

Progress Report

Title:	A human behavioral approach to reducing the impact of livestock pest or disease incursions of socio-economic importance		
Sponsoring Agency	NIFA	Project Status	ACTIVE
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Program Code: A5152**Program Name:** Global Food Security: Minimizing Losses**Project Director**

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Recipient Organization

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Non-Technical Summary

Emerging diseases of socio-economic importance have food security, perceived food safety, and domestic and international trade implications for the marketing of animals or animal products. Understanding the human behavioral dimensions of the introduction, spread, identification, reporting, and containment of new, emerging, and foreign pests and diseases of livestock is critically important for developing effective strategies to sustain a productive, profitable, and secure food animal sector. Experts in animal science and veterinary medicine, agricultural economics, public policy, anthropology, adult education, and risk communication come together to lead this inter-disciplinary applied research and outreach project focused on enhancing biosecurity practices and strategies to reduce the impact of incursions of new, emerging, or foreign pests or diseases of dairy, beef, and swine. Through engagement with project activities, stakeholders in U.S. dairy, beef, and pork production will be encouraged to implement practices and policies that collectively reduce the impact and threat of new, emerging, and foreign pests and diseases to the nation's meat and milk supply. This proposal directly addresses **Priority Area A5152 within the Food Security Challenge Area--Animal Health and Production and Animal Products**. Educational resources, "games", and messages developed and tested during the project will be made available beyond the end of the funding period through learning object repositories and an innovative web portal.

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Accomplishments**Major goals of the project**

Overall Goal: The activities and outputs of this project will 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 following objectives will guide the activities of this CAP:

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 (message tactic and wording, channels, and sources).

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.

What was accomplished under these goals?

Overall Goal: Roughly \$140 billion per year of economic activity in the United States is generated by food animal production, not counting poultry. Mitigating the consequences of diseases and pests with potentially severe social and economic ramifications is a vital aspect of sustaining a profitable and productive food animal sector. Protecting food animal health from new, emerging and foreign diseases and pests requires both the knowledge of, and routine performance of, behaviors that reduce the likelihood of entry of diseases and pests into an animal facility. We need better understanding of the motivational drivers of behavior and better tools to nudge behavior in the right direction. Innovative research platforms, stakeholder surveys and interactive delivery of educational materials are helping facilitate the development and adoption of practices and policies that collectively reduce the impact of new, emerging and foreign pests and diseases, particularly to domestic production of cattle, swine and small ruminant foods and byproducts.

The team's effort is organized around five objectives, listed above, which define the major thrust of effort planned over the course of the project. Their execution has been simultaneous not consecutive. Stakeholder input, cross-disciplinary linkages and synergies have informed project direction and refinement of objectives over the five-year project.

Major accomplishments: The team organized and conducted a two-day project symposium and workshop in College Park, Maryland, in May 2019. The symposium featured research and outreach outcomes; the workshop engaged participants in considering a new approach to a biosecurity community of practice. An evening session featured panelists from funding agencies and networks relevant to agricultural biosecurity. Recordings of the sessions are available at agbiosecurityproject.com. Prior to the symposium, the project team met to share progress and outline plans for the year ahead. The team has been active in identifying and pursuing grant funding for work leveraging achievements realized through the current project.

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 and pigs.

As previously reported, research efforts supporting objectives 2 and 3 are factoring into understanding which characteristics of stakeholders influence their approach to disease risk management and our efforts to communicate with them or develop incentives to motivate behaviors that protect animal health. We have developed multiple versions of our agent-based model that allow for testing different disease and human response scenarios. These data-driven models include supply chain dynamics, human behavioral components, and epidemiological components. Therefore, they can provide insights regarding practices, policies, or protocols to help reduce the impact of new or emergent diseases. Two manuscripts were published this year with more to follow.

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

Data from previous surveys of swine producers, feedlot operators, and meat packers are being used to understand the effects of contracting on biosecurity effort, swine producers' willingness to pay for Tier 1 diseases risk mitigation under ambiguity, management of multiple sources of risk in livestock production, and packer preferences for sourcing livestock. Beef industry surveys designed to understand producer decisions to report suspected diseases, producer decisions to adopt individual ID and share animal health information, and feedlot producer willingness to pay for individual ID and animal health information on procured feeder cattle have been completed. Manuscripts for referred journals, presentations, and extension articles continue to be developed and shared.

Objective 3. Determine, develop and apply most effective communication strategies (message tactic and wording, channels, and sources).

The communication research team has interviewed industry experts and animal health authorities to collect data focusing on the threat of African swine fever virus and recent outbreaks of highly pathogenic avian influenza in Iowa, Minnesota, and Indiana. The data from both sets of interviews have been evaluated and coded. The Extension Disaster Education Network is

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conducted and are being analyzed. The communication research team has submitted papers and posters based on these data.

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

Led by project team members affiliated with the SEGS Laboratory at the University of Vermont, we continue to integrate disease characteristics, human risk perception and socio-economic influences on behavior in a simulated environment using experimental games. One suite of games examines willingness to follow biosecurity protocols at the operational level, testing a variety of human risk perceptions and socio-economic influences. One peer-reviewed manuscript has been published, another is under revision, and a third is in preparation. At least three new versions of this experimental game are under-development including Chinese and Spanish language versions and a virtual environment version. The second suite of games examines risk perception and socio-economic influences at the owner/manager level and examines willingness to invest in biosecurity. Two manuscripts have been accepted and two more are in development.

