

American Association of Extension Veterinarians

2023 Applied Animal and Public Health Research and Extension Symposium

3:00PM – 6:00PM (East Coast US Time) Sunday, October 15, 2023

Location: Gaylord Chesapeake JKL room

Chair: Anne Lichtenwalner, Co-Chair: Lew Strickland

Moderator: Hayley Springer

Agenda

3:00-3:05 - Introduction	<i>Intro to the AAEV Symposium</i> Hayley Springer, AAEV President
3:05-3:20 – Presentation 3:20-3:25 – Q&A	<i>One Health in Action: Promoting Dairy Worker Safety in the Upper Midwest</i> Jeff Bender, Univ. of Minnesota
3:25-3:40 – Presentation 3:40-3:45 – Q&A	<i>Characterization and Description of Alternative Pig Farms in Minnesota</i> Miranda Medrano, Univ. of Minnesota (AAEV Travel Award Recipient)
3:45-4:00 – Presentation 4:00-4:05 – Q&A	<i>Population Medicine Clinical Rotation: A Disease Investigation Resource</i> Tyler McMurray, Mississippi State Univ. (AAEV Travel Award Recipient)
4:05-4:20 – Presentation 4:20-4:25 – Q&A	<i>Beef Quality Assurance – Resources connecting the cattle producer and educator</i> Julia Herman, National Cattlemen’s Beef Assoc., Centennial, CO
4:25-4:40 – Break	Virtual poster session
4:40-4:55 – Presentation 4:55-5:00 – Q&A	<i>The Potbellied Pig: 2023’s New Feral Cat</i> Karen M. Lopez and Nathalia D. Torres Cosme, Delaware Dept. of Agriculture
5:00-5:15 – Presentation 5:15-5:20 – Q&A	<i>Sodium percarbonate added to waste milk fed to dairy calves - a potential preservative</i> David J. Wilson, Utah State Univ.
5:20-5:35 – Presentation 5:35-5:40 – Q&A	<i>Enhanced Biosecurity- Secure Milk Supply Plans: Addressing Logistical Concerns and Current Biosecurity Protocols</i> Emma Thrower, Washington State Univ.
5:40-5:55 – Presentation 5:55-6:00 – Q&A	<i>Challenging enhanced biosecurity plans: when continuity of business is elusive</i> Julie Smith, Univ. of Vermont (prerecorded)

Please look for the 20th Annual AAEV Symposium in October 2024 in Nashville, TN.

American Association of Extension Veterinarians

2023 Applied Animal and Public Health Research and Extension Symposium

Second Annual Virtual Poster Session

Chair: Anne Lichtenwalner Co-Chair: Lew Strickland

Posters can be accessed at <http://www.extvets.org/meetings/2023/posters.asp>

Improving education and outreach to cattle producers, veterinarians, and transporters about the Secure Beef Supply (SBS) plan

J. Herman, D. Bickett-Weddle, M. Clowser, K. Simmons

Developing movement decision criteria and exercising movement plans for livestock grazing public land allotments in and around FAD control areas through collaboration with industry, state, and federal partners

J. Herman, D. Bickett-Weddle, E. Sanko, K. Glover, R. Barnett

Empowering veterinarians to be informed example leaders in a safety-first environment

J. Salter, K.A Rood, M. Pate

Bayesian latent class analysis to estimate the diagnostic performance of the bull breeding soundness evaluation for classifying Bos taurus bulls as satisfactory potential breeders

T.G. Gunderson, K.K. Shuck, B.L. Vander Ley, D.R. Smith

Clinical evaluation of a rapid test strip, PCR, and enriched aerobic culture for the detection of Salmonella enterica in equine feces

E.C. Herring, K.L. Pabilonia, R.S. McConnico, A.M. Chapman, B.T. Velayudhan, H. Aceto, N.M. Slovis, P.S. Morley, B.A. Burgess

Emergence and mitigation of carbapenem-resistant Escherichia coli in a small animal veterinary teaching hospital

E.C. Herring, H.K. Naikare, B.A. Burgess

Integrated Pest Management for Control of Gastropod Vectors on Pastures

R. White, A.B. Lichtenwalner

Please look for the 20th Annual AAEV Symposium in October 2024 in Nashville, TN.

