

Grain on Grass

Producer case study: E & K Shannon

Property owner: E & K Shannon
Property name: Tiona
Location: Bugaldie NSW
Annual rainfall: 650–700mm
Property size: 1,485ha across three properties
Enterprise: Beef cattle breeding and trading, cropping
Pasture type: Lucerne, tropical grasses and native grasses
Soil type: Sandy clay loam

Introduction

The Warrumbungle Mixed Farm Producer Group (WMFPG) was developed to increase the knowledge and skills of the producers involved through joint learning and experience sharing.

Members of the WMFPG were a mixed group of producers grazing dual purpose and winter crops.

There was an opportunity for these producers to utilise feeding equipment and on-farm grain stores to increase weight gain of stock grazing forage/dual purpose crops and turn stock off more quickly, increasing carrying capacity and, therefore, profitability.

The Grain on Grass project was developed to demonstrate the use of supplementary grain while grazing to:

1. Increase liveweight gain per head per day by 20%
2. Improve carrying capacity through expedited stock turn-off by 3.5%
3. Showcase the utilisation of grain supplementation during forage crop grazing in preserving carcase quality and meeting market specifications while reducing grazing days by 13%
4. Raise awareness among core producers and 25% of observers regarding the importance of feed tests in assessing feed quality
5. Increase awareness among core producers about utilising carcase feedback to ensure compliance with target market specifications
6. Enhance the skills of 75% of core producers in formulating supplementary feeding rations through the utilisation of feed tests.

Background

The Shannon family's mixed farming business is located 20km west of the village of Bugaldie.

The family's enterprises include beef cattle breeding and trading, with some cropping.

Their cropping production consists predominantly of winter crops, with a mixture of cash crops, dual-purpose and grazing crops.

Running 300 head of Angus-cross cows and 300 head of Angus-cross yearling cattle, their herd grazes on a variety of improved pastures including lucerne, tropical grasses and native pastures.

Grain on Grass demonstration at Tiona

The Grain on Grass demonstration at 'Tiona' focused on understanding the profitability and productivity benefits of supplementing Angus steers on Premier digit pastures during summer (**Figure 1**).

The demonstration ran for 48 days, commencing on 3 February 2023 and ending on 23 March 2023.

Unfortunately, it was cut short due to a lack of available herbage mass resulting from limited summer rainfall.

There were 100 yearling Angus steers in the demonstration, evenly split into the treatment and control groups, with both groups recording an average starting weight of 378kg.

Feed tests were undertaken on the pasture before developing the supplement ration (**Table 1**).

Figure 1: Premier digit pasture



Table 1: Initial feed test results for digit pasture

ANALYSIS RESULTS			1	2
Test Description	LOR	UNITS	Bottom Windmill	Andrews
Dry Matter	0.5	%	33.8	34.1
Moisture		%	66.2	65.9
Neutral Detergent Fibre - NIR	10	%	68	69
Acid Detergent Fibre - NIR	4	%	33	35
Crude Protein - NIR	2	%	7.1	4.4
Inorganic Ash - NIR	3	%	8	7
Organic Matter - NIR		%	92	93
DMD	39	%	50	49
DOMD	38	%	50	48
Calculation of ME	4.3	MJ/kg DM	7.1	6.8
WSC - NIR	4	%	<4.0	4.0
AFIA Hay and Silage Grade			NO GRADE	NO GRADE

The feed test results showed that the nutritional value of both paddocks was below current maintenance requirements for the class of stock.

Computer modeling using Grazfeed® indicated that without supplementation, the control animals would be in a weight deficit of approximately 370g/hd/day.

Due to this predicted deficit, it was decided that the control group cattle would receive a maintenance supplementation of 1kg/hd/day of oats fed by trail feeding to avoid dropping body condition. The treatment group would receive 3kg/hd/day of oats via the self-feeders in the paddock.

Results

Increase average daily gain by 20%

The final weights for the project were recorded on 23 March 2023. The treatment group had an average daily gain (ADG) of 0.79kg/day and the control had an ADG of 0.77kg/day.

