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Prawn farming is big business – and supported by cutting-edge research (Credit: CSIRO)

Innovative aquaculture

Research hub boosts Australian prawn industry

Aquaculture is one of the fastest growing food production systems in the world, surpassing beef production in 2011.

Securing Australia's position in the world supply of sustainable seafood means being at the cutting-edge of research, particularly when it comes to breeding the healthiest, best growing species.

That's why the Australian Research Council has invested $5 million of funding into the Australian Research Council Industrial Transformation Research Hub (ARC ITRH) for Advanced Prawn Breeding, based at James Cook University (JCU) in Townsville.

It is a consortium involving researchers from JCU, CSIRO, Australian Genome Research Facility (AGRF), University of Sydney and Vlaams Instituut voor Biotechnologie, as well as Australia's largest commercial prawn farming company, Seafarms Group.

"The project is a collaboration between researchers and the aquaculture industry in joint pursuit of innovation," says AGRF Director of Science and Technology Dr Kirby Siemering.

The Hub, which was launched in May 2015, supports research that integrates genomics with a traditional breeding programme for the black tiger prawn. The aim is to discover genetic markers linked to commercially important growth, disease and physiological traits.

The research team will gather the genomic resources and commercial phenotypic data, applied with pioneering genetic and genomic selection methodologies. It is set to make this the most advanced improvement program for any prawn species globally.

A key milestone of the program is a comprehensive draft genome and tissue-specific transcriptome of the black tiger prawn. This will provide information essential to the downstream development of advanced genomic breeding programs, along with the capacity to better understand gene function through detailed comparative genomic studies.

Commercially, the project will support Seafarms Group's ambitious venture to establish the world's largest prawn farms in northern Australia – 100,000 tonnes of prawns produced annually, grown in 10,000 hectares of ponds.

It is a leading example of a nationally collaborative approach to genomics research in the Australian agricultural industry, delivering international competitiveness alongside new discovery.

"Ultimately this work will benefit both Australia's research capabilities and its ability to compete globally in the aquaculture industry, which is very exciting for everyone involved," said Dr Siemering.