CQUniversity and MEDIFARM - Medicinal Crop Research

CQUniversity is Northern Australia’s agricultural innovator.

Our agricultural research team specialises in working with its communities to assess and support new agricultural innovations across our region and around the world.

While this is primarily focused on three core areas – horticulture, non-invasive sensor development, and precision livestock technologies – CQUniversity has an exceptional record in assessing new and novel crops for their suitability to production in new areas. This has included assessing dryland rice for production in North Queensland and assessing the performance of high-value spice crops, such as black sesame, for production in broadacre systems.

Our experience in non-traditional crop research also includes a strong track record in assessing medicinal poppy performance in Tasmania and industrial hemp in Queensland.

Professor Philip Brown, who heads CQUniversity’s Institute for Future Farming Systems (IFFS), led research projects in Tasmania which identified key yield and quality determinants for opium poppy production.

And industrial hemp research led by Dr Surya Bhattarai identified that the photoperiodic sensitivity of the crop could be controlled by the activation or deactivation of genes triggered by the change in light duration perceived by photoreceptive pigments. By improving the understanding of the mechanisms of photoperiodicity and sexual inheritance, Dr Bhattarai contributed to advances in breeding and crop management for commercial cultivation.
Research that delivers for Regional Australia

CQUnderstanding is internationally recognised for its specialist skills in the development of non-invasive, precision management tools, with its research independently assessed as above world class in the last two Excellence in Research for Australia (ERA) assessments.

In mid 2015 CQUnderstanding established its flagship Institute for Future Farming Systems (IFFS) to drive the delivery of new agricultural innovations, and provide an environment for practical, skills-based training and research-led teaching delivered by industry experts.

Importantly, its research is grounded in industry needs – the Institute’s researchers live and work in the communities they serve, with staff working closely with industry partners and primary producers in Bundaberg (Australia’s largest vegetable producing region) and Rockhampton (Australia’s beef capital).

Among its many successes have been the development of the widely adopted hand-held NIRS (near infrared spectrometry) gun, which assesses the ripeness of fruit, bolstering crop productivity through optimised harvest timing and improved fruit quality. In the livestock sector, the research team has developed automated data gathering tools to monitor the condition of individual animals and assist graziers make more informed production and marketing decisions.

The Institute utilises world-class facilities including the laboratories at the Central Queensland Innovation Research Precinct and the 3200-hectare Belmont Research Station.

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**Non-Invasive Sensors:** This cluster is focussed on the development of new sensor hardware and applications of existing sensors that can assess agricultural commodities and advance productivity without damaging the product.

**Precision Livestock Management:** The PLM team specialises in the use of cutting edge technology to automatically gather precise phenotypic data such as animal liveweight, pregnancy status and parentage, as well as improve the understanding of animal behaviours.

**Precision Horticulture:** In partnership with the Queensland Department of Agriculture & Fisheries, this team is delivering innovative new farming practices for the state’s major horticultural crops.

[www.cqu.edu.au](http://www.cqu.edu.au)
The IFFS medicinal cropping team

The CQU University Institute for Future Systems is headed by Director Phil Brown, who works with a team of 30 research and teaching staff as well as collaborating with numerous CQU University scientists from across a range of related disciplines. In the field of medicinal crops, the research team is comprised of Prof. Brown, Assoc. Prof. Simon White and Dr Surya Bhattarai.

IFFS and Precision Horticulture team leader Professor Phil Brown

Prof. Phil Brown leads both the IFFS and its Precision Horticulture team. The horticulture team works in partnership with the Queensland Department of Agriculture & Fisheries, and is focussed on improving the productivity and profitability of Queensland’s major horticultural commodities. It seeks to undertake research that will deliver innovative future farming practices and has the potential to make a substantial impact on the state economy. It is currently delivering major projects improving the sweet potato, chilli and tomato industries. Before joining CQU University, Prof. Brown led a series of opium poppy research projects in Tasmania.

Associate Professor Simon White

Dr Simon White joined CQU in 2017 bringing with him more than 20 years’ experience in agricultural research programs from working for various state and federal government organisations, universities, research development corporations and multi-national companies. Dr White’s areas of research expertise includes irrigation systems evaluations, water management studies, climate risk impacts, soil management and rehabilitation, food security in a developing country context and crop agronomy improvements. His current focus within the IFFS is in precision horticulture and the advancement of innovative future farming practices. Dr White understands the needs of the agricultural sector when it comes to practical and useful implementation of ag-tech innovations and integration of remote sensing in crop monitoring and management.

Dr Surya Bhattarai

Dr Bhattarai is a practical crop physiologist with extensive experience of applied agricultural research focussed on crop adaption to abiotic stresses. His research trials have assessed a range of novel crops for this region including industrial hemp, dryland rice and black sesame, as well as traditional broadacre crops including cereals, pulses, cotton and sugarcane. His work has focussed on improving crop water productivity, soil/nutrient management, and heat tolerance in tropical crops.

• For more information about the CQU University Institute of Future Farming Systems, contact Michael Thomson – 07 4930 6884 or m.thomson@cqu.edu.au
Locally Focussed, Delivering Globally

CQUniversity undertakes agricultural research at sites around Australia and overseas, with major government, corporate and private agricultural agencies.

Our Research Partners