



CRC FOR
PLANT ~ BASED
MANAGEMENT
OF DRYLAND
SALINITY



Salinity Update WA

May 2006

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FloraSearch beginning to flower. Four focus species with encouraging long-term prospects have now been identified for WA wheatbelt areas at risk of salinisation through the FloraSearch project.

The species are no strangers to most land managers – *Acacia saligna*, *Eucalyptus rudis* (flooded gum), *Eucalyptus loxopheba* subspecies *lissophloia* (smooth barked York gum - an oil mallee) and *Atriplex nummularia* (old man saltbush). But after extensive screening process under both the Search and FloraSearch projects, they are looking to have most chance of delivering the goods. FloraSearch, a joint national-scale project between the CRC Salinity and the Joint Venture Agroforestry Program (JVAP) set out in 2002 to follow up on Search and coordinate effort across southern Australia to develop new woody crops for wide scale adoption in areas prone to salinisation. Between them the two projects have screened more than 20,000 native plant species across southern Australia to reach the four focus species. The next step for the selected species is the beginning of plant improvement including better understanding of their agronomy and productivity.

The four contain a good spread of characteristics and industries that should provide flexibility for growers. *Acacia saligna* is a well known salt-tolerant browse shrub, also used internationally. Its fodder value could be much improved by selection and it has shown good properties for wood products such as panel board.

Flooded gum and smooth-barked York gum were shown to have unusually low density wood for eucalypts. This increases their potential for use in panel board products. Smooth-barked York gum is already being developed as an oil mallee but its more versatile wood increases its attraction. Flooded gum suffers bad insect damage in native stands but appears to have good natural variation and opportunity to select resistant lines. It will prefer low moist sites in the wetter western wheatbelt. Some 100 ha of trials are planned this winter involving old man saltbush and *Acacia saligna*.

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Saltbush – Use it or Lose it. A joint study by CSIRO Livestock Industries and the CRC for Plant-based Management of Dryland Salinity found that saltbushes that were not grazed in autumn had similar edible biomass the following year to saltbushes that were heavily grazed. Researchers found that there was little benefit in leaving old man saltbush ungrazed as the plants often lose their leaves anyway and tended to grow more slowly than the grazed bushes. Old man saltbush (*Atriplex nummularia*) is grown on saline soils in southern Australia as fodder for livestock and generally grazed during the autumn feed gap. However some farmers do not graze the shrubs each season believing it is better to save the feed for tougher times. Dr Norman cautioned that the study had so far only investigated the impact of crash grazing over four years and longer term impact on repeated short-term heavy grazing was yet to be determined. The study was based on trials on saline land near Tammin, 180 kilometres east of Perth part of a Sustainable Grazing on Saline Lands project, funded by Land, Water and Wool, an initiative of Australian Wool Innovation and Land and Water Australia.

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CRC Salinity Re-bid. The CRC for Plant-based Management of Dryland Salinity submitted its application for a second seven-year funding term on 31 March. If successful it will become the Future Farm Industries CRC, retaining interest in salinity (including engineering aspects and not just plants) but broadening its bailiwick to other profitable farm systems based on perennial pastures. Fifteen organisations have committed to the re-bid application including the Department of Agriculture and Food, Conservation and Land Management and The University of Western Australia.

Success of the first stage application will be known by the end of May. If this obstacle is successfully negotiated, much more detailed plans will be required by August. The final outcome will be announced at the end of the year, allowing formation of a new company structure by July 2007. This would provide a one-year overlap of the two CRCs as the current organisation will continue until June 2008.

Program managers for the proposed new CRC would include:

- Dr David Masters, CSIRO Livestock Industries - Future Livestock Production
- Dr Anna Ridley, Department of Primary Industries, Victoria - Future Cropping Systems
- Mr John Bartle, CALM, WA - New Woody Crop Industries
- Dr Richard George, Department of Agriculture & Food, WA - Farming Saline Landscapes
- Dr Michael Robertson, CSIRO - Biodiversity, Water, Land and Climate
- Prof David Pannell, UWA - Economic, Social and Policy Analysis
- Dr Ian Nuberg, University of Adelaide - Education and Training
- Mr Mark Stickells, CRC Salinity - Commercialisation and Adoption.

Chief Executive Officer Kevin Goss said the new organisation would focus on opportunities for business and farmers to invest in profitable solutions. The key to the new CRC would be to make managing salinity profitable, based on sound science and understanding the environment in which we farm. Many promising perennial crops and farming systems are already undergoing field trials as part of research within the existing CRC and they would be developed further in the new structure if it is supported.

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Salt-tolerant turf. The Australian Research Council, in partnership with the Shire of Wagin and multi-agency Rural Towns-Liquid Assets project, is funding a three-year study to evaluate salt-tolerant turf species at Wagin. Researcher Ghazi Abu Rumman will begin work in June, supervised by Dr Ed Barrett-Lennard from the Department of Agriculture and Food and Dr Tim Colmer from UWA. A technical officer is also to be appointed. The project will look at salt and water balance using groundwater for potential irrigation of parks, gardens and ovals. Besides putting some of the water from beneath the town to productive use, it would also reduce reliance on scheme water.

