UNIVERSITY OF VERMONT EXTENSION

CULTIVATING HEALTHY COMMUNITIES

Welcome From Dr. Julie Smith

Almost two years ago a talented group of individuals accepted my invitation to work together to develop an innovative integrative approach to address the problem of livestock animal health protection. We were thrilled that our proposal was selected for funding by USDA NIFA. It has been rewarding to see the group evolve into a functional team. In April 2015, we gathered face-to-face, many of us meeting in person for the first time. When we gathered again in November, the interconnections between project components really began to gel and the team was ready to incorporate feedback from a select group of advisors who attended the meeting. This newsletter is one way we can connect with additional stakeholders and advisors. We look forward to your involvement and input over the next four years. Spanning three time zones and situated in eight states, the project team collaborators come to the table with a wealth of expertise. The intent of this issue of the newsletter is to introduce them to you and help you better understand the goals and objectives of the project. Overall, the project is off to a great start! Your comments and input are welcome at any time. Please contact me: julie.m.smith@uvm.edu

Julie Smith, D.V.M, Ph.D.

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April Meeting Re-cap

Back row: Jeanne Rankin, Scott Merrill, Tim Sellnow, Asim Zia, Jason Parker, Glynn Tonsor, Steve Dritz, Lee Schulz
Front Row: Keith DesRoches, Jeannette McDonald, Susan Kerr, Julie Smith, Robert Littlefield
Not pictured: Chris Koliba

Note: Several team members came on board after the April meeting. They are: Dr. Ahmed Hamed, grant project coordinator Eileen Kristiansen, and graduate students Serge Wiltshire and Morgan Getchell

The meeting occurred the weekend of April 7-8, 2015 in Itasca, Ill. Project collaborators from seven institutions plus collaborating consultants attended. The meeting served as a way for team members to get to know each other, set expectations for collaborating on grant projects, create a timeline, discuss objectives and research questions, and brainstorm possible journal outlets for publications and conferences and national meetings for scholarly presentations. The meeting began with a discussion of the broader details and purpose of the grant. With a focus on collaboration at all levels, the team laid out a set of "ground rules" for working together. Then, Dr. Julie Smith shared the project logic model, which puts into flowchart form the inputs, outputs, and short and long term outcomes of the project. The project is organized around five major objectives. Those were outlined and discussed "fish bowl" style, with each person primarily associated with the objective discussing plans in the inner circle, while others in the outer circle asked clarifying questions as needed. After outlining these major goals and objectives, Dr. Smith shared her personal story of how she started on this line of research that ultimately lead to the creation and funding of this project. From there, major theories that guided the development and future directions of the project were covered. After covering these larger scale objectives and theories, the meeting turned to addressing the more specific aspects of the project. Together, the attendants laid out research questions to be investigated and answered by forthcoming projects, potential manuscript titles and target journals, target diseases for swine and cattle for projects, stakeholder groups, and finally a list of potential stakeholder meetings to target. To conclude, the group outlined specific expectations about reporting, publishing, proper acknowledgement, and project communications as well as an organization chart outlining grant hierarchy and the relationships between PIs, personnel, and other collaborators.

Team Members

Susan Kerr is the NW Regional Livestock and Dairy Extension Specialist for Washington State University. Previous to this position, she was the WSU-Klickitat County Extension Director. Dr. Kerr received a B.S. in Animal Science and D.V.M. degree from Cornell University, then practiced veterinary medicine in a rural mixed animal practice. She left practice to pursue a doctoral program at Kansas State University and earned a Ph.D. in Education. She has operated a non-profit cat feedlot since 1985.

Glynn Tonsor is an Associate Professor in the Department of Agricultural Economics at Kansas State University (KSU). Tonsor obtained a B.S. from Missouri State University and Ph.D. from KSU. Through active research, engaged outreach with industry, and first-hand knowledge with livestock production, Dr. Tonsor has economic expertise in an array of topics of importance to Kansas, U.S. and global stakeholders. These topics include animal identification and traceability, animal well-being and welfare, commodity market analysis, consumer demand, food safety, meat labeling policies, producer perceptions and preferences, risk management, and technology acceptance. He and his wife, Shauna, live in Saint George, Kansas with their children Ethan, Levi, and Aubree.

