

Can Electronic Tags Affect the Cost of Data Collection?

C.E. Pope and K.D. Atkins

CRC for Sheep Industry Innovation and NSW Department of Primary Industries, OAI, Forest Rd, Orange 2800.

Precision management requires efficient and timely collection of accurate data at a mob and individual animal level. The financial and production advantages that can be achieved through sheep breeding and selection have been described by Atkins *et al* (2006). Additional benefits from precision management will arise from regular monitoring and targeted management interventions for nutrition, animal health and product quality (Rowe and Atkins 2006).

The cost of measurement and recording, especially with the reported shortage of farm labour, is a significant barrier to the adoption of measurement-based systems. Radio-frequency identification (RFID) tags are more costly than printed plastic tags but offer potential labour savings through electronic data capture and accuracy, which is an important issue in managing individual animals, especially for breeding and selection. This issue has received some attention and we know that electronic data capture can reduce errors from about 5% in a well recorded flock to near zero. Some flocks have realized or unrealized errors well in excess of 5%, up to 15% errors have been reported in Qld.

Two examples are given of Sheep CRC collaborators who have used RFID extensively and who report substantial cost savings in both data capture and validation of data. The Centre Plus (Tullamore, NSW) example relates to the cost of collecting body weights only. The Balmoral Central Test Sire Evaluation (CTSE) (Vic) has also costed the data validation and editing exercise (Table 1).

Table 1. Cost comparison of Visual and RFID tags for collecting sheep liveweights and data cleaning.

	Centre Plus		Balmoral CTSE	
	Visual Tags	RFID	Visual Tags	RFID
No of sheep	700	700	600	600
No of labour units	3	2	3	2 ¹
No of man hours	11.67	4.67	13.5	3
Cost @\$40 per hour	\$466.80	\$186.80	\$540	\$120
Cost per weight recorded	\$0.67	\$0.27	\$0.90	\$0.20
Estimated error rate			5%	.05% ²
No of corrections needed			30	.3
Time/error			.1	.1
Hourly rate for data management			\$80	\$80
Cost of time for tag correction			\$240	\$2.40
Cost per record for data correction			\$0.40	\$0.005
Total Cost per unit correct data			\$1.30	\$0.20

¹Labour is required for pushing-up, tag reading and scale operation. The use of RFID allows tag reading and scale operation to be combined.

² Errors in RFID are limited to duplicate records of the same sheep. These are easily dealt with by deleting duplicate records.

The scenarios presented highlight the differences that can exist even with experienced data collectors and suggest that electronic tag reading can deliver substantial savings in labour costs, in excess of 50%. The Balmoral example shows that data accuracy is achieved in the RFID tagged group at almost no cost, whereas data collection in a visual ID system may still need substantial inputs before the data is useable. Cost savings need to be offset against capital costs for RFID tags, reader and data capture equipment. Tags can be reused on a number of animals, cost savings will be obtained on each recording occasion and the benefits to breeding programs are cumulative. Cost savings will be influenced by the durability of each RFID tag

The Sheep CRC wish to acknowledge the ongoing support of Sue Jarvis and the Balmoral CTSE Committee, and Mark and Robert Mortimer of Centre Plus.

Atkins, K.D., Richards, J.S. and Semple, S.J. (2006) *Proc. 8th Wld. Congr. Genet. Appl. Livest. Prod., Belo Horizonte, Brazil, August 2006, CD-ROM Communication 05-01.*

Rowe, J.B. and Atkins, K.D. (2006) *Aust. Soc. Anim. Prod. 26th Conf.*, Short Communication No. 33

Email: cheryl.pope@dpi.nsw.gov.au