HERD HEALTH AND PRODUCTION MEDICINE

Comparative use of Automated Behavior Monitoring System versus on-Farm Standard Operation Procedure for youngstock health in a commercial dairy farm

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INTRODUCTION

Youngstock healthcare control is one of the biggest challenges for dairy farms. Many precision livestock technology (PLT) have started to be used on dairy farms around the world initially dedicated for cows, and now also for youngstock (Friedman et al., 2022). It is a useful tool for farmers and veterinarians to face the multiple new challenges of the sector, such as the lack of skilled labor, increase in rearing costs or new legislation focus on reduction of antimicrobial use.

OBJECTIVE

The aim of this trial was to compare the use of an automated behavior monitoring system (SenseHub™ Dairy, MSD Animal Health) versus an intensive on-farm standardized health scoring system (Control) on youngstock health and growth.

MATERIALS AND METHODS

The study was performed on a large dairy farm located in Lleida (Spain). Calves were randomly allocated to one study group:

1. Automated behavior monitoring system (SHY)
2. On-farm veterinarian daily check using on-farm SOP (Control) and follow up until 8 months old.

Pre-weaned calves were reared in individual hutches and fed twice a day, 6 liters per day, fed with nipple bottles.
After weaning calves were grouped in small pens (6 to 12 calves until 98 days) and regrouped later.

The health monitoring was done by the on-farm veterinarian, in the control group, every calf was checked, twice a day in the pre-weaned calves and daily at post-weaning (using a modified Wisconsin Calf Health protocol). After weaning, animals were weekly measurement of rectal temperature.

In the SHY group, the monitoring ear tag was placed at birth to providing an hourly Health Index (HI). The veterinarian checked twice a day (AM & PM), and only those calves with HI < 86, using the same treatment criteria as in the control group.

Moreover, in both groups, the lung health of all calves was checked by ultrasound following the scoring system of Adams and Buczinski (2015) prior to weaning, treating calves with a score greater than 3.

The following information was recorded in both groups:

- Health: morbidity, age of onset, treatment and mortality.
- Growth: body weight at weaning and at 8 months of age.
- Labor time for checking and examining calves.

In conclusion, from a practical perspective, SenseHub™ Dairy Youngstock delivered insights that helped the farmer & veterinarian to have an earlier BRD diagnosis and lower prevalence of lung lesions at weaning. This had a positive impact on survival rates on the farm.

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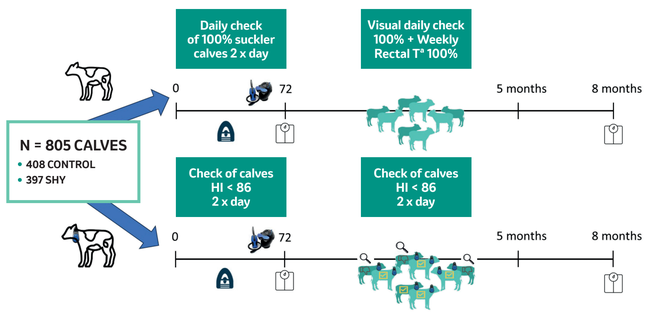
RESULTS

- The first descriptive results of the study show that despite this farm invests a lot of time on early diagnosis, the overall morbidity due to the most prevalent diseases (diarrhea and pneumonia) was globally similar in both groups.

FIGURE 1. Study groups and follow up of the calves along the trial.

