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In This Issue

News

Welcome Dr. Geoffrey Lossie, Poultry Health Specialist

Dr. Geoffrey Lossie is a poultry health specialist and faculty instructor at the OSU College of Veterinary Medicine within the Department of Veterinary Preventative Medicine. “Let me first start by saying that it is an absolute pleasure to be joining the college and I am greatly looking forward to supporting the poultry industry here in Ohio as well as all of the great practicing veterinarians throughout the state who see poultry clients.”

About the Position:

My position here within the CVM is currently a year-long appointment in which 50% of my duties are split between Extension efforts and teaching of veterinary students. The other 50% is dedicated to working on a poultry disease mapping project here in the state of Ohio.

My Background:

I began my foray into poultry medicine during my fourth year of veterinary school at the Purdue College of Veterinary Medicine. After taking a poultry rotation, I realized that this may be the field for me. After graduation I then applied for, and was accepted into, a three-year poultry diagnostic medicine residency also through Purdue University. During this time I achieved a Master of Science in poultry diagnostic medicine and went on to pass my boards becoming inducted into the American College of Poultry Veterinarians (ACPV) in 2017.

After my residency, I took a staff veterinarian position with a small broiler operation in Indiana. While I enjoyed my time in industry, and I’m thankful for the skills gained there, I really wanted to get back into academia, as teaching others is one of my passions. Thankfully, I found the position here and I’m now currently transitioning to become a Buckeye fan!

Outreach:

As part of my role in Extension, I’m delighted to begin working with veterinarians and Extension Educators around the state on issues related to poultry. I have a background and passion for helping backyard flock owners, commercial flocks, and the veterinarians

topical tetracycline for digital dermatitis in dairy cattle

- Producer experience with transitioning to automatic milking: Cow training, challenges, and effect on quality of life

Calendar

- Dairy Cattle Genomics Webinar
- DCWC Webinar Series
- 4th Dairy Cattle Welfare Symposium

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Location

Veterinary Extension Unit

housed within the

Department of Veterinary Preventive Medicine

Subscribe

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who support them. I want to be a key resource for you. I am always available to talk and consult with or answer any questions here at my home in Sisson Hall. Contact me any time at lossie.2@osu.edu or (614) 292-1677.

With that being said, I look forward to working with some of you in the near future and look forward to what 2019 has to offer.

About Dr. Lossie:

https://vet.osu.edu/about-us/people/geoffrey-lossie

Poultry Resources:

https://vet.osu.edu/extension/poultry-resources

Welcome Dr. Carlos Trincado, Swine Extension Veterinarian

Dr. Carlos Trincado is the new Swine Extension Veterinarian within the OSU Department of Veterinary Preventive Medicine and Veterinary Extension. He received his Master of Science degree from the University Minnesota in swine infectious diseases and his veterinary degree from Santo Tomás University in Santiago, Chile. He previously worked as a swine technical services veterinarian for Boehringer Ingelheim. He also has a great deal of expertise on biosecurity. He has considerable experience working with the swine industry in the US as well as in Latin America. Dr. Trincado can be reached at trincado.1@osu.edu or (614) 247-8335.

About Dr. Trincado:

https://vet.osu.edu/about-us/people/carlos-trincado

Swine Resources:

https://vet.osu.edu/extension/swine-resources

Research

Barragan A. A., Piñeiro, J. M., Schuenemann, G. M., Rajala-Schultz, P. J., Sanders, D. E., Lakritz, J., & Bas, S. (2018). **Assessment of daily activity patterns and biomarkers of pain, inflammation, and stress in lactating dairy cows diagnosed with clinical metritis**. *Journal of Dairy Science, 101*(9), 8248-8258. doi: 10.3168/jds.2018-14510

BACKGROUND: It has been reported that cows with clinical metritis experienced visceral pain in response to palpation of the uterus; thus, in addition to the negative economic implications, clinical metritis could be regarded as a welfare concern. Activity monitors have been used to assess the effects of common health events on dairy cattle behavior, and research is needed to identify activity patterns that indicate metritis.

