

# Workshop on Aquaculture farmers and farmer organizations Promoting good practices to boost responsible aquaculture

*20 February 2020, Pordenone, Italy*

## FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS



Food and Agriculture  
Organization of the  
United Nations



General Fisheries Commission  
for the Mediterranean  
Commission générale des pêches  
pour la Méditerranée



**MINISTERO POLITICHE AGRICOLE  
ALIMENTARI E FORESTALI**



# SOME AQUACULTURE HISTORY IN THE MEDITERRANEAN AND BLACK SEA

Vallicultura 14th c.



Etruscans 600 BC



Egyptians 2.000 BC



Ancient Romans

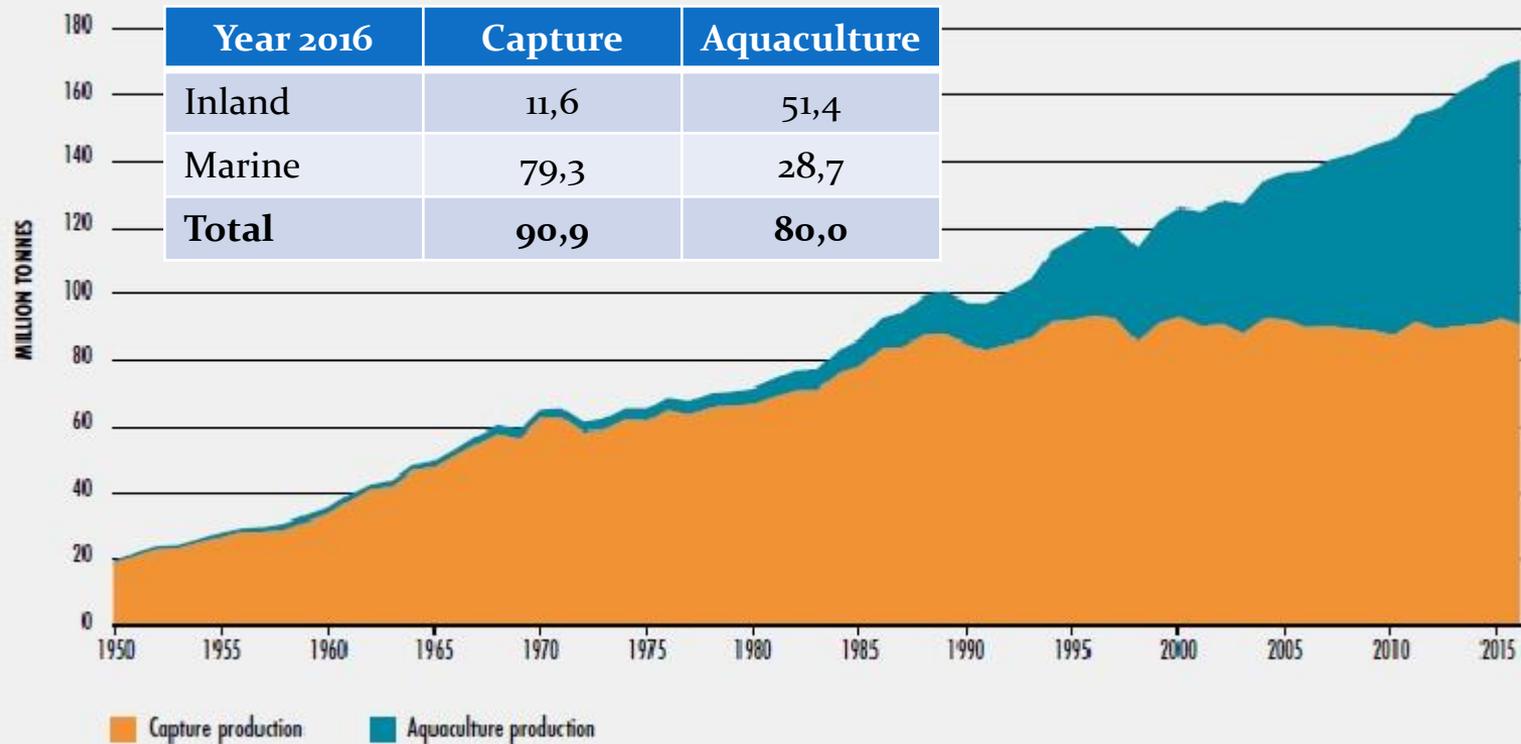


Coastal lagoon fisheries



# WORLD AQUACULTURE PRODUCTION

## WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION

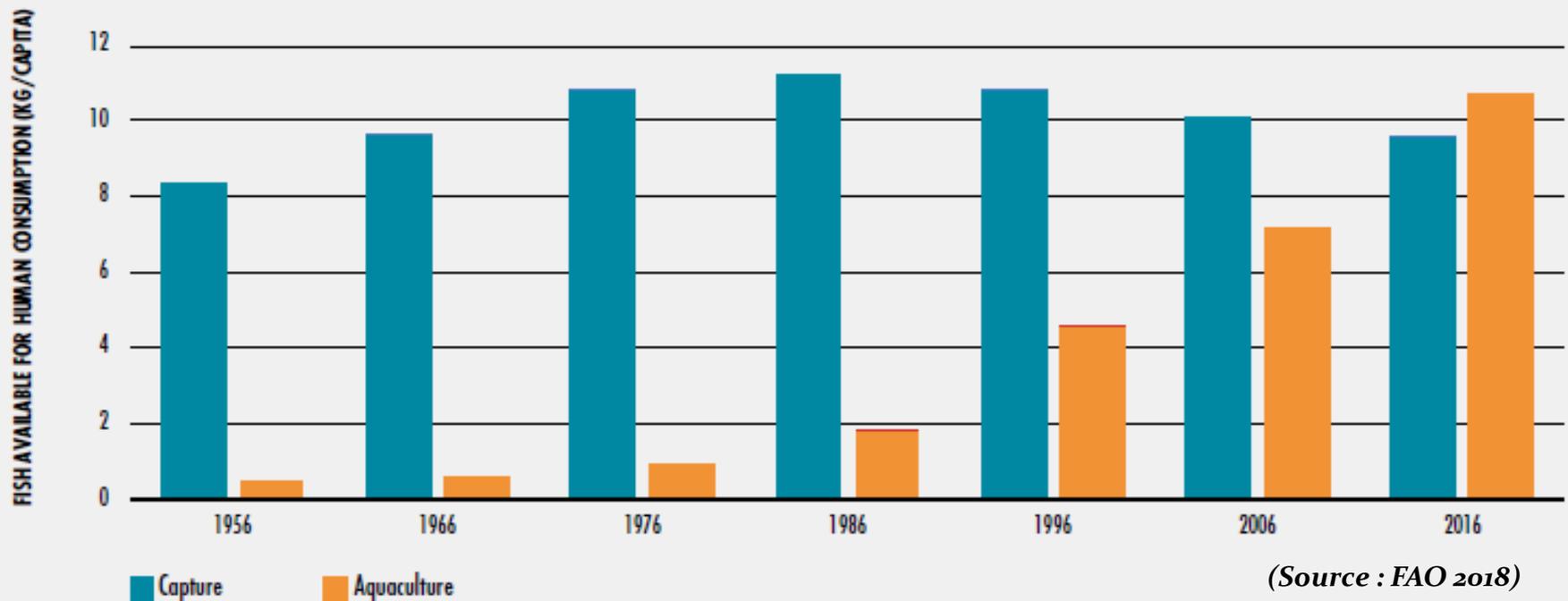


NOTE: Excludes aquatic mammals, crocodiles, alligators and caimans, seaweeds and other aquatic plants

(Source : FAO 2018)

