National Surveillance Programme for Aquatic Animal Diseases: Establishment of e-governance in Aquatic Animal Disease Management System

Funding under

Pradhan Mantri Matsya Sampada Yojana (PMMSY)

By

Department of Fisheries

Ministry of Fisheries, Animal Husbandry and Dairying

Government of India

Coordinating Institute

ICAR-National Bureau of Fish Genetic Resources (NBFGR), Lucknow






Team

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Dr. Neeraj Sood, Principal Scientist & CPI, NSPAAD

Dr. P.K. Pradhan, Principal Scientist & Head

Why Disease Surveillance!

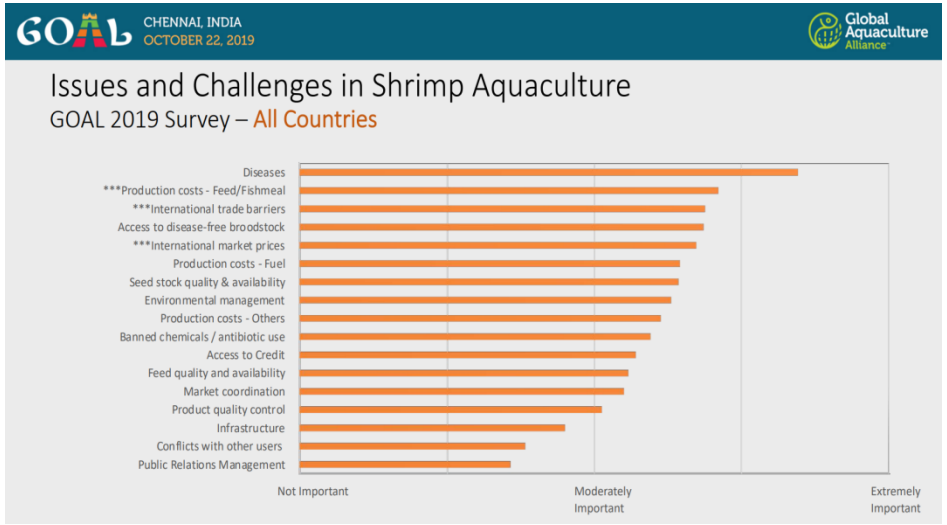
India ranks **2nd in fish and aquaculture production** globally

Annual growth rate in 2021-22- 10.34%

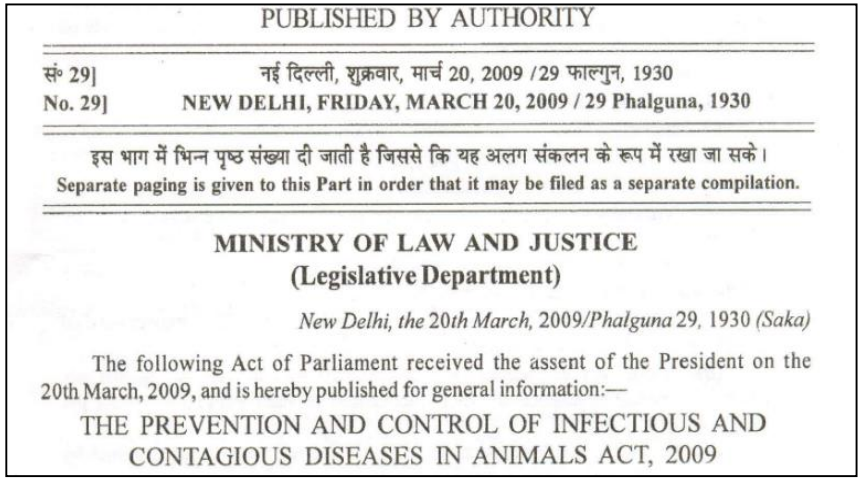
Diseases in aquaculture cause about 10% production loss

Annual Loss Estimate in India

- Shrimp diseases in the country (2018-19)- ~Rs. 7000/- crores
- Argulosis in carp culture ponds (2011-12)- Rs. 300 crores



Prevention and Control of Infectious and Contagious Diseases in Animal Act, 2009



PUBLISHED BY AUTHORITY

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No. 29] NEW DELHI, FRIDAY, MARCH 20, 2009 / 29 Phalguna, 1930

इस भाग में भिन्न पृष्ठ संख्या दी जाती है जिससे कि यह अलग संकलन के रूप में रखा जा सके।
Separate paging is given to this Part in order that it may be filed as a separate compilation.

MINISTRY OF LAW AND JUSTICE
(Legislative Department)

New Delhi, the 20th March, 2009/Phalguna 29, 1930 (Saka)

The following Act of Parliament received the assent of the President on the 20th March, 2009, and is hereby published for general information:—

THE PREVENTION AND CONTROL OF INFECTIOUS AND CONTAGIOUS DISEASES IN ANIMALS ACT, 2009

- **Early detection- key to control of infectious diseases**
- **Surveillance - a primary requirement for effective health management**

Launch of NSPAAD Programme

- Pan-India coverage
- Scientific advice to the fish farmers to reduce disease losses
- Involvement of State Fisheries Departments and MPEDA
- Disease app for timely reporting of diseases by the farmers

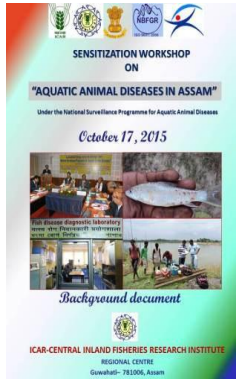
Project Investigators: 106
Young Professional-II: 67