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.

The online "learning objects" have been renamed "learning modules." Final versions of learning modules 3 and 4 have been published, incorporating edits based on feedback from pilot testing. Learning modules 5 and 6 are on track for completion.

These are available on our website, healthyagriculture.org.

A newly redesigned Healthy Farms Healthy Agriculture website, serving as a hub for biosecurity information, has been launched at healthyagriculture.org. A series of Healthy Farms Healthy Agriculture Community Conversations are planned for the spring along with the launch of an online community forum. This will fulfill the first part of the vision presented last May to build an online community of practice in the area of agricultural biosecurity.

The agent-based modelling has entered a new phase as we design a version for training and educational purposes. We are developing a model that has an augmented reality user interface and will allow the virtual placement of assets to reduce the spread of disease through a system.

What opportunities for training and professional development has the project provided?

Through this project, training opportunities for six undergraduates, nine graduate students, two post-doctoral research associates, and two program staff have been provided in year 5.

Undergraduates

Robby Beattie and Johnathan Urbani at the University of Vermont have been mounting experimental games in Unity and developing capabilities for gaming and modeling with augmented and virtual reality. Robby had a virtual reality demonstration at the Student Research Conference in April 2019.

Gemma Del Rossi has assisted with data presentation and literature reviews to support manuscript development under the supervision of Asim Zia.

Samantha Shields and Margaret Stevens assisted with creating blog posts for the Healthy Farms Healthy Agriculture website. Amber Oerly has assisted with data summary reporting at Kansas State University.

Graduate students

Luke Trinity presented at the project symposium, successfully defended his master's thesis at the University of Vermont in November 2019, and has entered a doctoral program at the University of Victoria, British Columbia.

Ollin Demian Langle Chimal continues his doctoral studies in Complex Systems and Data Science under Nick Cheney at the University of Vermont and has presented at the project symposium and an international complex systems conference in Colombia.

Serge Wiltshire defended his dissertation in March 2019 and was the first doctoral graduate of the Food Systems Program at the University of Vermont. He is now a postdoctoral researcher at the University of California, Berkeley.

Emily Helsel completed her master's project at the University of Central Florida in 2018 on her analysis of communication during the highly pathogenic avian influenza outbreak in 2016.

Maxwell Kuchenreuther completed his master's project at the University of Central Florida in 2018 on communication during the outbreak of porcine epidemic diarrhea virus in the United States.

America Edwards defended her master's thesis at the University of Central Florida in 2019. Her advisor and committee members are ADBCAP collaborators.

Danielle Farley joined the project in 2019 as a master's candidate in Communication at the University of Montana where she is assisting Joel Iverson with analyzing communities of practice in biosecurity.

James Mitchell, PhD candidate in Agricultural Economics at Kansas State University, has been supported by the project since August 2016, has presented nationally and internationally, and has published several manuscripts.

Christopher Pudenz, PhD student in Economics at Iowa State University, came on board in August 2017, published his first paper as first author in 2019, and recently presented at a pork producer meeting.

Post-doctoral researchers

Gabriela Bucini, post-doctoral assistant at the University of Vermont, has been pursuing opportunities to extend the agent-

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based modeling into training simulations for industry stakeholders. She recently accepted an appointment as a research associate on another project, but will remain with our project for 20% FTE.

Eric Clark, (75% FTE), was hired into the open post-doctoral assistant position at the University of Vermont. He plays an important role in the development of augmented reality agent-based models and the collection and analysis of the associated data.

Staff

Eileen Kristiansen, (100% FTE) project budget manager at the University of Vermont, is writing her dissertation and nears completion of her doctoral program in educational leadership.

Joanna Cummings, (100% FTE) communications professional at the University of Vermont, is lending her extensive web design and project promotion expertise to the project. She developed a website for the project and designed promotional materials for the project symposium in May, which she also attended. In August 2019, Joanna (and Gabriela Bucini) obtained a certificate for attending the "Special animal and plant health investigation workshop" facilitated by USDA and FBI veterinarians, FBI special agents, intelligence analysts, and animal and plant health experts.

How have the results been disseminated to communities of interest?

We report publication of eight peer-reviewed journal articles, 18 conference presentations (proceedings, papers, or posters) to national and international audiences, 16 symposium presentations at our own project symposium, three theses, and several other products including a website, symposium summary, project report, policy brief, and features in outreach publications (Scientia and Futurum). Members of the team further engaged stakeholders in a variety of (43) other outreach venues--seminars, classes, and workshops--described under other products.

What do you plan to do during the next reporting period to accomplish the goals?

The team has received a no cost extension to wrap up work on several objectives as outlined below. Several members of the team have been invited to present during an animal health symposium session at the annual meeting of the American Society of Animal Scientists. Members of the team continue to present at a variety of national and international meetings, including the International Crisis and Risk Communication Conference and the International Society for Economics and Social Sciences of Animal Health. As required, the project director plans to attend the USDA project director's meeting.

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 and pigs.

