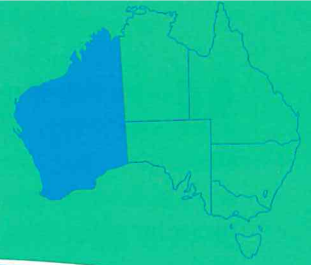




CRC FOR  
PLANT ~ BASED  
MANAGEMENT  
OF DRYLAND  
SALINITY



# Salinity Update WA

June 2005



**A**s WA's agricultural areas head into winter seasonal prospects are better in many areas than for some time, while the recent State Budget has increased funding for salinity and other sustainable management, largely reflecting progress towards on-ground works through major funding programs such as the Natural Heritage Trust and National Action Plan for Salinity and Water Quality. Evaluation of drainage as a tangible tool to manage salinity is attracting more funding, while useful information about using traditional tools such as lucerne is increasing.

This short newsletter is mailed out with *Focus on Salt* to subscribers in Western Australia. While prepared by the CRC, it aims to provide items to the wider community that is interested in better management of dryland salinity. If you have material for publication or know colleagues who would be interested, please contact:

➤ Georgina Wilson on (08) 6488 7353 or [gwilson@fnas.uwa.edu.au](mailto:gwilson@fnas.uwa.edu.au)

**E**ngineering evaluation progress. 1.5 Mt of salt per year flows down the Avon River and out to the Indian Ocean – a similar amount to that moving down the River Murray which attracts so much concern and funding in the Eastern States. This alarming statistic came from the Coordinator of the \$4M Engineering Evaluation Initiative, John Ruprecht. EEI, as it is known, is evaluating technologies including closed and open drains, groundwater pumping, evaporation basins, siphons and surface water management. All have passionate advocates, particularly drains.

John noted that drains work in most cases, but not everywhere, and it was important to understand their limitations. In the Warren area, effects would be felt only 10-20 m away from drains, but could be up to 160 m in areas such as Morawa and Naremben. The EEI team believes 25,000 km of drains have been excavated in WA, most at farm scale, with a minority at larger scales.

Some issues to be resolved include:

- disposal of drain effluent and downstream impacts;
- what soil additions might be required after drainage to restore soil to its productive potential e.g. gypsum or organic matter;
- all evaporation basins leak, but what is acceptable?
- drain management and maintenance: who is responsible?
- acid groundwater (see *Focus on Salt*);
- what happens if 90 farmers agree to a drain, but one is against it?

Mr Ruprecht said that as a community if we did nothing, the potential for flooding in the Avon and Swan Rivers could double or triple. The main EEI projects are:

- Merredin: deep drains and evaporation basin
- Beacon: deep drains and two evaporation basins
- Pithara: deep drains and surface water management
- Bodallin: pumping and evaporation basins
- South Tammin: palaeochannel pumping
- Dumbleyung: palaeochannel pumping
- Blackboy Creek, near Esperance: surface water management.

➤ More from John Ruprecht: (08) 9278 0461, or [john.ruprecht@environment.wa.gov.au](mailto:john.ruprecht@environment.wa.gov.au)

**A**pplications for the McKell Medal, a national award that recognises excellence and innovation in natural resource management are now open. Recent WA winners include Michael Lloyd (Lake Grace) and Garry English (Esperance). Nominees need demonstrate success in changing land use practices and community attitudes towards more sustainable management of natural resources and biodiversity. For more information contact the Secretary, McKell Medal Advisory Panel, [mckellmedal@daff.gov.au](mailto:mckellmedal@daff.gov.au), (02) 6272 4399 or [www.daff.gov.au/mckellmedal](http://www.daff.gov.au/mckellmedal)

**More drainage evaluation money.** While NAP funds are contributing to EEI, a special strategic reserve grant of \$2.84M to evaluate wheatbelt drainage works was announced recently also. This new project will begin in July and continue for three years. Legal aspects are expected to be the main focus with case studies of particular projects in different regions, including their engineering and technical aspects and likely impact. Yenyenning Lakes is likely to be one such area for study.

It is understood that the GRDC is also considering extra funding for drainage research in WA, but details are still awaited.

**Time for happy snapping!** Saline land may be an embarrassment for some owners, but there's a chance to turn it to advantage in the *SGSL Pride in Saltland Management Photography Competition*. The competition has prizes worth \$30,000 and closes on 19 August. One novel prize is a saltland 'makeover'. WA Organising Committee representative Jeff Patterson says that of the five categories, he expects 'Before and After' to be the most difficult in which to attract entries. So if you have some shots of land before revegetation or other treatment and can add some recent updates, this could be a winner.

