final report

Project code: B.NBP.0520
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Date published: April 2012
ISBN: 9781741919059

PUBLISHED BY
Meat & Livestock Australia Limited
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NORTH SYDNEY NSW 2059

Weaning management of beef calves – practical guidelines for northern Australian beef producers

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

The ‘Weaning management of beef calves – practical guidelines for northern Australian beef producers’ book or simply ‘the weaner book’ is a compilation of all the research, demonstration and practical knowledge available on weaning and weaner management in northern Australia. Most of this information has been available for some years, but it has not been collated in a single document that is practical and easy to understand. It has been difficult for property owners, managers and their staff to access. The end result of this project is an easy to read guide that has all the available information in one publication. Compiling this information has also highlighted areas where information is limited or non existent or where available information is not being implemented across the whole industry. This has been evaluated and included in recommendations for further research and or demonstration work.
Executive summary

There is a wealth of information from research findings, on property demonstrations and personal experiences of property owners, managers and advisors on weaning and weaner management of beef calves in northern Australia. Results from most of the research and demonstration work are available in research papers and extension publications such as newsletters and information sheets. Little of the personal experience particularly that of property owners and managers is available other than by personal communication.

The book ‘Weaning management of beef calves – practical guidelines for northern Australian beef producers’ is an attempt to compile all the available information into one publication for the public.

The book was compiled by a group of experienced staff from Queensland Department of Employment Economic Development and Innovation, Northern Territory Department of Resources and the Western Australia Department of Agriculture and Food. This group was selected for experience and access to information from property owners and managers throughout northern Australia.

The immediate benefit to industry is that there is now one source of information on weaning and weaner management in northern Australia that includes most of the research, demonstration and practical experiences that are available.

Adoption of improved weaning and weaner management methods has short term benefits of reducing breeder mortalities and improving overall breeder herd condition which in turn will result in a reduction in the need for breeder supplementation. The long term benefits include improved reproduction and greater turnoff per breeder unit. Where improved weaner management strategies have been implemented on beef properties, concentrated earlier calving has occurred. Additionally, the adoption of improved weaner management strategies usually results in improved management of the whole herd with significant added benefits to the business.

One down side to implementing these strategies (particularly where weaning calves younger and lighter - down to 100 kg liveweight) is the cost of purchasing feed storage infrastructure and feeding out equipment. On large properties this cost can be significant but has been shown to be more than covered by the benefits accrued from the strategy. There is also a greater need for more precise management of these lighter calves to ensure they grow well.

During the compilation of this book the team identified a number of areas where more knowledge is needed. The most significant of these is the effect of nutritional management on lifetime growth rate from weaning at 100 kg liveweight to turnoff (and particularly from weaning until the break in the season) for a range of markets including live export. The effect of growth rate on carcase characteristics particularly ossification and MSA boning group score needs to be investigated.
1 Background

Research and demonstration on weaning and weaning management has been carried out for over 50 years. There is also a wealth of research results, and field experience in this area held by advisors to the beef industry and property owners and managers. While much of this information is in written form such as a research reports, demonstration reports, newsletter articles, and ‘Tips and Tools’ publications a great deal of knowledge is in the form of undocumented experiences of property owners, researchers and industry advisors. Because of this fact, it was difficult, if not impossible, to access and report on all of the available information and experience relating to weaner management in northern Australia.

2 Project objectives

To compile in one book as much of the information on weaning and weaner management in northern Australia as practical so that this information and experience is more readily available to the industry.

3 Methodology

A project group including staff from Queensland Department of Employment Economic Development and Innovation, Northern Territory Department of Resources and the Western Australia Department of Agriculture and Food were selected. The basis for selection of staff was geographic – all areas of northern Australia were to be represented – and experience knowledge and contacts with producers in particular areas.

4 Results and discussion

Regional differences relating to the practical application of research findings was an internal issue that had to be dealt with by the project team. Integrating these differences into one publication, into a simple format, covering all of northern Australia, was not without its challenge and required multiple meetings and correspondence to reach consensus among the disparate regions. A significant achievement then of the project was that the final output (‘the weaner book’) represents the best bet practice recommendations for all northern Australian beef producing regions.

5 Success in achieving objectives

The project team has achieved the aim of compiling into one publication as much of the information (both research and on property experience) as is practical. The team has also achieved the aim of compiling a list of ‘knowledge gaps’. These are in the appendix and have been divided into:

(a) areas that need detailed research and
(b) areas that need more on property demonstration to gain more practical experience and better uptake of information by industry.
6 Impact on meat and livestock industry – Now and in five years time

While we have incorporated as much research and practical experience as possible, it was not possible to cover every eventuality a producer might encounter. Thus, the information provided in the book must be considered with one’s practical experience relevant to a specific area.

Improving weaning and weaner management cannot be done in isolation from managing the rest of the breeder herd. Practical experience has shown that improving weaning and weaner management results in improved management of the entire breeder herd. Yet, it can be difficult to attribute overall improved herd performance to any single aspect of management.

Improving weaning and weaner management has a number of short and long term benefits.

