

Aqua International

Estd. 1993

Health • Nutrition • Management • Processing

January 2024

Annual Subscription: Rs 800 Foreign \$ 100

Inside...

Editorial:
Farmers from North
seeking genuine Shrimp
material Buyers ...



Ravinder Singh

Karan Kalra



Rajkumar Sharma

Rajveer Singh



Gurpreet Singh

Manish Kumar

Dealers in Northern
region of India speak to
Aqua International for the
sector's development

Fisheries and Aquaculture
Infrastructure
Development Fund

Global shrimp
production forecast of
5.6 million metric tons is
slightly lower for this year

Harnessing AI Tools for
Advancements in Marine
Fisheries Research ...

INTRODUCING

SUPER STIMULANT VANNAMEI FEED



BayWhite Advanced

Super Stimulant Vannamei Feed

- Stimulates the special sensory cells that attracts shrimp to the feed
- Ensures continuous intake of feed
- Promotes faster growth and reduces wastage
- HP Boost - Boosts hepatopancreas function with functional ingredients
- Healthy Gut - Maintains healthy microflora in gut and limits Vibro Sp in gut



WATERBASE
Innovating for your growth

Corporate Office: The Waterbase Limited, Thapar House, 37 Montieth Road, Egmore, Chennai-600 008, Tamil Nadu, India. Ph: +91 44 4566 1700, www.waterbaseindia.com

SRIBS BiotechniQs Private Limited... Now recognised amongst top 10 Aquaculture Companies!



Quality Inputs - Quality Management... Towards Sustainable Aquaculture!!



SRIBS BiotechniQs Private Limited

302, Wing-A, Cello Triumph, I.B.Patel Road, off Western Express Highway,
Goregaon East, Mumbai 400063, Maharashtra, India. ☎ +9122 26861441 / 26851442

✉ info@sribsbio.in / marketing@sribsbio.in 🌐 www.sribsbio.in

SRIBS sustainability simplified®



FEED SUPPLEMENT

BioPhage-V



War of Virus over Vibriosis

ఉపయోగములు



- ★ విజియో బ్యాక్టీరియా ని పూర్తిగా నిర్మూలించి **vibriosis** నుంచి రొయ్యలకి రక్షణ కల్పిస్తుంది .
- ★ విజియో ద్వారా సంక్రమించే **white faeces** ని అరికడుతుంది.
- ★ **RMS** నుంచి రక్షణ కల్పిస్తుంది
- ★ బయోఫేజ్ V వాడకం వలన ప్రోబయోటిక్ కి ఎటువంటి హాని జరగదు. మరియు **probiotic** పనితనం పెరుగుతుంది.
- ★ బయోఫేజ్ V వాడకం వలన **biofloc** పెరుగును. దానివలన గ్రోత్ పెరిగి **F.C.R.** తగ్గును.



వాడు విధానము:

WATER APPLICATION

6-20 రోజుల D.O.C లో :
ఒక ఎకరాకు 100 ml బయోఫేజ్ - V ని 10 లీటర్ల చెరువు నీటిలో కలిపాలి. ఆ కలిపిన ద్రావణం ని చెరువులో సమానం గా చల్లవలెను. అవసరాన్ని బట్టి మరలా 40 నుంచి 50 రోజుల D.O.C లో రెండవసారి వాడవలెను.

FEED APPLICATION

6-20 రోజుల D.O.C లో :
ఒక లీటర్ చెరువు నీటిలో 10 ml బయోఫేజ్ - V ని కలిపాలి. అలా కలిపిన ద్రావణాన్ని 20 ml / kg మేతలో కలిపి ఉదయం మరియు సాయంత్రం 5-7 రోజులు వాడవలెను. అవసరాన్ని బట్టి మరలా 40 నుంచి 50 రోజుల D.O.C లో రెండవసారి వాడవలెను.

ఇలా బయోఫేజ్-వి వాడినచో చెరువు నీటిలో, మరియు రొయ్య గట్ లోని విజియో పెరుగుదలను పూర్తిగా నిర్మూలించవచ్చును.