Strengthening of Passive Disease Surveillance

223 Meetings involving 8583 fish farmers




Awareness Literature

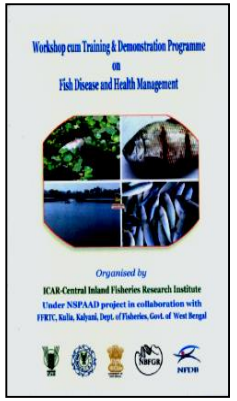




HRD- 38 Training programmes involving 699 officers of SFDs & research scholars

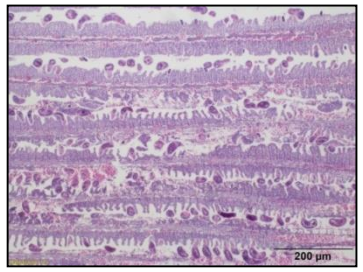


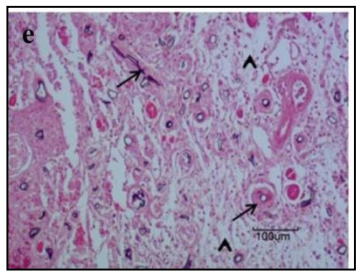


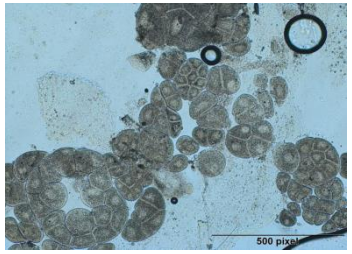


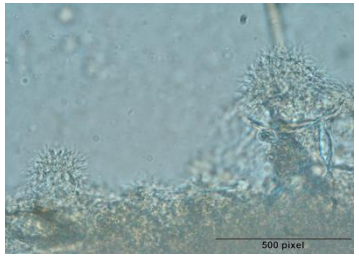
Reporting Disease Cases & Mechanism of Disease Governance

