

Souvenir

Indian Ecological Society Conference-2023



IESFAC - 2023

FISHERIES AND AQUACULTURE AN ECOLOGICAL PERSPECTIVE

22-24 February, 2023



Collaborating Host Institute

Guru Angad Dev Veterinary and Animal Sciences University (GADVASU)
Ludhiana, Punjab, India - 141004

www.iesfaconf.in



DEPARTMENT OF FISHERIES
GOVERNMENT OF INDIA



राष्ट्रीय मात्स्यिकी विकास बोर्ड National Fisheries Development Board

मत्स्य पालन विभाग / Department of Fisheries

मत्स्यपालन, पशुपालन एवं डेयरी मंत्रालय / Ministry of Fisheries, Animal Husbandry and Dairying
भारत सरकार / Government of India



स्तम्भ संख्या - 235, पी.वी.एन.आर. एक्सप्रेस वे, डाक-एस.वी.पी. एन.पी.ए, हैदराबाद-500 052
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फोन/Phone No. 040-24000201, फैक्स/Fax No. 040-24015568 ईमेल/email: info.nfdb@nic.in

About NFDB

The National Fisheries Development Board (NFDB) was established in 2006 as an autonomous organization under the administrative control of the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India to enhance fish production and productivity in the country and to coordinate fishery development in an integrated and holistic manner

What We Are

- Providing focused attention to fisheries and aquaculture (Production, Processing, Storage, Transport and Marketing).
- Achieving sustainable management and conservation of natural aquatic resources.
- Applying modern tools of research and development for optimizing production and productivity from fisheries.
- Training and empower women in the fisheries sector and also generate substantial employment.

Mandates

- To bring activities relating to fisheries and aquaculture for focused attention and professional management.
- To coordinate activities pertaining to fisheries undertaken by different Ministries/ Departments in the Central Government and also coordinate with the State/Union Territory Governments.
- To generate substantial employment.
- To train and empower women in the fisheries sector.
- To enhance contribution of fish towards food and nutritional security.

NFDB Mission

- Holistic development of the fisheries sector through enhancement of fish production and productivity; to supplement nutritious protein for the growing population; to accelerate the overall economy of the country, besides improving health, economy, exports, employment and tourism in the country

Schemes

- Pradhan Mantri Matsya Sampada Yojana (PMMSY)
- Group Accidental Insurance Scheme (GAIS)
- Fisheries and Aquaculture Infrastructure Development Fund (FIDF)
- Fish Market Price Information System (FMPIS)

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Partners



**National Fisheries
Development Board**



**NATIONAL BANK FOR
AGRICULTURE AND
RURAL DEVELOPMENT**



Title	Fisheries and Aquaculture: An Ecological Perspective
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Department of Fisheries
Ministry of Fisheries, Animal Husbandry & Dairying
Government of India



Pradhan Mantri Matsya Sampada Yojana (PMMSY)

**Total Investment : 20,050 Crores
5 Years (2020-2025)**

<https://pmmsy.dof.gov.in/>

**Total Sanctioned
(CSS & CS)
Till Date
11,029 Crores**

**States/UT's
Covered
Till Date
35**

**Estimated
Beneficiaries
Direct & Indirect
16,00,000**

Envisaged Socio-Economic Targets by 2025

Production – 22 Million Metric Tons

Additional Employment – 55 Lakh

Export Earnings – Rs.1,00,000 Crores





National Bank for Agriculture and Rural Development

VISION

Development Bank of the Nation for Fostering Rural Prosperity

MISSION

Promote sustainable and equitable agriculture and rural development through participative financial and non-financial interventions, innovations, technology and institutional development for securing prosperity

NABARD has been instrumental in bringing several initiatives for rural development through financial and non-financial interventions since its inception in 1982. These initiatives are aimed at building an empowered and financially inclusive rural India through specific goal-oriented targets, which can be categorized broadly into three heads: (i). Financial (ii) Developmental and (iii) Supervision.

HIGHLIGHTS

- Refinance support of ₹11636 crore to Cooperative banks & RRBs in FY 2021-22 for meeting credit need of farmers for agriculture operation and capital formation in Punjab.
- 8030 projects sanctioned with assistance of ₹ 11053.23 crore under Rural Infrastructure Development Fund (RIDF) in the State. During 2021-22 financial support facilitated irrigation infrastructure for 14044 hectare of land, construction of 3593 rooms in government schools and drinking water infrastructure across 460 villages.
- NABARD has also sanctioned a loan of ₹249.77 crore to National Dairy Development Board (NDDB) for modernizing the milk processing plants and machinery.
- NABARD has promoted more than 125 FPOs in Punjab. These FPOs are helping producers in collectivization of produce, processing, forward and backward linkages, marketing avenues, credit availability, etc.
- NABARD in collaboration with State and its agencies has supported climate change projects like Crop Residue Management Programme and Climate Resilient Livestock Production System in Punjab.
- Watershed development and projects like reclamation of alkaline soil in Patiala & Sangrur districts, promotion of DSR through Tar-Wattar Technology, Integrated Water Management Scheme (IWMS) in the aspirational district of Moga, to name a few are among area development interventions of NABARD in the State.
- New age, IOT based projects such as Pashu Palak Tele Advisory Kendra (PPTAK) was supported at GADVASU for tele call & Mobile app based advisory to livestock farmers. Another innovative project on Artificial Intelligence based collars designed by IIT Ropar for 24x7 monitoring of milch animals has been sanctioned to KVK Booh under GADVASU.
- In the International Year of Millets, a project on promoting millets has also been sanctioned to KVK Gurdaspur to be implemented in Gurdaspur, Amritsar, Tarn Taran, and Pathankot.



Punjab State Council for Science & Technology (PSCST)
Department of Science, Technology and Environment,
Government of Punjab



Punjab State Council for Science & Technology (PSCST) is the technical arm of Department of Science, Technology & Environment, Punjab as well as State Level Node of Department of Science & Technology, GOI. It is the Nodal Agency for promotion of Science & Technology in the State and is a Scientific and Industrial Research Organization approved by Department of Scientific & Industrial Research, Ministry of Science & Technology, GOI



PSCST is also spearheading Mission Innovate Punjab launched by the State Government for synergizing all the elements of Science, Technology & Innovation (STI) ecosystem for socio-economic development of the State. It functions through Research, Innovation & Start-up Facilitation, Technology Facilitation & STI Translation Facilitation Divisions to achieve its objectives. PSCST is engaged in identification of STI needs of various sectors & facilitating addressal thereof; technology development & demonstration; providing technological support for cleaner production to industry; creating synergies & networking with STI partners i.e. R&D Institutions, Universities, Industry, startups & Govt Departments; providing IPR support to innovators, capacity building, skill development and outreach activities. Further, the Council coordinates policy and infrastructure development for promotion of Science, Technology & Innovation (STI) in the State.

The Council hosts specialized centres supported by Ministry of Science & Technology, Govt. of India viz State Climate Change Knowledge Centre; Patent Information Centre; and Rural Innovation & Application Centre. It also has Technology Innovation Support Centre of World Intellectual Property Organization of United Nations and Regional Centre of Expertise on Education for Sustainable Development of United Nations University Institute of Advances Studies. The Council is also the Nodal Agency for National flagship programmes for science awareness and generating environmental consciousness of Department of Science & Technology, Govt. of India and Ministry of Environment, Forest & Climate Change, GOI.



ACKNOWLEDGEMENTS

The financial support received from the Esteemed Conference Partners, National Fisheries Development Board (NFDB) and National Bank for Agriculture and Rural Development (NABARD) for organizing the conference on “Fisheries and Aquaculture: An Ecological Prospective” at Guru Angad Dev Veterinary and Animal Sciences University is acknowledged with gratitude.

The financial assistance received from the Sponsors and Co-Sponsors Associated with the event is also gratefully acknowledged by the organizers.



श्री परशोत्तम रूपाला
Shri Parshottam Rupala



मंत्री
मत्स्यपालन, पशुपालन एवं डेयरी
भारत सरकार
Minister
Fisheries, Animal Husbandry and Dairying
Government of India

Message

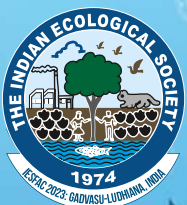
The fisheries sector is one of the fastest growing food producing sectors in the country and has registered an impressive growth of 14.3% from 2019-20 to 2021-22, with total national fisheries production reaching to all time high from 14.16 million tons in 2019-20 to 16.18 million tons during 2021-22. Fisheries has emerged as a high value enterprise in the recent past, supporting over 28 million of fish farmers, fish workers and other fishers and contributing 7.28% to national agriculture GDP. India is bestowed with diverse aquatic resources, which need to be judiciously utilized and conserved for long term socio-economic sustainability.

To realize actual potential of capture and culture fisheries resources of the country and to achieve an envisaged production target of 22 million tons by 2025, the Hon'ble Prime Minister of India launched the "Pradhan Mantri Matsya Sampada Yojana" (PMMSY) flagship program in 2020 for holistic development of the sector through various promotional schemes with a speculated investment of Rs. 20,050 crores. PMMSY is supporting the sector with substantial financial assistance to beneficiaries and the line institutes/departments/agencies for R&D and capacity building of stakeholders.

Further, climate smart eco-friendly technologies are required to develop resilient food systems and help our natural resources conserve their economic potentials for the future generations to come. I am pleased to know that the Indian Ecological Society is organizing a conference on "Fisheries and Aquaculture - An Ecological Perspective" (IESFAC-2023) in collaboration with one of the top-ranking veterinary universities, Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) at Ludhiana, Punjab from 22-24 February, 2023. Such national events are required to unify the experts, stakeholders and policy makers at a common platform to contemplate important issues associated with the sector, to formulate a strategic climate resilient eco-friendly action plan towards achieving the prospective aim of doubling farmers income and envisioned production targets. It will certainly analyses the strengths, weaknesses, opportunities and threats towards sustainable use of aquatic food production resource in reference to food security and growth of rural and national economy.

With warm compliments to the organizers, I wish the event all success.


(Parshottam Rupala)





Shri Banwarilal Purohit

Governor of Punjab
and
Administrator
Union Territory, Chandigarh



**Raj Bhawan
Chandigarh.**

Message

It is a matter of pleasure to learn that Indian Ecological Society, Ludhiana is going to organise 3 days Conference on “Fisheries and Aquaculture - An Ecological Perspective” in collaboration with Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

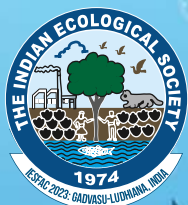
It is very important to develop environment friendly technologies for sustainable development of food production systems, which need to be resilient to changing climate.

Punjab is a progressive State with historic green and white revolution accomplishments and also has potential resources to witness striking leap towards blue revolution in coming years, especially due to development of shrimp farming in inland salt affected water logged waste lands of south west Punjab. About 1.5 lakh hectares of salt affected area in South west Punjab offers a huge resource for horizontal expansion of aquaculture sector, which needs to be developed with an integrated approach promoting conservation and sustainable use of land, water and living resources in an equitable way.

I strongly hope that the scientific deliberations during the Conference will offer pragmatic solutions to address emerging awareness and concerns about environmental health, climate change resilience and food safety.

I extend best wishes to the Indian Ecological Society and the Guru Angad Dev Veterinary and Animal Sciences University and wish the conference all success.

(Banwarilal Purohit)





ਸ਼੍ਰੀ ਭਗਵੰਤ ਮਾਨ
Shri Bhagwant Mann



ਮੁੱਖ ਮੰਤਰੀ, ਪੰਜਾਬ
Chief Minister, Punjab

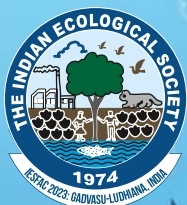
Message

It is heartening to learn that the Indian Ecological Society, Ludhiana (Punjab) is organizing Conference on “Fisheries and Aquaculture - An Ecological Perspective” (IESFAC-2023) at Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana in February, 2023.

The concerted efforts of Indian Ecological Society and Guru Angad Dev Veterinary and Animal Sciences University in organizing this conference are really laudable. I am confident this initiative will go a long way in chalking out an effective action plan for economic utilization of fishery resources through an ecosystem approach for long term suitability.

On this occasion, I convey my best wishes for the success of this event.

(Bhagwant Mann)





ਸ਼੍ਰੀ ਭਗਵੰਤ ਮਾਨ
Shri Bhagwant Mann



ਮੁੱਖ ਮੰਤਰੀ, ਪੰਜਾਬ
Chief Minister, Punjab

ਸੰਦੇਸ਼

ਮੈਨੂੰ ਇਹ ਦੱਸਦਿਆਂ ਖੁਸ਼ੀ ਹੋ ਰਹੀ ਹੈ ਕਿ ਇੰਡੀਅਨ ਈਕੋਲੋਜੀਕਲ ਸੁਸਾਇਟੀ, ਲੁਧਿਆਣਾ (ਪੰਜਾਬ) ਵੱਲੋਂ ਫਰਵਰੀ, 2023 ਵਿਚ ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਵੈਟਰਨਰੀ ਐਂਡ ਐਨੀਮਲ ਸਾਇੰਸਜ਼ ਯੂਨੀਵਰਸਿਟੀ, ਲੁਧਿਆਣਾ ਵਿਖੇ 'ਮੱਛੀ ਤੇ ਜਲਜੀਵ ਪਾਲਣ-ਇਕ ਵਾਤਾਵਰਣਿਕ (ਦ੍ਰਿਸ਼ਟੀਕੋਣ)' (ਆਈ.ਈ.ਐਸ.ਐਫ.ਏ.ਸੀ.-2023) ਵਿਸ਼ੇ ਉਤੇ ਕਾਨਫਰੰਸ ਕਰਵਾਈ ਜਾ ਰਹੀ ਹੈ।

ਇਹ ਕਾਨਫਰੰਸ ਕਰਵਾਉਣ ਲਈ ਇੰਡੀਅਨ ਈਕੋਲੋਜੀਕਲ ਸੁਸਾਇਟੀ ਅਤੇ ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਵੈਟਰਨਰੀ ਐਂਡ ਐਨੀਮਲ ਸਾਇੰਸਜ਼ ਯੂਨੀਵਰਸਿਟੀ ਵੱਲੋਂ ਕੀਤੇ ਗਏ ਯਤਨ ਸ਼ਲਾਘਾਯੋਗ ਹਨ। ਮੈਨੂੰ ਪੂਰਨ ਵਿਸ਼ਵਾਸ ਹੈ ਕਿ ਇਹ ਉਪਰਾਲਾ ਦੀਰਘਕਾਲੀ ਸਥਿਰਤਾ ਲਈ ਵਾਤਾਵਰਣ ਪੱਖੀ ਪਹੁੰਚ ਰਾਹੀਂ ਮੱਛੀ ਪਾਲਣ ਦੇ ਸਰੋਤਾਂ ਦੀ ਆਰਥਿਕ ਤੌਰ ਉਤੇ ਵਰਤੋਂ ਕਰਨ ਦੇ ਉਦੇਸ਼ ਨਾਲ ਢੁਕਵੀਂ ਕਾਰਜ ਯੋਜਨਾ ਉਲੀਕਣ ਲਈ ਸਹਾਈ ਸਿੱਧ ਹੋਵੇਗਾ।

ਇਸ ਮੌਕੇ ਮੈਂ ਇਸ ਕਾਨਫਰੰਸ ਦੀ ਸਫਲਤਾ ਲਈ ਸ਼ੁੱਭ ਕਾਮਨਾਵਾਂ ਭੇਜਦਾ ਹਾਂ।

(ਭਗਵੰਤ ਮਾਨ)





Shri Laljit Singh Bhullar
Cabinet Minister



Animal Husbandry, Fisheries and Dairy Development, Punjab

Message

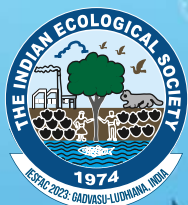
Fisheries is recognized as a sun rise sector, making significant contributions to food and nutritional security; livelihood and employment generation; doubling farmers income; and economic prosperity. Further, aquaculture is also well known as a remunerative diversifying component for agriculture and livestock farmers, capable of enhancing farmers income by many folds. It has converted salt affected water logged areas of the State into an economic resource through shrimp farming and is expected to boost the state and national economy with striking export earnings. For sustainable development of the sector, climate resilient and environmentally safe technologies are required for achieving required production levels and maintaining the quality standards.