One Health in Action: Promoting Dairy Worker Safety in the Upper Midwest

D Charlier¹, RC Vazquez¹, AK Liebman², **JB Bender**^{1,3}

¹School of Public Health, University of Minnesota

²Migrant Clinicians Network, Austin, Texas

³College of Veterinary Medicine, University of Minnesota

Dairy farming is a vital component of the rural Upper Midwest landscape; however, increasing production costs and declining farm numbers have raised concerns for the dairy industry's sustainability. In response to rising labor demands, many dairy farms have sought immigrant workers, predominantly from Spanish-speaking countries, to meet their workforce needs. Unfortunately, this workforce faces numerous challenges to safety, including limited formal education, language barriers, and hazardous working conditions. To overcome such challenges, the *Seguridad en las Lecherías (Safety on Dairy Farms)* health and safety intervention was developed with input from many, including veterinarians, public health professionals, and producers. The Occupational Safety and Health Administration (OSHA) approved intervention offers culturally appropriate, bilingual (Spanish and English) education for Spanish-speaking immigrant dairy workers around key topics such as safe animal handling, equipment usage, confined spaces, and worker rights and responsibilities.

This project implemented the *Seguridad* curriculum in two states of the Upper Midwest region, effectively increasing workers' safety knowledge. Producers also reported improved safety culture, increased teamwork among workers, and noticeable changes in safety behaviors, such as better compliance with personal protective equipment (PPE) usage. While challenges in training delivery due to worker turnover and the COVID-19 pandemic were encountered, the program's flexibility and adaptability were crucial in sustaining its impact. Safety champions were identified on each farm to reinforce safe practices and promote a culture of safety.

This presentation will discuss the implementation and evaluation of the project, emphasizing the importance of comprehensive, evidence-based, and culturally responsive health and safety training delivered in workers' native language. By addressing the unique challenges faced by immigrant workers and incorporating One Health principles, this project highlights the significance of investing in worker safety for the long-term sustainability and success of dairy farms. Veterinarians, as integral members of the agricultural community, can play a vital role in advocating and implementing such interventions, ensuring the health and safety of both workers and animals on dairy farms.

Characterization and Description of Alternative Pig Farms (APFs) in Minnesota (MN)

M. Medrano¹, M. Culhane¹, C. Corzo¹, S.S. Boelke², D. DeWitte²

College of Veterinary Medicine¹, University of Minnesota²

St. Paul, MN

The United States (US) swine industry has shifted to raising hogs indoors in barns. However, there are still farmers who alternatively raise their hogs outdoors. These “alternative” pig farms (APFs) include niche, pasture-raised, and USDA organic-certified, among others. Understanding farm characteristics such as farm type, biosecurity measures and management practices are key to providing appropriate recommendations and help farmers improve their sustainability. Since there is scarce data regarding APF characteristics, this research seeks to describe farming practices and health status of Minnesota (MN) APFs.

A three-step approach was implemented, 1) Develop a process to identify and create an APF database, 2) Conduct a survey to gather information from APFs regarding their farming, biosecurity, and marketing practices, and 3) Invite APFs to consent to a Porcine Reproductive and Respiratory Syndrome (PRRS), Porcine Epidemic Diarrhea (PED), and/or Pseudorabies (PRV) prevalence study with on-farm testing conducted to detect PRRS and PED viral RNA by PCR, PRRS antibodies by ELISA, and PRV antibodies by serum neutralization (SN).

Over 200 APFs were identified, emailed a survey¹, and 49 (25%) responded. There were 30 breeding and 19 growing pig farms purchasing nursery and/or grower pigs. Breeding herds had a median of five sows (1-48) and 23 used natural breeding with a median two boars (1-5), but four exclusively used artificial insemination. Prevalence studies on consenting farms revealed 43% (6/14) were PRRS positive either by ELISA or PCR, and all were PED and PRV negative.

