

**ELECTRONIC SYSTEMS FOR IMPROVED COLLECTION OF ANIMAL LIVEWEIGHTS**

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Electronic identification (EID), with appropriate software and hardware, provides the basis for the automated collection of machine-readable measurements for individual animals. The use of EID should overcome many of the problems associated with visually read ear tags, such as reduced tag readability and operator errors when reading and transcribing the numbers. The cost effectiveness of EID will depend in part on the labour saving resulting from automating one or several tasks, and the benefits derived from improvements in the speed and reliability of record keeping. This paper reports preliminary data on the relative labour efficiency of automated versus conventional weighing systems for cattle and sheep.

The electronic cattle weighing system at Hamilton is based on the HDX type electronic tags, required by NLIS, and special purpose software (Beef-one®) connected to Ruddweigh® scales. To compare the electronic weighing system with conventional visual tag reading and weighing, mobs of weaner cattle (n = 52 and 68) fitted with visually and electronically readable tags were weighed on two occasions using a crossover design. There was no significant difference in the average weighing time for cattle with conventional tags or electronic tags (21.5 vs. 20 seconds per head). The time for transfer of data to a spreadsheet took an average of 9.5 seconds per head for the visual records. For the electronic records, on one occasion it was completed in one minute, while on the other occasion it took 12 minutes due to a problem saving the file. Had the visual tags been dirty, as is common, the weighing time for the visual system would have been much greater with reduced accuracy. After two and half years of operation, the electronic system appears to have increased the accuracy of weighing and data transfer.

Fully automated sheep handling systems have been developed at Hamilton and Rutherglen (Gaunt *et al.* 2002). Both systems are based on the Allflex® HDX electronic tags and Sheepone® software. The system is connected to a pneumatic sheep handler (Racewell®) that can automatically hold the sheep for weighing using Iconix® electronic scales. Merino wethers (n=99) were used to compare three methods of weighing; (i) electronic - electronic reading of tags, weighed in Racewell® and data recorded electronically; (ii) visual - visual reading of the tags, weighed in Racewell® and data recorded manually; and (iii) traditional - visual reading of the tags, manually operated scales and data recorded manually. There were three replications in a Latin Square design, with one replicate being weighed each day. Three people were used to run each treatment.

**Table 1. Time for measuring sheep liveweights (n=99) using different weighing systems (estimated number of sheep weighed per hour shown in brackets)**

	Weighing time (min)	Data entry time (min)
Electronic	19.8 (300)	6.0
Visual	30.0 (198)	12.3
Traditional	28.7 (207)	11.7
l.s.d	3.0	4.0

The electronic system increased the speed of weighing and data entry (Table 1). There was the added bonus of improved accuracy for data transfer to a spreadsheet, eliminating the problems of misread tags or misheard tag numbers or weights being transcribed. An additional run using only two people did not significantly affect the efficiency of the electronic weighing process (data not shown), thereby leading to an added labour saving. The only apparent problem with the Racewell® system itself is that it occasionally failed to automatically capture the sheep, but this problem should be overcome. The full benefits of EID will only be realised if the data collected can be used to improve breeding programs and livestock management to lift production and or product quality.

GAUNT, G., SEYMOUR, G. and CURRAN, P. (2002). *Anim. Prod. Aust.* (these proceedings).

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