



Carbon, Energy & Climate Conference

Wednesday, September 26, 2012 – Friday, September 28, 2012

W.K. Kellogg Biological Station

3700 E. Gull Lake Drive, Hickory Corners, MI 49060



Welcome

The North Central Region Sustainable Agriculture Research and Education (NCR-SARE) program is organizing a two-year professional development and training initiative around carbon, climate and energy issues. Welcome to the initial training commemorating the initiative launch!

It's going to be an exciting two and a half days. We have representatives from all 12 North Central Region states and participants from the Western, Southern and Northeast regions as well. Most of the audience will be land grant university Extension faculty and staff. However, we also will have a diverse background of participants; from Midwestern farmers to non-profit leaders to state and federal agency representatives.

We have arranged some outstanding speakers for the program from organizations such as the U.S. Department of Agriculture, the National Lab for Agriculture and the Environment, noted Midwestern universities and much more!

Our program will begin the morning of Wednesday, September 26, with a plenary session featuring a number of distinguished keynote speakers, who will provide a broad context on carbon, bioenergy, climate and intersecting issues. Immediately thereafter, a farmer panel will provide an initial response. In the afternoon, participants will take in the diverse W.K. Kellogg Biological Station (KBS) research related to carbon, bioenergy and climate on field tours of four different sites. On Thursday morning, September 27, we will have concurrent sessions focused on climate, carbon and energy tracks, followed by hands-on field workshops in the afternoon. Last, but not least, on Friday, September 28, there will be an opportunity to learn more about communication strategies and discuss state opportunities and needs. The conference will conclude late Friday morning. Enjoy!

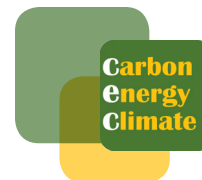
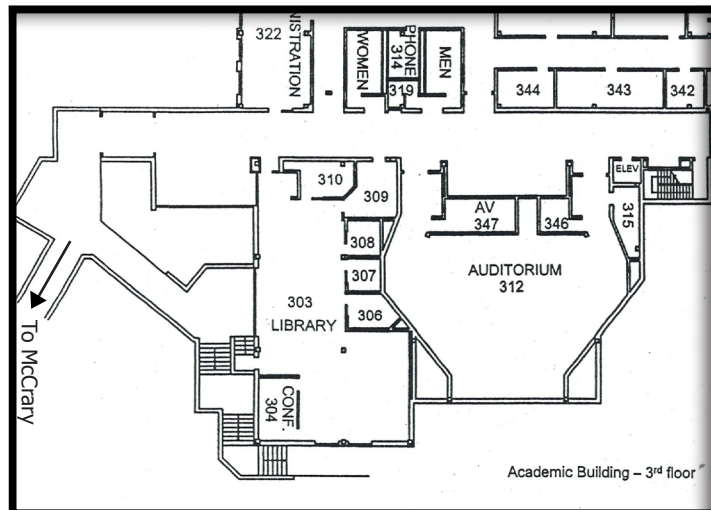
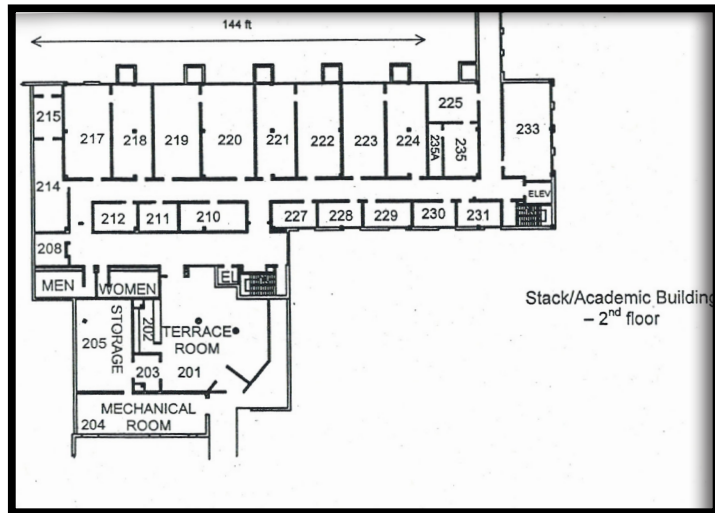
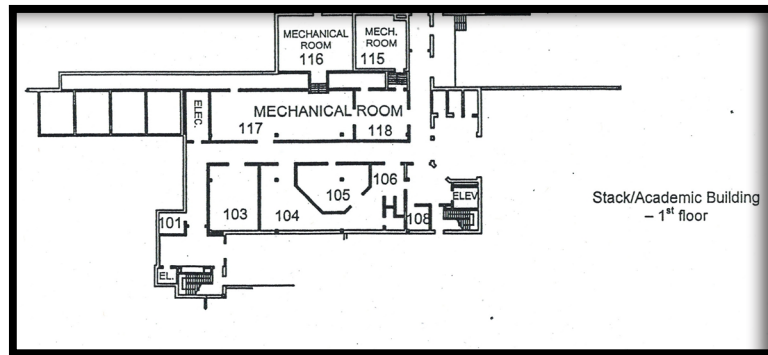


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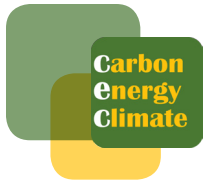
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Conference Floor Plans



Conference Timetable

Time	Tuesday 25th	Wednesday 26th	Thursday 27th	Friday 28th
7:00		Breakfast	Breakfast	Breakfast
7:15		McCrary Dining Hall	McCrary Dining Hall	McCrary Dining Hall
7:30				
7:45				
8:00				
8:15			Plenary Session	Plenary Session
8:30			Academic Building Auditorium	Academic Building Auditorium
8:45				
9:00			Concurrent Sessions	
9:15			Academic Building Auditorium & Terrace Room	
9:30				Break
9:45				
10:00		Break	Break	Plenary Session
10:15				Academic Building Auditorium
10:30				
10:45			Concurrent Sessions	
11:00			Academic Building Auditorium & Terrace Room	
11:15				
11:30				Adjourn/Lunch
11:45				McCrary Dining Hall
Noon				
12:15	Conference Registration & Room Check-In			
12:30		Lunch	Lunch	
12:45		McCrary Dining Hall	McCrary Dining Hall	
1:00				
1:15				
1:30				
1:45				
2:00		Field Tours	Field Workshops	
2:15		KBS Research Sites	KBS Research Sites	
2:30				
2:45				
3:00				
3:15				
3:30				
3:45				
4:00				
4:15				
4:30				
4:45				
5:00		Personal Time	Personal Time	
5:15				
5:30	Drinks & Light Snacks	Dinner on Your Own	KBS Bird Sanctuary Optional	NCR-SARE State Coordinators Meeting Terrace Room (NCR-SARE State Coordinators Only)
5:45	McCrary Dining Hall		"Sun Come Up"	Food, Fiber & Fuel Network Auditorium Optional
6:00			McCrary Dining Hall Optional	
6:15				
6:30			Dinner	Dinner
6:45			McCrary Dining Hall	McCrary Dining Hall
7:00				
7:15				
7:30				
7:45				
8:00				



Wednesday, September 26

Plenary Session, Academic Building Auditorium

Moderator: Dr. Robert Myers, Regional Director, North Central Region SARE

- 8:00 a.m. Welcome
Dr. Tom Coon, Director
Michigan State University Extension
- 8:10 a.m. Conference Overview
Dr. Robert Myers, Regional Director
North Central Region SARE
- 8:15 a.m. Keynote presentation on U.S. energy situation & context for bioenergy
Dr. Harry Baumes, Director
USDA Office of Energy Policy and New Uses
- 9:00 a.m. Keynote presentation on climate issues facing the North Central Region
Dr. Mark Seeley, State Climatologist & Professor
University of Minnesota
- 9:45 a.m. Break
- 10:00 a.m. Keynote presentation on connections between carbon, climate & energy
Dr. Jerry Hatfield, Director
National Lab for Agriculture and the Environment
- 10:45 a.m. Farmer panel: response to keynotes & producer perspective
Dr. Dale Mutch, Moderator
Michigan State University Extension
John Burk, Burk Farms
John Caveny, Caveny Farm
Martin Kleinschmit, NE Sustainable Agriculture Society
Jim Laubach, Laubach Orchards
Henry Miller, Miller Farms
Thomas Nelson, Nelson Farms
Jamie Scott, Scott Farms & Scott's Cover Crops
- 12:15 a.m. Lunch
McCrary Dining Hall

*For speaker biographies, see pages 17-41

1:15 p.m. Field tours at the KBS Research Sites

Attendees will be divided into four groups, which will rotate through each of four field tour stops during the afternoon. Each field stop will be approximately 40 minutes with 15 minutes of transit time (by wagon) between each location. Speakers will give overviews of the research at each site on the following:



- Site 1: Great Lakes Bioenergy Research Center (Page 12)
Dennis Pennington, Michigan State University Extension



- Site 2: Cover Crop Research (Page 12)
Dr. Dale Mutch, Michigan State University Extension



- Site 3: Long-term Ecological Research Site (Page 12)
Dr. Julie E. Doll, Michigan State University KBS



- Site 4: Pasture-based Dairy & Robotic Milking (Page 12)
Mat Haan, Michigan State University KBS

- 5:10 p.m. Field tours conclude; return to conference center
- 5:30 p.m. Optional trip to the KBS Bird Sanctuary (Page 12)
Kara Haas, Environmental Education Coordinator
Michigan State University KBS
(Meet at McCrary Hall for transportation)
- 5:30 p.m. NCR-SARE State Coordinators Meeting
(Coordination Meeting for NCR-SARE State Coordinators only)
Academic Building Terrace Room
- 6:30 p.m. Dinner
McCrary Dining Hall



From left to right: Austrian winter pea and oilseed radish on Henry Miller's farm in St. Joseph County and slurry seeded cover crops on Blight Farm in Calhoun County.



*For speaker biographies, see pages 17-41



Thursday, September 27

Plenary Session, Academic Building Auditorium

8:00 a.m. Research on farmer perceptions of climate change
Dr. Julie E. Doll, Michigan State University KBS &
Dr. Amber Campbell Hibbs, Kansas State University



Concurrent Sessions

9:00 a.m. Begin morning tracks: (1) Energy, (2) Carbon & (3) Climate



(1) Energy Track: Academic Building; Terrace Room

Moderator: Rob Myers, University of Missouri

9:00 a.m. Miscanthus & switchgrass production
Dr. Emily Heaton, Iowa State University

9:30 a.m. Integrating food & fuel production in the landscape
Dr. Emily Heaton, Iowa State University &
Dr. Sam Jackson, University of Tennessee/Genera Energy

10:00 a.m. Break (refreshments outside auditorium)

10:15 a.m. Herbaceous biomass for heat
Dr. Jerry Cherney, Cornell University

10:45 a.m. Oilseeds for biodiesel
Alan Weber, MARC-IV (Missouri)

11:15 a.m. Farmstead energy audits
Aluel Go, Michigan State University

11:45 a.m. Digester on a small Michigan farm
Charles Gould, Michigan State University Extension

12:15 p.m. Lunch
McCrary Dining Hall



Joint Carbon & Climate Tracks: Academic Building; Auditorium

Moderator: Linda Kleinschmit, North Central Region SARE

9:00 a.m. Climate change & agriculture
Dr. Jeffrey Andresen, Michigan State University

9:30 a.m. Carbon trading & policy issues
Dr. Philip Robertson, Michigan State University KBS

*For speaker biographies, see pages 17-41

10:00 a.m. Break (refreshments outside auditorium)



(2) Carbon Track: Academic Building; Auditorium A

Moderator: Linda Kleinschmit, North Central Region SARE

10:15 a.m. Nitrogen cycle & management related to climate issues
Dr. Peter Motavalli, University of Missouri

10:45 a.m. Carbon management & sequestration
Dr. Donald Reicosky, Retired ARS (MN)

11:15 a.m. Cover crop impact on carbon & nitrogen
Michael Plumer, Retired University of Illinois Extension

11:45 a.m. Cover crop cocktails
Dr. Dwayne Beck, South Dakota State University

12:15 p.m. Lunch
McCrary Dining Hall



(3) Climate Track: Academic Building; Auditorium B

Moderator: Dr. Julie E. Doll, Michigan State University KBS

10:15 a.m. Climate trends in the corn belt
Dr. Eugene Takle, Iowa State University

10:45 a.m. Midwest regional climate project on corn-based cropping systems
Dr. Lois Wright Morton, Iowa State University

11:15 a.m. Useful to Usable: Combining climate science & social science
to develop decision support tools for corn producers & advisors
Dr. Linda Prokopy, Purdue University

11:45 a.m. Role of regional climate centers
Molly Woloszyn, Midwestern Regional Climate Center

12:15 p.m. Lunch
McCrary Dining Hall

Continued on the next page...

