

different production systems and remained effective when validated with external data.

Key Words: animal behavior, machine learning, precision livestock farming

2682 Evaluation of a nonantibiotic, no-withdrawal, nonprescription therapy at dry-off to lower somatic cell count. B. J. Heins¹, K. T. Sharpe¹, P. Pinedo², V. E. Cabrera³, E. M. Silva³, R. A. Lynch⁴, Q. K. Kolar⁴, A. De Vries⁵, E. K. Miller-Cushon⁵, and G. M. Schuenemann⁶, ¹*University of Minnesota, St. Paul, MN*, ²*Colorado State University, Fort Collins, CO*, ³*University of Wisconsin, Madison, WI*, ⁴*Cornell University, Ithaca, NY*, ⁵*University of Florida, Gainesville, FL*, ⁶*Ohio State University, Columbus, OH*.

The use of antibiotics, including dry cow therapy, is prohibited for organic livestock production in the United States. Therefore, alternative management practices that maintain udder health need to be identified. The objective of this study was to compare the use of ozonized and stabilized food grade extra pure corn germ oil (Ozolea-Mast; Castegnato BS, Italy) for a method of dry cow therapy in Holstein and crossbred cows. Cows were housed at the University of Minnesota West Central Research and Outreach Center, Morris, MN, and data were collected from August 2023 to April 2024. Holstein cows ($n = 21$), Grazecross crossbred cows ($n = 6$) composed of the Normande, Jersey, and Viking Red breeds, and ProCross crossbred cows ($n = 40$) composed of the Montbéliarde, Viking Red, and HO breeds were included in the study utilizing 528 quarter samples. The 67 cows were randomly assigned to 2 treatments: Ozolea ($n = 33$) or antibiotic ($n = 34$) therapy at dry-off. Cows were balanced by lactation number, breed, and expected calving date. Cows had no visible signs of clinical mastitis at the time of dry-off. The Ozolea cows were provided with 1 tube per quarter for the second to last milking and 1 tube per quarter at the last milking before dry-off. The antibiotic therapy was cephalin benzathine broad spectrum antibiotic provided as 1 tube per quarter at last milking before dry-off. Aseptic quarter milk samples were collected at dry-off and at calving for bacteriological culture. Cows were followed for 5 mo after calving and SCC were recorded from DHIA test day. Independent variables for statistical analysis were breed group, parity, and month after calving. After calving, there were no significant differences ($P > 0.05$) in no growth from milk cultures for the 2 treatment groups for each quarter. Somatic cell count was similar ($P > 0.05$) for both treatment groups across the first 5 mo of lactation (197 for Ozolea vs. 123 for antibiotic therapy). Milk production was no different ($P > 0.05$) 26.8 kg/d for Ozolea cows and 26.1 kg/d for antibiotic therapy cows. In conclusion, there were no differences between treatment groups on curing the probability of intermammary infection during the dry period.

Key Words: organic, mastitis, dry-off

2683 Investigating dairy cattle welfare on Iranian intensive farms using resource-based measures: Cow flow management. A. Jafari-Gh¹, R. Laven¹, F. Khaloubagheri², S. M. H. Mirrahimi³, S. Jafari-Gh⁴, K. R. Mueller¹, M. Dehghan Banadaky⁵, and E. Vallee¹, ¹*School of Veterinary Science, Massey University, Palmerston North, New Zealand*, ²*Independent Researcher, Palmerston North, New Zealand*, ³*School of Veterinary Medicine, Karaj Islamic Azad University, Karaj, Iran*, ⁴*Animal Science Department, College of Agriculture and Natural Resources, Karaj Islamic Azad University, Karaj, Iran*, ⁵*Animal Science Department, College of Agriculture and Natural Resources, University of Tehran, Karaj, Iran*.

The change from pastoral systems to housed systems has resulted in substantial challenges for the dairy cattle industry including issues regarding cow flow and handling. In Iran, most of the milk consumed is produced on intensive dairy farms. Yet, there is no official welfare assessment scheme or routine welfare assessment on Iranian dairy farms. Thus, we designed and used a welfare-assessment protocol that included resource-based welfare measures, such as measures related to cow flow during milking time. The protocol was used in 28 freestall (FS) and 34 bedded-pack (BP) farms in Iran in 2022 and 2023. Measurements were done when no cows were in the tracks. Descriptive statistics were calculated using SAS version 9.4. Results show that out of 48 farms, the transfer passage (from pen to parlor) condition was good (i.e., no holes, bumps, or slippery surface) in 16 FS and 9 BP farms, moderate (holes with <10 cm diameter but no slippery surface) in 6 FS and 2 BP, and bad (large holes and slippery surface or hazards) in 15 farms (7 FS and 8 BP). Additionally, 8 small BP farms (small: <180 lactating cows) kept the cows in pens that were next to the parlor, so there were no transfer lanes to use. Cows were milked 3 times a day in 94% of farms and spent a maximum of >3 h/d for milking in 52% of farms, with 26% of them spending ≥ 4 h/day for milking ($n = 54$). Additionally, cows stood on concrete floor in 74% of holding areas. Lack of use of rubber mats can negatively impact the welfare of the cows, as cows can increase the incidence of claw horn hemorrhage and lameness. Track widths (median of 118 cm for small, 185 cm for medium, and 265 cm for large farms) did not meet the standards. In addition, even though the median entrance/exit gradient was 5%, parlor entrance was steep (i.e., 10%–15%) in 12.5% and too steep (i.e., $>15\%$) in 3.8% of farms, whereas exit was steep in 18% and too steep in 3.4% of farms. Results show a lack of attention to structural issues that can directly influence cows' welfare. This lack of attention can lead to poor cow handling and increased lameness on these farms.

Key Words: cattle welfare, farm management

2684 Impacts of volatile organic compounds from wildfire smoke on dairy cow metabolism and production. A. Pace¹, N. A. C. Johnston², A. Anderson^{1,3}, C. Sia², D. D. Miller², M. Larson¹, K. Mirkin^{1,3}, P. Villamediana¹, and A. L. Skibiel¹, ¹*University of Idaho, Moscow, ID*, ²*Lewis-Clark State College, Lewiston, ID*, ³*Washington State University, Pullman, WA*.

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Wildfire smoke contains particles (PM) and volatile organic compounds (VOC). Wildfire-PM reduces milk production and alters metabolism in cattle, but the contribution of wildfire-VOC is unknown. Lactating (2019–2022; average DIM = 21 d; $n = 43$) and dry (2019–2021; $n = 41$) Holstein cows were followed across wildfire seasons. Temperature-humidity index (THI) and PM were recorded. Passive thermal desorption tubes were used to collect VOC, which were analyzed using GC-MS. Weekly BW, BCS, rectal temperature (RT), and respiratory rate (RR) were recorded, and blood was collected to quantify plasma glucose (GLU), BHB, and nonesterified fatty acids (NEFA). Lactating cow milk yields were recorded, and composition was analyzed. Gestation length, calf birth weight (CBW), and CBW relative to gestational age (CBWA) were recorded for calves born to dry cows. Principle component (PC) analysis was performed on 24 VOC, PM, and THI. The top 4 PC, parity, and year were fixed effects in mixed models, with repeated effect of time within cow, and lags of up to 21 d. Calf data were analyzed using mixed models with year, sex, and dam parity as fixed effects, and a random effect of cow. Wildfire smoke was present in all years except 2019, which had low VOC and PM concentrations. Top contributors to