

## BlueBio Cofund

EATiP is providing input for the 2<sup>nd</sup> call of the BlueBio, as part of the ERA-NET Co-Fund on Blue Bioeconomy under H2020. Participating countries are: Belgium, Croatia, Denmark, Estonia, Finland, Germany, Greece, Iceland, Ireland, Italy, Malta, Norway, Portugal, Romania, Spain, and Sweden. Industry involvement is mandatory.

The input is related to Priority area 2: Exploring improvements in fisheries and aquaculture.

In the 1<sup>st</sup> call, the priorities within this area were defined as follows:

Aquatic biomass can ensure future food and nutrition security, supply for aquatic commodities and European competitiveness by sustainably cultivating, harvesting and processing resources. Sustainable production and consumption of aquatic bioproducts with reduced impact on the environment and climate can only be achieved if all actors work together, addressing and improving all activities along the value chain, from researchers and producers to end-users. New methods and technologies to improve production may require transdisciplinary approaches where further development of toolboxes and technologies may be an integrated part to ensure all three pillars of sustainability, economic, environmental and social - also known informally as profits, planet and people. These improvements shall contribute to meet consumer demands.

Projects should seek to:

Apply a combination of methods, processes, technologies and novel resources such as biotechnology to: create innovative feeds; improve brood stocks; improve biosecurity; define stock baselines; assess stock

### **EATiP recommendations**

As an industry-driven, multi-stakeholder platform, EATiP represents the consensus position of its membership, consisting of individual members throughout the aquaculture value chain and of its regional/national Mirror Platforms. Reaching the vision of aquaculture as full-fledged part of the blue bioeconomy in Europe and as the most promising approach to acquiring global food and nutrition security, requires the fulfilment of three major conditions: growth, sustainability and innovation. On the issues of animal breeding, EATiP is collaborating with FABRE TP.

Specific recommendations related to Blue Biotechnology include:

1. High-precision breeding: implementation of physiological biosensors, breeding programmes using new molecular tools, and integrating Big Data, IoT, AI, Deep Learning into husbandry practices
  - a. In-depth understanding of the immune and metabolic system of aquaculture organisms (Digital Twin)
  - b. Selective breeding to target important traits: adaptation to alternative feed sources, disease resistance, feed efficiency, fillet yield, flesh quality, nutritional profile
  - c. Identify and quantify genetic correlations between productive, disease resistance and welfare traits that will enforce synergies between traits and avoid unwanted effects of selective breeding for productivity traits
  - d. Genomics: genomic selection, genotyping techniques, high precision phenotyping methods, new breeding techniques such as CrispR

2. Development of alternative feed ingredients: investigate the potential of new ingredients from sources at lower trophic levels. Safety and reliability of the fish feed, and its effect on product quality are of critical importance.
  - a. Using side streams of gas (LNG, CO<sub>2</sub>), wood as a substrate for the cultivation of organisms
  - b. Cultivation of micro- and macroalgae, unicellular organisms, fungi with an optimised composition of fatty acids and/or proteins adapted to the dietary requirements of the fish
  - c. Establishment of biomarkers that are indicative of the nutritional status and the food conversion rate for assessing the potential of new ingredients
3. Measures to promote animal welfare and to prevent adverse health conditions: application of (immune)prophylaxis measures
  - a. Improve the understanding of host-pathogen interactions
  - b. Non-invasive monitoring measures of welfare indicators
  - c. Microbial control and microbiome management in hatcheries/RAS systems
4. Reaching of an acceptable environmental footprint:
  - a. Ecosystem-based management and governance
  - b. Genetic interaction with endemic species populations
5. Enable evolution towards a circular economy: improve the recovery of high-value waste (proteins and fish oils) into feed or additives
  - a. Effluents and sludge from production sites on land
  - b. By-products from aquaculture processing plants
  - c. Food/biological waste, by-products and energy from other Bioeconomy sectors and industries

A need was also expressed to promote cross-cutting issues on how to promote aquaculture innovation:

1. Promote open and inclusive dialogue: allocate new tools for knowledge and technology transfer, and support collaborative actions between industry (across the value chain), scientists and policy makers, as well as between experts across different disciplines.
2. Support projects with a high degree of industrial relevance

EATiP Secretariat

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