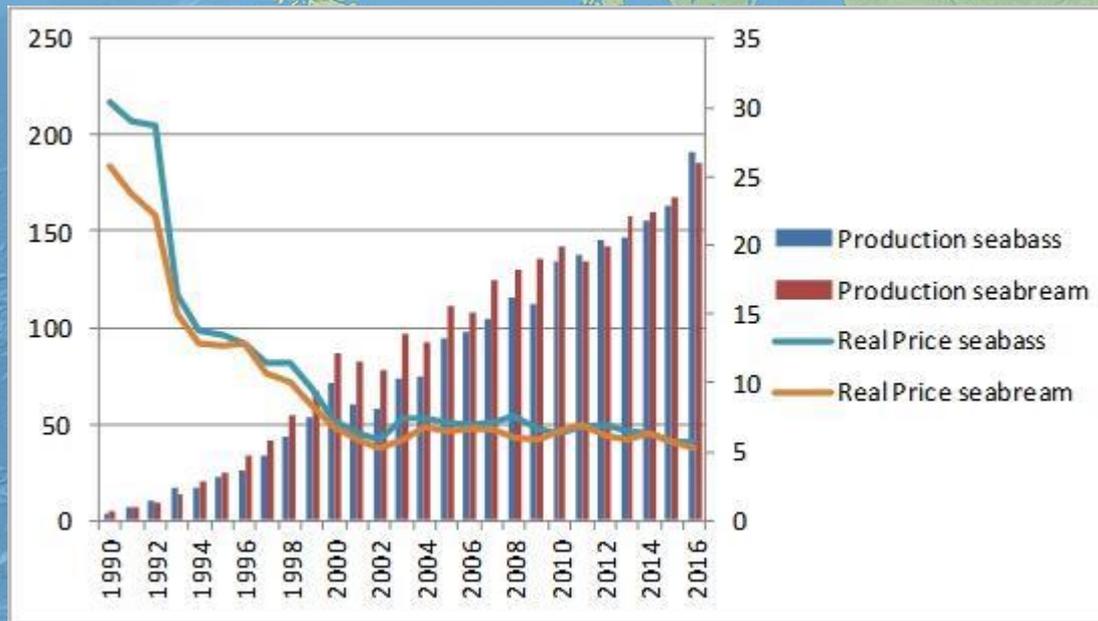
# AQUACULTURE PRODUCTS HUMAN CONSUMPTION

## RELATIVE CONTRIBUTION OF AQUACULTURE AND CAPTURE FISHERIES TO FISH FOR HUMAN CONSUMPTION



(Source : FAO 2018)