Product By:

Biomed Techno Ventures

54-9-17, Plot No. 1 & 2, Block F XIX, 100 Feet Road, Jawahar Autonagar, Vijayawada - 520 007.

☎ 0866-3500700

✉ biomed.vja@gmail.com

🌐 biomed.org.in



mega Ture F

More love means less stress.
Let love rule.

Improves shrimp fertility and lowers stress in the quarantine,
maturation, and copulation period.

Fertility and reproduction.



Let's
aquaculture
together 
MEGASUPPLY.

Distributed in India by:
ORANGE ENTERPRISE, Chennai, Tamilnadu
E-mail: salesorangeenterprise@gmail.com
Phone: +91-9962525791

www.megasupply.com
orders@megasupply.net

Made in USA 



...of living and growing with nature



POSEIDON BIOTECH

An ISO 9001 : 2015 certified company

2&3, PKM Cross Street, School Road, Mel Ayanambakkam, Chennai - 600 095 INDIA.
 Customer Care: +91 94440 24888 / customer@poseidonbiotech.com / www.poseidonbiotech.com



Spiral Stopper



Bevel Gear Box



2 HP Motor



Spiral



Worm Shaft & Wormwheel



Spiral (Helical) Gear Box



1 HP Gear Box



Paddle Wheel



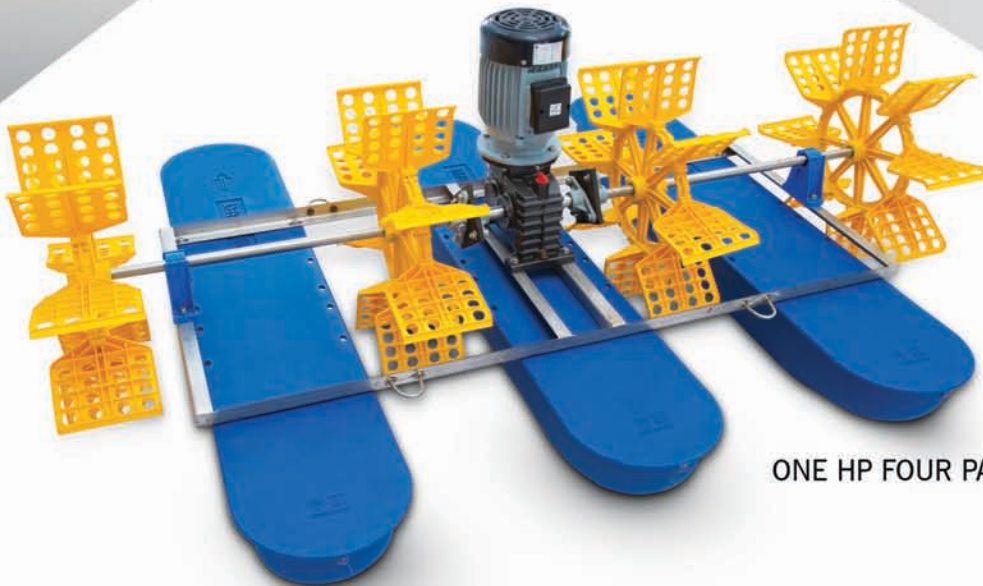
Long Arm Gland



2 HP Gear Box



2 HP Out Put Shaft



ONE HP FOUR PADDLE WHEEL AERATOR

1 HP Two Paddle - 2 HP Four Paddle - 2 HP Six Paddle

High Productivity - Excellence Performance - Easy Installation - Low Maintenance - Long Life



