

Report to

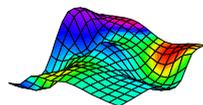
Australian Wool Innovation

Benefit Cost Analysis of AWI's Evergraze Investment

Contents

BACKGROUND	1
INVESTMENT	1
NATURE OF BENEFITS	2
QUANTIFYING BENEFITS	3
PAYOFF	5
CONCLUSION	5
ATTACHMENT: AWI PROGRAM INVESTMENT LOGIC – EVERGRAZE	6

September 2012



BDA Group
Economics and Environment

BDA MELBOURNE
PO Box 6009
Hawthorn West, VIC 3122
Ph (03) 8684 9707

BDA CANBERRA
PO Box 4022
Manuka ACT 2603
Ph (02) 6282 1443

BACKGROUND

BDA Group was commissioned by AWI to complete a benefit cost analysis of their investment in the Evergraze extension program, Phase VI. This phase includes investment from 2011 to 2014. AWI's investment was made under the 2010-13 Strategic Plan, On-Farm R&D Strategy 3 - The Environment, Climate Change and Carbon, Program 1 - The Environment and Climate Change. The analysis was completed with the primary purpose of providing a robust assessment of the potential returns to Australian wool growers from that investment.

The analysis reported here also includes a Program Investment Logic which provides a brief summary of the value of the investment to Australian Wool Growers, investment targets and activities and identified funding gaps that will aid in directing future funding in this area (Attachment).

INVESTMENT

Evergraze commenced as a collaborative project involving Meat & Livestock Australia (MLA), the Salinity CRC and a number of Catchment Management Authorities (CMA) in WA, Victoria and NSW¹. Funding was also provided through the commonwealth government's Caring for Our Country initiative to CMA's. The project goal was to increase profit (by 50%) from perennial based pastures in high rainfall areas of southern Australia. While the primary goal was to assist wool growers increase profit from these pasture areas it was anticipated that the more productive use of these areas would deliver environmental benefits through reduced soil erosion, improved water quality in waterways and reduced groundwater accessions.

In 2007 AWI contributed to an expanded Evergraze project to increase the focus on low input / native pasture areas and to increase wool grower involvement². Between 2007 and 2011 AWI contributed \$3.5m to the Evergraze project. Contributions by other parties over this period included \$13.4m by the CRC, \$4.4m by MLA and \$1.1m by the CRC.

In 2012 Agtrans Research³ undertook an ex-poste evaluation of the pay off from Evergraze from 2008 to 2011. They estimated that the net payoff to farmers successfully adopting Evergraze recommendations was around \$50 per hectare. The return from the total investment of \$22m in Evergraze, by all parties to 2011, was estimated at \$5.41 for every dollar invested. This report is available on AWI's website.

¹ In 2008 the CRC became the Future Farm Industries CRC,

² Mason, W., Hannam, B. & Simpson, I. 2005, Development Plan for an Expansion of the National Evergraze Project, Prepared for AWI and MLA, October.

³ Agtrans Research 2012, Economic Evaluation of Investment in Evergraze, Report to AWI, March.

By June 2010 3,100 producers had made changes to their pasture and livestock management systems as a result of participation in Evergraze extension activities⁴. To capitalise on R&D outcomes achieved from 2007 to 2011 AWI approved funding support of Evergraze Phase VI (for 2011/12 and 2011/13), which sought to increase adoption of Evergraze practices across an additional 2,400 producers. AWI Investment over the two years was \$1.4m (WP548) out of a total investment of \$2.8m.

Investment over 2011 to 2013 included:

(1) Extension (48% of expenditure)

Activities include the delivery and development of the Evergraze package which provides evidence based recommendations at a regional level, training programs, support of demonstration sites, targeting of farm advisors through workshops and on-line material and communication and awareness campaigns.

(2) Development (32% of expenditure)

Activities include refinement of models to assess the whole farm impacts from different practices and demonstrating environmental outcomes.

(3) Research (20% of expenditure)

Activities include the continuation of 2 research sites at Orange and Chiltern to improve the robustness of scientific conclusions.

NATURE OF BENEFITS

Previous evaluations have not identified benefits realised specifically by sheep and wool producers, but rather have focused on benefits to combined livestock enterprises including sheep, beef and dairy⁵. In this assessment an estimate of the benefits captured by sheep and wool producers is made.

The emphasis of Evergraze is on getting *the right plant in the right place for the right purpose*. Strategies will therefore vary from property to property depending on the physical characteristics of areas being improved and how increased pasture production from these areas are to be integrated into grazing management. While strategies might vary from property to property the bottom line is an increase in farm profitability. Evergraze Phase VI had a number of target profit impacts including 16-64 kg ha extra wool and 70-280 kg / ha extra meat across 120,000 hectares and achieved through:

- Increased stocking rates of between 2 dse and 10 dse per ha;

⁴ Jarrapool Project Management and Consulting Pty Ltd 2010, Evergraze Final report – Independent Review for AWI, November.

