
13 Innovative Strategies for Managing Swine Welfare During Natural Disasters. Anna K. Johnson¹, Christopher Rademacher¹, Jamee Eggers², Nicholas K. Gabler¹, Laura L. Greiner¹, Jeffery Kaisand³, Suzanne Millman¹, John Patience¹, Lee Schulz¹, Sherrie Webb⁴, Jason W. Ross¹, ¹Iowa State University, ²Iowa Pork Producers Association, ³State Veterinarian, ⁴American Association of Swine Veterinarians

Coronavirus Disease 2019 (COVID-19) was declared a global pandemic on March 11, 2020, by the World Health Organization. By April 2020, COVID-19 resulted in the simultaneous closure or reduced operations of many processing plants in the upper Midwest, which quickly resulted in supply chain disruptions. Iowa is the leading pork production and processing state, and these disruptions caused producer uncertainty, confusion, and stress, including time-sensitive challenges for maintaining animal care. The Resource Coordination Center (RCC) was quickly created and launched from the Iowa Department of Agriculture and Land Stewardship. The RCC had strategic collaborations with public representation from the Iowa Pork Producers Association, Iowa Pork Industry Center, and Iowa State University Extension and Outreach, and private partners through producers, veterinarians, and technical specialists. The RCC's mission was four-fold: (1) implement appropriate actions to ensure the health and safety of RCC members, stakeholders, and the public, (2) evaluate and reassess appropriate actions as needed for continuity of pork production operations, (3) provide information to pork producers during supply chain disruptions, and (4) maintain a safe and abundant pork supply for consumers. The command structure included Incident Commanders, Command Staff, and four Section Chiefs whom worked with their respective experts. Sections covered (1) operations, (2) planning, (3) logistics, and (4) finance and administration. As it related to animal welfare, the RCC provided information on management decisions, dietary alterations to slow pig growth, pig movement to increase living space, alternative markets, on-farm euthanasia and mass depopulation. Veterinary oversight was continually maintained. A manual was created to provide up-to-date information to inform producer decisions and aid. Although originally created for swine, the RCC also assisted poultry, cattle and sheep producers. In a crisis, Iowa created a model that reacted to producer's pragmatic and emotional needs. This model could be replicated for any emergency by other states.

Key words: animal care, mental-support, tools

16 Identification of Structural Variants Associated with Mastitis in Holstein Dairy Cows Using Whole Genome Sequencing and RNA-sequencing. Victoria Asselstine¹, Juan F. F. Medrano², Malane M. M. Muniz¹, Angela Cánovas³, ¹Department of Animal Biosciences, University of Guelph, ²Department of Animal Science, University of California, Davis, ³Centre for Genetic Improvement of Livestock, Department of Animal Biosciences, University of Guelph, Guelph

For the dairy industry, animal welfare and economic viability are key factors in determining the long-term sustainability of the industry. One challenge in lactating dairy cows is mastitis, as there are significant costs associated with each mastitis case due to treatment, milk loss, and potential cow culling. Differentially expressed (DE) genes, DE mRNA isoforms and DE long non-coding RNA (lncRNA) candidates were previously identified by our group between healthy and mastitic samples from six Holstein dairy cows. In total, 7 candidate genes, 5 mRNA isoforms and 4 lncRNA were targeted as they play an important role due to their association with mastitis or the immune system. The aim of the current research is to identify new structural variants in the transcriptome of these previously identified potential candidates using RNA-Sequencing. These structural variants could occur in both coding and intergenic regions of the genome and potentially impact the amino acid that is transcribed, creating a new functional or non-functional protein. In addition, whole genome sequencing (WGS) analysis was performed using hair samples collected from ten Holstein dairy cows (first lactation). Five of these animals had no previous reports of mastitis and five animals had at least one report of mastitis in her lifespan. The WGS results will be used to identify additional structural variants, especially within introns, of the previously identified candidates that could cause a genetic variation in individuals and an association to their susceptibility to mastitis disease.

Key words: mastitis resistance, RNA-sequencing, whole genome sequencing