USE OF A MONITORING SYSTEM FOR HEAT STRESS TO CHECK AND OPTIMIZE COOLING STRATEGIES

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Heat stress in dairy cows can have detrimental effects on milk production and reproduction. Traditional indicators like the temperature-humidity index (THI) provide an estimate of potential stress but fail to measure the actual impact on the animals. To address this, the study utilized the SenseHub® monitoring system, which records panting, a direct indicator of heat stress, along with intake and rumination data. The objectives of this work were to evaluate the impact of heat stress on cows in different production phases and assess the effectiveness of cooling strategies such as showers. The study monitored 77 cows from various production cycles, including lactating, dry, and postpartum cows, using the SenseHub® collar. Information on panting, intake, and rumination was collected over 24 hours, as well as daily and monthly averages from June 2022 to September 2022 in a commercial farm located in Bétera (Valencia, Spain). THI values were recorded during the whole experimental period. For prepartum cows, two cooling strategies were compared: 2 hours per day in three showers vs. 4 hours per day in six showers. Dry and postpartum cows received 4 hours of cooling per day in six showers. The results showed that lactating cows experienced the highest impact of heat stress, while dry cows were less affected. The monitoring revealed a significant difference between day and night impacts, with the highest panting percentage occurring during the day for lactating cows. In addition, the number of showers did not affect to dry cows as expected. Panting duration correlated inversely with intake and rumination activity, indicating the severity of heat stress. Descriptional analysis as well as T-test with paired data was performed with SAS System®. The beneficial effect of cooling on heat stress was clear during the day, but some doubts appear during the night. The average percentage of panting animals varied depending on whether they were in the cooling period or not. Comparing the two cooling strategies for lactating cows, no significant biological differences were observed. Despite the positive impact of cooling, heat stress remained high, with THI values above 72 resulting in reduced production and conception rates. In conclusion, the monitoring system used in this work proved to be a valuable tool for evaluating heat stress impacts and optimizing cooling strategies. However, under conditions of high ambient humidity, further evaluation of alternative cooling strategies is necessary to effectively mitigate the negative impacts of heat stress while optimizing available resources.