I am glad to note that the Indian Ecological Society, Punjab is going to organize 3 days conference on “Fisheries and Aquaculture - An Ecological Perspective” (IESFAC-2023) at Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana from 22nd to 24th February, 2023; which will provide a national platform for experts, fishers and the industry to deliberate on economically and environmentally viable interventions required for holistic development of fisheries and aquaculture sectors.

I warmly communicate my best wishes to the organizers and hope that the conference will be a grand success; and put forward prudent recommendations to expand the horizon of this sun rise sector to newer heights.

Laljit Singh Bhullar

(Laljit Singh Bhullar)





ਸ਼੍ਰੀ ਲਾਲਜੀਤ ਸਿੰਘ ਭੁੱਲਰ
ਕੈਬਨਿਟ ਮੰਤਰੀ



ਪਸ਼ੂ ਪਾਲਣ, ਮੱਛੀ ਪਾਲਣ ਅਤੇ ਡੇਅਰੀ ਵਿਕਾਸ
ਪੰਜਾਬ

ਸੰਦੇਸ਼

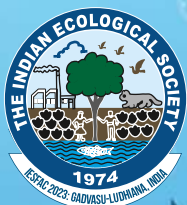
ਮੱਛੀ ਪਾਲਣ ਨੂੰ ਇਕ ਨਿਰੰਤਰ ਪ੍ਰਗਤੀਸ਼ੀਲ ਖੇਤਰ ਵਜੋਂ ਮਾਨਤਾ ਪ੍ਰਾਪਤ ਹੈ, ਜੋ ਕਿ ਭੋਜਨ ਅਤੇ ਪੌਸ਼ਟਿਕ ਸੁਰੱਖਿਆ ਦੇ ਨਾਲ-ਨਾਲ ਰੁਜ਼ਗਾਰ ਦੇ ਵਧੇਰੇ ਮੌਕੇ ਪੈਦਾ ਕਰਨ, ਕਿਸਾਨਾਂ ਦੀ ਆਮਦਨ ਦੁਗਣੀ ਕਰਨ ਅਤੇ ਆਰਥਿਕ ਖੁਸ਼ਹਾਲੀ ਵਿੱਚ ਮਹੱਤਵਪੂਰਨ ਯੋਗਦਾਨ ਪਾ ਰਿਹਾ ਹੈ। ਇਸ ਤੋਂ ਇਲਾਵਾ, ਜਲ ਜੀਵ ਪਾਲਣ ਨੂੰ ਖੇਤੀਬਾੜੀ ਅਤੇ ਪਸ਼ੂ ਪਾਲਕਾਂ ਲਈ ਇੱਕ ਲਾਭਕਾਰੀ ਵਿਭਿੰਨਤਾ ਵਾਲੇ ਕਿੱਤੇ ਵਜੋਂ ਵੀ ਜਾਣਿਆ ਜਾਂਦਾ ਹੈ, ਜੋ ਕਿਸਾਨਾਂ ਦੀ ਆਰਥਿਕਤਾ ਨੂੰ ਬਿਹਤਰ ਕਰਨ ਦੇ ਸਮਰੱਥ ਹੈ। ਇਸ ਖੇਤਰ ਨੇ ਝੀਂਗਾ ਪਾਲਣ ਦੇ ਮਾਧਿਅਮ ਰਾਹੀਂ ਰਾਜ ਦੇ ਸੇਮ ਪ੍ਰਭਾਵਿਤ ਖੇਤਰਾਂ ਨੂੰ ਆਰਥਿਕ ਸਰੋਤ ਵਿੱਚ ਬਦਲ ਦਿੱਤਾ ਹੈ ਅਤੇ ਇਹ ਉਮੀਦ ਕੀਤੀ ਜਾ ਰਹੀ ਹੈ ਕਿ ਝੀਂਗਾ ਪਾਲਣ ਤੋਂ ਪ੍ਰਾਪਤ ਹੁੰਦੀ ਨਿਰਯਾਤ ਕਮਾਈ ਨਾਲ ਸੂਬੇ ਦੀ ਅਤੇ ਰਾਸ਼ਟਰੀ ਆਰਥਿਕਤਾ ਨੂੰ ਹੁਲਾਰਾ ਮਿਲੇਗਾ। ਇਸ ਖੇਤਰ ਦੇ ਨਿਰੰਤਰ ਵਿਕਾਸ ਲਈ, ਲੋੜੀਂਦੇ ਉਤਪਾਦਨ ਨੂੰ ਪ੍ਰਾਪਤ ਕਰਨ ਅਤੇ ਗੁਣਵੱਤਾ ਦੇ ਮਾਪਦੰਡਾਂ ਨੂੰ ਕਾਇਮ ਰੱਖਣ ਲਈ ਉਨ੍ਹਾਂ ਤਕਨਾਲੋਜੀਆਂ ਦੀ ਲੋੜ ਹੈ ਜੋ ਕਿ ਵਾਤਾਵਰਣ ਸਨੇਹੀ ਹੋਣ।

ਮੈਨੂੰ ਇਹ ਜਾਣ ਕੇ ਪ੍ਰਸੰਨਤਾ ਹੋਈ ਹੈ ਕਿ ਇੰਡੀਅਨ ਈਕੋਲੋਜੀਕਲ ਸੋਸਾਇਟੀ (ਪੰਜਾਬ) 22 ਤੋਂ 24 ਫਰਵਰੀ, 2023 ਦੌਰਾਨ ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਵੈਟਨਰੀ ਅਤੇ ਐਨੀਮਲ ਸਾਇੰਸਜ਼ ਯੂਨੀਵਰਸਿਟੀ, ਲੁਧਿਆਣਾ ਵਿਖੇ “ਮੱਛੀ ਅਤੇ ਜਲ ਜੀਵਪਾਲਣ - ਇੱਕ ਵਾਤਾਵਰਣਿਕ ਦ੍ਰਿਸ਼ਟੀਕੋਣ (IESFAC-2023)” ਵਿਸ਼ੇ ‘ਤੇ ਤਿੰਨ ਦਿਨਾਂ ਕਾਨਫਰੰਸ ਦਾ ਆਯੋਜਨ ਕਰ ਰਹੀ ਹੈ। ਇਹ ਕਾਨਫਰੰਸ ਮਾਹਿਰਾਂ, ਮੱਛੀ ਪਾਲਕਾਂ ਅਤੇ ਉਦਯੋਗਾਂ ਨੂੰ ਮੱਛੀ ਪਾਲਣ ਅਤੇ ਜਲਜੀਵ ਪਾਲਣ ਦੇ ਸੰਪੂਰਨ ਵਿਕਾਸ ਲਈ ਵਿਚਾਰ ਵਟਾਂਦਰਾ ਕਰਨ ਹਿਤ ਇੱਕ ਰਾਸ਼ਟਰੀ ਮੰਚ ਪ੍ਰਦਾਨ ਕਰੇਗੀ।

ਮੈਂ ਪ੍ਰਬੰਧਕਾਂ ਨੂੰ ਆਪਣੀਆਂ ਸ਼ੁਭਕਾਮਨਾਵਾਂ ਦਿੰਦਾ ਹੋਇਆ ਉਮੀਦ ਕਰਦਾ ਹਾਂ ਕਿ ਇਸ ਕਾਨਫਰੰਸ ਨੂੰ ਜ਼ਾਨਦਾਰ ਸਫਲਤਾ ਮਿਲੇਗੀ ਅਤੇ ਇਸਤੇ ਜੀ ਨਾਲ ਉੱਭਰਦੇ ਖੇਤਰ ਨੂੰ ਨਵੀਆਂ ਉਚਾਈਆਂ ਤੱਕ ਲਿਜਾਣ ਲਈ ਨਵੇਂ ਨੁਕਤੇ ਤੇ ਵਿਚਾਰ ਸਾਹਮਣੇ ਆਉਣਗੇ।

Laljit Singh Bhullar

(ਲਾਲਜੀਤ ਸਿੰਘ ਭੁੱਲਰ)





डॉ. हिमांशु पाठक

सचिव, एवं महानिदेशक

Dr. Himanshu Pathak

Secretary (DARE) &
Director General (ICAR)



भारत सरकार
कृषि अनुसंधान और शिक्षा विभाग एवं
भारतीय कृषि अनुसंधान परिषद
कृषि एवं किसान कल्याण मंत्रालय, कृषि भवन, नई दिल्ली 110 001

GOVERNMENT OF INDIA
DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION (DARE)
AND

INDIAN COUNCIL OF AGRICULTURAL RESEARCH (ICAR)

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

KRISHI BHAVAN, NEW DELHI 110 001

Tel.: 23382629; 23386711 Fax: 91-11-23384773

E-mail: dg.icar@nic.in

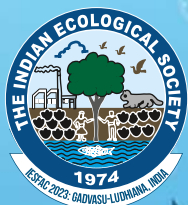
Message

I am happy to learn that Indian Ecological Society is organizing a Conference on “Fisheries and Aquaculture - An Ecological Perspective” at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana, Punjab on 22-24 February, 2023.

With a responsibility of feeding an expected world population of 9.0 billion by 2050, agriculture and allied sectors, including livestock and fisheries, need to march smartly to combat challenges of climate change, depletion and deterioration of land and water resources. It is essential to ensure sustainable supply of safe food without affecting the environment. This could be achieved through eco-friendly innovations to enhance productivity of agri-food systems and minimize post-harvest losses. The fisheries sector has significant role in food security and nutrition; livelihood support for rural communities; and economic growth of the nation. The fisher communities need to be educated to make them more adaptive to emerging challenges like climate change risks, resource health and food safety concerns.

I am confident that this conference will provide an interactive scientific platform for deliberations to work out short term and long-term strategies for professionals, fishers, industry and policy makers for sustainable development of the fisheries sector.

I extend warm compliments to the organizers and wish the conference a grand success.



(Himanshu Pathak)



श्री जतीन्द्र नाथ स्वेन, भा.प्र.से.
सचिव

Shri Jatinder Nath Swain, IAS
Secretary



मत्स्यपालन, पशुपालन एवं डेयरी मंत्रालय
मत्स्यापालन विभाग, कृषि भवन, नई दिल्ली-110001

**Ministry of Fisheries,
Animal Husbandry & Dairying
Department of Fisheries,
Krishi Bhawan, New Delhi-110001**



Message

It gives me immense pleasure to know that the Indian Ecological Society, Punjab is organizing a Conference on “Fisheries and Aquaculture - An Ecological Perspective” in collaboration with College of Fisheries, Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana, Punjab from February 22-24, 2023.

The Indian fisheries sector has evolved a long way since the independence, with the production rising from 0.75 million tonnes in 1950-51 to 16.2 million tonnes in 2021-22. All this has been possible due to the untiring efforts of the fishers, fish farmers, extension agents, educational and research institutions, and fisheries scientists. Recognizing the potential of the sector, Government of India has undertaken several initiatives from time to time including the current flagship scheme of “Pradhan Mantri Matsya Sampada Yojna” (PMMSY) to facilitate blue revolution in form of development of viable and sustainable fisheries and aquaculture through suitable interventions at critical points of the value chain.

The targets under PMMSY envisage fish production of 22 million tonnes and an additional employment generation of 55 lakh man-years by 2024-25. However, such is possible only if the productivity increases through a series of continuous innovations in the value chain. Over the years ICAR institutions and State Agricultural Universities - like Punjab Agricultural University, have played a pivotal role in the formulation and advancement of new technologies leading to successful projects in the field and further refinement by the practitioners.

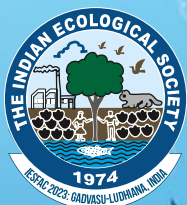
While we will continue to concentrate on growth of fisheries, it is important to keep in mind the need for judicious use of water resources for holistic development of the aquaculture sector and sustained prosperity of the nation. There is also a pressing need to minimize the impact on environment and to conserve the ecological health of our aquatic resources. Against this backdrop, the conference titled “Fisheries and Aquaculture- An Ecological Perspective” is a very timely initiative.

I am confident that this conference will provide an effective Scientist-Farmer-Industry interface to deliberate on the key issues, and to offer recommendations for sustainable development of fisheries sector at regional and national levels.

I wish to compliment the organizers and the aspiring participants in this endeavor and wish them grand success.

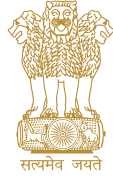
Jatindra Nath Swain

(Jatindra Nath Swain)





डॉ. सी. सुवर्णा भा.व.से.
मुख्य कार्यपालक
Dr. C. Suvarna, IFS
Chief Executive



राष्ट्रीय मात्स्यिकी विकास बोर्ड
National Fisheries Development Board
मत्स्य पालन विभाग
Department of Fisheries

(मत्स्यपालन, पशुपालन एवं डेयरी मंत्रालय, भारत सरकार)
(Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India)

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Message

Fisheries and aquaculture remain an important source of food, nutrition, employment and income for millions of people; and is one of the protein rich complete foods to alleviate hunger and nutrient deficiency. Indian fisheries sector is a very fast-growing sector, with 10.34% average annual growth rate in fish production and total export earnings was more than Rs. 57,586.48 crores during 2021-2022. Foreseeing an enormous potential in fishery sector, in special reference to rural populations, it is essential to develop the sector in a responsible, comprehensive and equitable manner for sustained economic yields.

With wide range of development activities from technology generation to infrastructure development and capacity building, National Fisheries Development Board (NFDB), Hyderabad is also facilitating transfer of available technologies from “Lab to Land” to catalyze farm level adoptions. DOF, MoFAHD is dedicated to reinforce the fisheries supply chain through its multidimensional Pradhan Mantri Matsya Sampada Yojna (PMMSY), with all time big investment of 20,050 crores in the history of fisheries sector.

In view of modern-day challenges of global warming, climate change, pollution and population explosion; along with rising concerns about environmental health and food safety, it is vital to make the food-systems sustainable, climate smart and environment friendly. It is heartening to learn that the Indian Ecological Society, Punjab is going to provide a much-desired platform to spotlight on environmental matters related to fisheries sector, through a conference on “Fisheries and Aquaculture: An Ecological Perspective” to be organized in collaboration with Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana, Punjab in 2023 from 22nd to 24th February.

I strongly believe that the conference will provide an effectual interactive stage to the academicians, researchers, fisheries professionals, farmers, industry representatives and policy makers to deliberate on core and consequential issues related to development of fisheries and aquaculture sectors, in light of associated environmental and public health concerns. With warm compliments and best wishes to the organizers and prospective participants, I wish the event all success.

(Suvarna Chandrappagari)





डॉ. जे.के. जेना

उप महानिदेशक (मत्स्य विज्ञान)

Dr. J.K. Jena

Deputy Director General
(Fisheries Science)



भारतीय कृषि अनुसंधान परिषद

कृषि अनुसंधान भवन-II, नई दिल्ली-110 012

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

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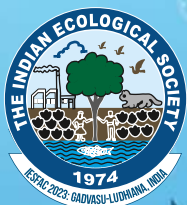
Email: ddgfs.icar@gov.in. jkjena2@gmail.com

Message

I am pleased to know that the Indian Ecological Society, Punjab Agricultural University, Ludhiana (Punjab) is organizing a Conference on “Fisheries and Aquaculture - An Ecological Perspective (IESFAC-2023)” in collaboration with the Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana, Punjab from 22-24 February 2023.