⁵ These evaluations include the Agtrans Research 2012 report, the Jarrapool Project Management and Consulting Pty Ltd 2010 report and the QualDATA 2011 report.

- Improved stock condition resulting in higher weaning rates, wool production and finishing weights;
- Reduced input costs; and
- Reduced capital cost of pasture renovation through time as a result of greater persistence of perennials.

Agtrans Research 2012 also report a range of environmental benefits associated with pasture improvement on degraded land through reduced ground water recharge and loss of surface soil through erosion. These possible benefits have not been quantified.

QUANTIFYING BENEFITS

Agtrans Research 2012 estimated the net average increase in farm profit from adoption of Evergraze principles was \$50 per ha, achieved after three years from when changes are first made. This estimate was derived from many case studies where financial details were provided⁶. Given the uncertainty as to the true value of increases in farm profit, sensitivity analysis was carried out using values of \$25 and \$100 per ha. These estimates relate to the average benefit across all livestock enterprises.

In this assessment an estimate of the increase in average farm profits for sheep and wool producers making practice changes as a result of their participation in Evergraze activities was made so that the pay off on woolgrower funds could be determined.

Because AWI's investment was aimed at low cost native pasture systems it was assumed that the majority of farm practice changes would involve the use of strategic grazing rather than set stocking. Strategic grazing of native pasture was found to increase annual pasture herbage yield by up to 50% (from 3,183 kg DM / ha to 4,770 kg DM / ha) and enable stocking rates to be increased by between 2 and 4 dse per hectare within three years⁷. Strategic grazing practices reported by DPI Victoria include:

- Optimised deferred grazing where stock are generally withheld from pasture areas during spring and late summer.
- Short term deferred grazing where stock are generally withheld from pasture areas during October and January; and
- Long term deferred grazing where stock are withheld from pasture areas during October to the Autumn break in the following year.

⁶ These case studies are available from the Evergraze website.

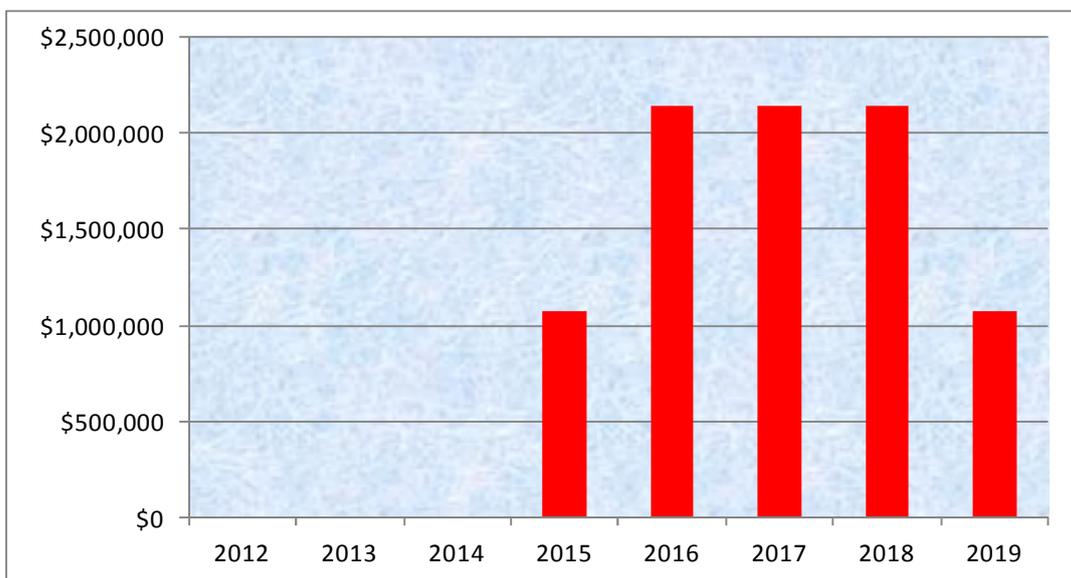
⁷ Department of Primary Industries Victoria, 2011, Native Pasture Management, Future Framing Systems Research, Hamilton, July.

An increase in stocking rate of 2-4 dse per hectare would generate an additional \$30 to \$60 per hectare in gross margin.⁸ After adjusting for the increased capital cost of stock⁹ the increased gross margin was estimated at between \$20 and \$50 per hectare, which was consistent with the Agtrans Research lower and middle estimate of Evergraze benefits.

The target adoption of Evergraze outcomes 2011/12 and 2012/13 is 2,400 producers in the high rainfall area. An adjustment was made to this total to reflect the situation where some producers may not make profitable changes. Based on Agtrans Research assumptions, only 720 producers are expected to make profitable changes each year. While no split between cattle and sheep producers adopting Evergraze outcomes has been made, it was assumed that 30% of producers run sheep. This was based on the average number of sheep and cattle run by 88 producers (on a dse basis) participating in a number of recent Evergraze activities and events¹⁰.