Nandini Gears™

www.nandinigears.com - nandinigears@yahoo.co.in

M : +91 98422 43447



Paddle



1 HP Motor



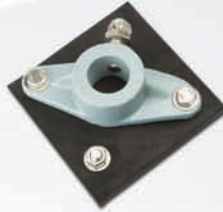
2 HP Motor



HDPE Cover



Long Arm Gear Box



Spiral Gear Box Movable Joint



Bearing Stand For Spiral



Movable Joint



Float



TWO HP SPIRAL AERATOR

QUALITY IS OUR MAIN CONCERN



Harvesting Dreams Year after Year



The **BEST** You Can Get



*L.Vannamei

**“Satisfaction is a Rating
Loyalty is a Brand”**



**“A Thankful Receiver
Bears a Plentiful Harvest”**

**The Responsible
Seafood Choice**

Corporate Office

GOLDEN MARINE HARVEST
Valathamman Koil Street
Chettikuppam
Marakkanam
District : Villupuram
Tamil Nadu, India

GOLDEN WHITE PRAWNS
Valathamman Koil Street
Chettikuppam
Marakkanam
District : Villupuram
Tamil Nadu, India

GOLDEN MARINE HARVEST
Thoduva Village, Kooliyar
Thirumullaivasal
District : Sirkazhi
Tamil Nadu, India.

GUJARAT GOLDEN MARINE
Survey N0- 312
Velan – 362720
District - Gir-Somnath
Gujarat, India

Email : info@goldenmarine.in

Website : www.goldenmarine.in

Contact : +91 99944 35858



Golden-Marine-Harvest GMH



Aqua International

English Monthly Magazine
(Established in May 1993)

Volume 31 Number 09 January 2024

Editor & Publisher
M. A. Nazeer

Editorial & Business Office:
AQUA INTERNATIONAL
NRS Publications,
BG-4, Venkataramana Apartments,
11-4-634, A.C.Guards,
Hyderabad - 500 004, India.
Tel: 040 - 2330 3989, 96666 89554
E-mail: info@aquainternational.in
Website: www.aquainternational.com

Annual Subscription
India : Rs. 800
Foreign Countries : US \$ 100
or its equivalent.

Aqua International will be sent to the subscribers in India by Book Post and to the foreign subscribers by AirMail.

Edited, printed, published and owned by M. A. Nazeer and published from BG-4, Venkataramana Apts., 11-4-634, A.C.Guards, Hyderabad - 500 004, India. Printed at Srinivasa Lithographics.
Registered with Registrar of Newspapers for India with Regn. No. 52899/93. Postal Regn. No. L II/ RNP/HD/1068/2021-2023.
Views and opinions expressed in the technical and non-technical articles/ news are of the authors and not of Aqua International. Hence, we cannot accept any liability for any loss or damage arising from the use of the information / matter contained in this magazine.

- Editor



NRS PUBLICATIONS
www.aquainternational.in

Editorial

11. Farmers from North seeking genuine Shrimp material Buyers; 1 or 2 processing plants for prosperity.

News

14. eFishery is set to cement its place in India.
16. Indian Coast Guard says it ensured nil loss of life at sea during cyclone Michaung.
18. International Healthcare displays its R & D products in Poultry Expo at Hyderabad.
20. Vizag fishing harbor to be smoke-free zone.
22. From north to south, fish varieties dwindle in 14 rivers; pollution, destructive practices to blame.
24. Fisheries and Aquaculture Infrastructure Development Fund.
26. 14th Agriculture Leadership Awards Draws Admiration and Applause.
28. 'Drones can identify diseases in fish'.
28. Centre earmarks Rs 120 cr to bolster fisheries in Goa.
32. Mumbai Research Centre of ICAR-CIFT organizes training cum demonstration programme on "Value addition and hygiene and handling of fish and fishery product" under SC Sub Plan.

Special Feature

36. Haryana Aqua Food coming up with Shrimp processing plant in North; also setting up Water Testing Lab at Sirsa.
37. Ramrai Trading grown up to Rs 40 cr company in four years.
38. Dealer is the backbone of this industry: Rajveer Singh.
38. Hardev Singh finds Shrimp farming profitable.
39. Big Processing Cos should set up processing units in North.
40. Rajkumar Sharma, Karan Kalra and Geekay Group joint venture to set up R & D Centre for Shrimp Pond Biofloc Technology.
41. Shrimp Farming will get a Boost if Processing Plants come in Haryana.
42. You should always Work to Inspire others, Rest of Things will Fall in Place !
43. Cargill claims 2,500 tonnes of feed supply in 2023 in North.

