# **Fish4Thought Event**

# **Gender-inclusive innovations for aquatic** food systems transformation

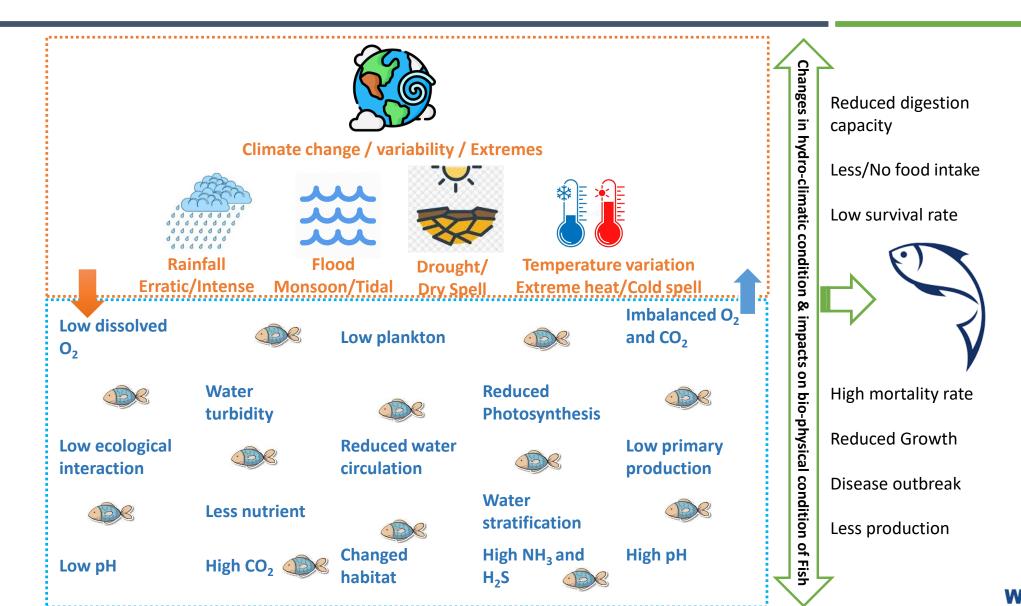
Tuesday, 8 March 2022 15:00-16:20 (UTC+8)

### Peerzadi Rumana Hossain PhD Climate Research Scientist





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



# Climate information Services for aquaculture to manage climate risks



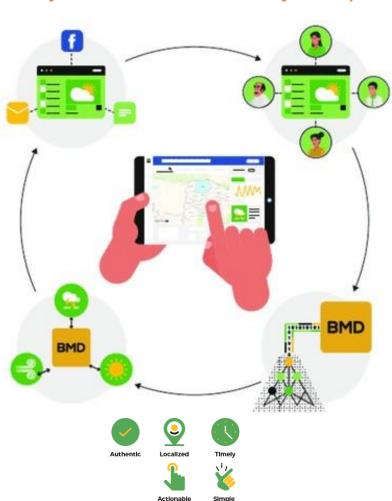
#### Climate information services with five day lead time



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



Crop species-specific thresholds are 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.





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



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.



**OPEN ACCESS** 

Droven Desirah

South Africa

Dome Ourse.

\*Correspondence:

рловганФорах огр

Poorzack Rumana Hinasai

This article was submitted to

Climate-Smart Food Systems

Providers in Sustainable Poort Sustaines

a soction of the iournal

Received: 07March 2021

Accepted: 20 April 202

Published: 07 Ame 2021

Hospin PR Amaro-Babu TS

and Philips M/2021) Disveloping

Decision Franswork for Managing

Front, Sustain, Food Syst., 5:677069

Climate information Services for

Aquabuture in Dange desh: A

Tomporature and Reintal

Variabliby Induced Plains

Myzek TJ, Braun M, Minammod EY

Science and Retindings Others

Insersity of the Piece State.