We continue to disseminate key findings about determinants of behavior from economic surveys, communication interviews, and digital field experiments in workshops, presentations, proceedings, and publications as well as through our websites (agbiosecurityproject.org and healthyagriculture.org).

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

In light of heightened U.S. concerns over the possible introduction of a Tier 1 disease of swine, African swine fever (ASF), a study is underway to model the market-perceived probability of an ASF outbreak in the United States by analyzing market signals. Unlike previous qualitative or assumption-constrained quantitative studies, this study relies on lean hog futures prices and implied volatility from lean hog options to simulate potential future prices and produce a quantitative measure. We expect tracking this measure to provide useful and actionable information for industry decision makers and policymakers to prevent or mitigate the impacts of ASF.

Although domestic pork prices would be expected to drop if exports were dramatically reduced in the face of a U.S. outbreak of ASF, it is unclear how domestic consumption would be affected. By understanding consumer perceptions, we can better design strategies to prevent or lessen demand impacts and avoid further serious economic implications for producers and the broader economy. We are planning to conduct a survey to answer the following questions:

- Can food safety information received from a news headline/article influence pork consumers' willingness to pay for pork chops during a hypothetical outbreak of ASF?
- What is consumers' willingness to pay for a pork chop produced with enhanced-biosecurity (participation in the Secure Pork Supply plan) certified by different entities (USDA vs. industry)?
- What is consumers' willingness to pay for a pork chop produced with preventive measures (e.g., enhanced biosecurity, vaccination, or gene-editing technology) designed to shield pigs from the ASF virus?

Adoption of enhanced biosecurity and surveillance measures consistent with the Secure Beef Supply Plan, which has been designed to both prevent and mitigate the effects of a foot-and-mouth disease outbreak, is being studied using responses to a 2018 survey of U.S. cow-calf and feedlot producers. Certain operation and producer characteristics are correlated with adoption. Publication of these results and results of the efforts described above is forthcoming.

Objective 3. Determine, develop and apply most effective communication strategies (message tactic and wording, channels, and sources).

A book on risk communication challenges and opportunities in the context of animal agricultural biosecurity is underway. Although originally slated for completion in summer of 2020, the timeline has been extended as a result of the COVID-19

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pandemic.

Analysis of interviews with industry experts and animal health authorities regarding the threat of African swine fever virus and recent outbreaks of highly pathogenic avian influenza will be published in refereed journals.

Development of the Healthy Farms Healthy Agriculture website and Community Conversations serves as an emerging example of communicating biosecurity. We plan to study the content of web meetings and webpages, and gather data from users of both. We plan to make practical recommendations for biosecurity websites as well as produce published research on web-based communities of practice.

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

In the coming year, we intend to advance our agent-based model by incorporating additional human behavioral and epidemiological signals. This will allow increased flexibility and usefulness for using the model as a digital decision support tool.

As previously noted, we are currently developing four new experimental game versions and anticipate data collection with a virtual reality experimental game. Currently a multiplayer version of the protocol adoption game, which examines willingness to invest in biosecurity by owner/managers, is under development.

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.

Now that the learning modules are published to our website, we begin the summative evaluation phase. We plan to collect data on use of and impact of the learning modules. We anticipate that FFA, 4-H, and other youth who interact with our learning modules are more likely to implement animal health protective behaviors and protocols, which will decrease animal illness and increase productivity (and profitability).

We plan to complete the first series of Healthy Farms Healthy Agriculture Community Conversations by late spring and anticipate another series in the fall. The conversations and launch of an online community forum fulfill the first part of the vision presented last May to build an online community of practice in the area of agricultural biosecurity. We are exploring opportunities to extend this effort to be inclusive of crop biosecurity stakeholders. We have established our website as a portal to information and training in the area of food animal health protection and look forward to supporting ongoing collaboration among stakeholders of agricultural biosecurity.

We are excited to be repurposing our agent-based models for training and educational purposes. We anticipate extending the reach of previous training efforts by using novel digital tools, thereby enhancing the ability of industry stakeholders to be prepared to respond in the event of an animal disease emergency.

Participants

Actual FTE's for this Reporting Period

Role	Non-Students or faculty	Students with Staffing Roles			Computed Total by Role
		Undergraduate	Graduate	Post-Doctorate	
Scientist	2.4	0	0.5	1.6	4.5
Professional	0.7	0	2	0	2.7
Technical	1.3	0.5	1.4	0	3.2
Administrative	1	0	0	0	1
Other	0	0	0	0	0
Computed Total	5.4	0.5	3.9	1.6	11.4

Student Count by Classification of Instructional Programs (CIP) Code

Undergraduate	Graduate	Post-Doctorate	CIP Code
	3		45.06 Economics.
2	3		09.09 Public Relations, Advertising, and Applied Communication.
	1		09.01 Communication and Media Studies.

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Undergraduate	Graduate	Post-Doctorate	CIP Code
	2		11.01 Computer and Information Sciences, General.
		1	11.03 Data Processing.
		1	11.08 Computer Software and Media Applications.
2			11.02 Computer Programming.

Target Audience

This past year, the team has reached a wide variety of audiences.

