

Expressions of Interest – Terms of Reference

Covered housing systems retrofittable to open feedlot pens

Summary:

Meat & Livestock Australia (MLA) is seeking expressions of interest from organizations with the capability to deliver R&D on covered housing systems retrofittable to open feedlot pens.

Background:

The Australian feed lot industry is committed to providing shade for cattle in feedlots in Australia. Shade enables feedlot operators to satisfy the five domains of animal welfare which includes cattle displaying natural behaviors' and reducing the risk of discomfort through improved self-thermal regulation. Shade also reduces risk of cattle heat load and improves the feedlots industry's resilience to climate variability. The installation of shade in Australian feedlots demonstrates our industry's collective commitment to prioritizing and continuously improving the welfare of cattle under our care.

At present there are a variety of options and designs of shade available for Australian lot feeders to adopt as part of their operations. These include:

- Retractable shade designs
- Separate panel designs
- Corrugated iron strip design with spaces to encourage drying
- Centre square designs with gaps to encourage drying
- Longitudinal shade rows in the north to south direction
- Covered housing systems

In recent years the use of covered housing systems has emerged as a potential solution for protection against summer heat and wet winter weather for grain fed cattle in Australia. Solutions that can be retrofitted to existing feedlot capital bases are essential to improve management of cattle in diverse environments. MLA has recently evaluated a novel tarp-based system providing 4 m²/head pen space coverage (approximately 1/3 of pen) with significant productivity and efficiency benefits. In addition, the feedbunk was covered by a 1.5 m overhang, protecting the feed from water ingress.

Further evaluation is required to determine the optimal economic response to pen cover density in open feedlot pens (e.g. as cover goes from 1/3 to 2/3 of pen area). Most feedlots in Australia are commercially stocked in the range of 12.5 to 16 m²/hd.

Project objectives:

Deliver to MLA by the agreed date:

- (1) Select a covered housing system designs retrofittable to existing feedlot pens to compare to conventional management at a single research site.
- (2) Examine the effect of pen cover density (4 versus 8 m²/head) retrofitted to an open feedlot pen compared to conventional management on:
 - a. Construction cost
 - b. Animal welfare metrics and pen surface moisture

- c. Performance, animal health and carcase characteristics
 - d. Cattle cleanliness and microbiological contamination of hides and carcase
 - e. Manure yield and composition
 - f. Records of capital and operating costs (R&M, pen cleaning costs)
- (3) Determine any ancillary benefits (e.g. water capture) that could be incorporated into the cost-benefit analysis.
- (4) Based on project results determine a cost-benefit analysis and pay-back of the treatments.
- (5) Make recommendations on the feasibility of the shelter solution to the Australian feedlot industry.

Brief project design and methods:

Animal Ethics

Animal ethics approval in the state of the collaborating feedlot will be required for all methodology involving live animals.

Experimental Design

Whilst not limiting the capacity of the applicant to develop any particular methodology or technique it is envisioned that the methodology may include an assessment of the following:

- randomised complete block designs

The methodology adopted must be scientifically robust and achievable within the defined project period to meet project objectives.

Given limitations of procuring and slaughtering cattle under large pen conditions it is expected that experimental treatments are limited to **3 treatments**, with a minimum pen size of 40 head. All experiments should include power calculations to justify their proposed level of replication for the pen size and expected treatment response.

All applications should include diagrams outlining:

- Orientation of shade or shelter relative to the pens rows (cardinal direction e.g. north south).
- Dimension of pens, proposed pen cover density, stocking density and location of water trough
- Placement of experimental treatment pens within the feedlot layout to ensure an unbiased treatment comparison.

Bedding

Bedding can be utilised in open feedlot pens under conventional management to manage welfare as long as bedding rate is held fixed for a given project. This will be decided prior to commencement of each project.

For partially covered pens treatments bedding will not be added.

