

Preliminary environmental impact assessment of diets for the production of insect meal for feed in aquaculture

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INTRODUCTION

newRIFF project aims at exploring the possibility of replacing traditional protein sources in **rainbow** trout farm feeds with protein meal from two insect species (Hermetia illucens and Tenebrio molitor) bred on locally available waste matrices, including by-products of rice processing.





LIFE CYCLE ASSESSMENT



PRELIMINARY RESULTS

Preliminary results show that the carbon footprint of the four diets ranges from 0.1 to 0.4 kg CO₂ eq/kg substrate depending on the different inclusions of the various matrices.

The goal of this study is to assess the environmental impact of four isoproteic diets formulated in the project, combining food and feed waste and rice processing. For this purpose, the Life Cycle Analysis (LCA) methodology was applied. **Functional unit:** 1 kg of substrate **System boundary:** from cradle to farm gate **Inventory analysis:** primary data for rice byproducts, secondary data for the other ingredients, transports and waste processing.





By varying the transport from 30 to 100 km carbon footprint varies...

	Baseline	Diet 1	Diet 2	Diet 3	Diet 4
Δ	+9%	+8%	+10%	+8%	+2%



but considering the avoided impact for the management and treatment biowaste that is reused, the of carbon footprint decreases...

Rice husk

Feed waste

Other rice by-products

Coffee silvery film

	Baseline	Diet 1	Diet 2	Diet 3	Diet 4
Δ	-18%	-43%	-10%	-36%	-9%

Broken rice

Hazelnut film

Breading waste

Dry distillary stillage



NEXT STEPS

In the next steps, it will also be essential to assess the growth performance of insects based on diet and to extend the analysis, first to the life cycle of insect meal production and then to the life cycle of **trout** production using insect meal.

FURTHER INFORMATION