- Engaged high school students and teachers, undergraduate students, university research faculty, and crop biosecurity stakeholders in learning how serious games can reveal insights into human decision-making and help solve complex problems when coupled with agent-based models.
- Reached distance educators, Extension Disaster Education Network delegates, and US and international communicators through conferences and meetings.
- Promoted online biosecurity modules to youth, agricultural educators, 4-H agents, and animal science faculty; also incorporated modules into undergraduate coursework.
- Provided biosecurity education to pork producers, allied industry, Blackfeet Extension personnel, undergraduate students, 4-H leaders, and the public.
- Provided a policy briefing to Senate Agricultural Committee Staff and a policy brief to federal agencies.

Additionally, university research and extension faculty, livestock organization personnel, and USDA program leaders engaged in project activities through a symposium organized by the project team in College Park, MD.

Products

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2020	YES

Citation

Smith, J. M., M. Colby, C. Koliba, S. Merrill, L. Trinity, E. Clark, O. Langle, G. Tonsor, A. Zia, G. Bucini, T. Sellnow, D. Sellnow, J. McDonald, K. Hiney, J. Cummings, M. Seeger, M. Myers, and J. Iverson. (n.d.). Animal disease biosecurity coordinated agricultural project 2019 symposium summary. Animal Disease Biosecurity Coordinated Agricultural Project. <https://agbiosecurityproject.org>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Koliba, C. (2019, May 15). A systems approach to improving biosecurity investments. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Merrill, S. C., and L. Trinity. (2019, May 15). Serious games and decision-making. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

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Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Merrill, S., E. Clark, and O. Langle. (2019, May 15). Willingness to invest in livestock biosecurity: evidence from digital field experiments. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Tonsor, G. T. (2019, May 15). U.S. swine survey insights – Tactical plan: gaining empirical insights on producer decision-making. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Tonsor, G. T. (2019, May 15). Information sharing in the beef-cattle industry – Tactical plan: Where's the beef? ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Zia, A. (2019, May 15). Socio-psychological determinants of cattle producers' intent to comply with animal disease control practices: a structural equation modeling approach. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Bucini, G., E. Clark, and O. Langle. (2019, May 15). A simulated production system for strategic decisions on disease control. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Sellnow, T., and D. Sellnow. (2019, May 15). Risk communication, the IDEA model and improving biosecurity: PEDv as a case study. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

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Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

McDonald, J. (2019, May 15). Online biosecurity education for youth: What a great IDEA! ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Hiney, K. (2019, May 15). SCRUB kits: Science creates real understanding of biosecurity. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Cummings, J. (2019, May 15). Healthy farms, healthy agriculture for biosecurity. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Seeger, M. W. (2019, May 16). Agricultural biosecurity: pre-crisis and risk communication. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Tonsor, G. T. (2019, May 16). Economist perspective on "So what?" ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Myers, M. (2019, May 16). Social marketing to save farmers' lives. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Sellnow, T., and D. Sellnow. (2019, May 16). Narratives as storytelling: implications of the IDEA model. ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

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Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Iverson, J. (2019, May 16). What is a community of practice and how do we view CoPs? ADBCAP Symposium: Innovation and Collaboration for Agricultural Biosecurity, College Park, MD. <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2019	YES

Citation

Pudenz, C. C., L. L. Schulz, and G. T. Tonsor. (2019). Adoption of Secure Pork Supply plan biosecurity by U.S. swine producers. *Frontiers in Veterinary Science*, 46, Article 146. <https://doi.org/10.3389/fvets.2019.00146>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2019	YES

Citation

Merrill, S., S. Moegenburg, C. Koliba, A. Zia, L. Trinity, E. Clark, G. Bucini, S. Wiltshire, T. Sellnow, D. Sellnow, and J. Smith. (2019). Willingness to comply with biosecurity in livestock facilities: evidence from experimental simulations. *Frontiers in Veterinary Science*, 6, Article 156. <https://doi.org/10.3389/fvets.2019.00156>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2019	YES

Citation

Wiltshire S., A. Zia , C. Koliba , G. Bucini , E. Clark , S. Merrill, J. Smith, and S. Moegenburg. (2019). Network Meta-Metrics: Using evolutionary computation to identify effective indicators of epidemiological vulnerability in a livestock production system model. *Journal of Artificial Societies and Social Simulation*, 22(2), Article 8. <https://doi.org/10.18564/jasss.3991>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2019	YES

Citation

Merrill, S., C. Koliba, S. Moegenburg, A. Zia, J. Parker, T. Sellnow, S. Wiltshire, G. Bucini, C. Danehy, and J. Smith. (2019). Decision-making in livestock biosecurity practices amidst environmental and social uncertainty: evidence from an experimental game. *PLOS One*, 14(4), Article e0214500. <https://doi.org/10.1371/journal.pone.0214500>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2019	YES

Citation

Sellnow, D. D., T. L. Sellnow, and J. M. Martin. (2019). Strategic message convergence in communicating biosecurity: the case of the 2013 porcine epidemic diarrhea virus. *Communication Reports*, 32(3), 125-136. <https://doi.org/10.1080/08934215.2019.1634747>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2019	YES

