

normal BBW (NBBW >1 kg; 32 piglets) and low BBW (LBBW <1 kg; 32 piglets). At weaning (25 days of age, d0), piglets were allotted into 4 groups (8 replicates of 2 piglets/group): (1) LBBW piglets fed a standard diet plus 120 ppm of Zn from ZnSO₄; (2) NBBW, piglets fed a standard diet plus 120 ppm of Zn from ZnSO₄; (3) LBBW fed standard diet plus 120 ppm of Zn from a potentiated source of ZnO; (4) NBBW piglets fed a standard diet plus 120 ppm of Zn from a potentiated source of ZnO. Piglets were weighted weekly until d21 post-weaning (end of the trial). Feed intake (FI) and faecal score were recorded daily. On d9 and d21, one piglet per replicate was slaughtered and colon content was collected for microbiota analysis; the pH from the distal jejunum, cecum, and colon was measured; and jejunum tissue was collected for morphological analyses. Data were analysed using a linear mixed model or a generalized linear mixed model with a Poisson distribution including treatment, class of BBW and their interaction as fixed factors, and the litter as a random factor. There was an interaction between Zn source and BBW for faecal index during d0–14 and d0–21 ($p < 0.01$). Faecal index was lower for pigs fed a potentiated source of ZnO compared to piglets fed ZnSO₄ (d0–d9, $p = 0.04$; d0–d14 and d0–d21, $p < 0.001$). Piglets from LBBW group had lower BW and FI throughout the study ($p < 0.01$) compared to NBBW piglets. Pigs fed potentiated ZnO tended to have higher ADG from d0 to d9 ($p = 0.07$) and from d9 to d14 ($p = 0.08$). On d14, piglets fed potentiated ZnO tended to have higher BW ($p = 0.09$) than pigs fed ZnSO₄. In the overall period G:F was higher ($p = 0.04$) for piglets fed potentiated ZnO compared to piglets fed ZnSO₄. The pH of the jejunum in piglets fed potentiated ZnO was lower than in piglets fed ZnSO₄ ($p = 0.02$). An interaction was observed in villus height ($p = 0.053$) and absorptive mucosal surface ($p = 0.02$) on d21, resulting higher in NBW piglets fed ZnSO₄. Further data on immunohistochemistry in jejunum mucosa are under evaluation to disentangle the mechanism of action behind the observed positive effect of the potentiate ZnO on the growth performance of LBBW and NBBW piglets.

O530

From tie-stall to loose house with Automatic Milking Robot in dairy cow systems: economic, production and animal welfare implications

Stefania Celozzi, Aldo Calcante, Martina Pavesi, Silvana Mattiello, Chiara Mazzocchi, Stefano Corsi, Michele Zannotti, Maddalena Zucali and Monica Battini

Department of Agricultural and Environmental Sciences, University of Milan, Milan, Italy

Tie-stall housing is still a widespread system on dairy cattle farms, despite being considered unacceptable due to evidence of

poor animal welfare, as stated in a minority opinion included in the scientific opinion published in 2009 by the European Food Safety Authority (EFSA) on the welfare of dairy cows. The transition to more welfare friendly systems could be stressful for the animals due to a huge adaptation effort to a new environment (e.g. housing, social group), but also for farmers from an economic and productive perspective. The objective of FREECOW project is to develop a model for a sustainable transition from tie-stall to loose housing in dairy cattle husbandry evaluating the evolution of some measures six months before and six months after the change of system. A dairy farm, located in Pianura Padana and housing approximately 35 lactating cows, was monitored for one year and data regarding animal welfare, feeding, milk production and quality, sustainability, and economic were recorded before (tie-stall housing with pipeline milking system) and after the transition to a loose housing system (with Automatic Milking Robot – AMR; GEA Dairyrobot R9500). As expected, the average avoidance distance at the feed rack significantly increased ($p < 0.001$) from tie-stall (5.20 ± 20.0 cm) to loose housing (40.34 ± 47.7 cm). The percentage of very fat cows decreased from 32.1% in tie-stall to 0% in loose housing system ($p = 0.023$), as well as the percentage of dirty udder and teats (from 37.2% to 0%; $p < 0.001$). Cows were fed diets based on corn silage, grass hay, corn meal, and compound feed. Feed selection was higher when cows were in tie-stall, especially for feed with a particle size in the range between 19–8 mm, which were less ingested by cows. The daily average milk production in tie-stall was 28.4 kg/cow. A decrease to 24.4 kg/cow (1.84 milking/cow/day) was found when the AMR was switched on; however, two weeks later it increased to 30.1 kg of milk/cow/day (+19%), with 2.81 milking/cow/day, and finally it stabilised three months later at 30.4 kg of milk/cow/day (>6% than in tie-stall). Incomplete or fail milking decreased from 6.87% to 3.84% (–44%) in two months and the average rejection from the AMR box decreased from 3.43 rejection/cow/day to 0.63 (–82%). Data on milk quality, sustainability and economic still need to be analysed. Preliminary results show an impact of the new husbandry system with probable positive effects for both the animals and the farmer.

O125

Transcriptomic and phenomic data integration to identify markers of subclinical mastitis in Holstein cattle

Vittoria Bisutti^a, Nuria Mach^b, Diana Giannuzzi^a, Alice Vanzin^a, Emanuele Capra^c, Alessio Cecchinato^a and Sara Pegolo^a

^a*Department of Agronomy, Food, Natural Resources, Animals and Environment, University of Padova, Legnaro, Italy*

^b*IHAP, Université de Toulouse, INRAE, ENVT, Toulouse, France*

^c*IBBA, National Research Council, Lodi, Italy*