

### **Greg Roth**

Greg Roth, Professor of Agronomy and Extension grain crops specialist at Penn State, develops educational programs for extension agents, agribusiness groups and producers on timely issues such as managing crops during drought stress, GMO concerns, potential of specialty corn hybrids, managing for grain quality, organic grain production and producing corn for silage. A key research focus has been managing corn for silage production using different hybrids and management strategies on dairy farms. He is studying the potential of added value wheat and barley varieties to try to create more opportunities for crop producers in the state. During the past four years he has been working with a team to develop a machine to interseed cover crops into growing corn and this has been used in over a dozen states so far.

### **Scott Rushe**

A graduate of Penn State University with a BS in Agronomy, Scott has been employed in agriculture all of his life. His employment has taken him from working with West Coast seed companies where he developed distribution of their genetics, worked directly with their seed growers, and evaluated new genetics to his current position with Seedway. At Seedway Scott is responsible for providing technical knowledge to Seedway staff and customers, evaluating and selecting new genetics to market from New England to Florida, collaborating with Universities on research trials, and representing Seedway in numerous professional organizations. Scott has held positions with the Pennsylvania Ag Council, Pennsylvania Forage and Grassland Council, and now serves on the Working Board of the American Seed Trade Association's Cover Crop Group.

### **Matthew Ryan**

Matthew Ryan, agroecologist and Assistant Professor at Cornell University in the Section of Soil and Crop Sciences, conducts research on sustainable cropping systems with an aim to increase cropping system sustainability through ecological intensification. He works with farmers, students, and other scientists to evaluate cropping system performance in terms of crop yield, profitability, environmental impact, and resilience. His current focus is on expanding the utility of cover crops by overcoming obstacles that limit their adoption and developing management practices that maximize their benefits. He also works on perennial grains, organic weed management, conservation agriculture, agroecological theory, and the role of diversity in adapting to climate change.

### **Brandon Smith**

Brandon Smith is the Northeast Region Team Leader for the NRCS Soil Health Division. Prior to this he served as the State Agronomist for the NH NRCS, and was part of a team that developed a pilot approach for Soil Health Management Planning. He has provided leadership on implementing soil health assessment and management planning through NRCS programs to other Northeast NRCS and external partners in the region's varied production systems. He earned his Ph.D. from Cornell in 2006 and a M.S. and B.S. from the University of New Hampshire. He has extensive experience with mineral nutrition and root nutrient uptake mechanisms, pH and micronutrient interactions, organic production, cover cropping, and conservation tillage approaches.

### **Andrew Smyre**

Andrew Smyre is an agronomist for Perdue AgriBusiness, a division of the Perdue Company that specializes in sourcing, purchasing and processing grains, meals and blended feed ingredients, and high-quality oils for use in food and non-food industries. The company also provides agronomic consulting services and support to grain and specialty oilseed crop producers. Andrew graduated from Delaware Valley University in 2008 with a B.S. in Agronomy. After graduating, he worked on the family farm and lived in Alaska with his wife and two dogs.

### **Raymond Weil**

Ray Weil has taught soil science to over 6,000 students at the University of Maryland and abroad and has addressed over 4,000 farmers at meetings and field days. He has also brought an ecological approach to soil science with his textbook *The Nature and Properties of Soils*. He is a pioneer of sustainable agriculture and cover cropping systems. For the last decade, he and many of his graduate students have investigated various properties of forage radish as a cover crop.



## **Cover Crops for Soil Health: A Northeast SARE Professional Development Workshop March 29-31, 2016 Baltimore, Maryland**

### **Workshop and Field Day Speakers**

#### **Michel Cavigelli**

Michel Cavigelli is the Lead Scientist on the ARS Farming Systems Project (FSP), a long-term field cropping systems study evaluating the sustainability of no-till, conventional till, and organic cropping systems by measuring agronomic performance, nutrient dynamics, soil biological activity and community structure, and predicting the long-term sustainability of cropping systems. Dr. Cavigelli's research contributes to all areas of FSP research but his primary focus is on agronomic performance and C, N and P dynamics. Nutrient dynamics research currently includes measuring soil inorganic nitrogen dynamics, biogenic greenhouse gas (CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>) fluxes, soil and nutrient runoff potentials, and nitrate leaching potential. His goal is to better understand the factors controlling these dynamics and to incorporate these measurements into existing predictive models to help assess C, N and P budgets for the FSP cropping systems. Dr. Cavigelli also conducts research on an organic farm near Buckeystown, MD, to determine the effects of intensive tillage on soil quality and the appropriate greensand application rate to maintain adequate K for alfalfa production.

