Department of Agriculture and Food
GOVERNMENT OF WESTERN AUSTRALIA

MEAT & LIVESTOCK AUSTRALIA

final report

Project code: B.NBP.0619.C

Prepared by: Matthew Fletcher
Department of Agriculture and Food, Western Australia

Date published: 29 March 2016

PUBLISHED BY
Meat and Livestock Australia Limited
Locked Bag 1961
NORTH SYDNEY NSW 2059

PDS – Implementation of Producer Demonstration Sites to increase research adoption and practice change in the Kimberley and Pilbara

PDSWA003 - Increasing awareness of weight change in feeder bulls between yarding and delivery to the exporter

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

Abstract

A Producer Demonstration Site (PDS) to examine weight change in the supply chain between yarding feeder bulls (young bulls) and loading onto a live export boat was conducted in the Kimberley, Western Australia. The PDS measured weight change in 240 Brahman X feeder bulls over 28 days in September 2012. Post mustering at Leopold Downs station the feeder bulls were drafted into four groups and fed either shipper pellets or oaten hay ad lib, or placed into a holding paddock. The group fed shipper pellets were split further into, one group fasted prior to weighing and the other not. After 14 days on these feeding regimes the feeder bulls were trucked to Roebuck Export Depot; all stock were fed shipper pellets and oaten hay ad lib for 14 days.

This PDS demonstrated there were financial benefits from holding stock in a holding paddock until required for transport. Where holding stock in a holding paddock is not an option, the next best option was to deliver stock direct to the depot and put them on feed until the point of sale.

Executive summary

A Producer Demonstration Site (PDS) to examine weight change in the supply chain between yarding feeder bulls (young bulls) and loading onto a live export boat was initiated by the Kimberley Beef Research Committee and funded by Meat and Livestock Australia. Feeder bulls are a common live export article in the Kimberley and Pilbara. This is primarily due to management (once a year mustering) and live export market opportunities, for example Middle Eastern markets prefer entire males.

No previous work had been completed or published in the Kimberley or Pilbara regarding weight change in the supply chain between yarding stock and loading for live export. A significant amount of anecdotal information exists about the change in weight of cattle immediately pre-shipment. This trial demonstrated changes in live weight between yarding and delivery to the exporter and will allow more informed decisions to be made with respect to feeding regimes and drafting weights pre-delivery to the exporter.

The PDS measured weight change in 240 Brahman X feeder bulls, initial average liveweight 246kg (range 200–350kg), over 28 days in September 2012. Stock were weighed on day 1, twice on day 14 (before and after transport) and on day 28. A 12-hour wet curfew was applied to all groups (except feeder bulls in Group 4) prior to weighing. Feeder bulls in Group 4 were used to capture weight change when not subjected to a 12 hour wet curfew prior to weighing, for shipper pellets only. Phase 1 (day 1 to 14) was completed at Leopold Downs, Fitzroy Crossing. Stock were randomly drafted into four groups of 60 head. Group 1 was fed shipper pellets ad lib, Group 2 was fed oaten hay ad lib, Group 3 was placed into a well-grassed holding paddock and Group 4 was fed shipper pellets ad lib. After 14 days on these feeding regimes the feeder bulls were trucked to Roebuck Export Depot (RED), Broome for Phase 2; all stock were fed shipper pellets and oaten hay ad lib for 14 days.

Phase 1 – feeder bulls held in the holding paddock for 14 days at Leopold Downs and delivered to RED (point of sale) returned the greatest net value of $431/head. The net value of feeder bulls fed pellets was $390/head and feeder bulls fed oaten hay was $385/head. It was more profitable to hold stock in a well-grassed holding paddock on-station than feed pellets or oaten hay while waiting to be transported. There was only a 3kg liveweight advantage ‘at the point of sale’ to providing a more nutritious ration; pellets v. native pasture, for 14 days prior to trucking. The lower net value received was solely due to the cost associated with purchasing and transporting fodder.

Feeder bulls previously fed pellets and from the holding paddock at Leopold Downs similarly lost on average 13.2kg liveweight during a 5-hour road trip to RED. This is equivalent to what nearby stations have also recorded during similar journeys.

Phase 2 – a significant portion of liveweight gain at RED was due to replacement of gut fill lost during transport. The average net value of feeder bulls after 14 days on feed at RED was $383/head for Group 1 (previously fed pellets), $379/head for Group 2 (previously fed oaten hay) and $419/head for Group 3 (previously fed native pasture). Feeder bulls previously held in a holding paddock at Leopold Downs returned the best net value ($419) after 14 days on feed at RED. This was because there was no direct cost associated with holding stock in a holding paddock at Leopold Downs for 14 days unlike when feeding pellets or hay.

There were financial benefits from holding stock in a holding paddock that is stock-proof, has adequate water and feed and can be easily mustered prior to transport. Where holding stock in a holding paddock is not an option, the next best option was to deliver stock direct to RED and put them on feed until the point of sale, which negates cartage costs on fodder.

Future producer demonstration sites to further develop this work are being investigated:

- Investigating weight change and feed consumption over 3, 5 and 7 days respectively on-station and at RED. It is hypothesised that sending stock to RED for 4–5 days prior to sale could provide an improved cost/benefit.
- Promote improved management of holding paddocks across the Kimberley.

The cooperation of Roebuck Export Depot, Bunuba Cattle Company and the Bunuba Aboriginal people, owners of land and cattle, allowed this demonstration to happen.

Feeder bulls from Group 1 eating pellets out of a poly feed tub at Leopold Downs station.

Table of contents

1. Background

This PDS was initiated by the Kimberley Beef Research Committee (see Appendix A). To measure weight change in the supply chain between the time feeder bulls are mustered on-station and loaded onto a live export boat. No previous work has been published in the Kimberley or Pilbara regarding weight change in the supply chain between yarding stock and loading for live export.

The amount of time stock spend in station yards prior to transportation varies significantly and depends on a number of factors such as accrual of sufficient numbers to fill a truck. Sometimes stock can be retained in secure and easily mustered holding paddocks if they are available. The nutritional management of stock in this transitory period is varied and ranges from native hay/pasture to oaten hay and even pellets. Stock destined for Indonesia are commonly fed (shipper pellets) at the Roebuck Export yards for between 24 hours and 20 days depending on vessel availability.

The Kimberley and Pilbara herd size is approximately 706 000 head (ABS, 2012). Dray et al. (2010) reported approximately ~80% of sale cattle in the Kimberley and East Pilbara were sold into the live export market in 2009, specifically the South East Asian market. The current market situation in Indonesia is that cattle must be landed on their shores at less than 350kg. It is the responsibility of producers to supply animals that meet the required specifications. This work will be made public to help producers better understand weight change in the yards and during transport, and assist in the prevention of 'out of spec' stock being delivered to the export yards.

Leopold Downs station (Figure 1) is owned by the Bunaba Aboriginal people and has been trialling different feeding regimes between mustering and the point of sale for many years. Station Manager Ned McCord, wanted to participate in the PDS to gather hard data (cost/benefit) to support future decisions regarding feeding regimes pre-sale. Roebuck Export Depot (RED) prepares thousands of cattle from the Kimberley and Pilbara for shipment every year. Manager Paul Heil believes there is potential for producers to reduce liveweight losses in sale stock; the losses are primarily due to poor handling and animals being fed sub-maintenance diets after mustering.

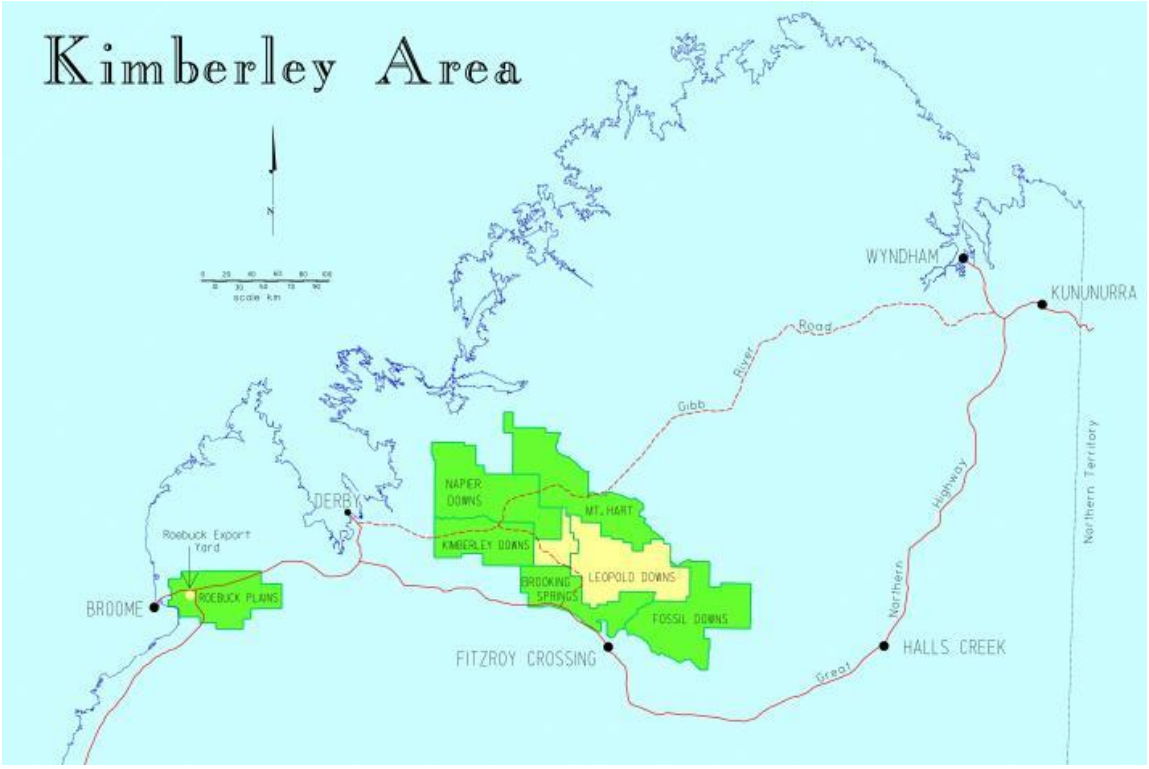


Figure 1: Kimberley area

2. Project objectives

Project objectives were:

- Record and analyse feed intakes and weight change for feeder bulls from yarding on-station to loading onto vessels.
- Measure the cost/benefit of feeding shipper pellets, oaten hay and holding feeder bulls in a holding paddock for 14 days at Leopold Downs and at Roebuck Export Depot.