**Short term**
- Reduced breeder mortality
- Decrease in supplementary feeding costs for the breeder herd
- Improved breeder condition

**Long term**
- Increased conception and therefore weaning rates
- More concentrated calving in continuously mated herds
- More income from sale of females

**Caution**

Where a strategy to wean calves younger and lighter is implemented considerable costs can be incurred in the purchase and setting up of feed storage, feeding out equipment and fed troughs. This strategy also requires a high standard of management of the younger and lighter calves and is often more labour intensive. In situations where the dietary requirements from native pastures is inadequate and if a high standard of management and appropriate supplementation is not implemented, young weaners do poorly and significant losses can occur. Coccidiosis is common in poorly managed young weaners.
7 Conclusions and recommendations

In compiling this book the project team has identified areas where further research and development is required.

Information and knowledge gaps for weaning and weaner management in northern Australia

Research

1. Impact of growth rate (from maintenance upwards) from weaning to slaughter with particular emphasis on the period from weaning until the break in the season on:
   a. subsequent growth to slaughter
   b. lifetime reproductive performance
   c. carcase traits particularly ossification and MSA grading
   d. weight and age at puberty.

2. The production advantage of NPN supplementation of early weaners (100 to 180 kg) with varying diets (as estimated from NIRS). There is a lot of work on true protein based supplements but not a lot with NPN supplements.

3. The optimum supplementation level (ie grams of urea per head) with varying diets. The early work was done at Swans with Black Speargrass as the base diet, which had a limited digestibility. With more digestible fodder (i.e. better quality native pastures) there may be an economic benefit with higher level of urea than suggested from the Swans data.

4. Need to establish minimum growth targets to optimise future productivity of different classes of weaners for a range of markets including live export.

5. Practical strategies to monitor skeletal growth in juvenile cattle.


NB A greater benefit would come if the birth date and/or weight of individual animals used in any experiment was known so that growth from birth to turnoff and actual age at turnoff could be calculated. The age of any group of cattle particularly those from commercial properties could vary by 6 to 12 months which will have a major influence on carcase traits such as ossification.

7. Role of gene marker or similar technology to identify individuals at weaning that are most likely to respond to management inputs to meet future target performance. The concept here is to be able to identify individuals that have the potential to meet different grading requirements such as MSA, have a younger age and weight at puberty, etc. Identified groups could be drafted at weaning into their potential performance groups for more efficient management thus potentially improving business profitability and performance.

8. Demonstrating the value of NIRS as a tool to predict diet quality selected by weaners and using this information to determine supplementary feeding requirements to achieve a range of growth rates.
9. Foetal programming effects due to under-nutrition of cows in early-mid pregnancy on progeny growth, reproductive performance and carcass traits.


Demonstration

The need, as demonstrated by the work in 1 above for good management of weaners from the day of weaning until the break in the season.

Some specific constraints/opportunities are:
- Insufficient weaner paddocks
- Wet season spelling of weaner paddocks
- Separate weaner paddock for second round weaners
- Value of improved pasture/inclusion of legumes in weaner paddocks

Improving feeding systems:
- Guidelines for trough spacing for lick, protein meal, fortified molasses
- Optimal mob sizes for particular weaner classes and supplements
- Supplement delivery equipment to reduce labour requirements

Recommendation

MLA talk to Dr Steve Petty with a view to having the report on his weaner management at Flora Valley in the 1990’s published.

General comments

In some cases the recommended research and demonstration has been done, but using animals over 200 kg liveweight at weaning, temperate breeds and with minimum growth rates of about 0.4 kg per day. We recommend that the research and demonstration be done in northern Australia using weaners of tropical breeds from 100 kg liveweight up to 200 kg liveweight with minimum growth rates from 0.2 kg per day.

The project group realise that animal welfare issues may prevent minimum daily gain targets of less than 0.4 kg being included in a research project. Therefore, information on performance of animals with low growth rate may be able to be achieved by assessing the daily gain of individual animals in a large group where the mean daily gain target may be 0.4 kg per day or higher. In practice, however, the growth potential for animals that grow slowly from weaning to the break in the season would likely be from animals with a low genetic ability to grow, rather than from animals with a higher genetic ability to grow but on a low plain of nutrition.
8 Bibliography

References relating to weaning and weaner management in northern Australia. Compiled by Lauren Williams 7/10/11

Books

Hasker PJS (2000) 'Beef cattle performance in northern Australia: a summary of recent research.' (Department of Primary Industries, Queensland, Brisbane.)


Conference proceedings


Weaning management of beef calves


**Industry articles**


Laing AR (2006) A guide to the amounts of various types of supplements needed to maintain moderate growth rates of weaners. In 'Northern Muster. Vol. 12'. pp. 32. (Department of Primary Industries, Queensland.)

Laing AR (2006) Lean wet season may need earlier attention to weaning. In 'Northern Muster. Vol. 12'. pp. 33. (Department of Primary Industries, Queensland.)


Industry reports


Weaning management of beef calves


Refereed Journal publications


Weaning management of beef calves


Non-refereed publications

Weaning management of beef calves


**Post-graduate degree publications**


**Producer Demonstration Site reports**