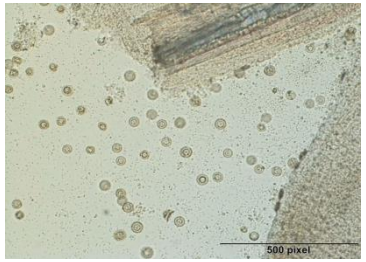


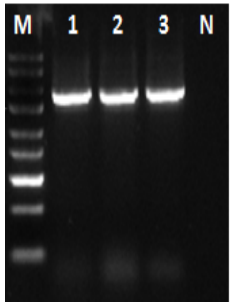



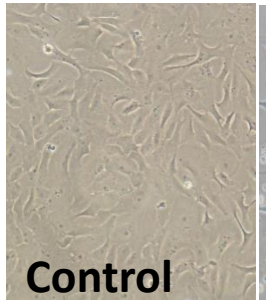


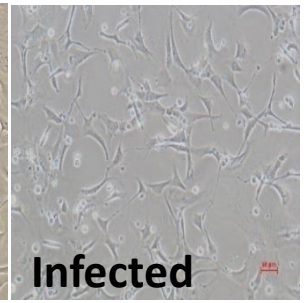


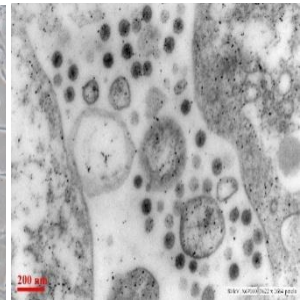


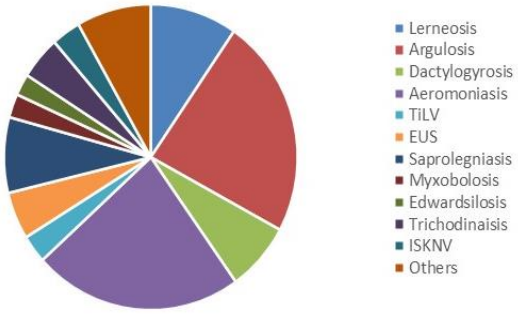


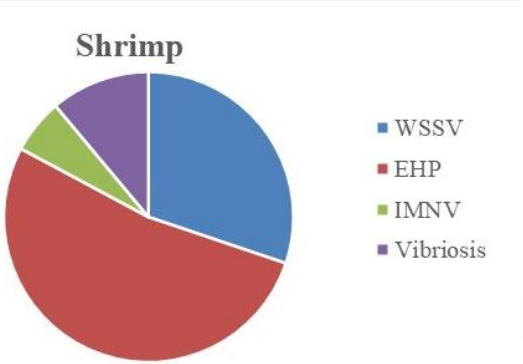


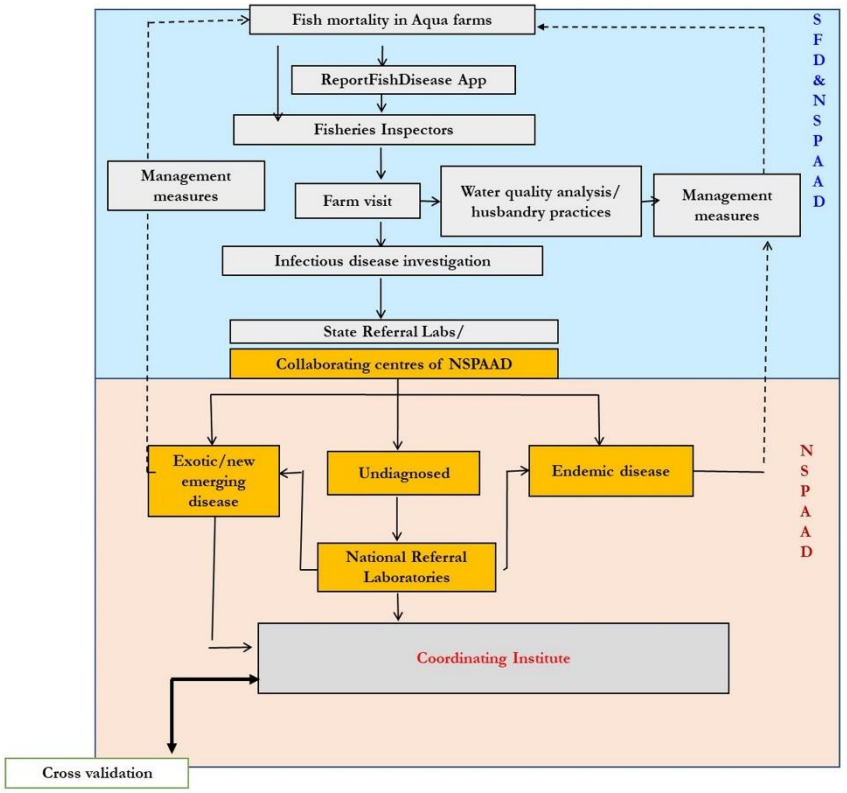






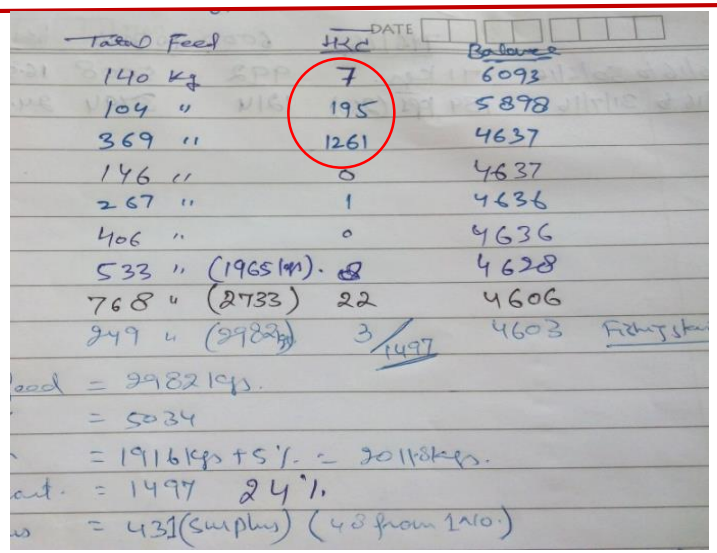


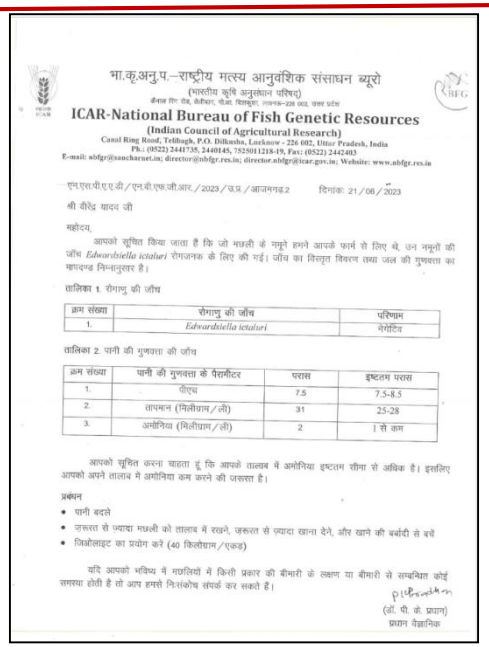




Nodal/ Co-nodal Officers	• Implementation of fish disease surveillance & reporting in the state
District Fisheries Officers	• Implementation of fish disease surveillance & reporting at district level
Block-level officers	• Preliminary investigation and collection & transportation of samples • Scientific advice to farmers /Sharing the results of disease investigation

Scientific Advisory to the Farmers and Stakeholders for Disease Management





भा.कृ.अनु.प.–राष्ट्रीय मत्स्य आनुवंशिक संसाधन ब्यूरो
(भारतीय कृषि अनुसंधान परिषद्)
ICAR-National Bureau of Fish Genetic Resources
(Indian Council of Agricultural Research)
Canal Ring Road, Telibagh, P.O. Dilkusha, Lucknow - 226 002, Uttar Pradesh, India
Ph.: (0522) 2441735, 2440145, 7525011218-19, Fax: (0522) 2442403
E-mail: nbfgr@sancharnet.in; director@nbfgr.res.in; director.nbfgr@icar.gov.in; Website: www.nbfgr.res.in

एन.एस.पी.ए.ए.बी./एन.बी.एफ.जी.आर./2023/उ.प्र./आजमगढ़.2 दिनांक: 21/06/2023

श्री वीरेंद्र यादव जी

महोदय,

आपको सूचित किया जाता है कि जो मछली के नमूने हमने आपके फार्म से लिए थे, उन नमूनों की जाँच *Edwardsiella ictaluri* रोगजनक के लिए की गई। जाँच का विस्तृत विवरण तथा जल की गुणवत्ता का मापदण्ड निम्नानुसार है।

तालिका 1. रोगाणु की जाँच

क्रम संख्या	रोगाणु की जाँच	परिणाम
1.	*Edwardsiella ictaluri*	नेगेटिव

तालिका 2. पानी की गुणवत्ता की जाँच

क्रम संख्या	पानी की गुणवत्ता के पैरामीटर	परास	इष्टतम परास
1.	पीएच	7.5	7.5-8.5
2.	तापमान (मिलीग्राम/ली)	31	25-28
3.	अमोनिया (मिलीग्राम/ली)	2	1 से कम

आपको सूचित करना चाहता हूं कि आपके तालाब में अमोनिया इष्टतम सीमा से अधिक है। इसलिए आपको अपने तालाब में अमोनिया कम करने की जरूरत है।

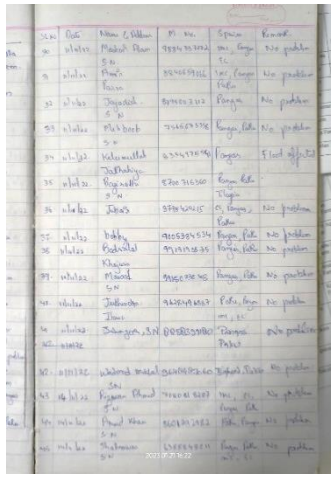
प्रबंधन
- पानी बदले
- जरूरत से ज्यादा मछली को तालाब में रखने, जरूरत से ज्यादा खाना देने, और खाने की बर्बादी से बचें
- जिओलाइट का प्रयोग करे (40 किलोग्राम/एकड़)

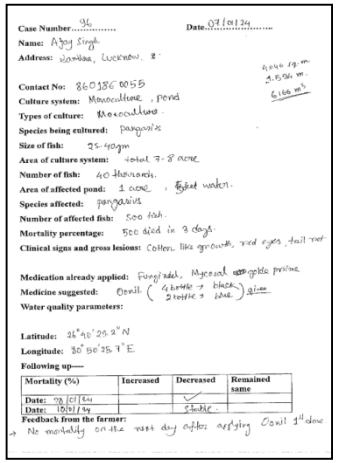
यदि आपको भविष्य में मछलियों में किसी प्रकार की बीमारी के लक्षण या बीमारी से सम्बन्धित कोई समस्या होती है तो आप हमसे निःसंकोच संपर्क कर सकते हैं।

