

### SEMI-INTENSIVE POLYCULTURE OF SEABREAM AND SOLE IN EARTH PONDS

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Earth ponds are the main production system for seabass and seabream in Portugal and in Spain, in particular in the Cádiz province. Different farms use various levels of intensification and pond size, but in general these are semi-intensive ponds covering large areas, ranging from one to several hectares, and with production ranging from 0.5 to 1.5 Kg/m<sup>2</sup> at the end of the production cycle. Production costs in this farming system are higher compared to intensive cage farms, and its economic sustainability depends on product differentiation and optimization of production. Seabass and seabream are traditionally the target species produced, but natural stocking with wild Senegalese sole and other species is common. A case study in the framework of the SEACASE project consisted in testing different improved production protocols in the earth ponds which are presently used to on-growing seabream in the South of the Iberian Peninsula. The aim was to enhance production through: 1) increasing revenue per ton of feed supplied to the system, while reducing its environmental impact, through polyculture of species with different feeding niches: seabream (feed, macroalgae), Senegalese sole (benthos, uneaten feed of seabream); 2) increasing production per hectare within sound environmental conditions. Controlled trials were performed in two locations: IPIMAR's pilot Aquaculture Research Station (Olhão, Portugal) and Aqualvor fish farm (Odiãxere, Portugal). These trials demonstrated that feeds with low incorporation levels of fish meal, and consequent lower release of soluble phosphorus, and thereby more environmentally friendly compared to common commercial feeds, can be used without adverse effects on production. They also showed that on-growing sole in ponds in polyculture with seabream can bring added value, but recovery of stocked sole is variable. It depends on maintaining good pond bottom conditions, namely preventing the creation of anoxic layers in the bottom.

#### Key-words:

GILTHEAD SEABREAM, SENEGALESE SOLE, GROWTH, POLYCULTURE