*For speaker biographies, see pages 17-41

1:15 p.m. Afternoon field workshops KBS Farm

Attendees will have the opportunity to choose one of three training programs that include hands-on activities at various field locations at the KBS station. The topic areas in general correspond to the morning tracks on energy, carbon and climate.



(1) Energy Field Workshops (Page 13):

- Mobile biodiesel plant demonstration
Dennis Pennington, Michigan State University Extension
- Biomass pelltization & densification
Dennis Pennington, Michigan State University Extension
- Biofuel feedstock plant identification
Dr. Emily Heaton, Iowa State University, & John Caveny, Farmer
- Biofuels blast
Mark Seamon, Michigan State University Extension



(2) Carbon Field Workshops (Page 14):

- Conducting a soil test for active soil carbon, & approaches used in Ohio
Dr. Rafiq Islam & Alan Sundermeier, Ohio State University Extension
- Planning & implementing cover crop testing
Dr. Dean Baas, Michigan State University Extension
- Cover crop demonstrations
Dr. Dale Mutch, Michigan State University Extension
- Measuring the invisible: carbon balance in agroecosystems
Dr. Julie E. Doll, Dr. Justin Kunkle & Stacey VanderWulp, Michigan State University KBS



(3) Climate Field Workshops (Page 15):

- Understanding gases - bench top demonstrations
Dr. Sara Syswerda, Michigan State University KBS
- Methods for measuring greenhouse gas emissions
Dr. Neville Millar & Kevin Kahmark, Michigan State University KBS
- Locating & interpreting weather/climate data sets
Beth Bishop, Michigan State University
- Setting up a weather station
Dr. Jeffrey Andresen, Michigan State University

4:45 p.m. Return by buses to conference center; personal time

5:30 p.m. "Sun Come Up"— optional documentary
on climate change refugees (Page 16)
Samantha Shaughnessy, Michigan State University Extension
McCrary Dining Hall

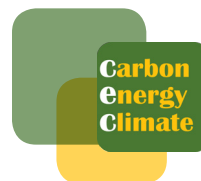


5:30 p.m. Meeting of Food, Fuel & Fiber Network (Page 16)
Dennis Pennington, Michigan State University Extension
Academic Building Auditorium



6:30 p.m. Dinner & bonfire
McCrary Dining Hall

*For speaker biographies, see pages 17-41



Friday, September 28

Plenary Session, Academic Building Auditorium

Moderator: Dr. Robert Myers, Regional Director, North Central Region SARE

8:00 a.m. Communication strategies on carbon, energy & climate
Elaine Andrews, University of Wisconsin



9:00 a.m. NCR-SARE Climate Change Professional
Development Program project
Dr. Julie E. Doll, Michigan State University KBS,
Dr. Tapan Pathak, University of Nebraska &
Dr. Cheryl Peters, Michigan State University Extension



9:15 a.m. Food, Fuel & Fiber Network
Dennis Pennington, Michigan State University Extension



9:30 a.m. Conference evaluation & discussion of future evaluations
Dr. Cheryl Peters, Michigan State University Extension

Break (take refreshments to state team breakouts)

9:45 a.m. State teams meet to develop state plans for training programs

10:30 a.m. State sharing & collaboration discussions;
share state reports & identify opportunities to
work with other states

11:15 a.m. Conference wrap-up
Dr. Robert Myers, Regional Director
North Central Region SARE

11:30 a.m. Adjourn; participants can grab box lunches
or eat in McCrary Dining Hall



*For speaker biographies, see pages 17-41



Session Descriptions

Wednesday

Field Tours:

Site 1: Great Lakes Bioenergy Research Center

Dennis Pennington, Michigan State University Extension

The primary objective of the Great Lakes Bioenergy Research Center (GLBRC), funded by the U.S. Department of Energy in 2007, is to remove the bottlenecks in producing cellulosic ethanol. Three centers were funded. What makes GLBRC unique is the sustainability component. At KBS, research is being conducted on six different cropping systems to evaluate their impacts on soil, water and air quality.

Site 2: Cover Crop Research

Dr. Dale Mutch, Michigan State University Extension

Participants will discover the influence of cover crops on greenhouse gases in both organic and conventional farming systems. In addition, participants will see organic dry bean experiments, some of which showcase the influence of different cover crops on dry bean growth. Those on the tour will also see the impact of several cover crops on three different tillage systems and corn crops.

Site 3: Long-term Ecological Research Site

Dr. Julie E. Doll, Michigan State University KBS

At the KBS Long-term Ecological Research (KBS LTER) site, participants will hear how researchers are working to answer the broad question of how agronomic management can better utilize biological resources in cropping systems to control pests, provide nitrogen and build soil fertility. In short, how to make agriculture more profitable and provide environmental benefits. Participants will visit the KBS LTER main experiment site, initiated in 1988, that compares conventional, organic and no-till cropping systems, including corn, soybeans, wheat, alfalfa and hybrid poplar trees.

Site 4: Pasture-based Dairy & Robotic Milking

Mat Haan, Michigan State University KBS

Tour participants will observe and learn how grazing and robotic milking are integrated into the management and research at the KBS Pasture Dairy Center. Special emphasis will be on research evaluating greenhouse gas emissions from pasture soils and dairy cattle while using the robotic milkers and best management practices.

Optional:

KBS Bird Sanctuary

Kara Haas, Michigan State University KBS

Don't miss a tour of the Kellogg Bird Sanctuary! The Sanctuary is home to captive birds; attendees will see birds of prey, upland game birds and waterfowl along the 3/4-mile paved trail. Haas will offer facts and answer questions along the way. The Sanctuary provides 180 acres of habitat for wild birds - participants can look for them along the way or borrow binoculars and take the 1 1/2-mile Lake Loop to explore more habitats. The tour will begin and end in the Sanctuary Auditorium. For transportation to the Sanctuary, meet at McCrary Hall.

Thursday

Energy Field Workshops:



Mobile Biodiesel Plant Demonstration

Dennis Pennington, Michigan State University Extension

At this demonstration, participants will see the equipment used to squeeze oil out of canola seeds and convert the oil to biodiesel in action. Participants will also learn about the economics of small-scale biodiesel production.

Biomass Pelletization & Densification

Dennis Pennington, Michigan State University Extension

Attendees will see the densification of biomass right before their eyes. Switchgrass will be ground and pelletized while the group watches. Low physical density of biomass is a key hurdle that needs to be addressed in second generation biofuels.

Biofuel Feedstock Plant Identification

Dr. Emily Heaton, Iowa State University

Participants in the Biofuel Feedstock Plant Identification workshop will learn how to identify Miscanthus, switchgrass and other leading energy crops, including ways to distinguish them from weedy relatives. Rhizome and plug planting will be discussed for Miscanthus, and seeding for other crops. Attention will be given to crop and variety selection, placement on the landscape and best management practices.

Biofuels Blast

Mark Seamon, Michigan State University Extension

The Biofuels Blast workshop will demonstrate a simple method to provide a hands-on system to help people understand the basics of fermentation in alcohol production. This system uses a sugar source, yeast and water in a small container that provides a visual demonstration of the speed and amount of fermentation with the collection of carbon dioxide. The demonstration can be useful for audiences ranging from school children to adults to help reduce some myths and mysteries surrounding the ethanol industry.

Carbon Field Workshops:



Conducting a Soil Test For Active Soil Carbon & Approaches Used in Ohio

Dr. Rafiq Islam & Alan Sundermeier, Ohio State University Extension

There is a great need for producers and educators to be able to evaluate field soil quality to help guide sustainability of agricultural practices. This field workshop is a dual purpose education program: (1) a field demonstration for farmers, crop consultants and anyone else who wants to learn about agricultural soil quality and how to measure it; and (2) a training session for educators and agency people who want to teach soil quality management to farmers and others. Participants will receive a test kit, and conduct a hands-on demonstration of a soil quality field test based on the use of a non-toxic dilute solution of potassium permanganate to determine the active organic matter, soil quality, N fertilization, etc. by changing the solution color, which is compared to a reference color chart for rating. Discussion will include soil quality analysis of the Ohio 50-year no-till research plots. Management recommendations for improving soil organic matter will also be shared.

Planning & Implementing Cover Crop Testing

Dr. Dean Baas, Michigan State University Extension

Participants will take part in discussions about resources for selecting cover crops, such as the Midwest Cover Crops Council (MCCC) website, web-based selector tool and Pocket Guide, and will learn how to use those resources.

Through an experimental demonstration plot, those in the workshop will layout, measure and label plots to learn how to plan a randomized complete block design experiment. Different cover crop seeds, which will be planted in the plot, will be reviewed. In turn, participants will learn planting methods, how to calculate seed requirements for different seeding rates and how to plant with a hand broadcast seeder.

Cover Crop Demonstrations

Dr. Dale Mutch, Michigan State University Extension

During this session, participants will see demonstrations on how to seed several different cover crops, including experimental design and calibration of seeds. Additionally, participants will take a biomass sample using quadrats: they'll collect samples of separate species and label bags. The group will also take pre-sidedress nitrogen (PSNT) samples to determine nitrate levels in the soil, and discuss sampling corn for stalk nitrate levels.

Measuring the Invisible: Carbon Balance in Agroecosystems

Dr. Julie E. Doll, Dr. Justin Kunkle & Stacey VanderWulp, Michigan State University KBS

The carbon cycle is important for both crop and soil health, as well as the climate. During this session, we'll talk in depth about the carbon cycle in agroecosystems. Participants will measure carbon dioxide emissions from agricultural soils, using real time sensors. They will also measure carbon loss (respiration) and carbon gain (photosynthesis) in corn plants.

Climate Field Workshops:



Understanding Gases-Bench Top Demonstrations

Dr. Sara Syswerda, Michigan State University KBS

There are three goals of this session: establish that gases have mass that can be measured; promote the idea that gases are all around us in our everyday lives; and show that even though gases may seem to weigh very little, there is such a large volume of gas everywhere that little bits of gas (and their effects) can accumulate into big amounts of gas (and big impacts on the world). Attendees will leave with a better understanding of gases, as well as demonstrations that they can take back home with them to share with their constituents.

Methods for Measuring Greenhouse Gas Emissions

Dr. Neville Millar & Kevin Kahmark, Michigan State University KBS

This workshop will provide the audience with practical experience and tips on field-based chamber methodologies for collecting and analyzing greenhouse gas emissions from agricultural land. This will include chamber design, chamber deployment, vial sampling procedures and potentially gas analysis using gas chromatographic techniques. Participants will also discuss the pros and cons of automated sampling and analysis and issues surrounding spatial and temporal heterogeneity of greenhouse gas emissions.

Locating & Interpreting Weather/Climate Data Sets

Beth Bishop, Michigan State University

An increasing amount of weather information is available on the internet. This session will illustrate the use of such information with a hands-on demonstration of the Enviro-Weather system, which provides real-time weather data and information for agricultural- and natural resources-related decision-making.

Setting Up a Weather Station

Dr. Jeffrey Andresen, Michigan State University

Advances in instrument and communication technology have made environmental monitoring simpler, more effective and less costly. This session will cover strategies and considerations involved in the design and purchase of an automated weather monitoring system, basic concepts of equipment operation and maintenance, data-logger management and programming and simple data analysis.