# SEA BASS AND SEA BREAM AQUACULTURE IN MEDITERRANEAN AND BLACK SEA

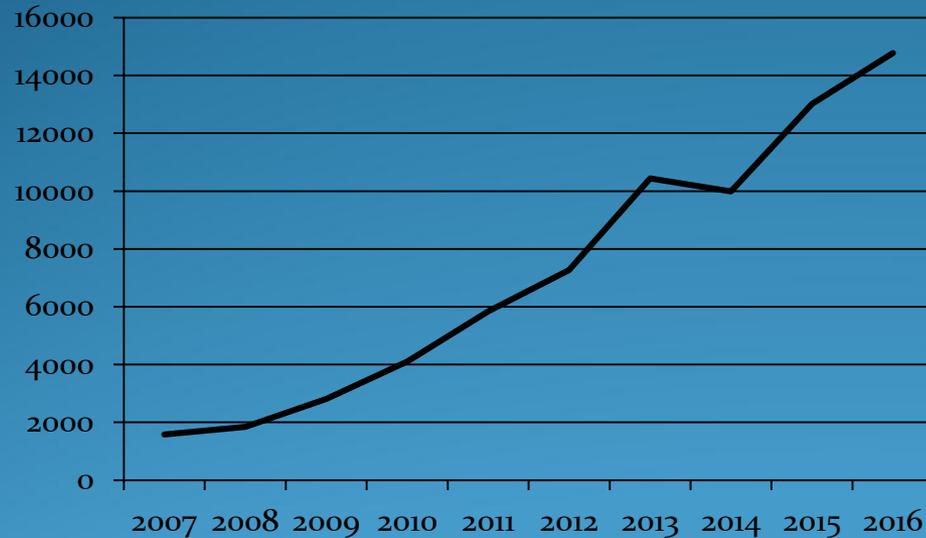


**Seabass and seabream aquaculture production (Thousand tonnes) and real price (in 2016 USD/kg).**

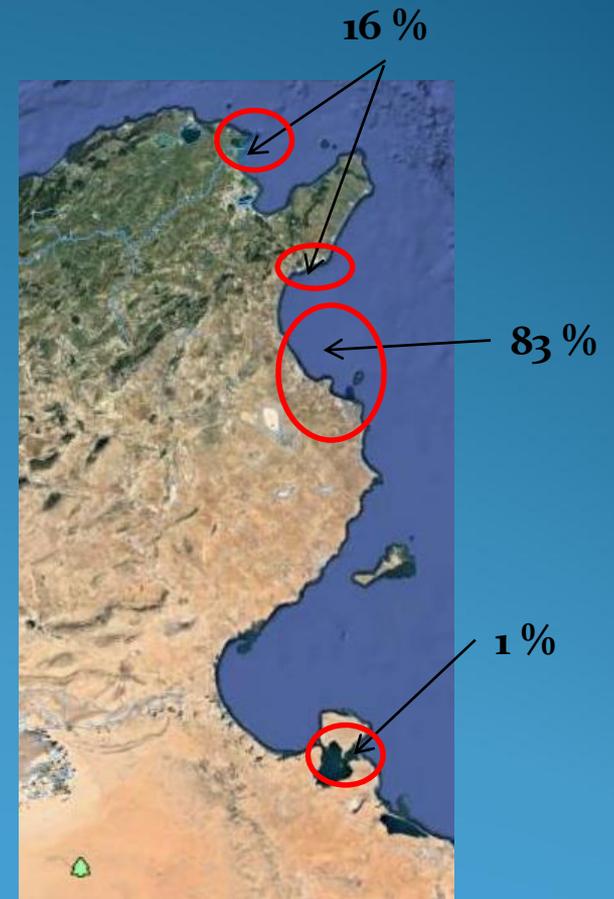
Country	Production	% of the total
Turkey	139 101	37 %
Greece	91 822	25 %
Egypt	51 161	14 %
Spain	35 353	9 %
Tunisia	14 732	4 %
Italy	14 400	4 %
Croatia	9 411	3 %
Cyprus	6 556	2 %
France	3 600	1%
Malta	2 260	1 %
Israel	2 132	1 %
Portugal	1 566	0 %
Albania	400	0 %
Algeria	360	0 %
Morocco	134	0 %
Slovenia	70	0 %
<b>TOTAL</b>	<b>343 058</b>	<b>100 %</b>

**Production (Tonnes) in 2016**

# SEA BASS AND SEA BREAM AQUACULTURE IN TUNISIA



Seabass and seabream aquaculture production (Tonnes) (Source: DGPA 2017)