➤ *Land, Water & Wool website at [www.landwaterwool.gov.au](http://www.landwaterwool.gov.au) and make it snappy!*

**First State NRM Conference** including the traditional State Landcare Awards will be held at Denmark on 4-6 October. Program details are still being finalised, but for those with a special interest in salinity but limited time, Wednesday might be a good day to attend. The CRC Salinity will be organising a morning session on *Diversification for profit and salinity management*. This will include a keynote address by Professor David Pannell on economics plus a forum of three case studies led by CEO Kevin Goss. Wednesday's afternoon tour on Profitable Grazing Systems also provides opportunity to eyeball the experts and garner the latest good ideas.

➤ *[www.wanrmconf2005.org](http://www.wanrmconf2005.org)*

**SGSL hits wheatbelt.** The SGSL team hit Kellerberrin in April, with a similar day's program to that held in three locations last spring (Cranbook, Dalwallinu and Wickepin). An encore performance is planned for Quairading on 24 June for those still lusting after barbecued saltland meat. Consistent messages to emerge included:

- Saltland can be profitable but individuals need to sort out what will work on their land.
- Salt-tolerant shrubs such as saltbush need to be combined with complementary feed such as stubbles, hay and understorey species.
- Because salinity is variable over even small distances, growing a range of species is always recommended.
- Don't plant saltbush and trees together or risk wasting several years of saltbush grazing before the trees can defend themselves from stock.
- Breeding for salt-tolerant wheat is looking good, but don't hold your breath. It will be about a decade before grain varieties are available, although earlier for feed wheat. And these new varieties will probably only suit mildly saline land.

**Healing saline soils with native grain crops** is the theme of a recent RIRDC publication *Perennial Grain Crops for High Water Use – the case for *Microlaena stipoides** available from <http://extranet.rirdc.gov.au/eshop/> priced \$16.

**Lucerne more profitable with lambs.** Analysis by the CRC Salinity on the economics of lucerne in the Central Wheatbelt region is indicating that it is more profitable in a farm system that focuses on meat as well as wool production. Economic modelling with MIDAS found that relatively small proportions of lucerne gave the best results – around 11-14 per cent of the farm to increase profit by 4-9% overall or \$20-45/ha of lucerne. For a traditional wool-producing flock, changing time of lambing from May to July and altering the farm system to include prime lambs more than doubled the per hectare value of lucerne.

Ignoring its value in controlling recharge, selecting lucerne over annual pasture is a trade-off between extra summer feed, and lower winter growth and higher establishment costs. In general, lucerne reduces cash flow in the first three years while the pasture is established, and then exceeds that of an unchanged enterprise. Small areas of lucerne, up to 10-15% of the farm, can improve profit while reducing recharge. Larger areas, up to 25-30% of the farm, give the same profit as without lucerne, but provide greater recharge benefits.

➤ *Contact Felicity Flugge on (08) 9368 3134 or [fflugge@agric.wa.gov.au](mailto:fflugge@agric.wa.gov.au)*

**Lucerne and wheat yields.** Farmer reports that wheat yields after growing lucerne may be depressed due to lucerne's strong ability to dry out the soil profile have been confirmed. In pasture trials on two different soil types for three years from 1998, followed by two years of wheat, Dr Fillery of CSIRO found depressed yields in the lucerne plots compared with areas sown to sub-clover and long-season annual pastures such as serradella. "Farmers are understandably not happy about the reduction of yield in one of their most profitable crops," he commented. "We suspect that the wheat ran out of water in the dry years of 2001 and 2002, after lucerne had done such a good job at drying out the soil, increasing the amount of pinched grain." In the trials lucerne removed 130 mm more soil water than the annual pastures. Drying effects of lucerne were greatest below the surface, from 55 to 150 cm deep, but comparatively low closer to the surface.

These results make it clear that when evaluating the economic impact of lucerne on farming systems, the prospect of reduced wheat yields must be balanced against benefits to livestock enterprises.

- *Further details from Ian Fillery at [ian.fillery@csiro.com](mailto:ian.fillery@csiro.com)*

**Four Catchment Demonstration Initiative** projects are moving into the implementation phase, now that detailed plans have either been accredited by the project's steering committee or are about to be completed.

The Catchments selected to receive between \$1M and \$1.7M funding support under the NAP, and matched by equal contributions from the farmers, are Gillingarra/West Koojan, Wallatin Wildlife and Landcare, Upper Coblinine, and the Fitzgerald Biosphere Group. The impacts on surface water and groundwater will be monitored carefully and evaluated to demonstrate either cost-effective measures for use by other catchments around the State, or to warn farmers if some practices prove ineffective or too expensive.