Articles

46. Global shrimp production forecast of 5.6 million metric tons is slightly lower for this year.
50. Harnessing AI Tools for Advancements in Marine Fisheries Research & Management.
53. Rooftop Aquaponics: The Future of Urban Farming.
54. Significance of food safety inspection for a seafood industry: An overview.

ADVERTISERS' INDEX

Angel Yeast Co Ltd	BC	Nandini Gears	6 & 7
ARCL Organics Ltd	25	Nihal Traders	57
Biomed Techno Ventures	3	Phileo by Lesaffre	21
Chemifine formulations	13	Poseidon Biotech	5
Deepak Nexgen Foods & Feeds Pvt Ltd	17	Salem Microbes Pvt Ltd	30 & 31
Doctor's Vet-Pharma Pvt Ltd	34 & 35	Skretting India	27
Famsun Co Ltd	10	Soon Strong Machinery Works Co. Ltd	33
FECPI India Pvt Ltd	59	Sribs Biotechniqs Pvt Ltd	2
Golden Marine Harvest	8	Team Agrotech Pvt Ltd	19
Hitech Life Sciences Pvt Ltd	29	The Waterbase Limited	FC
K.G.N. Hatchery	23	Uni-President Vietnam Co. Ltd	15
Megasupply Co.	4	Zest Animal Solutions	41
Microbasia	58	Zhanjiang Hengrun Machinery	44 & 45

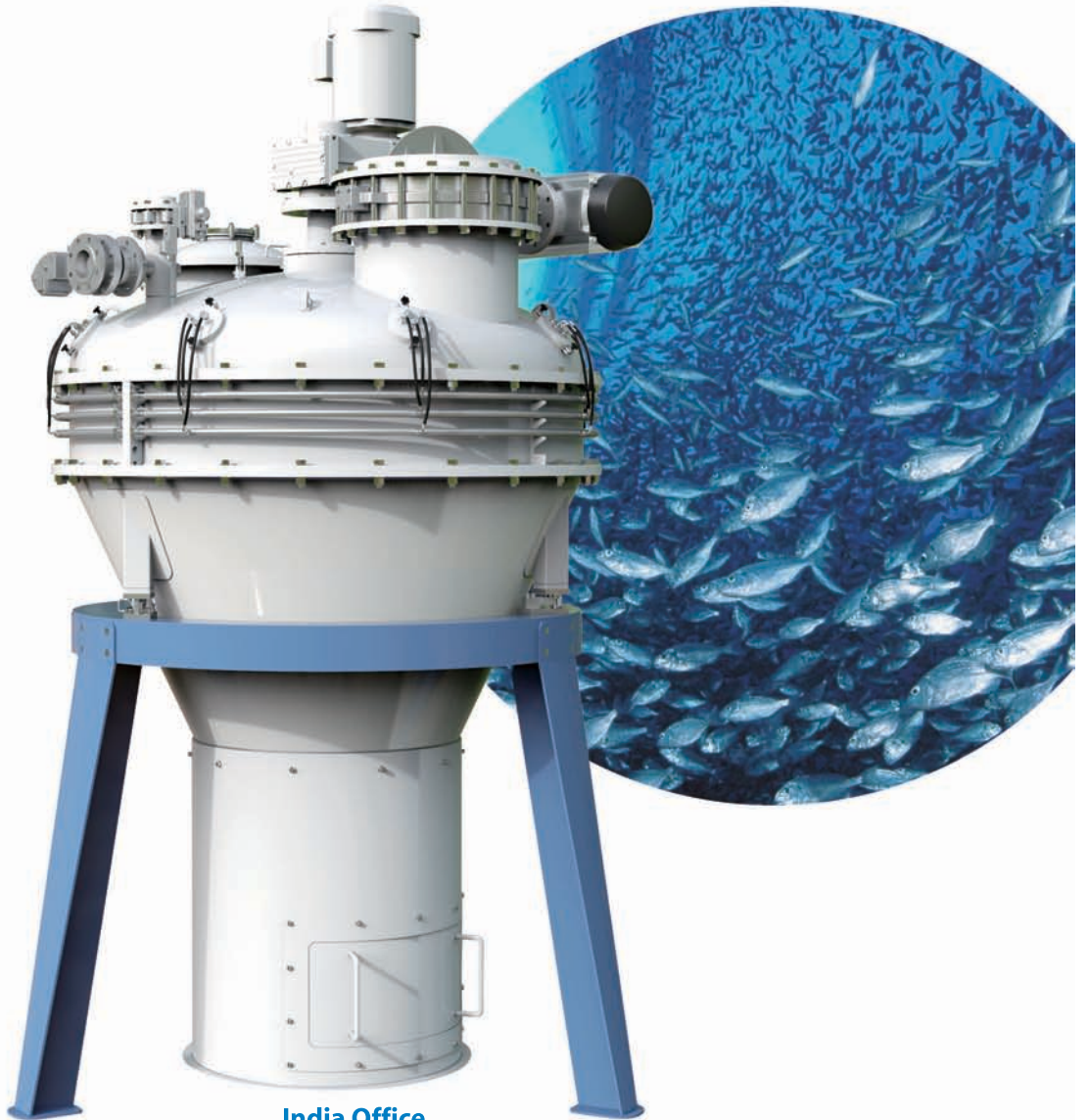
Subscriptions for Aqua International, English monthly, should be sent to:

The Circulation Department, Aqua International, BG-4, Venkataramana Apartments, 11-4-634, A.C.Guards, Near Income Tax Towers, Hyderabad - 500 004, India. Email: info@aquainternational.in

Vacuum coater

Exceptional design & Flexible operation

Vacuum coater for the application of oil or fat, pigments, flavors, functional improver, vitamins, etc. onto pellets after drying and/or cooling. Aquafeed and pet food in particular.



FAMSUN Co., Ltd.

Add: No.1 Huasheng Road, Yangzhou,
Jiangsu, China 225127
T:+86-514-87848880
E-mail:mypublic@famsungroup.com
www.famsungroup.com

India Office

Add: No 401 , Dega Towers , Raj Bhavan Road ,
Somajiguda , Hyderabad , Telangana - 500082
T: +62-21-30027458; 30027459
Contact: Arun Kumar K
E-mail : arunkumar@famsungroup.com
Mob: +91 9901916554

Contact: Shelby
E-mail: lxb@famsungroup.com
Mob: +91 9100436652

Farmers from North seeking genuine Shrimp material Buyers; 1 or 2 processing plants for prosperity



Dear Readers,

Greetings to the readers and advertisers of Aqua International for a Happy, Prosperous and Peaceful New Year 2024.

I wish that all of us get organised well personally and in the profession in this New Year 2024. Let us focus on maintaining good health, check whether you are going financially in a right and safe direction and maintain good relation with each other. Why not we change our thinking for an open and positive mindset that we do our bit for the well being of all in the society too.

The January 2024 issue of Aqua International is in your hands. In the news section you may find news about ...

I happened to have a meeting with a group of dealers dealing with feed, health & nutritional products and other inputs for aquaculture in northern region of India like Rajasthan, Haryana and Punjab at Malout, Punjab on 17 November 2023 and they strongly felt that there is an urgent need of processing companies who promptly pay for shrimp material to set up processing plants in northern region. The farmers and the industry can grow only when processors pay on time and maintain good relation and help farmers by lifting shrimp material on time and pay promptly. They also felt the need of water and antibiotic testing facilities, Cold chillers, P-Line, Nets etc in the region.