Continued on the next page...

Optional:



“Sun Come Up”

Samantha Shaughnessy, Michigan State University Extension

“Sun Come Up,” produced and directed by Jennifer Redfearn, places a human face on climate change. Viewers will follow the Carteret islanders, the world’s first climate change refugees, as they search for a new home. “Sun Come Up” has been nominated for an Academy Award in 2011 for Best Documentary Short.



Meeting of the Food, Fuel & Fiber Network

Dennis Pennington, Michigan State University Extension

This group is made up of Extension educators and specialists from the North Central Region. It meets annually to tour research plots and share Extension program ideas in the area of sustainable food and fuel production. The next tour will be held in August 2013 at the University of Illinois at Urbana-Champaign.

All who are interested are welcome to attend.



From top left, clockwise: Corn in mid-August on the KBS LTER site, crimson clover and aerial view of the GLBRC/KBS LTER cellulosic biofuels research experiment.



Conference Participants

Keynote Speakers



Dr. Harry Baumes

Director
USDA Office of Energy Policy & New Uses
Office of Chief Economist
1400 Independence Avenue, Southwest
Room 4059 South Building, Washington, D.C. 20250
P: 202-401-0461, E: hbaumes@oce.usda.gov

Dr. Harry Baumes returned to the USDA in April 2006, serving as Director of the Office of Energy Policy and New Uses. He served as the Acting Director of the Office of Energy Policy and New Uses (OEPNU) from January to November 2010. In December, he was appointed Director by the Chief Economist Director of the Office. In addition to administrative responsibilities, Dr. Baumes’ activities focus on renewable energy policy and evaluation – particularly biofuels and feedstocks. Dr. Baumes has worked on the renewable fuel standard (RFS) and coordinated USDA interaction and collaboration with the EPA on the proposed and final rule for implementing the RFS provisions of the Energy Independence and Security Act of 2007. He was responsible for the overall agenda and for the Agriculture, Forestry and Rural Development program for the ministerial level of the Washington International Renewable Energy Conference which had 5,000 attendees with representation from over 120 countries and 100 minister level officials (March 2008).

Prior to returning to the USDA in April 2006 as Associate Director of the OEPNU, Dr. Baumes was Managing Director of Agricultural Services for Global Insight (G.I.). There he had management responsibilities for the Agricultural Group, including domestic and international agriculture sector forecasting and consulting services. While at G.I., Dr. Baumes led three proprietary studies that looked at biofuels and implications for U.S. agriculture. Baumes has more than 30 years of professional experience conducting and/or managing domestic and international agriculture sector studies.

Dr. Baumes holds a Bachelor of Science degree from Cornell University (1974), Master of Science degree (1976), and a Doctorate of Philosophy degree (1978) in agricultural economics from Purdue University. Dr. Baumes’ graduate studies concentrated on quantitative methods.

**Dr. Jerry Hatfield**

Laboratory Director
National Lab for Agriculture & the Environment
USDA-ARS

2110 University Boulevard, Ames, IA 50011

P: 515-294-5723, E: jerry.hatfield@ars.usda.gov

Dr. Jerry L. Hatfield is currently the Laboratory Director of the USDA-ARS National Laboratory for Agriculture and the Environment in Ames, Iowa. He received his Ph.D. from Iowa State University in 1975

in the area of Agricultural Climatology and Statistics, a M.S. in Agronomy from the University of Kentucky in 1972, and B.S. from Kansas State University in Agronomy in 1971. He served on the faculty of the University of California-Davis as a biometeorologist from 1975 through 1983 and then joined USDA-Agricultural Research Service in Lubbock, Texas as the Research Leader of the Plant Stress and Water Conservation Research Unit from 1983 through 1989. He was appointed Laboratory Director of the National Soil Tilth Laboratory in 1989, which was renamed to the National Laboratory for Agriculture and the Environment in 2009.

His personal research focuses on quantifying the interactions among the components of the soil-plant-atmosphere system to quantify resilience of cropping systems to climate change. He served as the lead author on "The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity," as a member of the IPCC process that received the 2007 Nobel Peace Prize, as contributing author on "Agriculture" for the State of the Knowledge Report on "Global Climate Change Impacts in the United States" and as lead author on an IPCC Special Report on the effects of climate extremes.

He currently serves as the lead on the Agriculture sector report and the Midwest region report for the 2013 National Climate Assessment. He is a Fellow of the American Society of Agronomy, Crop Science Society of America and Soil Science Society of America, and Past-President of the American Society of Agronomy and member of the American Meteorological Society, American Geophysical Union and Soil and Water Conservation Society. He is the recipient of numerous awards, including the USDA Superior Service Award in 1997, the Arthur S. Flemming award for Outstanding Service to the Federal Government in 1997, along with the Distinguished Service Award, Kansas State University in 2002, Distinguished Alumni Award from Kansas State University in 2011 and the 2011 Conservation Research Award from the Soil and Water Conservation Society. He is the author or co-author of 394 refereed publications and the editor of 15 monographs.

**Dr. Mark Seeley**

Professor
Department of Soil, Water & Climate
University of Minnesota
Borlaug Hall, Room 438

1991 Upper Buford Circle, Saint Paul, MN 55108

P: 612-625-4724, E: mseeley@umn.edu

Mark Seeley joined the faculty of the University of Minnesota Department of Soil, Water, and Climate in 1978. Since that time, he has served as Extension Climatologist and Meteorologist, working closely with the National Weather Service, the Minnesota State Climatology Office and various state agencies, as well as regional Extension Offices around the state.

He has served as a weekly commentator on Minnesota Public Radio's "Morning Edition" news program and written the weekly newsletter "Minnesota WeatherTalk" since 1992. In recent years, he has helped Twin Cities Public Television (TPT) produce documentaries on Minnesota's deadliest tornadoes (Emmy Award Winner), lethal blizzards, worst floods and worst wildfires. Dr. Seeley has edited numerous children's books on weather and climate, and he has taught atmospheric science to K-12 science teachers for 19 years through the American Meteorological Society's DataStreme Program. Dr. Seeley is author of the Minnesota Weather Almanac published by the Minnesota Historical Society Press in 2006, and in 2011 he co-authored, with photographer Don Breneman, *Voyageur Skies: Weather and the Wilderness in Minnesota's National Park* (Afton Press), winner of the Northeast Minnesota Book Awards for photography.

His honors and awards include: Two-time recipient of the Sigma Xi Scientific Communication and Education Award in 2001 and 2008; recipient in 2003 of the Mn/DOT Research Partnership Award, as leader of a project dedicated to the design and deployment of living snow fences; the Extension Dean and Director's Award for Distinguished Extension Faculty in 2006; in 2007 he received the University of Minnesota Alumni Association Faculty Volunteer Award and the Career Achievement Award from Minneapolis/St. Paul Magazine; in 2009 as a team member he received a USDA Extension Award for most effective public engagement program for work on the Extension Disaster Education Network (EDEN). Most recently, in 2012 he was honored to receive the University of Minnesota President's Award for Outstanding Service.

Dr. Seeley's great-great grandfather, Ira Seeley, founded the town of Mazeppa, MN (Wabasha County) and was a member of the first Minnesota Territorial Legislature (1854-1858) and State Legislature (1858-1862). His great-grandfather was a member of the Minnesota Regiment during the Civil War, and his grandfather farmed near Appleton, MN. Dr. Seeley loves to share stories and lessons from Minnesota's weather history, and discuss the management and preservation of Minnesota's natural resources in the context of a changing climate.

Speakers



Dr. Jeffrey Andresen

State Climatologist for MI & Assoc. Professor
Department of Geography
Michigan State University
Geography Building

Room 236A, East Lansing, MI 48824
P: 202-401-0461, E: andresen@msu.edu

Dr. Jeff Andresen is Associate Professor of Meteorology/
Climatology with the Michigan State University
Department of Geography, Extension Specialist with

Michigan State University Extension and the State Climatologist for Michigan. He holds a B.S. degree from Northern Illinois University in Meteorology and M.S. and Ph.D. degrees from Purdue University in Agricultural Meteorology/Climatology. Dr. Andresen has professional experience with the National Weather Service and the USDA's World Agricultural Outlook Board in Washington, D.C., where he was involved in international crop/weather impact assessment and production estimation. He currently serves as co-director of Michigan's Enviro-weather information system, which supports agricultural pest and production management related decision-making across the state, as a member of the Great Lakes Regional Science Assessment Center and as an Extension specialist maintaining an active outreach program, including dissemination of weather and climate data and related information to the general public and continuing education activities. The primary focus of Andresen's research has been the influence of weather and climate on agriculture, both in the USA and in international production areas. Dr. Andresen is the author or co-author of over 100 peer-reviewed publications, outreach-related papers and other scholarly works.



Elaine Andrews

Environmental Education Specialist, Emeritus
Environmental Resources Center
University of Wisconsin-Cooperative Extension
3900 Connecticut Avenue, Northwest

Apartment 406G, Washington, D.C. 20008
P: 202-966-0854, E: eandrews@wisc.edu

Elaine Andrews (MS, MAT) is the retired Director of the
Environmental Resources Center in the College of
Agricultural and Life Sciences at the University of
Wisconsin, where she also served as a specialist in

environmental education, focusing on community and the environment. She is the former Executive Director of the North American Association for Environmental Education (NAAEE), a Principal Investigator for over 30 national or multi-state projects and author of numerous publications. Andrews continues her work in environmental education through her consulting business, Community & Environment, and provides volunteer expertise to NAAEE's environmental education certification program.



Dr. Dean Baas

Senior Research Associate
Agriculture & Agribusiness Extension
Michigan State University
612 East Main Street, Centreville, MI 49032
P: 269-467-5646, E: baasdean@anr.msu.edu

Dr. Dean Baas is Senior Research Associate for
Michigan State University Extension. He directs
activities for the Midwest Cover Crops Council (MCCC),
including the promotion of cover crop usage in the

Midwest and the development of tools to assist farmers in cover crop
decision-making. Dean is involved in cover crop and organic agriculture
research and education. Farmers and commodity groups are an integral part of
his projects and programs. He is the Sustainable Agriculture Research and
Education (SARE) Co-Coordinator for the state of Michigan, coordinating and
promoting SARE programs, including professional development, farmer rancher,
research and education and graduate student grant programs through the North
Central Region of SARE. He has a Ph.D. in the Environmental
Geosciences and Biosystems and Agricultural Engineering and a B.S. in
Agricultural Engineering from Michigan State University (MSU). Prior to returning
to MSU for graduate study, Dean had a 20-year career with the Kellogg Company.



Dr. Dwayne Beck

Manager & Professor
Dakota Lakes Research Farm
South Dakota State University
P.O. Box 2, Pierre, SD 57501

P: 605-224-6114, E: dwayne.beck@sdstate.edu

Dr. Dwayne Beck has been the Research Manager at
the Dakota Lakes Research Farm for 22 years. The
Dakota Lakes Research Farm consists of 800 acres of
land, of which about 250 acres is irrigated. The entire
operation is managed using no-till techniques. Of his research responsibilities, Dr.
Beck places emphasis on alternative energy systems and developing
no-till systems for irrigated and dryland areas in central South Dakota. Dr. Beck's
primary achievements deal with the development of programs that have allowed
producers to profitably adopt no-till techniques in a large portion of central South
Dakota, along with the identification of the important role crop rotation plays in
minimizing weed, disease and insect problems, while increasing potential
profitability was the key contribution of this project. Dr. Beck was inducted into
the South Dakota Hall of Fame in 2007 and was presented with the American
Agricultural Editors Association Distinguished Service Award in 2008. He received
a B.S. in Chemistry at Northern State University and a Ph.D. in Agronomy at
South Dakota State University.