PURPOSE: To assess (1) daily activity patterns, and (2) circulating concentrations of substance P, haptoglobin, and cortisol in lactating dairy cows diagnosed with clinical metritis. Furthermore, determination of Beta-Hydroxybutyrate (BHB), total calcium, white blood cells, milk yield, and reproductive data were collected for a more comprehensive assessment of clinical metritis in dairy cattle.

RESULTS: Cows with clinical metritis had increased lying time (628.92 versus 591.23 min/d) and elevated circulating concentration of substance P and haptoglobin, compared with cows without clinical metritis. Activity analysis by parity revealed that primiparous cows with clinical metritis spent more time lying compared with primiparous cows without clinical metritis. However, no differences in daily lying time were observed between multiparous cows with and without clinical metritis. Cows with metritis had a higher

circulating concentration of substance P (47.15 versus 37.73 pg/mL) and haptoglobin (233.00 versus 99.98 µg/mL) when compared with cows without metritis. Cows with clinical metritis had lower body condition score, and a greater proportion of cows in this group had hypocalcemia when compared with cows without clinical metritis. The circulating concentration of leukocytes and erythrocytes were decreased in cows with clinical metritis compared with cows without clinical metritis.

CONCLUSIONS: The authors concluded that the results showed increased concentrations of markers of inflammation, stress, and pain, and altered activity in cows with clinical metritis; thus, strategies aimed to minimize the negative effects associated with clinical metritis may be required to improve the welfare of dairy cows.

ACCESS THE ARTICLE…

Proudfoot, K. L., Weary, D. M., LeBlanc, S. J., Mamedova, L. K., & von Keyserlingk, M. A. G. (2018). **Exposure to an unpredictable and competitive social environment affects behavior and health of transition dairy cows**. *Journal of Dairy Science, 101*(10), 9309-9320. doi: 10.3168/jds.2017-14115

BACKGROUND: Little is known about the role of the social environment as a mediator of disease in transition cows. Previous research has not attempted to measure the combined effects of multiple sources of social disturbance on transition dairy cows. No studies have measured the effect of the social environment on pro-inflammatory cytokines in dairy cattle. Previous research assessing the effect of social pressures on transition cows has focused on addressing a single factor, with little unpredictability in the cow's daily routine.

PURPOSE: To determine the effect of housing transition cows in an unpredictable and competitive social environment on feeding behavior, social behavior, indicators of metabolic health (NEFA, BHB, calcium, glucose), indicators of inflammation (TNF-α and haptoglobin), and uterine health (cytological endometritis) after calving.

RESULTS: An unpredictable and competitive social environment changed the feeding and social behavior of dairy cows before calving. The treatment contributed to differences in some physiological biomarkers that indicate changes in inflammatory (higher TNF-α) and metabolic processes (higher NEFA and lower BHB). For multiparous cows, an unpredictable and competitive social environment before calving increased the risk of uterine disease measured using cytological endometritis. Mitigating social stressors before calving may help improve the health of dairy cows during the transition period.

CONCLUSIONS: The authors concluded that mitigating social stressors before calving may help improve the health of dairy cows during the transition period.

ACCESS THE ARTICLE…

Sharma, A., Erdman, M. M., Muñoz-Vargas, L., Mollenkopf, D. F., & Habing, G. G. (2018). **Changes in the prevalence, genotypes and antimicrobial resistance phenotypes of non-typhoidal *Salmonella* recovered from mail-order hatchling poultry sold at US feed stores, 2013-2015**. *Zoonoses and Public Health, 65*(1), 102-112. doi: 10.1111/zph.12416

BACKGROUND: With the increasing popularity of backyard poultry flocks, the number of reported live poultry-associated outbreaks have increased. Mail-order hatcheries are the major source of hatchling poultry bought for raising them as backyard flocks or as pets. Despite the frequency of such outbreaks, little is known about the population of Non-typhoidal *Salmonella enterica* (NTS) colonizing mail-order hatchling poultry.

