

# sparos

**I&D** nutrition in  
aquaculture

Tailoring your feeds

[www.sparos.pt](http://www.sparos.pt)



## SPAROS Lda

Pilot-scale feed mill and research  
services for Industrial partners

**SPAROS is a technology-driven SME dedicated to the development of new products and tailored nutritional solutions for aquaculture**

# Senior Management

## Jorge Dias: PhD in Fish Nutrition

- General Manager and Head of the Feed Technology Platform
- >15 years of R&D experience in Aquaculture
- Researcher at CCMAR, University of Algarve (PT)
- Researcher at DSM Nutritional Products (former ROCHE Vitamins) (FR)
- PhD Fellow at INRA-IFREMER Fish Nutrition Unit (FR)
- MSc in Food Technology at University of Bordeaux I (FR)
- MSc in Marine Biology at University of Algarve (PT)
- Expertise: nutritional requirements; feed formulation, feed additives; feed technology

## Luís Conceição: PhD in Fish Nutrition

- General Manager and Head of Project Management
- >15 Years of R&D experience in Aquaculture
- Researcher at CCMAR, University of Algarve (PT)
- Post-Doctoral Fellow at SINTEF (NO)
- PhD Fellow at University of Wageningen (NL)
- MSc in Marine Sciences at University of Porto (PT)
- Expertise: larval nutrition, amino acids/protein metabolism; sustainable farming practices

# Our fields of expertise

Besides Luís and Jorge....

**We are progressively expanding our expertise with a multidisciplinary team of bright young scientists (n=13)**



**Fish nutrition**  
**Digestive physiology**  
**Intermediary metabolism**  
**Immune and stress response**  
**Applied “omics” tools**  
**Farming systems**  
**Feed processing**

# EU aquaculture strategy

The European aquaculture industry of the future should be at the forefront of sustainable development, providing **healthy** and **safe** food of the **highest quality** to the consumer in an **environmental sound approach**

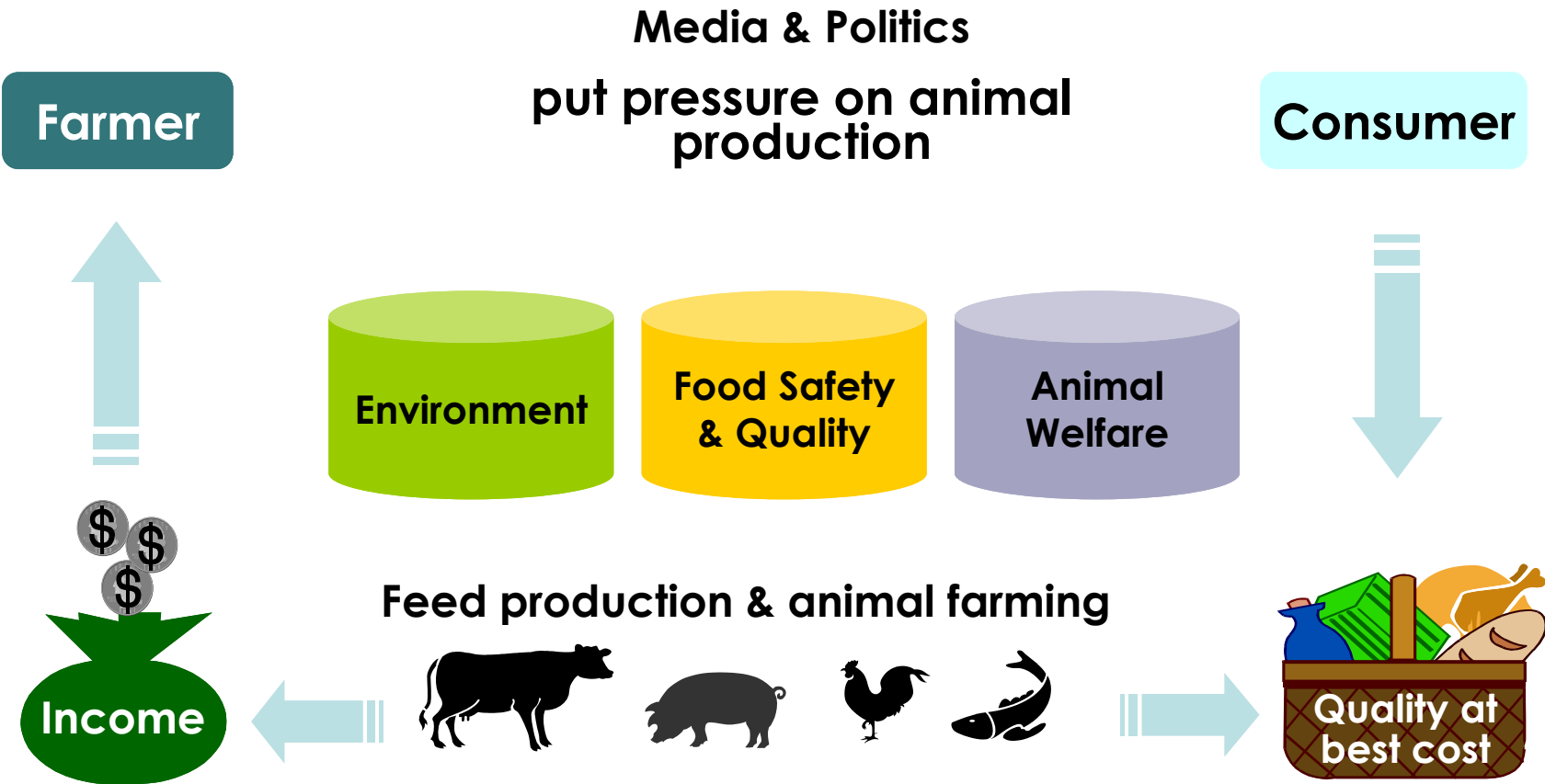
*EC2009: A new impetus for the Sustainable Development of EU Aquaculture*



