



Food and Agriculture  
Organization of the  
United Nations

# Integrated farming systems for food security and nutrition

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# Integrated farming systems – definitions

## What are IAA

- Aquaculture linked with plant crop and/or livestock subsystems on a farm
- Different practices and styles
- Generally extensive/semi-intensive based on natural food, induced by manuring and supplementary feed => moving to intensive/technical
- Direct IAA with on-farm inputs or indirect IAA with off-farm inputs

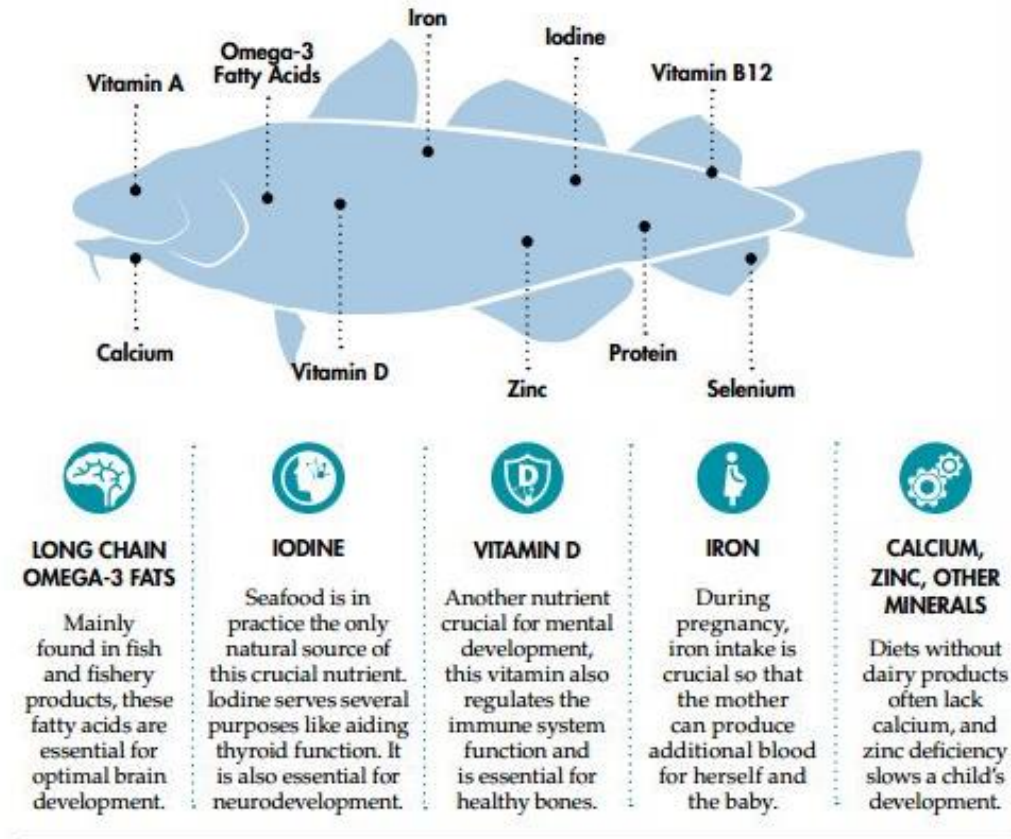


# Integrated farming systems – food security and nutrition

## Nutrition and dietary diversity

- Increased availability of high quality food on farm
- Fish are efficient converters of low grade feed to high quality protein
- Fish are key sources of vitamins and nutrients for rural households
- Enhanced diversity of production systems, can lead to enhanced diversity of diets, with nutritional outcomes

### Nature's superfood



# Integrated farming systems – social sustainability

## Broad-based benefits for the community

- Same amount of land and water produces both crops and fish
- Diversified income streams for farmers => more resilience to market fluctuations and shocks
- Income generating and job opportunities
- For rural households, fish are small units of cash or food



# Integrated farming systems – environmental sustainability

## Positive impact on natural environment

- Wastes from one system become inputs for another
- Less need for agrochemicals, fertilizer and pesticide
- Protection of aquatic ecosystems and restoration of ecosystem services
- Efficient use of resources, circularity
- Climate-smart production



# Integrated farming systems – challenges

## Access to knowledge, finance, and inputs

- Requires access to capital (investment), technical knowledge, inputs, and suitable land
- Knowledge based – systems based
- Options strongly influenced by local environment, seasonality, management
- Lack of sustained extension support services
- Hesitancy to convert land use
- Climate change, rainfall patterns



# Integrated farming systems – development pathways

## Different levels, and evolving purpose

- For most vulnerable, IAA improves family food security and nutrition, household subsistence
- Livelihood generation: increasing farmer resilience, option to sell surplus as farmers increasingly motivated to raise fish for market
- Intensification: moving towards high-value, investment
- IAA needs to be financially attractive, towards small-medium scale enterprise to generate adequate income



# Integrated farming systems – capacity development

## Capacity development and the enabling environment

- Farmer-focused needs assessment
- Awareness raising, demo sites and pilots
- Training and education, especially through participatory approaches e.g. Farmer Field School
- Supportive policies
- Financing support through micro-credit and farmer organization schemes





# Integrated farming systems – examples

## Farm diversification, Nigeria



# Integrated farming systems – examples

Rice fish for school feeding, Madagascar



# Integrated farming systems – examples

## Pig-Fish farming in Kafue, Zambia



# Integrated farming systems – examples

## Chicken – ponds, Burundi



# Integrated farming systems – examples

## Aquaponics pilot and validation in South Africa



# Integrated farming systems – examples

## Periphyton- based pond production, Côte d'Ivoire



# Integrated farming systems – examples

## Black Soldier Fly as feed for catfish, Nigeria

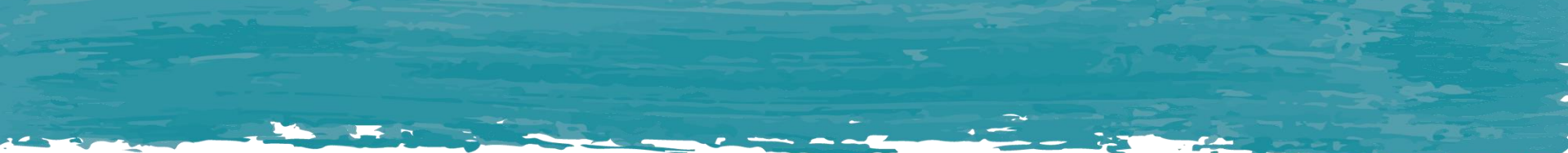


# Integrated farming systems – examples

## Integrated solar energy-aquaculture, Réunion







*We must transition towards a system that balances the need for food production with the urgent demand for climate action, sustainable agriculture and healthy affordable diets for all.*

*–Antonio Guterres  
UN Secretary General*