Fish4Thought Event

Gender-inclusive innovations for aquatic food systems transformation

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15:00-16:20 (UTC+8)

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Climate challenges being faced by the fish-farmers in the deltaic regions of Bangladesh

- Changes in hydro-climatic condition & impacts on bio-physical condition of fish
  - Reduced digestion capacity
  - Less/No food intake
  - Low survival rate
  - High mortality rate
  - Reduced Growth
  - Disease outbreak
  - Less production

- Climate change / variability / Extremes
  - Rainfall: Erratic/Intense
  - Flood: Monsoon/Tidal
  - Drought/Dry Spell
  - Temperature variation: Extreme heat/Cold spell

- Low dissolved O$_2$
- Water turbidity
- Low plankton
- Reduced water circulation
- Reduced Photosynthesis
- Low primary production
- Water stratification
- High NH$_3$ and H$_2$S
- High pH
- Changes in habitat
- Less nutrient
- Reduced digestion capacity
- Low pH
- High CO$_2$
- Low ecological interaction
Climate information Services for aquaculture to manage climate risks

Climate information services with five day lead time

1. Agvisely ingests real-time numerical weather model forecast outputs at the sub-district level supplied from BMD.

2. Based on large-scale peer-reviewed literature review of thousands of peer-reviewed studies and reports, scientific papers, scientists determined crop species-specific thresholds to climatic stresses at different periods during crop growth and developed crop management advisories.

3. Crop species-specific thresholds are automatically processed by an algorithm that integrates location-specific weather forecasts from BMD that triggers locally-appropriate advice for a variety of crops depending on when and where they are grown in Bangladesh, and in response to their climatic sensitivity.

4. Weather forecasts and associated crop management advisories are distributed to extension agents and farmers using a variety of media.

Seasonal climate information services with one month lead time

Developing Climate Information Services for Aquaculture in Bangladesh: A Decision Framework for Managing Temperature and Rainfall Variability-Induced Risks


Climate information services (CISs) are increasingly in demand to assist farmers in managing risks associated with climate variability and extreme events in food production. However, there are significant gaps in the availability and accessibility of these services, especially in aquatic food production in developing countries. In response, the authors aim to generate the background knowledge for developing climate information and decision support services tailored for aquaculture farmers in Bangladesh. The research group developed a system of information management and decision making for aquaculture and to document fish farmers’ awareness of the relationship between climate variability and aquatic food production systems. We also sought to identify the key events and communication channels needed to deploy forecasts effectively and prepare aquaculture farmers to act as response to the forecasts. A fish-farming activity calendar was developed that identified high temperatures, cold spell, heavy rainfall, and dry spell events as key climate phenomena affecting year round aquaculture operations, including pond preparation and maintenance, feeding stocking, grow-out management, and harvesting. This innovative decision support approach is to our knowledge the first attempt to develop CIS using species-specific temperature and rainfall thresholds to reduce climate risks and ensure resilience capacity for South Asian aquaculture system.
Enhancing climate information services for aquaculture at scale

Bangladesh

Odisha, India

Zambia

Regional

National

Global

Developing Climate Information Services in context of Zambia
Women’s engagement in supplementary fish-farming activities resulted in:
- restricted involvement in regular aquaculture operations
- restricted decision-making roles

Climate information services for aquatic food systems are critical:
- To promote women involvement in management decisions
- To strengthen their voice in decision making role
- To enhance their climate resilience capacity


Enhancing the capacity of fish-farmers and their support agents in understanding and using climate risk information at scale in Bangladesh – Available at https://hdl.handle.net/20.500.11766.1/5d6a3b

A video abstract on building resilience through climate information services for aquaculture in Bangladesh – Available at https://www.youtube.com/watch?v=ifHuG8SEq7M