

Inquiry into the coordination of the science to combat the nation's salinity problem

Submission to the House of Representatives Standing Committee on Science and Innovation by *Greening Australia*.

Greening Australia works in partnership with landholders, community, government and business to tackle environmental degradation in a practical, a-political, scientific way. Greening Australia addresses critical issues like biodiversity, salinity, declining water quality, soil degradation, and climate change through an innovative blend of practical experience, science, community engagement and commitment.

Greening Australia has been tackling salinity issues in a practical on-ground way for many years. We are committed to assisting in the process of salinity abatement and in the restoration of damaged landscapes.

The key contribution that Greening Australia can make to this inquiry is our experience as a practitioner and user of research directed towards salinity management. Our role is to broker the transition from research to practice – it is of direct relevance to the second term of reference of the Committee.

We see three major hurdles to the implementation of successful salinity programs:

1. The translation from science to the paddock scale is often difficult.
2. There is a need to rethink the role of trees from a whole of ecosystems services approach rather than on an issue-by-issue basis.
3. There is a need to 'learn by doing', there will never be perfect science on salinity and the best approach is going to be one that integrates the scientific knowledge with feedback from the ground.

Translating Science to the Paddock

Managing complex environmental issues requires good science and effective social/community engagement processes. Once an issue is raised in the public domain, it is incumbent on those raising the issue to provide clear management options to those responsible for taking action (land managers).

The worst outcome is to raise the willingness of a landholder to take action but then not be in a position to inform them on appropriate action. As one farmer recently commented at a salinity workshop:

You mean to tell me that you want to tell me how to manage my land, but when you get there you can't tell me what to do!

To avoid the problem of high expectations but poor implementation tools it is critical that science is linked to community based processes to ensure that solutions are owned and adapted at the local scale.

To achieve this outcome presents three fundamental challenges:

- Balancing robust scientific debate with the development of practical “no-regrets” options for salinity management.
- Continuous improvement and investment in an improved information base.
- Effective dissemination of paddock scale solutions.

Salinity is undoubtedly a complex problem that requires robust scientific debate. Critical analysis and questioning of current practice is both useful and necessary. However, the salinity debate has, at times, impeded action by those willing and able to make change. The solution relies on identifying those actions that can be taken with confidence that they will contribute to the solution whilst continuing to improve our science and our ability to target future actions.

There are many actions to control recharge and discharge that are of a “no-regrets” nature, particularly for localised salinity problems. It is incumbent upon major institutions such as CSIRO, BRS and R&D corporations to produce advice on these “no-regrets” actions to empower local communities to organise and take action.

Recommendation 1: A process for identifying no regrets salinity actions should be initiated and communicated through the new regional structures responsible for the development of catchment plans under the *Natural Heritage Trust* and the *National Action Plan for Salinity and Water Quality*.

Further, debate on fundamental science issues should then be directed to building on and improving the set of no-regrets strategies identified.

In some States the knowledge of salinity impacts and distribution of potential salinity sites is poor, a study commissioned by Greening Australia Tasmania found four major gaps:

- knowledge on management is low in all sectors,
- salinity is only beginning to emerge as an issue and the scale of current information is too large for meaningful interpretation
- there is a lack of knowledge on what vegetation is best used, whether exotic species may become pests if used and in what salt tolerant species are available for the climate
- there has been limited scientific study into salinity

The results of this study are reflected in current projects being undertaken in the NAP regions of Tasmania with most concentrating on research, monitoring and evaluation rather than on-ground works.

Recommendation 2: Continued investment in fundamental science is critical to refining and adapting approaches to salinity management. The outcomes of such work should be carefully communicated with a view to building upon and adapting existing approaches rather than revolutionising or undermining existing community initiatives.

Once strategy is developed it must be effectively communicated. Linking science and new technologies to farmers requires an ability to explain new technologies and what

they mean at the farm scale. This will not happen without competent and broad based extension staff. If you want to change behaviour then articulation of methods to use is necessary.

There are often unintended outcomes from the release of new knowledge that needs to be monitored carefully. The release of new maps on salinity hazard has caused some grief in some areas – this is due to the fact there is no one on ground to advise people what they mean for them. In more extreme cases there was an initial reaction by farmers that the value of properties mapped would fall. There is a lot of hype and emotion about salinity and without the extension staff to help this leads to frustration.