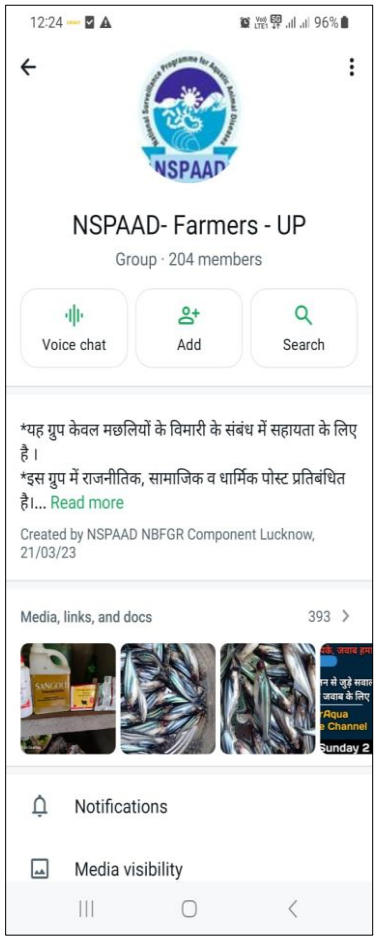
(डॉ. पी. के. प्रधान)
प्रधान वैज्ञानिक

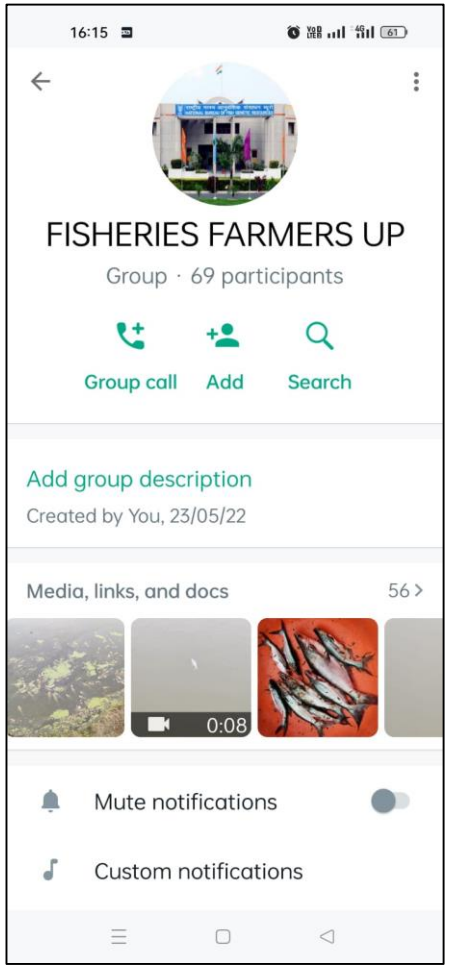
Farm No.	Farm address	GPS coordinates	Mortality (%)	Effect of intervention
				Mortality (%)
1	Jairajpur, Azamgarh	N 26°11′32″ E 83°10′35″	15-20	0
2	Jairajpur, Azamgarh	N 26°11′38″ E 83°10′42″	25	0
3	Kaptanganj, Azamgarh	N 26°14′50″ E 83°6′39″	25-30	0
4	Jairajpur, Azamgarh	N 26°11′32″ E 83°10′35″	15-20	0
5	Jairajpur, Azamgarh	N 26°11′12″ E 83°10′8″	20-25	0
6	Gaddopur, Phulpur, Azamgarh	N 26°0′13″ E 83°3′7″	10	0

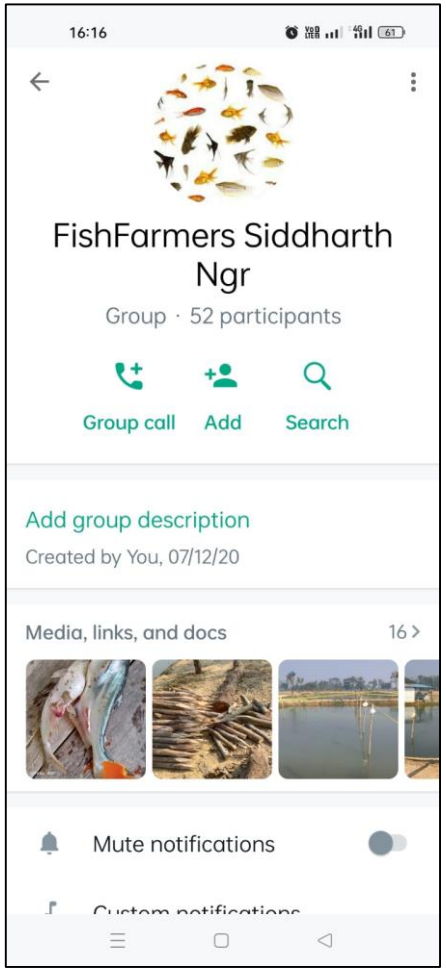
Developing WhatsApp Groups with Fish Farmers

