



Climate Smart Aquaculture

FishAdapt

Objectives of the project

Assists government to enable stakeholders to adapt to climate change by understanding and reducing vulnerabilities, piloting new practices and technologies, and sharing information

Key areas

- Strengthening regulatory frameworks
- Adaptive capacity
- Fisheries co-management
- Integrated mangrove with fisheries and aquaculture
- Inland fisheries and small-scale aquaculture
- Land and resource tenure

Effects of climate change

- Uncertain rainfall
- Droughts
- Increased temperatures
- Storms severity
- Storms frequency
- Flooding
- Sea level rise
- Salt inclusion in river and agricultural lands

Effects on aquaculture

- Reduced productivity
- Water seasonality
- Increased mortality
- Increased diseases
- Destruction of farm dikes by stronger storms
- Loss of animals for flooding
- Loss of habitats for animals

FishAdapt

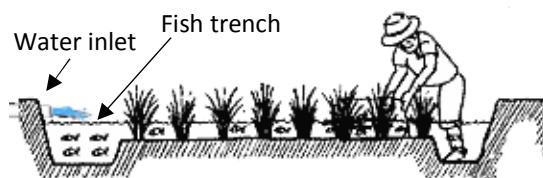
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Which rice-fish choices to meet farmers' needs?

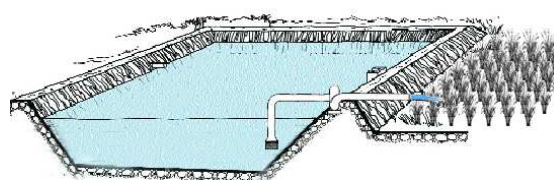
Rice productivity has been declining for decades, which pushed farmers to maintain profitability by clearing forests to produce more. Despite the need to vary incomes few options are available, but strict land laws do not help. Rice-fish is seen with interests. Despite being an old organic method it is variably considered by farmers: some see incomes from fish; other see in fish a limit for unrestrained pesticide use in industrial productions. However there are different farming methods that could be favoured by all.

In **traditional rice-fish** the paddies are designed to have a deeper trench on one side of the field and/or narrow canals leading to a pond. The trench hosts fish when the paddy is dried up and harvested. Between 1000-3000 juveniles/acre are stocked, depending on the size and species.

→ Suitable for rain-fed or irrigated rice.



Decoupled rice-fish use pond water to fertilize and irrigate paddies. Ponds can be managed more intensively as water is exchanged to irrigate rice. This solution enable fish farmers to spray their crops.
→ Rain-fed ponds supply freshwater when canals get saline in summer, thus improving rice yields and doubling crops



Benefits of traditional rice-fish

- Increase water productivity with fish and plants using the same water
- Additional incomes from fish
- Increased nutrition in households
- Fish control of pests and mosquitoes
- Fish wastes used for fertilization
- Organic management

Benefits of decoupled rice-fish

- Higher water productivity with fish and plants using the same water
- Avoid poor yields from salinity (each gram salt in water → -24% yield)
- More intensive production of fish
- Fertilization from fish water
- Farmers can freely spray their crops
- No toxic effects to fish
- Increased nutrition in households
- Freshwater storage for dry season

Areas for fish in paddy land can increase productivity and secure even 2 crops a year

What is needed?

- Review of the approaches in land uses. New approaches in the laws
- Departmental coordination in MoALI to pilot the development of alternative rice-fish systems and development of organic pest control protocols not harming fish