# RESEARCH AND TECHNOLOGICAL DEVELOPMENT IN BASS AND BREAM AQUACULTURE INDUSTRY

## PRIVATE COMPANIES



**Hatcheries**  
**Mass production of juveniles**



**Fish feed industry**  
**FCR – new components**



**Health and veterinary**  
**Disease management (vaccines, etc.)**



**Equipment manufacturer**  
**(Cages – nets – barges)**

# RESEARCH AND TECHNOLOGICAL DEVELOPMENT IN BASS AND BREAM AQUACULTURE INDUSTRY

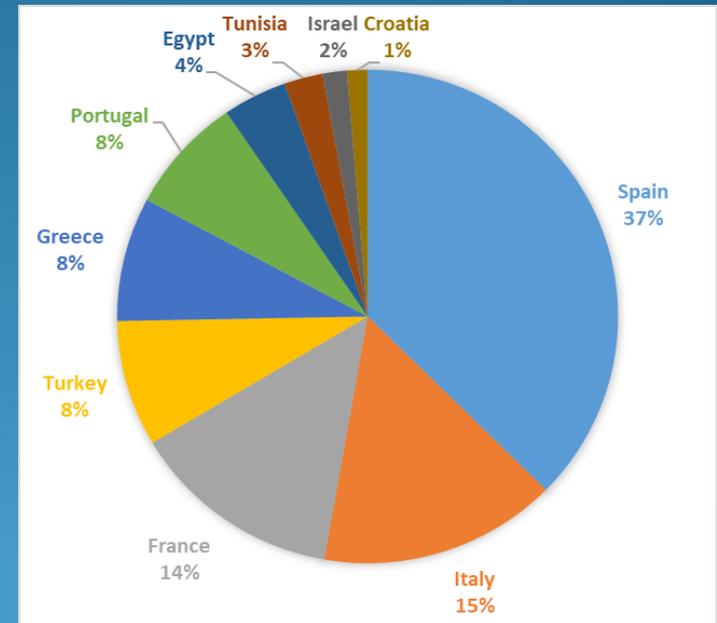
## SCIENTIFIC INSTITUTIONS

**115** Aquaculture  
research institutions  
in Mediterranean  
and Black Sea area

**1155** Researchers involved  
in aquaculture

**547** research projects  
mainly in France, Italy and Spain  
during 2005 to 2010

*(Source: AQUAMED 2013 in J. Ojeda - 2014)*

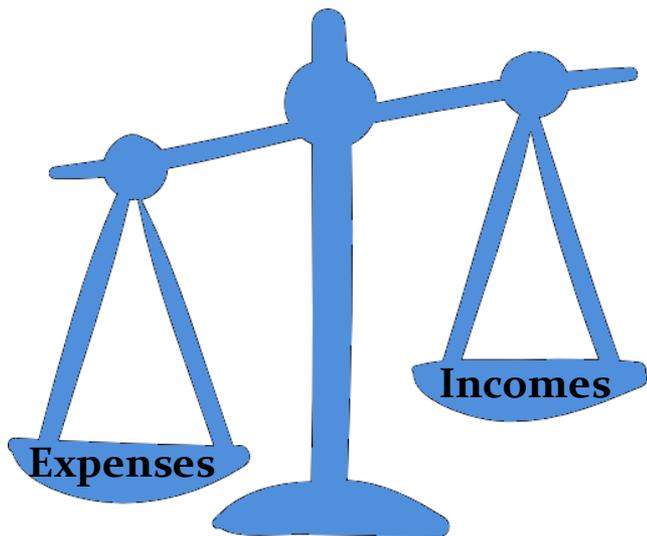


Aquaculture research papers in  
Mediterranean countries

*(Source: Aguilera C. and al. - 2019)*

## SITUATION OF ON-GROWING SEA BASS AND SEA BREAM FARMS IN TUNISIA

- Decrease of selling prices : overproduction on local market
- Survival rate : Diseases/climatic phenomena
- Decrease of the exchange rate of TND



No financial resources for R&D



Benefits

# TUNISIAN FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS

## INSTITUTIONAL BODIES



Research Institute



Inter professional group



Technical Centre of Aquaculture



Ministry of Agriculture

# TUNISIAN FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS

1- Improve the survival rates in on-growing farming activity

The choice of sites and in particular in the areas vulnerable to the consequences of climate changes and that could be affected by :

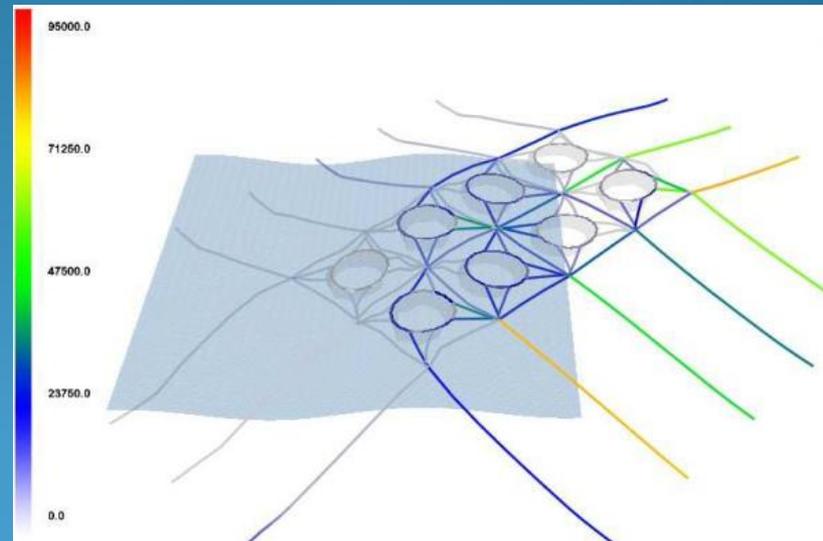
- Storms
- Significant variations in the physical/chemical conditions of the environment
- Algae / jellyfish blooms
- etc.