The fisheries sector, besides providing food and nutritional security, is also offering livelihood and employment opportunities to millions of people across the country, especially in rural areas. With total fisheries production of 16.18 million tonnes and export earnings of Rs.57,586 crores during 2021-22, the sector targets to achieve a production target of 22 million tonnes by 2024-25, for which several promotional schemes, development programmes, and policies are being implemented at the National and State levels. An ecosystem approach, therefore, is essentially required for sustainable development of the sector to harness the actual potential of aquatic resources with required measures to safeguard human and environmental wellbeing as well. The fisheries sector in Punjab has registered an impressive average annual growth rate of over 8% since 2010-11 and there is still great scope for taking the sector to newer heights. Due to the availability of vast resources of inland saline waters in Punjab and other north-western states like Haryana, Rajasthan and Uttar Pradesh, the region is expected to develop into a shrimp farming hub in coming years. In this endeavour, all food production systems, including fisheries, need to be evaluated in context to their ecological perspective to maintain quality and quantum of output in an eco-friendly manner.

I strongly believe that scientific interactions and deliberations at the said conference will highlight the key issues and recommendations to achieve the envisaged production targets through an effective lucid resilient action plan, within the environmental health protection requirements. I warmly convey my sincere greetings to the Indian Ecological Society and Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana for this initiative, and wish the Conference all success with great participation and fruitful deliverables.



J.K. Jena
21/12/22

(J.K. Jena)



डा. रविशंकर सी.एन.
निदेशक/उप-कुलपती

Dr. Ravishankar C.N.
Director/Vice-Chancellor



भारतीय कृषि अनुसंधान परिषद
भा.कृ.अनु.प.-केन्द्रीय मात्स्यिकी शिक्षा संस्थान, मुंबई
(वि.अ.आ. अधिनियम धारा-३ के अंतर्गत विश्वविद्यालय)

ICAR - CENTRAL INSTITUTE OF FISHERIES EDUCATION

(University under Sec. 3 of UGC Act)



कृषि एवं किसान कल्याण मंत्रालय, भारत सरकार, Ministry of Agriculture and Farmers Welfare, Govt. of India

Message

It is quite gratifying to note that the Indian Ecological Society' (IES), Punjab, in collaboration with College of Fisheries, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana is organizing the National Conference on "Fisheries and Aquaculture: An Ecological Perspective" from February 22-24, 2023. It is a timely taken initiative to respect and conserve the ecosystem services of natural resources to safeguard sustainability of our food production systems.

In light of the growing population and the ensuing rise in demand for food, fisheries and aquaculture will continue to play an important role in food and nutritional security for human populations expected to become 9.7 billion by 2050; and supporting millions of livelihoods at globally, especially in developing countries like India. Hence, it is vital to ensure that the aquatic resources are sensibly used through an ecosystem approach to safeguard long term sustainability. The conference's name is highly intriguing, covering the key areas with regard to environmental well-being in context to imperative aspects involved in development of fisheries and aquaculture sectors. Major concerns associated with any food production systems, like public health, climate change, value addition and food safety have been well considered in the conference theme areas.

Central Institute of Fisheries Education (CIFE), Deemed to be University, the premier ICAR institute for fisheries education in India, along with 2 fisheries universities and 32 fisheries colleges across the nation, is catering to professional human resource requirements of the sector. The fisheries education system in India also needs to be strengthened for required human resource output to achieve the envisaged fisheries production targets under the flagship scheme of the Prime Minister, the Pradhan Mantri Matsya Sampada Yojna (PMMSY), Department of Fisheries (DOF), MFAHD, GOI. The conference will serve as an excellent academic platform for postgraduate students, researchers and scientists to exhibit their scientific accomplishments and contributions and develop fruitful linkages fostering prospective collaborative R&D programs among different institutions.

I strongly believe that conference will benefit the fisheries sector with visionary recommendations towards sustainability. I also extend compliments and best wishes to the organizers and the participants for the grand success of the conference.

(Ravishankar C.N.)



ਡਾ. ਇੰਦਰਜੀਤ ਸਿੰਘ
ਉਪ-ਕੁਲਪਤੀ

Dr Inderjeet Singh
Vice-Chancellor



ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਵੈਟਰਨਰੀ ਅਤੇ ਐਨੀਮਲ ਸਾਇੰਸਿਜ਼ ਯੂਨੀਵਰਸਿਟੀ
ਲੁਧਿਆਣਾ-141004, ਪੰਜਾਬ (ਭਾਰਤ)

GURU ANGAD DEV VETERINARY & ANIMAL SCIENCES UNIVERSITY
LUDHIANA-141004, PUNJAB (INDIA)

Message

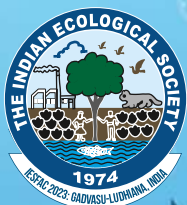
India is the 2nd largest aquaculture nation in the world after China, with all time high total fish production of 16.18 million tons recorded during 2021-22, accounting for 7.56% of global production. Contribution of fisheries sector towards food security, nutrition, livelihood support, employment generation and economic growth is well documented, especially in developing countries like India. Presently, about 28 million people in India, including fishermen, fish farmers and fish workers, are engaged in the fisheries and aquaculture at primary level. Aqua-food is an affordable rich source of complete animal protein, poly unsaturated fatty acids (PUFAs) like omega-3 and omega-6 fatty acids, minerals and vitamins, offering multiple health benefits and healthy option to mitigate hunger and malnutrition thereby contributing towards attaining the UN Sustainable Development Goals (SDGs).

With double digit average annual growth rate of 10.8% since 2014-15, the fisheries sector has a long way to go to harness actual economic potentials of its capture and culture fisheries resources. Recognizing the importance and potential of the fisheries sector, separate Department of Fisheries (DOF) was established under the Ministry of Fisheries, Animal Husbandry and Dairying by Government of India (GOI). Subsequently, Prime Ministers flagship scheme, Pradhan Mantri Matsya Sampada Yojana (PMMSY), was launched in May 2020 to give "Blue Revolution" a boost for achieving the production target of 22 million tons by 2025 and doubling the export earnings to Rs. 1,00,000 crores, besides generating 55 lakh additional employment opportunities and doubling income of the fishers.

However, every food system needs to be sustainably adaptive to emerging challenges of global warming, climate change, environmental contamination, resistant pathogens and food safety to attain the above set goals. Further, it is also vital to develop diverse region-specific aquaculture systems, benefitting all small, medium and large farmers without any environmental and social conflicts. The said conference on "Fisheries and Aquaculture- An Ecological Perspective" has been timely conceived by the Indian Ecological Society, Punjab, which is going to be organized in collaboration with the Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) at Ludhiana, Punjab from 22nd to 24th February, 2023. Punjab is a progressive State, heading towards "Blue Revolution" after attaining "Green" and "White" revolutions successfully. With huge potential of shrimp farming in inland salt affected areas, Punjab and its neighbouring states are expected to make significant contributions to shrimp production and export earnings of the country.

The conference aims to deliberate on the ecological perspectives related to sustainable development of the fisheries and aquaculture sectors, where scientists and experts from different domains will present their accomplishments, contributions and recommendations towards the said goal. I am confident that the said conference will stimulate and strengthen inter-institutional linkages for capacity building and collaborative research, subsequently providing realistic eco-friendly solutions for sustainable development of the fisheries sector through climate smart innovations. I wish the event achieves grand success with long term benefits.

(Inderjeet Singh)





ਡਾ. ਸਤਿਬੀਰ ਸਿੰਘ ਗੋਸਲ
ਉਪ-ਕੁਲਪਤੀ

Dr Satbir Singh Gosal
Vice-Chancellor



ਪੰਜਾਬ ਖੇਤੀਬਾੜੀ ਯੂਨੀਵਰਸਿਟੀ

ਲੁਧਿਆਣਾ-141004

PUNJAB AGRICULTURAL UNIVERSITY

LUDHIANA, PUNJAB - 141004 (INDIA)

Message

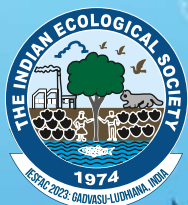
Punjab is a progressive agrarian State making significant contributions to national grain and milk basket, with only 1.5% of India's geographical area and 1.3% of its livestock population. As per the Economic and Statistical Organization, Government of Punjab, among the agriculture and its allied sectors, the fisheries sector emerged as the fastest growing sector with an estimated growth rate of 8.7% in 2019-20 and 2020-21, as compared to 6.4% and 4.7% growth rates recorded in the respective years for livestock sector. However, the agriculture sector growth remaining stationery during 2019-20, was estimated to have grown @ 2.4% during 2020-21. The fisheries sector in Punjab has witnessed a commendable transformation during the last decade, where aquaculture is no longer a traditional practice of rearing only carp species in freshwater. It has proved to be an exceptionally remunerative enterprise for salt affected waterlogged waste lands of south western Punjab, where underground salinity and waterlogging had affected agricultural output over the last 3-4 decades. Now, these waste lands are being potentially utilized for production of brackish water shrimp, an export commodity contributing about 74% to total earnings from export of fisheries products from India. It had been possible due to timely initiatives taken up by Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), the top-ranking vet varsity of India.

Fisheries sector is well known globally for its socio-economic contributions in terms of food security, nutritional significance, livelihood support, employment generation and economic growth. Although, Punjab is bestowed with diverse aquatic resources for economic utilization through aquaculture, but at the same time, it is important to develop the fisheries sector through an ecosystem approach in respect to responsible use of land and water resources, in special reference underground water use and reclamation of degraded or unproductive lands without any environmental and social conflicts. A cohesive scientific approach by PAU and GADVASU is expected to work out a comprehensive solution in respect to optimal use of water and land resources within the boundaries of ecological ethics.

I am happy to know that Indian Ecological Society, established in 1974 in College of Agriculture of Punjab Agricultural University (PAU), is going to organize conference on "Fisheries and Aquaculture- An Ecological Perspective" (IESFAC-2023) in collaboration with GADVASU from February 22-24, 2023. It is expected to highlight the ecological issues related to fisheries sector through scientific deliberations among the scientific fraternity, environmentalists and the concerned stakeholders along the supply chain.

I strongly believe that IESFAC-2023, will bring forward innovative eco-friendly recommendations for developing fisheries sector as an integrated economic component for doubling income of agriculture and livestock farmers. I compliment the organizers for the said initiative and wish the conference all success.

(Satbir Singh Gosal)





डा. बसंत कुमार दास

निदेशक

Dr. Basanta Kumar Das
Director



भाकृअनुप-केन्द्रीय अंतर्स्थलीय मात्स्यिकी अनुसंधान संस्थान

आई एस ओ 9000 : 2015 प्रमाणित संगठन

बैरकपुर, कोलकाता - 700 120, पश्चिम बंगाल

ICAR-Central Inland Fisheries Research Institute

AN ISO 9001 : 2015 Certified Organisation

Barrackpore, Kolkata - 700120 West Bengal



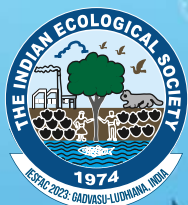
Message

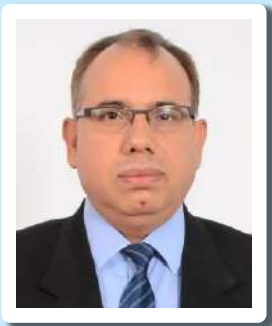
I am delighted to note that Indian Ecological Society, Punjab is organizing a Conference on “Fisheries and Aquaculture: An Ecological Perspective” (IESFAC-2023) at Ludhiana, Punjab in collaboration with a top-ranking vet varsity, Guru Angad Dev Veterinary and Animal Sciences University from 22nd to 24th February, 2023.

Globally, India ranks 3rd in total fisheries production and is the 2nd largest aquaculture nation; growing at annual growth rate of about 10% with total production of 16.24 million metric tons (mmt) recorded during 2021-22. India is bestowed with vast aquatic resources (freshwater, brackish water and marine waters), which are expected to produce 22 mmt of aqua-food by 2024-25. The target is huge but achievable, only if these resources are used responsibly for optimal production without any negative impact on the environment and public health. Mangrove destruction, pollution, overexploitation/illegal fishing and global warming/climate change have disturbed the ecological balance of the natural aquatic resources. With increasing awareness and concerns about environment health, sustainability and food safety, efforts are being made globally to conserve ecosystem services of food production systems. Although, production from the marine ecosystem in India remained almost static from 2015-16 to 2020-21, it increased by 18.7% in 2021-22; while production from the inland sector increased constantly during the same period and its share in the total production, increased from 61.08% (2011-12) to 74.63% (2021-22). For achieving the envisaged production targets, Pradhan Mantri Matsya Sampada Yojana (PMMSY) was flagged off in 2020 by Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, GOI with multidimensional promotional schemes for a holistic development of the sector, covering all the stakeholders connected to fisheries supply chain. The socio-economic significance of fisheries sector in food and nutritional security; livelihood support and employment opportunities; revenue generation and economic growth of developing nations, need to be conserved through eco-responsible approaches, involving complimentary technology advancements and regulatory governance. With a robust action plan, India can move forward to harness optimal production from natural waters through cage culture and develop climate smart aquaculture technologies through species and system diversifications. Although, advantages and disadvantages of technology advancement goes hand in hand, but it has to harmonize with the environment for long term sustainability.

I hope that all the stakeholders participating in this conference will have fruitful interactions regarding technological advancements, which can help in achieving the production target with minimal ecological impact and improving environmental health as well. I wish the organizers A Grand Success for the conference.

(Basanta Kumar Das)

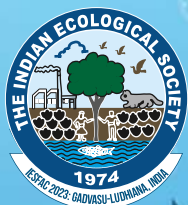




Dr. Kuldeep K. Lal

PhD, ARS
Director

Member, Advisory
Working Group on AqGR,
FAO, Rome, Italy; Former
Coordinator, Genetics &
Biodiversity, NACA,
Bangkok, Thailand; Former
Director, ICAR-NBFGR,
Lucknow, India



भा.कृ.अनु.पा.-केंद्रीय खारा जलजीव पालन अनुसंधान संस्थान
ICAR - CENTRAL INSTITUTE OF BRACKISHWATER AQUACULTURE
(ISO 9001 : 2015 Certified)
भारतीय कृषि अनुसंधान परिषद, कृषि एवं किसान कल्याण मंत्रालय, भारत सरकार
Indian Council of Agricultural Research, Ministry of Agriculture and Farmers Welfare, Govt. of India



Message

It gives me immense pleasure to learn that Conference on “Fisheries and Aquaculture: An Ecological Perspective”, is being organized by the Indian Ecological Society' (IES), Punjab, during February 22-24, 2023, at Guru Angad Dev Veterinary and Animal Sciences University (GADVASHU), Ludhiana, Punjab in collaboration with College of Fisheries, GADVASHU.

Besides significant contributions to global food and nutritional security and supporting millions of livelihoods; fisheries and aquaculture activities are equally important for the efficient utilization of aquatic resources and revitalization of aquatic ecosystems as well. Although, the global and Indian aquaculture is dominated by finfish farming in terms of volumes, but brackish water aquaculture stands out due to its extraordinary export earnings (mainly shrimp- 53% by quantity and 74% by value), which increased from 43,720 crores in 2020-21 with a growth rate of 31% to Rs. 57,586 crores in 2021-22 in India. Due to continuously international demand, export potential and remunerative returns for the farmers, shrimp culture expanded at a very rapid rate in India and total shrimp production crossed the 9.0 lakh ton mark in 2021. However, over dependence on international markets affected the Indian shrimp industry badly during 2022, due to export restricting global events like over 10 lakh tons of shrimp production by Ecuador, recession in Europe due to Ukraine war, COVID restrictions in China etc. Hence, domestic market for shrimp need to be strengthened in India before it is too late to sustain it as a remunerative industry.

It is very heartening to know that inland saline water areas of Punjab and other northern states, previously considered as wasteland, have emerged as attractive destinations for *Litopenaeus vannamei* shrimp farming. For shrimp farmers in these inland saline areas to reap long-term rich economic dividends, it is crucial to ensure culture sustainability by following the recommended management practices and biosecurity guidelines. Besides shrimp farming, these inland saline areas can be potentially utilized for rearing various brackish water finfish species. It will be fruitful if deliberations during this conference lead to the formulation of specific regulatory guidelines related to aquafarming in inland saline water areas.