3. Methodology

The PDS measured weight change in 240 Brahman X feeder bulls, initial average liveweight 246kg (range 200–350kg), over 28 days, in September 2012. The demonstration was carried out at Four Mile yards on Leopold Downs station, Fitzroy Crossing and at Roebuck Export Depot (RED), Broome. Department of Agriculture and Food, Western Australia Animal Ethics Committee had approved the trial (AEC no: 5-11-24). The demonstration was completed in two phases.

Phase 1 – at Four Mile yards was completed over 14 days. Steers were drafted into four treatment groups (60 head in each), treatments were:

1. Shipper pellets
2. Oaten hay
3. Native pasture

4. Shipper pellets (with no fast prior to weighing).

Steers had free access to drinking water at all times during the trial, except during transport. After 14 days on feed at Four Mile yards all steers were transported to RED.

Phase 2 – during Phase 2 all stock were fed shipper pellets and oaten hay ad lib for 14 days. The same shipper pellets and oaten hay used in Phase 1 were used in Phase 2.

Experimental procedures

Each steer was individually weighed on day 1, 14 (before and after transport) and 28. There was a 12-hour food curfew prior to each weighing, except for feeder bulls in Group 4 where no curfew was applied. Feed consumption was measured in all treatments during both phases.

Analytical procedures

A feed analysis was completed prior to the PDS starting on the shipper pellets and oaten hay (Attachment B). The analysis suggested the pellets would provide a better than maintenance diet, however, the oaten hay would not. Maxi Graze lick blocks (CP 60%) were offered to feeder bulls fed oaten hay to ensure an above-maintenance diet was offered. Pellets were purchased for $460/tonne and oaten hay for $360/tonne. All fodder used as part of the PDS was purchased from RED. Transport costs for delivering fodder from RED to Leopold Downs were included in the analysis at a cost of $110/tonne.

A feed budget pre- and post-entry was completed in Four Mile holding paddock (2.5km^2) where steers in Group 3 (holding paddock) were held for 14 days. The holding paddock was black soil plains pasture. At the time of assessment Four Mile holding paddock was considered to be in fair range condition; desirable perennial grasses present were bundle bundle grass (*Dichanthium fecundum*), ribbon grass (*Chrysopogon fallax*) and annual Flinders grass (*Iseilema vaginiflorum*). No cost accounting for pasture consumed in the holding paddock has been included in the cost/benefit analysis. This is because the stock owner was not required to put his hands in his pocket and pay for grass consumed; unlike direct costs associated with purchasing and transporting shipper pellets and oaten hay.

Average weights at the beginning of the PDS for each group ranged between 236kg and 251kg. Liveweight change was calculated by applying the weight change percentage for each group against the initial average feeder bull liveweight of 246kg.

Statistical analyses

A power analysis was used to calculate the number of feeder bulls required for each group, using the variation in weight gain over 28 days from another trial (Tudor 2003) and assuming a treatment difference of 200g/day. Based on these assumptions 60 animals per group were required for 80% power at a 5% significance level.

An analysis of variance (ANOVA) was used to test the difference between mean weight change in feeder bulls fed shipper pellets, oaten hay or held in a holding paddock during phases 1 and 2 of the demonstration.

Other

Costs associated with handling and feeding stock at Leopold Downs and RED have not been included in calculations. Costs (time, wages, machinery etc.) vary between stations and yard fees at RED vary with numbers on feed and length of time held. These costs have not been included in the analysis—to keep the results focussed on weight change and fodder costs. Checking/feeding stock daily at Leopold Downs required one person for approximately 2 hours per day. It took three stockpersons approximately 4 hours to muster stock out of the holding paddock on horseback. The holding paddock fence was checked on day 5 and day 9 to ensure it remained stock-proof. No yard fees were charged by RED for stock held as part of the PDS.

Jack O'Donnell (Leopold Downs) weighing bales of pressed oaten hay. Jack is a descendant of the late explorer WJ O'Donnell, a Kimberley pioneer ~ late 1800s.

4. Results

Phase 1 – Leopold Downs station (days 1–14)

Stock were randomly drafted into their respective groups, weighed and remained there for 14 days until weighed again. Stock fed shipper pellets gained an average of 11kg/head after 14 days (Table 1). Feeder bulls fed oaten hay gained on average 2.7kg/head and feeder bulls from the holding paddock gained on average 6.8kg/head. There was a significant difference at the $p<.05$ level between the three groups demonstrated.

Table 1: Average liveweight change (kg) for feeder bulls, days 1–14 at Leopold Downs and during transport to RED

Ration	Average weight gain (kg/hd)	Liveweight loss during transport (kg/hd)	Liveweight change – 14 days after mustering and delivery to RED (kg/hd)
Pellets	11.0	13.4	-2.4
Oaten hay	2.7	8.6	-5.9
Holding paddock	6.8	13.1	-6.3
Least significant differences	2.0		2.0

Table 1 shows liveweight loss during transport between loading stock at Leopold Downs and unloading at RED. Feeder bulls fed pellets lost an average of 13.4kg liveweight a head during the 5-hour journey; feeder bulls previously fed oaten hay lost on average 8.6kg; and feeder bulls from the holding paddock lost on average 13.1kg.

Feeder bulls held in the holding paddock for 14 days at Leopold Downs and delivered to RED (point of sale) returned the greatest net value of $431/head (Table 2). The net value of feeder bulls fed pellets was $390/head and feeder bulls fed oaten hay was $385/head.

Table 2: Average cost benefit at point of sale (RED) on completion of Phase 1 on Leopold Downs (days 1–14)

Ration	Induction weight (kg)	Feed costs per feeder bull ($)	Sale weight at RED (kg)	*Value at sale ($)	**Net value ($)
Pellets	246	48.00	243.6	438.00	390.00
Oaten hay	246	47.00	240.1	432.00	385.00
Holding paddock	246	0	239.7	431.00	431.00

* Calculated at $1.80/kg.

** Net value – sale weight x $1.80/kg less feed costs incurred to attain sale weight.

Fodder consumed

Stock fed shipper pellets consumed on average 85kg/head after 14 days or $48 worth of feed. Stock fed oaten hay consumed on average 100kg/head or $47 worth of feed and 258g/head of Maxi Graze 60 lick block (20% urea) after 14 days. No difference in the amount of forage available pre- and post-stocking the holding paddock was measured. This was likely due to the small number of stock held in the holding paddock over a short time.

Shipper pellets used as part of the PDS are the same as pellets used on live export boats. During Phase 1 at Leopold Downs feeder bulls ate ~85kg/head of pellets over 14 days (no oaten hay was offered). During Phase 2 at RED, the same feeder bulls ate ~67kg of pellets and 83kg of oaten hay.

Phase 2 – Roebuck Export Depot (days 14–28)

Change in liveweight for Phase 2 was calculated by comparing the weight of feeder bulls on arrival at RED and their weight after 14 days on feed. Induction weights at Roebuck were recorded after stock had been off food for 21 hours, this included a 12-hour wet curfew (at Leopold Downs); transportation to RED took 5 hours and weighing pre- and post-trucking took 4 hours.

Stock previously fed pellets at Leopold Downs gained most weight during 14 days at RED; feeder bulls from the holding paddock gained the least (Table 3). Feeder bulls fed oaten hay were about midway. There was a significant difference at the $p<.05$ level between the three groups demonstrated during Phase 2.

Table 3: Average liveweight change (kg), days 14–28 and adjusted for recovery of 'gut fill' due to fasting and transport

Ration	Average weight gain (kg)	Average gain (kg) less 'gut fill'
Pellets (previously fed pellets at Leopold Downs)	29.9	16.5
Pellets (previously fed oaten hay at Leopold Downs)	24.9	16.3
Pellets (previously in holding paddock at Leopold Downs)	21.3	8.2
Least significant differences	3.2	3.1

The average net value of feeder bulls after 14 days on feed at RED was $383/head for Group 1 (previously fed pellets), $379/head for Group 2 (previously fed oaten hay) and $419/head for Group 3 (previously fed native pasture) (Table 4).

Table 4: Cost benefit of holding feeder bulls at RED with point of sale at RED after 14 days

Ration	Induction weight (kg)	Feed costs per feeder bull over 28 days ($)	Sale weight (kg)	*Value at sale ($)	**Net value ($)
Pellets (previously fed pellets at Leopold Downs)	243.6	109.00	273.5	492.00	383.00
Pellets (previously fed oaten hay at Leopold Downs)	240.1	98.00	265.0	477.00	379.00
Pellets (previously in holding paddock at Leopold Downs)	239.7	51.00	261.0	470.00	419.00

* Calculated at $1.80/kg.

** Net value – sale weight x $1.80/kg less feed costs incurred to attain sale weight.

Fodder consumed during Phase 2

Feeder bulls previously accustomed to pellets at Leopold Downs ate ~$10 more per animal than feeder bulls in the other groups while at RED (Table 5).

Table 5: Total fodder consumed and costed during Phase 2

Ration	Pellets consumed per feeder bull (kg)	Oaten hay consumed per feeder bull (kg)	Total cost ($)
Pellets (previously fed pellets at Leopold Downs)	67	83	60.00
Pellets (previously fed oaten hay at Leopold Downs)	67	56	51.00
Pellets (previously in holding paddock at Leopold Downs)	62	62	51.00

Liveweight change over project duration (days 1–28)

Feeder bulls fed pellets over 28 days gained the most weight, calculated between the first weighing on day 1 and the last weighing on day 28. Feeder bulls initially from the holding paddock gained the least (Table 6); liveweight change from feeder bulls initially fed oaten hay was slightly better.

Table 6: Average liveweight change (kg) for feeder bulls over duration of demonstration, days 1–28

Ration	Weight gain (kg)
Pellets for 14 days at Leopold Downs and pellets and oaten hay for 14 days at RED	27.5
Oaten hay for 14 days at Leopold Downs and pellets and oaten hay for 14 days at RED	19.0
Native pasture (holding paddock) for 14 days at Leopold Downs and pellets and oaten hay for 14 days at RED	15.0

Feeder bulls not fasted prior to weighing

Using data collected during the PDS, a comparison was made between groups 1 and 4 (one subjected to a 12-hour food curfew pre-transport and the other not) and on the state, post-trucking, of both the animals and the stock crates used to transport them.

Feeder bulls in Group 1 were fasted off shipper pellets for 12 hours prior to trucking while similar feeder bulls in Group 4 of the trial were not. Both groups remained on water until loading at Leopold Downs. Feeder bulls in Group 1 were off food for 21 hours—this involved a 12-hour food curfew (at Leopold Downs), 5 hours transport to RED and 4 hours weighing pre- and post-trucking. Feeder bulls in Group 4 were off feed for 9 hours (5 hours trucking and 4 hours weighing).

