final report

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Milestone

(a) Final Report of project outcomes
(b) In conjunction with other CCASLI projects, a plan for on-farm trailing for the period 2012- 2015 prepared

Due date: 1 June 2012

Abstract

This project has been successfully completed.

The Final Report was submitted to DAFF on 11 June 2012, slightly over the due date of 1 June 2012 (Report accepted by Commonwealth). During the process of finalising the Final Report, DAFF staff were kept fully appraised of progress and the minor delays and were fully supportive of such.

A highly successful workshop was held in Canberra in May 2012 to outline the results of the program to key investors, especially Government staff. While attendance was not high, engagement during the workshop and feedback following it was excellent.

The financial report covering the period December 2011 to April 2012 (plus allowance for some continued expenses during May and June 2012 period) has been compiled by MLA and forwarded to DAFF. Over the period of the project, an under-spend against total budget was identified - in the vicinity of $200,000. To address this issue, the project steering committee has met and agreed to a program of relevant work in keeping with the objectives of CCASLI. DAFF are aware of the situation given their participation on the steering committee but senior DAFF staff have also been contacted in relation to this matter and a detailed letter (including proposed areas of expenditure) sent.

While the project may have 'concluded' on June 1 2012, many activities (especially communication of the outcomes from the project) are continuing.

Project objectives

1. The *Adaptation to Climate Change in Southern Livestock* Program and all projects within it run to schedule and budget, with variances accurately reported and explained.
2. As much as is possible given the Consultants ability to impact on all outcomes from the Program that:
    a) The Program is meeting objectives set out in the DAFF Australia's Farming Future Climate Change Program.
    b) Outputs from the Program research deliver practical options for adaptation to climate change for southern livestock producers, and awareness of those options in line with KPIs established in the DAFF funding deed.
    c) Outcomes from the research are communicated effectively to Government and to industry to facilitate understanding of the potential for agriculture, in particular livestock industries, to adapt to climate change; and
    d) Positive relationships with producers, industry and government as measured by shared understanding of the Program objectives and of

research outputs for practices and tools to improve producers' capacity to adapt to climate change.

3. Implement an effective monitoring and evaluation framework (and financial management system via MLA) ensuring accountability criteria for the Program are met to a high standard.
4. Act as the Executive Officer of the Program Steering Committee.
5. Collate progress reports for Steering Committee approval prior to their submission to DAFF.
6. Assist with planning and where appropriate facilitation of any program workshops
7. Ensure that this Program is integrated, as much as possible, with other relevant RD&E programs.

Success in achieving milestone

The following has been taken from the project milestone report to DAFF. It outlines progress in relation to relevant milestones. As certain components of Milestones 10 and 11 were not complete when the Milestone Report was submitted, they are also covered below for completeness

10	a. Final report of research outcomes and industry messages b. Final report of consultation outcomes c. Plan for on-farm trialling for period 2012-2015	15 Dec 2011 15 Dec, 2011	Complete Complete No longer relevant	Milestones 10 a) and b) are captured within the CCASLI Final Report to DAFF - June 2012. Further detail can also be found in individual milestone reports from each project partner (except WA which is still to be delivered) In relation to Milestone 6c), the recent release by DAFF of the FtRG and AoG funding streams (with a particular focus on mitigation) has caused some re-evaluation within the program on next steps post June 2012. The outcomes of SLA 2030 are not well suited to on-farm trialling (being the outcomes of models based on long range climate forecasts). In addition this program is focussed on adaptation, as distinct from mitigation. Notwithstanding, it is the view of the steering committee that there remains important research & development to be done within both adaptation and mitigation areas in southern livestock enterprises. The Final Report to DAFF has identified many of these areas. Project partners are intending to hold a large

				RD&E workshop in September 2012 to further refine these ideas, in conjunction with other relevant climate change projects.
	d. Plan for industry communications activities 2012-2015		See 10 c)	
	e. Report of producer awareness survey		Complete	Included in project partner final reports and DAFF Final Report
11	Expenditure report covering period May-Dec 2011, and full program expenditure report		Submitted	DAFF accepted
12	Final report accepted by the Commonwealth	1 June 2012	Report submitted 11 June 2012	

Overall progress of the project

The project has essentially been completed, although:

- Communication activities are continuing
- There is a plan in place to use un-spent funds over the period July to October 2012.

A brief summary of the key project outcomes is provided below. More detail is available in the Final Report.

In summary, modelling at most locations indicates:

- Future production systems will see increased temperatures and reduced rainfall leading to lower productivity (potentially 15 to 20% lower by 2030) and even larger impacts on profitability. These results are concerning, both for future food and fibre production, and for farming families, in southern Australia.
- Impacts vary significantly within and between states - being most severe in the lower rainfall parts of the sheep wheat zone, but positive for some currently higher rainfall / colder areas.

- As the impacts vary, so to do the adaptations which may help alleviate or enhance these impacts. No single adaptation provides all the answers, with a combination of adaptations likely to work best.
- Some of the best strategies or practices are already known to many producers (e.g. increasing soil fertility, genetic improvement of livestock) and are as applicable today as they will be in the future. Other adaptations which may not be applicable today may become so depending on the degree to which climates change in the future.