Citation

Trinity, L., S. C. Merrill, E. M. Clark, C. J. Koliba, A. Zia, G. Bucini, and J. M. Smith. (2020). Effects of social cues on biosecurity compliance in livestock facilities: evidence from experimental simulations. *Frontiers in Veterinary Science*. <https://doi: 10.3389/fvets.2020.00130>

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Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2020	YES

Citation

Clark, E. M., S. C. Merrill, L. Trinity, G. Bucini, N. Cheney, O. Langle-Chimal, T. Shrum, C. Koliba, A. Zia, and J. M. Smith. (2020). Using experimental gaming simulations to elicit risk mitigation behavioral strategies for agricultural disease management. PLOS ONE 15(3): e0228983. <https://doi.org/10.1371/journal.pone.0228983>

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Published	2019	YES

Citation

Bucini, G., S. C. Merrill, E. Clark, S. M. Moegenburg, A. Zia, C. J. Koliba, S. Wiltshire, L. Trinity, and J. M. Smith. (2019). Risk attitudes affect livestock biosecurity decisions with ramifications for disease control in a simulated production system. Frontiers in Veterinary Science, 6 Article 196. <https://doi:10.3389/fvets.2019.00196>

Type	Status	Year Published	NIFA Support Acknowledged
Theses/Dissertations	Published	2019	YES

Citation

Edwards, A. L. (2019). Instructional communication as a primary function of communities of practice during crises. Master's thesis, University of Central Florida, Orlando. Advised by Sellnow, T. L. Committee members included Iverson, J. & Sellnow, D. D.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2019	YES

Citation

Sheppard, R. (2019). Communicating model and anti-model biosecurity strategies in response to outbreaks of Highly pathogenic Avian Influenza. Master's project, University of Central Florida, Orlando. This project can be accessed by contacting: Timothy Sellnow: timothy.sellnow@ucf.edu

Type	Status	Year Published	NIFA Support Acknowledged
Theses/Dissertations	Published	2019	YES

Citation

Trinity, L. (2020). Complex systems analysis in selected domains: animal biosecurity & genetic expression (Master's thesis). Retrieved from <https://scholarworks.uvm.edu/graddis/1190>

Type	Status	Year Published	NIFA Support Acknowledged
Theses/Dissertations	Published	2019	YES

Citation

Wiltshire, S. (2019). On the application of computational modeling to complex food systems issues (Doctoral dissertation). Retrieved from <https://scholarworks.uvm.edu/graddis/1077>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2020	YES

Citation

Gund Institute for Environment. (2020, February). Agricultural Biosecurity: Reducing Risks and Impacts of Livestock Disease. [Policy brief]. Burlington, VT: Author.

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Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2019	YES

Citation

Educating youth about biosecurity can help prevent the spread of disease in animals. (2019). Futurum. 1(3), 42-45. <https://doi.org/10.33424/FUTURUM34>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2019	YES

Citation

ADBCAP: A human approach to improving biosecurity. (2019). Scientia. <https://doi.org/10.33548/SCIENTIA453>

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2020	YES

Citation

Healthy Farms Healthy Agriculture. (2020). <https://healthyagriculture.org>

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Lee, J., L. L. Schulz, and G. T. Tonsor. (2019, July 22). Swine producer willingness to pay for Tier 1 disease risk mitigation under ambiguity. 2019 Agricultural and Applied Economics Association Annual Meeting, Atlanta, GA.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Zia, A., S. Merrill, C. Koliba, E. Clark, G. Bucini, G. Del Rossi, N. Cheney, O. Chimal, T. Shrum, S. Moegenburg, J. Smith. (2019, May 1). Identifying leverage points for biosecurity risk management using massive online games and agent-based models. Netsci 2019, Burlington, VT.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Trinity, L. (2019, March 20). Human behavioral factors influencing biosecurity compliance: Evidence from an experimental game. University of Vermont Student Research Conference, Burlington, VT.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Beattie, R. M. (2019, March 20). Biosecurity compliance through immersive virtual reality simulations. University of Vermont Student Research Conference, Burlington, VT.

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Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Zia, A., A. Delgado, G. Bucini, S. Merrill, C. Koliba, G. Del Rossi, B. Norby, S. Moegenburg, and J. Smith. (2019, March 7). Socio-Psychological determinants of cattle producers' intent to comply with animal disease control practices: a structural equation modeling approach. American Society for Public Administration (ASPA) 2019 Annual Conference, Washington, DC.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2018	YES

Citation

Zia A., C. Koliba, S. Merrill, G. Bucini, E. Clark, S. Wiltshire, S. Moegenburg, and J. Smith. (2018, September 23). Identifying leverage points for biosecurity risk management using massive online games and agent-based models. Conference on Complex Systems, Thessaloniki, Greece.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Higgins, L. E., and J. M. Smith. (2019, November 13). Visualizing connections to document development of interdisciplinary collaboration among researchers. American Evaluation Association, Minneapolis, MN.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Lee, J., L. L. Schulz, and G. T. Tonsor. (2019, July 22). U.S. swine producer willingness to pay for Tier 1 disease risk mitigation under ambiguity. 2019 Agricultural and Applied Economics Association Annual Meeting, Atlanta, GA.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Schulz, L. L., and G. T. Tonsor. (2019, July 20). A deeper look at biosecurity. 2019 International Society for Economics and Social Sciences of Animal Health (ISESSAH) Conference, Atlanta, GA.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

