

Rumen Boluses are Efficient and Reliable for the Electronic Identification of Sheep

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Electronic ear tag identification (EETI) is commonly utilised in the sheep and cattle industries for enhanced flock management and supply chain traceability. Electronic identification rumen boluses (EIRB) are less commonly used in Australia. This trial aimed to establish whether the Rumitag[®] EIRB, which is already used extensively in Europe, has similar retention and readability characteristics to those observed in European trials (Garin *et al.* 2003) and are comparable to EETI.

Ceramic rumen boluses (Rumitag[®] Z20, Rumitag, Australia) were administered orally to 297 2nd cross lambs (Trial 1) and 495 1st cross ewe weaners (Trial 2) at Rutherglen Centre in Autumn 2005. The microchips used in EIRB are the same technology as present in National Livestock Identification System (NLIS) approved EETI. EIRB matched the following specifications: weight 20 g, length 56.4 mm, width 11.2 mm and specific gravity >3.

Both trials aimed to assess ease of administration, readability and retention rate. Incidences such as swallowing difficulty at administration were assessed using a scoring system on a scale of 0 (no incidence) to 9 (blocked and unable to administer). EIRB was administered to lambs at marking with an age range 4-10 weeks and weight range 8-24 kg and to ewe weaners aged 6-8 months, average weight 45 kg (34-56 kg). EIRB was read electronically 8 days and 62 days post administration for lambs and 13, 110 and 384 days post-administration for the ewe weaners.

To determine that EIRB has no adverse impact on young lambs a further 50 lambs from the same mob were identified with EETI. Liveweight was measured on 50 EETI and 50 EIRB lambs and growth rates analysed using ANOVA. The growth rate from time of bolus administration to the second retention reading (62 days) was 225 g/day and 210 g/day for the EIRB and EETI lambs respectively. Although data analysis showed a statistical difference ($P < 0.05$) between treatments, due to the limited number of lambs assessed, caution must be taken in interpretation of results and further work is recommended to substantiate this trend.

EIRB administration process was efficient and comparable to EETI in terms of ease and time. The majority of incidences observed were immediate regurgitation however EIRB were readministered immediately without incidence.

Retention rates for 2nd x lambs were 100% and 99% on Days 8 and 62 respectively, and 100% on day 13 and 99% on days 110 and 384 for the 1st x ewe weaners. Failure to read EIRB was attributed to the animal losing EIRB rather than the electronic reader failing to read the EIRB. This presumption is based on overseas information that indicates if a bolus is present electronic readings are normally 100% accurate. According to the International Committee for Animal Recording (2007) a device is considered provisionally approved if the readability at 6 months after application is $\geq 99\%$ and definitively approved if the readability at 12 month after application is $\geq 98\%$. Results from this trial meet the criteria for long term approval and in our experience are favourably comparable with EETI.

This project confirmed that 20 g sheep electronic rumen boluses can be orally administered quickly, easily and safely to sheep from marking weight (8 kg minimum wt). From our observations, administering EIRB to lambs less than 8 kg may have welfare and/or retention implications. To circumvent any welfare issues a mini bolus (5.2 g) may be more suitable for lambs weighing less than 8 kg (Garin *et al.* 2003). Furthermore the project determined that sheep administered with EIRB can be reliably identified, when processed in single file down a race equipped with electronic identification equipment.

This project has assisted in establishing that boluses are effective for the identification and tracking of sheep and provides preliminary information on the potential on-farm advantages and opportunities.

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