ECONOMIC BENEFITS OF INVESTING IN PASTURES ON SALINE LAND

Case study — Economics

THE BENEFITS OF REHABILITATING SALINE LAND INCLUDE:

- environmental
- aesthetic
- production.

A change in management of saline land can yield a positive return on investment.

Introduction

In the past, farmers have invested both private and public money into saline land rehabilitation projects, mainly for environmental gains such as:

- reduced erosion
- improved water quality
- improved biodiversity
- increased ground cover.

However, with the increase in areas of saline land on some farms across Australia has come the need for these areas to be more productive than before.

The following two case studies from the Boorowa region of NSW compare sown and volunteer salt pastures on each property. They also provide examples of how the area of saline land, the costs of investing in pastures on this land, and the ability to increase pasture grazing time affect the financial viability of the farming system.

Luke Beange

A sodic scald near Boorowa has eroded severely.

Case studies

For the purpose of this analysis the two farms are referred to as Farm A and Farm B. No direct comparison should be made between the two, as each property has a different enterprise mix and production system, as outlined below:

Farm A

Total farm area: 1189 ha

Total pasture area: about 925 ha

Area affected by salt: about 120 ha (13% of total pasture area)

Enterprise: self-replacing Merino ewe flock incorporating retained wether flock

Pasture mix: *Saltland pasture* – strawberry clover, balansa clover, fine-leaf white clover, puccinellia, tall wheatgrass, Quantum tall fescue, ryegrass, phalaris, sub clover.

Non-salt pasture – cocksfoot, phalaris, white and sub clovers, ryegrass, fescue (in better areas)

Current grazing management: Rotational grazing frequency on Farm A is usually around 14 days per paddock with rest periods of about 60 days, resulting in each paddock being grazed an average of 30 days a year. In order to reach sale weights, cast-for-age stock are placed in the rotation first when necessary. Careful management of the tall wheatgrass is necessary to prevent it becoming overgrown and unpalatable to the stock.

Addition of wethers to the rotational grazing system is considered essential by the landholder to prevent the tall wheatgrass from dominating the salt area pasture. Alternative control measures include slashing and chemical application.

Landholder observation suggests that saltland pastures last longer than other pastures in dry times. This supports the view that saltland pasture systems have some feed gap benefits. He has estimated that the saltland pastures provide a saving in feed costs equivalent to about half the weaners' required feed ration.

This equates to an estimated saving of 500 g of grain per weaner per week for 8 weeks. It must be stressed that this is the landholder's estimate and no quantitative measurements of relative feed values have been made.

The landholder also believes that under his current rotational grazing system – incorporating sown saltland

pastures – both ground cover and biodiversity are enhanced. He has seen a large increase in dung beetle activity. There has been a significant reduction in soil loss, and he believes that the quality of water runoff from his property has improved considerably since he adopted his current grazing system.

The landholder recalls that, before he adopted rotational grazing and sowing of saltland pastures, saline areas were increasing, with a subsequent reduction in farm carrying capacity.

Farm B

Total farm area: 814 ha

Conservation area: about 57 ha

Total pasture area: about 757 ha

Total pasture area, wethers: about 567 ha

Total pasture area, cattle: about 190 ha

Area affected by salt: about 40 ha (7% of wether pasture area)

Enterprise: Merino wethers; steer backgrounding for feedlot

Pasture mix: *Saltland pasture* – strawberry clover, balansa clover, puccinellia, tall wheatgrass

Non-salt pasture – cocksfoot, phalaris, clovers, lucerne

Current grazing management: The wethers and cattle are usually run on separate parts of the property, with a grazing rotation plan developed separately for each. The cattle enterprise is assumed to be run on a non-saline area of the property and hence is not considered in this analysis.

Grazing frequency is usually 6 to 10 days per paddock over two or three grazing rotations per year, with rest periods of between 60 and 180 days. The landholder considers the correct timing between grazing as a major factor in pasture persistence, allowing other plant species to develop, improving ground cover, and controlling the tall wheatgrass, which can become overgrown and unpalatable to stock. As trees reach a suitable size, stock are reintroduced into some conservation areas of the property.

The landholder believes that rotational grazing in these areas, with infrequent disturbance and minimal damage from stock, can enhance species numbers and diversity. The requirements of all the species that inhabit these conservation areas on the property are considered when developing grazing plans.

In normal years under the rotational grazing system with sown saltland pasture, the landholder does not supplementary feed his wethers. Supplementary feed would be required under the system without sown saltland pastures.

Results

Stocking rate

The proportion of total farm carrying capacity contributed by saline pasture area increased significantly on both case study farms following the establishment of sown saltland pasture (up from 9% to 18% for Farm A and from 5% to 7% for Farm B).

Mike Keys

Pasture establishing on salt scald near Boorowa.