**Beth Bishop**

Enviro-weather Coordinator
Michigan State University
1129 Farm Lane
East Lansing, MI 48824

P: 517-432-6520, E: bishopb@msu.edu

Beth Bishop is currently the Enviro-weather Coordinator, helping facilitate and manage various Enviro-weather projects. Enviro-weather is a collaborative project between Michigan

Climatological Resources Program and the Michigan State University (MSU) Integrated Pest Management Program, which develops and delivers a sustainable weather-based information system. This system helps users make pest, plant production and natural resource management decisions in Michigan. Bishop serves as a liaison among Enviro-weather staff and its partners, supporters and users. Not only does she educate users about Enviro-weather and its tools, but she also works to identify new users and areas for expanding resources. Bishop is also a staff member in MSU's Department of Entomology.

**Dr. Amber Campbell Hibbs**

Project Coordinator
Central Great Plains Climate
Education Partnership
Kansas State University

2714 Throckmorton, Manhattan, KS 66502
P: 785-532-3037, E: archibbs@ksu.edu

Dr. Amber Campbell Hibbs is a Project Coordinator for the Central Great Plains Climate Education Partnership (CGP-CEP) and the Kansas NSF EPSCoR

Climate Change Mitigation Project. She works with university faculty, partners and project stakeholders at the local, state and regional levels to promote climate literacy. The CGP-CEP has been working to develop and implement climate education programs throughout the Central Great Plains region which enable agricultural producers and rural community members to integrate the best available scientific information about climate into individual and community decisions. Dr. Campbell Hibbs has a Ph.D. in Biocultural Anthropology from Emory University and a B.S. in Anthropology from Kansas State University. Her research involves human interactions with the environment through food production and their impacts on health and well-being. Prior to her academic career, Dr. Campbell Hibbs worked on a specialty crops farm tending tomatoes, apples and a variety of cucurbits.

**Dr. Jerry Cherney**

E.V. Baker Professor of Agriculture
Crop & Soil Sciences
Cornell University
503 Bradfield Hall

306 Tower Road, Ithaca, NY 14853
P: 607-255-0945, E: jhc5@cornell.edu

Dr. Jerry Cherney received B.S. and M.S. degrees from the University of Wisconsin and a Ph.D. in Agronomy from the University of Minnesota. He has been on the

Cornell University faculty since 1990. His focus is on management and conversion of perennial grasses both as a forage crop and for biomass combustion. He is a Fellow of the American Society of Agronomy and the Crop Science Society of America. Dr. Cherney received the Crop Science Society of America Extension Education Award in 2008, and received the Agronomic Extension Education Award from the American Society of Agronomy in 2012.

**Dr. Thomas Coon**

Director
Extension
Michigan State University
446 West Circle Drive

108 Agricultural Hall, East Lansing, MI 48824
P: 517-927-5591, E: coontg@msu.edu

Dr. Thomas Coon is the Director of Michigan State University Extension (MSUE) and a Professor in the Michigan State University Department of

Fisheries and Wildlife. He provides strategic leadership and oversight for administration, policy and program development. He is working to improve external relations, build linkages across departments and colleges, diversify revenue sources, strengthen diversity and enhance scholarship for MSUE. Under his leadership, MSUE has undertaken a system wide redesign process that will enable the organization to focus its programming initiatives to meet Michigan's most pressing needs in these four key areas:

- Enhancing Michigan's First Green Industry: Agriculture & Agribusiness
- Preparing Michigan's Children & Youth for the Future
- Greening Michigan: Leveraging Natural and Human Assets for Prosperity
- Improving the Health & Nutrition of Michigan's residents

**Dr. Julie E. Doll**

Agroecology Outreach Specialist
W.K. Kellogg Biological Station
Michigan State University
3700 East Gull Lake Drive

Hickory Corners, MI 49060
P: 269-671-2266, E: jedoll@msu.edu

Since 2009, Dr. Julie E. Doll has been the Education and Outreach Coordinator for the Long-term Ecological Research Project at the Kellogg Biological Station,

Michigan State University. She develops programming for various stakeholders—including farmers, Extension Educators, policy makers, teachers, students and the general public—on ecology and field crop agriculture, with an emphasis on climate change. Previously, she worked as a Postdoctoral Research Associate and Graduate Research Assistant in the Agronomy Department at the University of Wisconsin-Madison. Her dissertation research investigated agronomic, ecological and social aspects of using native prairie grasses in grazed pastures. As a Peace Corps Volunteer in Paraguay from 2000–2002, Dr. Doll fell in love with working with farmers, grasslands and meeting the needs of people through improved agricultural production and care for the environment. She is passionate about strengthening the linkages between people, agriculture and the environment.

**Aluel Go**

Specialist
Biosystems & Agricultural Engineering
Michigan State University
Farrall Hall, 524 Shaw Lane

Room 120, East Lansing, MI 48824
P: 517-353-0643, E: goaluel@msu.edu

Aluel S. Go is a specialist in the Department of Biosystems and Agricultural Engineering, Michigan State University (MSU). He is a certified farm energy auditor

and manager of MSU's Farm Energy Audit and Certification Program. He coordinates Michigan State University Extension and Michigan Agricultural Energy Council (MAEC) efforts in energy efficiency, including working with utility providers regarding their Energy Optimization (EO) programs. Go developed technical materials and decision support tools for energy efficiency for the state of Michigan and other states in the North Central Region. He has worked with rural farmers and businesses to conduct energy audits and developed energy efficiency strategies, as well as evaluated alternative energy options in Michigan since 2005. Go has over 25 years of program and project management experience and over 20 years covering statewide and international projects. He helped develop and manage the comprehensive farm energy audit and certification program with partners in Nebraska, Minnesota, Wisconsin, Missouri, Nevada, Illinois, Indiana and Ohio. Go also leads a management team implementing several private foundation, state and federal projects involving farm/rural business energy audits, renewable energy assessments and renewable energy efforts.

**Charles Gould**

Extension Educator
Agriculture & Agribusiness
Michigan State University
12220 Fillmore Street

Suite 122, West Olive, MI 49460
P: 616-994-4580, E: gouldm@msu.edu

Since 2005, Charles Gould has focused on extracting energy from manure. He has particular expertise in the area of anaerobic digestion of manure. He is

working on developing affordable digesters for small and medium sized livestock and dairy operations. He co-authored the On-farm Anaerobic Digester Operator Handbook and has been the driving force behind developing the Michigan On-Farm Digester Operator Certification Program. Under his leadership, seven anaerobic digestion modules were developed for Extension Educators. These modules can be found at <http://fyi.uwex.edu/biotrainingcenter/>. To date, Gould has received over \$325,000 in grants to support projects related to energy production from manure and bioenergy crops, nutrient management, compost production and on-farm energy conservation. Some of the publications he has authored or co-authored can be found at <http://www.animalagteam.msu.edu/Home/tabid/151/Default.aspx> and <http://www.extension.org/>. Gould has been with Michigan State University Extension since 1995. He received his Bachelor's degree from Utah State University and his Master's degree from the University of Georgia.

**Mathew Haan**

Project Coordinator
W.K. Kellogg Biological Station
Michigan State University
3700 East Gull Lake Drive

Hickory Corners, MI 49060
P: 269-671-2360, E: haanm@msu.edu

Mathew Haan is currently the Project Coordinator for the Michigan State University Kellogg Biological Station Pasture Dairy Center. His duties include developing education programs for diverse audiences in dairy management, grazing and robotic milking technology. Haan has a B.S. in Animal Science and M.S. in Sustainable Agriculture and Animal Nutrition degrees from Iowa State University.





Kara Haas

Environmental Education Coordinator
W.K. Kellogg Biological Station
Michigan State University
3700 East Gull Lake Drive

Hickory Corners, MI 49060
P: 269-671-2510, E: karahaas@kbs.msu.edu

Kara L. Haas joined the Kellogg Biological Station team as Environmental Education Coordinator for the Kellogg Bird Sanctuary in October 2009. Haas

has a B.S. in Biology from Hope College and a Master's in the Practice of Teaching in Early Childhood Education from Western Michigan University. Her role at the sanctuary includes managing the day to day operations, teaching programs for children, families and adults and helping to fundraise and implement a long range strategic plan. Haas is an avid birder, and enjoys traveling and spending time with her family.



Dr. Emily Heaton

Assistant Professor
Agronomy
Iowa State University
1403 Agronomy Hall, Ames, IA, 50011

P: 515-294-1310, E: heaton@iastate.edu

Dr. Emily Heaton is an Assistant Professor of Agronomy focusing on the biomass crop production and physiology at Iowa State University (ISU). While pursuing her doctorate in Crop Sciences at the

University of Illinois, she pioneered and led research comparing the biomass production of Miscanthus and switchgrass in the U.S., research that indicated Miscanthus could produce 250% more ethanol than corn, without requiring additional land. Dr. Heaton joined ISU from Ceres, a plant genetics company in California that specializes in biomass crop breeding for fuel. Dr. Heaton remains actively involved with her family farm in Monticello, IL, which employs diverse agricultural activities ranging from rotational poultry grazing to biomass crop production for sustainable and profitable land management. At Iowa State, Dr. Heaton focuses on best management practices for perennial energy crops, with particular emphasis on Miscanthus and switchgrass.



Dr. Rafiq Islam

Program Director
Soil, Water & Bioenergy Centers
The Ohio State University South Centers
1864 Shyville Road, Piketon, OH 45661

P: 614-292-4900 ext. 147, E: islam.27@osu.edu

Dr. Rafiq Islam is the Soil and Water Quality Specialist at the Ohio State University South Centers at Piketon/ Ohio Agricultural Research and Development Center.

His research and extension interests focus on sustainable agriculture and ecosystems services; tillage, cover crops and soil quality; and marginal land and bioenergy feedstock production.



Kevin Kahmark

Research Assistant
W.K. Kellogg Biological Station
Michigan State University
3700 East Gull Lake Drive

Hickory Corners, MI 49060
P: 269-671-2330, E: kahmark@msu.edu

Kevin Kahmark is a Research Assistant at Kellogg Biological Station, Michigan State University. His investigations include research with greenhouse (GHG)

emissions and C and N biogeochemistry in agricultural landscapes. More specifically, Kahmark manages and designs the lab instrumentation and field instrumentation used to collect GHG emissions and general chemistry data from managed lands. He received his B.S. from Western Michigan University in Geology and Chemistry and has a degree in Nondestructive Engineering from Moraine Valley College near Chicago. Previously, Kahmark has worked in several university analytical chemistry laboratories, corporate environmental engineering research groups and the aerospace industry.



GLBRC/KBS LTER cellulosic biofuels
research experiment.



**Linda Kleinschmit**

Farmer & NCR-SARE Alumni
Extension Agricultural Engineering
University of Missouri
56149 Highway 12, Hartington, NE 68739
P: 402-254-3310, E: lindakl@ksu.edu

For the past 42 years, Kleinschmit has helped her husband, Martin, carry-on the family legacy: owning and operating the family farm he grew up on in Bow Valley, (northeast) Nebraska. The Kleinschmit's farm

has evolved into an organic farm, raising grass-fed beef. Over the years, Kleinschmit has been active in local, state and national farm, environmental and social justice organizations. She has been associated with NCR-SARE for over 10 years, serving on the Administrative Council, Chair for the 2006 National SARE Conference and Interim and Associate Professional Development Program Coordinator. Kleinschmit has recently retired in 2012, and is looking forward to spending more time with the five Kleinschmit children raised on the farm, including their very busy families; at last count, 11 grandchildren. Activism has always been an integral part of her life. Retirement will allow time and the freedom to advocate for sustainable agriculture and the issues that are critical for a just and holistic society for future generations.

**Dr. Justin Kunkle**

LTER Science Coordinator
W.K. Kellogg Biological Station
Michigan State University
3700 East Gull Lake Drive

Hickory Corners, MI 49060
P: 269-671-2359, E: kunkleju@msu.edu

Dr. Justin Kunkle is the Long-term Ecological Research (LTER) project Science Coordinator at Kellogg Biological Station. After receiving his B.A. in Biology

in 2000 at Franklin and Marshall College, Dr. Kunkle continued his education at Michigan State University, graduating with a Ph.D. in Forestry in 2008. Before joining the LTER staff, Justin worked in Hawaii as a post-doctoral research associate with the University of Minnesota.