Southeast Asia's leading aquaculture startup, eFishery, has announced the completion of a commercial pilot in India, marking a significant milestone in its plans for global expansion. The firm now aims to expand its footprint to five more Indian states by the end of 2024. Beyond India, eFishery is eyeing opportunities for one or two countries in Asia and Latin America within a year, while continuing to export shrimp products overseas. The company's global expansion strategy also focuses on tapping into diverse

markets, offering a comprehensive ecosystem to farmers, and creating a "digital co-op" model that provides access to high-quality inputs, IoT technologies, production SOPs and guaranteed market off-take, ultimately empowering farmers and unlocking their true potential.

With the subsidy of 40% to male and 60% to female, SC and ST candidates under PMMSY scheme, which comes to Rs 14 lakh project in a hectare unit by the Haryana and Punjab state governments, shrimp farming is growing in northern region of India. The subsidy is given at the end of first crop in one time.

The Indian Coast Guard braved the rough seas during cyclone Michaung and deployed eight ships and two aircraft to patrol the coastal waters of Tamil Nadu and Andhra Pradesh. Due to the proactive efforts of the prime maritime agency, there was no loss of life or property at sea, said an ICG statement. The ICG ensured the safe return of approximately 3,000 boats to their respective harbours. It also ensured the safety of more than 1,000 personnel manning the oil rigs in KG Basin. It advised merchant vessels in the area. Disaster response teams were deployed to mitigate and alleviate the sufferings of stranded personnel in Chennai.

Visakhapatnam district officials are planning to convert the Vizag fishing harbour area into a no-smoking zone following the recent fire mishap which reduced nearly 50 boats to ashes. It was identified that even after returning from voyages, the fishermen are leaving diesel tanks full and cooking gas cylinders unattended on their anchored boats at the harbour – a recipe for disaster waiting to happen. In these conditions, even a spark in a single boat may be sufficient to cause a chain reaction of fiery chaos due to stockage of flammable inventories in others as happened in the recent fire accident.

If India fails to convince the USA not to impose the anti-dumping and countervailing duty duties, the export of Indian shrimp exports to America will become costlier by 6 to 10 per cent. The American Shrimp Processors Association had requested the US Department of

Contd on next page



Aqua International

Our Mission

Aqua International will strive to be the reliable source of information to aquaculture industry in India.

AI will give its opinion and suggest the industry what is needed in the interest of the stakeholders of the industry.

AI will strive to be The Forum to the Stakeholders of the industry for development and self-regulation.

AI will recognize the efforts and contribution of individuals, institutions and organizations for the development of aquaculture industry in the country through annual Awards presentation.

AI will strive to maintain quality and standards at all times.

TALK TO US

SEND AN EMAIL:

info@aquainternational.in

Please do not send attachment.

FOLLOW US:

[facebook.com/aquainternational.nrs](https://www.facebook.com/aquainternational.nrs)

twitter.com/nrspublications

Send a letter: Letters to the Editor must include writer's full name, address and personal telephone and mobile numbers. Letters may be edited for the purposes of clarity and space. Letters should be addressed to the Editor:

AQUA INTERNATIONAL, BG-4, Venkataramana Apartments, 11-4-634, A.C.Guards, Near Income Tax Towers, Masab Tank, Hyderabad - 500 004, T.S, India.
Tel: +91 040 - 2330 3989, 96666 89554. Website: www.aquainternational.in

Commerce to impose a duty on import of shrimp from certain countries as they believed it was injuring the local fisherman. The department accepted this request and initiated an investigation of shrimp imports from India, Ecuador, Indonesia and Vietnam. These include both ocean-harvested shrimp as well as aquaculture shrimp. According to ASPA, 90 percent of shrimp imports in the USA are from these four countries.

To realize the potential of fisheries sector in the country, the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India has been taking up various initiatives for holistic development of fisheries and welfare of fishers. The initiatives inter-alia includes implementation of three major schemes namely Centrally Sponsored Scheme on Blue Revolution: Integrated Development and Management of Fisheries implemented during the period 2015-16 to 2019-20 with the central outlay of Rs 3000 crore and fisheries projects with an investment of Rs 5000 crore were approved under this scheme during above said period.

