

saltland prospects

2007



► Sarita Bennett
FUTURE FARM INDUSTRIES CRC AND
SCHOOL OF PLANT BIOLOGY, UWA
and Richard Price
KIRI-GANAI RESEARCH PTY LTD

Prospects for
profit and pride
from saltland



FUTURE FARM
INDUSTRIES CRC
PROFITABLE PERENNIALS™ FOR AUSTRALIAN LANDSCAPES

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Future Farm Industries CRC
The University of Western Australia (M081)
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T: (08) 6488 2505

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foreword

Saltland Prospects is an in-depth publication designed especially for farm consultants, advisers, agronomists and leading farmers keen to investigate what profitable options are available for salt-affected farmland. It brings together six years of research, and farmer case studies that featured prominently in the highly regarded *SALT Magazine*.

As the Chief Executive Officer of the Future Farm Industries Cooperative Research Centre (FFI CRC) and its predecessor, the CRC for Plant-based Management of Dryland Salinity (CRC Salinity), I commend this booklet to you. The knowledge it contains is current and relevant, and builds on CRC Salinity's successful demonstration that production from salt-affected land can be profitable and well integrated with enterprises on the whole farm.

In a 'first' for Australia, *Saltland Prospects* features a nation-wide saltland classification system. This land capability system will align farming systems best suited to individual farms, with estimated productivities for 15 growing regions across Australia.

Saltland Prospects is one in a series of Prospects Statements that summarise key Profitable Perennials™ technologies and farming systems to come from CRC Salinity. These now offer new opportunities to limit the onset of dryland salinity while improving productivity of grazing and cropping systems, and natural resource outcomes across Australia.

Why release this publication when the focus of environmental concerns in recent years has shifted away from the salinity threat to the new uncertainties of climate change and Australia's declining water resources?

It is good news that dryland salinity is unlikely to rise to the levels predicted during 2001, in part due to the recent dry climate sequence. However, salinity has already damaged an estimated two million hectares of farmland and is still a major threat to water resources, biodiversity, regional infrastructure and more farmland.

It still makes good economic, environmental and social sense to target our salinity management efforts on protecting the most valuable assets at risk. The combination of dryland salinity and climate change means that farmers will seek to be more efficient and selective with their land use and that natural resource management will have to be more finely tuned.

Saltland Prospects is the start of a series of products from FFI CRC, designed to assist farmers, their advisers and natural resource managers in making decisions based on new knowledge.

Another salinity management product soon to be launched by FFI CRC will be *Saltland Genie*, a web-based tool to assist farmers in making informed decisions about the best farming system to manage dryland salinity on individual farms. It will be supported by other land-capability assessment tools for saline land, *SaltCap* and *SaltDecide*.

Furthermore, FFI CRC proposes to create the *Salinity Knowledge Exchange*, an online learning site and library that draws together the latest research and development and farmers' experiences, supported by an extensive knowledge base with training courses and mentoring.

I trust you find *Saltland Prospects* ground-breaking and useful.



Kevin Goss

CHIEF EXECUTIVE OFFICER
FUTURE FARM INDUSTRIES CRC



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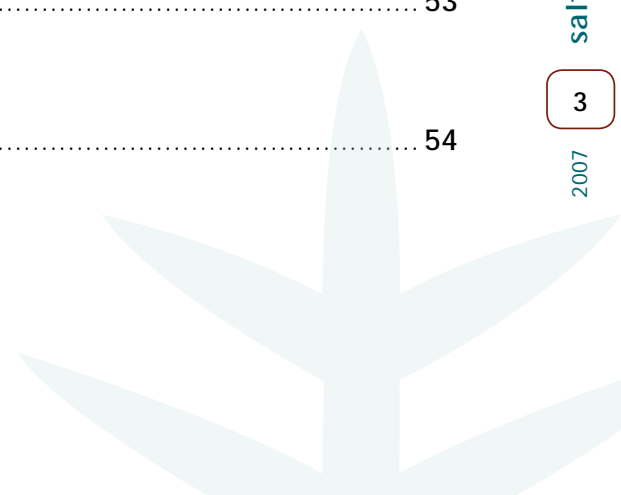
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Thanks go to:

As a product that integrates the diverse knowledge-base of a broad multidisciplinary team, there are many authors of this document. While most are listed in the bibliography, the tireless contribution to the editing made by David Masters, Nick Edwards, Felicity Byrne, Ed Barrett-Lennard, Warren Mason, Richard George, Jeff Patterson and Stephen Millar cannot go without the highest praise. The production of this Prospects Statement would not have been possible without the development of the Saltland Capability matrix for which the contribution of the SGSL team, and in particular Ed Barrett-Lennard, must be acknowledged.