**Dr. Neville Millar**

Senior Research Associate
W.K. Kellogg Biological Station
Michigan State University
3700 East Gull Lake Drive

Hickory Corners, MI 49060
P: 269-671-2534, E: millarn@msu.edu

Dr. Neville Millar is a Senior Research Associate at Kellogg Biological Station, Michigan State University. His research deals with greenhouse gas

(GHG) emissions and C and N biogeochemistry in managed lands. Currently, his work focuses on the effects of N management on nitrous oxide (N₂O) emissions from row-crops, with a particular emphasis on developing protocols and projects suitable for inclusion in U.S. and global carbon markets. Neville received his M.S. from the University of London and his Ph.D. from Imperial College London. Previously, he has worked in agroforestry systems on smallholder farms in Kenya, grasslands in Switzerland and wetlands in Alaska.

**Dr. Peter Motavalli**

Professor
Soil, Environmental & Atmospheric Sciences
University of Missouri
302 ABNR Building, Columbia, MO 65211

P: 573-884-3212, E: motavalli@missouri.edu

Peter Motavalli is a Professor in Soil Nutrient Management in the Department of Soil, Environmental and Atmospheric Sciences at the University of Missouri in Columbia, Missouri. He obtained his B.S. in Foreign Service from the Georgetown University School of

Foreign Service in 1978 and his M.S. degree in Soil Science in 1984 from the University of Wisconsin. His Ph.D. in Soil Fertility and plant nutrition was from Cornell University in 1989. Motavalli received a Fulbright-Hays Fellowship to work in Sudan from 1978 to 1979 and conducted his Ph.D. research at EMBRAPA's Savanna Center in Brazil. His professional experience includes work at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India, the Natural Resource Ecology Laboratory at Colorado State University and the University of Guam on the Pacific island of Guam, where he worked for four years. He started working at the University of Missouri in 1999. The emphasis of Motavalli's research is to determine the impact of soil amendments and agricultural management practices on plant productivity and the environmental fate of soil carbon and plant nutrients. His current research in Missouri is examining use of enhanced efficiency fertilizers to maximize nutrient use efficiency and reduce environmental contamination. He recently worked in Bolivia and Peru on a U.S. Agency for International Development-funded project determining the effects of climate change on soil degradation and developing alternative agricultural management practices that will assist in increasing soil productivity and reducing the impacts of climate change. He is also involved in a research partnership program with the University of the Western Cape in South Africa, where he has held a workshop on soil quality assessment methods.



**Dr. Dale Mutch**

Senior Extension Educator
Agriculture & Agribusiness
Michigan State University
612 East Main Street, Centreville, MI 49032
P: 269-467-5511, E: mutch@msu.edu

Dr. Dale Mutch has more than 32 years of research and Extension experience in organic farming, IPM, cover crops and sustainable agriculture. He helped establish and serves on the Executive committee of the Midwest Cover Crop Council (MCCC). He has served on the NCR-SARE

Administrative Council, Technical Committee and the Farmer/Rancher Grants Program. In July 2007, Dr. Mutch became Michigan's Sustainable Agriculture State Coordinator for NCR-SARE. His career emphasis has been on low-input and organic farming systems. His applied research focuses on participatory projects that use farmer advisory teams to direct and validate the work. Recent Extension publications include Integrated Weed Management: Fine Tuning the System (E-3065); Building a sustainable future: Ecologically based farming systems (E-2983); Integrated weed management: One year's seeding...(E-2931); No-till drilling cover crops after wheat harvest and their influence on next season's corn (E-2897); Cover crop choices for Michigan vegetables (E-2896); Cover crop choices for Michigan (E-2884); Oilseed radish, a new cover crop for Michigan (E-2907); Michigan field crop pest ecology and management (E-2704); and Michigan field cropecology (E-2646).

**Dr. Robert Myers**

Regional Director
Extension Programs
NCR-SARE
238 Ag. Engineering Building
University of Missouri, Columbia, MO 65211
P: 573-882-1547, E: myersrob@missouri.edu

Dr. Rob Myers currently serves as Professional Development Program Coordinator and Regional Extension Director for the USDA North Central Region

Sustainable Agriculture Research and Education (SARE) program. Dr. Myers manages competitive grants for extension funding and also state extension programs on sustainable agriculture across the 12-state North Central Region. He holds an appointment as an Adjunct Associate Professor of Plant Science at University of Missouri. He was previously founder and director of the Jefferson Institute, a nonprofit agriculture education institute based in Columbia, Missouri. From 1995-1997, Dr. Myers served as National Program Leader for Sustainable Agriculture and National SARE Director at USDA-CSREES in Washington, D.C. He did his graduate work at University of Minnesota, obtaining M.S. and Ph.D. degrees in agronomy. Following completion of his Ph.D., he served as a Congressional Science Fellow, working on the U.S. House of Representatives Agriculture Committee in 1988-89. He then spent five years as a faculty member in agronomy at University of Missouri. He grew up on a family farm in central Illinois and attended Illinois State University as an undergraduate in agricultural science.

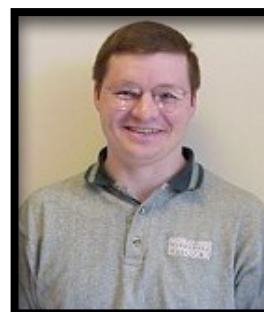
**Dr. Tapan Pathak**

Extension Educator-Climate Variability
School of Natural Resources
University of Nebraska-Lincoln
716 Hardin Hall

3310 Holdrege Street, Lincoln, NE 68583
P: 402-472-1483, E: tpathak2@unl.edu

Dr. Tapan Pathak is the Extension Educator for Climate Variability in the School of Natural Resources at the University of Nebraska-Lincoln. His current work

responsibilities include application of climate variability and climate change science to communicate risks, adaptation and mitigation strategies to diverse clientele across the state of Nebraska. Prior to joining the University of Nebraska, Dr. Pathak finished his Ph.D. at the University of Florida. His dissertation was focused on forecasting cotton yield in the southeastern United States using climate forecasts, climate indices and crop simulation model. Dr. Pathak finished his M.S. from Utah State University, where his research work was focused on validating an existing potato yield model and processing of airborne multispectral remote sensing imagery for various agricultural assessments.

**Dennis Pennington**

Senior Bioenergy Extension Educator
Agriculture & Agribusiness
Michigan State University
206 West Court Street, Hastings, MI 49058

P: 269-838-8265, E: pennin34@msu.edu

Dennis Pennington has been employed with Michigan State University Extension (MSUE) for 15 years. He spent 11 years as County Agriculture and Natural Resources Educator in Barry County, where his work focused on field and forage crop production, farm financial management and land use education. In February 2008, Pennington became a Bioenergy Educator. As the new Bioenergy Educator, Dennis has partnered with the Great Lakes Bioenergy Research Center and has been involved in several on farm research and demonstration projects. Pennington believes that agriculture has great potential in future production of both food and fuel. He received both his Bachelor and Master of Science degrees in the Crop and Soil Sciences Department from Michigan State University. Pennington is committed to excellence and strives to fulfill the MSUE mission by bringing science-based information and knowledge to critical needs and issues.

**Dr. Cheryl Peters**

Evaluation Specialist
Extension
Michigan State University
446 West Circle Drive

Agriculture Hall, Room 11, East Lansing, MI 48824
P: 989-351-0980, E: cpeters@anr.msu.edu

Dr. Cheryl Peters is an Evaluation Specialist with Michigan State University Extension (MSUE). Her work is part of the Organizational Development team under

the Director's office and she works with faculty and staff across all programming areas, which includes agriculture, community development, youth development and health. She was formerly a County Extension Director and Educator with MSUE. Before employment with MSUE, Cheryl was on faculty at Oregon State University as an Extension Evaluation Specialist on grant funded programs.

**Michael Plumer**

Consultant
Conservation Agriculture
333 Junction Falls Road
Creal Springs, IL 62922

P: 618-364-2219, E: plumermike@gmail.com

Michael Plumer is currently a consultant with Conservation Agriculture in the U.S. and internationally. Plumer has experience in programming, not only nationally, but in over 10 countries. He is also

Coordinator of the Illinois Council on Best Management Practices. Plumer is conducting programming and research in cover crops, conservation and watershed water quality issues. Plumer received a B.S. in agricultural science at the University of Illinois (Gamma Sigma Delta) and an M.S. in plant and soil science at the Southern Illinois University. Plumer was an Extension Educator with the University of Illinois Extension in Agriculture and Natural Resources for over 34 years.

**Dr. Linda Prokopy**

Associate Professor
Forestry & Natural Resources
Purdue University
195 Marsteller Street

West Lafayette, IN 47907
P: 765-496-2221, E: lprokopy@purdue.edu

Dr. Linda Stalker Prokopy is an Associate Professor in the Department of Forestry and Natural Resources at Purdue University. She is the Project Director for the

USDA-NIFA funded project Useful to Usable: Transforming Climate Variability and Change Information for Cereal Crop Producers. She considers herself to be an interdisciplinary social scientist with an academic background in environmental planning. She has over 30 peer-reviewed publications covering a variety of topics, but with an emphasis on the social dimensions of watershed management.

**Dr. Donald Reicosky**

Soil Scientist
Emeritus
USDA-ARS
24 Brook Street, Morris, MN 56267

P: 320-589-2069, E: don.reicosky@gmail.com

Dr. Donald C. Reicosky is a retired Soil Scientist for the USDA-ARS, North Central Soil Conservation Research Laboratory in Morris, Minnesota, and Adjunct Professor in the Soil Science Department of University of

Minnesota, St. Paul. His research involved describing crop response and water use on conventional till and no-till systems with and without irrigation. Dr. Reicosky's more current research focuses on tillage and residue management as related to global change issues with an emphasis on measuring gaseous losses of soil carbon following intensive tillage with a portable chamber. The short-term tillage-induced losses after moldboard plowing can help explain the long-term decline in soil carbon associated with intensive cropping. These results suggest need for improved conservation agriculture methods for enhancement of the soil resource and environmental quality.



Dr. Philip Robertson

Professor
W.K. Kellogg Biological Station &
Department of Plant, Soil & Microbial Sciences
Michigan State University

3700 East Gull Lake Drive, Hickory Corners, MI 49060
P: 269-671-2267, E: robert30@msu.edu

Dr. Philip Robertson is University Distinguished Professor of Ecosystem Science in the Department of Crop and Soil Sciences at Michigan State

University (MSU), with which he has been associated since 1981. Since 1988, he has directed the National Science Foundation (NSF) Long-Term Ecological Research (LTER) Program in Agricultural Ecology at the Kellogg Biological Station, where he is a resident faculty member. He currently serves as chair of the U.S. LTER Network's Science Council and Executive Board. He is also program leader for sustainability research in the Department of Energy's Great Lakes Bioenergy Research Center. He has testified before the U.S. Senate Agriculture, Forestry, and Nutrition Committee and participated in briefings for the U.S. House and Senate Science and Technology and Agriculture Committees. He has also served as an editor for the journals Ecology, Ecological Monographs, Plant and Soil and Biogeochemistry. In 2003, he was elected a Fellow in the Soil Science Society of America. In 2005, he received MSU's Distinguished Faculty award. Dr. Robertson received his B.A. from Hampshire College and his Ph.D. in Biology from Indiana University.



Mark Seamon

Extension Educator
Agriculture & Agribusiness
Michigan State University
1 Tuscola Street, Suite 100, Saginaw, MI 48607

P: 989-758-2500, E: seamonm@msu.edu

Mark Seamon is currently an Extension educator for Michigan State University Extension (MSUE), where he focuses on bioenergy crop production and bioeconomy business development. He has been with MSUE for 14

years with a large part of that time working on field crop production programming. Seamon has a B.S. degree in Crop and Soil Sciences from Michigan State University. He lives in east central Michigan with his wife and three children.



Alan Sundermeier

OH SARE Co-Coordinator & Educator
Extension
Ohio State University
639 Dunbridge Road

Suite 1, Bowling Green, OH 43402
P: 419-354-9050, E: sundermeier@osu.edu

Alan Sundermeier is the Ohio State University Extension Educator in Wood County, Ohio. He is also the Co-coordinator of the Ohio SARE program.