The Union ministry of fisheries, animal husbandry and dairying has earmarked Rs 310 crore, with a central contribution of Rs 120 crore under the Pradhan Mantri Matsya Sampada Yojana for the comprehensive advancement of fisheries in Goa. The financial support encompasses a wide array of initiatives, including support for traditional fishermen, provision of communication or tracking devices, sea-safety kits, insurance coverage, acquisition of deep-sea fishing vessels, alternative livelihood opportunities and comprehensive training and skill development initiatives.

Mr Sri Arjun Munda, Union Minister for Agriculture and Tribal Affairs, called for a reduction of imports and augmented exports of agricultural products while addressing the 14th Agriculture Leadership Conclave in New Delhi. He also called for enhancing the soil productivity by organic means and to increase awareness about organic products. He said that today India is number one in many agricultural commodities and under the leadership of Prime Minister, Narendra Modi, several schemes for agriculture development have been implemented. He exhorted all the stakeholders in agriculture to work in harmony to realize the intended target of prosperity in agriculture.

Dr Abhay Kumar, Scientist and program coordinator conducted the training cum demonstration program on 'Value addition and hygiene and handling of fish and fishery product'. In this program demonstration how to maintain hygiene during handling the fish cleaning and cutting to make fillet and preparation of different value-added fish products such as fish pickles, fish ball, fish cutlets, fish fingers and butterfly shrimp etc. The trainees were also given a chance to prepared customized fish products based on the regional preferences of the ingredients.

In the Articles section – Global shrimp production forecast of 5.6 million metric tons is slightly lower for this year, authored by Mr Darryl Jory, informed that India's production of Vannamei is contracting sharply in 2023 (possibly by 12 percent or so) but its Monodon production appears to continue expanding, a sustained trend over recent years. Some recovery (about 2 percent) for its Vannamei production is expected in 2024. Similarly, Vietnamese production of Vannamei in 2023 is expected to contract by up to 15 percent in 2023, with an expected recovery next year of possibly over 5 percent.

Indonesia will likely see a relatively lower contraction for Vannamei of about 5 percent in 2023 and a projected recovery of over 3.5 percent in 2024. All these countries are top producers of not just Vannamei but also Monodon.

Another article titled ***Harnessing AI Tools for Advancements in Marine Fisheries Research & Management***, authored by Ms Divya. M, Mr Karthik. N, Mr Rujan. J, Ms Shamini. S, Mr Porkodi. M and Mr Felix. S, said that artificial intelligence is revolutionizing the marine fisheries industry by enabling data-driven solutions to address critical challenges. This article explores the multifaceted applications of AI in marine fisheries, including fish stock assessment, marine protected areas and biodiversity monitoring. AI technologies, such as machine learning and data analytics, facilitate real-time monitoring, predictive modelling, and informed decision-making, ultimately promoting sustainable fishing practices and resource management.

Article titled ***Rooftop Aquaponics: The Future of Urban Farming***, authored by Mr Sampa Baidyan, informed that urban agriculture is not a new concept. For centuries, people have found ways to grow food in the heart of cities, whether in community gardens, small plots of land, or even on their windowsills. In recent years, however, urban agriculture has experienced a renaissance, driven by concerns about food security, environmental sustainability, and the desire for fresh, local produce. Rooftop farming takes urban agriculture to new heights—literally. It transforms otherwise underutilized rooftops into productive spaces for growing crops and raising fish through a system known as aquaponics. Aquaponics is a sustainable farming method that combines aquaculture and hydroponics. In a rooftop aquaponics system, fish are raised in tanks, and their waste-rich water is circulated to grow beds where plants are cultivated. The plants, in turn, filter and clean the water, which is then returned to the fish tanks. This closed-loop system creates a symbiotic relationship between fish and plants, with each benefiting the other.

Another article titled ***Significance of food safety inspection for a seafood industry: An overview***, authored by Mr Panoth Abhirami and Mr N Venkatachalapathy, said that the consumption of seafood is highly recommended as a part of a healthy diet because it is a potential source of protein with high biological value, vitamins, unsaturated fatty acids and minerals such as phosphorous or calcium.