Julie Smith is an extension associate professor at the University of Vermont. Julie received her B.S. in Biological Sciences, D.V.M., and Ph.D. in Animal Nutrition at Cornell University. Since joining the Department of Animal and Veterinary Sciences in 2002, she has applied her veterinary background to programs in the areas of herd health, calf and heifer management, and agricultural emergency management. She is responsible for teaching the undergraduate Animal Welfare class required of majors in her department. Dr. Smith has conducted trainings for Extension educators, livestock producers, and community members on the risks posed by a range of animal diseases, whether they already exist in the United States, exist outside of the United States, or pose a risk to both animal and human health. In all cases, she emphasizes the importance of awareness and prevention. She is currently leading a multi-species, multi-state project looking at the human behavioral aspects of implementing practices to protect animal health and food security, featured in this newsletter.

Serge Wiltshire is a Ph.D. candidate in Food Systems at the University of Vermont. His research interests include experimental economics, survey research, and complex systems topics surrounding agent-based computer modeling and computational network analysis, with a specific eye toward agricultural policy optimization. His M.S. thesis work focused on modeling the diffusion of grass-based dairy farming as a potential solution to pressing water quality and farm viability issues in Vermont. He is currently working on modeling the dynamics of disease transmission in the U.S. hog industry.

Asim Zia is currently serving as an Associate Professor of Public Policy and Decision Analysis in the Department of Community Development and Applied Economics, with a secondary appointment in the Department of Computer Science, at the University of Vermont. He is Associate State Director of Vermont's Experimental Program to Stimulate Competitive Research (EPSCOR) and the Director of the Institute for Environmental Diplomacy and Security at the University of Vermont. Dr. Zia is undertaking NSF funded work on developing computational integrated assessment models that project and quantify high-resolution impacts of global climate change and land-use land cover change on watershed scale hydrological systems and lake systems, and their feedbacks on social systems. Dr. Zia has published forty peer-reviewed articles/book chapters and three books. He has served as a Principal Investigator, Co-Principal Investigator or Co-Investigator on sixteen research grants worth more than $35 million. He has a Ph.D. in Public Policy from the Georgia Institute of Technology.

Timothy L. Sellnow is a professor in the Nicholson School of Communication at the University of Central Florida. Dr. Sellnow's research focuses on bioterrorism, pre-crisis planning, and strategic communication for risk management and mitigation in organizational and health settings. He has conducted funded research for the Department of Homeland Security, the United States Department of Agriculture, the Centers for Disease Control and Prevention, the Environmental Protection Agency, and the United States Geological Survey. He has also served in an advisory role for the National Academy of Sciences and the World Health Organization. He has published numerous refereed journal articles on risk and crisis communication and has co-authored five books on risk and crisis communication. Dr. Sellnow's most recent book is entitled, Theorizing Crisis Communication.

Lee Schulz is an assistant professor and extension economist in the Department of Economics at Iowa State University. Dr. Schulz grew up on a diversified crop and livestock farm in Wisconsin. He obtained a B.S. in Agricultural Business from the University of Wisconsin-River Falls, an M.S. in Agricultural Economics from Michigan State University, and a Ph.D. in Agricultural Economics from Kansas State University. Dr. Schulz's integrated extension, research, and teaching program provides leadership in the study of, and develops educational programing for, critical issues facing the livestock and meat industries.

Scott C. Merrill, a Research Assistant Professor at the University of Vermont, examines dynamics of change within pest-crop agroecosystems including aspects of climate change. Additionally, Dr. Merrill uses experimental gaming as a novel technique for collecting data to examine human dimensions of social ecological systems. As a quantitative ecologist he uses a variety of techniques in population modeling, spatiotemporal simulation modeling and landscape ecology. An important goal of his work is the creation of applicable and predictive models to inform suggested best management practices.

Jason Parker is an assistant research professor of agricultural anthropology in Plant and Soil Science at the University of Vermont. Previously, he held a research scientist position in Horticulture and Crop Science at The Ohio State University, and adjunct professor positions in Sociology and Anthropology at both the College of Wooster and Youngstown State University. He earned a B.A. in anthropology with a sociology and political science minor from Youngstown State University, M.A. in anthropology and Ph.D. in agricultural and environmental anthropology from The Ohio State University. Dr. Parker's primary research interests are understanding scale, diversity, and land tenure characteristics of farm households and communities as they relate to agricultural problems. In the past five years, his research has been funded by multiple USDA programs.