I am sure that the conference will be educative and useful for all the participants. My best wishes to the organizing team for this timely endeavor in north-western part of the country.

(Kuldeep K. Lal)



डॉ. प्रमोद कुमार साहू
निदेशक

Dr. Pramoda Kumar Sahoo
Director



भा.कृ.अनु. प-केन्द्रीय मीठाजल जीवपालन अनुसंधान संस्थान
(आईएसओ 9001:2015 प्रमाणित संस्थान)
कौशल्यगंग, भुवनेश्वर-751002, (ओडिशा), भारत
ICAR-Central Institute of Freshwater Aquaculture
(An ISO 9001:2015 Certified Institute)
Kausalyaganga, Bhubaneswar-751002, (Odisha), India



Message

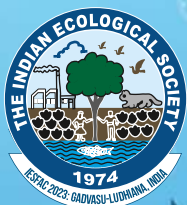
It is a matter of great pleasure that the Indian Ecological Society (IES), Punjab Agricultural University (PAU), Ludhiana, in collaboration with Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana is organizing conference on “Fisheries and Aquaculture: An Ecological Perspective” during February 22-24, 2023.

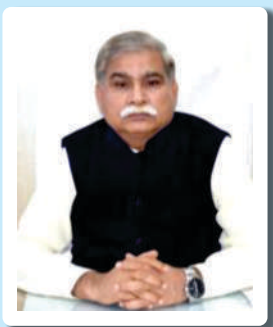
Fisheries Sector has been playing an important role in providing food security, livelihoods, and socioeconomic growth of developing as well as developed countries. Due to the global stagnation of capture fisheries production in recent years, the onus has shifted to the aquaculture sector to meet the rapidly increasing demands, which is already supplying 49% (88 million metric tons) of total fisheries production (179 million metric tons) of the world (excluding seaweeds). Though finfish dominate the freshwater aquaculture production sector, there is huge scope for species diversification and productivity enhancement. With the horizontal and vertical expansion of aquaculture, there are environmental concerns also related to sustainability with respect to loss of species/genetic diversity, entry of transboundary and zoonotic pathogens in the culture system, stress, disease outbreaks and production losses. Thus, the development of sustainable aquaculture practice is critical to supply the growing demands for aquatic foods. Hence, it is very important to formulate an interstate action plan to designate region specific aquaculture activities in respect to available resources under the prevailing climatic conditions.

I am sure that the conference with a focus on ecological and socio-economic sustainability will come out with excellent recommendations for sustainable aquaculture development in the country.

I extend my warm greetings to all the participants and wish all the best to the organizers.

(Pramoda Kumar Sahoo)





Dr. Pramod Kumar Pandey
Director



ICAR - DIRECTORATE OF COLDWATER FISHERIES RESEARCH

Anusandhan Bhawan, Industrial Area,
Bhimtal - 263136, Distt: Nainital, Uttarakhand, India

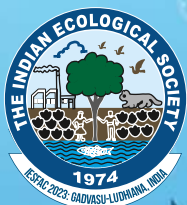


Message

I am pleased to learn that the Indian Ecological Society, Punjab is organizing a conference on “Fisheries and Aquaculture: An Ecological Perspective”, in collaboration with Guru Angad Dev Veterinary and Animal Sciences University, at Ludhiana, during 22-24 February 2023.

India is bestowed with vast and diverse water resources that harbours a rich aquatic biodiversity. Correspondingly, fisheries and aquaculture are a major source of livelihood and nutritional security for millions of people in the country. During 2020-21, the contribution of fisheries sector to the Indian agricultural gross domestic production and overall economy was 6.7 and 1.1%, respectively. Through the combined efforts of various stakeholders and the adoption of modern science and technology, the total annual production of fish and other aquatic products and their contribution to human food basket is steadily increasing in our country. With the present pace of annual growth, the total fish production of India is expected to reach 22 million tonnes by 2024-25. This ambitious goal is well supported by various government initiatives under the Pradhan Mantri Matsya Sampada Yojana, with a fund outlay of INR 20,050 crores. Even in the case of coldwater fisheries and aquaculture, there is increasing attention to sustainably manage and use the coldwater resources and unique fish diversity spread across the Himalayan range and Peninsular uplands. The total fish production from the coldwater states and union territories accounts for nearly 3% of the inland fish production in India. Particularly, rainbow trout farming is gaining momentum over the last decade, as a lucrative livelihood option. Conservation and propagation of endemic Himalayan fishes such as golden mahseer and snow trout is becoming imperative. Diversification of aquaculture system and species are being prioritised, along with the adoption of resource efficient technologies such as recirculating aquaculture system. The scope for alternative livelihood through ecotourism and endemic ornamental fishes is being realised.

Considering the impending challenges associated with changes in climate and ecosystems, it is satisfying to note that this conference is focused on ecologically sustainable development of aquaculture and fisheries, and the themes are well crafted to address the key challenges and opportunities. I warmly compliment the organizers for organising this important event, and wish the participants a very engaging conference with fruitful deliberations and learning experience.



(Pramod Kumar Pandey)



Professor
Dr. Soottawat Benjakul
Director



**International Center of Excellence in Seafood Science
and Innovation**

Faculty of Agro Industry, Prince of Songkla University
Hat Yai, Songkhla 90110 Thailand
Tel: 66-74-286343
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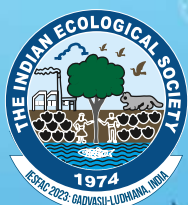
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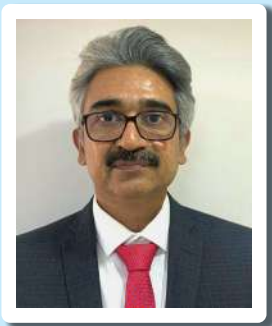
The growing population has been associated with a driving force for the seafood processing industry to produce the prime quality product for competition, mainly due to the increasing demand for both domestic consumption and export. Seafood has been known for its delicacy and high nutritive value. This augmenting demand has led to the generation of wastes or by-products during the processing. Their conversion or transformation into high-market value products, especially functional ingredients, or nutraceutical products, can pave a way for increased revenue and economic strength of the industry and nation. Appropriate utilization of fish/shellfish processing by-products will not only help in lowering the environmental pollution from waste disposal but also provide highly valued safe functional products as supplements for enhanced human health or health promotion. Furthermore, the development of alternative food ingredients, particularly antioxidants and antimicrobial agents, as well as those possessing bioactivities such as antihypertension, antiobesity, etc. could be further focused. Being one of the major maritime states, India makes a significant contribution to the global seafood basket. Focusing on the circular economy brings about the holistic development of the country and neighboring nations.

It is a pleasure to learn that the Indian Ecological Society (IES) in collaboration with the College of Fisheries, Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana, is organizing a conference on 'Fisheries and Aquaculture: An Ecological Perspective', at Ludhiana, Punjab from 22 to 24 February 2023. This conference will provide a platform to discuss innovative ideas and advanced technologies for the effective utilization of fisheries waste without creating environmental problems or pollution and to promote the sustainable growth of the fisheries industry.

I wish the conference a success with great benefits. Please extend my warm greetings and best wishes to the organizers and participants.

(Professor Dr. Soottawat Benjakul)





Shri Raghunath B.
Chief General Manager



NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT



Message

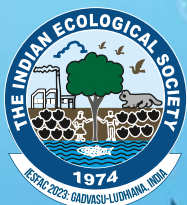
Fish farming is increasingly gaining traction among farmers of the State. The State has good inland water resources comprising of 868 km of rivers, 11200 Km of Canals, 14510 acres of small water reservoirs and lakes which presents ample opportunities for development of fisheries sector. The farmers of Malwa region has taken up shrimp cultivation sensing an opportunity in the problem of salinity afflicting these areas.

The growth of the fisheries sector should be with due regard to sustainability keeping in view the possible impact on the environment. Production and productivity cannot be at the cost of environment and ecology.

Adoption of latest technology as well as sustainable farming practices needs farmers to come together as it will neither be possible nor feasible for farmers to do so on an individual basis. Punjab Regional Office of NABARD has extended grant support for promotion of two Farmers Producer Organisation (FPO) of fish farmers. One of the FPOs covering farmers in 5 districts viz. Barnala, Sangrur, Fazilka, Mansa, and Ferozepur is promoted by KVK Barnala of GADVASU.

I congratulate the efforts of Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) for organising the Conference on Fisheries and Aquaculture under the aegis of the Indian Ecological Society. The deliberations in the seminar should encourage adoption of latest technologies in fisheries while at the same time giving due regard to sustainability, environment and ecology. I am sure the fish farmers of the State will be benefited by the Conference and I wish the Conference all success.

(Shri Raghunath B.)





Dr. Jatinder Kaur Arora
Executive Director



**Punjab State Council for Science & Technology
Department of Science, Technology & Environment
Government of Punjab**

Message

Climate change threatens nation's ability to provide for food and nutritional needs. Since agriculture and fisheries depend on the weather conditions, climate change may have a negative effect on both productivity as well as livelihood of communities. Punjab, the bread basket of India, is frontrunner in agriculture. More than 60% of State's population lives in rural areas and heavily relies on agriculture & allied sectors.

The potential for aquaculture to meet the growing need for food as well as provide increasing opportunities for diversification in agriculture are enormous. However, the sustainability of sector is at stake due to predicted effects of climate change that are no more a future but a present reality. The projected temperature rise may further intensify the concerns by preventing fish from spawning due to thermal stress. Such expected effects of climate change are putting the sector's viability in jeopardy.

I am glad that Indian Ecological Society, has conceptualized the Conference on 'Fisheries & Aquaculture - An Ecological Perspective', in collaboration with Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) at Ludhiana, for enhancing productivity of the sector in sustainable manner and address projected challenges in the wake of climate change concerns. The conference is a timely initiative to coordinate the efforts of the scientific community as well as the entrepreneurial potential of fisheries which will go a long way in advancing the sector. I wish the endeavor a great success.

(Jatinder Kaur Arora)





Dr. Manoj Sharma
Director



Mayank Aqua Products

Surat, Gujarat

Message

I am glad to know that Indian Ecological Society, Punjab is organizing Conference on “Fisheries and Aquaculture - An Ecological Perspective” at Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (Punjab) during the month of February, 2023. It has been timely planned to promote scientific deliberations on climate smart and environmentally safe aquatic food production systems to conserve economic output of our land and water resources.

Fisheries has been recognised as a sunrise sector, providing food and nutritional security to billions, besides offering livelihood and employment to millions of people globally, with substantial boost to socio-economic growth of rural communities. India has created an international niche as 2nd largest aquaculture producer of the world, with total fish production of over 16 million tons and all-time high export earnings of Rs. 57,586 crores during 2021-22. Shrimp (frozen) contributed 53% by quantity and 74% by value in total Indian fisheries export and with total shrimp production of 9.37 lakh tons in 2021, India slipped down from largest to second largest shrimp exporter of the world. Out of total shrimp exported (7.28 lakh tons) from India in 2021-22, about 88% (6.43 lakh tons) was Vannamei shrimp, *Litopenaeus vannamei*.

Punjab is a progressive State and moving towards blue revolution, with fast development of vannamei shrimp farming in its inland salt affected water logged areas. There is a huge saline resource available in Punjab and its neighbouring states, like Haryana, Rajasthan and Uttar Pradesh, which can be potentially utilized for economic opulence if developed through an ecosystem approach and strategic action plan, in special reference to quality assurance and marketing. The northern states can very well complement the southern states of India to produce more than 10 lakh tons of shrimp and regain the position of largest shrimp exporter of the world. However, there is dire need to develop domestic market to bring down over dependence of the shrimp industry on international market and hence, release pressure of export related unforeseen uncertainties to safeguard the farmer from economic losses and exploitation.

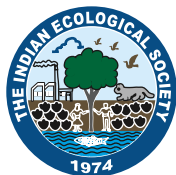
I am pretty sure that the above conference will serve as an effective platform for elaborative discussion to generate comprehensive recommendations for sustainable development of Fisheries Sector. I wish all the organisers a grand success of this conference.



(Manoj Sharma)



Dr. A.K. Dhawan
President



President, Indian Ecological Society

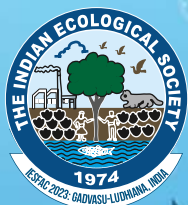
Punjab Agricultural University
Ludhiana, Punjab (India)

Message

The 'Indian Ecological Society' established in 1974, is one of the pioneering organizations of India, engaged in advances in ecological sciences and environmental protection through various activities at national and international levels, inviting expert inputs, knowledge sharing, deliberations, identification of SDGs and required action plans thereof for sustainable development of agriculture and allied sciences. The Society attempts to fulfil the above objectives by publishing the '*Indian Journal of Ecology*' (since 1974), proceedings and such other publications as may be considered desirable. The journal is considered a premier journal reporting research findings in the field of basic and applied ecology.

In view of significant role of fisheries sector in food and nutrition security; livelihood and employment generation; and its contribution to national economy, the 'Indian Ecological Society' Ludhiana in collaboration with Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana is going to organize 3 days conference on "Fisheries and Aquaculture - An Ecological Perspective" (IESFAC-2023) from 22nd to 24th February, 2023. The conference will focus in different areas of Ecologically Sustainable Aquaculture Production Systems, One Health, Responsible Aquaculture, Climate Resilience and ICT/AI in Fisheries, Management and Conservation of Water Resources, Fish Processing, Value Addition, Quality Assurance & Marketing, Capacity Building & Socio-Economic Empowerment etc; which will provide a national platform for experts, fishers and the industry to deliberate on economically and environmentally viable interventions required for holistic development of fisheries and aquaculture sectors.

The Indian Ecological Society (IES) on various occasions in the past has also successfully engaged in diverting brains of the world to think of ways to protect the environment and promote ecological studies. I hope this conference will definitely fulfil its objective to bring out certain viable and sustainable innovations and strategies.



Akhawan

(A.K. Dhawan)



Dr. Jatinder Paul Singh Gill
Director of Research



ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਵੈਟਰਨਰੀ ਅਤੇ ਐਨੀਮਲ ਸਾਇੰਸਿਜ਼ ਯੂਨੀਵਰਸਿਟੀ
ਲੁਧਿਆਣਾ-141004, ਪੰਜਾਬ (ਭਾਰਤ)
GURU ANGAD DEV VETERINARY & ANIMAL SCIENCES UNIVERSITY
LUDHIANA-141004, PUNJAB (INDIA)

Message

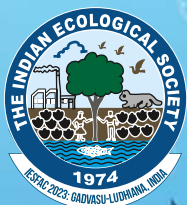
The biggest challenge of today's world is to feed the human population, which is projected by United Nations to increase to 9.7 billion by 2050, combating climate change, depleting resources and public health risks. China and India accounts for about 35% of world's population and the World Population Review has already projected that India has surpassed China's population. In this context, India needs to strengthen its food production systems through climate smart and environmentally safe production technologies; conservation of ecosystem services of natural resources; processing and storage of harvests and promoting circular bio-economy under the umbrella of 'One Health'.

Fisheries sector is one of the fastest growing sectors with double digit growth rate; significantly contributing to socio-economic prosperity of rural communities and economic growth in India, bestowed with biodiversity rich aquatic resources to support millions of livelihoods, and is providing affordable quality animal protein for human nutrition. India is the 2nd largest aquaculture nation of the world after China and its total fisheries production from inland and marine sectors crossed 16 million metric tons (mmt) mark in 2021-22; moving one step closer to the envisaged target of achieving 22 mmt in 2024-25 by Ministry of Fisheries, Animal Husbandry and Dairying, Government of India (GOI). For the said purpose Department of Fisheries, GOI launched Pradhan Mantri Matsya Sampada Yojana (PMMSY) in May 2020, as an impetus scheme to boost 'Blue Revolution' in the country.