ORIGINAL RESEARCH publined 07.3 no 2021 ox: 10.00007s. 6.2021.677000



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

Peerzadi Rumana Hossain ", T. S. Amjath-Babu", Timothy J. Krupnik", Melody Braun<sup>a</sup>, Essam Yassin Mohammed <sup>e</sup> and Michael Phillips <sup>e</sup>

Worldfish, Dhake, Bangledesh, "Informational Major and Wheat Improvement Center (CMM/YT), Dhake, Bangladesh, "Informational Research Institute for Climate and Sicolety, Columbia University New York, NY, United States, "Worldfish December Major New York, NY, United States," Worldfish

Climate information services (CIS) are increasingly in demand to assist farmers in managing risks associated with climate variability and extremes experienced 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. this study aims to generate the background knowledge for developing climate information and decision support services tailored for aquaculture farmers in Bangladesh. We surveyed 800 fish-farming households, interviewed 30 key informants. and conducted a systematic literature review to identify climate-sensitive operations and management decisions in aquaculture and to document fish-farmers' awareness of the relationships between climate variability and aquatic food production systems. We also sought to identify the lead time and communication method(s) needed to deploy forecasts effectively and prepare aquaculture farmers to act in response to the forecasts. A fish-farming activity calendar was developed that identified high temperature, cold spell, heavy rainfall, and dry spell events as key climatic phenomena affecting yearround aquaculture operations, including pand preparation and maintenance, fingerling stocking, grow-out management, and harvesting. We also identified five climate-sensitive management decision points and 26 potential advisories in line with specific climate variability to manage induced risks in the day-to-day operations of fish farmers. Finally, the research team developed a decision framework based on the temperature and rainfall thresholds for the grow-out phase of four widely cultivated and economically important fish species in Bangladesh. This innovative decision support approach is to our knowledge the very first endeavor to develop CIS using species-specific temperature and rainfall thresholds to reduce climate risks and ensure resilience capacity for South Asian aguaculture system

Keywords: climate, variability, risks, aquaculture, services, threshold, fish-farmers

Frontiers in Sustainable Food Systems | www.frontersin.org

Are 2021 | Volume h | Art de 67706

# Enhancing climate information services for aquaculture at scale



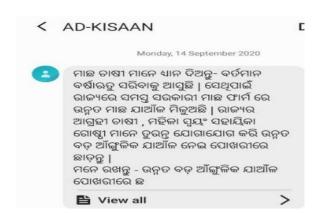


#### Odisha, India

୍ମୟ୍ୟ ଚାଷୀ ଭାଇମାନେ ଧାନ ଦିଅନ୍ତୁ!