At their pre-trucking weighing on Leopold Downs, feeder bulls in Group 1 (fasted off food) weighed on average 7.71kg (3.13%) lighter than feeder bulls in the non-fasted Group 4. On arrival at RED the difference was 9.81kg (3.98%).

At Leopold Downs feeder bulls previously fed shipper pellets and not fasted prior to weighing consumed on average 87kg/head of pellets or $49 worth of feed. At Roebuck Export Depot the same feeder bulls consumed on average 72kg/head of pellets and 62kg/head of oaten hay or $56 worth of feed.

5. Discussion

Phase 1 – Leopold Downs station (days 1–14)

Feeder bulls fed shipper pellets recorded the highest liveweight gain during Phase 1 at Leopold Downs; probably due to the (formulated) nutritional value of the pellets. Oaten hay used in the trial was ‘good sweet hay’ (export quality). Feeder bulls foraged and burrowed through each bale, eating the seed head first (most palatable) and leaving a trough full of straw. The two lick blocks were only lightly utilised over the first few days; lick consumption steadily increased thereafter. Pellets represented a more balanced and consistent diet than oaten hay which varied in quality.

A much greater difference in weights between stock fed oaten hay at Leopold Downs and those held in Four Mile holding paddock was expected at the conclusion of Phase 1. Feeder bulls in the holding paddock gained on average 6.8kg over 14 days. Due to the time of the year (September) and low CP content of the native grasses, it was expected that feeder bulls would have only just maintained their weight, not increased it. Visual observations in the holding paddock showed that stock were browsing mimosa (*Acacia farnesiana*) and sensitive plant (*Neptunia dimorphantha)*. This is common during the dry season.

It was more profitable to hold stock in a holding paddock than feed pellets or oaten hay while waiting to be transported. The difference in net value between the holding paddock group and other group was approximately $41. There was no measured weight gain ‘at the point of sale’ when providing a more nutritious ration, for example pellets v. native pasture, for 14 days prior to trucking. Therefore, the lower net value received was solely due to the cost associated with purchasing fodder. Pellets cost $570/tonne and oaten hay cost $470/tonne, including GST, landed at Leopold Downs.

Where practical the most profitable method of holding stock on-station prior to sale is in a holding paddock. Where a secure, watered and well-grassed holding paddock is not available, feeding shipper pellets provided a better net value per feeder bull than oaten hay. Shipper pellets were also easier to handle (quicker to feed out) and the bags could be refilled and used again.

Feeder bulls previously fed pellets and from the holding paddock at Leopold Downs similarly lost on average 13.2kg liveweight during a 5-hour road trip to RED. This is equivalent to what nearby stations have also recorded during similar journeys.

Oaten hay used in the trial was ‘good sweet hay’ (export quality). Feeder bulls foraged and burrowed through each bale, eating the seed head first (most palatable) and leaving a trough full of straw.

Phase 2 – Roebuck Export Depot (days 14–28)

A significant portion of liveweight gain at RED was due to replacement of gut fill lost during transport. Feeder bulls already accustomed to hay or pellet feeding at Leopold Downs, gained on average 16.4kg liveweight after 14 days on feed at RED. This was on average 8.2kg more than the group grazing the holding paddock at Leopold Downs. Good management and feeding at RED in combination with good on-station management, resulted in a 30kg a head advantage over cattle which might have been sold on weight at arrival at RED immediately following mustering.

Feeder bulls held in a holding paddock on Leopold Downs for 14 days and then at RED for a further 14 days returned the best net value ($419), at the end of phase 2. These bulls ate $51 worth of fodder over the demonstration duration. Feeder bulls fed oaten hay at Leopold Downs and pellets/hay at RED ate $98 worth of fodder and bulls previously fed pellets at Leopold Downs and pellets/hay at RED ate $109 worth of fodder. This difference in fodder costs was a result of the stock owner not required to pay for grass consumed; unlike direct costs associated with purchasing and transporting shipper pellets and oaten hay on- station.

Feeder bulls fed shipper pellets for 28 days weighed 12.5kg more than bulls held in a holding paddock for 14 days and then fed pellets for 14 days. The increased weight gain (12.5kg) did not offset extra costs associated with offering pellets for 28 days vs. 14 days.

Feeder bulls previously fed pellets at Leopold Downs returned the next best net value of $383. Stock previously fed oaten hay returned a net value of $379.

These results indicated that feeder bulls from the Leopold Downs holding paddock returned a greater net value after 14 days on feed at RED than feeder bulls previously fed shipper pellets or oaten hay at Leopold Downs.

Feeder bulls not fasted prior to weighing

It was expected that more faeces would be observed on the trailer floors of the stock crates carrying stock not subjected to a curfew (Group 4), as these stock did not have 12 hours in which to empty out prior to trucking, as was the case for Group 1 animals. However, there was no visible difference in the amount of faeces covering the trailer floors between each of the respective groups. There was also no difference in the amount of faeces covering animals post-trucking. This was not surprising as pellets used as part of the trial were dry, with a moisture content of 8.5% (similar to grasses in the northern rangelands at the end of the dry) and therefore less likely to exhibit 'fluid-like' tendencies.

Presupposing that imposing a curfew offers no substantiated benefits in helping cattle cope with transport, producers who curfew stock pre-transport are likely to be delivering stock to the point of sale weighing less than if a curfew had not been implemented.

6. Conclusion

There were financial benefits from holding stock in a holding paddock until required for transport. This assumes the paddock is stock-proof, has adequate water and feed and can be easily mustered.

Where holding stock in a holding paddock is not an option, the next best option was to deliver stock direct to RED and put them on feed until the point of sale, which negates cartage costs on fodder. It should be noted these results were calculated after 14 and 28 days of feeding. Experience at RED indicates an improved return on investment can be achieved by holding stock for just 4–5 days rather than 14 days prior to sale out of RED.

Finally, where leaving stock in a holding paddock is not an option and there are insufficient numbers to fill a truck to get to the export depot, the most profitable method was to hold them in station yards and feed pellets.

Producers can reduce losses by avoiding holding stock for excessive periods of time in yards. They need to muster them out of the holding paddock just prior to arrival of trucks and avoid holding them in yards over night where ever possible.

7. Future producer demonstration sites

- Look at weight change and feed consumption over 3, 5 and 7 days respectively on-station and at RED. It is hypothesised that sending stock to RED for 4–5 days (until the point of sale) could provide an improved cost/benefit.
- Look at how holding paddocks are managed across the Kimberley and how range condition can be improved.

Feeder bulls soon after arriving at Roebuck Export Depot. Note feed trough on photo left and hay rack on right. These were the feeder bulls fed oaten hay at Leopold Downs station.

8. Extension and communication

As part of the PDS a number of extension and communication activities were carried out. Activities specific to Western Australia were *Rangelands Memo* articles, a presentation at the Kimberley Pastoralist and Graziers Association meeting and an ABC radio interview. Four articles were contributed to *FutureBeef Update* and one article to MLA's *Feedback* magazine to inform producers across Australia of the results. A poster paper was also presented at the North Beef Research Conference Update in Cairns. All extension materials completed as part of the PDS are listed in Appendix C.

9. Acknowledgements

The co-operation of Roebuck Export Depot, Bunuba Cattle Company and the Bunuba Aboriginal people, owners of land and cattle, made this demonstration happen.

10. References

Dray, R, Huey, AM, Fletcher, M, Stockdale, M & Smith, PC 2010, *Final report B.NBP.0628 – Pastoral Industry Survey of the Kimberley and Pilbara regions, Western Australia - 2010*, Meat and Livestock Australia, North Sydney, NSW 2060.

Tudor, T, Accioly, J, Pethick, D, Costa, N, Taylor, E & White, C 2003, *Project LIVE.202 – Decreasing shipboard ammonia levels by optimising the nutritional performance of cattle and the environment on ship during live export. Meat and Livestock Australia*, North Sydney, NSW 2060.

11. Appendices

Appendix A – Kimberley Beef Research Committee Members

Appendix B – Shipper pellet and oaten hay feed analysis

Appendix C1 – *Rangelands Memo*, January 2013 and *Future Beef Update*, August 2013

Appendix C2 – *Rangelands Memo*, January 2013 and *Future Beef Update*, August 2013

Appendix C3 – *Future Beef Update*, May 2013 and *Rangelands Memo*, September 2013

Appendix C4 – *Future Beef Update*, May 2013 and *Rangelands Memo*, September 2013

Appendix C5 – Northern Beef Research Update Conference poster, August 2012

Appendix C6 – Northern Beef Research Update Conference paper, August 2012

Appendix C7 – *MLA Feedback* article, September 2013

Appendix C8 – Kimberley, Pastoralist and Graziers Association, presentation, November 2013

Appendix C9 – ABC radio interview, November 2013

Appendix A – Kimberley Beef Research Committee Members

Minutes of Kimberley Beef Research Committee (KBRC) meeting

Location: Quanbun Downs **Date:** 10 May 2011 **Start:** 08.00

Present:

- Michael DeLong (Dampier Downs)
- Peter Letchford (Private Veterinarian)
- Peter O'Brien (Liveringa)
- Michael Courtney (Liveringa)
- Matthew Kane (Nerrimah)
- Keith, Kelly and Darcy Anderson (Jubilee Downs)
- David and Helen Stoate (Anna Plains)
- Kevin Brockhurst (Larrawa)
- Matthew Fletcher (DAFWA and KBRC Secretary)

Guests:

- Philip Hams (Gogo station)
- Manus Stockdale (DAFWA)
- Anne Marie Huey (DAFWA)
- Kath Ryan (DAFWA)
- Ewan Crook (Pfizer) and
- Wayne Hall (MLA)

General business:

Excerpt from general business:

Increasing awareness of weight loss/gain between yarding and delivery to exporter – Matthew Fletcher. This producer demonstration site (PDS) was initiated to focus on:

- weight loss while stock are waiting to be transported at station yards and
- weight loss/gain in the supply chain between yarding and loading onto the boat.

The KBRC supported this PDS.

Meeting closed at: 10.30am

Appendix B – Shipper pellet and oaten hay feed analysis

M.J. Fletcher 16 July, 2012
DAFWA Development Officer
PO Box 19
Kununurra WA, 6743

Dear Matthew,

Herewith are the Comprehensive Wet Chemistry analysis results for the sample of Oat Hay and Shipper pellets that we finalised over the week-end. I apologise for the delay largely due to the need to have some of the wet chemistry analyses repeated. DM is the Dry Matter content of the material as-received.

