

Terms of Reference

Farming Systems R&D and Modelling for the Southern Feedbase

Background/Introduction

In 2010, MLA acting as agent for the Red Meat Co-investment Committee (RMCiC) developed a Feedbase Investment Plan (the FIP) that followed on from the PISC process of developing national beef and sheep industry RD&E strategies. To build the next level of detail, MLA commissioned the Feedbase R&D Plan which defined 5 key R&D Pillars - Pasture breeding & evaluation; Productive & sustainable pastures; Grazing management & production systems; Weeds & biodiversity; and Decision tools. MLA (in conjunction with RMCiC partners) has launched a major effort to implement the Feedbase R&D Plan, primarily by developing and contracting specific projects within the Pasture breeding & evaluation Pillar, the Productive & sustainable pastures Pillar and the Grazing management & production systems Pillar and commissioning the development of a Weeds and biodiversity strategy.

In the “Grazing management & production systems” pillar, the overarching goal is to increase profit by increasing the margin between cost of production and sales revenue. The role of research and development in grazing management and production systems is to **optimise stocking rates through better managing pasture utilisation in concert with enterprise flexibility and to fit these into a business management framework**. These changes must improve labour efficiency, optimise pasture management for production and NRM outcomes, produce agricultural systems that are resilient to seasonal variation, manage risk and deliver product that meets market specifications and community expectations. Experimentation at the ‘whole of system’ level has many challenges so over the last 15 years systems modelling has played an increasing role in the examination of systems scale questions.

For the Grazing management & production systems Pillar there are two important challenges:

1. What key systems level questions are already being asked, or are likely to be posed across the suite of projects involved in the rollout of the Feedbase R&D Plan; and
2. What mix of modelling and/or system level R&D and/or farm monitoring is the most appropriate package of tools to apply to these system level questions.

As the Feedbase R&D Plan is implemented, there will be a greater need to focus on the role of simulation models that can support research by exploring the interactions between the R&D pillars, and potentially for producer applications that increase knowledge, adoption and practice change but some systems level R&D may be required.

Objectives of the brief

The primary objective of this project is to determine the key production systems questions that are being or are likely to be posed in the suite of projects involved in the rollout of the Feedbase R&D Plan. An alternatively way to state the objective might be ‘what are the key component (within each pillar) production system (across pillar) interactions that are likely to require examination by experimentation, farm monitoring or biophysical and/or bioeconomic modelling?’ These questions are likely to include those being posed within and between research projects (ie researcher questions) and those being posed by leading producers and their advisors.

Once the key questions have been articulated, the subsequent objectives include:

- i. To determine the capacity of current modelling tools to assist with answering the questions being posed in current and proposed research;
- ii. To recommend what (if any) ongoing model/tool development is required – including any new tools are needed for research or for assisting producers;
- iii. To determine the capacity available for model development;
- iv. To determine the capacity of current and potential model users (includes researchers, extension staff interacting with producers and producers acting independently) to make use of the tools;
- v. To determine if there are farming systems questions that are not able to be addressed via the component projects and any modeling activities, and if there are, what mix of systems level R&D and/or farm scale monitoring is needed for these questions;
- vi. To examine if there are other issues to consider regarding systems level R&D – for example, can adjustments be made to the within pillar (ie component) projects to obtain a better systems level outcome or can systems level R&D speed up adoption of feedbase innovations by reducing the need for producers to experiment within their own system.

Note - the challenges associated with systems level experimentation mean that such experimentation should be the last resort, with systems modelling and on-farm data collection the first priority for addressing systems level questions.

Tasks

1. Review the relevant background documents [these include the Feedbase Investment Plan (FIP) and the Feedbase R&D Plan (FR&DP), the model inventory paper from the Managing Climate Variability program, whole farm system modeling reports, market research for MLA's rainfall outlook tool etc] to build up an understanding of the expectations and opportunities associated with decision support models. It is likely that prospective applicants will want to at least briefly review the FR&DP when preparing a bid.
2. Meet with MLA (and potentially with RMCiC partners) to build a full understanding of the expectations and requirements associated with this project.
3. Gain an overview of the projects that are being developed and implemented as part of the Feedbase R&D Plan so that the scope of the component/within pillar activities is broadly understood.
4. Consult with researchers in the feedbase area (soil, water, nutrient, pasture, pasture animal interaction, systems, weeds) to identify the current and likely emerging research questions across the geographic region and enterprise combinations.
5. Consult with extensions officers, producer networks and producer groups to determine their current and likely emerging questions that might be addressed by decision support tools based on the biophysical/bioeconomic models or by systems level R&D.
6. Consult modelers and model users to build an inventory of currently available models (and their current usage) relevant the southern Australian feedbase program – the focus for this inventory is on simulation models that integrate across disciplines (or pillars) and/or that operate at the whole farm scale.
7. Make an assessment of capacity to develop models (new and existing).
8. Make an initial identification of any mismatch between current model capability compared to the key questions identified in 4 and 5 above to meet the needs of researchers, advisors and leading producers.