- *Brian Beetson on (08) 9368 3778 or [bbeetson@agric.wa.gov.au](mailto:bbeetson@agric.wa.gov.au)*

**Hunting a native 'lucerne'.** The CRC Salinity's hunt for a native 'lucerne' perennial pasture species is continuing, with recent plantings of possible contenders at Lake Grace and Katanning. The two WA sites are among five national sites where about 30 species are being grown with lucerne and other exotics. The hope is to find a native perennial with the value of lucerne but

more tolerant of acid soils and better suited to lower rainfall. While the aim is to find pastures for farming areas, the wheatbelt has not proved a good hunting ground, as many plants have been eaten out, or removed by farmers concerned they might be poisonous. Instead, research officer Richard Bennett found the pastoral areas more fruitful during trips to the Goldfields, Meekatharra and Carnarvon. Richard is confident that good candidates will be found, possibly from the *Cullen* (scurf peas) or *Swainsona* (which includes Sturt's desert pea) genera.

- *Richard Bennett on (08) 6488 1846 or [bennettr@cyllene.uwa.edu.au](mailto:bennettr@cyllene.uwa.edu.au)*

**New CRC Board member.** Badgingarra farmer Gary Peacock recently joined the board of the CRC Salinity as the National Farmers Federation nominee. Gary replaces former NFF President Ian Donges.

**Biodiversity survey now available.** The findings of one of the most comprehensive biological surveys of the State's farming areas have now been published. A *biodiversity survey of the Western Australian agricultural zone* was undertaken by the Department of CALM and the WA Museum, in collaboration with the Universities of WA and Adelaide. It was part of the State Salinity Strategy and aimed to determine the threat of secondary salinisation to terrestrial and aquatic biodiversity as well as increase understanding of biological richness. The survey revealed that about 450 flowering plants and 400 spiders, scorpions and aquatic invertebrates were at risk of extinction from salinity. Remaining remnants of many valley-floor wetland, shrubland and woodland communities could also disappear. Twenty-five new invertebrate species and six new plants were found, and many more are awaiting scientific description. The 386-page publication includes a CD and is available from the WA Museum Shop on (08) 9427 2776 for \$95 plus postage and packing.

**The CRC's online forum** (<http://forum.crcsalinity.com/forum/>) currently has 133 subscribers with topics ranging from drainage to water quality to saltland pastures. The forum operates at two levels – a limited number of categories open to all comers, with a further set of categories available only to User Groups, mostly within the CRC Salinity.

- *More from Bruce Munday: (08) 8538 7075; [bruce@clearconnections.com.au](mailto:bruce@clearconnections.com.au)*

**Innovative ways to improve and conserve the environment** will be recognised in this year's WA Environment Awards, co-ordinated by the Department of Environment. Minister Judy Edwards said the awards offered people and organisations high profile recognition across 14 categories. The Awards - now in their fourth year - provide recognition to the growing number of organisations and individuals working to reduce their ecological footprints on the environment. Corporate business, government and community groups can highlight their environmental initiatives through any of 14 categories. Entries close on 29 July and winners announced on 18 November.

- Full details are available from the website <http://awards.environment.wa.gov.au/>

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## CRC Salinity Communications

[www.crcsalinity.com](http://www.crcsalinity.com)

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## Coming events

### It's Time to Profit from Saltland

Friday 24 June  
Free field day organised by  
Quairading LCDC and SGSL  
Contact Cyndi Mulders on 9645 0236

### International Workshop

#### Multiple Benefits from Sustainable Bioenergy Systems

Perth, July 31 - August 5, 2005  
including a Field Study Tour August 1-2  
<http://www1.crcsalinity.com/> click Latest News

### WA launch of EverGraze – More Meat from Perennial\$

Date to be advised in early August

### Inaugural WA State Conference on Natural Resources Management

Denmark Centre for Sustainable Living  
4-6 October 2005  
[mdurcan@inet.net.au](mailto:mdurcan@inet.net.au) or  
[www.wanrmconf2005.org](http://www.wanrmconf2005.org)

### 29th Australian Groundwater School

Fundamentals of groundwater science,  
technology and management  
Adelaide University, 11-16 July  
Contact Trevor Pillar: 08 8201 5632;  
[cgs@groundwater.com.au](mailto:cgs@groundwater.com.au)

### 13th Getting to Know Groundwater & Surface Water

Practical training in hydrogeology for  
community and industry non-specialists  
University of WA, 4-5 August  
Contact Trevor Pillar, Centre for Groundwater  
Studies: 08 8201 5632; [cgs@groundwater.com.au](mailto:cgs@groundwater.com.au)

### 9th International Conference on Salt Lake Research

Curtin University of Technology, Perth  
26-30 September 2005  
<http://www.isslr.org/>

### Where Waters Meet

Exploring the transition phase where water  
transforms from one expression to another  
Jointly convened by International Association of  
Hydrogeologists, Australian Chapter  
Auckland, 28 November – 1 December  
[www.iah.asn.au](http://www.iah.asn.au)