CSIRO

Aquaculture
research

Improving the quality, productivity, profitability and sustainability of the Australian and global aquaculture industry.

CSIRO Agriculture and Food aims to boost the value, competitiveness and sustainability of Australia's AUD$1 billion aquaculture industry. We have worked directly with the aquaculture industry in Australia and overseas for more than 25 years, concentrating on pre-farm gate innovations and delivery.

Our research improves food production in aquaculture species such as finfish, crustaceans and molluscs. It assists the industry to keep stocks healthier, increase productivity, and deliver the highest quality products to Australian consumers.

Our work helps the industry to compete internationally, work efficiently, and secure a sustainable future.

Working with CSIRO, Australia's national science agency, provides access to world-class research capabilities across the value chain, beyond the farm, in digital technologies, and all the way to your consumer's plate.

Applied breeding to develop selective breeding programs for finfish, molluscs and crustaceans with our aquaculture industry partners.


Applied breeding with the Pacific oyster industry has increased natural resistance to Pacific Oyster Mortality Syndrome (POMS), reducing stock losses and increasing productivity.

We're improving growth and productivity through selective breeding of genetically elite white legged shrimp with commercial partner Viet-Uc for the Vietnamese grow-out industry.

Genomic prediction is creating a more efficient and sustainable Atlantic salmon industry through selective breeding to grow fish faster and with fewer disease management interventions.
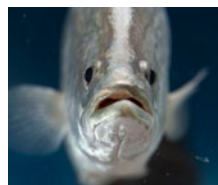

We're working with the finfish industries of iconic Australian species barramundi and Murray cod to breed for superior performance.

Multi-omics technologies are being applied to discover the functional basis of commercially relevant traits to drive future breakthrough technologies.


Our focus is to functionally characterise the molecular mechanisms of underlying traits such as sex determination, maturation, reproduction, stress and product quality.
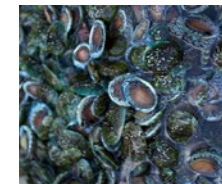
Our work has annotated the genomes of salmon, black tiger prawn and abalone to reveal genomic regulatory mechanisms and resolve complex host-pathogen interactions.

We are actively developing biomarkers and gene regulatory networks to resolve the molecular basis of environmental stress and functional feed ingredients.
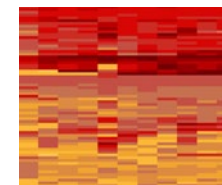
The team harbours capabilities that span genomics, transcriptomics, proteomics, metabolomics, epigenetics and associated bioinformatic analysis pipelines.

Inputs → Production → Processing → Distribution and marketing → Customer

Health and welfare improvements through sustainable production, product quality, and novel solutions to manage disease and improve animal resilience.

By developing a deeper understanding of diseases through novel tools and intervention strategies, we are maximising gill health and enabling best practice health management.

We develop smart monitoring, surveillance and data management systems that help farmers sustainably manage the health and biosecurity of key species and their environment.
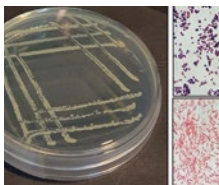
Our work to understand microbiomes and the capacity of probiotics and novel feed ingredients is improving the resilience of shrimp and fish species against common diseases.

Our novel, refined diagnostic assays (such as Shrimp MultiPath) focus on key aquaculture pathogens, providing cutting-edge and cost-effective support for improved health management interventions.

Production systems that improve efficiencies of high-value species with a strong focus on novel technologies, quality seed supply, and production planning and management strategies.

Our whole-of-system machine learning, sensor technology and wearable data collection devices are advancing prawn farming by providing real time information, forecasting and decision support tools.

We're refining high-value finfish and crustacean hatchery production. Our research explores broodstock conditioning and maturation, juvenile/fingerling production and quality control.

We're optimising biofloc technology (water quality, microbial management, feeding, biosecurity and nursery systems) and integrated farming models to boost sustainability and profitability.

Our work assists aquaculture business development, production planning and management at farm and production levels via a value chain approach, sustainability indicators, and economics.

Nutrition to develop sustainable diets that increase productivity, feeding efficiency, health and product quality for the Aquaculture industry.

Our team has leading expertise in finfish and crustacean nutrition, covering aspects such as species performance, digestive physiology, nutrient retention and nutritional condition to meet client needs.

We have a team of formulators and laboratory scale feed extruders, giving us the ability to develop research in extrusion technology and produce industry relevant feeds.
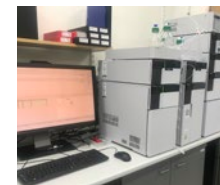
Our world-class laboratories house instruments that measure and predict biochemical properties of feeds and biological materials.

Our feed research assesses the palatability, digestibility and utilisation of ingredients, refines nutritional requirements, and develops novel formulations and additives for diverse species.

Collaboration for impact

Working with CSIRO Agriculture and Food provides access to comprehensive scientific and industry expertise from the gene to the plate.

Our diverse range of people and partnerships span Australia and 25 countries, fostering a shared vision to create measurable economic, environmental and social impact.

farmers | agribusiness | industry | communities | researchers | universities
philanthropic organisations | research and development corporations
national and international governments

As Australia's national science agency and innovation catalyst, CSIRO is solving the greatest challenges through innovative science and technology.

CSIRO. Unlocking a better future for everyone.