Insects – A valuable resource for a more Sustainable Aquaculture

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Framework:
Aquaculture is an efficient food production system able to produce large amounts of food in a relatively short period of time, which can help to respond to the challenge of a growing population. However, for farmed marine fish and shrimp, the dependence on fish meal and fish oil has contributed to the depletion of fish stocks and to the rise of feed prices. Currently used plant-based feed alternative ingredients do not present all the nutrients required for marine organisms and their intensive production has high environmental impacts. In this context, insects have been lately considered as viable ingredients for marine organisms feed. Insects are highly rich in proteins among other important nutrients and are more efficient food converters than other animals. Furthermore, they have low requirements for arable land and water, have low greenhouse gas emissions, which makes them a viable alternative as aquafeed ingredients towards a more Sustainable Aquaculture.

Aquaculture is the fastest growing sector of the food economy, increasing by more than 10% per year and currently already accounts for more than 50% of all shrimp/fish consumed (FAO 2018).

Feeding represents 40-60% of the total production costs in shrimp/fish farming.

Substantial effort has been expended over the past decades in evaluating a wide range of potential alternative ingredients to fishmeal and fish oil for use in aquaculture feeds (Turchini et al. 2009).

Those ingredients can generally be classified into those of either plant origin, terrestrial animal origin or single cell protein.

Conclusions:
• Insects are able to feed on low quality feeds, consuming less water, energy, occupying less arable land, emitting lower GHG emissions, and still produce high quality protein and other important nutrients, being one of the most sustainable ingredients for aquaculture feeds.
• For marine organisms this is not so straightforward, since insects lack omega-3 long chain polyunsaturated fatty acids.
• Several studies indicate that the nutritional composition of insects may be enhanced by the diet they feed upon.
• For all these reasons, insects can be crucial in contributing to a more Sustainable Aquaculture and to the challenge of feeding a growing world population.

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