

Environmentally Friendly Diets and Certification Issues for Sustainable Semi-intensive Coastal Aquaculture in the SEACASE Project

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Abstract

Sustainable methods of exploiting the coastal water bodies are possible through the association of conservation of wetlands with the development of extensive and semi-intensive farming. Nevertheless, the present production costs of traditional extensive and semi-intensive aquaculture systems in southern Europe are often too high to be a sustainable economic activity. The main goal of the European Commission (FP6) funded SEACASE project (www.seacase.org) is to develop effective tools for maintenance of competitiveness, productivity, profitability, and thus sustainability of extensive and semi-intensive aquaculture production in southern Europe, while minimizing its environmental impacts and improving the quality and public image of its products. Earthen ponds are the main production system for seabass and gilthead seabream in Portugal and in the Spanish province of Cádiz. In general, these are semi-intensive systems covering large areas, with production ranging from 0.5 to 1.5 kg/m² at the end of the production cycle. One of the six case studies of the SEACASE project consists of testing different improved production protocols in these earthen ponds, and proposes a "code of good practices" for semi-intensive farming of seabream and sole in polyculture. Production will be enhanced through: 1) increasing revenue per ton of feed supplied to the system, while reducing environmental impacts through polyculture of gilthead seabream and Senegalese sole; 2) Increasing production per hectare within sound environmental conditions; and 3) Launch the basis for increasing added value to the production through a certification process.

Within this case study, environmentally friendly fish diets for semi-intensive fish farming systems will be tested. A lab-scale trial was already performed, where it could be shown that growth performance of gilthead seabream during the growing phase can be sustained by a practical dietary formulation containing as little as a 12.5% level of marine-derived proteins. A 65 % replacement of fish oil by a mixture of soy and rapeseed oil has a negative effect on FCR when associated to a simultaneous 60% replacement of fishmeal. However, evaluation of the economical FCR could still justify the use of practical diets in which fishmeal and fish oil are replaced at a 60 % level.

The validation of such "environmentally friendlier" feeds at a commercial scale in association with a polyculture (gilthead seabream, and Senegalese sole) production system is currently underway. Its success in terms of the biological performance of fish, its environmental loads, and economic viability is an important contribution to the sustainability of these low-input fish farming practices.

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