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DIET QUALITY AND ANIMAL PERFORMANCE OF CATTLE GRAZING THE PILBARA RANGELANDS

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INTRODUCTION

There is little documented information of the performance of grazing cattle in the Pilbara. Similarly there is no information on the quality of the diet that cattle actually select on the different land systems of the Pilbara. There is also little information on the reliability of faecal Near Infra-red Reflectance Spectroscopy (NIRS) as a tool to determine diet quality in the Pilbara rangelands.

A project, supported by Dept of Agriculture WA (DAWA) and Meat and Livestock Australia (MLA), to provide some base information on these issues was initiated in 2003. Cattle body condition, lactation status and simple pasture assessments are being recorded at regular (4 – 6 weekly) intervals at collection sites on some of the representative pasture systems of the Pilbara. Faecal NIRS is being used to predict diet quality of cattle grazing these pasture systems.

Results to date indicate that non lactating breeders have generally maintained body condition in areas that received useful summer rains. Faecal NIRS predictions at this stage of the project appear to be reflecting animal performance, as observed by changes in body condition of non lactating cattle at most sites. While dietary Crude Protein (CP) predictions declined to 5 –6% range at most sites during the year, predicted digestibility remained above 50% at all sites throughout 2003.

PROJECT OBJECTIVES

1. Establish initial animal performance 'benchmarks' of grazing cattle in the Pilbara region of WA.
2. Establish the reliability of faecal NIRS to predict animal performance and as a management tool in the Pilbara.
3. Produce a technical report, based on project outcomes, producer experience and best bet information, on the use of supplements in the Pilbara.

METHOD

Data collection sites have been established at stock watering points located in areas broadly representing three Pilbara pasture/land systems. Pasture photo monitoring sites have been established on each pasture/land system.

The body condition (1 – 9 scale) and lactation status, percent of mob lactating and estimated calf age of cattle watering at each 'collection site' is recorded at 4 – 6 weekly intervals. A bulked faecal sample is collected from at least 20 fresh dung pats at each site at each collection. Faecal NIRS predictions of diet quality provided by CSIRO, Townsville include; dietary crude protein (CP), faecal nitrogen (N), digestibility, non grass in the diet and live weight change.

Rainfall events, pasture assessments of yield, green:dry leaf ratio and leaf:stem ratio are also recorded at each observation. The pasture photo monitoring sites are recorded at three-monthly intervals to provide an indication of seasonal landscape changes.

Project progress is regularly reported to co-operating pastoralists for consideration in management decisions and to the broader rangeland community in our *Pastoral Memo* newsletter and at producer meetings.

PROGRESS TO DATE

1. A total of 15 collection sites have now been negotiated with seven pastoralists from different areas of the Pilbara.
2. Sample collections, recording of cattle body condition and some assessment of quality of grazing on offer commenced at the majority of these sites in November/December 2002.
3. Pasture photo monitoring sites have been established within the grazing area of collection sites.
4. Thirteen data collection 'rounds' have been completed on most sites.
5. Progress reports have been presented to Pilbara pastoralists at several meetings during 2003.
6. Information on the project has been published in the Dept of Agriculture WA *Northern Pastoral Memo* and the *NIRS Newsletter*, published by Queensland Department of Primary Industries & Fisheries (QDPI&F) staff involved in a similar project activity.
7. A pilot diet/faecal pair observation on cattle confined to a Spinifex-based pasture community has been conducted to determine the effectiveness of this type of observation to improve the accuracy of current calibration equations.
8. Communications with the QDPI team have been maintained and encouraged to ensure that information collected on both sides of Australia is comparable.
9. Project is currently progressing satisfactorily and it is anticipated that all currently agreed milestones will be met.

DISCUSSION

Three of the pastoralists co-operating in this project have included the information being collected in their management decisions for the timing of mustering and commencement of supplementation. Another pastoralist not involved in the project has submitted samples to assist in planning a supplementation program based on information generated by the project.

One co-operating pastoralist has indicated interest in developing a supplementation 'trial' to determine the cost benefit of supplements in his area. It is intended to weigh dry cattle on a regular (2 – 3 monthly) basis and collect regular faecal samples for NIRS determinations as part of this observation. This interest is encouraging for the future of NIRS as a management tool for the Pilbara.

Collations of condition changes of non lactating breeders and diet quality predictions from NIRS suggest that current NIRS predictions are useful cattle management tools for some rangeland pasture communities. These are pasture communities with significant areas of perennial tussock grasses including Buffel (*Cenchrus ciliaris*), Roebourne Plains (*Eragrostis xerophila*), Barley Mitchell (*Astrebla pectinata*) and Hoop Mitchell (*A. elymoides*).

Predictions of diet quality and predicted animal performance of animals grazing pasture communities including significant areas of Spinifex (*Troidia spp.*) appear to provide less reliable information. This is not surprising considering little diet/faecal pair information has been generated from these pasture communities for inclusion in the development of NIRS calibration equations.

The current project is providing information on where current NIRS predictions are likely to be useful in determining cattle performance in the Pilbara rangelands. It is also identifying pasture systems where more work is required to improve the accuracy and usefulness of predictions. An increased understanding of the diet quality that cattle grazing the Pilbara rangelands select during the year will form a basis for the development of improved cattle management systems to increase the production efficiency of Pilbara cattle herds in the future. This is likely to result in more efficient and environmentally responsible cattle production systems.

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