CP, NDF, ADF, ME, FAT, STARCH and WSC are all expressed on a Dry Matter (DM) basis.

The values for P, K, S, Na, Ca , Mg & Cl are expressed as g/kg DM while Cu, Zn, Mn, Fe, Co, Mo, Se and B are expressed as mg/kg DM.

Attribute	Oat Hay	Shipper Pellet
DM (%)	88.8	91.5
CP (%)	4.1	10.2
NDF (%)	53.6	53.0
ADF (%)	30.1	30.6
DDM (%)	64.0	66.3
DOMD (%)	61.0	63.0
ME (MJ/Kg DM)	9.4	9.8
STARCH (%)	--	17.8
WSC (%)	27.0	--
Phosphorus (P)	1.4	2.1
Potassium (K)	5.9	5.8
Sulphur (S)	0.6	1.1
Sodium (Na)	4.0	0.89
Calcium (Ca)	1.3	5.2
Magnesium (Mg)	0.9	1.2
Chloride (Cl)	6.5	2.2
Copper (Cu)	4	8
Zinc (Zn)	12	23
Manganese (Mn)	124	55
Iron (Fe)	82	621
Cobalt (Co)	0.15	0.33

Attribute	Oat Hay	Shipper Pellet
Molybdenum (Mo)	0.28	0.76
Selenium (Se)	0.012	0.059
Boron (B)	3	5

CP = Crude Protein - The amount of true protein and non-protein-nitrogen in a feed and ultimately provides the building blocks of the body, the amino acids. CP is determined as Nitrogen content x 6.25.

NDF = Neutral Detergent Fibre - The residue remaining after extraction of forage with a neutral detergent solution. NDF contains hemicellulose which may be digestible depending on the degree of lignification.

ADF = Acid Detergent Fibre - The residue remaining after extraction of forage with an acid detergent solution. ADF reflects the indigestible component of forages, which is influenced by the lignin content.

DDM = Digestible Dry Matter - The difference between the DM consumed and the DM excreted in the faeces, expressed as a percentage of the DM consumed. DDM is usually determined *In Vitro* using internal standards of known digestibility measured in feeding trials with live animals, usually sheep. The DDM values for these samples were calculated from the DOMD values.

DOMD = Digestible Organic Matter in DM - The difference between the OM consumed and the OM excreted in the faeces, expressed as a percent of the DM consumed. The DOMD for these samples was determined *In Vitro* using standards of known digestibility measured in feeding trials with live animals.

ME = Metabolisable Energy - The feed energy the animal uses to maintain body activity and production. ME can be calculated from either DDM or DOMD and is expressed as Mega Joules (MJ) per kg DM.

WSC = Water Soluble Carbohydrates - The readily fermentable plant sugars that are extracted by water solutions and are often used as a palatability attribute for Cereal hay. High levels are desirable in forage.

The Oaten hay has a CP value well below that required to maintain even mature stock while the DDM and ME values are good reflecting that the ADF and NDF values are not overly high and the WSC value is very respectable. This level of WSC should help enhance the palatability of this hay and its acceptance by stock and would help to efficiently utilize Non-Protein-Nitrogen (NPN) such as Urea if consumed with this hay to lift the CP intake of stock. The CP of the Pellets is Ok at around the lower level advised for preparation and live shipment of cattle and the ME is above that recommended. This level of ME should not pose a problem for cattle well adapted to these pellets to consume them *ad lib* as the level of Starch is not that high and the fibre present should encourage adequate rumination to maintain rumen function. Thus the levels of ME and CP in these pellets should be quite well utilized to support modest growth of young and healthy, unstressed cattle that consume an adequate amount of these pellets.

The levels of Phosphorus and Potassium in the Oat hay are adequate for stock being fed at maintenance, the levels of Calcium, Sulphur and Magnesium are quite low, while Sodium and Chloride are quite high. The levels of Calcium and Phosphorus in these pellets are adequate to support some growth, Sulphur and Magnesium are Ok while Potassium, Sodium and Chloride are not that high - as is often the case for Shipper pellets. The levels of the Trace Minerals in the Oat hay, apart from Copper and Selenium should be adequate to meet the requirements to support some growth of young stock. However, the Copper level in this hay may be marginal for cattle while Selenium is well below the minimum level recommended for cattle. The levels of the Trace Minerals in the Pellets should be adequate to meet the requirements for some growth of young cattle when the pellets are consumed at an adequate level (CSIRO, 2007).

The Oaten hay would need to have the marked deficit in CP made good and the limiting Minerals supplied for this hay to sustain young cattle. This may be achieved if the young cattle consumed, in concert with an adequate amount of this hay, enough of an appropriate Lick containing some True Protein as well as some NPN plus the requisite Minerals for optimum intake and utilization of this hay. Although these pellets are reasonably safe, it would be best for the pellets to be gradually introduced to cattle after they have been filled-up on palatable, Cereal hay such as this Oat hay.

CSIRO (2007). “Nutrient Requirements of Domesticated Ruminants”, CSIRO Publishing.

Please phone me on 95257085 if you require clarification on any of the above results or the comments.

Kind regards and best wishes,

Dr John T.B. Milton
Director of ILS
Order of the Crown of Thailand, BAgrSci(Hons), PhD.

Please Note: Due care and attention is taken in providing these professional comments, but no responsibility is accepted for any inappropriate action taken in response to these comments.

Appendix C1 – *Rangelands Memo*, January 2013 and *Future Beef Update*, August 2013

Department of Agriculture and Food

GOVERNMENT OF WESTERN AUSTRALIA

Infonote RANGELANDS

To curfew or not

Matthew Fletcher, Department of Agriculture and Food, Kununurra

A 'curfew' is a generic term used in livestock industries describing the practice of enforced food, water or food and water deprivation, usually prior to transport, sale or slaughter (Fisher et al. 2006). Anecdotal reports from transporters, agents, producers and industry professionals indicate that stock tend to travel better when subjected to a curfew pre-transport, due to the reduced volume of faeces and urine on the truck floor; reducing the risk of slippage and falling. The *Model Code of Practice Land Transport (2002)* discusses 'emptying out time' as the deliberate and variable period of water and/or feed deprivation aimed to minimise faecal and urine spoilage of the transport vehicle and subsequent problems with animals slipping.

It is believed the idea of a curfew was originally implemented for stock loaded directly off a 'wet moist pasture'. Due to the high moisture content, stock faeces was fluid, allowing it to easily spread and stain both stock and truck. This resulted in stock presenting at local saleyards stained in faeces, increased the potential for injury (slipping) during transport and left transporters with soiled stock crates (both sides and floor) requiring cleaning.

Using data from a recent demonstration conducted at Leopold Downs station and Roebuck Export Depot (RED) (looking at *weight change in feeder bulls between yarding and delivery to the exporter),* a comparison was made between two groups (one subjected to a 12-hour food curfew pre-transport and the other not) and on the state, post-trucking, of both the animals and the stock crates used to transport them.

Two pens (60 in each) of Brahman X feeder bulls with an initial average liveweight of 246 kg (range 200–350 kg) were used. Feeder bulls in group one of the trial were fasted off shipper pellets for 12 hours prior to trucking while similar feeder bulls in group four of the trial were not. Both groups remained on water until loading at Leopold. Feeder bulls in group one were off food for 21 hours. This involved a 12-hour food curfew (at Leopold); transport to RED of 5 hours and weighing pre and post-trucking of 4 hours. Feeder bulls in group four were off feed for 9 hours (5 hours trucking – 4 hours weighing).

At their pre-trucking weighing on Leopold Downs feeder bulls in group one (fasted off food) weighed on average 7.70 kg (3.13%) lighter than feeder bulls in the non-fasted group four. On arrival at RED the difference was 9.81 kg (3.98%).

It was expected that more faeces would be observed on the trailer floors of the stock crates carrying stock not subjected to a curfew (group four), as these stock did not have 12 hours in which to empty out prior to trucking as was the case for group one animals. However, there was no visible difference in the amount of faeces covering the trailer floors between each of the respective groups. There was also no difference in the amount of faeces covering animals post-trucking. This was not surprising as pellets used as part of the trial were dry, with a moisture content of 8.5% (similar to grasses in the northern rangelands at the end of the dry) and therefore less likely to exhibit 'fluid-like' tendencies.

Presupposing that imposing a curfew offers no substantiated benefits in helping cattle cope with transport, producers who curfew stock pre-transport are likely to be delivering stock to the point of sale weighing less than if a curfew had not been implemented.

Feeder bulls from Group 1 (pink tags); shipper pellets in poly trough.

References

Fisher, A, Ferguson, D, Lee, C, Colditz, L, Belson, S, Lapworth, J & Petherick, C 2006, *Cataloguing land transport science and practices in Australia*, final project report B.AHW.0126 submitted to MLA.

Model Code of Practice Land Transport, 2002, CSIRO publishing.

Appendix C2 – *Rangelands Memo*, January 2013 and *Future Beef Update*, August 2013

Department of Agriculture and Food
GOVERNMENT OF WESTERN AUSTRALIA

Infonote RANGELANDS

The cost of NOT feeding sale cattle

Matthew Fletcher, Department of Agriculture and Food, Kununurra

Drawing on data obtained from a recent demonstration conducted at Leopold Downs station and Roebuck Export Depot (looking at *weight change in feeder bulls between yarding and delivery to the exporter*) a desktop review was undertaken to investigate the economic impact of liveweight loss in the yards due to fasting (no food or no food and water).

The *Model Code of Practice for the Welfare of Animals (Cattle)* states that cattle should not be deprived of access to water for periods longer than 24 hours, unless in transit, in which case the codes of practice for transport of cattle apply. Lactating cattle, or those in poor condition, should not be deprived of access to water for periods in excess of 12 hours. In regards to food, cattle should not be deprived of access to food for periods longer than 48 hours, unless in transit; then the code of practice for transport will also apply. Stock in poor condition, pregnant, or calves less than one month of age should not be deprived of access to food for periods longer than 24 hours.

Based on the results of trial work conducted by Kirton et al. (1972), stock without access to food but with access to water lose 5% of their bodyweight after 24 hours, 8% after 48 hours and 9% after 72 hours. Based on the results of trial work conducted by Whytes et al. (1980), liveweight loss when access to both food and water is restricted increases considerably (8%, 11% and 14% respectively).