9. Determine if specific systems questions require experimentation at the systems level – MLA’s most recent major investment into farming systems R&D was the EverGraze project and this project might form a case study to underpin any recommendation to invest in systems level R&D that might emerge from this brief? If systems level experimentation is recommended, then how should MLA (and the RMCiC partners) best go about answering them.
10. Develop a discussion paper that addresses the questions outlined in the Objectives and that raises any other issues and challenges that emerge from the review. Included in this task is the development of a case study on systems R&D using the EverGraze project if systems level experimentation is likely to be recommended. This discussion paper must not only raise the issues and challenges, but must contain the draft recommendations developed by the consultant or project team so these recommendations can be tested in the workshop below.
11. Organise and facilitate a workshop (with the above discussion paper as pre-reading and the starting point for the workshop) to develop agreement amongst producers, researchers, extension agents and any other key parties as to a) the key systems level questions that need to be addressed as part of the rollout of the Feedbase R&D Plan and b) the mix of modelling and/or system level R&D and/or farm monitoring is the most appropriate package of tools to apply to these system level questions.
12. Prepare the final project report following the workshop and deliver it to MLA. This report must contain the final recommendations for what ‘project level activity’ is needed and what development process MLA should apply in order to develop the project or projects that are needed in the southern feedbase program to delivery on the systems level questions.

Outputs

There are four deliverables associated with this project:

1. An inventory of models available for the feedbase research, and an inventory of capacity in model development and users (Tasks 6 & 7).
2. A discussion paper as outlined in Task 8 -10 above. This discussion paper must be reviewed and approved by MLA before being sent out to the intended workshop participants.
3. A brief report from the workshop described in Task 10 above.
4. A final report that represents an agreed position resulting from industry consultation of the discussion paper (primarily via inputs at the workshop, but wider distribution may be required by the RMCiC partners), and includes:
 - The discussion paper, updated on the basis of the workshop and other feedback – this document provides the background justification for investing (or not) in systems level modeling and R&D.
 - The final recommendations covering:
 - what ‘project level activity’ is needed in the southern feedbase program to delivery on the systems level questions;
 - what development process MLA should apply (ie clear recommendation for the next steps) in order to develop the project or projects that are needed (Note - the purpose here is to provide sufficient information to allow the investing parties to agree in principle to an investment and to commission the development process);
 - how such R&D should be linked to the component projects (including any adjustments that might be made to those projects).

Proposed method and time allocations

Following is a draft outline of a suggested methodology and time allocation – this is to provide a general guide to applicants rather than a clear instruction.

Task	Action	Days
1/2	Review background and liaise with MLA/RMCiC	3
3	Gain an overview of the Feedbase R&D investments	3
4/5	Consult re systems level questions	6
6/7/8	Built model inventory and match to systems level questions	6
9	Determine systems experimentation needs	4
10	Prepare interim report (discussion paper) and brief MLA	5
11	Organise and facilitate industry workshop	4
12	Prepare and submit final report	4
TOTAL		35

The final number of days may be adjusted in the negotiations associated with finalising a contract.

Milestones and payment

There are four milestones associated with this contract:

Milestone	Achievement criteria	Date	Payment
1.	Contract signing	20 Mar 2012	25%
2.	Model inventory completed	21 April 2012	25%
3.	Completion and circulation of approved discussion paper	30 May 2012	25%
4.	Final report completed and accepted by MLA	15 June 2012	25%

- Payments will be made on receipt by MLA of tax invoices and appropriate supporting documents. Payments will be made against completion of milestones.

Selection Criteria and Process:

Expressions of Interest to undertake the tasks outlined in this TOR will be assessed against the following criteria. The applicant or team must have and present in an EOI:

- an understanding of key aspects of the southern feedbase and of the management decisions associated with southern meat producing systems;
- an understanding of the requirements of this project;
- an understanding of systems modelling and farming systems level R&D for the southern feedbase;
- a proven track record for identifying and synthesising published and unpublished research data, results and industry knowledge to produce high quality analyses and make sound recommendations;
- (or be able to draw on) experience/expertise across the agro ecological pasture zones of southern Australian;
- a proposed methodology to undertake the tasks outlined in this TOR;
- value for money - the quoted price for the work including overall fees (number of days and the daily fee must be specified) and likely expenses associated with conducting the project. Costs

associated with industry workshops should not be included, other than for the applicant or team's time in preparation and conduct of the workshop.

Reporting and Liaison

Dr Warren Mason (MLA's feedbase R&D plan coordinator) will oversee this consultancy and will participate in meetings, teleconferences, workshops and other communications as needed. Dr Mason will be the primary point of contact for the contractor and the associated agency partner.

The successful applicant will:

- Attend an initial briefing meeting with MLA in person or by teleconference as agreed at the time
- Provide brief email reports on a regular basis (at least monthly) to the MLA coordinator on progress and impending issues that may require direction or further exploration
- Provide the draft discussion paper for approval by MLA before progressing to any industry workshop
- Provide a final report by 15 June 2012.

All reports are to be provided to MLA electronically.

All queries should be directed to:

Dr Warren Mason

Feedbase R&D plan coordinator

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EOI should be lodged with Kelly Hawley khawley@mla.com.au by CoB 23 February 2012