Robert S. Littlefield is an NDSU Chamber of Commerce Distinguished Professor in the Department of Communication at North Dakota State University. Dr. Littlefield's research focuses on the cultural aspects of risk and crisis communication particularly as they pertain to addressing the needs of vulnerable populations. The U.S. Department of Education, the U.S. Department of Homeland Security, the U.S. Department of Agriculture, and the U.S. West Foundation have funded his research on food security, crisis renewal, and working with vulnerable publics. He has authored or co-authored scholarly articles, book chapters, and books on risk and crisis communication with culturally diverse groups. His most recent co-edited book, *Risk and Crisis Communication: Navigating the Tensions between Organizations and the Public*, is now available.

Ahmed Hamed, Ph.D., is a Research Assistant Professor in the Department of Plant and Soil Science at the University of Vermont. Dr. Hamed, a computer scientist by training, brings substantial technical skills to the team. He contributes new computational methods and algorithms and is particularly interested in Big Data, network analyses and social media analytics. Dr. Hamed is excited about using social media data (e.g., Tweets) and experimental games to come up with new data models to reveal patterns in human behavior and learning processes. He will be essential in the development of experimental games and acquiring data to help understand the human/social component of food animal health protection.
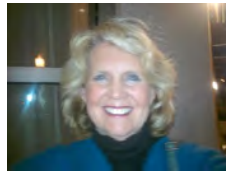
Jeannette McDonald is a veterinarian with a Ph.D. in education, specifically distance education, and is thus uniquely qualified to lead projects for biosecurity education of all types and for all audiences. Dr. McDonald was the lead for a national online Johne's Disease Veterinary Certificate Program which has been adopted by almost every state in the Union, as well as virtual farm visits and veterinary Johne's simulation (JD Consult), and producer modules and simulations . Her team developed a large diversity and breadth of education for food safety, one health/one medicine, nursing, medical, veterinary, and public health fields, maintaining flexibility and accessibility. She was also the PI on a FIPSE grant to create VetICE, a cooperative of veterinary schools to create and share courses across institutions. Since taking an early retirement from UW-Madison she's had a Fulbright award working with the Italian national animal health service creating an iPad version of a risk assessment for Johne's Disease in dairy cattle as well as an interactive simulation for producers. A sample of products from previous projects can be seen at www.tlcprojects.org.

Steve Dritz is a Professor at the College of Veterinary Medicine, Kansas State University. During his tenure at the Kansas State University College of Veterinary Medicine, he has coordinated numerous field and university research trials involving graduate students and swine producers and established highly productive collaboration with colleagues in Animal Sciences and Industry. Dr. Dritz has developed relationships in several swine production systems that have allowed for access to data and commercial scale research facilities unavailable at K-State. These trials have resulted in 199 peer reviewed journal articles, 281 refereed abstracts, 4 book chapters, 2 patents and the training of 25 Ph.D. and 35 M.S. students. Due to the practicality and applicability, Dr. Dritz's research has resulted in invitations for 56 international research and technical training presentations and 98 domestic presentations. Dr. Dritz is an active member of the K-State Applied Swine Nutrition Team. He received his D.V.M. degree in 1990 from the University of Minnesota and his Ph.D. in Swine Nutrition and Production in 1995 from Kansas State University.

Christopher Koliba is a Professor in the Community Development and Applied Economics Department at the University of Vermont (UVM) and the Director of the Master of Public Administration (MPA) Program. He possesses a Ph.D. and an MPA from Syracuse University's Maxwell School of Citizenship and Public Affairs. His research interests include governance networks and complex adaptive systems, network performance and accountability, organizational learning and development, environmental governance, and educational policy. His current research program focuses on the development of complex adaptive systems, models of land use, watershed management, food systems, transportation planning, biosecurity and smart grid energy networks. He is the lead author of *Governance Network in Public Administration and Public Policy*. He teaches courses pertaining to public policy and public affairs, public administration, systems analysis, governance networks, collaborative management, and the intersection of science and society.

