University of Southern Queensland

Centre for Agricultural Engineering

Irrigation and Water Management

Vision

To modernise irrigation and water management practices throughout the world to improve the profitability, sustainability and socio-economic well-being of rural industries and communities.

Overview

For over 25 years, the centre has been working with industry to develop more sustainable and efficient ways of using water to grow crops and support the environment. Irrigation research is conducted across a wide variety of agricultural industries nationally and internationally.

- Recognised internationally as a leader in precision irrigation research.
- A recent key activity has been the development of smart automated surface and pressurised irrigations systems.
- We work closely with the cotton, sugar and dairy industries, as well as a range of commercial companies.
- Benefits achieved include reduced reliance on labour for irrigation management, improved crop production, improved irrigation efficiency, reduced pumping energy costs and reduced environmental impact.
- Technical support and irrigation training is delivered to local industry groups and international organisations.
- Development of decision support tools to improve web enabled devices in irrigation management has been ongoing.
- We work internationally to provide small scale farmers with knowledge and skills to adopt new irrigation technologies to improve crop productivity and sustainability.

Research Highlights

Through the support of our research partners, we have delivered significant benefits to farming including:

- Technologies for automation of surface irrigation systems and large mobile irrigation machines. Platforms developed allow real time adaptive management of irrigation strategies, integrating crop production models, irrigation and nutrient management strategies, soil and crop sensors, and control systems.
- Decision support tools to improve resource efficiency, including smart phone Apps for irrigation scheduling, soil moisture monitoring, pump and irrigation system auditing and performance monitoring and benchmarking.
- International projects to improve irrigation and soil and water management in developing communities to alleviate poverty and enhance food security.

Research Projects

- Improving water use for dry season agriculture by marginal and tenant farmers in the Eastern Gangetic Plains. Funded by ACIAR (Australian Centre for International Agricultural Research).
- Developing precise and automated irrigation control systems. Collaborative funding provided through Federal Government, CRDC (Cotton Research Development Corporation), SRA (Sugar Research Australia) and Dairy Australia.
- Integrating soil and water management in vegetable production in Lao PDR and Cambodia with Funding from ACIAR (Australian Centre for International Agricultural Research).
- Developing new smart phone based systems for tracking soil water availability in a collaborative funding partnership with CSIRO and DAWR (Department of Agriculture and Water Resources).
- Assessing the performance of evaporation control products for storage dams for private industry. Private industry funding.
- Development of decision support tools and smart phone apps for improved irrigation and energy management with the Queensland Government and industry groups contributing. Queensland Government and industry groups contribute to funding for this development.
- Improved irrigation system selection and operation for increased productivity and profitability with funding provided by SRA (Sugar Research Australia).

Research Impact

- Development and implementation of IrriMATE™ technology which has led to significant savings for one of Australia's largest rural export earners, the cotton industry. This predictive software tool and methodology was developed to optimise surface irrigation practices where which commercialised through a license agreement.
- International projects funded through ACIAR in countries including India, Nepal, Bangladesh, Cambodia and Laos focus on improving dry season agriculture for marginal and tenant farmers, and integrated soil and water management in vegetable production. The demonstrated outcomes include providing local landholders with the skills, equipment and confidence to adopt new technologies to improve their productivity and create a viable farming future.

Want to know more?

07 4631 1871
usq.edu.au/research
Follow us @caeusq
cae.admin@usq.edu.au

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