#### **Heather Darby**

Heather Darby is an agronomic and soils specialist for the University of Vermont Extension, with her MS from the University of Wisconsin in Agronomy and her Ph.D. in Crops and Soils at Oregon State University. Being raised on a dairy farm in Northwestern Vermont has also allowed her to play an active role in all aspects of dairy farming as well as gain knowledge of the land and create an awareness of the hard work and dedication required to operate a farm. These practical experiences complemented by her education have focused her attention towards sustainable agriculture and promotion of environmental stewardship of the land. Heather is involved with implementing many research and outreach programs in the areas of fuel, forage and grain production systems in New England. Outreach programs have focused on delivering on-farm education in the areas of soil health, nutrient management,

organic grain and forage production, and oilseed production. Research has focused on traditional and niche crop variety trials, soil management strategies and cropping systems development.

#### **Sjoerd Duiker**

Sjoerd Duiker is an Associate Professor of Soil Management and Applied Soil Physics. His specialization focuses on the effects of soil management practices on soil physical properties and processes. This includes the effect of no-tillage and tillage on soil physical properties, how soil compaction affects soil and crops, what effect crop rotation plays in maintaining soil quality, and the benefits and challenges of cover crops. The use of a systems approach to no-tillage, soil compaction and crop rotations is a crucial element in all of his work. Research takes place on Penn States research farms as well as in collaboration with farmers and field agronomists in Pennsylvania.

#### **Jeff Frey**

Jeff Frey is the owner/operator of Future View Farms in Willow Street, Pennsylvania where he grows 600 acres of corn and 200 acres of soybeans, and raises 4,000 finishing pigs.

#### **Ramona Garner**

Ramona Garner is the Plant Materials Specialist for the USDA Natural Resource Conservation Service's East National Technology Support Center in Greensboro, NC. She has worked in the NRCS Plant Materials Program for 25 years as both an agronomist and a center manager. Ramona is presently working with NRCS plant materials centers across the country to identify ways to improve our use of cover crops. A study at six centers extending from the east to west coast is evaluating seeding rates and species mixes and how they may influence soil health. Another study at 25 centers is evaluating the adaptability of 52 cultivars from 8 cover crop species. Ramona grew up on a family farm in Alabama and received her PhD in Agronomy from Clemson University.

### **Stuart Grandy**

Stuart Grandy is a professor at the University of New Hampshire where his research examines how soil organisms interact with their environment to regulate ecosystem processes such as nutrient cycling, organic matter turnover, trace gas emissions, and productivity. This research encompasses multiple spatial scales and lies at the interface of soil ecology, biogeochemistry, and ecosystem science. Much of his current work focuses in some capacity on the feedbacks between plants, organic matter dynamics, and soil biological communities. His research spans sites in the Northeast, Midwest, and West and includes different agriculture, forest, and mountain ecosystems.

### **Steve Groff**

Steve Groff grows 200 acres of grain crops, 30 acres of pumpkins, and 2 acres of high tunnel heirloom tomatoes at his Cedar Meadow Farm in Lancaster County, PA. Each year, he oversees hundreds of replicated research plots, focusing on the economics and nutritional influence of cover crops. He is a cover crop innovator who along with Dr. Ray Weil, was instrumental in developing the Tillage Radish over a 10 year period. Steve is currently transitioning to a more defined role of cover crop education and consulting utilizing the research and networking he's associated with.

### **Dean Hively**

Dean Hively is a Research Physical Scientist with the USGS Eastern Geographic Science Center, where he leads a task titled 'Understanding Agricultural Conservation Practices.' He is posted to the USDA Agricultural Research Service, Hydrology and Remote Sensing Laboratory where his research uses a combination of satellite and proximal multispectral and hyperspectral sensors, along with on-farm sampling and access to farm management records, to map and evaluate the plant biomass, nitrogen content, and vegetative ground cover associated with winter cover cropped fields. In addition, Dean is the lead for maintaining the USGS status as a Conservation Cooperator with the USDA, and coordinates the annual acquisition of privacy protected conservation data from USDA agencies and the production of aggregated datasets for public release. This information informs adaptive management of conservation resources by Chesapeake Bay Program Partners, and links the agricultural landscape to water quality outcomes by documenting the implementation and performance of conservation practices at the watershed scale.

### **Mitch Hunter**

Mitch Hunter is a PhD candidate in Agronomy at Penn State University working with Dr. David Mortensen to develop ecologically sound farming systems that are productive, economical, and workable for farmers. His current research focuses on using diverse cover crop "cocktails" to improve cropping system productivity, sustainability, and resilience in the face of challenging climatic conditions. He is investigating how cover crops affect the water relations of the following corn crop under drought, since drought is expected to become more frequent and severe under climate change. He is also assessing how cover crop cocktails can contribute to ecological weed management. Mitch draws inspiration from time spent working on Hunter family farms in Minnesota and Illinois and on ranches in California and Nevada. Prior to coming to Penn State he was the Federal Policy Manager with American Farmland Trust in Washington, DC, where he worked to promote on-farm conservation in the federal Farm Bill. He received a B.A. in Government from Harvard University following two years of liberal arts study, self-governance, and student labor at Deep Springs College.