PURPOSE: To describe the box-level prevalence of Non-typhoidal *Salmonella enterica* recovered from mail-order hatchling boxes, the pulsed-field gel electrophoresis (PFGE) patterns and antimicrobial resistance (AMR) phenotypes observed in 2014 and 2015 compared to that found in a study from 2013.

RESULTS: The box-level prevalence of NTS was significantly higher in 2015 compared to 2014. Also, the population of Salmonella serovars recovered in 2015 was more diverse and substantially different from those recovered in the previous two years. Of PFGE patterns recovered from hatchling boxes, seven distinct patterns in 2015, three in 2014, and four in 2013 were indistinguishable from the PFGE patterns of human outbreaks-associated strains in the respective years. Importantly, a significant positive correlation was found between the box-level prevalence of PFGE patterns and the number of human illnesses associated with the same patterns. Also, the proportion of multidrug-resistant isolates was higher in 2014 and 2015 compared to that in 2013.

CONCLUSIONS: Shipments of mail-order hatchling boxes are frequently contaminated with Salmonella genotypes indistinguishable from outbreak-associated strains linked to contact with live poultry. The prevalence of NTS significantly increased in 2015 relative to 2014, in part as an unintended consequence of changes in purchasing practices by the national chain of retail stores. Furthermore, there was a significant positive correlation between the box-level prevalence of PFGE patterns of NTS recovered from shipment boxes and the size of multistate outbreaks caused by the same patterns, suggesting that effective control efforts at the hatchery level are likely to result in important impact on public health. However, additional control measures at store and consumer level are nonetheless warranted. Although antimicrobial resistance in this population of isolates is generally low, the recovery of MDR strains of serovars Kentucky, Enteritidis and Mbandaka further highlights the need for interventions to combat antimicrobial resistance and mitigate the public health impact of mail-order hatchling poultry.

ACCESS THE ARTICLE…

Cramer, G., Solano, L., & Johnson, R. (2019). **Evaluation of tetracycline in milk following extra-label administration of topical tetracycline for digital dermatitis in dairy cattle**. *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2018-14961

BACKGROUND: Given that digital dermatitis (DD) treatment with tetracycline is extra-label and limited data exist on the presence of antibiotics in milk with currently used drugs, doses, and dosages, there is a need to further evaluate topical tetracycline treatment for DD in dairy cattle. This study will assist veterinarians with recommendations for extra-label use of topical tetracycline to treat DD in dairy cattle, thereby minimizing risks of violative levels in milk and promote safety of the human food supply.

PURPOSE: To determine the milk concentrations and withdrawal interval of tetracycline following topical application at various doses. Secondary objectives included (1) evaluation of the agreement between assays used to measure tetracycline in milk and (2) investigation of plasma concentrations of tetracycline following topical application of a high dose.

RESULTS: Tetracycline was present in milk, plasma, and teat skin from all treatment groups. Tetracycline concentrations varied depending on time of sampling, method of application, and dosing level. At 8 h post-treatment, 11% of cows had tetracycline present in milk higher than 100 ng/mL (ppb) but none higher than 300 ng/mL. The 25-g treatment group had the longest estimated withdrawal interval, the highest observed concentrations (210–244 ng/mL) of tetracycline present in milk, and the longest observed consecutive period of tetracycline presence (from 8 to 72 h) among all treatment groups. Compared with liquid chromatography-mass spectrometry, the Charm test had a sensitivity of 77 and 100% for measuring tetracycline in milk at ≥30 and ≥100 ng/ mL, respectively. Post-treatment samples of the teat skin were taken from 15 cows on 6 occasions, and every cow had tetracycline present in at least 1 of those 6 samples. This confirms an association between topical DD treatment with tetracycline and contamination of the teat. A total of 22% of blood samples had detectable tetracycline,

and the majority (63%) occurred at 8 h post-treatment. At 100 ng/mL, the estimated cow-level milk withdrawal interval ranged from 0 to 70 h. At 300 ng/mL, the estimated cow-level withdrawal interval ranged from 0 to 34 h, and was 0 h at the bulk tank level.

