

## Trees & Production: Linking Scattered Trees into Production Landscapes

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Scattered paddock trees are a common sight across many areas of the grazing landscape and offer a valuable natural resource both above- and below-ground. It has been estimated, however, that within 40 to 185 years these trees could be lost from the Australian landscape (Gibbons *et al.* 2008). This PhD project has been developed to understand the roles these scattered trees play in grazing environments. This will enable strategic incorporation of this valuable natural resource into landscapes in ways that benefit both ecological and production outcomes.

This project has demonstrated, that in the southern hemisphere, a patch of 'greener' pasture growth common to the south-southeast of a single tree. This trend is consistent across tree species and landscape positions. This suggests that the tree's shade and any associated affects may be the causative effect of this trend. To test this hypothesis a shade experiment has been developed to examine the effect of shade (light reduction), and the associated affects of shade on soil moisture and temperature, on pasture growth. Because of the complex movement of shade around a single tree the experiment was designed to reflect four changing sun/shade zones (see figure for details).

Soil temperature and moisture are currently being monitored at 5 minute intervals using the EM50 logger across the changing shade zones to examine if these factors are associated with changes in plant growth. In addition another logger is being concurrently utilised to monitor the site's weather changes (PAR under the shade and in the full sun, rainfall, and air temperature and humidity). This information will be of considerable value for elucidating if and why shade influences pasture biomass, and will assist in the development of design strategies for paddock tree incorporation.

### Related Paper

Barnes P, Wilson BR, Nadolny C, Grows I (2009) The influence of individual native trees and grazing regime on soil properties and groundcover patterns in a temperate landscape of New South Wales, Australia *The Rangeland Journal* **31**, 405-415.

### Reference

Gibbons P, Lindenmayer DB, Fischer J, Manning AD, Weinberg A, Seddon J, Ryan P, Barrett G (2008) The Future of Scattered Trees in Agricultural Landscapes. *Conservation Biology* **22**, 1309-1319.

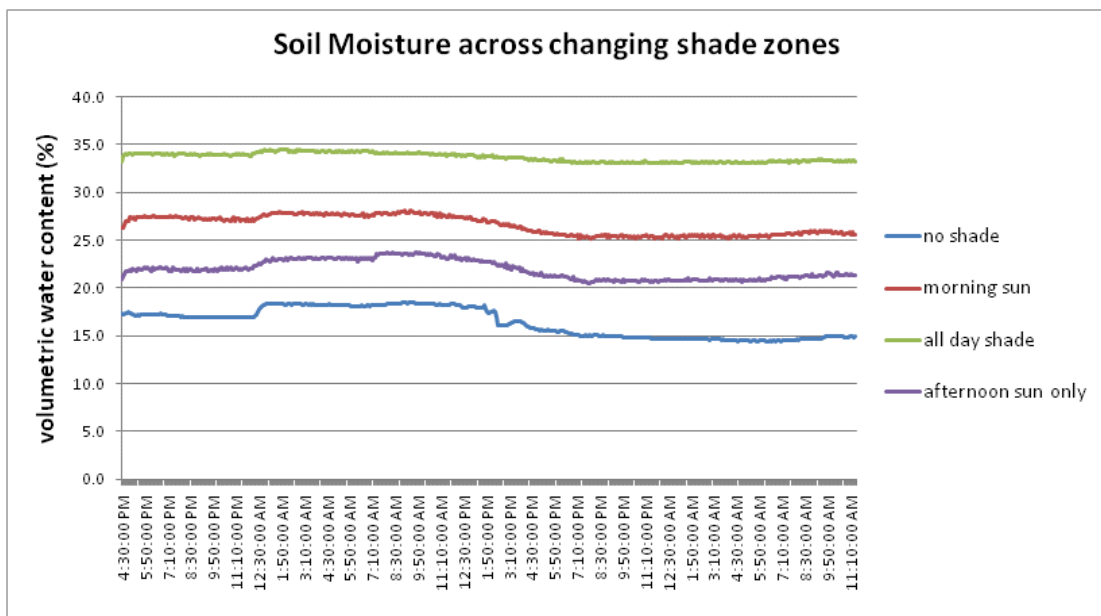
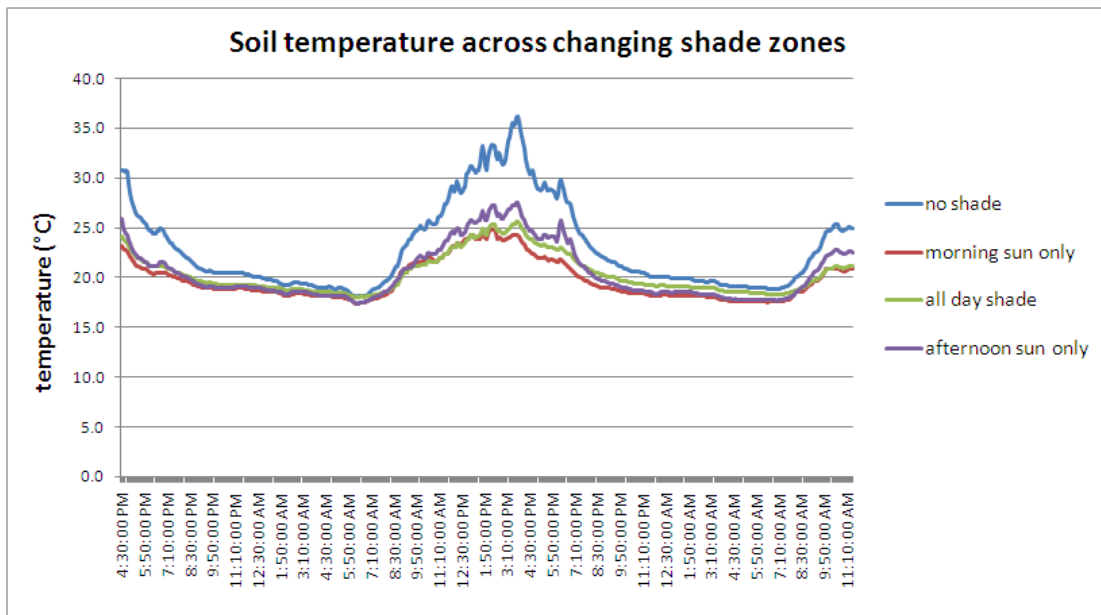


Figure: An example of diurnal soil temperature and volumetric water content changes across the 4 changing shade zones