Sundermeier and conducts certified organic grain and cover crop research.



Dr. Sara Parr Syswerda

Coordinator
KBS K-12 Partnership
Michigan State University
3700 East Gull Lake Drive

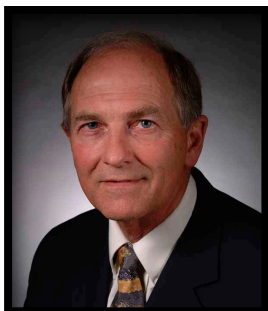
Hickory Corners, MI 49060
P: 269-671-5117, E: parrsar1@msu.edu

Sara Parr Syswerda is a scientist and educator at Kellogg Biological Station (KBS). Originally from Indiana, Syswerda received her undergraduate education at Cornell University, where she did research in chemical ecology and horticulture. She also worked on the student organic farm. Syswerda then came to Michigan State University for her graduate program, where she worked on the Long-Term Ecological Research site at KBS. Syswerda continued to work at KBS after receiving her Ph.D., and she is now running the KBS K-12 Partnership. She also conducts research focusing on ecosystem services from agriculture, as well as education research about how students learn science.



Native prairie plants being studied as cellulosic biofuel crops at the GLBRC/KBS LTER.



**Dr. Eugene Takle**

Professor
Agronomy
Iowa State University
3013 Agronomy Hall, Ames, IA 50011
P: 515-294-9871, E: gstakle@iastate.edu

Dr. Gene Takle is Professor of Agricultural Meteorology in the Department of Agronomy and Director of the Climate Science Program within the Bioeconomy Institute at Iowa State University. He also holds faculty appointments in the

Department of Geological and Atmospheric Sciences and the Department of Aerospace Engineering. His research includes studies of US regional climate by use of regional climate models. Professor Takle is a member of the multi-institutional team that has produced regional scenarios of future climates under the North American Regional Climate Change Assessment Program. He has conducted peer-reviewed research on climate change impacts on streamflow, water quality, rainfall spectra, tile drainage, soil carbon, mycotoxin in corn, wind energy resources, solar energy resources, roadway design and building design. He also leads a team of researchers from several national laboratories and universities that is conducting a multi-year measurement program to assess microclimate and agronomic influences of a 200-turbine Iowa wind farm. He has been a contributing author and reviewer on the IPCC and U.S. Climate Change Science Program reports and currently serves as Coordinating Lead Author of the agriculture Chapter for the National Climate Assessment. He is a Fellow of the American Meteorological Society and serves on the Board of Trustees for the University Corporation for Atmospheric Research.

**J. Alan Weber**

Vice-President
MARC-IV
3801 Bray Court
Columbia, MO 65203
P: 573-268-6502, E: aweber@marciv.com

Mr. Alan Weber is a founding partner of MARC-IV, a consulting company that specializes in the development of industrial products from agricultural resources. Active with biodiesel commercialization activities since 1991, Weber assisted with the establishment of the National Biodiesel

Board's (NBB) Washington, D.C. office in 2006-07 and continues to provide economic and technical support to their efforts. He currently leads industry feedstock development efforts to increase raw material sources such as algae, jatropha, minor oilseeds such as winter canola and camelina, halophytes and traditional oilseed commodities. In addition to his activity with MARC-IV, Weber is actively engaged with the management and operation of an 875-acre family farm in central Missouri. Weber was recently appointed by the U.S. Secretaries of Agriculture and Energy to serve on the Biomass Research & Development Initiative Technical Advisory Committee. He also serves on the Industry External Advisory Board for the National Alliance for the Advancement of Biofuels and Bioproducts, an industry consortium formed to develop economic algal biofuels. Weber is a recipient of the 2007 NBB's Outstanding Service Award and the NBB Industry Outstanding Commitment Award in 2000. Weber completed his undergraduate and graduate training in Agricultural Economics at the University of Missouri.

**Molly Woloszyn**

Extension Climatologist
Midwestern Regional Climate Center &
Illinois-Indiana Sea Grant
2204 Griffith Drive, Champaign, IL 61820
P: 217-244-7612, E: mollyw@illinois.edu

Molly Woloszyn is the Extension Climatologist for the Midwestern Regional Climate Center and Illinois-Indiana Sea Grant, which are both a part of the University of Illinois at Urbana-Champaign. As the Extension Climatologist for both programs, Woloszyn is responsible for communicating climate-related information to various audiences throughout the Midwest. Woloszyn's educational background includes a Master of Science in Atmospheric Science from Colorado State University and a Bachelor of Science in Meteorology from Northern Illinois University. Prior to being an extension climatologist, Woloszyn was an Earth Science instructor at community colleges in Oklahoma and Illinois.

**Dr. Lois Wright Morton**

Professor
Department of Sociology
Iowa State University
317C East Hall, Ames, IA 50011
P: 515-294-2843, E: lw Morton@iastate.edu

Dr. Lois Wright Morton is not only a Professor of Sociology, but also a Sociology Extension Program Coordinator and the Project Director for Heartland Regional Water Coordination Initiative, Iowa State University Iowa Learning Farms, Extension Performance-Based Farmer-Led Watershed Management Program and the USDA-NIFA Climate Change, Mitigation and Adaptation in Corn-based Cropping Systems Coordinated Agricultural Project (CAP). Her research and Extension programs center on agriculture and natural resource management: water quality, farmer conservation management decision-making, grassland biodiversity management on working agricultural lands, and farmer response and adaptation to long-term weather patterns using a suite of ecological, agronomic and engineering approaches. Dr. Wright Morton's overall goal is to integrate research and Extension into a seamless effort whereby each informs the other iteratively. The theoretical framework for this integration centers on social relationships, civic structure and citizen discovery of new knowledge that strengthens the problem solving capacity of leaders and citizens of communities and organizations. Civic structure refers to the capacity and ability of local citizens to work together to exert leadership on behalf of the community interest and to guide group decision making in the allocation of resources and joint actions to solve shared problems. Extension programming and educational activities are used to translate and interpret research for individuals and groups so they can evaluate and apply sound social science findings to motivate and direct their own missions, goals and actions.

Farmer Panel



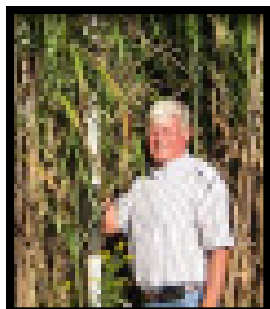
John Burk

Farmer
Burk Farms
812 Salzburg Road
Bay City, MI 48706

P: 989-245-9972, E: sunriseside31@hotmail.com

On 2,500 acres, Burk Farms specializes in sugar beets, corn, white wheat and soybeans. Over the years, Burk Farms has begun using a variety of different soil sampling, fertilizer techniques and conservation

practices. On some of the sugar beet fields with lighter soils, no-till is used to prevent the wind from blowing out the crop and maintains a mulch to hold in moisture. Since 2000, the use of cover crops has improved the soil a great deal and helped increase sugar beet and corn yields dramatically. Many of the farm's drainage ditches are not set up on slopes, causing erosion. To fix the problem, an erosion control structure has been built. It returns sediments back into the fields and prevents it from washing into drainage ditches. Burk Farms is run by John Burk, who first began his farming career in 1990. This year, Burk Farms is celebrating its centennial birthday. Happy 100th!



John Caveny

Farmer
Caveny Farm
1999 North 935 East Road
Monticello, IL 61856

P: 217-762-7767, E: soilsteward@prairiein.net

Caveny Farm, established in 1987, is around 50 acres of owned and rented land in Central Illinois managed by John Caveny. Prior to that, Caveny managed a conventional farm, growing corn, soybeans, hay and

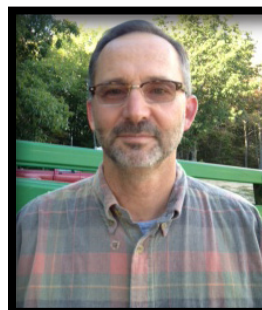
raised and fattened cattle. Caveny has more than 40 years of experience, with a focus on grass and animal-based agricultural production systems that produce food and energy. Caveny's business plan is to turn "grass into cash." The farm is seeded to cool season perennial grasses, which produce feed and the perennial warm season energy grass *Miscanthus x giganteus*, which produces bedding and ultimately fuel. These grasses support the farm's heritage poultry enterprise and its flock of Katahdin sheep. Quantifiable carbon is sequestered from these activities. The oldest on-farm research plot for *Miscanthus* in the United States is located on the farm. Like other farmers, Caveny's goal is to create an environmentally and economically sustainable farming operation: "Our farm produces blue sky, green grass, fresh air and good food for the long haul." For more information on the Caveny Farm, visit its website at www.cavenyfarm.com and sister site, www.agricarbon.com.



Martin Kleinschmit

Farmer & Consultant
Nebraska Sustainable Agriculture Society
Farmers Union
56149 Highway 12, Hartington, NE 68739
P: 402-254-7310, E: martink@hartel.net

Martin Kleinschmit has a 380-acre organic farm (since 1993) dedicated to livestock and machinery. In 1971, when Kleinschmit started farming, he began to transition from a commodity livestock grain farm; one that sold milk, pork and grain-fattened beef, to one that grows organic grains, supports a small 30-head grass-fed beef herd and grass-fattens about 120 head of yearlings a year. All the grassland acres on the farm were crop fields at one time, but now they are in a recovery phase; in grass to grow cattle and to rebuild the soil carbon reserves. Currently, the milk barn is vacant and used for sorting cattle, and the hog barn is storage and in the process of being renovated for a solar array factory. The chicken coop is used to store an antique car and other supplies, while the machine shed is full of unused, outdated machinery. The silos are empty and are also unused. Kleinschmit is retired and mentors a young farmer in organic production and grass management. The mentee rents the 190-acre pasture, as well as 125 acres of organic grain, while Kleinschmit controls 80 acres of pasture and his Low-Line Angus and Murray Grey cattle.



Jim Laubach

Farmer
Laubach Orchards
10195 Dymond Road
Honor, MI 49640

P: 231-645-7306, E: jlaubach@centurytel.net

Laubach Orchards was established in 1912 and specializes in growing tart cherries. Jim Laubach and his wife, Sally, grow 25 acres of tart cherries and manage 185 acres of sprawling open fields and woodlands. When Jim and Sally first started farming 33 years ago, they wanted to build the orchard as a family farm. Since then, however, they have maintained the orchard as a part-time farm and developed an integrated pest management consulting business, which works with other fruit growers in northwest Michigan. Their business, HortSystems, works with about 20 fruit growers each growing season and has collaborated with Michigan State University on many fruit-related research projects. Unfortunately for Laubach, most of his crop was lost this year due to the odd season and subsequent weather. This season, Laubach Orchards was hit with two-feet of snow in six hours! Facing challenge after challenge, including extreme cold temperatures and droughts, Laubach is looking forward to the upcoming year.



Henry Miller

Farmer
Miller Farms
17613 Fairchild
Constantine, MI 49042
P: 269-716-6452, E: villamil@net-link.net

Miller Farms was first established in 1977 with a heavy focus on corn and conventional tillage. However, over the years they have since turned to rotations and a diversified crop mix, including cover crops. Miller Farms

has approximately 2,000 acres. Corn is grown on 1,000 acres, while the rest is divided among soybeans, wheat and green beans. The business produces seeds for Pioneer Hi-Bred International, Inc., the world's leading company that develops, produces and sells high-yielding corn, sorghum, sunflower, alfalfa, canola and wheat seeds to farmers in more than 90 countries. Strip tilling, along with no-till methods, is practiced on Miller Farms. Owner Henry Miller grew up on a farm and started farming part-time on his own in 1975. Two years later, he bought the land that is now known as Miller Farms. Most of Miller's farmland has a conservation easement, meaning it will remain farmland and open space.