On-site project management:

All applications must include a suitably qualified on-site project manager to ensure that project methodology is achieved. Qualifications of this on-site project manager should be included in the preliminary application. On-site project managers should be located at the feedlot for all induction,

treatment allocation, weigh and dispatch days. The research organisation will be required to have a staff member present at all abattoir slaughter days to match visual ID to body numbers.

Weighing

Given this trial will occur under commercial feedlot conditions weighing will be limited to induction weights, re-implant weights (if practiced), and outgoing pen weights (split weighed) over weighbridge. Access to cattle for other procedures at these timepoints (e.g. blood sampling, bolus insertion etc.) should be negotiated on a case by case basis with the collaborating feedlot and MLA.

It is a MLA requirement that all weighbridges, feed truck scales, and individual livestock scales are certified prior to the experiments commencement, monitored and check weighed during the experiment. Proof of calibration certificates will be required by MLA for milestone payment to the research organisation.

Cattle and Feed Purchase & Slaughter

The research organisation will subcontract the collaborating feedlot to purchase all cattle and feed for the experiment. To enable equal treatment comparison it is expected that outgoing pens within a treatment block are slaughtered at similar days on feed. If all cattle in a block are not able to be slaughtered at a single timepoint, equal numbers of animals from each experimental treatment should be slaughtered over consecutive slaughter days till the block is complete.

The research organisation should negotiate a Research fee with collaborating feedlot that accounts for feedlot fees and risk management associated with facilitating experimental methodology, providing shelter systems for evaluation, cattle and feed purchase and equal days on feed slaughter of treatments with an experimental block.

Capital Items

Capital items are ideally purchased and installed by the feedlot organisation and leased to MLA for the projects duration at an appropriate justified rate.

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 and delivered in Microsoft Word format.

In addition to MLA standard reports, the following will also be provided to MLA at the time of delivery of the Final report:

1. a copy of all project data, including meta-data

Timing:

Delivery timeline is a selection criterion at both stages of application assessment and speed to delivery outcomes for commercial industry will be viewed positively. The project should not exceed 2 years.

Budget:

There is no set budget for the total project however, applicants should deliver a fully justified budget to achieve project objectives within the desired timeframe. Value for money is a selection criterion.

Confidentiality:

By submitting an expression of interest, the applicant will disclose information in the preliminary application form to MLA's employees, agents, contractors and advisors, for the purposes of this tender process and any legal or MLA policy requirement. Applicants must identify any information that they consider should be protected as confidential information and provide reasons for this.

Conflict of interest:

Applicants, research teams or subcontractors with any potential conflicts of interest, should thoroughly outline these in this application, including how they propose to manage them, if applicable.

Process:

Expressions of interest: Applicants submit a preliminary application, utilizing the MLA Preliminary Application form (see below), addressing the Terms of Reference. Proposals will be scored against the selection criterion set out in this Terms of Reference. Preliminary applications must not exceed six (6) pages. MLA will acknowledge receipt of each application. Applicants will be advised in writing of the success or failure of their preliminary application.

Selection criteria:

Stage 1 - Expressions of Interest applications will be reviewed by Meat & Livestock Australia, and selection will be based on assessment against the following criteria:

1. Background of proposed work
2. Outputs, outcomes and impacts of the R&D that will be undertaken
3. Quality of brief project design and methods to achieve project objectives
4. Adequate resourcing and expertise to facilitate proposed R&D
5. Value for money of preliminary budget
6. Delivery timeline

Project proposal submissions:

To access the MLA Preliminary application templates (Grain-Fed, Live Export & Goats), go to <https://www.mla.com.au/research-and-development/funding-opportunities/industry-researchers/>, then navigate to the preliminary application form.

MLA applications must be lodged electronically as Word document to: mvandersaag@mla.com.au

Stage 1 MLA Preliminary Applications must be received by COB, 16th February, 2022.

Strict adherence to the time deadline for applications will occur. Applications received past the deadline will not be assessed. Applications not received in the standard MLA application template will not be assessed.

Further information:

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