Jeanne M. Rankin, D.V.M., a third generation Montanan, received her Bachelors of Science in Agriculture; Animal Science from Montana State University and her D.V.M. from Colorado State University. She practiced predominantly equine, small ruminants and camelid veterinary care for 17 years before joining the Montana Department of Livestock in November of 2004. Dr. Rankin served as the Assistant State Veterinarian and as the Acting State Veterinarian for the Montana Department of Livestock where she developed the Montana Trichomoniasis program and oversaw Disease Reporting, Foreign Animal Disease Response and Emergency Preparedness. She is a Foreign Animal Disease Diagnostician and is currently working with Montana State University Extension as the Agro-Emergency Projects Coordinator. Dr. Rankin has served the American Veterinary Medical Association as the representative of Small Ruminant Practitioners group on the Animal Agriculture Liaison Committee and currently is the Equine Medicine representative to the AVMA's Committee on Disaster and Emergency Issues. Since 2012, Jeanne is also a director for the Montana Veterinary Medical Association, and is currently president-elect. In her spare time she sings in the Great Falls, MT Symphony choir, manages a small herd of 60 registered Gelbvieh Cattle and raises AQHA performance horses, near Raynesford, MT.

Project Description

Food security and economic security are vulnerable to the consequences of new, emerging, or trans-boundary animal diseases reaching the United States and spreading rapidly through food animal populations, triggering export market closures, and raising concerns about food safety. Preparing for such a disaster is a complex challenge. Because of human resistance to preparing for something that is not part of one's individual experience or the collective experience of one's social network, developing and maintaining protocols and policies effective at preventing the spread of disease is difficult. The USDA NIFA has awarded a Coordinated Agricultural Project grant to a multi-institutional multi-disciplinary team willing to take on this challenge by focusing on its human behavioral dimensions. The title of the project is "A human behavioral approach to reducing the impact of livestock pest or disease incursions of socio-economic importance." Unofficially, we call it the Animal Disease Biosecurity Coordinated Agricultural Project (ADB CAP).

In our project proposal, we discuss a focus on biosecurity, but this term will be replaced by "animal health protection" in our outputs. We are employing a holistic approach to biological risk management in an effort to understand the overall vulnerabilities and to identify locations and practices of greatest likelihood of effectiveness and attractive benefit-to-cost estimates. Then attention can be focused on how to effect change at these points through appropriate communication strategies. Consistent with this approach, we consider the following questions: Q1. What are key determinants of behavior of stakeholders at critical control points regarding application of practices or protocols in dairy, beef, hog and small ruminant production to prevent incursions of pests and diseases? Q2. What messages (channels, sources) are most effective at getting stakeholders to "care" about potential incursions of pests and diseases of animals and their roles? Q3. What are workable solutions that enhance biosecurity? What is seen as practical and feasible at the level of any critical control point? What incentives are feasible and likely effective? Q4. What outreach tools, materials, games, assessments, and inter-actions result in measurable changes in attitudes and behaviors across cattle, hog and small ruminant production systems? As stated in our project logic model, our overall goal is for the activities and outputs of this project to facilitate the development and adoption of practices and policies that collectively reduce the impact of new, emerging and foreign pests and diseases to domestic production of cattle, swine and small ruminant foods and byproducts. The project expects funding to continue for a total of five years. Educational resources, "games", and messages developed and tested during this project will be made available beyond the end of the funding period.

Project Objectives

- **Objective 1: Characterize determinants of behavior of stakeholders at critical control points where application of practices or protocols can prevent (or reduce the impact of) incursions of pests and diseases of cattle, pigs and small ruminants.**

- **Objective 2. Determine economic attractiveness of solutions that enhance biosecurity.**

- **Objective 3. Determine most effective communication strategies (including message wording, messenger and media selection).**

- **Objective 4. Integrate disease characteristics, human risk perception and socio-economic influences on behavior in a simulated "game" environment.**

- **Objective 5. Develop educational and outreach materials and methods that lead to measurable changes in attitude and behaviors at critical control points in cattle, swine and small ruminant production systems.**