CSP93C Executive Summary

A plain English summary

Irrigation is an important component of successful production of cotton. The irrigation water is scarce and the demand for irrigation water is continuously increasing as the area under irrigation expands. With increasing demand, on-farm water use efficiency has become an important issue due to competition between domestic, industrial, livestock and irrigation as well as environmental. This has imposed increased significance on water use efficiency of Australian cotton farms beyond the need to maximise returns from a limited resource.

The purpose of this project was to assess the current status of water use efficiency of the cotton industry at both crop and farm level using historical water management information from commercial producers and existing farming system trials. The information gathered from producers included neutron moisture meter readings, dates of sowing, harvesting and irrigation, yield, amount of irrigation water inputs and weather data. Data from existing farming system trails at ACRI and the CRC farming system sites were used to investigate the effect of farming systems on cotton crop water use efficiency.

Around 200 individual sets of field data were analysed to estimate seasonal evapotranspiration and the actual fraction of irrigation water used by the crop. Water inputs at the farm level, actual crop water use, production efficiencies of water and quantitative water efficiencies at the farm level were calculated for the major cotton growing areas. The observed average crop water use efficiency was 2.5 kg/mm/ha (1.1 Bales/ML) and the average farm level irrigation efficiency was 57% but both showed a large variability. Despite the high efficiency in terms of return per unit of water used there is room for further improvement in crop water use efficiency and irrigation efficiency in many cotton farms. Using the knowledge and experience gained from this project, an integrated water management system will be developed to improve the water use efficiency in cotton farms.