

Temperature rumen bolus able to record intake and drinking behavior for dairy small ruminants

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Active rumen boluses suitable for dairy sheep and goats (BIOSENS; external diameter, 22 mm; length, 80 mm; weight, 50 g) were developed in the frame of the DairyCare Incubator Grants for small ruminants based on the prototypes previously produced and tested in dairy sheep (Oliver et al., 2016, DairyCare 4th Annual Conference, Lisbon). The rumen boluses contained an internal temperature sensing device, connected to an external programmable receiver by high radiofrequency (HRF) ranging from 433.4 MHz. The core of the bolus was an ATMEL microprocessor configured for low power operation and powered with by a small cylindrical Li battery (3.3 V, 2.1 Ah, 2/3AA) which proved to be operative at the mid-term (6 to 10 mo) logged to a temperature sensor collecting data every 2 s. The radiofrequency signal was able to be transmitted from inside the rumen to a small designed transceiver located at more than 5 m or placed in a collar of the sheep. A total of 100 boluses were produced and administered to dairy sheep in different stages of lactation. Current signals recorded showed rumen changes according to feed intake and drinking behavior and are being related to the type and amount of feed and water daily eaten as shown in Figure 1. Rumen temperature ranged between 34 and 40°C and averaged $38.49 \pm 0.43^\circ\text{C}$, the peaks corresponding to feeding and drinking episodes.

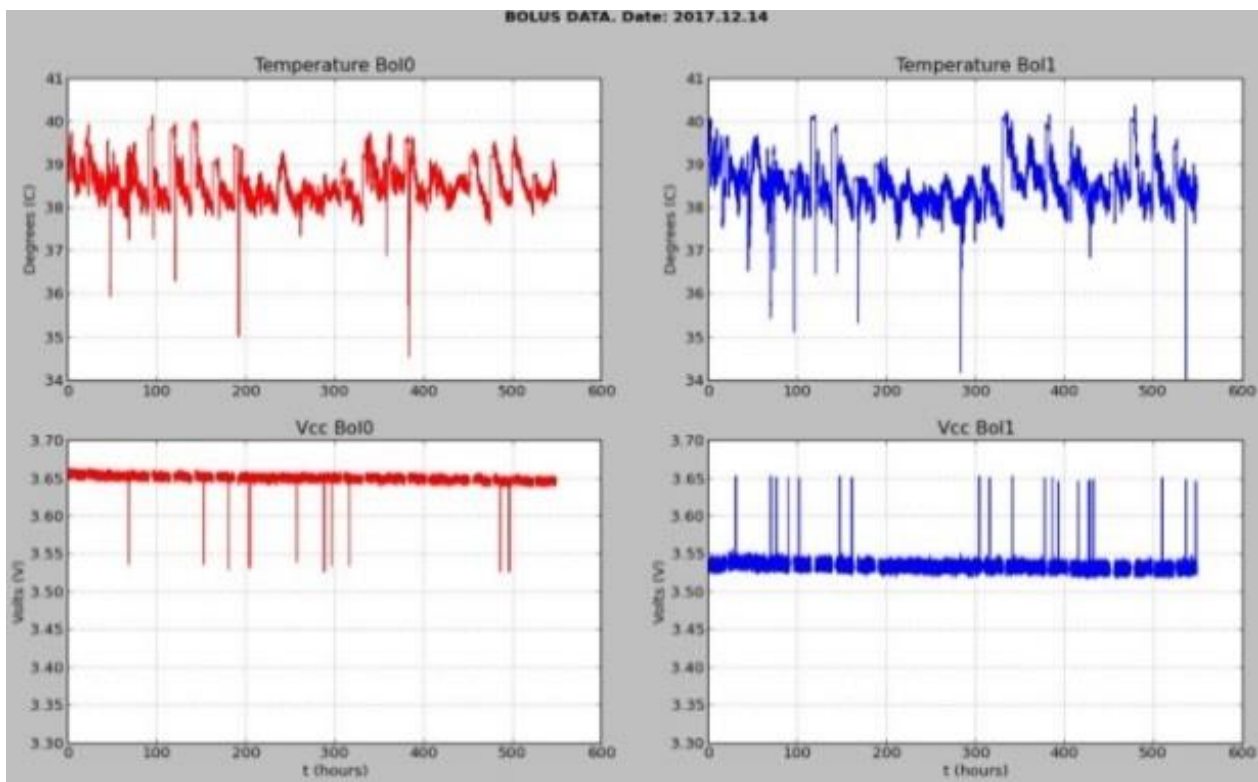


Figure 1

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