Leg Bands and Rumen Boluses for the Long-term Electronic Identification of Goats

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INTRODUCTION

European regulation EC 21/2004 stated the mandatory use of passive radio frequency identification (**RFID**) devices for replacement sheep and goats (>6 mo of age) when the small ruminant population in a State is >600,000 animals. Scarce information on RFID leg bands in goats is available.

This work was aimed at assessing the performance of leg bands for visual and electronic ID in dairy goats, and compared with standard ruminal boluses.

MATERIAL & METHODS

Animals & Management:

220 adult Murciano-Granadina dairy goats from a commercial herd (Terradelles, Girona, Spain, n = 170) and the experimental farm of the Universitat Autònoma de Barcelona (S1GCE, Bellaterra, Spain, n = 50).

Managed under intensive conditions, being fed high quality forage and supplemented with concentrate.

Identification devices:

1) Rumen boluses (**RB, n = 220**; Rumitag, Barcelona) made of a high specific gravity ceramic mixture and with the following features: **68 x 21 mm** (length × o.d.) and **75 g**. Boluses contained 32 mm half-duplex glass-encapsulated transponders.

2) Leg bands (**LB, n = 220**; Animal Comfort, Jumilla) placed in the right hind leg (metatarsus), and consisting of plastic bands (**181 × 39 mm, 21 g**) closed with 2 types of half-duplex button electronic ear tags (**LB1**, 26.5 mm o.d., open piece, 3.9 g, n = 90, Allflex, Vitré; and, **LB2**, 25 mm o.d., closed piece, 5.5 g, n = 130, Rumitag).

Measurements:

Shank perimeter of 110 adult goats and 47 goat kids (6 mo of age) was measured to decide on the inner perimeter of fastened LB.

Time for tagging, reading and data recording with an ISO handheld reader (Ges2S, Rumitag) was registered.

Devices (visual and electronic) were regularly read in static conditions until 1 yr. Readability was expressed as:

Readability (%) = (read devices / monitored devices) x 100

Shank perimeter and readability of devices were analyzed with the GLM and CATMOD procedures of SAS v.9.1, respectively.

RESULTS & DISCUSSION

Shank perimeters of young (70 ± 1 mm) and adult goats (88 ± 1 mm) were lower ($P < 0.001$) than the inner perimeter of fastened LB (110 ± 1 mm). Young 6-mo goats were considered inadequate for LB application.

Time for leg band application with the attached transponder and data recording was 53 ± 3 s, similar ($P > 0.05$) to time reported for RB (49 s).

Readability of ID devices are shown in **Table 1** and **Figure 1**. At 1 yr, 2.5% RB were lost; 3.6% LB were open and unreadable due to breakage of the electronic ear tag, and 1.5% had to be removed because of limping (1 leg was inflamed and the LB constricted the metatarsus, and 2 LB were too loose and got blocked on the pastern).

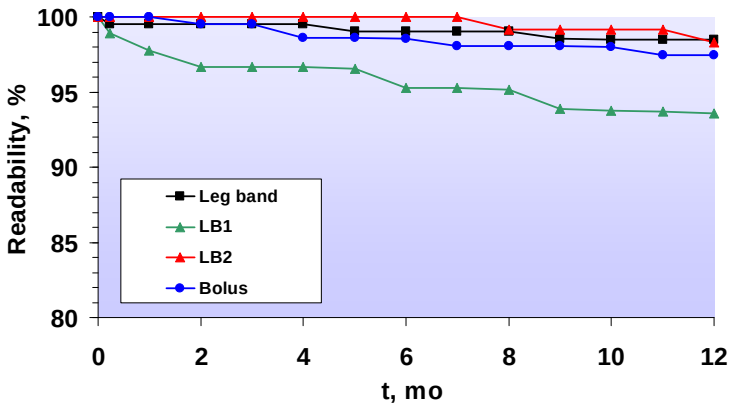
Table 1. Physical features of ruminal boluses and their retention rate (RR, %) in goats.

		Button transponders		
ID devices	Leg bands	LB1	LB2	Boluses
Applied, n	220	90	130	220
Monitored, n	197	78	116[1]	197
Removed, n	3	0	0	0
Lost, n	0	5	2	5
Readability, %	98.5[a]	93.6[b]	98.3[ab]	97.5[ab]

[1] 3 leg bands were removed due to limping.
[a, b] Values with different letters in the same line are different ($P < 0.05$).

Readability of LB1 and LB2, excluding the LB removed, was 93.6 and 98.3% ($P = 0.48$), respectively. No readability difference between LB (98.5%) and RB (97.5%) was detected ($P = 0.48$). Only LB and LB1 differed ($P < 0.05$).

Figure 1. Readability of RFID devices throughout 1 yr of study in dairy goats



IMPLICATIONS:

Leg bands were inadequate for identification of replacement goats, although they may be an efficient method in adult goats. Electronic tags on the leg bands and rumen boluses did not meet the ICAR reference values for official identification (>98%).

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