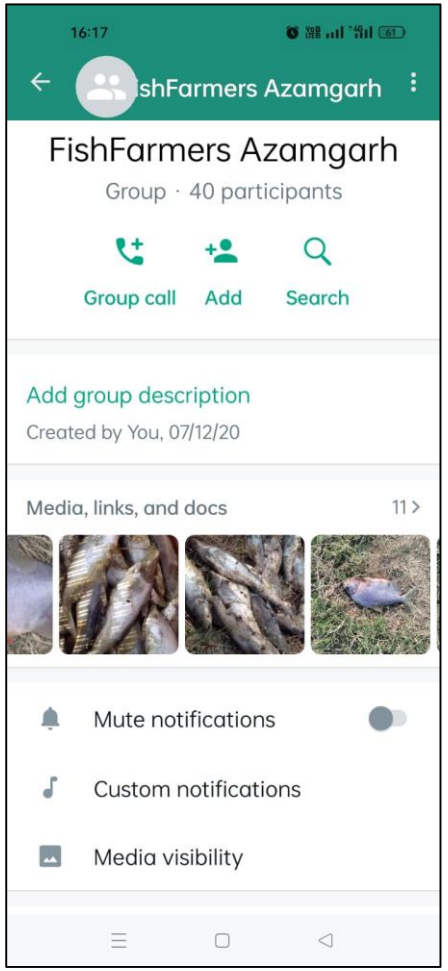



Case Number: 96 Date: 07/01/24
Name: Ajay Singh
Address: Gomtinagar, Lucknow, U.P.
Contact No: 8601380055
Culture system: Monoculture, pond
Types of culture: Monoculture
Species being cultured: pangasius
Size of fish: 25-40gm
Area of culture system: total 7-8 acre
Number of fish: 40 thousands
Area of affected pond: 1 acre, flyash water
Species affected: pangasius
Number of affected fish: 500 fish
Mortality percentage: 500 died in 3 days
Clinical signs and gross lesions: Cotton like growth, red eyes, tail rot
Medication already applied: Fungitech, Mycozal and aquatic purine
Medicine suggested: Oxoil (4 bottle + black 2 bottle + blue) given
Water quality parameters:
Latitude: 26°45'29.2"N
Longitude: 80°58'25.7"E
Following up—
Mortality (%)	Increased	Decreased	Remained same
Date: 09/01/24			
Date: 10/01/24			Stable
Feedback from the farmer:
No mortality on the next day after applying Oxoil 1st dose







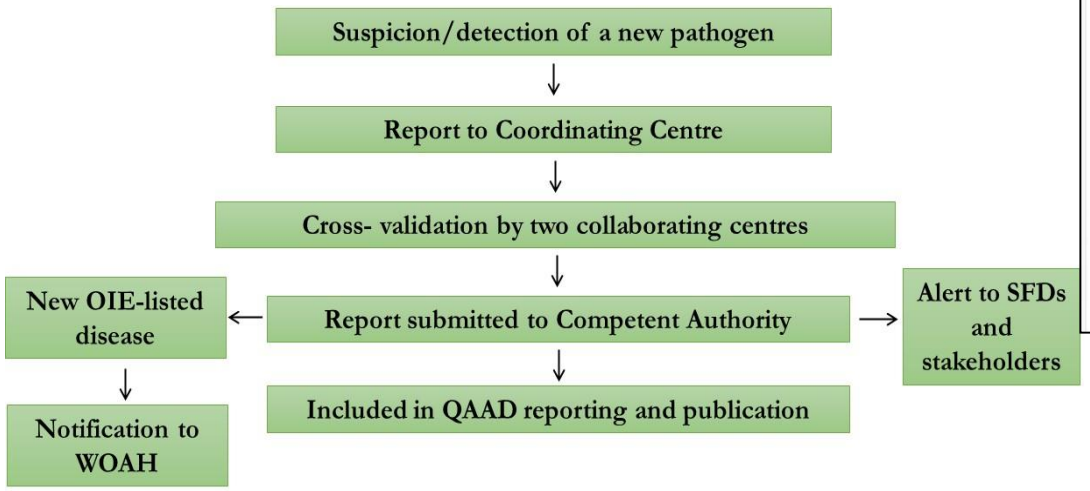


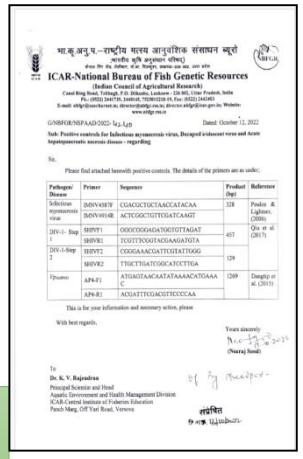
Contacting farmers telephonically for disease-related problems

Contacting farmers through WhatsApp for disease-related problems

First-time Detection of Aquatic Animal Pathogen in the Country

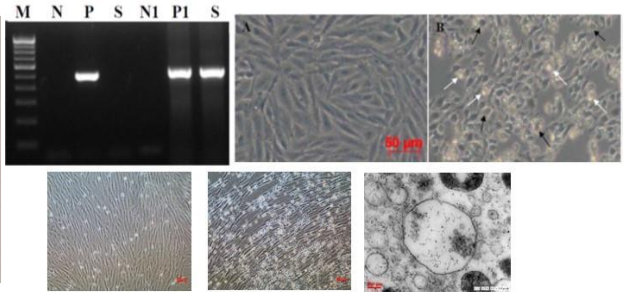
Reporting Mechanism of a New Disease




ICAR-National Bureau of Fish Genetic Resources

Tilapia Parvovirus

- Nile tilapia collected from grow-out ponds in Ranipet district, Tamil Nadu
- Samples confirmed to be infected with Tilapia parvovirus using PCR assay, Sequencing, Isolation of Virus and Experimental infection



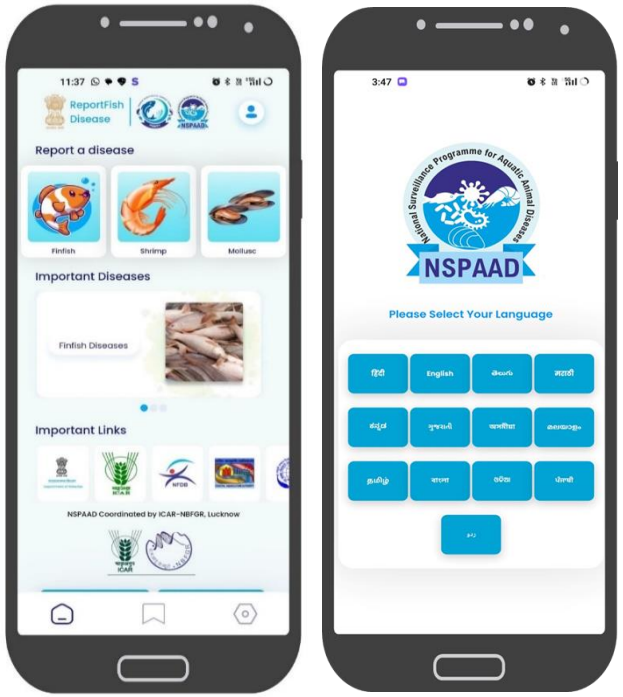
Wenzhou shrimp virus 8

Shrimp samples received from ICAR-CIBA were validated by ICAR-NBFGR and RGCA, Nagapattinam and found positive for the Wenzhou shrimp virus 8.

