

Sub no 60

Salinity Inquiry
Submission No. ...60.....

**Submission to the House of Representatives Standing Committee on
Science and Innovation Parliamentary Select Committee on Salinity**

29th October 2003

Catherine Cornish; Committee Secretary,
House of Representatives
Standing Committee on Science and Technology,

**Re: Inquiry into the Coordination of Science to Combat
the Nation's Salinity Problem: A supplementary document.**

Dear Madam,

I would like to thank the Committee for the invitation and opportunity to make this submission of expressing my views on this most critical environmental threat; dryland salinity.

Dryland salinity is a major environmental problem. It affects many semi-arid and arid landscapes in Australia. It is a complex problem involving; water/rock (sediment or soil) interaction, changes in the water budget, and changes in the hydrogeochemical cycle of soluble elements. Dryland salinity is exclusively associated with the chemical evolution of flowing groundwater and sequential mobilisation of soluble salts stored within the subsurface. Soil salinisation is due to three factors: a source of salt (present in the rock mass), a transport medium (groundwater) and the depositional

environment (soil). A lack of one of these factors will restrict the development of dryland salinity. Often the lack of background environmental knowledge leads to the misinterpretation of the salt source and therefore leads to a misinterpretation of the origin of salinity. A follow on effect is the incorrect selection of management options. As long as the source of salt is unidentified, the problem is far from being solved. The priority in the study of salinisation by research institutions and government organisations has been on the remediating the effects of salinity. Many studies only describe the after effects of salinity, and forget to address the causes.

The development of dryland salinity is associated with salt. This is stored in the soil compartment of the landscape and later mobilised by flowing groundwater. Saline groundwater that discharges on the ground surface, will eventually cause land degradation. This is only a visual manifestation of what are complex underground processes. What we do see, we often describe as the effect of some undefined processes and this is incorrect. The most commonly adopted origin of salinisation by evaporation is only the effect of evaporation of groundwater discharging and carrying salt from an unknown source. This is not the origin of salinity. It is exclusively a visual manifestation of what saline water can do to the ground surface.

The first issue that must be faced by investigators is that dryland salinity is a complex problem. After more than 30 years of scientific research, the problem is still not resolved. This is not because Australia is lacking talented scientists and researchers, it is because the problem is misunderstood due to its complexity. If the problem is seen as simple, then the explanations are simple. Lack of understanding at present is brought about because the problem is far from simple, and roots causes need to be revisited by researchers.

Secondly there is a lack of funding. We need to return to looking at the fundamentals, the root causes of salinisation. Research money is going into the effects of salinity and monitoring, not into the fundamentals. This does not find the source of salt and origin of salinity, but this may be because certain groups think they have solved the fundamental problems – they have not.

The complexity of the problem including the geological environment, hydrogeology, geochemistry, climate and climate changes, soil, land use, human activities, etc., are never investigated concurrently. Some researchers see the complexity of the problem, but do not have enough funding for the research. However, large government and research organisations, which are heavily funded, do not adequately investigate this complex problem. They favour the simplistic view of the development of dryland salinity and do not solve the problem, which may have been solved years ago if proper scientific research was undertaken.

It is a challenge to start any investigation of dryland salinity. However, not everyone wants to accept this challenge. Under the pressure by farmers and the community seeking a quick solution for the problem, very often research is concentrated on providing descriptive information about the dryland salinity site and finding rapid management solutions. This is usually written in layman's English and a lack of scientific terms and knowledge is invoked. Why? In most cases investigators do not understand the problem themselves due to a lack of scientific knowledge which prevents them carrying out a proper investigation.

Poor exchange of scientific knowledge in relation to dryland salinity, also does not help research organisations acquire understanding and solutions to the problem. There is not an established scientific body which will coordinate research of all organisations and researchers across Australia. Established for this purpose large scientific and government organisations (CSIRO, DLWC, etc.) are acquiring the funding, but not the cooperation of other researchers, and/or small research groups, and organisations.

The research community needs more funding for basic research to study dryland salinity to solve this nations major environmental problem. Funding must be distributed evenly between different research communities, and not only supported by the government CSIRO, Land and Water Australia and Bureau of Rural Sciences, which over years have received most of the funding but have done little to solve the problem.

The challenge now is to understand not only the visual effects of dryland salinity but also gain knowledge about the source (s) of salt, the origin of salinity, and mechanisms which are responsible for the development of environmental degradation.

I thank the Committee for the opportunity to express these views. The Australian community is not seeking just solutions to salinity problems that need to be properly managed, but is also looking for water, soil resources, and agricultural productivity which depends on a proper plenitude of research and solutions to the problem.