An innovative and lower emissions economy, reconciling demands for sustainable agriculture and fisheries, food security, and the sustainable use of renewable biological resources for industrial purposes, while ensuring biodiversity and environmental protection

*EC2012 - Innovating for Sustainable Growth: a Bioeconomy for Europe*

# EU animal farming faces serious challenges



... how to transform these challenges into opportunities

# Our services

# Custom-made R&D feeds

## Pilot-scale feed mill: from a 3-5 kg up to 1 ton

- Twin-screw extruder with conditioner
- Low-shear temperature controlled extruder
- Vacuum coater for application of fats and feed additives
- All auxiliary equipment (hammer-mill, dryer, crumbler, mechanical sieves,...)
- Fluidized dryer for manufacture of fish larvae diets
- Spray-dryer for microencapsulation of nutrients and bioactive compounds



**Our pilot-scale is a valuable tool for the development and testing phases of your new products**

# Feed technology

## Pellet quality tests

- Pellet durability index
- Pellet hardness
- Physical water stability
- Sinking velocity
- Fat absorption/leaking
- Starch gelatinization
- Nutrient leaching
- Extrusion conditions



### Raw materials

Chemical composition  
Functional properties

- Protein
- Starch
- Fat

Particle size  
Bulk density



### Process variables

Conditioning

- Steam
- Residence time

Mash feeding rate  
Torque speed  
Screw configuration  
Drying

**Functional changes**  
Starch gelatinization  
Protein denaturation  
Fiber solubilization



**Physical Quality**  
Durability & Hardness  
Post-extrusion oil absorption capacity  
Buoyancy control



# Fish nutrition trials

## Contract research trials

- Evaluation of the efficacy of ingredients, feeds and additives in fish at various research facilities under our management
- Typical trials comprise the evaluation of growth performance, FCR, nutrient digestibility and metabolic use, palatability, effluent loads



- **Protocols for larval rearing and feeding**
- **Novel feeds for new species**
- **Testing of new feed additives**
- **Feeding strategies to improve profitability**

# Experimental species

## Freshwater species



**Nile tilapia**  
*Oreochromis niloticus*



**Common carp**  
*Cyprinus carpio*



**Rainbow trout**  
*Oncorhynchus mykiss*

## Marine species



**Gilthead seabream**  
*Sparus aurata*



**European seabass**  
*Dicentrarchus labrax*



**Meagre**  
*Argyrosomus regius*



**Turbot**  
*Scophthalmus maximus*



**Senegalese sole**  
*Solea senegalensis*

**Our products**

# Custom Feeds for Hatcheries

## Feeds for fish larvae and post-larvae

**Tailor-made feeds**, in which you may specify the origin and contents in protein, HUFA, phospholipids, taurine, vitamins, minerals and selected additives