The table below compares the cost to producers of fasting animals over three days to that of feeding oaten hay over the same period. Stock with an average weight of 300 kg held off feed for 24 hours will suffer 15 kg liveweight loss; off feed and water will result in 24 kg liveweight loss over the same period. No weight loss is recorded when stock are offered oaten hay (at maintenance), however a cost is incurred to feed.

Ration and length	Weight change (%)	Weight change (kg)*	Cost to feed hay/head/day	Cost/head of weight loss at $1.80/kg	Overall cost per head
Fast – food only (24 hr)	-5%	-15	na	$27.00	$27.00
Fast – food only (48 hr)	-8%	-24	na	$43.20	$43.20
Fast – food only (72 hr)	-9%	-27	na	$48.60	$48.60
Fast – food and water (24 hr)	-8%	-24	na	$43.20	$43.20
Fast – food or water (48 hr)	-11%	-33	na	$59.40	$59.40
Fast – food or water (72 hr)	-14%	-42	na	$75.60	$75.60
No fast – hay and water (24 hr)	^0	0	^^$3.19	$0.00	$3.19
No fast – hay and water (48 hr)	^0	0	^^$6.38	$0.00	$6.38
No fast – hay and water (72 hr)	^0	0	^^$9.57	$0.00	$9.57

*Weight 300 kg. ^No weight gain expected. ^^Budgeted at 2% body mass (6 kg eaten per day) and oaten hay costing $532 per tonne (delivered Leopold Downs, Fitzroy Crossing).

These figures clearly demonstrate that it makes economic sense to feed sale stock while waiting in the yards. It also fulfils the producer's legal and moral responsibility to care for the welfare of animals under their control.

References

Kirton, A, Paterson, D, & Duganzich, D 1972, 'Effect of pre-slaughter starvation in cattle, *Journal of Animal Science*, 34: 555–559.

Wythes, J, McLennan, S, Toleman, M 1980, 'Liveweight loss and recovery in steers fasted for periods of twelve to seventy two hours', *Aust J Exp Agric Anim Husb*, 20: 517–52.

Appendix C3 – *Future Beef Update*, May 2013 and *Rangelands Memo*, September 2013

Department of Agriculture and Food
GOVERNMENT OF WESTERN AUSTRALIA

Infonote RANGELANDS

Increasing awareness of weight change in feeder bulls between yarding and delivery to the exporter

Matthew Fletcher (Department of Agriculture and Food, Kununurra), Paul Heil (Manager, Roebuck Export Depot) and Jack O'Donnell (Stockman, Leopold Downs station)

A Producer Demonstration Site (PDS) on this topic was initiated by the Kimberley Beef Research Committee (KBRC) to examine:

1. Weight change while stock are waiting at station yards prior to being transported.
2. Weight change in the supply chain between yarding and loading onto the boat.

Method

The PDS measured weight change in 180 Brahman X feeder bulls, initial average liveweight 246 kg (range 200–350 kg), over 28 days, in September 2012. Stock were weighed on day one, twice on day 14 (before and after transport) and on day 28. A 12-hour wet curfew was applied to all treatments prior to weighing, to reduce the influence of gut fill on weights.

Phase one was completed at Leopold Downs station (Leopold), north of Fitzroy Crossing. Stock were randomly drafted into three treatment groups of 60 head:

- shipper pellets (Group 1)
- oaten hay, and (Group 2)
- native pasture. (Group 3)

After 14 days on these feeding regimes at Leopold the feeder bulls were trucked to Roebuck Export Depot (RED), Broome, for phase two of the demonstration.

At Leopold shipper pellets (crude protein (CP) 10% and metabolisable energy (MJ/kg DM) 9.8) were available *ad lib* for feeder bulls in Group 1 only. Oaten hay (CP 4.1% and 9.4 MJ/kg DM) was available *ad lib* for feeder bulls in Group 2 only; two Maxi Graze 60 (CP 60%) lick blocks were also provided to compensate for the low CP content in the hay. Pellets and hay were fed in round poly troughs. The holding paddock where stock were held in Group 3 was black soil plains pasture. At the time of assessment the paddock was considered to be in fair range condition; desirable perennial grasses present were bundle bundle grass (*Dichanthium fecundum*), ribbon grass (*Chrysopogon fallax*) and annual Flinders grass (*Iseilema vaginiflorum*).

Phase two was conducted at RED, Broome.

During phase two all stock were fed shipper pellets (in a feed trough) and oaten hay *ad lib* for 14 days. The same shipper pellets and oaten hay used in phase one were used in phase two.

Results

Phase one – liveweight change at Leopold Downs station (days 1–14)

On day one all stock were randomly drafted into their respective groups, weighed and remained there for 14 days until weighed again. Stock fed shipper pellets gained an average of 11 kg/head after 14 days. Feeder bulls fed oaten hay gained on average 2.7 kg/head and feeder bulls from the holding paddock gained on average 6.8 kg/head.

Table 1 **Average liveweight change (kg) for feeder bulls, days 1–14 at Leopold Downs and during transport to RED**

Ration	Average weight gain (kg/hd)	Liveweight loss during transport (kg/hd)	Liveweight change – 14 days after mustering and delivery to RED (kg/hd
Pellets	11	-13.4	-2.4
Oaten hay	2.7	-8.6	-5.9
Holding paddock	6.8	-13.1	-6.3

Phase two – liveweight change at Roebuck Export Depot (days 14–28)

Liveweight loss during transport between loading stock at Leopold and unloading at RED was recorded. Feeder bulls fed pellets lost an average of 13.4 kg liveweight a head during the 5-hour journey; feeder bulls previously fed oaten hay lost on average 8.6 kg; and feeder bulls from the holding paddock lost on average 13.1 kg.

Change in liveweight for phase two was calculated by comparing the weight of feeder bulls on arrival at RED and their weight after 14 days on feed. Induction weights at Roebuck were recorded after stock had been off food for 21 hours, this included a 12-hour wet curfew (at Leopold); transport to RED was 5 hours and weighing pre and post-trucking took 4 hours.

Stock previously fed pellets at Leopold gained most weight during 14 days at RED; feeder bulls from the holding paddock gained the least (Table 2). Feeder bulls fed oaten hay were about midway.

Table 2 **Average liveweight change (kg) for feeder bulls, days 14–28 and adjusted for recovery of 'gut fill' due to fasting and transport**

Ration	Average weight gain (kg)	Average gain (kg) Less 'gut fill'
Pellets (previously fed pellets at Leopold)	29.9	16.5
Pellets (previously fed oaten hay at Leopold)	24.9	16.3
Pellets (previously in holding paddock at Leopold)	21.3	8.2

Liveweight change over project duration (days 1–28)

Feeder bulls fed pellets over 28 days gained the most weight, calculated between the first weighing on day one and the last weighing on day 28. Feeder bulls initially from the holding paddock gained the least (Table 3); liveweight change from feeder bulls initially fed oaten hay was slightly better.

Table 3 **Average liveweight change (kg) for feeder bulls over duration of demonstration, days 1–28**

Ration	Weight gain (kg)
Pellets for 14 days at Leopold and 14 days at RED	27.5
Oaten hay for 14 days at Leopold and pellets for 14 days at RED	19.0
Native pasture (holding paddock) for 14 days at Leopold and pellets for 14 days at RED	15.0

Feeder bulls from Group two (green tags) eating oaten hay.

Discussion/summary

Phase one – at Leopold Downs station (days 1–14)

Feeder bulls fed shipper pellets recorded the highest liveweight gain during Phase one at Leopold; probably due to the (formulated) nutritional value of the pellets. Oaten hay used in the trial was 'good sweet hay' (export quality). Feeder bulls foraged and burrowed through each bale, eating the seed head (most palatable) first and leaving a trough full of straw. The two lick blocks were only lightly utilised over the first few days; lick consumption steadily increased thereafter. Pellets represented a more balanced and consistent diet than oaten hay which varied in quality.

Feeder bulls in the holding paddock gained on average 6.8 kg over 14 days. Due to the time of the year (September) when forage quality is typically low, it was expected that feeder bulls would have only just maintained their weight, not increased it. Visual observations in the holding paddock showed that stock were browsing mimosa (*Acacia farnesiana*) and sensitive plant (*Neptunia dimorphantha)*. This is common during the dry season.

Phase two – at Roebuck Export Depot (days 14–28)

Feeder bulls previously fed pellets and from the holding paddock at Leopold similarly lost on average 13.2kg liveweight during a 5-hour road trip to RED. This is equivalent to what nearby stations have also recorded during similar journeys.

A significant portion of liveweight gain at RED was due to replacement of gut fill lost during transport. Feeder bulls already accustomed to hay or pellet feeding at Leopold gained on

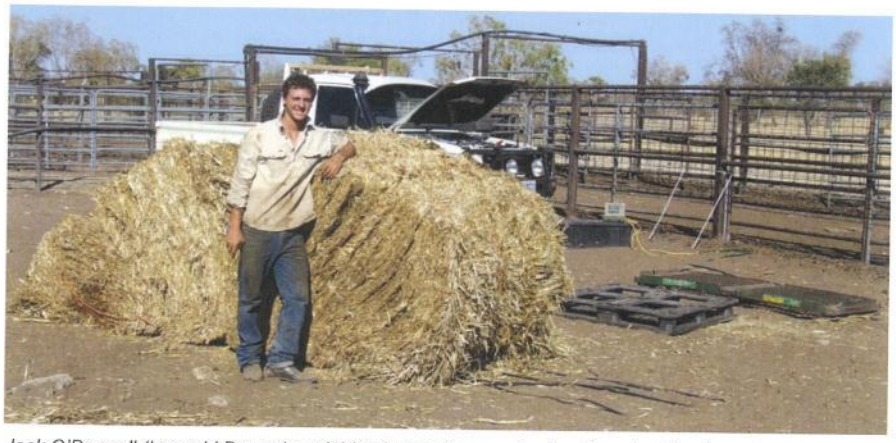
average 16.4 kg liveweight after 14 days on feed at RED. This was on average 8.2 kg more than the group grazing the holding paddock at Leopold.

Good management and feeding at RED in combination with good on-station management resulted in a 30 kg a head advantage over cattle which might have been sold on weight at arrival at RED immediately following mustering.

Liveweight change over duration of trial (28 days)

The hypothesis of the demonstration—*cattle fed shipping pellets throughout the trial will have gained the most liveweight at the conclusion*—was proven correct. However, a much greater difference in weights between stock fed oaten hay at Leopold and those held in 4 mile holding paddock was expected at the conclusion of the trial, considering the time of the year (September) and low CP content of the native grasses.

