'The macabre fascination that goes with gothic horror novels'

What can we learn from six years of salinity hype?

Jennifer Marohasy

Australia grows a lot of wheat. About 12 million hectares are planted each year, producing 24 million tonnes of grain. The Cole Royal Commission is currently focused on how the Australian Wheat Board sells this wheat internationally, a story which is splashed upon the front of the papers almost daily.

But not so long ago, wheat farms were featuring in stories about the spread of dryland salinity. In 2000–2001, the National Farmers Federation and the Australian Conservation Foundation pleaded for $65 billion to save the Australian environment from this particular scourge. They didn't get $65 billion—but the publicity did help secure a still not insubstantial $1.4 billion in Federal Government funding for the *National Action Plan for Salinity and Water Quality*.

The report which underpinned this lobbying effort, *Australian Dryland Salinity Assessment 2000*, is now recognized as seriously flawed, and the claims that 17 million hectares would be lost to the 'white death' are now dismissed as an exaggeration from overly pessimistic scientists. More detailed maps developed on a State-by-State basis under the Action Plan have similarly been dismissed as flawed.

This could be just another one of those stories about new evidence disproving an old theory, or it could be a story about the wilful misuse of science to create the impression of a crisis to secure ongoing research funding. Let's consider some of the evidence.

The 1990s was dubbed the 'Decade of Landcare'—a series of initiatives aimed at promoting sustainable land use and management. As the decade drew to a close, so did funding for Decade of Landcare projects.

Then, in late 1998, one-third of Telstra was sold for $14.24 billion, of which the Federal Government allocated $1.15 billion to 'the environment' through the establishment of a Natural Heritage Trust. This would see a continuation of Federal Government funding for environmental projects, including the establishment of a National Land and Water Resources Audit.

One of the Audit group's first publications was the 2000 dryland salinity assessment report. The 129-page glossy warned that the area with a high potential to develop dryland salinity from rising groundwater would likely increase from 6 million hectares in 2000 to 17 million hectares in 2050.

The Assessment did not distinguish between what might normally be considered irrigation salinity as opposed to dryland salinity. It determined that areas with groundwater within two metres of the surface were at high risk of dryland salinity. According to the assessment report, the forecast ground-water levels were 'based on straight-line projection of recent trends in groundwater levels', including for the continent's most important agricultural area, the Murray–Darling Basin.

Yet the data did not support the notion that we had a situation of rising groundwater in the Murray–Darling Basin. Groundwater levels in the Murray, Murrumbidgee and Coleambally irrigation areas—the regions considered most at risk in eastern Australia—have generally fallen over the past ten years. After having risen in the 1970s, they were clearly falling by the late 1990s.

In 2004, the CSIRO provided me with the following reasons for the general fall in groundwater levels: improved land and water management practices, relatively dry climate over the past ten years and increased deeper groundwater pumping and higher induced leakage from shallow to deeper aquifers.

Interestingly, in the assessment report, even when values are shown for years before the report was published (for example, 1998), the values are 'predictions', not measured statistics. The assessment report does not provide any information about the actual measured extent of dryland salinity, nor does it test its projections against actual outcomes.

Data collected by Murray Irrigation Ltd since 1995 from 1,500 sites covering 500,000 hectares of land considered most at risk from irrigation salinity has shown a 90 per cent drop in the area af-

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fected by shallow water tables.

Yet the assessment report was extensively quoted and accepted uncritically as evidence of a spreading dryland salinity problem.

The assessment report stated that there was a national salinity problem, but in order for the States to access some of the $1.4 billion from the salinity Action Plan, they needed to do more detailed mapping and show the extent of the potential problem on a catchment basis.

And so, in August 2002, agricultural industry representatives gathered with the media at Queensland's Parliament House to hear speeches from Premier Peter Beattie, Federal Minister for Environment and Heritage Hon Dr David Kemp and others for the unveiling of one of the first catchment-based salinity hazard maps. In his speech, Premier Beattie stressed the gravity of the salinity problem and said that the salinity map he proudly displayed was based on the best science. He said it had been checked and endorsed by the CSIRO and the National Land and Water Audit.

The maps were met with disbelief by many. Local landholder Dr Ian Beale explained in the rural weekly, *Queensland Country Life*, that according to the government's own Salinity Management Handbook, the area west of the 600mm isohyet (a geographic measurement of areas with equal precipitation) could not be at risk of dryland salinity. Yet it was shown on 'the Premier's map' as bright red and therefore at high risk.

This map was subsequently used to inform government decision-making, including the assessment of permits for tree vegetation and permits for building on-farm storages. In southern NSW, these (now discredited) salinity hazard maps were used as a basis for calculating insurance premiums.

In Sydney, in March 2005, I listened to a speaker from Geoscience Australia explain how technology used by the Queensland Government to develop the salinity hazard maps and other maps used in catchment management planning were based on old, outdated technology. I queried this during the question session at the conference and received the reply that the Queensland scientists who put the original maps together were not skilled in the technology that they were using.

This includes the salinity hazard map which Premier Beattie said had been endorsed by the CSIRO—a map used to regulate vegetation management and calculate insurance premiums.

Six years on, most of the $1.4 billion has been spent and an increasing number of scientists are claiming, not that they have fixed the salinity problem, but rather that the assessment, and the hazard mapping that followed, grossly exaggerated the extent of the problem.

John Passioura from CSIRO wrote in a review paper published late last year, 'From Propaganda to Practicalities—the progressive evolution of the salinity debate' that, 'Our only defence against the charge of charlatanism is that before deceiving others, we have taken great pains to deceive ourselves'. In the paper, he explains that:

> Remote sensing techniques, especially aerial electromagnetics coupled with good ground-truthing, were revealing great variation below ground in the occurrence of saline aquifers, both laterally and vertically. The metaphor of the 'silent flood', the widespread rapidly-rising uniformly-saline watertable that is going to take out millions of hectares of our most productive agricultural land, was therefore being questioned—not by the mass media, who embraced it with the macabre fascination that goes with gothic horror novels, but by experienced observers of landscapes and of hydrographs.

About 2 million hectares, or 0.4 per cent of all farmland is affected by salinity and most of this is in the Western Australian wheat belt. Programmes have been in place for many years to address this problem, but it is unclear how successful they have been. In eastern Australia, when the Murray–Darling Basin Commission started constructing salt interception schemes in the early 1980s, salt levels were rising in the Murray River and the area at risk of irrigation and dryland salinity was spreading. But farmers working with clever agronomists and engineers had effectively addressed many of these issues by the late 1990s. Dryland and irrigation salinity remains a problem, but there is evidence to suggest it was reducing in extent by the late 1990s.

So why did so many scientists go to so much trouble to convince themselves of an impending disaster in the late 1990s? Why did the National Farmers Federation risk the reputation of its farmers when it pleaded for $65 billion? The Queensland Government appears to have grossly overstated the extent of its actual and projected salinity problem, because it didn't want to miss out on Federal Government funding promised through the National Action Plan for Salinity and Water Quality.

The Australian media is currently fixated on the AWB scandal and there have been cries that the Australian public should care more. There have been claims that the AWB story hasn't gained traction with the average Australian because we accept that bribes are part of doing business in many overseas countries.

Should the average Australian care that $1.4 billion was secured to fund environmental works on the basis of nonsense predictions? Some in the science community have argued that they were simply being too pessimistic when they accepted the conclusion that 17 million hectares of land could be lost to dryland salinity. But if a Royal Commission along the lines of the Cole inquiry started examining the evidence, the 'salinity science' and 'salinity maps' would be exposed as works of propaganda rather than science.

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