Recommendation 3: “No-regrets” salinity tools and management strategies for each region should be made available to all extension staff employed under the *National Action Plan for Salinity and Water Quality* and the *Natural Heritage Trust* with appropriate training provided.

Salinity in the context of Ecosystem System Services

Salinity is but one issue of concern in our landscapes. Other outcomes landholders and the Australia community seek include:

- improved productivity and profitability
- improved soil condition
- effective biodiversity conservation
- improved water quality
- improved scenic amenity
- carbon sequestration

Unlike many scientists and policy makers, farmers think holistically. Farmers do not see the issues as separate, they all relate to the same thing in the end – livelihood. In many cases an extension officer will come out to discuss biodiversity for example but won't be able to talk about salinity or production issues – from a farmer perspective this is not a good outcome and leads to a piecemeal type approach in tackling the various issues that they may have.

More importantly in the context of this inquiry, solutions developed for one outcome may not be optimal in a whole of landscape context. For example, Greening Australia ACT & SE NSW is currently running a salinity/biodiversity program aimed at producing positive benefits for both salinity and biodiversity issues. In the case of multiple benefit projects there are often trade offs to be made. ie. salinity may not be reduced as far if biodiversity or carbon sequestration are targeted as well. However, from a whole of ecosystem view the combination of outcomes may in fact be more beneficial in the long term.

There are many actions, riparian lands protection for example, that effectively deliver many environmental benefits – including some salinity benefits. If thought about in a whole of landscape context, such actions may be taken with greater confidence and more definitive advice provided to land managers.

Recommendation 4: Salinity research and proposed management actions will need to be aligned with management actions targeting other environmental and production objectives. Such an approach will tend to increase the range of “no-regrets” options available to landholders.

A related challenge is the need to develop local area and whole farm plans. These plans should cover the broader objectives and incorporate multi-benefit approaches to revegetation. The lack of extension and particularly broad based expertise to cover all issues that a landowner has is a major problem in addressing this.

With the technology now available, a system/model of developing farm plans one-on-one with farmers using digital aerial photography, salinity maps (ie. multi-layer plans), to plan the best overall strategy to tackle issues can be realised. Greening Australia is in the process of developing comprehensive farm planning tools in Queensland and New South Wales with a view to achieving regulatory compliance and guiding on-ground actions.

The development of effective farm scale plans can be facilitated through good science, catchment scale data and priorities, and on-farm interpretation. To bring this package together a combined effort between government, R&D organisations, community groups, land managers and other stakeholders will be required.

Recommendation 5: The development of whole-farm plans that integrate salinity management with other environmental issues and prioritise management actions is a key priority. The expertise to undertake these assessments exists across a number of organisations. The challenge is to resource and broker partnerships that can deliver an effective “one-stop-shop” to land managers.

The need for an adaptive approach

In many regions, advice on salinity management is only available at a generic level. The challenge of developing relevant local scale action plans is significant. This puts land managers, who are often only interested in their local area, in a dilemma when considering whether or not to take action.

Some projects that Greening Australia has assisted with have spent the last few years attacking salinity through revegetation programs - to good effect it would seem. With new science emerging, questions are often raised as to whether or not these methods have any impact on salinity— once these views are aired it can become very hard for these projects to get continued funding. This may be the case even if projects have an outstanding past record and have benefits for other issues. Without investing more money to improve these projects and to feed back to the project planning process they do then become a waste of time and disenfranchise the landholder community.

In response to the need to facilitate adaptive learning Greening Australia is seeking to connect researchers with practitioners so that projects are well designed, results analysed, underpinning assumptions questioned and the lessons learnt fed back so that the programs can be dynamically improved through time. We have done this successfully with a range of biodiversity and salinity related programs.

To increase the connections between research and practice, Greening Australia recently launched a new initiative *Changing Lives and Landscapes* (Attached). The program, which has secured support from the Australian Government, aims to broker knowledge from leading research institutions to practitioners. It is a direct response to the need to ensure community based programs are both informed by and inform research in natural resource management. Our objective is to ensure projects are better designed and more effectively monitored and evaluated to promote learning and an adaptive approach to environmental management.

Recommendation 6: Dedicated support is required to broker linkages between science and practice. A dedicated team of 10-15 “knowledge brokers” targeting salinity management would speed this process considerably.