The trial showed that feeding shipper pellets to cattle stockpiled on-station resulted in heavier cattle at sale than the same cattle fed oaten hay. Stock previously fed shipper pellets on-station were accustomed to pellets when delivered to RED and performed better than other groups trialled; once again resulting in heavier cattle at sale.



Jack O'Donnell (Leopold Downs), weighing bales of pressed oaten hay. Jack is also a descendant of the late explorer WJ O'Donnell, a Kimberley pioneer ~ late 1800s.

Acknowledgements

The co-operation of Roebuck Export Depot, Bunuba Cattle Company and the Bunuba Aboriginal people, owners of land and cattle, made this demonstration happen.

Appendix C4 – *Future Beef Update*, May 2013 and *Rangelands Memo*, September 2013

Department of Agriculture and Food

GOVERNMENT OF WESTERN AUSTRALIA

Infonote RANGELANDS

The cost/benefit of feeding feeder bulls for 14 days at Leopold Downs and Roebuck Export Depot

Matthew Fletcher (Department of Agriculture and Food, Kununurra), Paul Heil (Manager, Roebuck Export Depot) and Jack O'Donnell (Stockman, Leopold Downs station)

Background

A Producer Demonstration Site (PDS) on this topic was initiated by the Kimberley Beef Research Committee (KBRC) to examine:

1. Weight change while stock are waiting at station yards prior to being transported.
2. Weight change in the supply chain between yarding and loading onto the boat.

Prior to loading a boat destined for live export, stock are required to be held at a registered premise (export depot) for a minimum of 24 hours. This allows stock to start adjusting to a probably new feed ration prior to loading.

When an exporter (e.g. Wellards) organises a boat out of Broome, local agents (Elders or Landmark) are notified and given a quota to source. Agents generally meet with the producer on-station, look over the cattle, agree on a sale price, draft a suitable line and sign a contract. The producer is paid on delivery weight at the export depot (weighed straight off truck). Stock purchased out of the export depot incur either a 3% deduction on their final liveweight (to account for gut-fill) or 12 hours off feed (wet curfew) is imposed prior to that weighing.

On-station stock are generally retained in secure, well grassed and easily mustered holding paddocks, where available, for 2–4 days prior to transporting. Stock sold out of the export depot are usually held for 4–5 days prior to sale, allowing them to recover from the stress of transportation and replace lost gut fill.

In circumstances where range condition in the paddock is poor or stock are likely to escape, stock are generally held at the station yards. The amount of time stock spend in the yards prior to transporting varies significantly and depends on a number of factors, such as accrual of sufficient numbers to fill a truck and their required date of arrival at the export depot. While waiting to be transported, stock are generally fed hay and occasionally pellets, depending on management.

As part of this demonstration feeder bulls were fed for 14 days on-station and again for 14 days at Roebuck Export Depot (RED). It is not common practice for cattle to be held on feed for 14 days at RED, however, due to quarantine requirements, cattle have been held on feed at RED for as long as 60 days prior to export to a bluetongue sensitive market in the Middle East.

Methodology

The PDS measured weight change in 180 Brahman X feeder bulls, initial average liveweight 246 kg (range 200–350 kg), over 28 days in September 2012. Stock were weighed on day one, twice on day 14 (before and after transport from station to RED) and on day 28. A 12-hour wet curfew was applied to all treatments prior to weighing, to reduce the influence of gut fill on weights. Phase one was completed at Leopold Downs station (Leopold), north of Fitzroy Crossing. Stock were randomly drafted into three treatment groups of 60 head. Group 1 was fed shipper pellets *ad lib*, Group 2 fed oaten hay *ad lib*, and Group 3 were placed in a holding paddock containing native pasture.

After 14 days on these feeding regimes at Leopold the feeder bulls were trucked to RED, Broome, for phase two of the demonstration. During phase two at RED all stock were fed shipper pellets and oaten hay *ad lib* for 14 days. The same shipper pellets and oaten hay used in phase one were used in phase two.

Results

Costs associated with handling and feeding stock at Leopold Downs and RED have not been included in the calculations below. Costs (time, wages, machinery etc.) vary between stations and yard fees at RED vary with numbers on feed and length of time held. These costs have not been included in the analysis—to keep the results focussed on weight change and fodder costs. No cost accounting for pasture consumed in the holding paddock has been considered in the below results.

Checking/feeding stock daily at Leopold Downs required one person for approximately 2 hours per day. It took three stockpersons approximately 4 hours to muster stock out of the holding paddock on horseback. The holding paddock fence was checked on day five and day nine to ensure it remained stock-proof. No yard fees were charged by RED for stock held as part of the PDS.

Phase 1 — net value of feeder bulls after 14 days at Leopold Downs and delivered to RED (days 1–14)

Feeder bulls held in the holding paddock for 14 days at Leopold Downs and delivered to RED (point of sale) returned the greatest net value of $431/head. The net value of feeder bulls fed pellets was $390/head and feeder bulls fed oaten hay was $385/head.

Table 1 **Average cost benefit at point of sale (RED) to feeder bulls on completion of Phase 1 on Leopold Downs (days 1–14)**

Ration	Induction weight (kg)	Feed costs per feeder bull ($)	Sale weight at RED (kg)	*Value at sale ($)	**Net value ($)
Pellets	246	48.00	243.6	438.00	390.00
Oaten hay	246	47.00	240.1	432.00	385.00
Holding paddock	246	0	239.7	431.00	431.00

* Calculated at $1.80/kg.

** Net value – sale weight x $1.80/kg less feed costs incurred to attain sale weight.

Phase 2 — net value of feeder bulls after 14 days at RED (days 14–28)

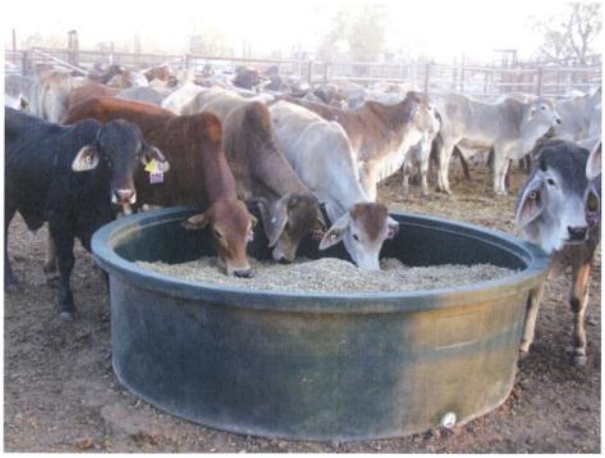
The average net value of feeder bulls after 14 days on feed at RED was $431/head for Group 1 (previously fed pellets), $426/head for Group 2 (previously fed oaten hay) and $419/head for Group 3 (previously fed native pasture).

Table 2 **Cost benefit of holding feeder bulls at RED with point of sale at RED after 14 days**

Ration	Induction weight (kg)	Feed costs per feeder bull ($)	Sale weight (kg)	*Value at sale ($)	**Net value ($)
Pellets (previously fed pellets at Leopold)	243.6	61.00	273.5	492.00	431.00
Pellets (previously fed oaten hay at Leopold)	240.1	51.00	265.0	477.00	426.00
Pellets (previously in holding paddock at Leopold)	239.7	51.00	261.0	470.00	419.00

* Calculated at $1.80/kg.

** Net value – sale weight x $1.80/kg less feed costs incurred to attain sale weight.



Feeder bulls from Group 1 (pink tags) eating shipper pellets in poly trough at Leopold Downs station.

Discussion/summary

Phase 1 – at Leopold Downs station

It was more profitable to hold stock in a holding paddock than feed pellets or oaten hay while waiting to be transported. The difference in net value between the holding paddock and other treatments was approximately $41. There was no measured weight gain 'at the point of sale' when providing a more nutritious ration, for example pellets vs. native pasture, for 14 days prior to trucking. Therefore, the lower net value received was solely due to the cost associated with purchasing fodder. Pellets cost $570/tonne and oaten hay cost $470/tonne, including GST, landed at Leopold Downs.

Where practical the most profitable method of holding stock on-station prior to sale is in a holding paddock. Where a secure, watered and well grassed holding paddock is not available, feeding shipper pellets provided a better net value per feeder bull than oaten hay. Shipper pellets were also easier to handle (quicker to feed out) and the bags could be re-filled and used again.

Phase 2 – at Roebuck Export Depot

Feeder bulls previously fed pellets at Leopold returned the best net value ($431) after 14 days on feed at RED. This was probably because they were accustomed to the pellet ration, having been on them for 14 days at Leopold. Feeding logbooks at RED showed that,

over the 14-day period, stock previously accustomed to pellets ate ~$10 more per animal than feeder bulls in the other treatments. Feeder bulls previously fed oaten hay at Leopold returned the next best net value of $426. Stock from the holding paddock returned a net value of $419.

These results indicated that feeder bulls previously fed shipper pellets on-station returned a greater net value after 14 days on feed at RED than feeder bulls previously fed oaten hay or from the holding paddock.

Managing stock prior to sale

There were financial benefits from holding stock in a holding paddock until required for transport. This assumes the paddock is stock-proof, has adequate water and feed and can be easily mustered.

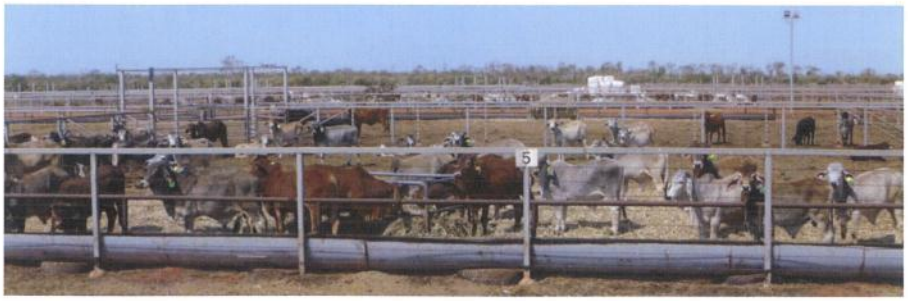
Where holding stock in a holding paddock is not an option, the next best option was to deliver stock direct to RED and put them on feed until the point of sale, which negates cartage costs on fodder and also frees up yard space. It **SHOULD BE NOTED** these results were calculated after 14 and 28 days of feeding. Experience at RED indicates an improved return on investment can be achieved by holding stock for just 4–5 days rather than 14 days prior to sale out of RED.

The *Model Code of Practice for the Welfare of Animals (Cattle)* implies that in regards to food, cattle should not be deprived of access to food for periods longer than 48 hours, unless in transit; then the code of practice for transport will also apply. If stock are mustered into yards, drafted and trucked, the owner will need to consider 'time off feed' and make fodder available, if required.