While the program has provided information not previously available, it has also unearthed some key R&D and policy challenges including:

- If climate change predictions prove correct, the impact on productivity and profitability across southern Australian livestock industries is very significant. The adoption of current technologies, development of new technologies and policy responses will all be required to reduce these impacts.
- As climate science gets better, will these impacts change?
- There is a need for whole farm systems evaluation - and what about mixed farming enterprises, and the pastoral zone?
- What policy instruments can help farmers have more flexibility and adaptation options, but in an emissions constrained world?
- How can we better manage potentially increasing extreme events (droughts, floods, heat-waves etc)?

The table below provides some of the key benchmarks for the project

CCASLI - Final Report against Targets (at 30 April 2012)

	Regions	Locations	Workshops	Other Extension Events	Producers directly engaged	Comms. products	Producers aware
	Period	Period	Period Total	Period Total	Period	Period	Period
NSW	8	24	19	15	2122	12	8622
Victoria	3	7	9	15	784	5	2064
Tasmania	1	7	9	8	201	4	600
SA	4	6	10	12	322	33	2819
WA	2	4	4	0	100	4	100
Cumulative Total	18	48	51	50	3529	58	14205
Program Target	12	24	24	50	NA	NA	10,000

Note:
1. The above figures relate only to state producer workshops and do not take account of the several hundered farmers, public and private consultant and advisors, scientists, students and government representatives covered by UoM, TIA and CSIRO
2. More extension is planned in several states

Recommendations

While not recommendations, the CCASLI Final Report does identify some opportunities in relation to research and policy. These are reproduced below.

Some research issues

- Advances in climate science will continue to provide more answers, especially in relation to climate change predictions. As new predictions are released, there is a need to review the findings of SLA 2030 to see if they (and recommended strategies / adaptations) change dramatically.
- While the GRAZPLAN models (contained in the GrassGro software) have been extremely useful in this project, they have limitations that are likely to affect progress as investigation of climate change adaptation options moves to its next stage. The most important gaps in GrassGro are the effects of animal health issues (particularly parasites) on animal performance; the feedback between pasture production and soil organic matter; and its inability to represent shrubs such as saltbush.
- CCASLI covered many locations within southern Australia but further work is needed to fill in the geographical gaps existing so that the breadth of sheep and beef enterprises across southern Australia can be covered
- More detailed work on adaptations is needed in those areas which have the greatest impact and currently have not been able to recover lost profit. The CSIRO work at 2050 and 2070 has identifies regions for the more detailed studies
- Whole of farm systems evaluation (rather than just at an enterprise level - usually just one component of a "farm") will strongly assist in providing a greater level of validation to the whole of system models currently available and highlight the potential adaptation opportunities within or across farming systems. Mixed farming systems and pastoral areas in particular are gaps.
- While some adaptations can be proposed now (as they are already applicable) for others, how will individual producers know when the right time is right to start changing farm practices, especially as change will, on average, be gradual? What are the trigger points?
- The incidence of extreme events may increase, but we do not have the tools to adequately understand their impact.
- Current modelling approaches compare 2010 systems with, say, 2050 climates. Future models need to consider the counterfactual i.e. comparing 2050 systems as they might be without climate change with 2050 systems that are affected.
- Plant breeders need to consider both new plant species for southern Australian livestock systems, as well as heat tolerance and rooting depth traits in existing pasture species to make them more resilient.
- There is a need to have the ability to effectively and efficiently quantify CFI offset methods across a broad spectrum of farming systems for the livestock industries (i.e. further develop the COST calculator for dairy; incorporate it with DGAS and other calculators; and develop similar tools for beef and sheep enterprises).

Some policy issues

- While livestock production under various future scenarios will still be viable in 2030 and beyond, and adaptation strategies will assist, impacts on production and especially profitability will be significant. This will not only require ongoing research but new approaches to policy to reduce impacts on food and fibre production, and farming families, in southern Australia.
- Global food demand is increasing, there is more pressure on producers to mitigate emissions and yet a changing climate could negatively affect

production. What policy approaches should Government and industry seek to best align these competing interests?

- Future modelling and policy approaches should consider the balance between adaptation, sequestration and mitigation impacts of proposed farming systems changes.
- It is likely that in the future, farmers will need even more flexibility. How can service industries to agriculture and governments respond to provide producers with that greater flexibility in the future?
- By 2050 and 2070, modelling suggest that the lower-rainfall parts of the cereal-livestock zone at least may require either new technologies, a complete re-thinking of the feedbase or else sustained price increases in order for livestock production to remain viable. Policy responses will be equally important.
- Farmers usually react to changed circumstances but tend not to react in anticipation of changed circumstances, especially as predicted by modelling. What R&D and policy can be employed to best help farmers be better prepared?

Appendices

Refer to Milestone Report and Appendices provided to DAFF