# TUNISIAN FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS

1- Improve the survival rates in on-growing farming activity

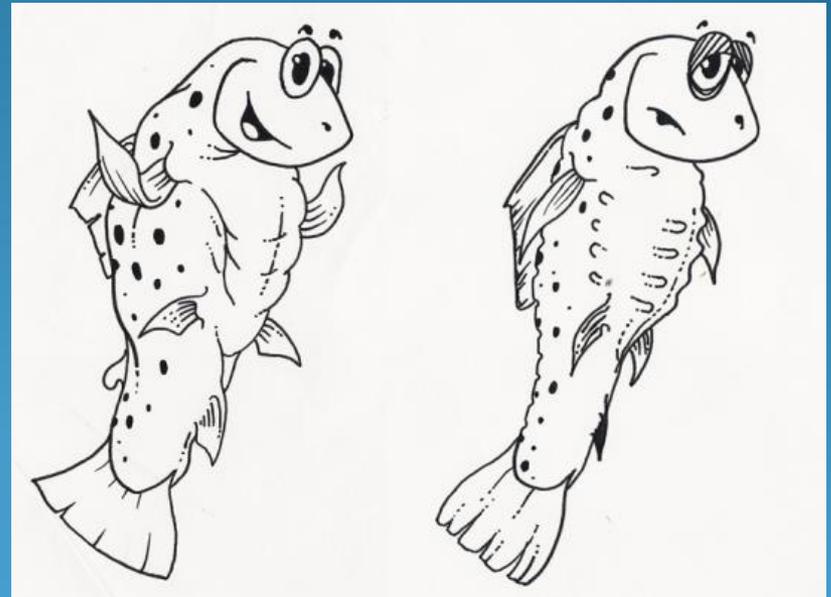
The choice and sizing of equipments according to the sites conditions and innovative solutions to reduce losses due to climatic hazards whose episodes and violence have increased in recent years due to climate change



# TUNISIAN FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS

1- Improve the survival rates in on-growing farming activity

- Resistance of fish to pathogens (test on virus before introducing the fries in the farm)
- Prevention against disease
- Good knowledge of diseases and prophylaxis in the event of outbreaks.

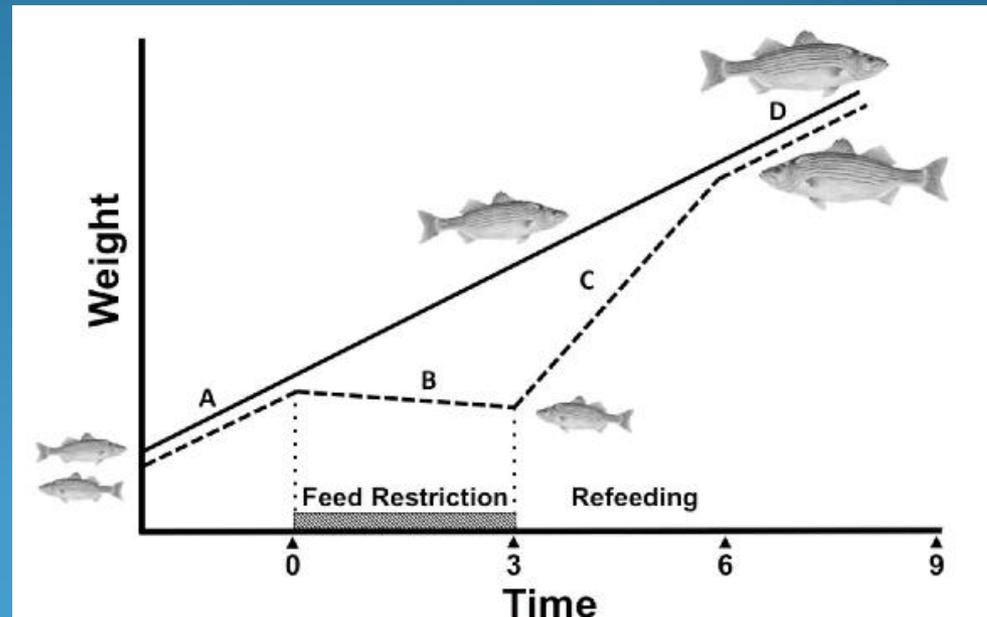


# TUNISIAN FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS

## 2- Improve the feed conversion ratio

### Fish feed strategy :

- Choice of quality
  - Digestibility
  - Energy
- Distribution strategy
- Equipments (i.e. barges, canons)



# TUNISIAN FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS

## 2- Improve the feed conversion ratio

### Choice of the fries

- Good knowledge of hatchery operations
- Hatchery reports and analysis
- Skills and abilities in detecting abnormalities

