final report

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Feed intake measurement of cattle in the Tullimba R&D Feedlot

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Executive Summary

This report covers the 108 Hereford steers from HH12 that had feed intake and weight gain recorded on them in UNE's Tullimba feedlot. All data has been delivered to BreedPlan. Each trial is summarised below:

HH10: This report covers the 108 Hereford steers that began feed intake testing at Tullimba on 01/07/2017. They finished in the feedlot on 14/09/17 (77 days). Cattle have generally performed well and have averaged around 14.327 kg/day feed intake for the 77 days. Trial average weight gain has been 2.18 kg/day weight gain (range 1.32 – 2.7 kg/day) during the test period after adaptation to the feeders. Retrieval of valid daily feed intake data will allow robust estimates of RFI and EBVs. Feed intake and live weight data from manual weighing is being reported to the breeder groups fortnightly and have been supplied to BreedPlan via Jim Cook.

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1 Background

1.1 Background regarding NFI testing

Feed is the largest recurring input cost in beef cattle production systems. Residual feed intake (RFI, also called ‘ net feed intake ’ or NFI in Australia) is a measure of feed use efficiency and can be used to help manage the utilisation of feed on farm and in the feedlot. Net feed intake is calculated as the difference between the actual feed intake by an animal over a test period minus that expected or predicted based on its size and growth rate (Herd et al. 2003a). An animal with a lower feed intake than expected is considered more efficient. Selective breeding for low-RFI animals offers the potential to produce progeny that will eat less with no compromise in size or growth performance (Archer et al. 1999). There has been shown to be genetic variation for NFI with moderate Heritability in growing cattle being reported (Arthur and Herd 2012). However, the opportunity to improve profitability in the feedlot through animal breeding for lower RFI is dependent not only on the existence of genetic variation in RFI, but also on the magnitude of genetic associations with other key production traits. For feedlot cattle, these traits include growth rate, feed conversion ratio (FCR), and carcass and meat quality traits, many with tight market specifications and penalties for non- compliance. Genetic merit of cattle for breeding purposes is described by estimated breeding values (EBV; BREEDPLAN 2010), with trial RFI-EBV first becoming available in Australia in 2002 in the Angus breed (Angus Society of Australia 2002), and BREEDPLAN RFI-EBV becoming available at the end of 2013 for Angus cattle (Herd et al. 2014). Other breeds, such as Hereford beef cattle, are now embracing the use of NFI EBVs.

To Gain the information regarding NFI, standards for the collection of good data have been described. In general the amount of time required to collect stable data is the biggest influence on NFI testing. This data collection forms tha basis of understanding and selection for feed efficiency in beef cattle.

2 Project Objectives

1. To measure and report on the feed intake of Hereford Beef Information Nucleus (BIN) Livestock at UNE Tullimba Feedlot Research Facility including provision of Reports containing data

2. To collect and store the data from this Project as well as other data generated by GrowSafe and other recording equipment. This data will be stored in a database accessible by UNE researchers subject to Clause 8.9 of the Agreement.

3 Methodology

3.1 Background

Approximate number and sex of cattle fed:

Cohort 1 108 Hereford Steers

Approximate date of entry to feed period:

Cohort 1 01/07/2017

Payment is based on $2/head/day for trial periods (7+70 days) in feeders.

4 Results

4.1 Cohort 1 (HH12)

Cohort 1 (Here12): Feedlot pens 4,5

Head count 108
First full feed date = 01/07/17
Last full feed date = 14/09/17
Number of full feed days = 77

Valid Feed Intake days:	66	Pen 12
	63	Pen 15

Note. The number of valid Feed Intake days is less than the days of the trial due to power outages (storms), rain days and equipment issues.

The table below summarises the data that has been recorded for the completed cohort.

	Trial Start Wt (fitted) (kg)	Trial End Wt (fitted) (kg)	Wt Gain (kg)	ADG (kg)	Avg Daily FI (g)
MIN	382	515	91	1.32	10514
AVERAGE	**468.5**	**619**	**150.5**	**2.18**	**14327**
MAX	576	759	186	2.7	18218

The table below summarises the completed cohort.

Breed	Number	$	Start feeders	End test	Days on feeders
Hereford	108	$16,632	01/07/17	14/09/17	77

5 Discussion

The project proceeded as planned though anticipated completion dates were later due to delays in cattle availability through the Hereford Society and delays with data processing.

6 Key Messages

The Growsafe facility at Tullimba is a valuable industry resource for RFI testing. The data collected from the project is underpinning the NFI EBV that can be utilised by breeders to select for feed efficiency.

To be maintained, the facilty needs a regular flow of cattle though it to help fund any repairs and maintenance and for future upgrading of the facility.

7 Conclusions/Recommendations

It is key that the beef cattle industry makes as much use of the raw data collected and stored for genetics R&D as possible.

The main limitation of the project thus far is the lack of investment in human capacity to analyse some of the novel data that has been recorded as part of this project. UNE is now funding a PhD student to examine better ways to select for feed efficency. Other industry investment in personnel time would increase the value of this data to industry.

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