

ABFA CALL FOR APPLICATIONS

Closing date: 7 October 2018

Priority	Gut health of farmed barramundi juveniles: Stage 1) Identify where damage occurs by monitoring gut function
Need	<p>An unknown non-bacterial factor is causing intestinal dysfunction in juvenile farmed Barramundi, affecting performance and triggering bacterial enteritis.</p> <p>Histological samples from recent years have indicated that there is inflammation and enteritis in the gut of many farmed barramundi fingerlings, with either very low or no bacterial presence. This has been seen in fingerlings of varied sizes but is not a known issue in adult Barramundi. These observations have anecdotally been reported by at least 3 barramundi hatcheries/nurseries from different regions around Australia.</p> <p>Enteritis effects gut health and function and does develop into large numbers of mortalities. Growth, performance and health of barramundi juveniles is being affected by this enteritis.</p> <p>Multiple vets have suggested that a non-bacterial factor is compromising the integrity of the gut which leads to a secondary bacterial infection following translocation, stress or poor water quality. This may present severely with mortalities or moderately with reduced/plateaued feed rates. In some instances this may only present as reduced performance/feed intake following translocation. The effects on production from this disease are significant.</p> <p>This highlights the need for a thorough research investigation into gut health of farmed barramundi juveniles. This call is for STAGE 1 of the following proposed schedule of work. Stages 2 and 3 will be dependent on stage 1.</p> <p>Stage 1) Identify where damage occurs by monitoring gut function</p> <p>Methods to quantify and evaluate gut health throughout gut development is required and will be used to identify the causative agent(s) (biotoxin/feed ingredient/microbe imbalance/rearing practices) and pinpoint the phase of development where the enteritis occurs:</p> <ul style="list-style-type: none">- Pin point age/period where damage occurs by monitoring gut function, permeability and the intestinal microbiome.- Establish whether damage occurs as a single phase or can re-occur later. <p>Future research may include:</p> <p>Stage 2) Quantify the sensitivity of juvenile Barramundi to soya saponins and other veg additives. (If this is found to be a likely factor.) Dietary soya saponins are known to cause enteritis in other species such as Salmon, Yellowtail and Zebrafish. What is the sensitivity of Barra to soya saponins or other vegetable additives, and at what age are their guts developed enough to cope/tolerate inclusion (very important for future soy/sustainable diets)?</p>

	Stage 3) Establish changes to industry practises based on this data. E.g. Develop specific weaning/rearing diets to help with gut health and function. Change husbandry practises to assist gut health.
Planned outcomes	Planned outcomes of stage 1: <ul style="list-style-type: none"> - Improved understanding of Barramundi gut health. - Development of techniques to assess gut health in farmed barramundi providing an understanding of how farming practises are affecting gut health.
Funding partners	ABFA IPA. Maximum funding available to invest in Stage 1 is \$50,000

Priority	Improve harvest and slaughter of farmed Barramundi to minimise fish stress, and thereby improve quality for the market place and improve fish welfare outcomes.
Need	<p>As stress during harvest and slaughter can have significant impact on flesh quality it is in the commercial interest of aquaculture operators to ensure harvest and slaughter practices are humane and stress on fish is minimised. Current practices for slaughter of farmed Barramundi use ice slurry.</p> <p>The sector has undertaken preliminary research to understand impacts of harvest and slaughter methods on stress, product quality and fish welfare. This work has touched on the use of rested harvest to reduce stress during the harvest procedure. Further investigation is needed into practical and cost-effective application of rested harvest on farms, together with understanding how practices can be improved, for example understanding optimal ice slurry amount, timing, and crowding; and determining impact on flesh quality indicators (e.g. flesh pH, blood glucose and lactate and blood pH).</p> <p>Complementary to this is the need to investigate impact on fish stress of direct ice transfer as a slaughter method. Further research could make use of EEG and ECG (combined with traditional behavioural and physiological measures) to investigate brain and heart activity of fish subjected to direct ice transfer.</p>
Planned outcomes	<p>A project application to address this need will build on prior research: 'Benchmarking harvest methodologies in the Australian barramundi aquaculture industry – impacts on stress, product quality and fish welfare', (Wilkinson, R. 2012).</p> <p>Project outputs should (a) provide Barramundi producers with information on logistically and economically feasible ways to improve harvest and slaughter</p>

	practices and (b) determine impact of practices on welfare and flesh quality indicators.
Funding partners	ABFA IPA. Maximum funding available to invest is \$90,000