

# RESEARCH DIRECTIONS

## Saving Soil from Sodium Salts

**Dr Loo-Teck Ng from the School of Natural Sciences is exploring new technologies for reducing sodium ion concentrations in soil through an Environmental Trust Environmental Research Program Seeding Grant Project.**

'As clean drinking water is becoming scarce due to reasons such as increase in population and drought, many government authorities have resorted to recycled water for irrigation' says Dr Ng. 'However, recycled water is known to contain high levels of sodium ions, and when used for irrigation, this can contribute to soil salinity and create problems by breaking down soil structure, making the soil water-logged and putting growing plants under stress which decreases crop yields. This project will explore the use of hydrogels impregnated with a water-soluble calcium salt as a longer-term approach to improve soil salinity. Hydrogels are polymers capable of absorbing water and expanding to more than 100 times their original size and returning to their original size when completely dehydrated. Based on this unique property of absorbing and releasing water, it is anticipated that neutral hydrogels embedded with soluble calcium salts will be able to deliver calcium ions into sodic soils that have been irrigated with recycled water to improve the soil salinity. This is expected to assist plants to thrive and lead to increased crop yields while conserving water.'

Using sophisticated chemical and physical analysis techniques, Dr Ng will test different types of soil (clay, loam, sandy soils, and combinations of these) that have been incorporated with calcium-based hydrogels and treated with recycled water. Results from these tests will be compared to the same sorts of soils without the hydrogel, or that have been irrigated with non-recycled water.



This project will be of significant value to Australian suburban gardeners and agriculturalists who use recycled water to irrigate their soils. It is expected to reduce the application of fertilisers and the use of valuable drinking water for irrigation, thus improving the economy and creating a cleaner environment for all Australians.

**Project Title:** Ameliorating soil sodicity using calcium salt incorporated hydrogels  
**Funding has been set at:** \$19,950  
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