India is a progressive nation with a strong human resource, infrastructure and advanced technology backup, complimenting the available resources to achieve the required food production targets. However, for sustainability of these systems, it is important to develop region-specific farming models in interest of all categories of farming communities in India (small/marginal/medium/large), without any environmental and social conflicts. Moving ahead of this direction, conference on "Fisheries and Aquaculture- An Ecological Perspective" is being organized by the Indian Ecological Society, Punjab in collaboration with the Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) at Ludhiana, Punjab from 22nd to 24th February, 2023; to bring all the stakeholders (experts/scientists/students/farmers/industry/environmentalists) together on one platform for scientific and strategic deliberations to make the sector resilient and sustainable within the domain of eco-responsibility, food safety and one health.

The said conference will certainly catalyze and strengthen scientific linkages to take up fruitful collaborative research and development programs; and capacity building of young professionals to cater the sector for its economic sustainability. I hope, this conference will be a great professionally satisfying learning experience for the participants.

(Jatinder Paul Singh Gill)





Dr. Asha Dhawan

Former Dean (Retd.)
College of Fisheries
GADVASU



Indian Ecological Society Advisor for IESFAC-2023

Message

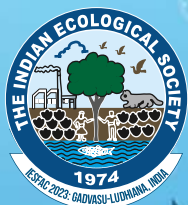
Fisheries has evolved into a promising economic industry globally and produced about 179 million metric tons (mmt) of aquatic animals (fish and shell fish, excluding algae) in 2020-21; out of which $\approx 88\%$ (157 mmt) was used for human consumption. The sector is supporting 58.54 million livelihoods (fishermen and fish farmers) globally, including 49.42 million (84.4%) in Asia, containing the top three fish producers of the world - China, India and Indonesia. Total fisheries production of India reached to 16.24 mmt (8% of world total production) in 2021-2022, with export earnings of Rs. 57,586 crores from export of fish and fishery products to US, China, EU, Japan and SE Asia. Indian aquatic diversity and resources supports about 28 million fisher families and is contributing 6-7% to national agricultural GDP. The sector is foreseen to produce 30% more "Aqua-food" (22mmt) by 2024-25 and efforts are being at state and national levels to provide the required impetus in respect to human resource, technology innovation, infrastructure development, promotional schemes and capacity building. Recent creation of separate Department of Fisheries (DOF) under Ministry of Fisheries, Animal Husbandry and Dairying (MoFAHD), GOI in 2019 and launching of Pradhan Mantri Matsya Sampada Yojana (PMMSY) by DOF, GOI in 2020 are two biggest examples reflecting socio-economic significance of the sector in Indian context.

Mother earth is bestowed with exhaustive diverse resources serving mankind in multiple ways, including food production. Ecological health of these resources has been compromised due to anthropogenic activities complimentary to modern world developments. If continued like this, the envisaged production targets to feed the human population will be nothing more than a fanciful thought. Hence, it is high time that we look forward to eco-friendly innovations which can fulfil the targets without or with minimal environmental cost and threats to public health. In this context, Indian Ecological society has taken an initiative of organizing this conference in collaboration with Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) at Ludhiana, Punjab from 22nd to 24th February, 2023 and has invited prominent experts for fruitful deliberations on fisheries related ecological perspectives and future road map for sustainable development of the fisheries sector.

I am confident that the IESFAC-2023 will be a great learning experience for the young professionals; offer opportunities to develop interinstitutional linkages; and put forward feasible recommendations for achieving the objective of developing the sector in an equitable and responsible manner.

Asha Dhawan

Asha Dhawan





Dr. Meera D. Ansal
Dean



College of Fisheries
Guru Angad Dev Veterinary and Animal
Sciences University (GADVASU),
Ludhiana, Punjab- 141004



Message

Fisheries had been the fastest growing food production sectors of India, recognized for its role in food security, nutritional worth, livelihood support to rural populations, employment generation and economic growth of nations, in special reference to Asian countries contributing about 88% to world's total aquaculture production. India is the 3rd largest fish producer, 2nd largest aquaculture nation and 4th largest exporter of fish and fisheries products in the world. As per FAO, India ranked first in inland fisheries production, surpassing china by 0.34 metric million tons (mmt) in 2020. On an average, the fisheries and aquaculture sectors are growing with an impressive annual growth rate of 8% and 10%, respectively. Overall, fisheries has recorded an outstanding double-digit annual average growth rate of 10.87%, since 2014-15. With an estimated total fisheries production of 16.18 mmt and export earnings of 57,586 crores during 2021-22, India aims to increase it to 20 mmt in 2022-23 and 22 mmt in 2024-25; under the prime minister's flagship scheme named "Pradhan Mantri Matsya Sampada Yojana" (PMMSY); launched in 2020.

India is bestowed with wide spectrum of aquatic biodiversity and diverse aquatic resources, supporting livelihood of millions of people. Further, fisheries sector also holds great significance in augmenting food security with add on health and nutritional benefits. Being an affordable and rich source of complete animal protein, fisheries is capable of alleviating hunger and nutritional deficiency and hence, help in attaining the United Nation's Sustainable Development Goals (SDGs) targeting 'Zero Hunger' (SDG-2) and 'Good Health and Well Being' (SDG-3).

Realizing the socio-economic potential of fisheries sector, a highest ever investment of 30,572 crores (2015-2025) was announced by the central government under various schemes/programs, including PMMSY, Blue Revolution and Fishery and Aquaculture Infrastructure Development Fund (FIDF) for its holistic development along the supply chain. In addition to human resource, technological interventions, outreach programs and policies required for producing intended food from any natural resources, it is vital to make sure that it is done without disturbing the ecological balance, contaminating the food bowl and depriving the stakeholders of their due share for economic sustainability of any food production system.

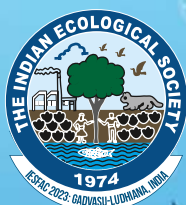
Three days conference on "Fisheries and Aquaculture: An Ecological Perspective" (IESFAC-2023), is being organized by the Indian Ecological Society, Punjab in collaboration with Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) from 22nd to 24th February, 2023; covering theme areas related to journey of 'Aqua-Food' from 'Fisher to Fork' in capture and culture fisheries sectors. The conference will definitely serve as a dynamic platform where the veteran scientific fraternity, prospective fisheries professionals, farmers and the industry will come together to deliberate on current issues to realize expected outcomes from fisheries sector through climate smart safe innovative ideas; besides offering an excellent opportunity to all the stakeholders to develop fruitful linkages of mutual interest.

With warm greetings to all delegates, the organizers strongly believe that IESFAC-2023 will successfully fulfil its objectives of putting forward an insight to make fisheries sector healthier, profitable and globally competitive for its sustainable development.

MD. Ansal

(Meera D. Ansal)

Organizing Secretary IESFAC-2023





*Sustainability
Demands Responsibility*



ABOUT THE INDIAN ECOLOGICAL SOCIETY

The Indian Ecological Society (IES) was established in 1974 at College of Agriculture, Punjab Agriculture University, Ludhiana, Punjab, India, under Prof. A.S. Atwal, an eminent ecologist, educationist and administrator, as the Founder President. The Society, one of the pioneering organizations of India, is engaged in advances in ecological sciences and environmental protection. It is managed by senior faculty members, assisted voluntarily by scientists from various fields, in addition to their regular assignments. During that era the main emphasis was on increasing production which leads to 'Green Revolution', however, its impact on ecology, natural resource, environment etc were not the prime issues. These objectives were amended time to time keeping in mind the priority areas in the field of ecology and environment. Moreover, there is change in definition and area of ecology during the last 5 decades; the updated objectives have also been included in 'Web Site'

MEMBERSHIP

The Society has both Annual & Life Members & Institutional Subscription, from India & Abroad. More than 160 members joined as 'Life members' during the last five years (total 574) and 1036 joined as 'Annual members' in 2022. Members receive e-copy of journal and have right to publish the manuscript. All authors, submitting papers in the journal for publication, must be member of the society

FELLOW OF INDIAN ECOLOGICAL SOCIETY

All life members can submit brief bio-data for fellow of Indian Ecological Society after three years and must have published 2 manuscripts in Indian J Ecology

STATE CHAPTERS

Further, to have more interaction in the related fields, the Society has initiated 'State and Institution Chapters' in **Maharashtra** (National Institute of Abiotic Stress Management, Malegaon, Baramati, Pune), **Jammu and Kashmir** (Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu), **Odisha** (Orissa University of Agriculture and Technology, Bhubaneswar), **Himachal Pradesh** (Dr. YS Parmar University of Horticulture and Forestry, Nauni Solan), **Gujarat** (Navsari Agricultural University, Navsari), **North – East** (ICAR- Complex for NEH Region, Lembuchera, Agartala, Tripura) and **Kerala** (Kerala Agricultural University, Thrissur)

INDIAN JOURNAL OF ECOLOGY

The '**Indian Journal of Ecology**' (ISSN-0304-5250 since 1974) is an official publication of 'Indian Ecological Society' and is refereed and peer reviewed journal for the members of 'Indian Ecological Society'. The 'Journal' is considered 'a premier journal' (NAAS rating 5.79 & Scopus rating 0.54) reporting the research findings in the field of basic and applied ecology. The 'Journal' is not paid but it is only for the members of IES. It is an open assessed 'Journal'. Due to the tremendous response and participation of number of institutions within/outside India, the issues per year were raised from 2 (2016) to 4 (2018) and to 6 (2021).

CONFERENCES/SEMINARS/SYMPOSIA

The Society is arranging various Conferences (both National & International)/Seminar/Symposia in different areas of ecology. Since its inception it had already arranged 14 national/international conferences/seminars/symposia/workshops in collaboration with different institutes & this is the 15th one.

- National Symposium on "Land and Water Management in the Indus Basin (India)", November 9-11, 1978 at Punjab Agricultural University, Ludhiana
- Seminar on "Status of Wild Life in Punjab", November 1-8, 1983 at Punjab Agricultural University, Ludhiana





- Seminar on “Status of Environmental Pollution in Punjab”, February. 4, 1985 at Punjab Agricultural University, Ludhiana.
- International Conference on “Ecological Agriculture; Towards Sustainable Development”, Nov. 15-17, 1997 in collaboration with center for research in Rural and Industrial Development, Chandigarh.
- Conference on “Biopesticides: Emerging Trends” (BET 2001), February 7-9, 2001 Chandigarh in collaboration with Society of Biopesticide Sciences India and Punjab State Council for Science & Technology, Chandigarh.
- Conference on “Biopesticides : Emerging Trends” (BET 2005), October, 2005 at Palampur, in collaboration with Society of Biopesticide Science India.
- Conference on “Iufro Symposium on Short Rotation Forestry: Synergies For Wood Production And Environmental Amelioration”, February 10-12, 2011 Punjab Agricultural University, Ludhiana in collaboration with Department of Forestry & Natural Resources, PAU, Ludhiana.
- Workshop cum Conference on “Eco-restoration of Lentic-Lotic Systems through Six Pillar Approach of Integrated Lake Basin Management” was organized by Shirshti Environment and Sustainable Society (SESS) Society for Environment Education Research and Management (SEERAM), Pune, Maharashtra in collaboration with Indian Ecological Society (IES), PAU, Ludhiana – 141 001, India and Youth for Sustainable Development, Shimla – 01 held at Dumra Auditorium, DMC, Ludhiana, India from January 7-8, 2014.
- International Conference on “Natural Resource Management: Ecological Perspectives (IESIC 2016)”, February 18-20, 2016 in collaboration with Sher-e Kashmir University of Agricultural Sciences and Technology of Jammu, Jammu, India
- Conference on “Climate Change and Agricultural Production” March 6-8, 2017 in collaboration with Bihar Agricultural University, Sabour-813210, Bhagalpur, India
- National Conference on” Alternate Farming Systems to Enhance Farming’ Income ” September 19-21, 2017 at YSP University of Horticulture and Forestry Nauni -173230, Solan, India
- International Conference on “Sustainable Agricultural Innovations for Resilient Agri-Food Systems” October 13-15, 2022, SUKAST, Jammu.

PRESENT CONFERENCE AT GADVASU, LUDHIANA

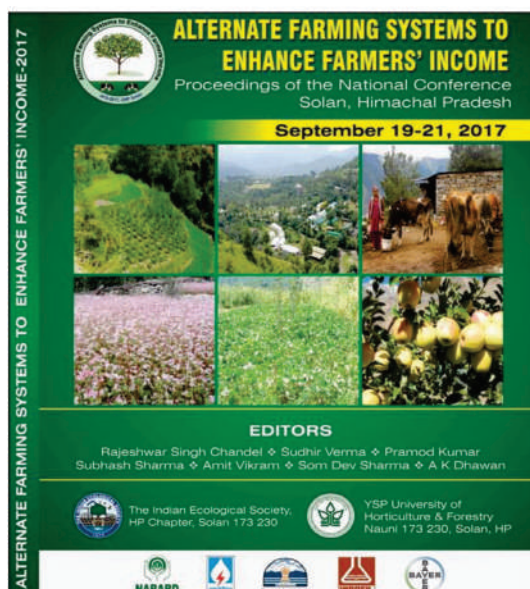
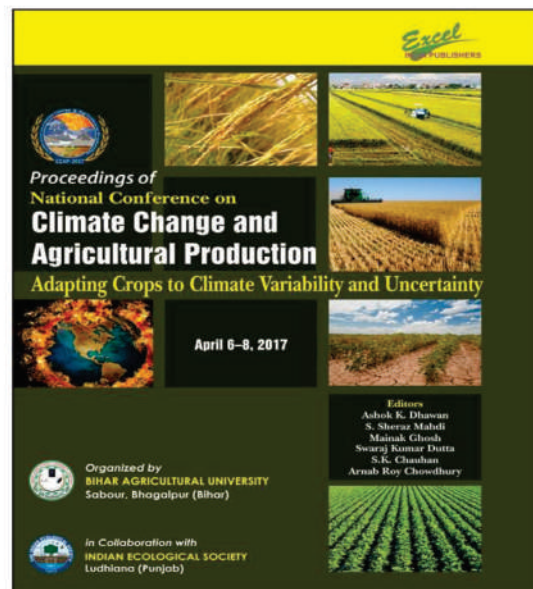
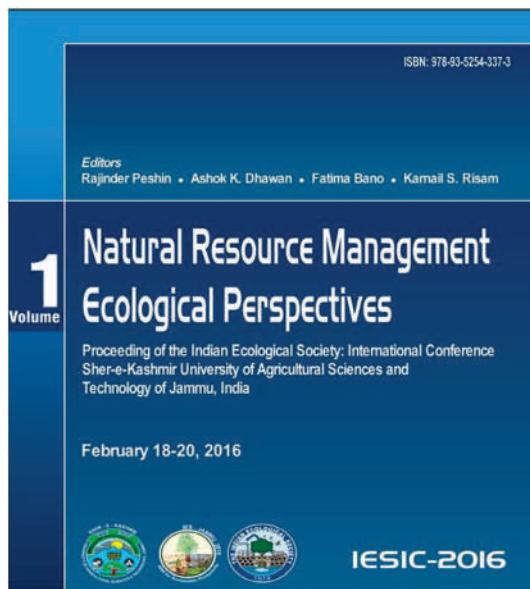
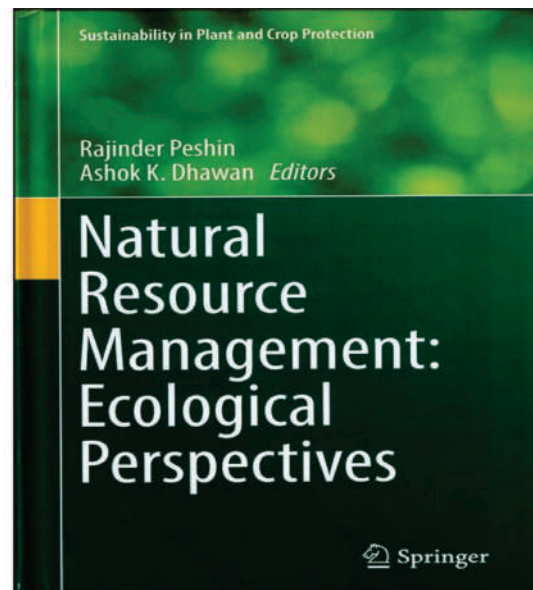
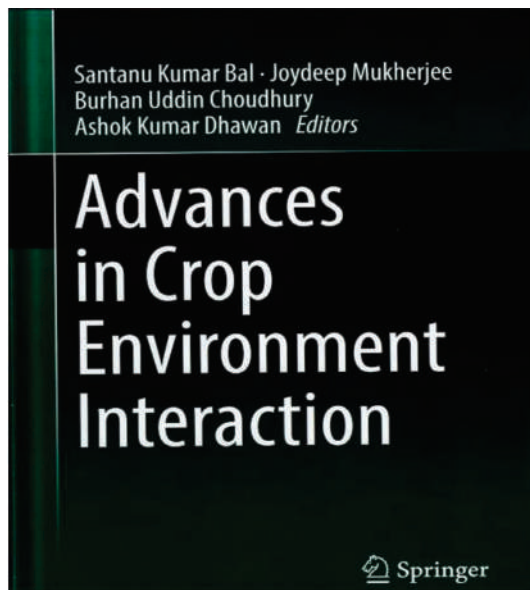
The Indian Ecological Society (IES) on various occasions in the past has successfully engaged in diverting brains of the world to think of ways to protect the environment and promote ecological studies.

