finalreport

Project code: B.NBP.0372

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Date published: 23 Sep 2014

ISBN: 9781741915204

PUBLISHED BY
Meat & Livestock Australia Limited
Locked Bag 991
NORTH SYDNEY NSW 2059

Northern Australian Beef Fertility project – Wean-a-calf

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Abstract

Following a series of project team meetings and meetings/consultation with Regional Beef Research Committee's (RBRC's) in northern Australia during the second half of 2006 and early 2007, the final draft of the Northern Australian Beef Fertility Project application was submitted to MLA in April, 2007.

Executive Summary

This project was initiated to enable the comprehensive planning and industry consultation required to develop a full research application to be submitted to MLA early in 2007. A comprehensive assessment of the logistics of conducting this very large project was made. A list of potential co-operating veterinarians was established and a number of crush-side data capture systems assessed and quotes for their implementation in the planned research received. Critical feedback from a range of industry stakeholders and collaborating researchers was collated and incorporated into the final research application. The net benefit for industry was submission of an accurately costed comprehensively planned research project application.

Contents

1 Background

During 2005 as part of the Northern Beef Programmes strategy development a series workshops were held with regional industry stakeholders, the Northern Pastoral Group and researchers. Producers ranked beef cattle reproduction equal third in the ranking of priority issues. However it was recognised that there was a serious lack of data on what were achievable levels of breeder mob reproductive performance by broad geographic region, and how much of the variation in mob reproductive performance could be explained by known factors.

A recently completed MLA funded project (NBP.336) concluded that if northern beef cattle producers achieved breeding mob pregnancy rates per cycle of 65% and perinatal losses of <10%, the direct benefits to their businesses could be of the order of $15M per annum. There has been no systematic study of the reproductive performance of breeding herds in northern Australia or of the factors affecting performance. Rather there have been a number of case studies and producer surveys which although providing some very useful data are limited in their application to the industry as a whole.

In mid-2006 the Northern Beef Programme held a meeting with selected beef cattle reproduction researchers and epidemiologists to discuss the logistics of conducting a large scale research project to define and quantify the factors affecting breeder mob reproductive performance and what were achievable levels of performance across northern Australia. A project development team was subsequently established to develop a full research application to be submitted to MLA.

2 Project Objectives

The Consultant will achieve the following objective(s) to MLA's reasonable satisfaction:

By 28th February 2007: a detailed, full project proposal for Northern Australia Beef Fertility Project (Wean-a-Calf) completed.

3 Methodology

A series of project development meetings were held leading to the development of a preliminary proposal which was submitted to MLA in October, 2006. A series of telephone and face to face meetings were held with the members/ chairperson of the majority of RBRC's to discuss the projects objectives, logistics of carrying out the project and the benefits to the industry. This generated extensive feedback which was synthesised and incorporated into the full application.

4 Results and Discussion

Major outcomes of the project development were:

1. identification of a group of some 36 cattle veterinarians from across all regions of northern Australia which were, a) prepared to participate in the study, and b) provided a beef reproductive management service to clients who also would be prepared to participate in the study
2. identification of several electronic data capture systems which had the capacity to capture the data required by the project

5 Success in Achieving Objectives

The application for funding of the Wean-a-calf project was submitted in April 2007, was considered by the NBP and MLA board in May and has subsequently been approved and funded by MLA.

6 Impact on Meat and Livestock Industry – now & in five years time

The detailed planning which has been put into the development of this project has the laid the foundation for the long-term delivery of the project objectives and thus the benefits to industry which have been outlined in the project application (Appendix 1).

7 Conclusions and Recommendations

This project development project has enabled the timely submission of a fully costed, comprehensively detailed research application to MLA. The scale and the complexity of the project (154 breeding mobs consisting of some 96,000 head) required significant dedicated time to be put into the project development by researchers, cattle veterinarians, DPI officers and producers.

8 Bibliography

The following MLA final reports and ongoing projects (*) were used in the preparation of the research application:

- North Australia Beef Producer survey 1990 – O'Rourke, Winks and Kelly (1992)
- Minimising pregnancy failure and calf loss – Fordyce, Burns and Holroyd (2006)
- Improved diagnosis of reproductive disease in cattle – Lew et al (2006)
- Impact of infectious disease on beef cattle reproduction – Kirkland et al (2007)*

Appendix 1

10 PROPERTY SELECTION CRITERIA

1. Clients of selected project veterinarians

2. Property owner / manager keen to participate & support the project and capture all required data.

3. Property owner / manager prepared to keep the mobs initially recruited on the property and easily tracked for the duration of the study. Fencing needs to be in good repair and mustering techniques adequate so that at least 90% of each selected can be mustered twice yearly..

