Economic evaluation of salinity management options in the cropping regions of Australia

Summary
The main achievement of the project was the release in April 2003 of hard and electronic copies of the 180 page report 'Economic evaluation of salinity management options in cropping regions of Australia'. A copy of the report is attached to this final report (Attachment 1). Through mail outs and direct requests, approx. 800 hard copies of the report have been distributed nationwide. The report has received attention in various media, mostly in response to national and state press releases.

Report Disclaimer
Conclusions

Over the next 20 years, a further 1.1 million hectares of farmland in Australia’s grain growing regions is forecast to become salinity affected, yet there are marked regional differences in the size and rate of this spread. Large increases in areas affected by salinity are forecast in the GRDC agro-ecological zones of Western Australia (WA) - sandplain, South Australia (SA) (Bordertown) and Victoria (VIC) (Wimmera), New South Wales (NSW) and VIC slopes, WA central and VIC high rainfall zones. Many of these zones are main sources of Australian farm profit. Hence, declines in farm profit due to salinity within these zones will lessen overall grain industry profits. Further, of these the SA Bordertown and VIC Wimmera and WA sandplain zones face major salinity challenges as the impact costs of salinity equate to forecast percentage annual reductions in farm profit of 7% and 10%, respectively. To overcome such reductions in profit, especially with likely continued adverse cost-price movements, large increases in enterprise productivity or new profitable enterprises will need to be found.

By contrast, in the other two zones particularly affected by salinity, NSW and VIC slopes and WA central zones, combating the negative impact of salinity is a more feasible challenge. The forecast annual reductions in profit due to salinity in these two zones are only 3% and 2%, respectively. The marked differences between zones in the forecast impacts of salinity mean there are also differences in the size of the challenge to farming systems. The profitability of some farm businesses in some zones will be very reliant on salinity management innovations. If these innovations do not emerge to protect or boost farm profit, then the viability of these businesses will be eroded quickly.

In this study, the farm level profitability of a range of options for salinity management was assessed. A main finding was that deep rooted perennial fodder species appear to offer the best short to medium term prospect for managing salinity in most agricultural zones. This finding helps counter a common view that perennials are less profitable than traditional enterprises. However, currently available perennials are in most situations unlikely to be profitable at the scale required to have a significant impact on either the rate of spread of salinity on farmland or the rate of increase of saltload in rivers and streams. Hence, although profitable inclusions in farming systems, in many situations, they may only slow or delay the onset of salinity. Eventually, many growers may need to consider engineering, tree-based, deep rooted perennials and adaptation options such as saltland pastures in managing salinity.

Recommendations

The main research and development (R&D) challenges for salinity management remain the need to:

1. Discover new species or improve the relative profitability of existing species that reduce recharge while being profitable.
wide scale inclusions in farming systems.

2. Develop cost effective appropriate engineering options, including desalinisation technologies.

3. Develop profitable farming systems that incorporate salt affected land.

Due to geographical differences in salinity threats and impacts, there are opportunities to better target GRDC salinity research, development and extension (R,D&E) expenditure. This report identifies that the zones that require special focus are the WA sandplain, SA Bordertown and VIC Wimmera, NSW and VIC slopes, the WA central and the VIC high rainfall zones.

Specific R&D suggestions in GRDC regions are listed in Attachment 1 (pp 127-129).

Outcomes

Expected Outcome (benefits)

Economic Outcomes

More than 40 commissioned case study economic analyses of salinity management options in grain growing regions of Australia are reported, along with a collation of existing published and grey literature of economic assessments of salinity management options for grain growers. This GRDC report represents the most comprehensive consistent review to date of current salinity management options for grain growers.

It reveals that many growers are profiting or could profit from further adoption of perennial and saltland pastures. However, further profitable adoption of these options is unlikely to greatly restrict the eventual spread of salinity, given the outlook for growers' economic conditions.

Environmental Outcomes

This study suggests that the current set of growers' salinity management options is unlikely, in many situations, to halt the spread of salinity. More likely is a lessening in the rate of spread of salinity.

Social Outcomes

To the extent that growers adopt the profitable salinity management options identified in this report, their farm incomes will be higher and their capacity to support regional economies will be greater. Benefits to rural communities could flow from growers adopting profitable options for managing salinity.

Achievements/Benefits

Overview of Project Achievements

The main achievement of the project was the release in April 2003 of the ‘Economic evaluation of salinity management options in cropping regions of Australia’ report. The project leader has given two ABC radio interviews in June, and material from the report has and will be presented at several conferences, as well as appearing in various rural media (e.g. Crop Doctor article) and on various web-sites such as


The conference publications include:


The role of saltland pastures in the farming system - a whole-farm bioeconomic analysis: case study example 2. In a compilation of case studies for the Saltland Pastures Association, December 2002, pp.128.


A hard copy publication, 'Compilation of case studies assessing the viability of lucerne, oil mallees and saltland pastures', WA Dept of Agriculture, pp.37, Bennett, A., Edward, A., Young, J. and Kingwell, R. (2003) has been released and an article has been prepared for SEA News.

Other research
In making salinity management investment choices, often a grower is mostly concerned with the effectiveness and relative profitability of alternatives. A grower needs to know how alternative systems compare given current conditions, as well as how the systems may fare in the future. To invest in managing salinity problems, ideally a grower needs to know the nature of the emerging salinity threat on his/her farm, the efficacy of alternative systems in reducing salinity problems and their current and future relative profitability. At times much of the required information is site-specific and subject to uncertainty.

Hence, an overarching R,D&E challenge is to generate or provide information and principles or rules of thumb relevant to different settings that might facilitate growers' decisions about investment alternatives for salinity management.

Additional information
Attachments


Salinity Management Options in Cropping Regions of Australia, for SEA News.


In addition, case studies from the main report to GRDC (Kingwell et al. 2003) are available at http://www.agric.wa.gov.au/environment/salinity/case_studies/index.htm