

# Terms of Reference

## Heat stress nutrition

### Summary:

Meat & Livestock Australia (MLA) is seeking expressions of interest from individuals, organisations or project teams with the research capability and infrastructure to undertake a well researched, systematic and coordinated assessment of nutritional strategies that can be employed to assist with management of heat load in feedlot cattle.

### Background:

MLA has previously funded a number of projects to evaluate the potential of dietary modifications and nutritional management strategies to assist with management of heat load in feedlot cattle. The initial impetus for this work came from the report of project FLOT.307 “Heat load in feedlot cattle”, which postulated a potential mechanism that could be employed to reduce total metabolic heat production and to shift the timing of that heat production to a period of the day where it was more likely to be dissipated to the environment.

A subsequent project, FLOT.314 “Investigations of dietary manipulations as a mechanism for minimising the impact of excessive heat load events on feedlot cattle”, provided a series of recommended research activities to address a range of issues identified by the review. Some of these recommendations have been addressed in subsequent work, but many remain outstanding.

Project B.FLT.0343 “Amelioration of heat stress in feedlot cattle by dietary means” examined the potential to increase the proportion of metabolic heat that is evolved at night, when it can be more easily dissipated to the environment, by managing feeding times or by altering the composition or the processing method of the dietary grain. Similarly, project B.FLT.0345 “Assessment of betaine and glycerol as ameliorants of heat load in feedlot cattle” investigated the effects of supplementary betaine and glycerol in both shaded and unshaded cattle. Results of both projects were not encouraging.

While most of the other areas of research associated with management of heat load in feedlot cattle have been completed, the contribution that nutritional strategies can make to amelioration of heat load remains outstanding. Given that there has also been a substantial amount of work undertaken overseas in the past few years, it is timely to revisit and refocus this research effort.

### Project Objectives:

1. Produce a well-researched and comprehensive literature review that provides a clear definition of the known dietary modifications and feeding strategies that reduce heat load in feedlot cattle and identifies the gaps in existing knowledge/information that are of crucial importance to formulation of new strategies.
2. Outline a coordinated and prioritised program of R&D that systematically addresses the identified gaps and generates the knowledge and information necessary for formulation of new strategies that can be practically implemented by lotfeeders.

**Methodology:**

Without limiting the ability of the applicant to develop and apply any particular approach or methodology, it is envisaged that the project will initially involve a comprehensive and critical review of past MLA activities in this area, together with a review of the scientific literature both in Australia and overseas. Travel may be required to consult with overseas researchers actively engaged in this area of work and to access more recent research.

To address the knowledge gaps, it is envisaged that the R&D program will potentially involve a range of projects encompassing areas from basic cell biology research to more applied research involving feeding studies under climate controlled conditions. It will be important to demonstrate a logical progression of the research effort from the laboratory, through small scale trials under controlled conditions to commercial implementation. MLA would view favourably collaboration with other research groups that both ensures the developed R&D program is critically evaluated prior to submission and provides an opportunity to expedite the research activities through access to additional facilities and/or an additional summer period each year.

**Process:**

The Expression of Interest should be submitted using an MLA Project Application supplemented with appendices as required, to address any specific requirements. To access the project application template, go to [www.mla.com.au](http://www.mla.com.au) and follow the links to *Research and development*, then *Funding opportunities* and *Research organisation funding* to download the **MLA Full application template and guidelines**.

In particular, the proposal should:

1. Detail the approach that will be adopted to address the project objectives.
2. Detail the specific work activities proposed and timelines for their achievement.
3. Provide details of the information/data to be collected, collated and assessed and how these activities will be undertaken.
4. Include a detailed and fully costed budget that covers all the resources required to undertake the work, including details of basis for charging (daily fees, number of days, expenses, etc.).
5. Propose a payment schedule, taking account of the following:
  - o Progress payments may be negotiated against project milestones if the size and timescale of the project warrant this. The proposal should propose milestones and payments if required.
  - o A minimum of 20% of the project budget must be retained for payment against the final milestone.
  - o Payment of fees will be upon MLA acceptance of the attainment of the milestones.

**Selection Criteria:**

Selection of the successful proposal will be based on the following criteria:

1. Soundness of the method proposed to complete the project objectives, including timelines and milestones by which progress will be measured;
2. Demonstration of the applicants knowledge and understanding of the relevant issues;
3. Track record of the applicant and proposed team members; and
4. The project budget and assessed value for money.

**Reporting Requirements:**

The successful applicant will provide milestone reports (if required) and a final report giving full details of the results of the work. Milestone and final reports will be prepared in line with MLA report guidelines.

The successful applicant may also be required to prepare and/or contribute to short articles for dissemination in MLA and industry publications.

The researcher shall report directly to Des Rinehart, MLA Feedlot R&D Project Manager.

**Confidentiality and IP:**

Where information is available which may assist the successful applicant in meeting the requirements of the project, MLA will provide such information to the successful applicant. All data and cited references must be acknowledged appropriately in the final publication and it is the sole responsibility of the applicant to ensure copyright laws are not breached.

The successful applicant will be required to enter into a standard agreement with MLA.

**Further Information:**

If you have questions regarding this project, contact:

Des Rinehart  
Feedlot R&D Project Manager  
Livestock Production Innovation  
Meat & Livestock Australia

Phone: 0417 728785

Email: [drinehart@mla.com.au](mailto:drinehart@mla.com.au)

**Project Proposal Submissions:**

Proposals must be lodged electronically as Word document to: [applications@mla.com.au](mailto:applications@mla.com.au)

Proposals must be received by **COB Friday 10 February 2012**.