In view of significant role of fisheries sector in food and nutrition security; livelihood and employment generation; and its contribution to national economy, the ‘Indian Ecological Society’ Ludhiana in collaboration with Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana is going to organize 3 days conference on “Fisheries and Aquaculture: An Ecological Prospective” (IESFAC-2023) from 22nd to 24th February, 2023.

GOLDEN JUBILEE YEAR (2023)

The society is celebrating 2023 as its Golden Jubilee year, during which the society is initiating Best Theses Award (Gold Medal & cash prize of Rs 5000/- in 11 state Agricultural Universities). The correspondence has already been initiated in this direction. Further, the society already had 7 State Chapters and in context of Golden Jubilee year celebrations, 11 more states will be covered. Conferences will also be organized during this period and in this direction. Forthcoming 1st Conference on Fisheries & Aquaculture in collaboration with Guru Angad Dev Veterinary & Animal Sciences University will be held from February 22-24, 2023 at Ludhiana.







International Conference on Ecological Agriculture; Towards Sustainable Development, Chandigarh (1997)



International Conference on Natural Resource Management Ecological Perspectives, Jammu (2016)



International Conference on Climate Change Adaptation and Biodiversity, Andaman and Nicobar Islands (2016)



International Conference on Climate Change and Agricultural Production, Bhalgalpur (2017)



International Conference on Alternate Farming Systems to Enhance Farmers' Income, Solan (2017)

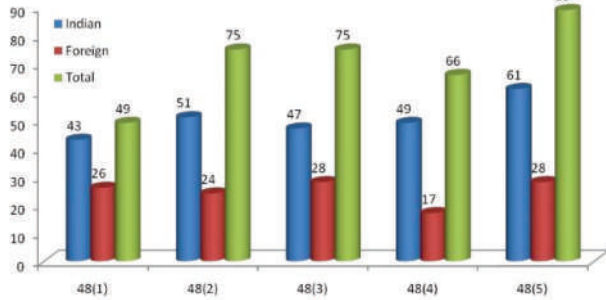


International Conference on Global Initiatives Sustainable Development: Issue and Strategies, Bangkok (2019)

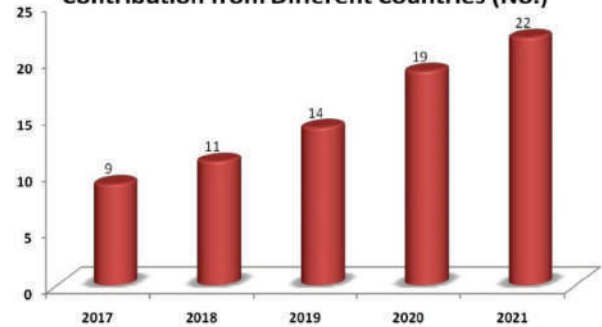


International Conference on Sustainable Agricultural Innovations for Resilient Agri-Food Systems, Jammu (2022)

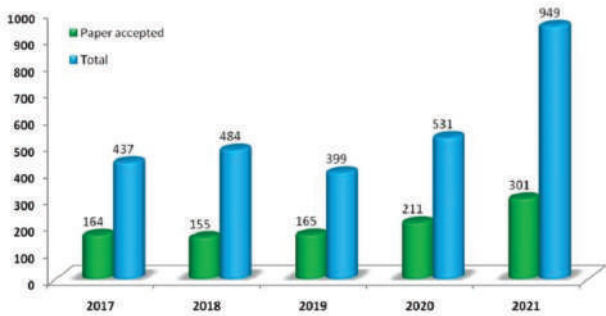
Institutions Contributing to Indian J. Ecology (2021)



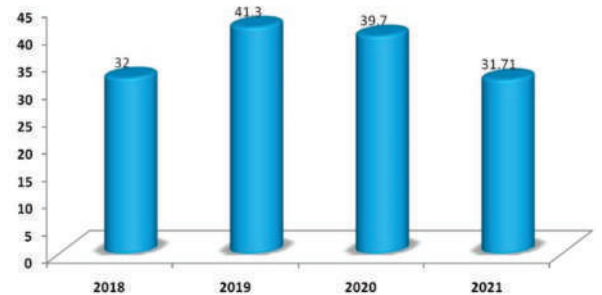
Contribution from Different Countries (No.)



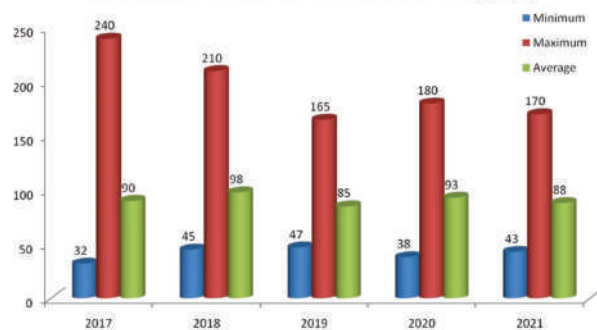
Number of Research Articles Submitted and Published



Acceptance Rate of Research Article (%)



Timeframe for Publication of Research Articles (Days)



About the University

Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) was carved out of one of the top-ranking State Agricultural Universities, Punjab Agricultural University (PAU) on 9th August, 2005 at Ludhiana through Punjab Act No. 16 of 2005. Initially, College of Veterinary Science (established in 1969), was shifted from PAU to GADVASU and later on it expanded its horizon with establishment of new colleges (constituent and affiliated colleges), Krishi Vigyan Kendra (KVK), Regional Research and Training Centers (RRTC) in the State.



Constituent Colleges

6

- College of Veterinary Science, Ludhiana
- **College of Fisheries, Ludhiana**
- College of Dairy Science & Technology, Ludhiana
- College of Animal Biotechnology, Ludhiana
- College of Veterinary Science, Rampura Phul, Bathinda
- Veterinary Polytechnic College, Kaljharani, Bathinda

4

Regional Research & Training Centres (RRTC)

- RRTC, Kaljharani (Bathinda)
- RRTC, Talwara (Hoshiarpur)
- RRTC, Booh (Tarn Taran)
- RRTC, Sappanwali (Fazilka)

3

Krishi Vigyan Kendras (KVKs)

- KVK, Majri (Mohali)
- KVK, Handiaya (Barnala)
- KVK, Booh (Tarn Taran)

2

Affiliated Colleges

- Khalsa College of Veterinary & Animal Sciences (Amritsar)
- Baba Hira Das Ji College of Veterinary Pharmacy, Village Badal (Sri Muktsar Sahib)

UNIVERSITY RANKING

Top Ranked amongst Veterinary & Animal Sciences Universities

- **ICAR Ranking**
2017, 2018, 2019
- **Research.com Ranking**
2022



Within a span of about 17 years, since it started functioning on 21st April, 2006, GADVASU achieved remarkable milestones towards holistic development of animal husbandry, dairy and fisheries sectors of the State through an integrated 3-tier approach including i) human resource development (HRD); ii) innovative applied R&D initiatives; and iii) technology transfer and capacity building of stakeholders. Today GADVASU ranks among the top Veterinary and Agricultural Universities in the country, with international brand value and linkages.

The University has been accredited and recognized by the University Grants Commission (UGC) to receive central assistance under section 12(B) of UGC Act, 1956. The University got accreditation from UGC and ICAR and has been admitted as a regular member of the Association of Indian Agricultural Universities (AIAU) and Association of Indian Universities (AIU). Indian Council of Agricultural Research (ICAR) has accredited the University and its four constituent colleges viz. College of Veterinary Science, College of Dairy Science and Technology, College of Fisheries, and College of Animal Biotechnology with grade 'A'. The University is committed to produce world class professionals (graduates and postgraduates) to serve the livestock and fisheries sectors; and its alma matter is well settled with nationally/internationally recognized excellence in academics, research, administration and policy making in India and abroad. Further, in order to promote self-reliance among the passing out professional in veterinary, dairy and fisheries sciences, special initiatives have also been taken up by the university to inculcate entrepreneurial skills among the students through various innovative capacity development programs, as per regional, national and international needs.



College of Veterinary Science (COVS), Ludhiana



College of Fisheries (COF), Ludhiana



College of Dairy Science and Technology (CODST), Ludhiana



College of Animal Biotechnology (COABT), Ludhiana



College of Veterinary Science (COVS), Rampura Phul, Bathinda



Veterinary Polytechnic (VP), Kaljharani, Bathinda

Constituent Colleges of GADVASU

On Campus Institutes- 07

- Directorate of Human Resource Management
- Directorate of Livestock Farms
- Directorate of Veterinary Clinics
- Center for One Health
- COVID-19 Testing Laboratory
- Animal Disease Research Centre
- Pashu Palak Tele Advisory Kendra



ICAR - Centers of Advanced Faculty Training (CAFT)

Total CAFT in 68 SAUs - 44

GADVASU -03

- Veterinary Surgery & Radiology
- Veterinary Gynecology & Reproduction
- Veterinary Pathology

Niche Area of Excellence

1. Research Centre for Veterinary Ayurveda (AYUSH, GOI)
2. Canine Research Network (DBT, GOI)
3. Niche Area of Excellence in Antibiotic Resistance: Animal - Human Interface (ICAR)
4. Niche Area of Excellence in Animal Disease Registry & Tissue Bank (ICAR)
5. Niche Area of Excellence in Inland Aquaculture in Punjab (ICAR)
6. Climate Resilient Livestock Production System (NAFCC-NABARD)



ICAR- Institutional Development Plan (IDP) GADVASU (2019)

National Agricultural Higher Education Project (NAHEP)- World Bank

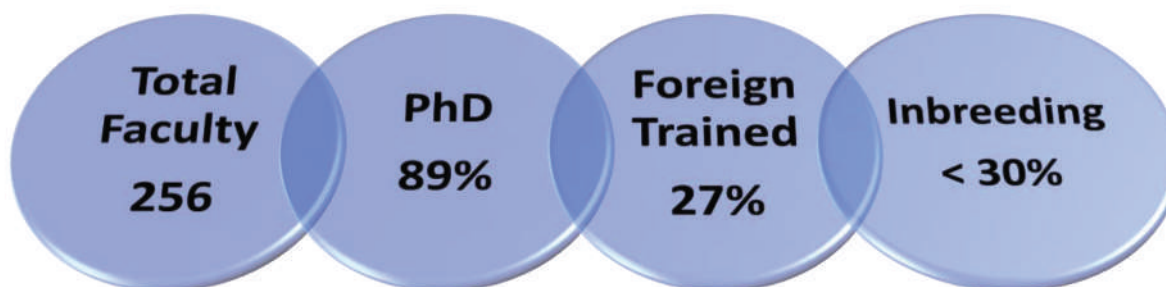
Total IDP Awarded Institutions
in India - 18



Academic Profile

Programs/Courses (86)	Details	Total Student Strength- 2023 ≈ 2200 UG PG Ph.D. Diploma Other Courses (Including Affiliated Colleges)
Undergraduate 04	COVS - B.V.Sc. COF - B.F.Sc. CODST - B.Tech (Dairy Tech.) COABT - B.Tech (Ani. Biotech.)	
Post Graduate 27	COVS - M.V.Sc. (16) COF - M.F.Sc. (04) CODST - M.Tech./M.Sc. (05) COABT - M.V.Sc. /M.Sc. (02)	
Doctorate (Ph.D) 24	COVS - 15 COF - 03 CODST - 04 COABT - 02	
Para Vet/PG Diplomas 08	COVS Ludhiana – 05 COVS Rampura Phul - 01 VP – 01 COABT - 01	
Certificate Courses 11	COVS Ludhiana - 06 COVS Rampura Phul - 01 COF – 04	
Short Courses 12	COVS- Ludhiana – 04 COVS - Rampura Phul - 05 COF – 02 COABT- 01	

Faculty Profile



Europe



Leading International Collaborators

USA



Canada



Australia



Asia



Total Number of Existing MoU's - 33

University Website
www.gadvasu.in



About College of Fisheries, GADVASU

With historic roots in Department of Zoology, College of Basic Sciences of Punjab Agricultural University (PAU), Ludhiana (Punjab), the fisheries faculty moved to Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), which was carved out of PAU in 2005 and started functioning on 2006, for development of animal husbandry, dairy and fisheries sectors in the State. Within a span of 2 years after shifting to GADVASU in 2006, the ‘Fisheries Faculty’ transformed in to a ‘Fisheries Unit’ in 2007 and then finally to ‘College of Fisheries’ in April, 2008.

College of Fisheries (COF) was established in GADVASU to produce professionally proficient human resource (graduates and postgraduates) to serve the fisheries sector in different capacities (teaching, research, extension, planning and livelihood generation) for holistic development through productivity enhancement and socio-economic sustainability. Since its establishment, the College has registered a commendable academic growth and has made significant R&D contributions towards development of the inland fisheries sector in the north-western region of India.

With five departments (Aquaculture, Fisheries Resource Management, Aquatic Environment, Fish Processing Technology and Fish Engineering), competent experienced faculty, smart classrooms, fully equipped modern laboratories and a well-developed “Instructional cum Research Farm” (spread over an area of 6 ha), COF, GADVASU possesses hi-tech/advanced facilities for effectual teaching, capacity building (experiential learning, skill development, trainings and demonstrations), advanced research and extension programs. COF is accredited by the ICAR with “A” Grade and is offering undergraduate (UG) and postgraduate (PG) degree programs in different disciplines of fisheries.

Within a span of 15 years, College of Fisheries, GADVASU has made remarkable R&D contributions towards development of fisheries sector in the region. Economic utilization of inland salt affected waterlogged zero earning waste/degraded lands through aquaculture, particularly shrimp farming, is one example well documented and acclaimed nationally and internationally. Further, freshwater aquaculture (carp culture) diversification through pangas catfish culture, brood stock production (through overwintering) and breeding under challenging climatic conditions of the State was also made successfully. Furthermore, medicated formulated feeds (grow out and brood stock) with herbal supplemented have been developed for growth, immunity and reproductive enhancement in fish. Nevertheless, college is also excelling in the field of aquatic animal health management involving development of organic solutions for prevention and control of diseases, like probiotics, vaccines, macrophage cocktails, immunostimulants etc.; and development of farmer level diagnostic kits.