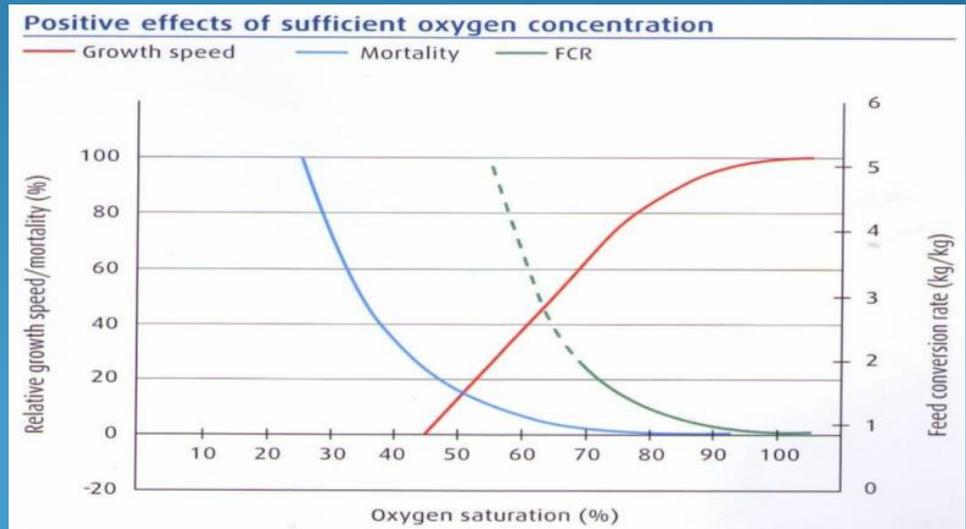


# TUNISIAN FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS

## 2- Improve the feed conversion ratio

The well-being of fish in their farming environment

- Density
- Net cleanness (dissolved O<sub>2</sub>, parasites...)
- Quality of the environment (water, marine substratum)



# TUNISIAN FISH FARMER RESEARCH NEEDS AND TECHNICAL DEVELOPMENTS

## 3- Valorization of the final product

- Quality labels

OR

- Standards

Integrating the concepts of food safety, traceability

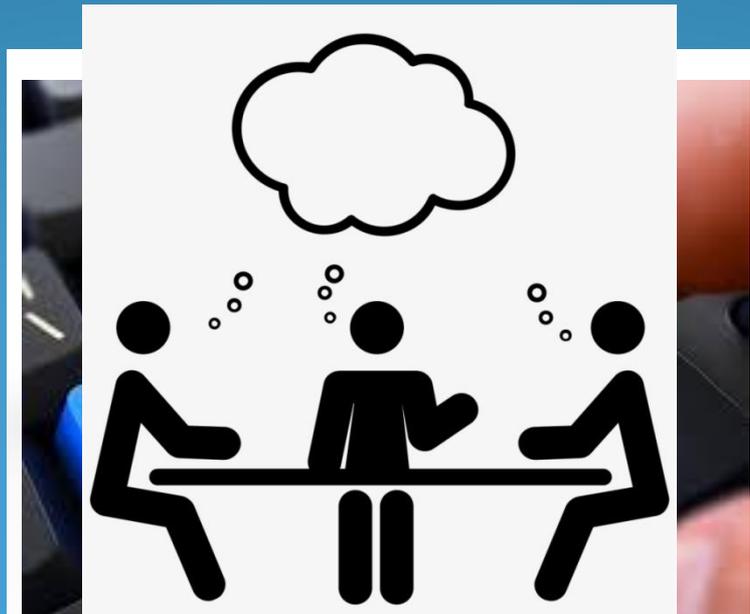


# MEETING THE FARMER'S EXPECTATIONS (TUNISIA)

GFCM resolution 41/2017/1

Recommends to enhance the sharing of research outcomes and knowledge on aquaculture

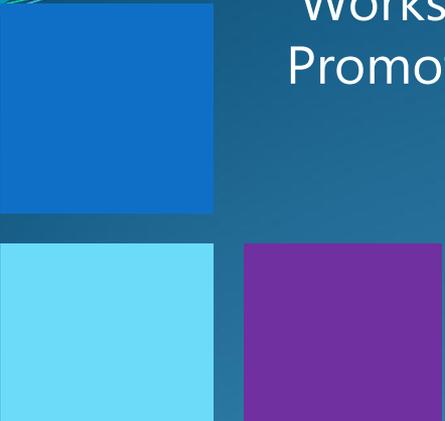
WORKSHOPS  
TECHNICAL ASSISTANCE  
PERIODIC TRAININGS





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Promoting good practices to boost responsible aquaculture

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FISH FARMER RESEARCH NEEDS AND  
TECHNICAL DEVELOPMENTS

**THANK YOU**