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DRYLAND SALINITY AS SEEN ON TV

The most publicised example of dryland salinity in NSW occurs at Dicks Creek just outside the ACT. This has long been used to illustrate the applicability of the rising groundwater model and the seriousness of the dryland salinity problem. The site is routinely visited by tours with the next stop being a site where the salinity problem is identified as having been solved through revegetation. Prince Charles has taken the tour and Mr Carr used the site as a backdrop for an announcement of new initiatives to address the environment.

With the rising groundwater model tree clearing on hills is said to increase the percolation to groundwater with the adverse salinity occurring through this water rising to the surface on the plains. The rising water is said to bring salt to the surface from sub-surface stores. The water and salt are generally said to move vertically upwards on the plains although it is seldom clear whether the rising relates to upward movement or a failure to drain. However, in drained landscapes upward movement is necessary for subsurface salt stores on the plains to be bought to the surface.

A photograph of the highly publicised site (Fig. 1) shows appreciable woody vegetation on the hills. Moreover, those familiar with landscape hydrology recognise that the water is draining down the hill slope over and through the soil. There is an incised drainage gully which drains water from the soil profile and prevents water from moving vertically upward. The water associated with the impact is not part of any groundwater system and the flow is primarily lateral with all vertical movement being down.

Further issues arise when measurements are obtained of salinity. The electrical conductivity (EC) of a 1:5 soil water suspension is around 2.9 ms/cm for the surface soil and 2.3 ms/cm for the subsoil. There is excess salt but the agricultural rating for such levels is slightly saline with yields of sensitive crops being affected.

The land degradation at the site has arisen through grazing. Livestock have disturbed the surface soil and the lateral flow of water down the slope has eroded the dispersible soil. It is a typical example of hill slope erosion where the erosion is occurring through seepage of water through the soil as well as surface runoff. Salt is an issue but in terms of composition rather than amount with sodium promoting the dispersion of clay.

The issue is why the misrepresentation, particularly given the observations reported by Geoff Taylor (University of NSW) and Brian Tunstall (ERIC) at a symposium *Surface Mapping Using Geophysics* at the University of Sydney in November 2001. The separate studies identified that adverse salinity in the Dicks Creek region as being primarily associated with lateral movement along geological unconformities rather than a rising groundwater system.

Passioura (2005)[1] summarises the situation with public science addressing dryland salinity.

[1] Passioura, J. (2005) Epilogue: from propaganda to practicalities – the progressive evolution of the salinity debate. Aust. J. Expt. Agric. 45, 1503-06.

Our only defence against the charge of charlatanry is that before deceiving others we have taken great pains to deceive ourselves.

This identifies that the deceptions associated with dryland salinity have arisen from public research scientists. The difficulty with the suggested defence is that self deceit is a fundamental characteristic of charlatanry. As self deceit is integral to charlatanry it is no defence and the comment attempts to justify the unjustifiable.

This situation is evidenced by another quote from the paper.

The way ahead is to ensure that what we write as professionals is subject to external peer review as standard practice, and that what we tell the general community, the media, and the policy institutions, is based on material that has passed through this filter.

This conclusion is based on the unsubstantiated suggestion that the overly optimistic and pessimistic views on dryland salinity have been developed and promulgated because of a lack of peer review. It is suggested that establishment scientists are not to blame despite their identified involvement in scientific deception.

The situation is that censorship associated with peer review has been used to suppress and dismiss views of dryland salinity that do not accord with those promoted by public scientists and the administrators that fund them. Public scientists are only changing their views as they discover what has previously been presented by independent scientists. Censorship is being used to maintain positions and deny the community opportunities to apply valid and cost effective approaches to addressing dryland salinity.

Fig. 1 Soil erosion at Dicks Creek