College of Fisheries, GADVASU – Building



Instructional cum Research Farm (6 ha) - COF, GADVASU

Departments – 05

1. **Aquaculture**
2. **Fisheries Resource Management**
3. **Aquatic Environment**
4. **Fish Processing Technology**
5. **Fish Engineering**

**Faculty
Strength
19**

Degree Programs

- **B.F.Sc**
- **M.F.Sc. – 04 Subjects**
Aquaculture
Fisheries Resource Management
Aquatic Environment Mangement
Fish Processing Technology
- **Ph.D. – 03 Subjects**
Aquaculture
Fisheries Resource Management
Aquatic Environment Mangement

**ICAR
Accredited
2013 & 2018
Grade- A**

**Ph.D.
Faculty
100%**

**Foreign
Trained
37%**

**Faculty
Inbreeding
21%**

Other Skill Development/Entrepreneurial Programs

Certificate Courses (6 month) – 04

1. Fish Hatchery Management
2. Aquarium Science
3. Fish processing Technology
4. Aqua-Clinics

Short Courses (1 Month) – 02

1. Aquarium Fabrication and Maintenance
2. Fish Feed Formulation and Manufacturing



Prestigious National Programs/Projects

1. **ICAR - Niche Area Excellence (NAE) (2010-2015)**
2. **ICAR- National Surveillance Programme for Aquatic Animal Diseases- NSPAAD (State Partner: 1st Phase - 2018-2022 & 2nd Phase - 2022-2025)**
3. **Centre for Development of Advanced Computing (cDAC)- Ministry of Electronics and Information Technology, (GOI)- Establishment of Automated Aquaponic System for Vertical Farming in India (2019)**
4. **Department of Fisheries, MoFAHD (GOI) – 100% Funding under PMMSY-CS Scheme (1.39 Crores) - Establishment of Capacity Building Resource Centre for Intensive Aquaculture Technologies (2021)**





Inauguration of Recirculatory Aquaculture System (RAS) and Biofloc Aquaculture System (BFAS) recently established at College of Fisheries, GADVASU under PMMSY funded Project "Capacity Building Resource Centre for Intensive Aquaculture Technologies", by Sh. Jitendra Nath Swain (IAS), Secretary, DOF (MoFAHD, GOI) in the presence of Sh. Sagar Mehra, Joint Secretary, DOF (MoFAHD, GOI) and Dr. Inderjeet Singh, Vice Chancellor, GADVASU on 07.01.2023.

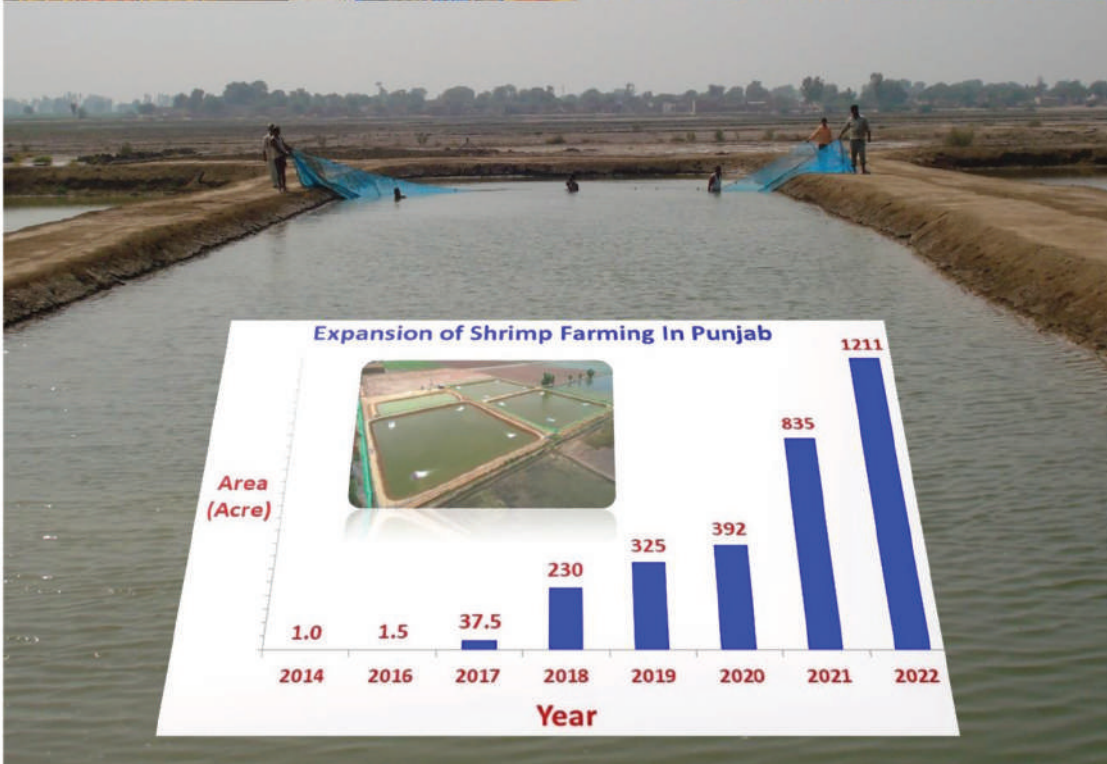
Major R&D Thrust Areas

- Aquaculture in degraded lands – Salt affected & water-logged areas
- Aquaculture diversification with high value species- Fresh water and inland saline water
- Integrated aquaculture and IMTA models promoting circular bio-economy
- Intensive aquaculture technologies – Recirculatory Aquaculture System (RAS), Biofloc Aquaculture System (BFAS), Aquaponics etc.
- Pond cage aquaculture and in-situ aquaponics
- Climate smart aquaculture technologies
- Brood stock management, breeding and seed production
- Non-food aquaculture (Ornamental fisheries and freshwater pearl culture) technologies
- Duckweed based eco-friendly bioremediation technology for waste water and village ponds
- Ecological mapping of natural water resources – Seasonal water spread variations, water quality, biodiversity and population dynamics; pollution status, bioaccumulation of potential pollutants in the food chain and public health
- Medicated feed formulations with herbal supplements for growth, immunity and reproductive potential enhancement in fish/shellfish
- Cost effective fish feed formulations and manufacturing with non-conventional feed resources
- Disease Surveillance in aquaculture systems with special reference to village ponds and inland saline areas
- Aquatic animal health management - Probiotics, vaccines, diagnostic kits, bacteriophage cocktails & immuno-stimulants
- Quality assurance and quality control
- Zero wastage fish/shellfish processing technologies promoting circular bio-economy
- *Azolla* and duckweed culture for economic application in agriculture, aquaculture, poultry and livestock farming
- Database generation – Natural aquatic resources, village ponds, aquaculture ponds, fishers (fish/shrimp farmers and fishermen), fishing gears, input industry (hatcheries, feed industry, pharmaceuticals etc.) socio-economic performance, technology gaps, fish markets, landing sites, quality and food safety, waste generation and management etc.





Shrimp Harvest in Punjab (2018 – 2022)





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0161-2414054, 2414061



www.gadvasu.in

Our Distinguished Speakers



Dr. Ravishankar, C.N. is the Director and Vice-Chancellor of Central Institute of Fisheries Education (CIFE), Mumbai, deemed-to-be-University under Indian Council for Agricultural Research (ICAR). Prior to joining as Director CIFE, he served as Director of ICAR-Central Institute of Fisheries Technology (CIFT), Kochi. With more than 35 years of experience in the domains of food science research, post-harvest technologies and food safety, he established India's first Fisheries Business Incubation Centre. He is honored with many awards for his scientific contributions in fisheries harvest and post-harvest technologies and is Fellow of National Academy of Agricultural Sciences (NAAS), Association of Food Science and Technology (AFSTI), Society of Fisheries Technologists India (SOFTI) and Karnataka Science and Technology Academy (KSTA). He is chairing several national committees, including the Committee for Drafting National Policy on Post-Harvest Processing and Marketing of Fish and Fishery Products with Ministry of Fisheries, Animal Husbandry and Dairying, GOI; Nodal Authority for Developing Approved Standard Deep-Sea Fishing Vessel Design and Specification; and Scientific Panel on Fish and Fish Products, FSSAI with Ministry of Health and Family Welfare.

Dr. Basanta Kumar Das is Director of ICAR -Central Inland Fisheries Research Institute (CIFRI), Kolkata; having vast experience in the fields of fish disease management, molecular epidemiology, anti-viral gene expression, development of immunostimulants and bioactive compounds from algae and plant derivatives. He has guided 25 Ph.D. and 35 Masters Students. Dr. Das has more than 360 international publications with total citations of 7483. He is recipient of number of prestigious national and international awards, among them Jawaharlal Nehru Award in 1999; Lal Bahadur Shastri Young Scientist Award in 1999- 2000 and Rafi Ahmed Kidwai Award in 2020 conferred by ICAR, New Delhi, are noteworthy. Under his dynamic leadership ICAR-CIFRI- Barrackpore achieved prestigious "Sardar Patel Outstanding ICAR Institution Award" in 2020.



Dr. K. P. Kumaraguru Vasagam is presently working as Principal Scientist (Fish Nutrition), ICAR-Central Institute of Brackish Water Aquaculture (CIBA), Chennai since 2018. After obtaining his Doctoral degree in Marine Biology from the Center of Advanced Study in Marine Biology, Annamalai University, he served as a R&D Manager in a US-based consultant company called Integrated Aquaculture International, for five years in its project at Brunei. Later he moved back to India; worked in the postdoctoral programs of UGC and CSIR's; and then joined CIBA as Fish Nutritionist in 2012. His main research interests include cost effective fish feed formulation, Functional feeds, Feed utilization optimization, feed management, nutrient efficient Biofloc based aquaculture systems and automation in aquaculture. He has worked in 5 externally funded project and several inhouse research projects in the last ten years in CIBA, on different aspects of brackishwater aquaculture. To his credit, he has around 25 papers in peer-reviewed scientific journals on various aspects of fish nutrition and one patent granted for formulation and processing of a functional broodstock feed for pearlspot fish.



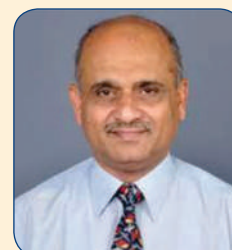
Dr. Manoj Mohanlal Sharma, a promising fisheries professional holding Ph.D. Degree in fisheries, opted to try his luck into aqua-preneurship at a very young age and has played an instrumental role in establishing shrimp farming in the salt affected wastelands in Surat (Gujarat); besides establishing the Gujarat Aquaculture Association, benefiting thousands of shrimp farmers and generating employment opportunities for about 1.5 lakh individuals directly and indirectly. Now with 30 years of shrimp farming experience, Dr Manoj is invited across the globe as an eminent expert to guide the shrimp farmers. He has received various national and international awards for his socio-economic contribution, such as 'Best Innovative Farmer Award' by National Fisheries Development Board and 'Agrivision Award' for grass root development of shrimp farmers and coastal rural communities; with wider media coverage on news channel such as CNBC network and DD Kisan as "Father of Blue Revolution in Gujarat".



Dr. Saroj Kumar Swain, presently working as Principal Scientist, ICAR-Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar, Odisha; is dynamically involved in research, technology development and extension activities in the field of ornamental fisheries. He developed captive breeding technology for various indigenous (more than 17) and exotic varieties, including endangered ornamental fishes of India. He developed a new variety of ornamental fish, shining barb (*Pethia conchonius*) and also discovered a new ornamental fish species from river Mahanadi viz. *Parasylorinchus swaini*, which is named after his name. He is the architect behind the establishment of

famed ICAR CIFA public aquarium and introduced the concept of Ornamental Aquaculture Field School to promote Ornamental fisheries in rural areas. He also played a pivotal role in development of National Action Plan for Ornamental Fisheries Development under PMMSY Scheme of Department of Fisheries, GOI; and headed the Multi Institutional project of NAIP-Livelihood and Component-3 of World Bank funded project as Consortium Principal Investigator, which uplifted the socio-economic conditions of more than 8000 farm families in Odisha. Dr. Swain is honored with many National awards; have published 50 research papers and 4 books; and has a PATENT to his credit for developing CIFACURE, a medicine for controlling bacterial and fungal diseases of aquarium fishes. He has played a key role in organizing series of stakeholder's consultation meetings and brought out a detailed strategic action plan for increasing the overall fish production in India.

Dr. Atul Kumar Jain is a Fisheries Professional turned into an exemplary entrepreneur, after serving ICAR- Central Institute of Fisheries Education (CIFE), Mumbai as a fisheries scientist for 23 years from 1983 to 2006, with significant scientific contributions in the field of semi-arid and inland saline water aquaculture. He opted for voluntary retirement in 2006 to transform his love for ornamental fisheries into an entrepreneurial activity by establishing an ornamental fish production farm in a village near Udaipur in Rajasthan; which became the first ornamental unit within inland states to receive funding from MPEDA. Moving another step forward, he upgraded his production unit to an advanced "Ornamental Fisheries Training and Research Institute", Known as OFTRI, which is a sought-after capacity building resource center for aspiring candidates from different parts of the country; and has trained about 850 candidates so far, with many establishing their own ornamental fish unit or aquarium shops. As team leader of ornamental fisheries expert group, he published book on "Best Management Practices for Freshwater Ornamental Fish Production" published by NFDB. He served as an adjunct scientist at Tamil Nadu Fisheries University; Visiting Professor at College of Fisheries, GADVASU, Ludhiana under Institutional Development Plan of ICAR-NAHEP; and Consultant, RKVY, Ministry of Agriculture. His mission is to develop the ornamental fisheries sector through capacity building of stakeholders, promotion of ornamental fish keeping as a hobby and transforming it into an attractive entrepreneurial enterprise for youth to attain self-reliance.





Dr. Debajit Sarma is working as Principal Scientist in ICAR-Directorate of Coldwater Fisheries Research (DCFR) at Bhimtal, Uttarakhand. For his outstanding contribution towards development of Coldwater Fisheries in the Himalayan states, he has been conferred with Fellowships by Cold Water Fisheries Society of India (CFSI) and Zoological Survey of India (ZSI); besides receiving many awards like Dalela Oration Award, Eminent Scientist Award, IBRF Excellence Award, VRP Sinha Award. He is honored with “Certificates of Appreciation” from State Governments of Mizoram, Sikkim, Nagaland, Arunachal Pradesh, Uttarakhand and Assam; Bhoreli Angling and Conservation Association; Jasingfaa Aqua-tourism Centre. He is serving as visiting/adjunct faculty of more than 10 reputed Indian Universities; published 97 research papers, 59 research articles, 10 books/monographs and 49 book chapters; successfully completed more than 20 research projects; and has guided 12 Ph.D., and 14 M.F.Sc. /M.Sc. students as Major/Co-supervisor. Dr. Sarma is the founder Secretary and former president CFSI. He has organized 15 national seminars/symposia/workshop as organizing secretary/convener and conducted 50 national HRD program as Course Director/Co-coordinator benefiting about 10000 farmers & officers.

Dr. R. S. Chauhan, a renowned fisheries scientist, recently retired as Dean of College of Fisheries, Govind Ballabh Pant University of Agriculture & Technology (GBPUAT), Pantnagar, Uttarakhand, after completing an outstanding professional career of more than 3 decades. Previously he also served as Director Fisheries, Government of Uttarakhand; Secretary, Uttarakhand State Fish Farmers Development Agency; Member, State level Sanctioning Committee, RKVY; Member, Institute Management Council of ICAR-Directorate of Coldwater Fisheries Research (DCFR), Bhimtal; and Member, Uttarakhand State Wildlife Advisory Board. He handled 15 research projects as PI/Co-PI and published 82 research papers/articles, popular articles, books/book chapters and bulletins. He has supervised 21 Masters/ Doctoral students; besides organizing several symposia/workshops/trainings. He has received numerous awards including the Fellow of Coldwater Fisheries Society of India and Inland Fisheries Society of India; Eminent Scientist Gold Medal of Society of Life Sciences and Life Time Achievement Award of the Society of Life Sciences.



Dr. K. Ambasankar is working as Principal Scientist and SIC (Nutrition Group) at ICAR - Central Institute of Brackish water Aquaculture (CIBA), Chennai; having made significant contributions in the field of nutrition and feed development for brackish water aquaculture, with main focus on nutrient requirement, functional feeds for larvae and brood stock, fish meal replacement using sustainable resources, enzyme application in aqua feeds and feed processing using pelletizer and extruder. He has developed and commercialized several aqua feed technologies successfully and the cost-effective shrimp feed Vanami^{Plus} developed by his team has gained popularity among the farmers. He guided 5 Ph.D and 8 M.Sc., Students and has 100 Publications in the national and international journal of repute to his credit. He underwent international training at CSIRO Australia and was also nominated as an Indian representative to participate in the in the Regional Consultation on Responsible Production and Use of Feed in Asia – Pacific, Bangkok, Thailand. The nutrition team lead by him received the prestigious ICAR team award in agriculture and allied sciences in 2016-17 for Animal and Fisheries Sciences.