4. Property owner / manager keeps reasonable records so we can capture property and mob level data e.g, vaccinations given (what and when); herd structure (age etc); paddock moves; supplementary feeding (what, how much, when); pasture quality and quantity; stocking rates; rainfall data (also other climate data from nearest BOM site); date bulls out & in etc etc

5. Typical of cattle properties in the region, in particular with respect to size, breeder numbers, pastures, herd management (including breed, mating regime) and performance.

6. Commercial breeder properties – exclude studs and fattening or trading properties. For mixed properties, breeder size and income needs to be a significant proportion of the income.

7. Breeder herd is pregnancy tested at least once annually, and the owner / manager would be willing, with financial assistance, to pregnancy test the selected mobs twice yearly.

8. Pregnancy testing facilities (in reasonable working condition) are available

9. Weighing facilities for weaners at least are available.

10. All working bulls have previously undergone a BBSE examination and all newly purchased and bulls following one joining are tested annually. If this has not been done, the participating producer is willing to have it done (at his expense or a subsidized rate?)

11. If NLIS tags are not already in the breeder herd, producer is willing to pay to apply NLIS (EID) tags to all cattle in the selected mobs. The project budget will provide for the electronic capture of the EID in combination with individual data.

12. Mobs available for selection are joined naturally without any artificial breeding

Appendix 2

11 Data to be collected by co-operating veterinarians from each property and mob

Property level	Mob level	Animal level (at each visit)
Owner / Manager & the length of time they have both been in those roles	Paddock ID and area	Cow ID
Exact location – longitude / latitude	Exact location of paddocks (may change year to year) – longitude / latitude	Age
Geographic / rangelands description	Paddock geographic / rangelands description	Breed
Climate - rainfall; where this is recorded on the property; nearest BOM site.	Climate – individual paddocks – may need to set up rain gauges on the paddocks the trial mobs are in, particularly on big properties	BCS (standard amongst vets)
Any recent significant changes to the property	Stocking rate – LSU or AE/ha & per 100ml rainfall. Stock days?	Lactation Status (wet, dry, lost calf or weaner mum – combination of reducing udder and BCS of cow)
Enterprise (eg breeder only; trading & breeding; cattle & cropping; cattle & sheep)		Pregnancy status (incl any comments on palpation of reproductive organs)
Herd size	Mob size	Live-weight
Herd structure / stock inventory – age & number of breeders; no. of bulls; number & age of dry cattle	Mob structure / stock inventory – age & number of breeders; no. of bulls. Changes year to year – culls; turn-off (culls), mortality rates; breeders added	Comments on health of cow
Joining system (controlled – how many months; continuous; breeder segregation)	Length of joining period – bulls in, bulls out	Some blood samples and swabs will be taken
Heifer management – post-weaning; yearling to joining; joining to calving	Records of any unusual occurrence like fetuses found in paddock; weather events	
Bull management	BBSE – fertility of bulls	Bull ID and BBSE assessment results
Genetic strategy – bull & heifer selection	Breed (cow & bull) & any other description of cattle – introduced (origin) or homebred etc	
Culling practices – bulls & cows		
Herd modelling including replacement nos. / % for bulls & heifers		

Main income generator, eg sale of weaners; sale of feeder heifers & steers; turn-off rate; weight gain		
What do they use as their KPI – key profit indicators	Weight of cattle turned off every year (weaners and culls)	
Any significant outside influences, eg RCS		
Mustering practices and efficiency	Mustering efficiency in the mob	
Nutritional / sustainability strategies - pasture management; drought; supplementary feeding	Monitoring of pasture quality & quantity – kg DM/ha at set times of the year (monitor sites); type of pasture; NIRS; wet chemistry	
	External nutrition – supplementary feeding; fertilizer (??)	
Health management – vaccinations; drenches, HGPs, biosecurity	Vaccinations and other treatments – initial; annual boosters etc	
Wildlife (kangaroos, dingoes, goats, feral pigs etc) and their management	Calf predation?	

Appendix 3 Bull group fertility rank

This ranking was devised using the Australian Cattle Veterinarians definition of a fertile bull (a bull is considered fertile if when mated to 50 normal fertile females it is able to impregnate at least 90% within 2 months) and assuming a bull percentage of 2% for a mob of 500 normally fertile females – it has been assumed that each bull in the group will each mate with 50 different cows . The pregnancy rates after a 2 month joining period for the different fertility ranks are as follows:

- Fertile bull group - 90%
- Mainly fertile bull group (9 fertile and 1 subfertile bull[a]) – 86%
- Moderately fertile bull group (7 fertile and 3 subfertile bulls) – 78%
- Moderately subfertile group (4 fertile and 6 subfertile bulls) – 66%

[a] the degree of subfertility for each bull ranged from mild to severe with the estimated pregnancy rate after 2 months being 70%, 50% and 30% for mild, moderate and severely subfertile bulls respectively. The pregnancy rates quoted above are for mobs mated to bull groups containing varying incidences of moderately subfertile bulls or equal numbers of mild, moderate and severely subfertile bulls