The majority (44) reported raising other livestock and poultry, but despite having multiple animal species, nearly one-third (12) have never consulted a veterinarian. With half (22) reporting selling animals and products direct-to-consumer, this is a potential outreach area for veterinarians with mixed animal skills and public health/food safety knowledge. Many APFs were committed to meeting standards desired by consumers, six farms are Certified Humane and four are USDA-organic certified. By describing APFs' farming and marketing practices, veterinarians can learn how to better serve this population, as consumer demand is increasing for alternatively raised pork. This knowledge will be important when assessing the disease transmission risk and appropriate outbreak response.

1. Qualtrics, Provo, UT. <https://z.umn.edu/OutdoorSwineSurvey>

Population Medicine Clinical Rotation: A Disease Investigation Resource

TB McMurray, DVM; WI Jumper, DVM, PhD; CL Huston, DVM, PhD, Dipl. ACVPM Dipl. Epidemiology;
DR Smith, DVM, PhD, Dipl. ACVPM Dipl. Epidemiology

Department of Pathobiology and Population Medicine at Mississippi State University
College of Veterinary Medicine, Starkville, Mississippi

The objective of the Population Medicine clinical rotation at Mississippi State University College of Veterinary Medicine (MSU-CVM) is to support veterinarians and livestock producers across Mississippi and neighboring states in investigations of disease or decreased productivity. Investigations arise from a variety of sources including diagnostic lab submissions, practicing veterinarians, and MSU-CVM clinical services. In October 2022, a practitioner in Alabama referred a yearling steer from a commercial cow-calf herd of approximately 120 adult cows to MSU-CVM for necropsy. Necropsy revealed chronic pulmonary edema and enteritis. History gathered from the client indicated two other steers out of 35 total had died in the previous two weeks (8.6% mortality). The Population Medicine service was contacted to perform an on-farm disease investigation. Residents led veterinary students through the steps of an outbreak investigation including interviewing key individuals, making a clinical diagnosis, identifying system-level factors responsible for the disease outbreak, developing a plan to prevent new cases or future outbreaks, effectively communicating the findings to the client and referring veterinarian, and developing a system to document actions and evaluate success. While gathering history on site, it was discovered that nine mature cows had died in the previous 12 months, approximately 17% of cows were not pregnant in the spring of 2022, three abortions had occurred during the 2022 calving season, and four pregnant cows were purchased from a local auction barn in fall of 2021. After the initial visit, students communicated their hypothesis that the outbreak was multifactorial in nature, and provided recommendations for biosecurity/biocontainment measures, improved nutrition, and additional diagnostic testing for bovine viral diarrhea virus (BVDv) to the client and primary veterinarian. A follow-up visit included collecting samples for BVDv testing, which confirmed the herd diagnosis of BVDv. This case highlights the importance of teaching veterinary students how to conduct an outbreak investigation, implement diagnostic testing strategies, and communicate their findings. Through a successful collaboration with MSU-CVM diagnostic lab personnel, referring veterinarian, and client, the Population Medicine rotation was able to develop and initiate a plan to eradicate BVDv from this herd, while providing educational opportunities to all who were involved.

Beef Quality Assurance – Resources connecting the cattle producer and educator

J. Herman¹, E. Mulvaney¹, M. Clowser¹, J. White¹

¹National Cattlemen's Beef Association, Centennial, CO

Abstract: The National Cattlemen's Beef Association (NCBA) Producer Education team works on the Beef Quality Assurance (BQA) and other Beef Checkoff-funded programs each day to ensure cattle producers have industry leading information and resources. Veterinarians can use these resources to build on new or existing producer relationships to enhance the care and productivity of the operation. These opportunities not only add value to a veterinary practice, but they also reinforce livestock veterinarians' dedication to healthy animals and a safe food supply. It is important not only to the producer and veterinarian, but to the industry as a whole, that cattle are responsibly handled and transported, and welfare of the animal is always a priority. Several resources developed by the Producer Education team at NCBA are available for producers, veterinarians, and transporters to review for more information on cattle welfare, employee training, and herd health management. Producers, veterinarians, and educators are encouraged to review the tools and resources, get certified in BQA, and ensure they are following best management practices for cattle in their care. It is important that the education producers, veterinarians, and transporters receive is current and up to date, but not all groups have the time or resources to leave their operation. Resources and materials will be provided along with insights on consumer knowledge of the program.