Finally, where leaving stock in a holding paddock is not an option and there are insufficient numbers to fill a truck to get to the export depot, the most profitable method was to hold them in station yards and feed pellets.

Future producer demonstration sites:

- Look at weight change and feed consumption over 3, 5 and 7 days respectively on-station and at RED. It is hypothesised that sending stock to RED for 4–5 days (until the point of sale) could provide an improved cost/benefit.
- Look at how holding paddocks are managed across the Kimberley and how range condition can be improved.



Feeder bulls, from Group 2 (green tags) in pen number 5 at RED.

Acknowledgements

Roebuck Export Depot, Bunuba Cattle Company and the Bunuba Aboriginal people, owners of land and cattle are thanked for making this demonstration happen.

Appendix C5 – Northern Beef Research Update Conference poster, August 2013

Department of Agriculture and Food

FutureBeef

The cost/benefit of feeding feeder bulls between yarding and loading onto a boat

Matthew Fletcher[A], Paul Heil[B] and Jack O'Donnell[C]

[A]Department of Agriculture and Food WA, Kununurra; [B]Roebuck Export Depot, Broome, WA; [C]Formerly Leopold Downs station, Fitzroy Crossing, WA

A Producer Demonstration Site (PDS) on this topic was initiated by the Kimberley Beef Research Committee to examine:

1. Weight change while stock are waiting at station yards prior to being transported.
2. Weight change in the supply chain between yarding and loading onto the boat.

The PDS measured weight change in 180 Brahman X feeder bulls, initial average liveweight 246 kg, over 28 days, in September 2012. Phase one (days 1-14) of the demonstration was completed at Leopold Downs station (Leopold), north of Fitzroy Crossing (see Figure 1) and phase two was conducted at Roebuck Export Depot (RED), Broome.

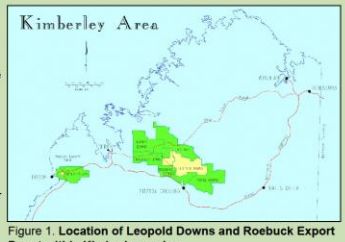


Figure 1. **Location of Leopold Downs and Roebuck Export Depot within Kimberley region.**

Phase 1 - net value of feeder bulls after 14 days at Leopold Downs and delivered to RED (days 1–14)

Where practical the most profitable method of holding stock on-station prior to sale is in a holding paddock (Table 1). Where a secure, watered and well grassed holding paddock is not available, feeding shipper pellets provided a better net value per feeder bull than oaten hay. Shipper pellets were also easier to handle (quicker to feed out) and the bags could be re-filled and used again.

Table 1 **Average cost benefit at point of sale (RED) to feeder bulls on completion of Phase 1 on Leopold Downs (days 1–14)**

Ration	Induction weight (kg)	Feed costs per feeder bull ($)	Sale weight at RED (kg)	*Value at sale ($)	**Net value ($)
Pellets	246	48.00	243.4	438.00	390.00
Oaten hay	246	47.00	240.0	432.00	385.00
Holding paddock	246	0	240.2	432.00	432.00

* Calculated at $1.80/kg.
** Net value – sale weight x $1.80/kg less feed costs incurred to attain sale weight.

- Shipper pellets crude protein (CP) 10% and metabolisable energy (MJ/kg DM) 9.8 were used.
- Oaten hay (CP 4.1% and 9.4 MJ/kg DM) was used; two Maxi Graze 60 (CP 60%) lick blocks were also provided to compensate for the low CP content in the hay.
- The holding paddock was in fair range condition; desirable perennial grasses present were bundle bundle grass (*Dichanthium fecundum*), ribbon grass (*Chrysopogon fallax*) and annual Flinders grass (*Iseilema vaginiflorum*).

Phase 2 - net value of feeder bulls after 14 days at RED (days 14–28)

Feeder bulls previously fed pellets at Leopold returned the best net value ($432) after 14 days on feed at RED (Table 2). This was probably because they were accustomed to the pellet ration, having been on them for 14 days at Leopold. Feeding logbooks at RED showed that, over the 14-day period, stock previously accustomed to pellets ate ~10 more per animal than feeder bulls in the other treatments.

These results indicated that feeder bulls previously fed shipper pellets on-station returned a greater net value after 14 days on feed at RED than feeder bulls previously fed oaten hay or from the holding paddock.

Table 2 **Cost benefit of holding feeder bulls at RED with point of sale at RED after 14 days**

Ration	Induction weight (kg)	Feed costs per feeder bull ($)	Sale weight (kg)	*Value at sale ($)	**Net value ($)
Pellets (previously fed pellets at Leopold)	243.4	60.00	273.5	492.30	432.00
Pellets (previously fed oaten hay at Leopold)	240.0	51.00	265.5	477.90	427.00
Pellets (previously in holding paddock at Leopold)	240.2	49.00	262.1	471.78	422.00

* Calculated at $1.80/kg.
** Net value – sale weight x $1.80/kg less feed costs incurred to attain sale weight.

Weight change over PDS duration for each treatment is presented in Figure 2. Also included are the effects of fasting animals, based on results of trial work conducted by Kirton et al. (1972) for stock without access to food and Wythes et. (1980) for stock without access to both food and water. Figure 2 demonstrates that it makes economic sense to feed sale stock while waiting to be transported.

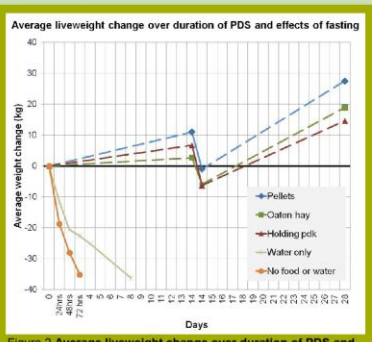


Figure 2 **Average liveweight change over duration of PDS and effects of fasting.**

Key findings

- ***There were financial benefits from holding stock in a holding paddock until required for transport.***
- ***Where holding stock in a holding paddock is not an option, the next best option was to deliver stock direct to RED and***
- ***Where leaving stock in a holding paddock is not an option and there are insufficient numbers to fill a truck, the most profitable method was to hold them in station yards and feed pellets.***

Acknowledgments

The cooperation of Roebuck Export Depot, Bunuba Cattle Company and the Bunuba Aboriginal people, owners of land and cattle, made this demonstration happen.

References

Kirton, A, Paterson, D & Duganzich, D 1972, 'Effect of pre-slaughter starvation in cattle', *Journal of Animal Science*, 34: 555–559.

Wythes, J, McLennan, S & Toleman, M 1980, 'Liveweight loss and recovery in steers fasted for periods of twelve to seventy-two hours', *Aust J Exp Agric Anim Husb*, 20: 517–52.

Supporting your success

mla MEAT & LIVESTOCK AUSTRALIA

Appendix C6 – Northern Beef Research Update Conference paper, August 2013

The cost/benefit of feeding feeder bulls between yarding and loading onto a live export boat

Matthew Fletcher[A], Paul Heil[B] and Jack O'Donnell[C]
[A]Department of Agriculture and Food WA, Kununurra; [B]Roebuck Export Depot, Broome, WA; [C]Formerly Leopold Downs station, Fitzroy Crossing, WA

Introduction

A Producer Demonstration Site (PDS) to examine weight change in the supply chain between yarding feeder bulls (young bulls) and loading onto a live export boat was initiated by the Kimberley Beef Research Committee and funded by Meat and Livestock Australia. Feeder bulls are a common live export article in the Kimberley and Pilbara. This is primarily due to management (once a year mustering) and live export market opportunities e.g. Middle Eastern markets prefer entire males.

Methods

The PDS measured weight change in 180 Brahman X feeder bulls, initial average liveweight 246 kg (range 200–350 kg), over 28 days in September 2012. Stock were weighed on day 1, twice on day 14 (before and after transport) and on day 28. A 12-hour wet curfew was applied to all treatments prior to weighing. Phase 1 (day 1 to 14) was completed at Leopold Downs, Fitzroy Crossing. Stock were randomly drafted into 3 treatment groups of 60 head. Group 1 was fed shipper pellets *ad lib*, Group 2 fed oaten hay *ad lib*, and Group 3 was placed into a well grassed holding paddock. After 14 days on these feeding regimes the feeder bulls were trucked to Roebuck Export Depot (RED) for phase 2; all stock were fed shipper pellets and oaten hay *ad lib* for 14 days.

Results and discussion

Phase 1 — feeder bulls held in the holding paddock for 14 days at Leopold Downs and delivered to RED (point of sale) returned the greatest net value of $432/head. The net value of feeder bulls fed pellets was $390/head and feeder bulls fed oaten hay was $385/head. It was more profitable to hold stock in a well grassed holding paddock on station than feed pellets or oaten hay while waiting to be transported. There was only a 3 kg liveweight advantage 'at the point of sale' to providing a more nutritious ration; pellets vs. native pasture, for 14 days prior to trucking. The lower net value received was solely due to the cost associated with purchasing and transporting fodder.

Phase 2 — the average net value of feeder bulls after 14 days on feed at RED was $383/head for Group 1 (previously fed pellets), $379/head for Group 2 (previously fed oaten hay) and $419/head for Group 3 (previously fed native pasture). Feeder bulls previously held in a holding paddock at Leopold Downs returned the best net value ($419) after 14 days on feed at RED. This was because there was no direct cost associated with holding stock in a holding paddock at Leopold Downs for 14 days unlike when feeding pellets or hay.

There were financial benefits from holding stock in a holding paddock that is stock-proof, has adequate water and feed and can be easily mustered prior to transport. Where holding stock in a

holding paddock is not an option, the next best option was to deliver stock direct to RED and put them on feed until the point of sale, which negates cartage costs on fodder.

Future producer demonstration sites to further develop this work are being investigated:

- Investigating weight change and feed consumption over 3, 5 and 7 days respectively on-station and at RED. It is hypothesised that sending stock to RED for 4–5 days prior to sale could provide an improved cost/benefit.
- Promote improved management of holding paddocks across the Kimberley.

Acknowledgements: The co-operation of Roebuck Export Depot, Bunuba Cattle Company and the Bunuba Aboriginal people, owners of land and cattle, made this demonstration happen.

Corresponding author matthew.fletcher@agric.wa.gov.au

Appendix C7 – *MLA Feedback* article, September 2013

Research at work

The latest on-farm strategies emerging from MLA's investment in research

Weighty solutions for the west

Kimberley cattle producers have been looking closely at the station-to-boat supply chain, with an MLA-supported trial revealing the most cost-effective methods for managing cattle prior to export.