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PHOTO: DAFWA's SGSL team and Photographic Branch

About the authors

Dr Sarita Bennett is a Research Fellow with the Future Farm Industries CRC and the School of Plant Biology, UWA. She has 14 years experience in the ecological, genetic adaptation and systems application of pasture and fodder plants for the mediterranean climate regions of Australia and Europe. She completed her PhD at the University of Birmingham and the Institute of Grassland and Environmental Research in the UK, and has subsequently worked in WA for 11 years, initially with CLIMA and then CRC Salinity. She has particular skills in information analysis and synthesis and has been co-author or co-editor of three books, with more than 35 other journal and book chapter publications. Sarita is the pasture theme coordinator for the SGSL initiative, having recently returned to WA after three years at the University of Wales Bangor, UK.

Richard Price is Managing Director of Kiri-ganai Research Pty Ltd. He is experienced in developing and servicing national, inter-disciplinary and multi-organisational environmental and agricultural programs. During 1992 he established and managed Australia's National Dryland Salinity Program, bringing it to a successful conclusion in 2004. As a senior manager with the Land & Water Resources R&D Corporation he established and managed the National Climate Variability in Agriculture Program, National Soil Acidification Program, Research Integration and Adoption Program and the Social and Institutional Research Program. Richard was a Board member of the CRC Salinity and helped establish the SGSL initiative from which much of the content of this Prospects Statement is drawn.



PHOTO: DAFWA. Inset: Sarita Bennett

The prospects for investment in saltland management

Improving saltland can enhance the robustness and flexibility of an enterprise, by providing additional grazing options. It also diversifies risk management options on mixed farms by offering a greater capacity to alter the cropping/grazing mix according to market signals and climate forecasts.

A range of plants exist that can provide significant levels of biomass and support animal production on saltland. From these options, producers are realising a range of benefits. Looking into the future, the emergence of profitable salt-tolerant grains is a possibility, adding further to the resilience of production systems faced with saltland and rising water tables.

Economic benefits

Returns from saltland pastures vary from farm to farm, but usually comprise a mixture of:

- direct value of the additional feed produced
- additional feed available out-of-season, which can provide even greater value
- resting land unaffected by salinity after the break, allowing more autumn/winter production from non-saline pastures
- an increase in efficiency of wool production resulting from salt in the sheep's diet
- intake of beneficial compounds, such as vitamin E, that are prevalent in some saltland pastures during summer
- having a safe and productive area to run sheep while cropping takes place
- a drought reserve in the tough years.

It is the combination of pasture and livestock management that is critical to profitable returns from saltland. Managing higher stocking rates, whether within rotational or set stocking systems, demands greater pasture management as well as animal management skills, but the returns can be significant. Economic modelling outlined in this *Prospects Statement* shows saltland pastures can generate \$21-\$25 per hectare per year additional profit for a typical 3750 ha property in the eastern Western Australian wheatbelt to \$40-\$80/ha/yr additional profit for a typical 2000 ha farm in the Southern Agricultural region (with the \$80/ha being achieved for the first 50 ha). For a farm in south-west Victoria saltland pastures can generate an Internal Rate of Return (IRR) of 21% for a 10-year pasture life and a payback period after five years. In New South Wales saltland pasture has been reported to provide an average annual value of \$85/ha on a farm in the central slopes. All these figures are examples only, as the variation in saline land results in variation in returns.

Environmental benefits

Well managed saltland pastures can reduce wind and water erosion by maximising groundcover on otherwise fragile land. Many producers with saltland invest in saltland pastures for this reason alone. Research suggests increased groundcover on saltland makes a significant difference to managing salinity *in situ* as well as downstream by reducing water, salt and sediment run-off. For example, there appears to be higher water use under saltbush than under unimproved pastures, helping producers control soil moisture and salinity levels.

Biodiversity benefits also exist. Management of saltland for grazing encourages plant species heterogeneity, while higher microbial biomass and respiration have been associated with saltland pastures than with unimproved saltland. These benefits do not require a production trade-off; for example, there is a positive correlation between microbial weight and respiration and livestock production.

Managing saltland improves the resilience and function of landscapes. The dynamics between soils, water, biota and nutrients can be improved by managing saltland with salt-tolerant pastures. For example, in WA revegetation with saltbush and annual legumes has improved infiltration, soil stability and nutrient cycling.



PHOTO: DAFWA's SCSL team and Photographic Branch

Social benefits

Social factors can act as the most powerful driver of managing saltland. There is tremendous personal satisfaction, confidence and pride gained from successfully managing saltland. These social benefits include:

- improved visual amenity of rehabilitated land
- an enhanced sense of meeting social responsibilities and contributing to catchment health
- achievement of a range of personal and family aspirations about the farm and how it is used.

Social benefits often outweigh economic considerations in making decisions about saltland management.

The aim of this document

Saltland on properties across Australia opens new opportunities for profitable agriculture. Many producers are currently managing saltland for a wide range of benefits. Knowledge offered by their experience is supported by a range of research to portray a heartening picture. This *Prospects Statement* captures the existing knowledge base about saltland and uses it to outline the prospects for managing saltland across Australia. Leading producers, their advisers, industry networks, natural resource management groups and research investors alike can use this knowledge to inform investment and management decisions in respect to saltland on farms, across catchments or within program investment portfolios.