

# USE OF RUMINAL SENSORS FOR EARLY DETECTION OF ACIDOSIS IN DAIRY CATTLE

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## INTRODUCTION

In the continuous pursuit of improving animal welfare in dairy production, ruminal sensors emerge as a key tool. These advanced devices are essential for the early detection of metabolic diseases such as ruminal acidosis, allowing real-time monitoring of rumination and feeding patterns. This technology provides farmers with an effective tool to proactively address conditions that impact the health and well-being of dairy cows.

## ANALYSIS:

- Quickly detect ruminal acidosis thanks to the study of ruminal pH and water intake through rumen temperature.
- Study whether there is a relationship between pH and ruminal temperature, through descriptive and statistical analysis of the data.

## RESULTS

## MATERIAL AND METHODS

### Collection of ruminal sensors dairy cow data:

Were collected from 43 cows from an experimental farm in Girona with a record of 2 months (July and August).

All cows remained on a specific diet and are on thermoneutrality ranges.

### Statistical analysis:

- Descriptive analyzes using graphs of variables, averages and Scatter diagrams.
- Statistical analyzes using the correlation factor "r", the statistical factor "t", and calculating the p-value.

We used Excel, and Emath programs

### • Descriptive Analysis:

There is a visual association between the reduction of rumen temperature and pH, that is to say, it ingests more water and more frequently in acidosis.

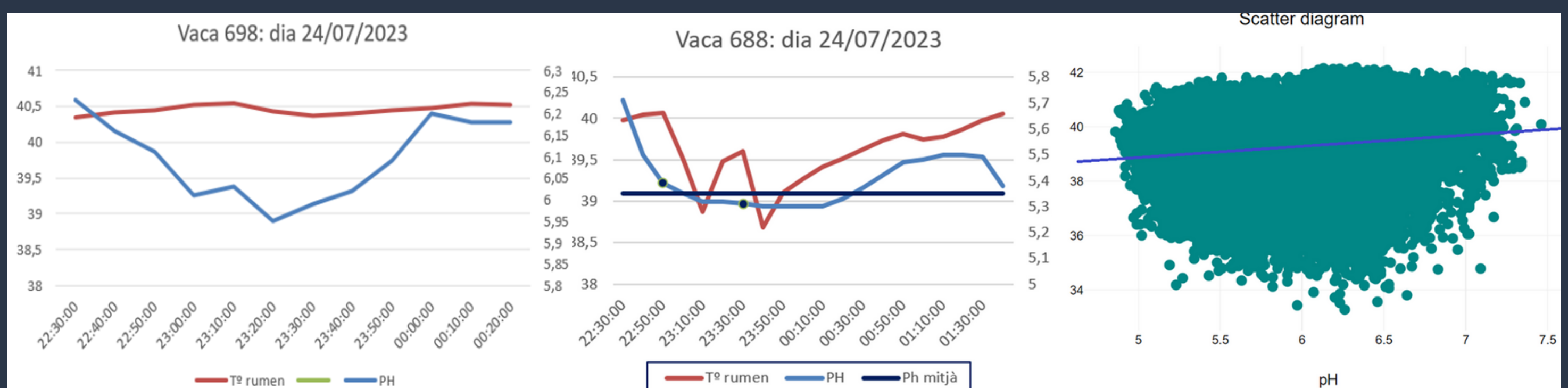
### • Statistical Analysis:

- Pearson correlation coefficient:  $R=0.111$ , there is slight positive correlation.

- Statistical coefficient  $T = 0.698$

-P-value: 0.5

P-value is upper than the level of significance (0.05) the null hypothesis is rejected.



## CONCLUSION

- In general terms, there seems to be a direct relationship between the drop in temperature in the rumen, which corresponds to the animal drinking more water, with the drop in pH below 5.5.
- In the statistical analysis, the  $R=0.111$  shows us a positive correlation, but the p-value does not give us sufficient significance and rejects the null hypothesis, so we should increase the sample size

## REFERENCES

CERRATO-SÁNCHEZ, M.; CALSAMIGLIA, S.; FERRET, A. Effect of the magnitude of the decrease of rumen pH on rumen fermentation in a dual-flow continuous culture system. Journal of animal science, 2008, vol. 86, no 2, p. 378-383.

### Gràfica de distribució t

$p \approx 0,25$



$-0,698 = t = +0,698$