Mr. B. Ravikumar, a promising fisheries professional holding post graduate degree in fisheries, is an aquaculture expert working in the field of aquaculture; having more than 25 years of work experience in India, Philippines, Iran, Madagascar, Mozambique, Malaysia, Thailand, Indonesia, Srilanka and Bangladesh. He obtained his B.F.Sc. and M.F.Sc. degrees from Fisheries College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Tuticorin, India. He has worked in Network of Aquaculture Centers in Asia-Pacific (NACA), IFC-World Bank Group, Asian Development Bank (ADB) and WorldFish projects as aquaculture specialist and project manager. He also served as BMP expert in FAO projects related to improving the livelihoods of small-scale farmers in Indonesia and Bangladesh; and Farm Manager at integrated shrimp farming projects in Africa promoted by European companies. Presently, he is working as Assistant Vice President – Sales and Technical in Growel Feeds Pvt. Ltd., one of the leading fish feed companies in India. He is an exemplary source of entrepreneurial inspiration for young fisheries professionals of the country.



Dr. Indrani Karunasagar, an internationally renowned scientist, retired as Associate Director of Research, Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU), Bidar. After her retirement from KVAFSU, she joined NITTE (Deemed to be University), Mangaluru as the first Director of NITTE University Centre for Science Education and Research. She has several international research collaborations with University of Stirling, UK; University of Maryland, USA; University of Wurzburg, Germany; and University of Ghent, Belgium. She has served on several national and international Committees including FAO/WHO; Joint Expert Committee on Microbiological Risk Assessment (JEMRA); and Member of FAO subcommittee on Antimicrobial Resistance. She is a recipient of several awards and recognitions in India and abroad, notable being the National Technology Development Award, Govt. of India; Fellow, National Academy of Agricultural Sciences; Sir. M. Visvesvaraya Award for Excellence in Research and Lifetime Contribution to Science and Technology, GoK; Rafi Ahmed Kidwai Award, ICAR, GoI; M.S. Swaminathan Award, Asia Pacific Award for eminence in Aquatic Virology etc. She has 380 publications in high impact factor national and international journals, chapters in several books and has edited three books; with >11,000 citations and h-index of 59. She has guided 40 Doctoral and 40 Masters students, who are now occupying prestigious faculty and industry positions in India and abroad.

Dr. Iddya Karunasagar, an internationally renowned scientist, retired as Director of Research, Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar. Indian Council of Agricultural Research (ICAR) awarded him National Professorship in 2005 and he worked as Senior Fishery Industry Officer in the Aquaculture and Fisheries Department at Food and Agriculture Organization (FAO) of United Nations at Rome, looking after the area of quality and safety during 2007-2014. He played a key role in several FAO/WHO food safety risk assessments. After his retirement from FAO, he has been working as International Consultant to organizations like FAO, WHO, International Trade Center (ITC), UNIDO and Asian Development Bank (ADB). Dr. Iddya Karunasagar has guided over 30 Ph.D. and 45 Masters degree students. He is the recipient of several prestigious awards including Biotechnology Product and Process Development Award from the Govt. of India; Rafi Ahmed Kidwai award from Indian Council of Agricultural Research; Aquaculture Award from Marine Products Export Development Authority; Academic Contributor of the biennium Award from International Association of Seafood Professionals (Sydney, Australia); and Life Time Achievement Award from Indian Society for Virology and Karnataka Science and Technology Academy. He has been elected Fellow of National Academy of Agricultural Sciences, Indian Academy of Microbiology, Karnataka Science and Technology Academy. He is Editor-in-Chief, Journal of Health and Allied Sciences NU and has served as Editor/Member Editorial Board in several international Journals and is currently Academic Editor, PLOS ONE, Associate Editor of the Journal of World Aquaculture Society. He chairs the Scientific Panel on residues of antibiotics, Member of Biohazard Panel and Scientific Committee of Food Safety and Standards Authority of India (FSSAI).





Dr. Vindhya Mohindra is serving as Principal Scientist, Fish Conservation Division, ICAR- National Bureau of Fish Genetic Resources (NBFGR), Lucknow, India. She has more than 28 years of experience in the field of fish conservation genetics and genomics. Her core research areas and expertise are development of genomic resources and signatures of natural selection for utilization in genetic differentiation of wild fish population and whole genome sequencing of important fish and fish pathogens, bio-prospecting of genes and allele mining for important traits. She has recipient of prestigious honors like M. S. Swaminathan Award for Best Indian Fisheries Scientist conferred by Professional Fisheries Graduates Forum, Mumbai and Best Scientist of ICAR-NBFGR Award, ICAR-NBFGR, Lucknow. Her research findings have been published in reputed national and international journals.

Dr. Inderpreet Kaur Kullar is working as Associate Professor at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana. She completed 3-month training on Policy Making at University of Saskatchewan, Canada in 2015. She has been associated with 11 research projects; having 50 research publications in referred journals, 40 popular articles, 10 research reports and various policy documents at state and national level to her credit. Her major scientific contribution as an economist included recommendations in respect to sustainability of small farmers; consideration of cost of milk production along with fat and SNF, while announcing milk prices; and revision of 60 years old standards for cow milk in Punjab by FSSAI, Govt of India. Dr. Inderpreet is working with international agencies in field of livestock like LICOS, Belgium, IFCN, Germany and Messay University, New Zealand.



Dr. L.N. Murthy, Senior Executive Director at National Fisheries Development Board (NFDB), is playing major role in enhancement of fish production, productivity & utilization in the country and coordinating the fishery development activities in an integrated and holistic manner, policy framing for IUU concern and revamping of country's domestic, regional, and international approach to recognize IUU fishing as a traditional and non-traditional national security threat. He has an expertise in the area of post-harvest fisheries technologies, fish protein chemistry, quality control, surimi and surimi-based products and residue contaminants etc. During his previous service period at ICAR- Central Institute of Fisheries Technology (CIFT), CIFT was awarded as Best Agri-Business Incubator for the year 2012 and 2013.

Mr. Ravi Kumar Yellanki is the Managing Director of Vaisakhi Bio-Marine Private Limited and Vaisakhi Bio-Resources Private Limited, Andhra Pradesh, one of the leading shrimp hatchery operators in India, and operates one of the largest farms in the country. The company is also making its foray in to shrimp exports. For more than 20 years, Mr. Ravi Kumar Yellanki has been familiar with hatchery operations in India. Remarkably through his numerous written papers and publications, he shared his experiences and knowledge concerning shrimp hatchery sphere such as the management and its role in changing environment. His expertise in terms of local market trends and opportunities is remarkable. Today, he concentrates his awareness on building sustainable strategies for Indian Shrimp Aquaculture. After serving Society of Aquaculture Professionals (SAP) as President, he is now President of All India Shrimp Hatchery Association (AISHA).





Professor Dr. Soottawat Benjakul, an internationally renowned scientist working in the field of Food Science and Technology at International Center of Excellence in Seafood Science and innovation (ICE-SSI), Faculty of Agro-Industry, Prince of Songkla University (PSU), Hat Yai, Songkhla, Thailand. He received his Ph.D. (Food Science and Technology) from Oregon State University, USA in 1997 under the support from the Fulbright scholarship. His major fields of interest are seafood quality and valorization of fish processing byproducts. He has published more than 1000 research articles in peer-review international journal with H-index of 101 and more than 42,000 citations; and is conferred as Outstanding Researcher of Thailand and Thomson Reuters Highly Cited Researcher. He has been listed as the top 1% of researchers for most cited documents in the field of Agricultural Sciences by Clarivate Analytics for 8 consecutive years. He is serving as reviewer to several journals and is on the editorial board of Journals like Food Biochemistry, Fisheries Science, Journal of Food Science, Science Asia and Foods. He established 'International Center of Excellence in Seafood Science and Innovation, ICE-SSI' at PSU to strengthen the seafood research and extension in Thailand and Southeast Asia.

Dr. Armaan U. Muzaddadi is presently working as Principal Scientist & Head, Transfer of Technology Division, ICAR-Central Institute of Post-Harvest Engineering and Technology (ICAR-CIPHET), Ludhiana. He has teaching, research and extension experience of more than 22 years in Fisheries Science. He obtained his B.F.Sc. with distinction from Assam Agricultural University followed by M.F.Sc. and Ph.D. in Fish Processing Technology (Fisheries Research Management) from ICAR-CIFE, Mumbai. He has published more than 30 research papers in national and international journals, 02 books, 20 book chapters, 21 manuals/edited books, 90 technical papers/extension bulletin and more than 100 popular articles. He has handled 12 projects as Principal Investigator and 10 projects as Co-Investigator. He has guided 20 M.F.Sc. students and one Ph.D. student. He is also the Inventor and Patent holder of the Live Fish Carrier System, for which he has also received awards from the Confederation of Indian Industry and The World Bank.



The Indian Ecological Society Fellows-2023



Dr. Surjya Narayan Datta is presently working as Assistant Professor (Fisheries) in the Department of Fisheries Resource Management, College of Fisheries, Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana. He is an eminent academician and researcher, having over 15 years of research experience in the field of fish population dynamics, population genetics, climate resilience in fisheries, pond cage aquaculture; and culture, breeding and reproductive biology of catfish. Dr. Datta has guided 09 post graduate students as Major/ Co-Advisor and handled 09 research projects as PI/ Co-PI/associated scientist, funded by UGC, ICAR, PPCB and RKVY etc. He has standardized BMPs, brood-stock rearing and breeding technology of high value

Pangas catfish under agro-climatic conditions of Punjab and bred the fish successfully for the first time in the State, presenting prospective scope of establishing pangas hatchery in the northern part of the country. Dr. Datta acquired two international trainings in the field of 'Climate Change in Fisheries' at University of Antwerp, Belgium in 2016 and 'Capacity building in Intensive Aquaculture' at University of Arkansas, USA in 2022 to promote region specific intensive aquaculture systems. He has published 60 research articles in peer reviewed journals and has been conferred with 'Best Researcher Award' and 'Best Teacher Award' by GADVASU for the academic years 2018-19 and 2022-2023.



Dr. Prabjeet Singh is working as an Assistant Professor (Fisheries) in the Department of Fisheries Resource Management of College of Fisheries, Guru Angad Dev Veterinary Sciences University (GADVASU). With his dynamic research aptitude and extension skills he has played a significant role in developing aquaculture in salt affected waterlogged waste lands of south west Punjab through standardization, validation, demonstration and replication of technology for shrimp (*Penaeus vannamei*) farming in inland saline water. His technical hand holding to the shrimp farmers has made a significant socio-economic impact, involving economic utilization of zero earning lands, leading to socio-economic development of debt-ridden rural communities. He was awarded with "Visiting

Researcher Fellowship" by the International Centre of Excellence in Seafood Science and Innovation (ICE-SSI), Prince of Songkla University Hatyai, Thailand; and also received Young Scientist Award, Research Excellence Award and Fellowship of Society of Life Sciences. He handled 2 RKVY research project as a PI and two extramural projects as a Co-PI; authored 34 research publications in peer reviewed high impact factor journals, with H-Index of 9 and 717 citations; 29 extension articles; 25 conference papers; 2 book chapters; and 3 theory/practical manuals; besides delivering 18 Radio/TV talks. He has guided 3 M.F.Sc and 1 Ph.D as a Major advisor apart from being on the advisory committee of seven masters/Ph.D. students. As placement in-charge of the College, he has played an instrumental role in employment of fisheries graduates in public and private sectors. As a passionate extension worker, he is serving the shrimp farmers of Punjab and its enamouring states like Haryana and Rajasthan as well.

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Animal Husbandry and Dairying, GOI

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• Dr. Naveen Kumar B.T., Assistant Professor, COF	Member
• Dr. Prem Kumar, Subject Matter Specialist, KVK, SKUAST-J	Member



VIII. Memento cum Felicitation Committee

- | | |
|---|-------------|
| • Dr. A.P.S. Brar, Professor, COF | Convener |
| • Dr. Vaneet Inder Kaur, Principal Scientist, COF | Co-Convener |
| • Dr. Grishma Tewari, Scientist, COF | Member |
| • Dr. Vikas Phulia, Assistant Professor, COF | Member |

IX. Refreshment / Food Committee

- | | |
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| • Dr. Jaswinder Singh, Associate Professor, COVS | Convener |
| • Dr. Prabjeet Singh, Assistant Professor, COF | Co-Convener |
| • Dr. Amit Mandal, Assistant Professor, COF | Member |
| • Dr. Arunbeer Singh, Assistant Professor, COVS | Member |
| • Mr. Jaskarn Singh, Assistant Estate Officer | Member |

X. Tentage Committee

- | | |
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| • Dr. Jaspal Singh Hundal, Principal Scientist, COVS | Convener |
| • Dr. S. S. Sodhi, Associate Professor, COABT | Co-Convener |
| • Dr. Abhishek Srivastava, Assistant Professor, COF | Member |
| • Dr. Vijay Kumar Reddy, Scientist, COF | Member |
| • Mr. Jaskarn Singh, Assistant Estate Officer | Member |

XI. Audio-Visual cum Photography Committee

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| • Dr. Harpreet Singh, Associate Professor (Communication) | Convener |
| • Dr. Surjya Narayan Datta, Assistant Professor, COF | Co-Convener |
| • Dr. Naveen Kumar B.T., Assistant Professor, COF | Member |
| • Mr. Khushvir Singh, Assistant Professor, COF | Member |
| • Dr. Rajinder Kaur, Assistant Professor, KVK, Barnala | Member |

XII. Stage Co-ordination Committee

- | | |
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| • Dr. Deepti Narang, Principal Scientist, COVS | Convener |
| • Dr. Vaneet Inder Kaur, Principal Scientist, COF | Co-Convener |
| • Dr. Sarbjeet Kaur, Assistant Professor, COF | Member |
| • Dr. Amandeep Singh, Assistant Professor, VAHEE | Member |
| • Dr. Gulgul Singh, Subject Matter Specialist, KVK, Tarn Taran | Member |

XIII. Press, Publicity & Media Coverage Committee

- | | |
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| • Dr. Harpreet Singh, Associate Professor (Communication) | Convener |
| • Dr. Vaneet Inder Kaur, Principal Scientist, COF | Co-Convener |
| • Dr. Rajnish Sharma, Assistant Professor, COH | Member |
| • Dr. Anuj Tyagi, Assistant Professor, COF | Member |
| • Dr. Prabjeet Singh, Assistant Professor, COF | Member |
| • Dr. Amandeep Singh, Assistant Professor, VAHEE | Member |

XIV. Excursion Committee

- | | |
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| • Dr. Ajeet Singh, Assistant Professor, COF | Convener |
| • Dr. Anuj Tyagi, Assistant Professor, COF | Co-Convener |
| • Dr. Amit Mandal, Assistant Professor, COF | Member |
| • Dr. Siddhnath, Assistant Professor, COF | Member |



XV. Cultural Program Committee

- | | |
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| • Dr. Grishma Tewari, Scientist, COF | Convener |
| • Dr. Sarbjeet Kaur, Assistant Professor, COF | Co-Convener |
| • Dr. Gulgul Singh, Subject Matter Specialist, KVK, Tarn Taran | Member |

XVI. Security/Vehicle Parking Committee

- | | |
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| • Dr. Nitin Dev Singh, Professor, COVS & Security Officer, GADVASU | Convener |
| • Dr. Vijay Kumar Reddy, Scientist, COF | Co-Convener |
| • Dr. Sachin Onkar Khairnar, Scientist, COF | Member |
| • Dr. Siddhnath, Assistant Professor, COF | Member |
| • Mr. Jaskarn Singh, Assistant Estate Officer | Member |
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