CONCLUSIONS: Based on their results, the authors suggest conservative measures and following appropriate local regulations when using antibiotics topically to treat DD. These measures should include gentle cleaning that does not cause additional damage to the DD lesion and reducing risks of violative residues in milk by using the lowest effective dose of tetracycline. When these measures are followed, withdrawal intervals for individual cows would be 24 to 36 h to meet Canadian MRL and 0 h to meet US tolerances for tetracycline in dairy milk. To ensure appropriate ELDU and meet regional regulatory policies veterinarians should receive guidance from FARAD in the US and the Canadian Global Food Animal Avoidance Databank in Canada. Furthermore, testing of the milk from individual cows or the bulk tank with a commercial screening test for tetracycline will aid in ensuring food safety.

ACCESS THE ARTICLE…

Tse, C., Barkema, H. W., DeVries, T. J., Rushen, J., Vasseur, E., & Pajor, E. A. (2018). **Producer experience with transitioning to automatic milking: Cow training, challenges, and effect on quality of life**. *Journal of Dairy Science, 101*(10), 9599-9607. doi: 10.3168/jds.2018-14662

BACKGROUND: Automatic milking systems (AMS), or milking robots, have had a positive effect on the quality of producers' lives. Benefits include improved cow health, easier health detection, increased milk production, more interesting/less routine activities, needing less labor, and a more flexible lifestyle. Switching to AMS involves a transitional and training period for both people and cows. Limited documentation is available on how producers experience the transition and how AMS has affected the quality of dairy producers' lives.

PURPOSE: To determine how Canadian dairy producers experienced the transition to, and use of, AMS, focusing on experiences with cow training, challenges during the transition, and effect on quality of life.

RESULTS: Overall, producers experienced a positive transition to AMS. Producers perceived that AMS improved profitability, quality of their lives and their cows' lives, and had met expectations, despite experiencing some challenges during transition such as learning to use the technology and data, cow training, demanding first few days, and changing health management. Less than half of the AMS producers (42%) trained cows or heifers to use the AMS before the first milking with the robot. Producers who implemented training before first milking reported that it took an average of 1 week to train a cow or heifer to use the AMS. Producers reported it took a median of 30 days for an entire herd to adapt to the AMS, whether or not cow training took place. On average, 2% of a herd was culled for not adapting, or not voluntarily milking, when otherwise physically and behaviorally normal. With AMS, producers suggested they gained more time flexibility, found work to be less stressful and physically demanding, found employee management easier, and had improved herd health and management. The vast majority (86%) of producers would recommend others to transition to AMS.

CONCLUSIONS: The authors reported that their findings benchmark the experiences of Canadian dairy producers during the transition to, and use of, AMS, which will help producers make a more informed decision about adopting AMS and will make future transitions easier by detailing what should be expected of the change.

ACCESS THE ARTICLE…

Calendar

A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at **https://vet.osu.edu/**

Dairy Cattle Genomics Webinar

(Webinars are free of charge, but you must register.)

- January 28, 2019 at 12:00 p.m. EST
    - **"*Novel fertility markers in heifers and lactating cows*"**
        - Dr. Joseph Dalton, University of Idaho
    - **"*Dairy cattle genomics with emphasis on resumption of post-partum cyclicity and pregnancy*"**
        - Dr. Gustavo Schuenemann, The Ohio State University

https://osu-cfaes.zoom.us/webinar/register/WN_HZ9vgfNwQsamIFWDbqNWAQ

Dairy Cattle Welfare Council – Webinar Series

(Webinars are free of charge, but you must register.)

- January 23, 2019 at 5:00 p.m. EST
    - **"*Considerations for implementing aggressive use of polled genetics*"**
        - Dr. Chad Dechow, Penn State University

Register at https://www.dcwcouncil.org/webinar-series

4th Annual Dairy Cattle Welfare Symposium

Intersection of Best Practices and Sustainability

- May 29-30, 2019
- Embassy Suites by Hilton Orlando Lake Buena Vista South; Kissimmee, Florida

Registration details available at https://dcwcouncil.org/symposium

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