Terms of reference

MLA Grassfed Beef Productivity Program

Bull breakdown during joining – more pregnant cows, fewer broken bulls

Summary

This Terms of Reference addresses the Southern Australian Livestock Research Council (SALRC) and Western Australian Livestock Research Council (WALRC) priority for grassfed beef productivity research, development and adoption investment. MLA is calling for projects to develop, validate, and demonstrate remote monitoring technologies that enable early identification of bull breakdown during joining, and quantify the causal issues of joining failure relating to bulls in southern Australian systems.

Purpose and Background

Bull costs represent a significant profit driver for beef businesses and play an important role in optimising profitability through productivity and increased genetic potential. However, the productive success of the herd, and transfer of superior genetics, is reliant on the bull's reproductive capabilities and physical soundness during the joining period. While Bull Breeding Soundness Exams (BBSEs) establish if bulls are fit at the start of joining, lameness, preputial or penile injury or infection during the breeding season can cause breakdown. Recent survey data from Western Australia suggests that 20% of virgin bulls broke down during joining, with an average working life of a bull ranging between 2.3 and 3 years. Bull breakdown represents costs associated with bull treatment or replacement, reduced pregnancy rates, empty cows, and later-born calves, these costs can be especially pronounced if the condition is not identified early.

Despite evidence that bull breakdown during joining can be common, there is limited objective data on the incidence, causes and impacts of bull breakdown in southern Australian beef production systems, and limited tools for producers to monitor bull behaviour to identify early when breakdown or joining failure occurs.

SALRC and WALRC have identified early identification of bull breakdown during joining as a priority area for investment. Projects should focus on providing producers with practical and reliable means of remotely monitoring bull behaviour, able to detect the common causes of bull breakdown and alert producers when management intervention is required.

Scope/Objectives

MLA is calling for projects that address the following objectives:

- Develop or demonstrate technologies that can remotely monitor bull performance or health issues during the joining and pre-joining period to enable early intervention of breakdown.
- Investigate the prevalence, causes and factors contributing to bull breakdown in southern Australia, and the cost to the beef industry.
    - Through a systematic review of the literature, identify the causal and associative factors contributing to bull breakdown.
    - Based on the factors identified in the literature review and listed below, quantify the contribution of the factors to joining failure in bulls.
        - Penile and preputial conditions
        - Fat, structural composition, musculoskeletal disease or injury
        - Social behaviour (e.g. dominance, aggression or bullying)
        - Sperm morphology and motility
        - Linkage to reproductive disease
        - Age
        - Mating seasons exposure
        - Environmental conditions
        - Other behavioural, physiological, anatomical abnormalities
- All projects should include extension and adoption activities to support producers to manage and reduce bull breakdown, boost conception rates, and increase longevity of bulls.

The proposed project should include both research and producer practice change elements. Project proposals which demonstrate how they have engaged with and consulted producers and cattle veterinarians will be favourably assessed, as will proposals that demonstrate collaboration between researchers, producers, and service providers, or builds capacity of early career staff.

Proposed activities

Proposals should define the outputs (products, services, technologies, knowledge, innovations, etc.) created by, or contributed to, by this project and then describe any attributable outcomes and impacts from these outputs, and how success of the project will be measured.

Research activities:

Proposals integrating research activities should include a considered methodology to achieve objectives. Replication and statistical power must be considered for all research activities. Applications that progress to the full proposal stage will be requested to complete a full and detailed study protocol. Projects examining bull breakdown should ensure that a Bull Breeding Soundness Examination (BBSE) is undertaken before and after joining.

Methodology and solution design should include producer input, through elements such as action learning cycle and participatory research to ensure the research is fit for purpose to integrate into existing management systems common to Australian cattle production systems and bull management.

Adoption activities:

Projects developing new tools must state a clear pathway to industry adoption/commercialisation, including consideration of intellectual property. Project adoption and practice change activities may include a combination of long-term practice change programs for producers, short workshops, awareness raising events or resources, and advisor capability building.

Extension outputs should also include updates for inclusion in More Beef from Pastures 2.0, including facilitator notes, suggested session run sheets.

MLA's monitoring and evaluation framework, and other evaluation planning resources can be found here: https://www.mla.com.au/about-mla/how-we-are-governed/Planning-reporting/evaluation/

Project duration

A maximum project duration of five years is anticipated.

Budget and funding

The proposal should include all resources, personnel and budget required to complete the project. There is no set budget for this project, however, value for money will be a key selection criterion. A budget justification will be submitted with the project application and should include allocation for proposed extension and awareness raising activities, producer consultation, animal ethics, and monitoring and evaluation.

Projects may be funded through Grassfed Cattle Levies, MLA Donor Company (MDC) funding stream, at a maximum leverage ratio of 50:50, excluding access fees, or a hybrid combination of both funding mechanisms.

More information about the MDC can be found here: https://www.mla.com.au/about-mla/what-we-do/mla-donor-company/

Selection criteria

Proposals will be assessed by a panel of producers and technical experts. Selection criteria will include but is not limited to:

- Value for money, aligned with potential industry impact and well justified.
- Regional applicability of the approach, and practicality within extensive production systems.
- Presentation of a strong value proposition for producer adoption/involvement, including a likely positive return on investment, low handling commitments, and integration with existing systems and practices.
- Technical feasibility and likelihood of success, based on scientific evidence
- Presentation of a clear pathway to industry adoption/commercialisation

Confidentiality and intellectual property

Intellectual property ownership will be negotiated with the successful applicant according to the most effective path for adoption and commercialisation, and to ensure benefit for the Australian Red Meat industry. Background IP, encumbrances, and freedom to operate should be considered in the proposal.

For projects developing remote monitoring technology, background IP, project IP, and commercialisation/industry adoption pathways must all be clearly stated in the proposal.

Tenders will be shared with a review panel for the purpose of evaluation and will otherwise be kept confidential.

If not already in place, the successful applicant will be required to enter into an Umbrella Research Agreement with MLA. These terms can be found here: https://www.mla.com.au/about-mla/mla-agreements/

Deadline for submissions

Preliminary proposals must be received by MLA before 5.00pm (AEST) Monday, 18th January 2027. Late proposals will not be accepted.

Use the preliminary proposal template to submit proposals electronically to MLA at: projectcall@mla.com.au

Proposals will be acknowledged and recorded on the MLA project information system.

Further Information

If you have questions about these terms of reference, contact:

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