Luke Beange

Another saline scald near Wellington, NSW

Gross margins

Increases in enterprise gross margin from the area of improved saltland pasture area and at the whole-farm level were achieved on both farms. On the saline area the gross margin for Farm A increased by 142%, whereas the increase in gross margin for Farm B was 53%. At the whole-farm level the establishment of sown saltland pasture resulted in gross margin increases of 18% for Farm A (Figure 1) and 6.5% for Farm B (Figure 2).

Capital costs

Pasture establishment costs were the largest capital costs. They included the costs of seed, fertiliser and chemicals and their application, and machinery.

Figure 1: Farm A – whole-farm-enterprise gross margin

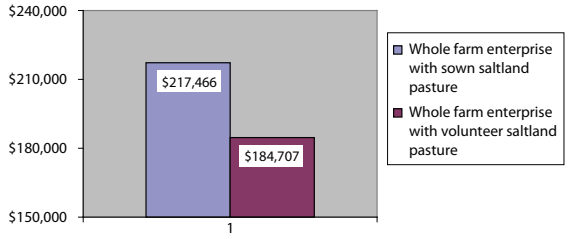


Figure 2: Farm B – whole-farm-enterprise gross margin

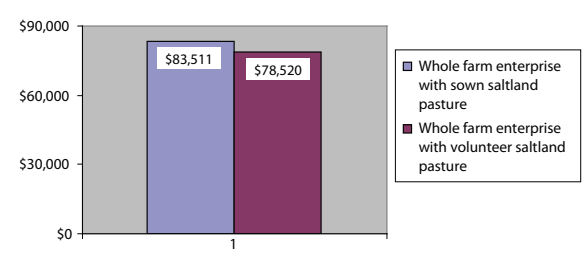


Figure 3: Farm A – present-value cumulative cash flow for salt area

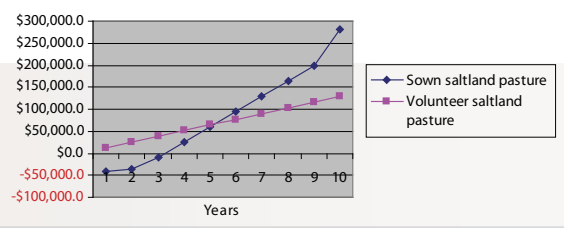
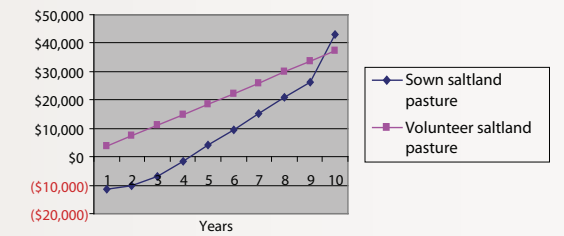


Figure 4: Farm B – present-value cumulative cash flow for salt area



Establishment costs for Farm A were $252/ha and those for Farm B were $204/ha. Farm A also included a mixture of non-saltland pasture species in the species used; this accounts for the difference in costs.

Other capital costs included the cost of extra fencing and watering points and the cost of extra livestock.

Total capital costs of establishing sown saltland pasture were calculated as $664/ha for Farm A and $349/ha for Farm B.

The large difference in capital expenses reflects Farm A's higher saltland pasture costs and the significant investment in extra livestock.

Initial partial budget analysis indicated that establishment of sown saltland pasture on both farms yielded a positive return on extra capital (40% for Farm A and 14% for Farm B).

Financial results

Peak debt from investment in sown saltland pasture on saline areas on Farm A occurred in year 1. Cumulative cash flow (CCF) results indicated that the initial investment in sown saltland pasture was paid back by year 4. CCF from sown saltland pastures exceeded the CCF from the volunteer saltland pasture in year 6 and in all subsequent years (Figure 3).

Peak debt from investment in sown saltland pasture on Farm B occurred in year 1, and the investment was paid back in year 5. The CCF from the investment for sown saltland pasture remained below the CCF for volunteer saltland pasture throughout the investment period.

When incorporated into the whole-farm economics, supplementary feed costs saved from the extra feed available to the whole enterprise in drier periods on Farm B resulted in higher annual net cash flows, helping to cover the establishment costs and making the investment more attractive.

Management-only approach

The main basis to this study was the financial comparison of sown saltland pasture and volunteer pasture on saline areas. The results outlined above suggest that the sown pasture option is better for the farm business. However, Farm B landholder considers that substantial environmental benefit (without loss of productivity) can be gained at low cost by simply changing grazing management on saline areas.

Some saline sites on Farm B have not been sown to saltland pastures. These areas have been managed differently by using a planned grazing process with grazing limited to between 6 and 10 days a year. The results of this management change are improved species diversity, with more native grass species on these areas than on other parts of the farm, and a large improvement

in ground cover. Productivity has also improved, with previously bare ground and scald areas now providing feed value. Some fencing and water infrastructure costs may be incurred.

A positive return on investment

In general, the results of the financial analyses in these case studies indicate that a change in management of saline land yielded a positive return on investment.

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