Following validation, a compiled report submitted to Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India

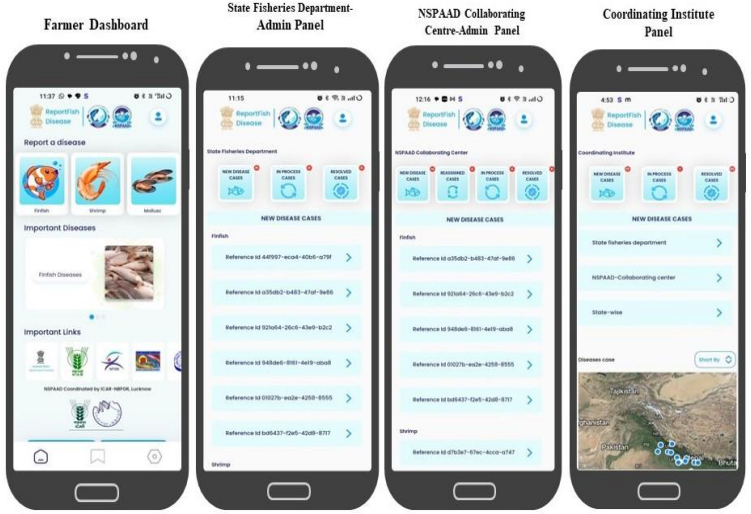
‘ReportFishDisease’ Mobile App: e-Governance in Aquatic Animal Health Management

- At present, many of the disease incidences in aquaculture go unreported
- Necessity of a mechanism to connect farmers, field-level officers and fish health experts

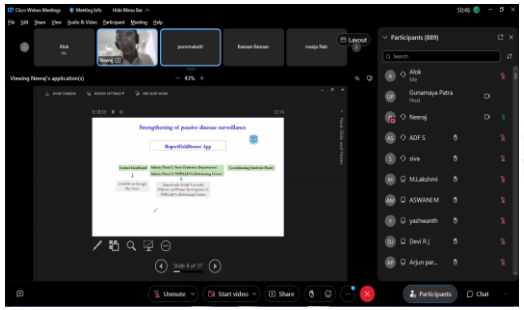


Advantages

- Real time reporting of disease cases and improvement in reporting of number of cases
- Timely advice to the farmers thereby reducing losses
- Automatic geotagging of the farms
- Monitoring disease cases on temporal and spatial scale



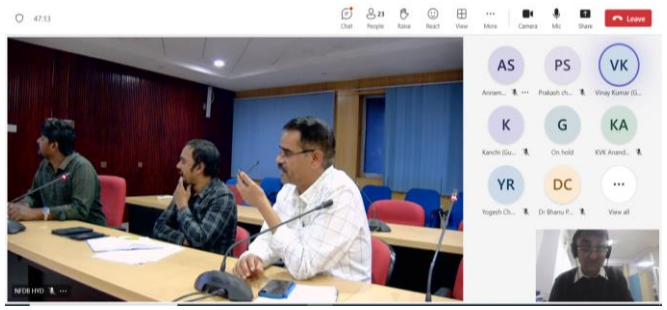
Popularization of 'ReportFishDisease' App



മത്സ്യ രോഗങ്ങൾ കണ്ടെത്തുന്നതിനും നിരീക്ഷിക്കുന്നതിനും മൊബൈൽ ആപ്പ്

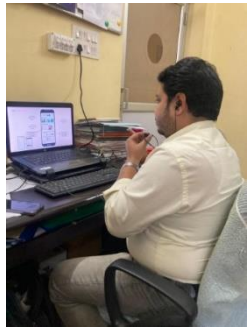
App to monitor fish diseases

Farmers can report disease outbreaks by providing information such as location, species affected, symptoms observed, and images on the app



Department official of Jharkhand sensitized on 'Report fish disease' application for effective health management

Kolkata,(KCN): The ICAR-CIFRI has organized one-day awareness program on fish disease surveillance and Report fish disease application program for effective health management under the NSPAAD phase II project funded by Pradhan Mantri Matsya Sampada Yojana (PMMSY) at ICAR-CIFRI, Barrackpore, Kolkata. Under the supervision of the Director, ICAR-CIFRI, Dr. B.K. Das, 26 officials from Jharkhand state livelihood promotion society, under Rural development department, Jharkhand were enlightened about the newly developed application 'Report fish disease' on 27th December 2023. These officials were working for the development of the fisheries sector in Seraikela, Khunti and Gumla districts of Jharkhand. The application was installed on the mobile phones of officials and the working principle and benefits were informed. The team also enlightens the gathering on several areas of disease surveillance and health management of fish including the aquatic environment vis-à-vis antimicrobial resistance issues, the status of fish disease management, sustainable approaches for aquaculture development, etc. The program was coordinated by Dr. Vikash Kumar, Mr. Asim Kumar Jana and research scholar of the NSPAAD Phase II project Souvik Dhar, Anupam Adhikari with great efficiency.



National Database on Aquatic Animal Diseases

Distribution maps

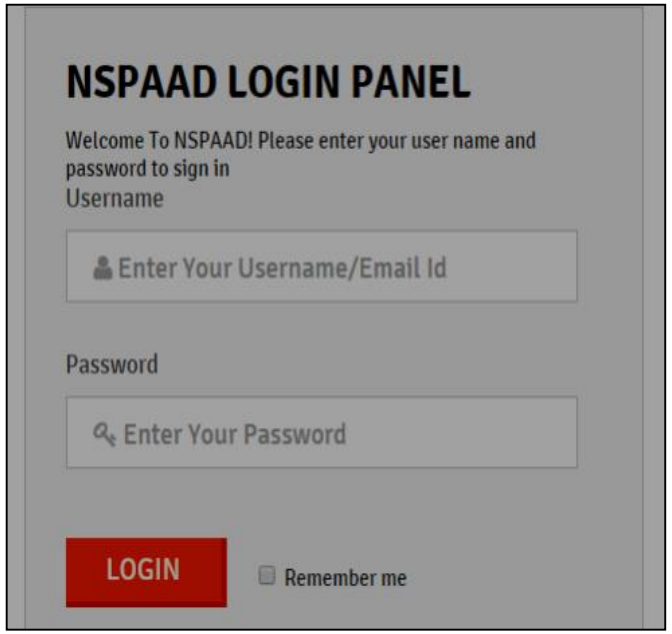
Home | Collaborating Centers | Research Group | States Covered | Gallery | Events | Download | Login