Thomas Nelson

Farmer
Nelson Farms
7530 Madison
Elwell, MI 48832
P: 989-560-1303

A family operation since 1945, Nelson Farms is located in mid-Michigan and is an organic farm. In 1996, Nelson Farms made the slow transformation from conventional to organic. Thomas Nelson, who took

over the farm in 1973, noticed a growth in the organic market and found its marketing opportunities alluring and interesting. He also saw the changeover to organic as an alternative to handling pesticides and herbicides. On 725 acres, some of which is leased, Nelson Farms grows a wide variety of crops; yellow corn, food-grade soybeans, edible beans (such as navy beans), wheat, peas and green beans. Nelson utilizes crimson clover on the farm as a cover crop.



Jamie Scott

Farmer
Scott Farms
& Scott's Cover Crops
6914 E. 200 South, Pierceton, IN 46562
P: 574-551-1267, E: jascfarm@aol.com

Scott Farms has been a family farm for generations, beginning with Jamie Scott's grandfather, Morris Scott. Scott began farming around 3-years-old and has been heavily involved in the family business his entire life.

Spread across 2,000 acres, Scott Farms harvests corn, beans and alfalfa hay. The farm originally used conventional tillage, but now is 100% no-till. In addition, the use of cover crops has become one of Scott Farms' biggest priorities. Scott began his own side business, Scott's Cover Crops, which now spends more than two months a year doing aerial seeding. This year, Scott's Cover Crops has distributed seeds on 80,000-100,000 acres. Scott strongly believes in conservation, in doing his part to protect the environment and in saving his land for future generations to come.

From top left, clockwise: Kleinschmit's farm building site, Miller's soybean and rye crops and Caveny Farm.



NCR-SARE State Participants

Illinois



Dr. Ted Funk

Extension Specialist
Agricultural & Biological Engineering
University of Illinois at Urbana-Champaign
332E AESB, 1304 West Pennsylvania Avenue, MC-644, Urbana, IL 61801

P: 217-333-9313, E: funkt@illinois.edu



Kerry Goodrich

State Resource Conservationist
USDA-NRCS (Natural Resources Conservation Science)
2118 West Park Court
Champaign, IL 61821

P: 217-353-6640, E: kerry.goodrich@il.usda.gov



Dr. Dokyoung Lee

Assistant Professor
Department of Crop Sciences
University of Illinois
1102 South Goodwin Avenue, Turner Hall, S-320, Urbana, IL 61801

P: 217-333-7736, E: leedk@illinois.edu



Gary Letterly

Extension Educator
Environmental & Energy Stewardship
University of Illinois
1120 North Webster Street, Taylorville, IL 62568

P: 217-246-3565, E: letterly@illinois.edu



John Pike

Extension Educator
Local Food Systems & Small Farms
University of Illinois
402 Ava Road, Murphysboro, IL 62966

P: 618-687-1727, E: jpike@illinois.edu



Dr. Thomas Voigt

Associate Professor
Crop Sciences
University of Illinois
1102 South Goodwin Avenue, Urbana, IL 61801

P: 217-333-7847, E: tvoigt@illinois.edu



Dr. Richard Weinzierl

IL SARE Coordinator & Extension Entomologist Specialist
Crop Sciences
University of Illinois
1102 S. Goodwin Ave., Urbana, IL 61801

P: 217-244-2126, E: weinzierl@illinois.edu

Indiana



Roy Ballard

IN SARE Coordinator & Purdue Extension Educator
Agriculture & Natural Resources
Purdue University
802 North Apple Street, Greenfield, IN 46140

P: 317-642-6566, E: rballard@purdue.edu



Tony Bailey

Conservation Agronomist
USDA-NRCS (Natural Resources Conservation Science)
6013 Lakeside Boulevard
Indianapolis, IN 46278

P: 317-295-5845, E: tony.bailey@in.usda.gov



Kenneth Eck

Extension Educator
Agriculture & Natural Resources
Purdue University
1482 Executive Boulevard, Suite A, Jasper, IN 47546

P: 812-482-1782, E: kjeck@purdue.edu



Edward Farris

Extension Educator
Agriculture & Natural Resources
Purdue University
354 North Jefferson Street, Suite 202, Huntington, IN 46750

P: 260-358-4826, E: emfarris@purdue.edu



Michael O'Donnell

Extension Educator
Agriculture & Natural Resources
Purdue University
100 West Main Street, Room 202, Muncie, IN 47305

P: 765-747-7732, E: modonnel@purdue.edu



Bryan Overstreet

Extension Educator
Agriculture & Natural Resources
Purdue University
2530 North McKinley Avenue, Suite 1, Rensselaer, IN 47978

P: 219-866-5741, E: boverstreet@purdue.edu



Hans Schmitz

Extension Educator
Agriculture & Natural Resources
Purdue University
203 South Prince Street, Suite B, Princeton, IN 47670

P: 812-385-3491, E: hschmitz@purdue.edu

Iowa



Aaron Andrews

Field Coordinator
Agricultural & Biosystems Engineering
Iowa Learning Farms & Iowa State University
100 Davidson Hall, Ames, IA 50010

P: 515-294-4922, E: andrews1@iastate.edu



Martin Adkins

State Resource Conservationist
USDA-NRCS (Natural Resources Conservation Science)
210 Walnut Street
693 Federal Building, Des Moines, IA 50309

P: 515-323-2211, E: martin.adkins@ia.usda.gov



Jamie Benning

Extension Watershed Specialist
Sociology
Iowa State University
317A East Hall, Iowa State University, Ames, IA 50011

P: 515-294-6038, E: benning@iastate.edu



Jill Euken

Deputy Director
Bioeconomy Institute
Iowa State University
1140D BRL, Iowa State University, Ames, IA 51544

P: 515-294-6286, E: jeuken@iastate.edu



Andrew Larson

IA SARE Coordinator & Small Farms Specialist
Extension & Outreach
Iowa State University
2013 Agronomy Hall, Iowa State University, Ames, IA 50011

P: 515-294-5875, E: allarso1@iastate.edu



Jeri Neal

Program Leader
Ecological Systems & Research
Leopold Center for Sustainable Agriculture
209 Curtiss Hall, Iowa State University, Ames, IA 50011

P: 515-294-5610, E: wink@iastate.edu



Dana Petersen

Program Coordinator
Iowa State Farm
Extension to Agriculture, Iowa State University
214C Davidson Hall, Ames, IA 50011

P: 515-294-533, E: petersen@iastate.edu

Kansas



Dr. Charles Barden

Extension Forester
Horticulture, Forestry & Recreation Resources
Kansas State University
2021 Throckmorton-HFRR, Manhattan, KS 66506

P: 785-532-1444, E: cbarden@ksu.edu



Dr. Amber Campbell Hibbs

Project Coordinator
Central Great Plains Climate Education Partnership
2714 Throckmorton
Manhattan, KS 66502

P: 785-532-3037, E: archibbs@ksu.edu



Kerri Ebert

KS SARE Coordinator & Coordinator of the Kansas Center
for Sustainable Agriculture & Alternative Crops
KSU Biological & Agricultural Engineering
129 Seaton Hall, Manhattan, KS 66506

P: 785-532-2976, E: kebert@k-state.edu



Mary Fund

Water & Resource Coordinator
Kansas Rural Center
304 Pratt, PO Box 133
Whiting, KS 66552

P: 785-873-3431, E: ksrc@rainbowtel.net



Nicholas Levendofsky

Special Projects Coordinator
Kansas Farmers Union
206 Washington Avenue
Republic, KS 66964

P: 785-361-2100, E: kfu.nick@gmail.com



Dr. Peter Tomlinson

Assistant Professor & Extension Specialist
Agronomy
Kansas State University
2013B Throckmorton Plant Sciences Center, Manhattan, KS 66502

P: 785-532-3198, E: ptomlin@ksu.edu



Donn Teske

Farmer
Kansas Farmers Union
17925 Goldenbelt Road
Wheaton, KS 66521

P: 785-770-0336, E: dteske@bluevalley.net

Michigan



Beth Bishop

Enviro-weather Coordinator
Michigan State University
1129 Farm Lane
East Lansing, MI 48825

P: 517-432-6520, E: bishopb@msu.edu



Christina Curell

Extension Educator
Agriculture & Agribusiness
Michigan State University
915 Michigan Avenue, Baldwin, MI 49304

P: 231-745-2732, E: curellc@anr.msu.edu



Dr. John Durling

Agronomist
USDA-NRCS (Natural Resources Conservation Science)
7472 Stoll Road
East Lansing, MI 48823

P: 517-641-6300, E: john.durling@mi.usda.gov



Paul Gross

Extension Educator
Agriculture & Agribusiness
Michigan State University
200 North Main Street, Mt. Pleasant, MI 48858

P: 989-772-0911 ext. 302, E: grossp@msu.edu



Dr. Nikki Rothwell

Northwest Michigan Horticultural Research Station (NWMHRS) Coordinator
& Extension Educator, Agriculture & Agribusiness
Michigan State University
6686 South Center Highway, Traverse City, MI 49684

P: 231-946-1510, E: rothwel3@msu.edu



Mark Seamon

Extension Educator
Agriculture & Agribusiness
Michigan State University
1 Tuscol Street, Suite 100, Saginaw, MI 48607

P: 989-758-2503, E: seamonm@msu.edu



Marilyn Thelen

Extension Educator
Agriculture & Agribusiness
Michigan State University
100 East State Street, Suite G100, St. Johns, MI 48879

P: 989-227-6454, E: thelen22@anr.msu.edu

Minnesota



Joel Haskard

Co-Director
Clean Energy Resource Teams (CERTs)
University of Minnesota
411 Borlaug Hall, 1991 Upper Buford Circle, St. Paul, MN 55108

P: 651-239-2687, E: haska004@umn.edu



Julia Olmstead

Senior Associate
Institute for Agriculture & Trade Policy
2105 First Avenue South
Minneapolis, MN 55404

P: 651-270-1505, E: julia@iatp.org



Jill Sackett

Extension Educator & Conservation Agronomist
Agronomy & Plant Genetics
University of Minnesota
1243 Lake Avenue, Suite 222, Fairmont, MN 56031

P: 507-238-5449, E: sacke032@umn.edu



Kate Seager

MN SARE Coordinator
NCR-SARE
411 Borlaug Hall
1991 Upper Buford Circle, St. Paul, MN 55108

P: 612-625-8235, E: kseager@umn.edu



Betsy Wieland

MN SARE Co-Coordinator
NCR-SARE
701 4th Avenue South
Suite 700, Minneapolis, MN 55415

P: 612-369-9267, E: eliza003@umn.edu



Gary Wyatt

Extension Educator
Food Agriculture & Natural Sciences
University of Minnesota
1961 Premier Drive, Suite 110, Mankato, MN 56001

P: 507-389-6748, E: wyatt@umn.edu



Dr. Diomy Zamora

Extension Educator & Associate Extension Professor
Natural Resource Management & Utilization
University of Minnesota
1530 Cleveland Avenue North, St. Paul, MN 55108

P: 612-626-9272, E: zamor015@umn.edu

Missouri



Don Day

Extension Associate (Energy)
College of Agriculture, Food & Natural Resources
University of Missouri
2-28 Agricultural Building, Columbia, MO 65211

P: 573-823-1570, E: daydr@missouri.edu



Dan Downing

Water Quality Associate
Agricultural Engineering Extension
University of Missouri
205 Agricultural Engineering Building, Columbia, MO 65211

P: 573-882-0085, E: downingd@missouri.edu



Dr. Hamed El-Mashad

Assistant Professor
Biomass & Bioenergy Engineering
Lincoln University
904 Chestnut Street, Jefferson, MO 65211

P: 573-681-5963, E: el-mashadh@lincolnnu.edu



Matthew Herring

Agronomy/Natural Resources Specialist
Franklin County MU Extension Center
University of Missouri
116 East Main, Union, MO 63084

P: 636-583-5141, E: herringm@missouri.edu



Charles Ellis

Natural Resource Engineer
Lincoln County MU Extension Center
University of Missouri
880 West College, Troy, MO 63379