The Potbellied Pig: 2023's New Feral Cat

K.M. Lopez, N.D. Torres Cosme

Delaware Department of Agriculture

Since 2016, Delaware has been experiencing an increased number of potbellied pigs running at large. Advertised as micro-mini or teacup pigs, constituents become disinterested in retaining ownership of the animals once they grow to their adult size and become difficult to manage and contain. They have high fecundity, as they can reproduce at 12-16 weeks of age, with 2-15 piglets per litter. With few options for rehoming, owners turn the unwanted animals out as strays, at which point they cause extensive damage to private and state properties and pose a disease risk to the public and other animals. This is the first time that Delaware has been faced with the risk of establishment of a feral swine population.

On June 1, 2023, a new regulation was published in the Delaware Register of Regulations listing potbellied pigs as its first non-native invasive animal species. The purpose of the new regulations is to provide detailed involvement of the Delaware Department of Agriculture in determining an exotic animal species to be invasive and to establish and clarify the requirements of the owners of these species. Starting June 12, 2023, owners had 30 days to comply with the new regulations of owning a potbellied pig by obtaining an Invasive Animal Permit for their animal(s). Some examples of the permit requirements are: 1) cease breeding or other activity that increases the count of potbellied pigs; 2) sale, import, and auction of the animals are prohibited; 3) adequate housing and secure fencing to prevent the animals from escaping the premises are required; 4) the owner has 12 hours to report in person or by phone if their animal is at-large; after 72 hours, unclaimed animals will be dispatched.

Regulations stipulate that pigs must be tagged with visible identification. After considering the concerns of constituents and owners, our veterinary and public relations staff decided to allow microchipping as an alternative mode of identification, with a waiver signed by the owner. Premises visits will be conducted by animal health personnel to evaluate the animal enclosures, welfare, and confirm identification has been applied to potbellied pigs.

Sodium percarbonate added to waste milk fed to dairy calves - a potential preservative

DJ. Wilson¹, GM Goodell², R Dumm³, T Kelly², M Bethard²

¹Utah State University, Logan, Utah, USA

²The Dairy Authority, Greeley, Colorado, USA

³Dairy Tech, LLC, Loveland, CO, USA

The preservative sodium percarbonate (SP) was studied as an inhibitor of bacterial growth in pasteurized waste milk to be fed to dairy calves. Bacteria standard plate counts (SPC) in cfu/ml were performed using Standard Methods for the Examination of Dairy Products procedures. After on-farm pasteurization at 63° C for 30 min, milk was incubated at 32° C (90° F) in a 0.4 m³ (14.3 ft³) incubator. SPC were calculated for 210 aliquots from 7.6 L (2 gal) batches of pasteurized milk at times 0 (when milk cooled to 49° C for safe handling) and at 1, 2, 3, 4, 5, 6, 7, 8 and 24 hr after pasteurization. Concentrations of SP added to milk were 0 (control), 200 mg/L and 400 mg/L. Statistical significance between SPC for the SP concentrations within each time point was tested using ANOVA. Results are shown in the table below:

SPC (cfu/ml) in post-pasteurized waste milk over time at 90° F (32° C)

Time post-past	Sodium percarbonate concentration		
	0 (Control)	200 mg/L	400 mg/L
0	2641	2280	4062
1 hr	3082	1474	1708
2 hr	7464	148	845
3 hr	44,358	478	2523
4 hr	180,940	5965	5715
5 hr	146,347	2174	6724
6 hr	214,583	2280	3643
7 hr	575,125	2160	4629
8 hr	962,250	2183	3318
24 hr	160,590,000	430,000	15,324

All values are SPC bacteria counts, cfu/ml

Bolded values were significantly higher than others within the same time (row) at P < 0.05, ANOVA

SP added to pasteurized milk at 200 mg/L or 400 mg/L was associated with SPC remaining significantly lower than in untreated milk at 32° C, beginning 2 hr after pasteurization. Treated milk always had SPC < 7,000 cfu/ml through 8 hr. SP has potential as a preservative for milk fed to calves. Further studies are in progress.