Download

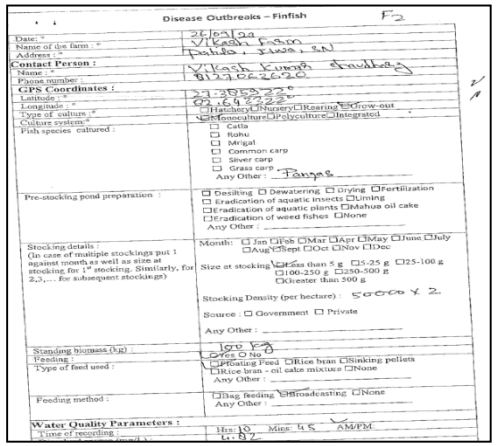
- NSPAAD Application User Manual
- Format for Baseline Information of the Farm
- Format for Biological Sample Collection- Finfish
- Format for Biological Sample Collection- Crustaceans
- Format for Biological Sample Collection- Molluscs
- Format for Collection of Information from Disease Outbreak- Finfish
- Format for Collection of Information from Disease Outbreak- Crustaceans
- Format for Collection of Information from Disease Outbreak- Molluscs

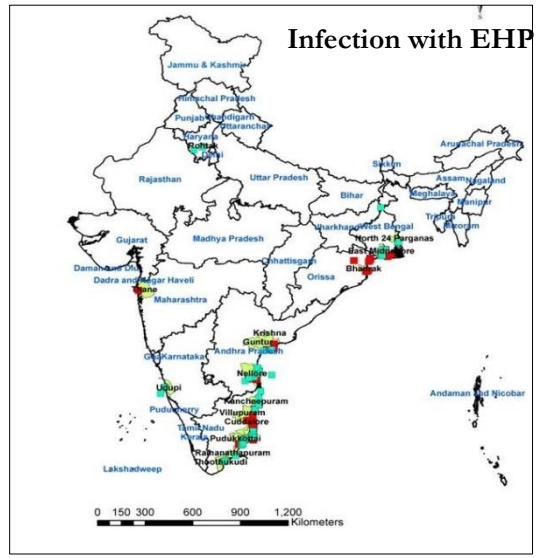
BASE LINE DATA OF THE FARM

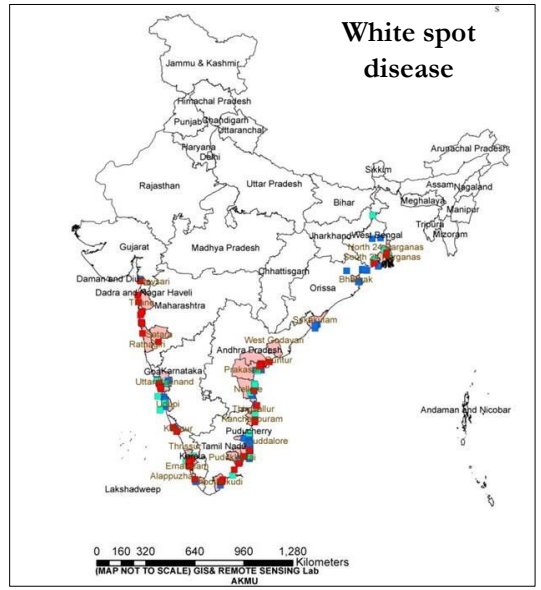
Date : *	
State : *	
District : *	
Block : *	
Village : *	
Contact details :	
Name of the farm :	
The farm has been operational since (year) :	
Owner of the farm :	
Contact person name : *	
Village :	
Block :	
Pin code :	
Phone No :	
GPS Coordinates :	
Latitude :	
Longitude :	
Details of the farm :	
Ownership of the farm :	☐ Owned ☐ Community ☐ Leased ☐ State farm ☐ None
If leased :	From: To:
Type of farm : *	☐ Brackishwater ☐ Cold water ☐ Freshwater ☐ Mariculture