P: 636-528-4613, E: ellisce@missouri.edu



Debi Kelly

MO SARE Co-Coordinator
University of Missouri
234 Agricultural Engineering Building
Columbia, MO 65211

P: 573-808-6015, E: kellyd@missouri.edu



Dr. Hank Stelzer

State Forestry Extension Specialist
Forestry
University of Missouri
203 ABNR, Columbia, MO 65211

P: 573-882-4444, E: stelzerh@missouri.edu

Nebraska



Dr. Corey Brubaker

Nebraska State Conservation Agronomist
USDA-NRCS (Natural Resources Conservation Science)
100 Centennial Mall North
Room 152, Lincoln, NE 68508

P: 402-437-4164, E: corey.brubaker@ne.usda.gov



Karen DeBoer

Extension Educator
Panhandle Research & Extension Center
University of Nebraska
920 Jackson Street, P.O. Box 356, Sidney, NE 69162

P: 308-254-4455, E: kdeboer1@unl.edu



Francis John Hay

Extension Educator
Biological Systems Engineering
University of Nebraska-Lincoln
250 Chase Hall, Dept. of Biological Systems Engineering, Lincoln, NE 68583

P: 402-992-0947, E: jhay2@unl.edu



Mark Hinze

Extension Educator
Agronomy
University of Nebraska-Lincoln
3180 West U.S. Highway 34, Grand Island, NE 68801

P: 308-385-5088, E: mark.hinze@unl.edu



Dr. Gary Lesoing

NE SARE Coordinator
Southeast Research & Extension
University of Nebraska-Lincoln
1824 North Street, Suite 102, Auburn, NE 68305

P: 402-274-4755, E: glesoing2@unl.edu



Dr. Tapan Pathak

Extension Educator-Climate Variability
School of Natural Resources
University of Nebraska-Lincoln
716 Hardin Hall, 3310 Holdrege Street, Lincoln, NE 68583

P: 402-472-1483, E: tpathak2@unl.edu



Randy Pryor

Extension Educator
Lincoln Extension
University of Nebraska
Box 978, Wilber, NE 68465

P: 402-821-2151, E: randy.pryor@unl.edu

North Dakota



Roger Ashley

Area Extension Specialist/Cropping Systems
Dickinson Research Extension Center
North Dakota State University
1041 State Avenue, Dickinson, ND 58601

P: 701-690-7616 or 701-483-2348 ext. 106, E: Roger.Ashley@ndsu.edu



Craig Askim

Mercer County Extension Agent
Agriculture & Natural Resources
North Dakota State University
1400 Highway 49 North, Beulah, ND 58523

P: 701-873-5195, E: craig.askim@ndsu.edu



Annie Carlson

Executive Director
Foundation for Agricultural & Rural Resources
Management & Sustainability (FARRMS)
301 5th Avenue SE, Medina, ND 58467

P: 701-486-3569, E: acarlson@farrms.org



Chester Hill

Area Extension Specialist
Williston Research Extension Center
North Dakota State University
14120 Hwy 2, Williston, ND 58801

P: 701-774-4315, E: chet.hill@ndsu.edu



Christopher Augustin

Soil Health Area Extension Specialist
North Central Research Extension Center
North Dakota State University
5400 Highway 83 South, Minot, ND 58701

P: 701-500-7970, E: Chris.Augustin@ndsu.edu

Ohio



Anne Baird

Extension Educator
School of Environmental & Natural Resources
Ohio State University
2021 Coffey Road, Columbus, OH 43210

P: 614-292-8603, E: baird.41@osu.edu



Bruce Clevenger

Extension Educator
Extension Defiance County
Ohio State University
6879 Evansport Road, Suite B, Defiance, OH 43512

P: 419-782-4771, E: clevenger.10@osu.edu



James Hoorman

Assistant Professor
ANR & Extension
Ohio State University
220 West Livingston Street, Room B252, Celina, OH 45822

P: 419-421-7255, E: hoorman.1@osu.edu



Rafiq Islam

Program Director
Soil, Water & Bioenergy Resources
Ohio State University South Centers
1864 Shyville Road, Piketon, OH 45661

P: 614-292-4900 ext. 147, E: islam.27@osu.edu



Gregory LaBarge

Field Specialist
Agronomic Systems
Ohio State University Extension
222 West Center Street, Marion, OH 43302

P: 419-460-0600, E: labarge.1@osu.edu



Eric Romich

Field Specialist
Energy Development
Ohio State University Extension
1461 Mt. Vernon Avenue, Marion, OH 43302

P: 740-725-6317, E: romich.2@osu.edu



Alan Sundermeier

OH SARE Co-Coordinator & Extension Educator
Extension Wood County
Ohio State University
639 Dunbridge Road, Suite 1, Bowling Green, OH 43402

P: 419-354-9050, E: sundermeier.5@osu.edu

South Dakota



Laura Edwards

Extension Climate Field Specialist
Agriculture & Biosystems Engineering Extension
South Dakota State University
13 2nd Avenue Southeast, Aberdeen, SD 57401

P: 605-6262870, E: laura.edwards@sdstate.edu



Jesse Hall

Agriculture Extension & Research Assistant
Plant Science Department
South Dakota State University
312 Agriculture Hall, Box 2207A, Brookings, SD 57007

P: 605-690-3594, E: jesse.hall@sdstate.edu



Jeffrey Hemenway

Soil Quality Specialist
USDA-NRCS (Natural Resources Conservation Science)
Federal Building
200 4th Street Southwest, Huron, SD 57350

P: 605-352-1239, E: jeffrey.hemenway@sd.usda.gov



Paul O. Johnson

Extension Field Specialist
Plant Science
South Dakota State University
1910 West Kemp Avenue, Watertown, SD 57201

P: 605-882-5140, E: paulo.johnson@sdstate.edu



Dr. Jeppe Kjaersgaard

Assistant Professor
South Dakota Water Resources Institute
South Dakota State University
Box 2120, Brookings, SD 57007

P: 605-688-5673, E: jeppe.kjaersgaard@sdstate.edu



Dr. Peter Sexton

SD SARE Coordinator & Associate Professor
Plant Science Department
South Dakota State University
316 Agriculture Hall, Brookings, SD 57007

P: 605-691-1143, E: Peter.Sexton@sdstate.edu



Larry Wagner

Agronomy Crops Field Specialist
Plant Sciences Department
South Dakota State University
2001 East 8th Street, Sioux Falls, SD 57103

P: 605-782-3290, E: larry.wagner@sdstate.edu

Wisconsin



Valerie Dantoin

Farmer & Faculty
Organic & Sustainable Agriculture Trades
Northeast Wisconsin Technical College
2740 West Mason Street, Green Bay, WI 54307

P: 920-498-5568, E: valerie.dantoin@nwtc.edu



Jim Goodman

Farmer
NCR-SARE
East 103 City Highway Q
Wonewoc, WI 53968

P: 608-489-2291, E: r.j.goodman@mwt.net



Lee Jennings

Crops & Soils Educator
Cooperative Extension
University of Wisconsin
1 Fen Oak Court, Room 138, Madison, WI 53718

P: 608-224-3716, E: lee@countyofdane.com



Diane Mayerfeld

WI SARE Coordinator
University of Wisconsin Extension &
Center for Integrated Agricultural Systems (CIAS)
1535 Observatory Drive, Madison, WI 53706

P: 608-238-2223, E: dbmayerfeld@wisc.edu



Pamela Porter

Research & Outreach Specialist
University of Wisconsin
609 Riverside Drive
Madison, WI 53704

P: 608-575-2055, E: pporter@wbi.wisc.edu



Scott Sanford

Senior Outreach Specialist
Biological Systems Engineering
University of Wisconsin-Madison
460 Henry Mall, Madison, WI 53706

P: 608-262-5062, E: sasanford@wisc.edu



Gene Schriefer

Agriculture & Agribusiness Agent
Ag. Natural Resource Education
University of Wisconsin Extension
303 West Chapel Street, Dodgeville, WI 53533

P: 608-930-9850, E: gene.schriefer@ces.uwex.edu

SARE Regional Participants

North Central



Jean Andreasen

Executive Office Administrative Specialist
NCR-SARE
University of Minnesota
1390 Eckles Avenue, Suite 120, Saint Paul, MN 55108
P: 612-331-3113, E: jandreas@umn.edu



Dr. Beth Nelson

Director
Research & Education Programs
NCR-SARE
1390 Eckles Avenue, Suite 120, Saint Paul, MN 55108
P: 612-626-4436, E: schre002@umn.edu



Dr. Robert Myers

Regional Director
Extension Programs
NCR-SARE
238 Ag. Engineering Building, University of Missouri, Columbia, MO 65211
P: 573-882-1547, E: myersrob@missouri.edu

Northeast



Michael T. Keilty

Sustainable Food & Agriculture Educator
Extension
University of Connecticut
843 University Drive, Torrington, CT 06790
P: 860-567-8324, E: michael.keilty@uconn.edu



Violet Stone

New York State Coordinator
Northeast SARE
15A Plant Science
Cornell University, Ithaca, NY 14853
P: 607-255-9227 (w) or 607-339-5014 (c), E: vws7@cornell.edu

Southern



William Sheftall

Extension Agent IV-Natural Resources
Leon County Extension
University of Florida
615 Paul Russell Road, Tallahassee, FL 32301
P: 229-224-8470, E: sheftall@ufl.edu

Western



Al Kurki

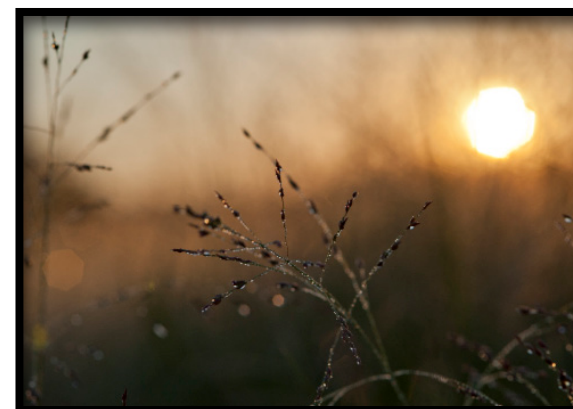
Associate Training Coordinator
Western SARE
1115 Stuart Street
Helena, MT 59601
P: 406-449-0104, E: alkurki@msn.com



Dr. Juliet Marshall

Associate Professor, Cereals, Pathology & Agronomy
Plant, Soils & Entomological Sciences, University of Idaho
Idaho Falls R&E Center, 1776 Science Center Drive
Suite 205, Idaho Falls, ID 83402
P: 208-390-4859, E: jmarshall@uidaho.edu

From left to right: Switchgrass at the GLBRC/
KBS LTER biofuels research site, organic
soybean field in the KBS LTER in late August
and miscanthus giganteus at the GLBRC/KBS
LTER biofuels research site.





Conference Planning & Staff-MSUE



Dr. Dean Baas

Senior Research Associate
Agriculture & Agribusiness Extension
Michigan State University
612 East Main Street, Centreville, MI 49032

P: 269-467-5646, E: baasdean@anr.msu.edu



Dr. Julie E. Doll

Agroecology Outreach Specialist
W.K. Kellogg Biological Station
Michigan State University
3700 East Gull Lake Drive, Hickory Corners, MI 49060

P: 269-671-2266, E: jedoll@msu.edu



Dr. Dale Mutch

Senior Extension Educator
Agriculture & Agribusiness
Michigan State University
612 East Main Street, Centreville, MI 49032

P: 269-467-5511, E: mutch@msu.edu



Thomas Rorabaugh

Program Assistant
Extension
Michigan State University
18207 Four Mile Road, Morley, MI 49336

P: 231-856-4372, E: rorabau1@msu.edu



Samantha Shaughnessy

Communications Coordinator
Extension
Michigan State University
Agriculture Hall, Room 11, East Lansing, 48825

P: 203-738-8041, E: shaugh17@msu.edu

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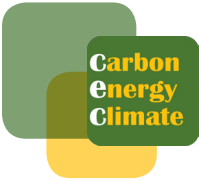
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Carbon, Energy & Climate Conference

