Calving monitorization by remote technology in dairy cattle

Laura Molina [1], Carlos C Pérez-Marín [1], Estrella Agüera [2]
[1] Animal Medicine and Surgery Dpto, [2] Cellular Biology, Physiology and Immunology Department, University of Cordoba, Spain
vet.lauramolina@gmail.com

Implementation of Smart Farming (SF) technologies is helping to collect plenty of data regarding animal health, weather and machinery, among others, to improve productivity. One of these technologies are the precision livestock farming (PLF) sensors, which could be used to detect early reproductive events. An example of these PLF is the calving detection sensor, that may reduce the incidence of dystocia and genital infections, improving the reproductive performance and animal welfare. In this experience, Vel´Phone sensor (Medria, France) was inserted into the vagina of pregnant cows around 7-10 days before the expected date of parturition and it measured the vaginal temperature. This gadget sends a first SMS message (F) to the farmer´s phone indicating which is the normal vaginal temperature; the second notification (S) indicates that temperature drops suddenly and parturition is impending; and the third (T) informs that the sensor has been expelled. When the second notification was received, cows were moved to a calving barn. There, animals were better monitored by videocamera, observing the expulsion of fetus (E) and writting down the elapsed time. The objective was to determine intervals between S and T, and between T and E, and also to analyse the variation in cows suffering retained placenta (RT). A total of 51 dairy cows were monitored. It was observed that a 14.9% of sensors did not send the second notification, while 5% failed in T. When data were reviewed, it was confirmed that all these animals calved before the expected date, and that sensors were inserted at the wrong (too late) time. In cows suffering RT, the elapsed time between S-T was 17.0±1.7h, while when placenta was correctly expelled the interval was longer (26.9±4.0h), although no significant differences (p=0,305) was detected. T-E intervals were 176.7±63.3 and 94.1±12.8 min in RP and normal-calving cows, respectively, and significant differences (p<0.05) were observed. To conclude, the determination of S-T interval at the parturition could help farmers to make a decision to move animals at relaxing barns for a better monitorization, and longer T-E intervals could give information on when the probability to retain placenta is higher and preventive treatments should be implemented. Further research in this field is necessary because the use of these technologies can prevent a lot of problems associated with postpartum diseases.