Pradeep Mandal farm, Balasore, Odisha





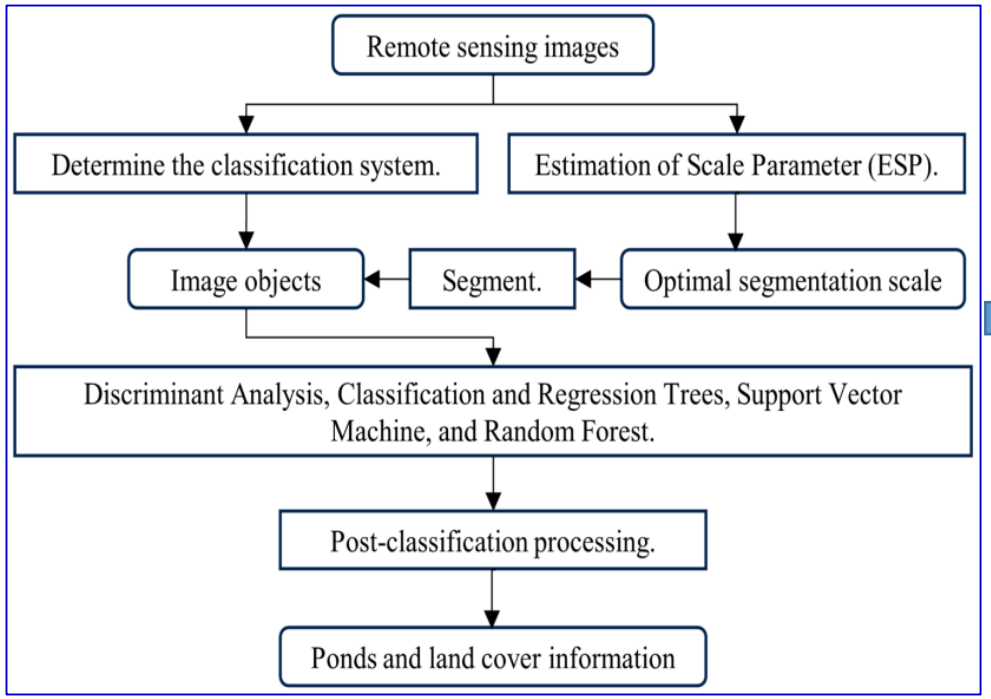


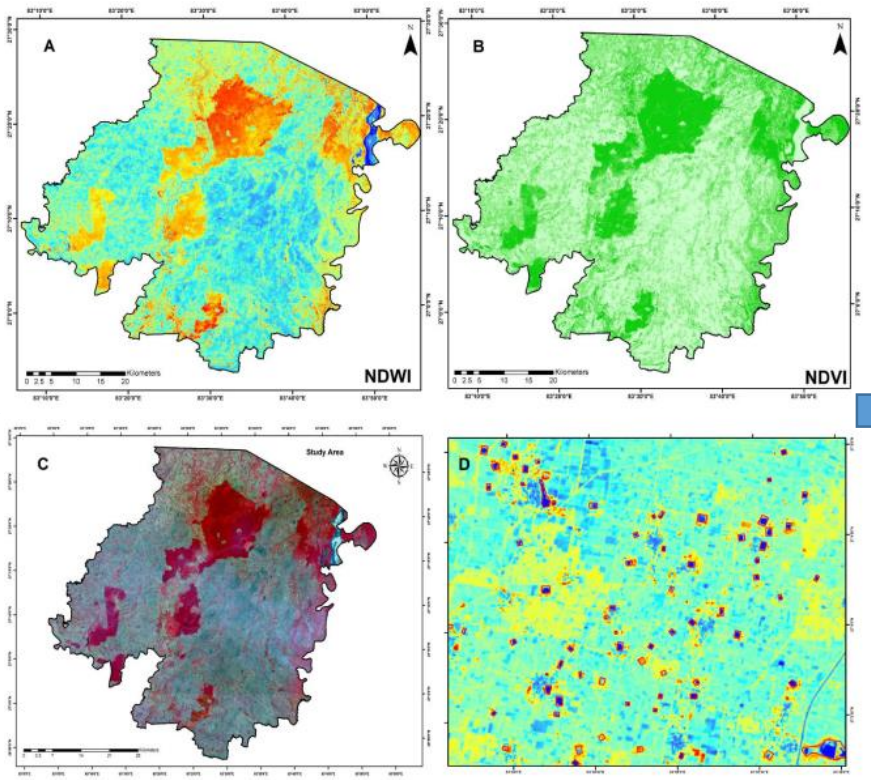
Water Body Detection using Remote Sensing & GIS Techniques

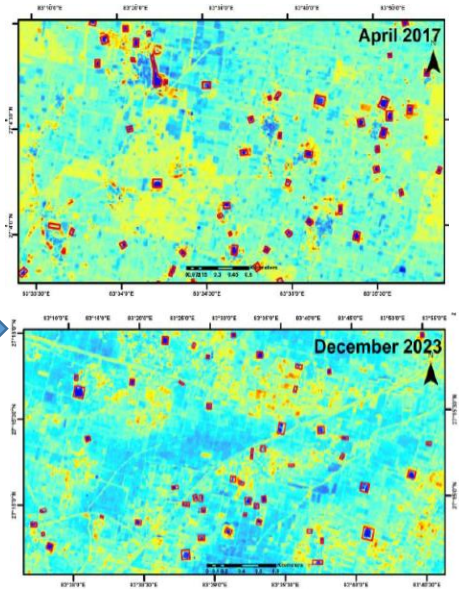
The five important key pond detection techniques utilizing remote sensing and GIS in Maharajganj District

- Spectral Analysis, Texture Analysis, Change Detection, Object-Based Image Analysis (OBIA), Hydrological Modeling Integration

Processing of Sentinel-2 satellite Image

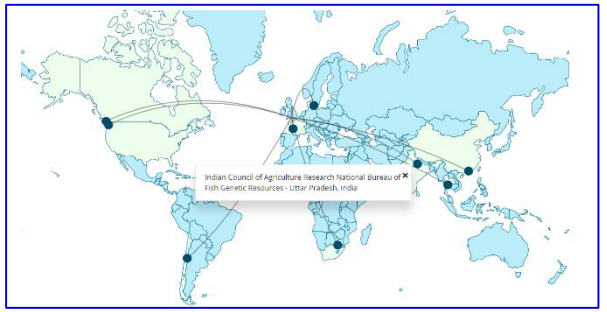






Impacts of Disease Governance under NSPAAD

- A strong network of Aquatic Animal Health Laboratories across the country
- Strengthening of passive disease surveillance in the country
- Diagnostic capability for OIE/NACA listed and emerging diseases
- Mechanism for first time reporting of exotic/emerging diseases
- System for alerts and advisories following suspicion/confirmation of new disease
- Providing scientific advice to the farmers



RFD app will serve as a platform for strengthening eGovernance on Aquatic Animal Disease Management in the country

Global Recognition

3rd International Conference on Aquatic Animal Epidemiology (November 30 - December 2, 2023)

Nearly 200 participants including 20 international experts

School on Aquatic Animal Epidemiology (December 4-8, 2023)

Resource person: Prof. K.L. Morgan, Emeritus Professor, University of Liverpool

Presentation of NSPAAD at FAO, Rome

Way Forward

- Improved reporting of disease cases using ReportFishDisease App
- Research on developing user-friendly tools of e-governance in fisheries and aquaculture for sustainable management
- Linking aquaculture insurance policies with disease reporting in the RFD App
- Baseline information of Fish Farms with geo-coordinates
- Strengthening of National Database on Aquatic Animal Diseases
  - ❑ Developing disease prediction models
  - ❑ Control strategies for major diseases affecting aquatic animals
- Use of artificial intelligence for disease diagnosis

Use of E-Governance to monitor, manage and control aquatic animal diseases for sustainable aquaculture development

Acknowledgements

- Minister of Fisheries, Animal Husbandry and Dairying, Government of India
- Secretary, Department of Fisheries, Govt. of India
- Secretary, Department of Administrative Reforms and Public Grievances
- Secretary, DARE and DG, Indian Council of Agricultural Research (ICAR)
- Jt. Secretaries, Department of Fisheries, Govt. of India
- Coordinator, NSPAAD and DDG (Fy. Sc.), ICAR
- Co-coordinator, NSPAAD and Director, ICAR-NBFGR
- State Fisheries Departments
- Collaborating Centres, NSPAAD

Thanks….