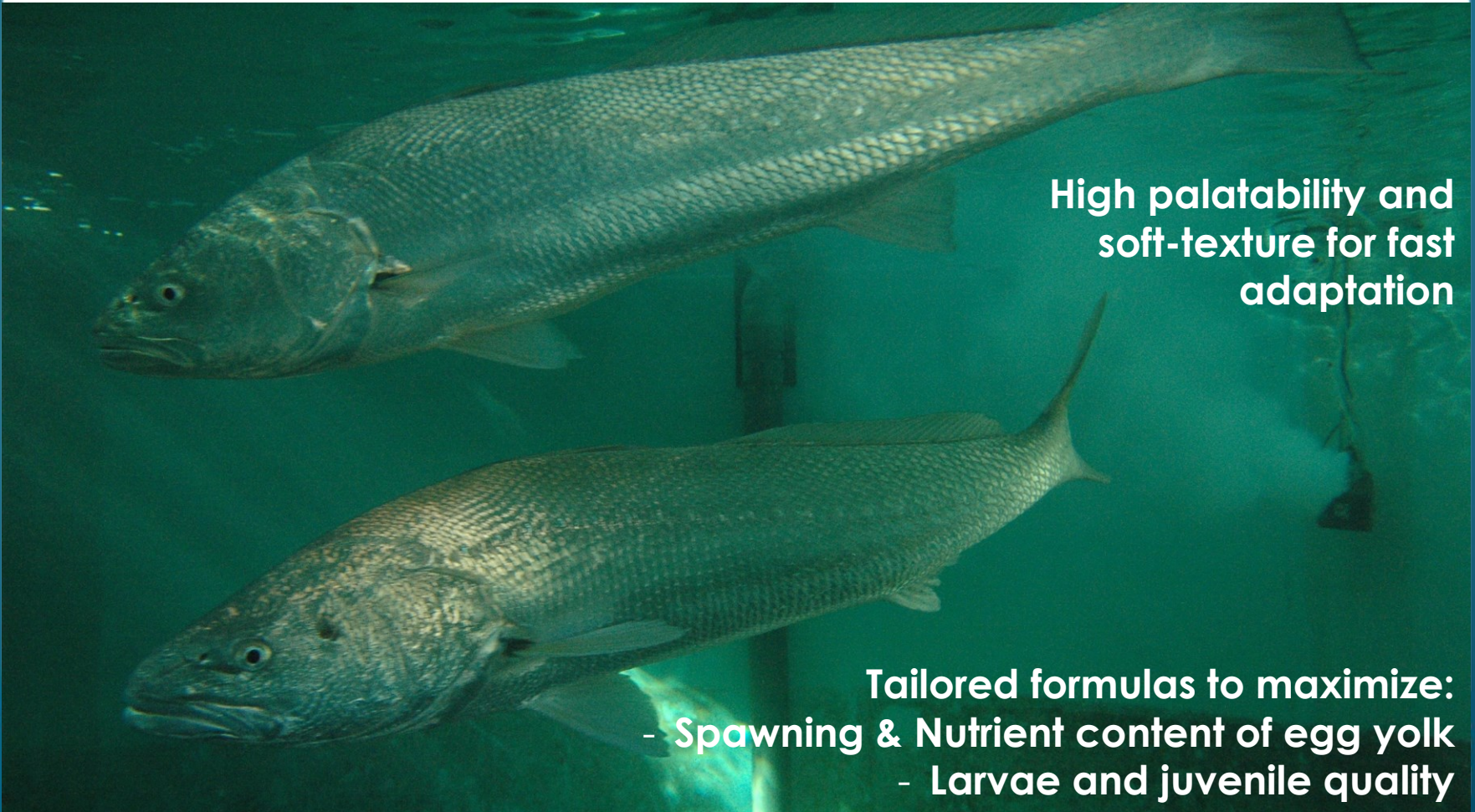




Tailoring  
your feeds

# Custom Feeds for Hatcheries

## Feeds for enhanced Broodstock performance



High palatability and  
soft-texture for fast  
adaptation

Tailored formulas to maximize:

- Spawning & Nutrient content of egg yolk
- Larvae and juvenile quality



Tailoring  
your feeds

# Premium ornamental feeds

## Premium feeds for ornamental fish and shrimp

Premium ingredients and  
manufactured by cold-extrusion  
and spheronizer technologies



# New ingredients and additives

## Functional feeds for enhanced productivity

Agrofood by-products, microalgae, copepod and insect biomasses as novel sustainable sources of protein and lipids to the aquafeed industry



Biotech feed additives to enhance nutritional condition and stress mitigation in fish

Natural biofortification of fillets with health-valuable nutrients to human nutrition (n-3 PUFAs, iodine, selenium, vitamin D3)

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Visit us at: [www.sparos.pt](http://www.sparos.pt)



Or watch our video at:

<http://youtu.be/A4m3gyYHfWM>