

### Benefits from this research

Salt affected land is an increasing proportion of many farms across southern Australia and the implications for grazing management on-farm are significant. The CRC and others are developing a range of productive pastures for saltland. This project adds value to that work by focussing on the performance of the actual farm outputs – the livestock thus ensuring the profitability of new grazing systems to manage salinity.

This research will deliver opportunities for improving the animal performance from saltland pastures by:

- Selecting the most appropriate animals to graze saltland pastures
- Providing guidelines for management strategies to maximise animal performance
- Designing better forages to provide superior animal performance

### Linkages with related CRC projects

Sustainable grazing on saline land (Subprogram 8)  
 Economic and social assessment (Subprogram 10)  
 Animal systems for recharge areas (Subprogram 12)

To find out more about **Functional implications of high salt diets for grazing ruminants** contact:

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CRC SUBPROGRAM 6  
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# Restoring the balance

## 6

### ANIMAL SYSTEMS

*To develop and demonstrate profitable and practical animal production systems using new and existing perennial plants in recharge areas*

SPII New livestock production systems for salt tolerant pastures

## Functional implications of high salt diets for grazing ruminants

This project investigates the impact of high salt load on animal production and health.

By identifying the **animals and management systems that are best suited for salt tolerant pastures**, this project will help to provide strategies and guidelines for using forage systems based on salt tolerant plants.

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Salt affected land is an **increasing proportion** of many farms across southern Australia.

Only the grazing industries have the scale, existing infrastructure and markets to make use of this salt affected land in the short to medium term. If this land is to be used for profitable and sustainable grazing **new animal production systems** must be developed.

If new production systems are to be based on saltland pastures it is essential to determine the **impact of a high salt load** on animal production and health.

## The research challenge

The economic benefits of saltland pastures will be highest if they are integrated into the whole farm management system and exploited by the most efficient class of animal.

To be able to make these recommendations, we must increase our knowledge of the physiological and functional implications of a high salt diet and develop animal-based strategies to maximise the benefits from saltland pastures.

This project will provide information needed to identify the animals and management systems that are best suited for salt tolerant pastures, through a better understanding of the physiological effects of salt and other secondary compounds.

The project will also assist in the selection of new plant varieties and species for productive and profitable salt tolerant pastures, and in the design of production systems which combine a range of plants and grazing rotations to suit regional conditions and production goals.

## How is the research being done?

This project will focus on the stages of animal production when salt tolerant plants are most likely to be used. This includes pregnancy, and the early growth phase once the animals have been weaned.

A range of studies will be performed, from simple comparative experiments of growth in sheep and cattle fed high salt diets, to a detailed molecular investigation of the effects of salt on rumen microorganisms.

Specific experiments will entail:

- Measuring the effect of diets with high salt concentrations on voluntary feed intake, appetite, diet selection and rumen function
- Determining which plant compounds affect the feeding value of different salt-tolerant plants
- Measuring the effect of diets with high salt concentrations on pregnant ewes, with a focus on foetal development and its consequences for the salt tolerance, growth and carcass characteristics of the offspring.
- Quantifying differences in salt tolerance in a range of animals and identifying lines and breeds that cope best with a high salt diet.

## KEY RESEARCHERS

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