This was a difference of 0.02kg and equated to only a 3% increase in ADG of the supplemented animals. This difference in weight gain was not significant ($P>0.05$).

Improve carrying capacity through expedited stock turn-off

Exact figures for improved carrying capacity and stock turn-off are difficult to calculate as there was no target finishing weight.

However, the results from this site do indicate that through supplementing with grain, stock are more likely to substitute pasture intake for grain supplementation, therefore making pasture last longer and improving carrying capacity.

Cost-benefit analysis

The results from the cost-benefit analysis are displayed in the tables below.

Costs for grain and labour are shown for both the control group and the treatment group as both were fed a ration (as outlined in the description of the demonstration above).

At a cost of \$300/t of grain, the cost per head per day (including labour) was \$0.41 for the control group and \$1.04 for the treatment group.

The cost benefit analysis showed that the loss associated with supplementary feeding 1kg/hd/day compared to 3kg/hd/day was -\$0.94/hd/day or -\$45.07 for the demonstration period.

Table 2: Cost of grain and labour for the control group

Control group	
Total cost of grain	\$810
Total cost of labour	\$165
Cost grain + labour	\$975
Cost grain + labour (per tonne)	\$361
Cost grain + labour (per kg)	\$0.36
Grain consumed per day (kg)	56
Grain consumed per head (kg)	1.1
Cost/hd/day	\$0.41
Cost/hd/demo period	\$19.50

Table 3: Cost of grain and labour for the treatment group

Treatment group	
Total cost of grain	\$2,310
Total cost of labour	\$195
Cost grain + labour	\$2,505
Cost grain + labour (per tonne)	\$325
Cost grain + labour (per kg)	\$0.33
Grain consumed per day (kg)	160
Grain consumed per head (kg)	3.2
Cost/hd/day	\$1.04
Cost/hd/demo period	\$50.10

Table 4: Average daily gain and \$ gain per head per day

	TOTAL ADG (KG)	\$/KG	\$ GAIN/HD/DAY	\$ GAINED THROUGH SUPPLEMENTARY FEEDING
CONTROL GROUP	0.76	\$4.50	\$3.43	
TREATMENT GROUP	0.79	\$4.50	\$3.54	\$0.10

Table 5: Cost-benefit analysis per head per day and for the demonstration period

Cost benefit/day/head			Cost benefit/demo period/head		
Cost/hd/day (\$)	\$ Return/hd/day	Cost benefit (\$)	Cost/hd/demo period (\$)	\$ Return/hd	Cost benefit (\$)
1.04	0.10	-0.94	50.10	5.03	-45.07

Evaluation of case study

This demonstration showed that by supplementing grain, weight gains were only slightly improved.

The minimal difference in ADG may have been due to several factors.

Primarily, the amount of supplement being fed to the control group was calculated in error, resulting in this group receiving more supplement than needed for maintenance of liveweight.

Consequently, the control group could not be effectively used as a comparison with the treatment group.

Additionally, the over-supplementation of the control group would have led to a significant substitution of grain for grass and poor pasture utilisation within the control animals.

The similar ADG of both groups also indicated that the Grazfeed prediction may not have been accurate and that the control group was gaining adequate nutrition from the pasture.

A key learning from this demonstration was the importance of considering animal behaviour, particularly shy feeders, when supplementary feeding using self-feeders.

Where possible, shy feeders should be identified early and alternative feeding options such as trail feeding should be utilised to minimise the impact on weight gain across the group.

This demonstration highlighted that it may be best for producers to undertake some basic calculations using figures for cost of grain and current/future livestock prices to ensure that there is a financial benefit to supplementing livestock on tropical pastures.

There may be certain scenarios where the importance of an increase in liveweight gain may be placed above the immediate direct financial cost, for example, if you have heifers that need to be at a joinable weight by a certain date to ensure optimal conception rates.

The determining factor influencing the adoption of supplementation is the return on investment (cost of grain and labour versus weight gained).

For further information:

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