COMPARISON OF CONVENTIONAL AND ELECTRONIC IDENTIFICATION METHODS IN BEEF COWS UNDER RANGELAND AND LONG TERM CONDITIONS

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INTRODUCTION

Electronic identification (**EID**) is recognized as a useful tool for livestock. Of the available EID devices, electronic ear tags and ruminal bolus are recommended in cattle. Injectable transponders are not recommended due to recovery difficulties in the abattoir (Conill et al., 2002; *J. Anim. Sci*. 80:919-925). In this sense, it is necessary to consider the recent report of the European Commission to the Council and the Parliament on the possibility of introduction of electronic identification for bovine animals

With this aim, ear tags (conventional and electronic) and ruminal boluses were compared in beef cattle under rangeland conditions in Spain

MATERIAL & METHODS

- **Animals & Management:**
  A total of **161** adult cows from the ***Bruna dels Pirineus*** beef cattle, grazing under rangeland conditions in the Pyrenees Mountains were identified with different devices and studied for a period of ***8 years*** (1997-2004).
- **Conventional Ear Tags:**
  All cows wore two officially approved plastic flap ear tags (weight, 6 g; width×height, 57×79-mm; Azasa-Allflex, Madrid, Spain), one in each ear, according to the European Regulation for cattle identification (*CE 1760/2000*).
- **Electronic EarTags:**
  Plastic button ear tags containing a half-duplex (***HDX***) transponder (weight, 10 g; o.d., 30 mm; *Allflex, Vitré, France*) attached to the left ear were used.
- **Ruminal boluses:**
  Cylindrical boluses (length×o.d., 21×68- mm; 75 g) made of atoxic ceramic material were used. Each bolus contained one passive ***HDX***, glass encapsulated transponder (length × o.d., 32.5×3.8-mm; *Tiris, Almelo, The Netherlands*).
- **Procedures & Measurements:**
  Handheld ISO transceivers were used for the reading controls Gesreader 2S (*Rumitag S.L., Spain*).

Table 1. Performance of identification devices used in beef cows grazing under rangeland conditions in Spain.

Year	Losses, % (n)			Failures, % (n)	
	Plastic ear tags	Electronic ear tags	Ruminal boluses	Electronic ear tags	Ruminal boluses
1 (97)	1.6 (6)	0	0	0	0
2 (98)	2.2 (7)	0	0	0	0
3 (99)	2.3 (6)	0	0	1.6 (2)	0
4 (00[1])	2.7 (6)	1 (1)	0	0	0
5 (01)	3.5 (4)	1.7 (1)	0	0	0
6 (02)	3.4 (4)	1.7 (1)	0	0	0
7 (03)	5.6 (7)	3.2 (2)	0	0	0
8 (04)	11.0 (11)	10.0 (5)	0	0	0

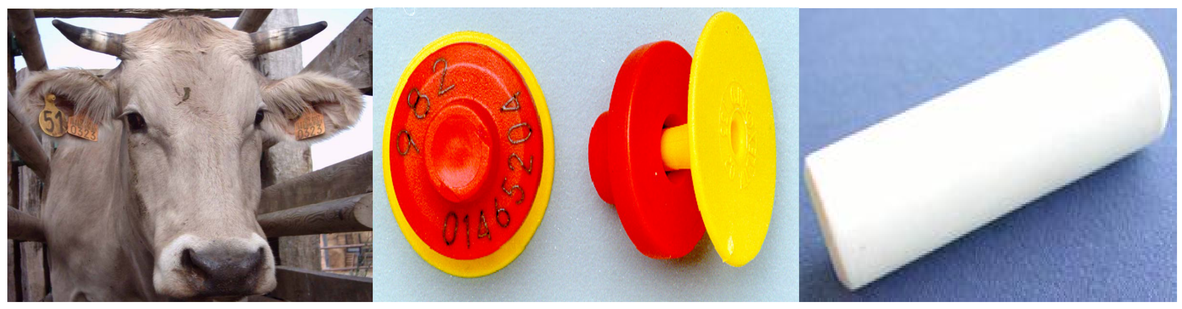
[1] Herd was divided in two and reading controls were only performed in one herd (112 cows). All treatments differed at $P < 0.05$.

Devices were read before and after application, 24-h and 1-wk after, and annually at the official annual brucellosis and tuberculosis testing and drugging.