McDonald, J., S. Kerr, J. M. Rankin, and J. M. Smith. (2019, October 26). Introducing an innovative livestock biosecurity curriculum for youth. Applied Animal and Public Health Research and Extension Symposium, Providence, RI.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Smith, J. M., T. M. Bass, G. Bucini, N. A. Cheney, E. Clark, J. Cummings, M. C. Getchell, E. A. Greene, L. E. Higgins, K. M. Hiney, J. O. Iverson, S. R. Kerr, C. J. Koliba, E. Kristiansen, R. S. Littlefield, J. M. Martin, J. McDonald, S. C. Merrill, S. Moegenburg, M. Myers, J. S. Parker, J. M. Rankin, L. Schulz, D. Sellnow, T. L. Sellnow, R. Sero, G. Tonsor, and A. Zia. (2019, November 4). Taking a transdisciplinary approach reveals new insights for protecting food animal health. Conference for Research Workers in Animal Disease, Chicago, IL.

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Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Schulz, L. L. (2019, November 8). Swine industry biosecurity: an economics perspective. University of Minnesota College of Veterinary Medicine Swine Seminar, St. Paul, MN.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Sheppard, R., T. L. Sellnow, D. D. Sellnow, and A. J. Parrish. (2019, October). Innovations in crisis communication theory to aid in the comprehension and compliance with urgent biosecurity messages. Crisis6—Innovations in Risk and Crisis Communication, Leeds, United Kingdom.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Sellnow, T. L., and D. D. Sellnow. (2019, May 30). Current theory and practice at the intersection of IMC and Crisis. 5th Biennial IMC Conference, Wilmington, NC.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Sellnow, T. L., D. D. Sellnow, D. D., and A. L. Edwards. (2019, November). The transportability of renewal across crisis types: agricultural biosecurity, PEDv, and African swine fever. National Communication Association, Baltimore, MD.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Sellnow, T. L. (2019, December). Risk communication. Eighth regional stakeholders meeting to review the implementation of the International Health Regulations (2005): To accelerate the implementation of national action plans for health security, World Health Organization, Eastern Mediterranean Region, Cairo, Egypt.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Tonsor, G. T. (2019, May 15). The role of research and extension in creating healthier individuals, more resilient communities, and safer agriculture. Senate Ag Staff Briefing, Washington, DC.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2019	YES

Citation

Tonsor, G. T. (2019, May 15). The role of research and extension in creating healthier individuals, more resilient communities, and safer Agriculture. Agricultural Research Congressional Exhibition & Reception, Washington, DC.

Other Products

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Product Type

Other

Description

Promoted forums associated with the Healthy Farms Healthy Agriculture website through a series of web meetings dubbed the Healthy Farms Healthy Agriculture Community Conversations. The first Community Conversations and associated forum address mortality composting. Forum participation requires registration. Communications professional Joanna Cummings has designed the site. NIFA support is acknowledged. <https://forums.healthyagriculture.org>

Product Type

Other

Description

Created four modules of laboratory activities, which support the online educational curriculum. A number of workshops will allow assessment of modules in user satisfaction and understanding. Team members included Kris Hiney and Betsy Greene in collaboration with Brittani Kirkland and Amanda Dewing.

Product Type

Other

Description

Project Director Smith presented (remotely) to the Northeast IPM Center Advisory Council meeting on October 8, 2019. Her presentation summarized the work being done by the Animal Disease Biosecurity Coordinated Agricultural Project team. Subsequent discussion explored ways to link plant and animal system biosecurity concerns. NIFA support was acknowledged.

Product Type

Other

Description

Presented a 75-minute workshop, "'Discover' and 'Engage' in online biosecurity education," at the 2019 National Association of Agriculture Educators Convention in Anaheim, California, on December 4, 2019. About 40 primarily high school FFA teachers, had a chance to view, explore, and discuss the biosecurity series of modules that we have created for middle and high school students. NIFA support was acknowledged in the presentation and in the slide handouts that we distributed. Presenters were Jeannette McDonald and Thomas Bass. Co-authors include Susan Kerr, Jeanne Rankin, Julie Smith, Kim Larson, Celia Powell, and Tou Xiong. The abstract can be accessed at the NAAE website: <https://www.naae.org/convention2019/schedule.cfm>

Product Type

Other

Description

Led a 45-minute workshop, "Engaging students with 'discovery learning,' gamification, and scenario-based education," at the 2019 Online Learning Consortium Accelerate Conference, November 21, in Orlando, FL. Over 50 distance educators, designers, and developers were able to see, hear, explore, and discuss the biosecurity series of modules we have developed for 6th - 12th grade students. NIFA was acknowledged in the presentation and in the handouts. Team members include Dr. Jeannette McDonald, Dr. Susan Kerr, Dr. Jeanne Rankin, Dr. Julia Smith, Kim Larson, Celia Powell, and Tou Xiong. The abstract for the workshop can be accessed at the conference website: <https://onlinelearningconsortium.org/attend-2019/accelerate/program/schedule/>

Product Type

Other

Description

In June 2019, the Social Ecological Gaming and Simulation Lab team conducted a workshop entitled, "Serious games: agriculture, climate change and water quality," during Basin Resilience to Extreme Events High School

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Students and Teachers Training Week at Saint Michael's College in Colchester, VT. Thirty high school students participated in gaming sessions over the week. Team members involved were Scott C. Merrill, Luke Trinity, Eric Clark, Christopher Koliba, Asim Zia, and Gabriela Bucini. Additional collaborators were Rachel Schattman and Joshua Faulkner. NIFA support was acknowledged.