Livestock export is a core activity of WA's cattle industry, especially in the Kimberley where many of the region's 706,000 cattle are destined for shipment.

The sale price is determined by the weight of cattle when entering an export depot so distance, time off feed and management pre-sale can have significant implications.

An MLA Producer Demonstration Site (PDS) to assess the influence of pre-sale feeding regimes was initiated by the Kimberley Beef Research Committee (KBRC) and the WA Department of Agriculture and Food. The trial was held at Leopold Downs, Fitzroy Crossing, and 400km away at the Roebuck Export Depot.

Three strategies were trialled:

→ retaining stock in the station's holding paddock pre-trucking and allowing them to graze on native pastures

→ transporting pellets or oaten hay to feed on-station

→ delivering stock direct to depot →

Market compliance

The bulls in the trial (see box for details on how the trial was conducted) lost an average 13.1kg during the five-hour road trip between Leopold Downs and the export depot. In addition to replacing the gut fill lost during transport, the bulls already accustomed to hay or pellets at Leopold Downs went on to gain an average 16.6kg after 14 days at the depot. This was an average of 7.3kg more than the group which grazed in the holding paddock.

Counting the costs

Once the costs of feeding were accounted for, the best option was keeping stock in a holding paddock and allowing them to graze on native pastures until required for transport. The difference in net value between the holding paddock and the next best option (delivering stock direct to Roebuck Export Depot and putting them on feed until the point-of-sale if a secure, watered and well-grassed holding paddock is not available) was about $10/head.

The least attractive option was to feed pellets or hay on-station.

Downstream impacts

KBRC Chairman Mike DeLong of Dampier Downs, Broome, said the PDS built producers' awareness of what happens to livestock after leaving their station.

"Kimberley producers have made significant genetic and management gains, but often miss opportunities to pick up profit down the supply chain," Mike said.

"While there is plenty of anecdotal evidence about weight change pre-shipment, this trial quantifies the impact of different preparation regimes.

"Every producer must weigh up their own unique circumstances. Hopefully the findings from this PDS will help the decision making process. The hard and expensive work done on station to produce a quality product can be diminished by not following up to the point-of-sale and beyond. This highlights that the entire supply chain has an influence on the bottom line."

Left: Feeder bulls from group one were fed shipper pellets for 14 days at Leopold Downs and for a further 14 days at Roebuck Export Depot. These bulls gained about 27.5kg (11%) over the duration of the PDS.

The nuts and bolts

The trial combined feeding strategies already in place at Leopold Downs with standard pre-shipment preparation requirements at the Roebuck Export Depot for cattle destined for Indonesia.

It is a requirement for cattle to be fed on shipper pellets in the depot at least 24 hours before shipping to adjust to the new diet before loading, and to ensure they weigh between 200 and 350kg. Stock are often held for longer, depending on their weight, markets and vessel availability.

During the on-station trial, 180 Brahman-cross feeder bulls were allocated to one of three feeding regimes: shipper pellets, oaten hay, or grazing on native pastures in a holding paddock. The cattle were subjected to a 12-hour wet curfew (supplied water but not feed) before weighing. They were weighed on day one and prior to trucking on day 14.

On arrival at Roebuck Export Depot, cattle were fed the standard ration of pellets and oaten hay for 14 days. Cattle were weighed on arrival and after 14 days on feed, and feed intake was measured.

Matthew Fletcher, WA Department of Agriculture and Food
E: matthew.fletcher@agric.wa.gov.au
Mike DeLong
E: dampierdowns@skymesh.com.au

ON-STATION: Stress free is key

Ned McCord managed Leopold Downs during the PDS trials.

Ned McCord has a simple strategy to prepare cattle for live export: use low-stress stock handling techniques, know your market specifications, assess inputs against expected returns, and be adaptable.

Ned managed Leopold Downs, owned by The Bunuba Cattle Company, during the PDS that was held on the station to trial feeding regimes. (He has since moved onto another role in the company).

Each year, the station sends 4,500–5,000 young cattle and 1,000 cows and bulls to the Roebuck Export Depot. The Brahmans (60%) are prepared for shipment to Indonesia, while the Shorthorn and Brahman-cross stock are cleared to go south to domestic markets at Perth, or onto agistment in preparation for export the following February to Israel.

"We have trialled preparation strategies over the past eight years to try and recoup weight lost during the 400km trip to Roebuck, so this PDS was a logical step to share management decisions at Leopold Downs," Ned said.

He found the best approach was to be flexible in the face of market fluctuations, seasonal conditions and the availability and price of feed.

"We look closely at feed and freight costs each year. If good quality pasture is available, we might run some cattle in a holding paddock."

"Some years it is more cost effective to feed cattle hay or pellets on-station, and other years we send them to the export yards for longer preparation to avoid paying freight costs on feed to station. The difference could be $50–60/head," Ned said.

The annual strategy is identified up to two months before the first road trains roll into Leopold Downs in May.

"Once we have an indication of prices, we work backwards and assess what feeding strategy will give us the best profit margin on expected return," Ned said.

Pre-sale preparation is underpinned by animal welfare and education of staff.

"We teach our staff low-stress stock handling. This improves animal welfare and affects our bottom line. Quiet cattle are more cost-efficient because they settle onto feed quicker," Ned said.

"We also feed pellets and hay at weaning, and this education helps to minimise stress in the export yards."

Ned always followed cattle into Roebuck to gain feedback from the depot's staff, and to see how stock handled the trip and their new environment.

"As producers we spend so much time, money and effort concentrating on breeding and raising cattle to the point of sale, but what happens after they leave our property is also very important."

Snapshot

Ned McCord, former manager, Leopold Downs, Fitzroy Crossing, WA

Property: 404,648ha across two stations (Leopold Downs and Fairfield Station are run as one property)

Enterprise: Beef cattle breeding

Livestock: 20,000 head, 60% Brahman, 40% Kimberley Shorthorn and Brahman-cross

Pasture: Mix of native pastures, spear grasses, Mitchell and Flinders grass

Soil: Mix of heavy black soil and lighter spinifex

Rainfall: 500mm

Lessons learned

- Use low-stress stock handling techniques to improve animal welfare and settle cattle onto feed before shipment.
- Educating stock at weaning to create opportunities to make profit later.
- Balance production costs with expected return to select a pre-sale preparation strategy.

Ned McCord
E: Ned.McCord@wesleycollege.net

AT DEPOT: Next stop, Indonesia

As manager of the Indigenous Land Corporation's Roebuck Export Depot (RED), Paul Heil prepares thousands of cattle from the Kimberley and Pilbara regions and the Northern Territory for shipment every year.

Above: Matthew Fletcher (Department of Agriculture and Food Western Australia) and Peter Hooley (Roebuck Export Depot) mulling over weights after the final weighing.

The 15,000-head capacity Roebuck Export Depot not only prepares cattle for export to Indonesia, Egypt, the Philippines and Malaysia, but it also provides a clearing house for cattle heading south for domestic processing, store sales or agistment.

With more than 100 stations supplying stock, Paul sees the results of on-property strategies to ensure cattle get on with the business of eating when they arrive in the depot.

"We can pick cattle that have been well-handled and fed pellets either during weaning or before trucking," he said.

"These cattle are familiar with yards and go straight onto food and water when they arrive here.

> "They perform 100% better than cattle straight out of the paddock. Insufficient preparation is an animal welfare issue, because cattle don't eat or drink until they adjust to their new environment.

"The quicker cattle rehydrate and achieve compensatory weight gain after trucking, the less time they need to spend in the yards, so the producer gets more bang for their buck. It also helps RED manage staff and throughput."

Paul encouraged producers to follow their stock off-station.

"A lot of station owners and managers are surprised at how their cattle perform in the yards. Some of these cattle have only been handled by a few people, and behave very differently in a strange environment," he said.

"Seeing their cattle in the next stage of the supply chain lets producers identify how they could pick up profit by adjusting their management."

Paul said four to five days in the export yards could be the balance between the cost of feeding and recouping weight. He hopes future trials can identify the optimum time frame.

Following the PDS, Paul is reassessing the depot's feed regime. Pellets, hay and silage are currently fed separately, but he has plans to introduce a mix wagon to optimise feed intake.

"Freight costs $200/tonne so if we can feed more efficiently and finish cattle sooner, it will be a win-win situation," he said.

Paul Heil
E: roebuckexportdepot@tlc.gov.au

Appendix C8 – Kimberley, Pastoralist and Graziers Association, presentation, November 2013

Pastoralists & Graziers Association of WA (Inc.)
KIMBERLEY DIVISION OF CATTLE MEN & WOMEN

A meeting of the above Division will be held at
Fossil Downs Station, Fitzroy Crossing on

FRIDAY 8TH NOVEMBER 2013 - Commencing at 8.00 am

---

1. Attendance
2. Apologies
3. Confirmation of Minutes from 19th April 2013
4. Business Arising
5. Guest Speakers
   - 5.1 Matt Fletcher, Development Officer, Daff Kununurra
     Results on Project of weight change in feeder bulls between yarding and delivery.
   - 5.2 Kevin Chennel, Executive Director Livestock Industries and
     Tom De Witter, Veterinary Officer Broome.
     B.J.D.
   - 5.3 Ben Secrett, Buru Energy.

SMOKO

   - 5.3 Karel Eringa, Manager Pastoral Land and Russel Shaw
     Draft Lease
   - 5.4 Cassandra Wittiwer, Vet Officer, Daff northern region
     Export advisory
6. General Business
7. Closure

If you are attending it is important that you

RSVP - Annette Henwood, Fossil Downs : 9191 7055

Appendix C9 – ABC radio interview, November 2013

Rural Report for Northern WA: Monday November 18th 2013

Study finds holding paddocks cost effective to keep weight on cattle

Tyne McConnon

A study has found the most cost effective and beneficial way to keep weight on cattle when being transported is to use a holding paddock.

The Department of Agriculture research looked at weight change in the supply chain between the time bulls are mustered until they're loaded onto a live export ship.

The idea for the study came from a meeting of the Kimberley Beef Research Committee in early 2011.

The department's Matthew Fletcher says the team worked with Leopold Downs station and Roebuck Export Depot on the project.

"The three most common ways people feed their animals while they're waiting to be transported is you either put them in a holding paddock, you feed them oats and hay in the yards or you give them shipper pellets.

"We followed 246 bulls over 28 days with all three methods. We found on station the most profitable method after the first 14 days was to hold them in a holding paddock."