Readability (R,) of different devices were calculated as:

$$R\ (\%) = (\text{Devices read} / \text{Devices applied}) \times 100$$

Data analysis was carried out by using the PROC CATMOD of SAS (v. 8.1). Differences were declared at $P < 0.05$.



RESULTS & DISCUSSION

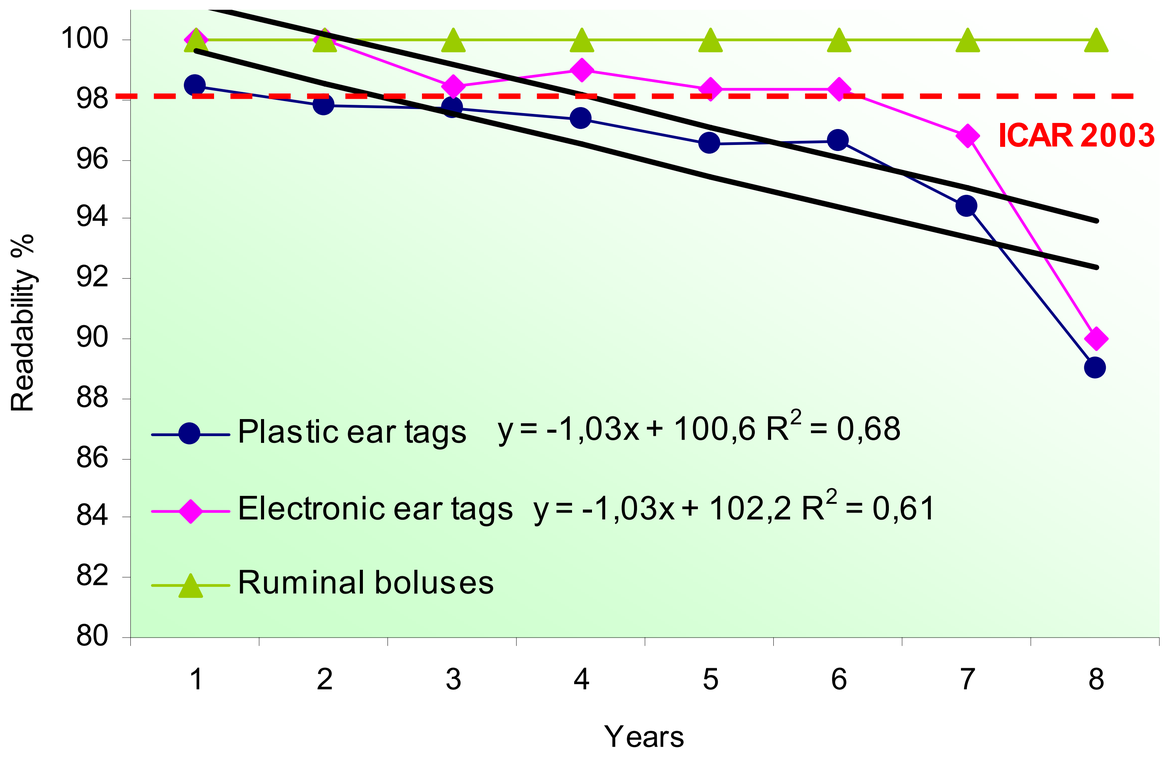
Accumulated results of losses of all devices and failures of the electronic devices are shown in **Table 1**.

A total of 40 conventional ear tags were lost during the trial. Two cows lost both ear tags, but losses did not occur in the same year.

Five electronic ear tags were lost and two more failed during the trial. Losses were reported throughout the trial but failures occurred the third year probably due to humidity in the device.

Two electronic boluses (1.2%) were lost 2 h after application and were reapplied on the same day. No new losses or failures of boluses occurred during the rest of the trial. Readability during the trial are shown in **Fig. 1.**

Figure 1. Readability of different identification device observed in beef cattle under extensive condition



After 8 years, the 50 cows remaining in the herd retained 89.0% of official plastic ear tags. Electronic ear tags showed a 88.4% readability (1.6% failed and 10.0% were lost). Annual ear tag losses was 1.4% on average, but dramatically increased after the 6th year.

IMPLICATIONS:

EID proved to be **more efficient** than conventional tagging in beef cows under rangeland conditions. **Long term readability was greater for boluses than ear tags**, recommending their use for EID of cattle in practice.

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