Product Type

Other

Description

The Social Ecological Gaming and Simulation Lab team at the University of Vermont hosted a Faculty Activity Network event on May 6, 2019. The event was organized by Chris Koliba and Scott C. Merrill. They were joined by team members Gabriela Bucini, Eric Clark, Luke Trinity, and Robby Beattie and presented to six faculty members from other disciplines. Representatives of University Communications and the Office of the Vice President for Research also attended. The purpose of the Faculty Activity Network is to encourage faculty to learn about each other's work and foster new collaborations.

Product Type

Other

Description

In May 2019, the Animal Disease Biosecurity Coordinated Agricultural Project team held a symposium and workshop in College Park, MD. NIFA support was acknowledged. Research and outreach efforts of the team were featured during the symposium. The workshop was designed to engage stakeholders in a biosecurity community of practice in a new way. About 20 stakeholders not affiliated with the project, including several NIFA program leaders and staff, attended one or both days of the event. Michelle Colby, National Program Leader for Biosecurity, provided introductory remarks. The following team members presented during the event: Julie Smith, Christopher Koliba, Scott C. Merrill, Luke Trinity, Ollin Chemal Langle, Eric Clark, Gabriela Bucini, Glynn Tonsor, Asim Zia, Tim and Deanna Sellnow, Jeannette McDonald, Kris Hiney, Joanna Cummings, Matthew Myers, and Joel Iverson. Matthew Seeger, Wayne State University, presented a keynote during the workshop. An evening session between the symposium and workshop consisted of a panel of individuals representing networks related to biosecurity and a panel of individuals representing funding opportunities of interest to those working in the area of agricultural biosecurity. A print summary of highlights of the symposium and workshop presentations as well as recordings of the presentations and panel sessions are available at the project website: <https://agbiosecurityproject.org/2019-adbcap-symposium/video-gallery/>

Product Type

Other

Description

Created a teacher's guide to support the use of the online biosecurity learning modules. This comprehensive teaching manual links our learning objectives with STEM and FFA educational standards. It also includes suggestions for additional activities that educators can incorporate into units on biosecurity and suggests ways to use the online learning modules both independently and for face-to-face meetings. The guide was created by Tommy Bass, Jeanne Rankin, Susan Kerr, and Jeannette McDonald. The guide can be accessed at <https://healthyagriculture.org>

Product Type

Other

Description

Chris Koliba presented a Food Systems Issues & Solutions seminar on "Using games and simulations to improve livestock biosecurity" to a dozen Food System graduate students and faculty at the University of Vermont on February 12, 2020. NIFA support was acknowledged.

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Product Type

Other

Description

Jeanne Rankin presented "Biosecurity information on the farm all year long" in 15-minute video segments for Montana Extension personnel and livestock producers (collaborating with Extension agents and specialists) in February 2020. Videos to be archived and promoted. NIFA support was acknowledged.

Product Type

Other

Description

Susan Kerr and Jeanne Rankin presented a 45-minute presentation, "Engraining biosecurity best practices in the next generation of livestock producers" at the EDEN Annual Conference in Spokane, Washington on September 19, 2019. NIFA support was acknowledged.

Product Type

Other

Description

Jeanne Rankin attended the MT Dept. of Livestock Secure Pork Supply Workshop in Lewistown, MT, in July 2019, with MT pork producers and volunteered to assist in developing farm biosecurity plans.

Product Type

Other

Description

Jeanne Rankin incorporated Learning Objects 1 - 4 into a lecture for undergraduate college students at Montana State University in Animal Science 337, Diseases of Domestic Livestock, in January 2020. NIFA support was acknowledged.

Product Type

Other

Description

Jeanne Rankin presented "Disaster, disease, and biosecurity" to an undergraduate class at Montana State University, Animal/Equine Science 430, Horse Management, in April 2019. NIFA support was acknowledged.

Product Type

Other

Description

Jeanne Rankin shared Learning Objects with Equine Science faculty member at Montana State University as a resource for disease and disaster prevention, response, and planning content in future undergraduate courses. NIFA support was acknowledged.

Product Type

Other

Description

Tommy Bass assigned Learning Objects 1 and 2 to undergraduate college students at Montana State University in Animal Science 222, Livestock in Sustainable Systems, as a homework assignment following two lectures on animal health, biosecurity, and livestock emergency management in March 2019 and 2020. Approximately 110 students are/were enrolled in each cohort. NIFA support was acknowledged.

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Product Type

Other

Description

Jeanne Rankin presented biosecurity fair resources relevant for MT 4-H shows and exhibitions to MT 4-H agents in March 2020. Materials shared included ADBCAP modules and teachers' guide. NIFA support was acknowledged.