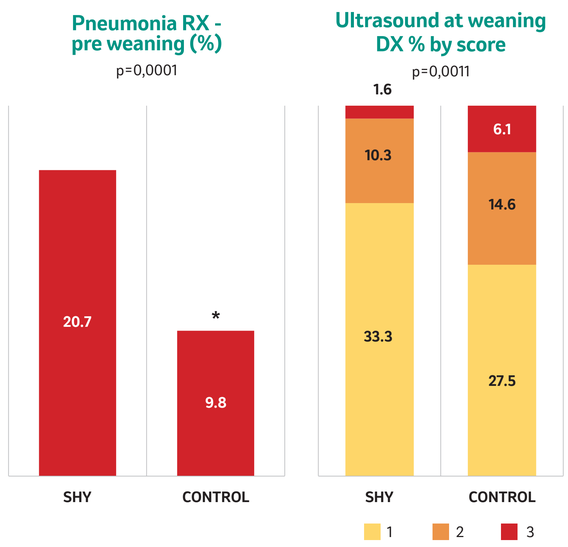
A total of 805 female calves born between February and November 2022 were enrolled at birth (SHY n=397 and CONTROL n=408).



RESULTS

- However, differences were observed in the first diagnosis of pneumonia, earlier in the calves of SHY group.
- On the other hand, although a significantly higher percentage of calves was treated pre-weaning due to pneumonia in the SHY group (20.7 vs 9.8%, respectively), the lung ultrasound at weaning showed a better lung health in the SHY group, with significantly lower presence of mild and severe lesions (p<0,0011). **Fig 2**

FIGURE 2. Preweaning pneumonia treatments and results of lung ultrasound at weaning.



RESULTS

- In the control group, more time and experience were needed to identify sick calves; as in SHY clinical examination was focused only of those calves previously identified in risk by the health alerts (8 calves checked on average, max 31 and min 1, each day in the SHY group). **Fig 3**
- Related to body weight no significant differences were found. **Fig 4**
- On the other hand, the heifer losses, through rearing, were more than double in the control group (2.7%) than in the SHY group (1%). The main cause of this increase was the elimination of heifers due to poor growth (1.2% at 195 days of age on average). **Fig 5**

FIGURE 3. Time spent for detection and check of sick calves.

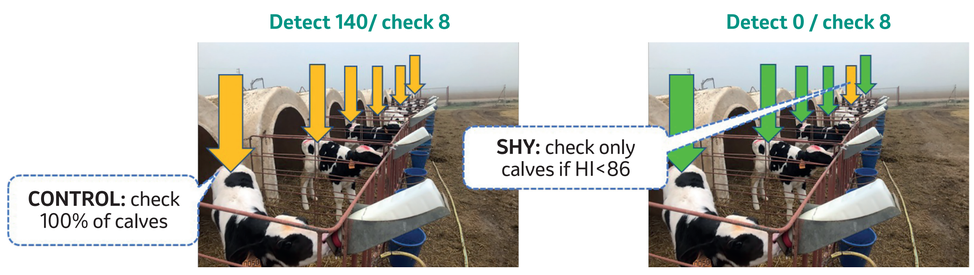


FIGURE 4. Average body weight at 8 months in both study groups.

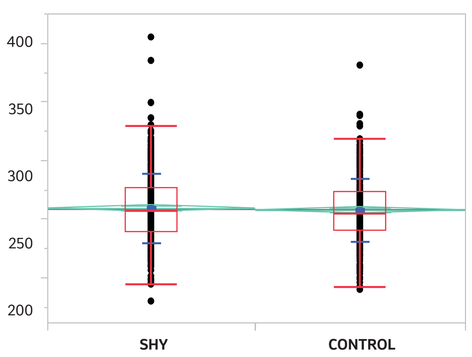
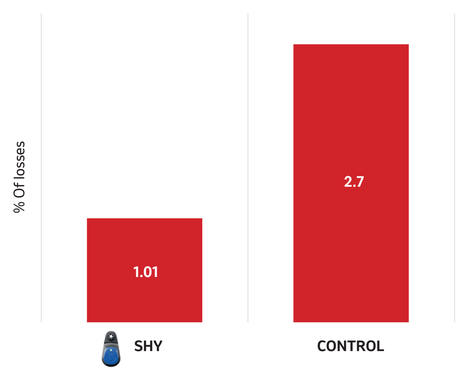


FIGURE 5. Percentage of losses through the rearing period.



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Abstract number: 1396.