session will describe odor management practices, and direct and indirect abatement methods, including prudent facility siting strategies.

Dr. Heber is a Professor and Agricultural Engineering Extension Specialist in building environmental control, livestock air quality, and measurement modeling and control of air pollutants emitted from farms. He has been at Purdue University for 26 years and directed the National Air Emissions Monitoring Study which was reported to the U.S. EPA in 2010.

PRACTICAL EXPERIENCES INCORPORATING SWINE MANURE INTO A SOIL HEALTH SYSTEM

MARK LEGAN
Livestock & Crop Farmer, Legan Livestock & Grain, Inc.



Learn from Mark Legan about how they have leveraged soil health practices like no-till and cover crops in their west central swine farm. Hear about some of the challenges and opportunities they have encountered along the way and what they have done to address them.

Mark & his wife Phyllis started a first generation farm in 1989. Today along with their daughter and son in law they operate a 2200-sow farrow to finish operation and 1,000 crop acres in a cover crop no-till system.

PANEL DISCUSSION PRECISION APPLICATION: WHAT'S IN USE, WHAT'S COMING NEXT

STEPHEN LESHNER
Partner, Leshner Poultry Farm



See Abstract under Megan Dresbach

Stephen Leshner is a 3rd generation partner of Leshner Poultry Farm, Chambersburg PA. His philosophy, "Manure is Money when properly placed" and desire to apply accurately, led the farm to invest in load cells and precision technology on their spreader truck that automatically calibrates manure application, keeping rates uniform when manure density and speed vary.



CAN MANURE IMPROVE SOIL HEALTH?

TENG LIM
Associate Professor, P.E.,
University of Missouri Extension



A unique opportunity allowed a Missouri team to study soil health variables and manure land application, based on state-wide and research plot data. Data was compared between fields with and without manure application for carbons, mineralizable nitrogen, bulk density, water stable aggregates and other variables. A significant difference was found only for phosphorus. However, when the effects of manure land application was compared within the counties, manure applications increased the active carbon, organic carbon, phosphorus, and water stable aggregate values for some. Come discuss the potentials and meanings of these and what it means to your soil and production.

Teng Lim is an Associate Professor of University of Missouri Extension. He enjoys collaborating with members of the Missouri interdisciplinary Extension teams for agriculture industries. Teng has been focusing on the assessment of odor and emissions of animal production, and modeling work for emissions and odor setback distances for modern animal facilities. He has also characterized the effectiveness and practicality of several mitigation methodologies at farm settings. His current research and extension projects focus on practical waste management, biofiltration for emission mitigation, anaerobic digestion for antibiotic degradation, and biosecurity training.

FOUNDATIONAL NUTRIENT CONCEPTS EVERYONE UTILIZING MANURE SHOULD KNOW

ROBB MEINEN
Senior Extension Associate,
Department of Animal Science,
Penn State University



If you work with manure and crops in any capacity you should know the foundational issues that impact nitrogen and phosphorus utilization efficiencies. The principles discussed in this presentation provide the knowledge base needed to make decisions in a world where balancing agriculture production and environmental conservation are both reality and necessity. These key concepts are paramount to both agronomic and economic nutrient decisions.

Robb Meinen is a Senior Extension Associate in Penn State's Department of Animal Science. His main duty is coordination of education for over 700 professionals in Pennsylvania's Commercial Manure Hauler and Broker Certification Program. Additionally Meinen co-instructs the universities Nutrient Management course. As a sow farm manager Meinen's farm was in the top 5% of production in the US and was recognized nationally as an Environmental Steward of the Pork Industry. Meinen was chair of the 2010 Manure Expo and co-chair of the 2015 North American Manure Expo. The 2015 event was recognized with Pennsylvania's Governor's Award for Environmental Excellence, the top environmental recognition given in the state... not too bad for a crap show!

WHAT WE NEED TO KNOW ABOUT ADDITIVE PRODUCTS FOR MANURE TREATMENT

JIQIN (JQ) NI
Associate Professor of
Agricultural and Biological
Engineering, Purdue
University.



Manure additives are one of the technical options for managing and treating livestock and poultry manure. After decades of development, more than 50 commercial manure additive products are currently available in North America. This presentation provides a research-based overview for users and potential users of manure additives.

Jiqin (JQ) Ni received his Ph.D. at the Catholic University of Leuven (KUL), Belgium. His research is in methodology and technology in air quality study, bioenergy from agricultural wastes, and air and water pollution abatement. His extension is in livestock and rural waste systems engineering, including manure management, water and air resource protection, and on-farm biological waste treatment using technologies such as anaerobic digestion and best management practices for reducing environmental impacts from animal agriculture.

EXCESS ON-FARM PHOSPHORUS: TREATMENT OF MANURE AND EFFLUENT

CHAD PENN
Research Scientist, USDA-ARS,
Adjunct Professor,
Purdue University



Is it possible to remove phosphorus (P) or at least reduce phosphorus solubility in manure and effluent without constructing an expensive and sophisticated waste-water treatment plant? Growers who are restricted in their manure and effluent applications due to excessive soil test P concentrations and soil P regulations must find alternatives to continue normal animal production. Learn about how phosphorus sorption materials can help reduce phosphorus losses to surface waters.

Dr. Penn is a research scientist at the USDA Agricultural Research Service in West Lafayette, Indiana and adjunct professor in the Department of Agronomy at Purdue University. Before joining USDA in 2016, he was professor of soil and environmental chemistry at Oklahoma State University since 2005. His current research is focused on soil chemistry and fertility for improving plant nutrient recommendations, thermodynamics of surface reactions, design and construction of phosphorus removal structures, animal waste management, nutrient transport, and use of gypsum in agriculture.