### **Perry Lilley**

Perry Lilley is the owner/operator of Lilley Farms in Smyrna Mills, Maine. Perry is a dairy farmer who grows corn silage, soybeans, alfalfa-grass and small grains and rotates some land with potatoes. He has been a no-till farmer for more than 5 years.

### **Natalie Lounsbury**

Natalie Lounsbury is a PhD student at the University of New Hampshire and a part-time vegetable farmer in Maine. Prior to moving back to New England, she received her M.S. at the University of Maryland where she studied cover crops and reduced tillage in vegetable production systems.

### **Charles Martin**

Charles Martin is a grain and beef cattle farmer and equipment innovator in Loysville, PA. In addition to farming, Charles and his sons run a farm equipment fabrication and repair shop. Charles' patented helical roller planter attachment is now being commercially manufactured by Dawn Biologic as the ZRX crimper roller. This planter attachment enables no-till planting of grain crops directly into standing cover crops. Another equipment innovation from Charles is an in-crop highboy seeder for planting cover crops into standing corn.

### **Curtis Martin**

Curtis Martin is owner of Mid-Atlantic Planters and Equipment, LLC in Smithsburg, MD. Curtis's business specializes in sales of precision planting equipment, meter calibration and planter repair and maintenance.

### **Travis Martin**

Travis Martin- Equipment Territory Representative for DAWN Biologic, working to provide farmers with solutions to help maximize their cover cropping efforts. He has previously worked in the seed industry focused on research, education, and promotion of cover crops. Travis is committed to seeing an increase in soil health and cover cropping by continuing to equip the agricultural industry with information, the latest research and practical solutions. He enjoys partnering with others to eliminate barriers and promote innovative solutions.

### **Steven Mirsky**

Steven Mirsky is a Research Ecologist for the USDA-ARS in the Sustainable Agricultural Systems Laboratory, USDA-ARS -BARC Beltsville, Maryland. He conducts agro-ecological research in organic and sustainable cropping systems. His research focuses on evaluating cropping system sustainability including agronomic and environmental criteria. Steven conducts research on evaluating the multifunctional role of cover crops (weed control and Nitrogen scavenging and fertility) and their integration into agroecosystems for soil, crop, and weed management. Steven received his M.S. and Ph.D. from Pennsylvania State University.

### **Ronald Morse**

Ron Morse is emeritus professor at Virginia Tech whose major focus is cover crop-based conservation agriculture for small-scale vegetable farms. Areas of specialization include establishment and management of high-biomass cover crops to suppress weeds and supply nutrients for succeeding vegetable crops; integration of farmscapes (biostrips) and plant-diverse controlled-traffic beds to alleviate soil compaction, manage insect pests and improve soil and overall farm health; and development and refinement of small-farm equipment.

### **Rob Myers**

Rob Myers has been adjunct faculty in the Plant Sciences Division at the University of Missouri since 2001, with primary appointment as Regional Director of Extension Programs for the North Central Region SARE program, and coordinator of the regional SARE Professional Development Program. He administers competitive grants and state

funding for sustainable agriculture projects in 12 North Central states. His professional expertise encompasses sustainable agriculture, conservation, and cropping system diversification and he has conducted research and education programs with a number of alternative crops and cover crops. In 2013-14 he held a special appointment as Endowed Chair of Agricultural Systems through the University of Minnesota. He has contributed on national committees and councils addressing a number of federal research, education, and agriculture policy programs, including currently serving as Co-Chair of the National Working Group on Cover Crops and Soil Health.

### **Skip Paul**

Skip Paul, along with his wife Liz and son Silas, owns and operates Wishing Stone Farm in Little Compton, Rhode Island where they produce peaches, 35 acres of organic vegetables, eggs, honey, and value added products, which are all sold via CSA, wholesale and farmers markets. Skip has been experimenting with cover crops for over 30 years. The Paul's growing methods mirror their commitment to sustainable agriculture and the protection of open space, while providing food for our local communities. They started their farm in 1983 as early adopters of the organic movement where they adapt to weather conditions, farming trends, and community interest.

### **Chris Reberg-Horton**

Chris Reberg-Horton is Associate Professor and Organic Cropping Specialist at North Carolina State University working with organic corn, soybeans and wheat, and with farmers trying to enter the growing market for organic grains. Chris received his B.S. at UNC in Environmental Science and M.S. from the University of California at Davis where he studied crop modeling. After working with Extension in California and North Carolina, Chris returned to graduate school at NC State, earning his PhD working with Nancy Creamer examining the potential for breeding cereal rye to be more allelopathic to enhance the weed control obtained from this popular cover crop. After graduation, he was Assistant Professor of Sustainable Agriculture at the University of Maine and worked with organic dairy farmers on grain and forage production. Currently Dr. Reberg-Horton researches weed management in organic soybeans, reducing tillage in organic systems, and collaborating with plant breeders on developing better cultivars for organic farmers. He is the SARE professional development coordinator for NC State and is Assistant Director of Collaborative Research at the Center for Environmental Farming Systems.