Estimated benefits to sheep producers are shown in Figure 1. Benefits only extend to 2019 as it was assumed the counterfactual, or without AWI investment scenario, would be a lag of four years. It was also assumed that producers do not generate any benefits until the third year¹¹ following on-farm practice change and that benefits only apply to 100 hectares per property. Total benefits through time were estimated at \$8.6m.

FIGURE 1: ESTIMATED INVESTMENT BENEFITS THROUGH TIME.



⁸ Based on an average gross margin for fine and medium wool of \$17.90 and \$9.40 per dse respectively and a fine to medium sheep run ratio of 2:1 (based on AWI's RMCG farm model).

⁹ The increase in capital value was estimated at \$66 per dse or \$9.50 on an annualised basis over a 10 year period using a 7% discount rate.

¹⁰ QualDATA 2011, Evergraze Impact Report – June 2010 to August 2011, August.

¹¹ These assumptions were based on the reported impact of the Evergraze extension investment in the AWI Project Approval Memo (28th August 2011). Other assumptions based on Agtrans Research Report.

PAYOFF

In this section the estimated pay off on the AWI investment is reported. Measures are reported in Table 1 and are based on the estimated benefits to Australian wool growers as detailed in the previous section. It was estimated that the AWI investment will generate benefits to Australian wool growers of between \$2m and \$5m in present value terms¹². This represents a return of up to \$3.80 on every dollar invested by AWI in the Evergraze Investment over the years 2011/12 and 2012/13.

TABLE 1: INVESTMENT PERFORMANCE MEASURES

Performance Measure	Profit Increase	
	\$20 / ha	\$50 / ha
Present value of Benefits (\$m)	\$2.0	\$5.0
Present value of Costs(\$m)	\$1.3	\$1.3
Net Present Value (\$m)	\$0.7	\$3.7
Benefit Cost Ratio	1.5	3.8

CONCLUSION

It was estimated that the investment by AWI in Phase VI of Evergraze will deliver a positive benefit to Australian wool growers. The investment complements investment by other parties (MLA & the Future Farm Industries CRC) and is being directed at supporting adoption of Evergraze recommendations for low cost native pasture areas operated by sheep producers.

The Agrtrans Research 2012 report also included an evaluation of investment by all parties in Evergraze from 2011 to 2013. Estimated performance measures are reported in Table 2. They concluded that investment by all parties would deliver a benefit of \$62.4m (present value terms) to Australian sheep and cattle producers from a total investment by all parties of \$9.8m (present value terms).

TABLE 2: AGTRANS RESEARCH 2012 ESTIMATED PERFORMANCE MEASURES

Performance Measure	Value
Present value of Benefits (\$m)	\$62.4
Present value of Costs(\$m)	\$9.8
Net Present Value (\$m)	\$52.6
Benefit Cost Ratio	6.4

¹² Benefits were adjusted to reflect the level of capture of profit gains by Australian wool growers – estimated at 75%. A discount rate of 5% was used.

ATTACHMENT: AWI PROGRAM INVESTMENT LOGIC – EVERGRAZE

On-Farm Strategy	Strategy – On-Farm R&D Strategy 3 The Environment, Climate Change and Carbon		
Program	Program – Program 1- The Environment and Climate Change		
Value to AWI <i>Why is AWI investing in this area? In what way will value be captured by Australian woolgrowers (metric)?</i>	Opportunity to capitalise on previous investment by AWI and others to promote better use of low cost native pastures in high rainfall areas. Benefits to woolgrowers include increased farm profits from pasture utilisation in these areas and improved environmental outcomes in terms of reduced land degradation, improved water quality in water ways and reduced salinity impacts.		
Target market(s)	Sheep producers in high rainfall zone with areas of native pasture.		
Measure <i>What could be measured to demonstrate that the value has been achieved?</i>	Increased farm profit across 120,000 hectares (all livestock industries)		
Target(s) <i>For the measure selected what is the target change sought under the strategic plan?</i>	<ol style="list-style-type: none"> 1,440 sheep producers adopting Evergraze recommendations by 2014. Minimum average profit increase of \$20 per ha on areas of native pasture Application to average of 100 ha per property. 		
Investment Activities <i>What activities have been undertaken with AWI funds to achieve the target?</i>	<p>Research – continue two of the six research sites.</p> <p>Development – use of models to demonstrate potential whole farm impacts of Evergraze recommendations</p> <p>Extension – preparation and delivery of materials / activities to wool growers in target area.</p>		
Investments	2011-12	2012-13	Total
AWI total investment	\$675k	\$675k	\$1,350k
Co-funding by others	\$2,168k	\$1,514k	\$3,682k
Gaps <i>What gaps currently exist in which AWI investment might be required in the future to ensure target is met?</i>	<p>Investment targets wool producers where potential profit gains are more marginal to meat production enterprises.</p> <p>Seen as last period of investment support as recommendations will be widely available at the conclusion of the investment.</p> <p>Measures on performance do not adequately separate wool and meat producers.</p>		