**MANURE MANAGEMENT
TECHNOLOGY
SELECTION GUIDANCE**
WHAT IS BEST FOR YOU?

JEFF PORTER
National Animal Manure and
Nutrient Management
Team Leader, USDA-NRCS



There are a number of different manure management technologies available and new innovations are being introduced all of the time. So what technology will work best for a particular operation? Factors such as operational size, landowner goals and objectives and, of course, cost must be considered. This presentation will outline many of the available manure management technologies and provide guidance on approaches in selecting the right technology for a livestock operation.

Jeff Porter is the NRCS National Animal Manure and Nutrient Management Team Leader located at the East National Technology Support Center in Greensboro, NC. His main responsibilities include reviewing and evaluating innovative technologies in manure management, working with states to assist in the transfer of these technologies to help carry out the NRCS mission.

**RENEWABLE NUTRIENTS
OBSTACLE V. OPPORTUNITY**

CARL RAMSEY
Digester Operations Manager,
Prairie's Edge Dairy Farm, LLC.



In the age of sustainability and consumer based accountability, will we be able to lead, follow or get out of the way? What challenges do we face to excel in the future?

Carl Ramsey began with the dairy in 1999. He has held various roles within this family-owned operation from Farm Manager / Property Manager roles to his current role as the Manager of Digester Operations, where they integrate Biogas Operations / Co-Gen and Nutrient Separation Technologies.

**THE MICHIGAN
ENVIROIMPACT TOOL**
A DECISION SUPPORT
TOOL FOR SHORT-TERM
MANURE AND NUTRIENT
APPLICATION PLANNING

ERICA ROGERS
Michigan State University
Extension Environmental
Management Educator



The Michigan EnviroImpact Tool is a free daily runoff risk decision support tool to help farmers effectively plan short-term manure and nutrient application. This runoff risk tool uses National Weather Service information about precipitation, soil moisture and temperature, and landscape characteristics in order to forecast the potential for runoff. This presentation will cover the importance of manure and nutrient application planning and how the Michigan EnviroImpact Tool can aid in this process.

Erica Rogers is an Environmental Extension Educator with Michigan State University Extension located in Gratiot County. Much of her work deals with manure management in livestock and poultry operations and how to effectively utilize nutrients on the farm as well as proper handling and storage to reduce environmental impacts. Additionally, she does work with environmental watershed quality, odor management, and mortality management.

**NEWTRIENT MANURE
TECHNOLOGY CATALOG**
AN ON-LINE RESOURCE FOR
EVERYONE INVOLVED IN DAIRY
MANURE MANAGEMENT

MARK STOERMANN
Chief Operating Officer,
Newtrient LLC



Looking at the manure-management technologies that currently exist and the new and emerging technologies, Newtrient provides a reliable, third-party technology evaluation tool for the dairy industry. This open-source, technology catalog provides a comprehensive listing of relevant and readily available dairy manure management technologies.

Mark came to his position with Newtrient as an outgrowth of his previous experience with food waste anaerobic digestion project development, building out compressed natural gas (CNG) infrastructure, construction of anaerobic digesters processing dairy manure which included electrical generation, gas cleaning, renewable natural gas (RNG) production, CNG as transportation fuel, and nutrient recovery.

MANURE HANDLING FROM ANIMAL TO FIELD:
A NORTHEAST US PERSPECTIVE

JOHN TYSON
Regional Extension
Agricultural Engineer,
Penn State University Extension



For manure handling to be done effectively and efficiently on a farm it must be treated as an integrated system. All the individual parts must fit and work together to give the desired outcome. The selection of a part of the system or change in procedure at one point in the system will have ripple effects both upstream and downstream in the system. There may also be times when the goals of the manure system contradict the goals of the animal housing system. For example, if irrigation of a low solids liquid is the desired manure system this may lead to little or no bedding used in the housing which can lead to animal comfort issues. We will look at the characteristics of many of the manure handling systems used in the Northeast US and discuss how the systems are built for the betterment of animals, environment, and producers.

John Tyson is with Penn State Extension and located in Central Pennsylvania. In this position he has conducted educational programming in dairy housing, cow comfort, farmstead layout, feed storage design, manure handling, and agricultural ventilation. Programs have been conducted with producers, builders, agricultural suppliers, veterinarians, and financial lenders dealing with these agricultural engineering issues. His primary focus has been on individual assistance directly with the producer. During this time he has also been involved in the production of various Extension Publications involving dairy housing facilities. John has been a Licensed Professional Engineer in Pennsylvania since January of 2003.

DON'T RELY ON LUCK
USE THE RIGHT HITCH PIN

FRED WHITFORD
Clinical Engagement
Professor and Director of
Purdue Pesticide Programs,
Purdue University



There is a science to keeping an implement safely connected by a hitch pin to a truck or tractor. Not using the correct pin is a serious issue that farmers face. But when the implement detaches, you've lost control. You don't have to guess who would be held responsible in the event of an accident. You will learn that there is a lot more to a hitch pin that you ever imagined.

Fred Whitford has authored more than 300 publications including 7 books and 120 extension bulletins. He has delivered more than 5,500 presentations throughout Indiana and the United States. In recognition of his significant contributions to Extension outreach efforts, he has received numerous awards, including the Frederick L. Hovde Award of Excellence in Educational Service to Rural People of Indiana, the Outstanding Extension Faculty/Specialist Award from Purdue Extension, Excellence in Extension Award from the Association of Public and Land-grant Universities, and Honorary Master Farmer by Indiana Prairie Farmer and the Purdue University College of Agriculture.