Turfs to be compared include the common kikuyu (*Pennisetum clandestinum*), saltwater couch (*Paspalum vaginatum*), NyPa turf (*Distichlis spicata*) and marine couch grass (*Sporobolus virginicus*). Ghazi will be working with Mark Pridham from the Department of Agriculture and Food, and results should also have application in other wheatbelt towns.

Catchment Demonstration Initiative update. The \$6 million Catchment Demonstration Initiative (CDI) supported by the National Action Plan for Salinity and Water Quality (NAP) and other agencies is beginning to show progress at four regional sites after a fairly slow start.

The Upper Coblinine Catchment Group was recently presented with \$1.7 M to implement perhaps the largest catchment plan undertaken recently in WA. Its planned works, on top of that already completed, include 3000 ha of herbaceous perennials, 510 ha of salt-tolerant plants, 500 ha of woody revegetation, 70 km of valley and hillslope earthworks, dams and 360 km of fencing. Significant monitoring and evaluation is included.

The Wallatin-O'Brien catchment implementation plan (\$1.2 million) comprises significant amounts of engineering work and the planning and assessment phase is nearing completion. Siphons, pumping and drainage have been included after exhaustive drilling and investigation. Plant-based works including lucerne and saltland agronomy are also in place.

Meanwhile, the West Koojan Gillingarra CDI Committee is finalising review of its implementation plan after significant revision. The Fitzgerald Biosphere group is maintaining progress, having almost completed its second year of its implementation plan.

Salt-tolerant wheat progress. WA quarantine laws which require new imported plant varieties to be grown in a glasshouse for the first generation will delay testing of new candidates in the quest for a salt-tolerant wheat. Field trials planned for WA this winter will have to be delayed by 12 months and glasshouse work will be done in Canberra instead.

Research on the salt-tolerant wheat project is being financed by the GRDC and done through the CRC Salinity by a project team headed by Dr Tim Colmer at UWA. The team is working on crosses between sea barleygrass and wheat and its first products, if successful, will be a feed quality rather than bread wheat. The breeding process is very similar to that used for triticale, a cross between rye and wheat, made many years ago. It is not genetic engineering, but 'wide-crossing' to combine the characteristics of a domestic crop with a wild salt-tolerant relative.

Salt tolerance involves the ability to accumulate sodium and chloride safely within the plant, controlling their movement and discriminating nutrient uptake in favour of more useful elements, including potassium and nitrate. Dr Colmer said that if all went well, a salt-tolerant and waterlogging-tolerant feed wheat might be available to growers in about five years. This should be suitable for sowing in mildly to moderately saline land, allowing cropping on some areas currently too saline for barley.

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Drainage developments. As part of the Wheatbelt Drainage Evaluation, engineering consultants GHD are assessing the feasibility of drainage in the Yenyening area (Morbinning, Kunjin and Salt Rivers). Field data analysis has revealed four options comprising elements of regional drainage, tributary drainage, disposal via the Avon River and evaporation sinks (lakes and constructed basins). Stakeholder workshops have led to further technical assessment and refinement of options; disposal remains a critical issue.

CSIRO is completing analysis of the impact of drainage on the Avon using LASCAM modelling. The model evaluates the water balance of 107 sub-catchments, and calibration on 12 gauging stations (flow, concentration and load), 22 lakes (levels and overflows) and groundwater (rate of rise). It proved difficult to calibrate (due the absence of quality data) but is now suitable to run scenarios based around regional drainage. In parallel, a consultant is preparing an economic assessment of the options. Again, data gaps require significant estimations and sensitivity analysis. A similar project recently commenced on the Yarra Yarra and the Blackwood, and another is proposed for the upper Yilgarn.

A new Catchment Assessment Tool (CAT) has been developed in Victoria and is being trialled in the Toolibin Recovery Catchment to take advantage of data of sufficient quality to enable calibration and verification. By June the model will be completed and used to underpin works. Similar projects in other catchments are planned if it goes well and is suitable for use in areas for which less information is available.

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Saltlist – the email list initiated and managed by the NDSP and subsequently managed by the CRC was effectively wiped out when the ISP became the ‘victim’ of a corporate takeover. The new ISP does not support email lists.

Not to be beaten, the CRC is now hosting Saltlist on its own server, but unfortunately the original list of 750 email addresses is forever lost. Since then the new list has built to 113.

To subscribe send an email to saltlist-subscribe@crccsalinity.com.au. No need to put anything in the subject line nor a message.

Any comments, queries or notice of up-coming events related to salinity, don’t hesitate to contact:

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It would be great if you would alert/remind your friends/colleagues that this edition is now available and point out that they can subscribe to a reminder of each new edition at www.crccsalinity.com.au/update

Coming events

Soil Biology for Soil Health in Sustainable Production

Friday 19 May, Albany

Phone (08) 9892 8444 or email shu@agric.wa.gov.au

13th Australian Society of Agronomy Conference

10-14 September 2006, Perth WA

www.agronomy.org.au

Annual meeting and field day of Saltland Pastures Association

21 September 2006, Cranbrook

spa@agric.wa.gov.au

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