Product Type

Other

Description

Jeanne Rankin attended the 2019 MT Pork Quality Assurance program to become PQA certified and visited with Hutterite pork producers about their secure pork supply biosecurity plans. Discussed Extension's involvement in assisting with plans with porcine veterinarians who were present.

Product Type

Other

Description

Jeanne Rankin conducted a teleconference with Blackfeet Extension regarding biosecurity during calving working with state diagnostic lab for incidence of actual livestock disease in May 2019. The Tribal Extension office personnel work with Native American producers.

Product Type

Other

Description

Jeanne Rankin presented diseases and biosecurity protocols to an artificial insemination class (approx. 22 reproduction professionals and technicians) held at Montana State University's BART Farm in December 2019.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for horse owners and event centers" and "ADBCAP biosecurity promotion" to about 75 horse owners in Redmond, WA, on April 27, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for sheep farm visitors" and "ADBCAP biosecurity promotion" to about 15 small ruminant owners on Puget Island, WA, on May 4, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "ADBCAP biosecurity promotion" to about 150 goat owners at Goat Academy in Moscow, ID, on May 18, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

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Product Type

Other

Description

Susan Kerr presented "ADBCAP biosecurity promotion" to about 80 sheep owners (adults and youth) at Lamboree in Goldendale, WA, on June 1, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Q fever presentation" and "ADBCAP biosecurity promotion" to about 25 goat owners (4-H adults and youth) at 4-H club meeting in Puyallup, WA, on June 15, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity display" and "ADBCAP biosecurity promotion" to WA State Department of Agriculture Take Your Child to Work Day in Olympia, WA., on July 17, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for farm visits" and "ADBCAP biosecurity promotion" to about 25 Natural Resource Conservation Service personnel in Leavenworth, WA, on July 31, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity activities for veterinary outreach and using the ADBCAP biosecurity with youth" to about 15 veterinarians at the annual American Veterinary Medical Association convention in Washington, DC., on August 5 and 6, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for fair exhibitors" and "ADBCAP biosecurity promotion" to about 35 youth and adults at the 2019 San Juan County 4-H and Fair in Friday Harbor, WA, on August 14, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr and Jeanne Rankin presented "Biosecurity for farm tours; "Selecting and keeping healthy goats" and "ADBCAP biosecurity promotion" to about 50 adult attendees at the 2019 American Dairy Goat Association annual convention in Boise, ID, on October 18-19, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

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Product Type

Other

Description

Susan Kerr presented "Biosecurity and parasite control for small ruminant producers" and "ADBCAP biosecurity promotion" to about 21 adult attendees at San Juan County Small Ruminant Education Day in Friday Harbor, WA., on November 1, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for rabbit exhibitors"; "Rabbit hemorrhagic disease" and "ADBCAP biosecurity promotion" to about 50 adult and youth attendees at regional rabbit show in Monroe, WA, on December 7, 2019. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for 4-H livestock projects" and "ADBCAP biosecurity promotion" to about 25 adult and youth attendees at a 4-H club meeting in Silvana, WA, on January 6, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for rabbit exhibitors"; "Rabbit hemorrhagic disease" and "ADBCAP biosecurity promotion" to about 25 adult and youth attendees at the Inland Empire Rabbit Breeders' Association show in Spokane, WA, on January 18, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Farm biosecurity planning" and "ADBCAP biosecurity promotion" to about 15 adult attendees at the Country Living Expo in Stanwood, WA, on January 25, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for 4-H poultry and rabbit youth"; "Biosecurity for emerging equine diseases" and "ADBCAP biosecurity promotion" to about 15 adult and youth attendees at the King County 4-H Super Saturday in Auburn, WA, on February 1, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity tabletop exercise" and "ADBCAP biosecurity promotion" to about 65 adult and youth attendees at the WSU Swine Day in Moses Lake, WA, on February 7, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

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Other

Description

Susan Kerr presented "Biosecurity activities for 4-H youth" and "ADBCAP biosecurity promotion" to about 22 adult and youth attendees at a San Juan County 4-H meeting in Friday Harbor, WA, on February 10, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity to reduce RHD risk" and "ADBCAP biosecurity promotion" to about 30 adult attendees at USDA/WSDA in-Service in Olympia, WA, on February 12, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity activities for 4-H goat project youth" and "ADBCAP biosecurity promotion" to about 15 youth and adult attendees at NW Oregon Dairy Goat Association annual conference in Canby, OR, on February 29, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for 4-H project animals" and "ADBCAP biosecurity promotion" to about 25 youth and adult attendees at Skagit County 4-H club meeting in Sedro-Woolley, WA, on March 1, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Product Type

Other

Description

Susan Kerr presented "Biosecurity for 4-H project animals" and "ADBCAP biosecurity promotion" to 11 youth and adult attendees at Lopez Island 4-H Livestock 4-H club meeting, Lopez Island, WA, on March 6, 2020. NIFA support was acknowledged. Materials available from Dr. Kerr.

Changes/Problems

It is with sadness that I report the departure of both of our original USDA NIFA program leaders. Margo Holland passed away in August 2019 and Peter Johnson retired from NIFA in September 2019. We are eternally grateful for the two of them for their support of the project and their devotion to the success of their program areas.