- ୬ ଆଞ୍ଚଳିକ ପାଣିପାଣ କେନ୍ଦ୍ର ଭୁବନେଶ୍ୱରର ପୁଟନା ଅମୁସାରେ ଆସରା ୨୯ ତାରିଖରେ ଉତ୍ତର ଆଭ୍ୟରଣୀଣ ଜିଲା ପୁଡିକରେ ପାଣ ସାଧାରଣତଃ ମେପୁଆ ରହିବା ସହ ଦିଛି ଛାନରେ ବର୍ଷା ହେବାର ସ୍ୟାବନା ରହିଛି ।
   ୬ ଆସରା ୩୦, ୩୧ ଜାନୁଯାରୀ ଏବଂ ୧ ଫେବ୍ୟାରୀ ସମୟରେ ଉତ୍ତର ଆଭ୍ୟରଣୀଣ ଜିଲା ପୁଡିକରେ ତାପମାତା ୩ ର ୪ ଡିଗ୍ରୀ
- ସେଲସିୟସ ଓ ଦସାଣ ଆଭ୍ୟରଣଣ ଜିଲା ସୁଡିକରେ ୨ ରୁ ୩ ଡିଗ୍ରୀ ସେଲସିୟସ ପର୍ଯ୍ୟର ତାପମାଡ଼ି ଏସିବାର ସ୍ୟାଦିନା ରହିଛି । ♦ ଏହି ସମୟରେ ଆକାଶ ପ୍ରାୟତଃ ଘନ କୁହୁତି ହେବାର ସିୟାଦନା ରହିଛି । ତେଣୁ ଏହି ସମୟରେ ମାଛ ପୋଖରୀର ବୃତ୍ତ ଧାନ ଦେବା
- ଳଚିତ । ♦ ମେଘୁଆ ପାଣ, ଘନ ବୃହୁତି ଓ ତାପମାତ୍ରା କମିବା ଯୋଣୁଁ ମାଛ ମାନଙ୍କର ଖାଦ୍ୟ ପ୍ରହଣ କରିବା ପରିମାଣ କମିଯାଏ । ତେଣୁ ଖାଦ୍ୟର ପ୍ରକୃତ
- ଜପଯୋଗକୁ ଲକ୍ଷ୍ୟ କରି ଖାବ୍ୟ ପ୍ରୟୋଗ କରନ୍ତୁ । ♦ ପୋଖରୀର PH ପରୀଷା କରି ଆବଶ୍ୟକ କୁମେ ଚନର ପ୍ରୟୋଗ କରନ୍ତୁ । \*(ସ୍ୱଚନାର ଭବ : ମବ୍ୟ ନିର୍ଦ୍ଦେଶାଳୟ, ଓଡ଼ିଶା ଓ ଖାର୍ଲ୍ ଫିସ )
- 🌣 ଅଧିକ ସ୍ତନା ଓ ପରାମର୍ଶ ପାଇଁ ରିଲାଏନ୍ ଫାଉଷେସନର ଟୋଲ ଫ୍ରି ହେଲୁଲାଇନ ନମ୍ବର 1800 419 8800 ରେ ଯୋଗାଗ କରହ ।
- Soft of good of coloring this district tribe statuted above by explanate explaint explaint 1800 419 8000 60. Explanate extra 1 coloring explaints of the coloring explaints of the coloring explaints of the coloring explaints of the coloring explaints. The coloring explaints of the coloring explaints of the coloring explaints explaints.

m Reliance ଅଧ୍ୟ ହୁଖି, ଉତୁପାରର, ମହା ଚାଞ ଓ ସ୍ୱାହା ସମୁହାର ପଞାମର୍ଥ ବଥା ମୋବରକ କ୍ଷମୟ ମହେଳ କରିଥାରେ ନିଶ୍ୱକ ସ୍ତରମ ପାରତା m Foundation ପାଇଁ ବିଶାୟର ଆଧାରଣଙ୍କର ବେଷ ମୂଳ ବମ୍ପରରେ ନମ ପଞ୍ଚାବରର ବରତୁ ।  $1800\,419\,8800$ 



Zambia

Developing Climate
Information
-Services in context
of Zambia



ପାଣିପାଗ ଭିରିକ ପରାମର୍ଶ



#### **Climate Information Services - Gender inclusive innovation in response to climate risks**

Women's engagement in supplementary fish-farming activities resulted

- -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

















Mohammed EY, Hossain PR, Lau J, Wahab MA, Beveridge MCM and Marwaha N. 2021. Accelerating climate resilience of aquatic food systems. Penang, Malaysia: CGIAR Research Program on Fish Agri-Food Systems. Program Brief: FISH-2021-16. Available at <a href="https://hdl.handle.net/20.500.12348/4921">https://hdl.handle.net/20.500.12348/4921</a>

Hossain PR, Amjath-Babu TS, Krupnik TJ, Braun M, Mohammed EY and Phillips M, 2021. Developing Climate Information Services for Aquaculture in Bangladesh: A Decision Framework for Managing Temperature and Rainfall Variability-Induced Risks. *Front. Sustain. Food Syst.* 5:677069. Available at https://doi.org/10.3389/fsufs.2021.677069

WorldFish, 2020. A training dialogue report: Introduction to Climate Services for Aquaculture. CGIAR Research Program on Climate Change, Agriculture and Food Security. Capacitating Farmers and Fishers to Manage Climate Risks in South Asia. Penang, Malaysia: WorldFish. Program Report: 2020-04. Available at https://hdl.handle.net/20.500.12348/4062

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

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

Thank you

P.Hossaín@cigar.org