Enhanced Biosecurity- Secure Milk Supply Plans: Addressing Logistical Concerns and Current Biosecurity Protocols

E.E. Thrower¹, E. Vergara Barrios¹, T.M. Edmonds², C.C. Figueiredo¹, C.S. McConnel¹

¹Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Washington State University, Pullman, Washington, United States of America

²Darigold, Northwest Dairy Association, Seattle, Washington, United States of America

Contagious disease outbreaks such as Foot and Mouth Disease represent a major threat to the dairy industry, as both animal health/welfare and business continuity are affected. Secure Milk Supply (SMS) plans allow for dairy herds to prepare enhanced biosecurity measures, which consist of designating a line of separation, establishing controlled entry access points, and setting up cleaning and disinfection (C&D) stations to control access to the premises and isolate on-farm activity. The objectives of this study were to 1) assess frequent concerns raised by dairymen regarding SMS implementation, and 2) explore potential changes made to current biosecurity protocols as a result of completing a plan. A total of 18 premises representing 12 dairies (average size: 4,041 lactating cows; range: 1,250 - 9,700) throughout the state of Washington were involved in the project. Based on farm manager or owner input, C&D station implementation was considered the component of an SMS plan that would be the most challenging to execute (7/12 dairies). This was due to the requirement for an open area with access to adequate water and proper drainage. Additionally, the lengthy process of proper C&D was a concern given the potential impact on traffic congestion due to the frequency and number of feed trucks entering and exiting the farms. Another common concern raised by the dairymen (4/12) was the continuous monitoring of personnel and vehicle access points necessary to oversee adherence to biosecurity protocols, as there would need to be an employee designated in this position at all times to best secure the farm. With regard to objective 2, most participating farmers did not plan to make any concrete modifications as a result of completing their SMS plan; however, several (5/12) expressed the need for more biosecurity training to raise employee awareness and increase conscientiousness regarding tracking movement onto the dairy.

Challenging enhanced biosecurity plans: when continuity of business is elusive

J. M. Smith, A. D. Dixon, and M. L. Thach

University of Vermont, Burlington

In summer 2023, two veterinary students (i.e., the project interns) completed a six-week project developing confidential, enhanced biosecurity plans for eight dairy and diversified dairy farms in Vermont. The plans were developed according to Secure Milk Supply or other applicable Secure Food Supply guidance. Because foot-and-mouth disease (FMD) is a foreign animal disease from the perspective of the United States, it is important to support all efforts to keep it out, control it in other parts of the world, and have contingency plans in case it reaches our livestock here. Although the FMD virus can affect all cloven-hoofed animals, *it is not a human health concern* unlike the similar sounding hand-foot-and-mouth disease of people. The most significant consequence at the farm level if FMD were discovered in the United States would be plummeting farm gate income because export markets would cease for susceptible animals and their meat and milk. Farm-specific enhanced biosecurity plans are anticipated to help farms remain free of disease and have access to permits to move animals or animal products in the event of a highly contagious animal disease outbreak. Even with COVID fresh in everyone's minds, getting farmers to consider making plans for a hypothetical fast-moving animal disease emergency like FMD was not easy. The project interns persisted in recruiting farms and scheduling visits. They identified operational risks for the spread of disease and drafted enhanced biosecurity maps and plans. A binder of materials and electronic versions of all documents were provided to each participating farm. A common challenge to developing enhanced biosecurity plans was the multi-site footprint of many farms. The interns identified significant farm traffic between more than one milking facility and multiple replacement raising facilities managed as one operation. Although access to the bulk tank could be configured using the "milk house outside of the line of separation" option, the milk truck route would unavoidably overlap with farm traffic unless adequate personnel were available to spend much of every day cleaning and disinfecting vehicles. Future efforts will explore options for semi-automated cleaning and disinfection stations suitable for Vermont's climate.