Results in Shrimp, Fish and Crab farming can be achieved as per specifications when the pond management guidelines are followed. Farmers and Integrators have to give sufficient time and attention to farm management and check the developments there to ensure results. When you invest your hard earned money into it, a little more care and attention can prevent losses and help in profitable farming all the time.

Readers are invited to send their views and comments on the news, special feature and articles published in the magazine which would be published under "Readers Column". Time to time, we shall try to update you on various aspects of Aquaculture sector. Keep reading the magazine Aqua International regularly and update yourself. Wish you all fruitful results in your efforts.

M.A.Nazeer
Editor & Publisher
Aqua International

CHEMIFINE



Formulating Chemicals For Better Growth

OPTIMIN[®]

High concentrated Macro & Trace Mineral
Mixture for Aquaculture



PROVIT GEL[®]

Ultimate Growth Promoter



NEWMIN FORTE[®]

Unique Blend of Chelated Minerals
for Aquaculture use



PROVIT-C[®]

Supplemental Vitamin-C



C MOULT MIN[®]

Special blend of feed minerals
for healthy growth



VIRACID[®]

Broad spectrum disinfectant
for vibrio control



C-SENCE[®]

High Concentrated Water &
Soil Probiotic



C-SOFT[®]

Aqua Soft



PROSOL[®]

Soil Probiotic for Biodegradation
in aquaculture ponds



ODOCHEM[®]

Natural absorbent of ammonia and
its toxic gases in aquaculture



GUTCARE[®]

Remedy for white feces disease



ODOCHEM-XL[®]

Concentrated Yucca Liquid 50%



cf **CHEMIFINE**
Formulations Pvt. Ltd.

An ISO 9001:2015 &
cGMP Certified Company

e-mail : chemifine@gmail.com
www.chemifine.in
Customer Care No. : 8185007700

eFishery is set to cement its place in India

Southeast Asia's leading aquaculture startup, eFishery, has announced the completion of a commercial pilot in India, marking a significant milestone in its plans for global expansion



eFishery already employs over 50 people in India

The Indonesia-headquartered firm kicked off the pilot project in March and has now successfully acquired over 1,000 acres of ponds under contract, and distributed more than 3,000 tonnes of feed in Andhra Pradesh, an Indian state contributing to 35 percent of the country's total aquaculture production. The firm now aims to expand its footprint to five more Indian states by the end of 2024.

Beyond India, eFishery is eyeing opportunities for one or two countries in Asia and Latin America within a year, while continuing to export shrimp products overseas. The company's global expansion strategy also focuses on tapping into diverse markets, offering a comprehensive ecosystem to farmers, and creating a "digital co-op" model that provides access to high-quality inputs, IoT

technologies, production SOPs, and guaranteed market off-take, ultimately empowering farmers and unlocking their true potential.

eFishery CEO and co-founder Gibran Huzaifah explained that India is a key part of the overall growth strategy, which also includes expanding the company footprint in Indonesia and growing in export markets:

"Beginning with the Indian pilot project, I take pride in our global impact, unlocking the potential of aquaculture worldwide through Indonesian-made technology, resulting in a remarkable average two to three-fold increase in farmers' profit. We recognise the potential and value of tapping into the Indian aquaculture market, which mirrors the size and structure of the Indonesian market, both dominated

by small and medium farmers. By supporting them as partners, these key contributors to local and regional food security help ensure a sustainable and accessible source of protein for global communities," he said in a press release.

Indian aquaculture potential

India has a population of 1.4 billion and an aquaculture industry, valued at over \$15 billion, which has

grown at an impressive >8 percent compound annual growth rate (CAGR) for the last three decades. Despite its vast potential, small and medium farmers in India grapple with challenges such as poor market linkage, inconsistent and non-beneficial pricing schemes, delayed payment terms, and a lack of basic farm management information, protocols, technology, and innovation. Addressing these challenges, eFishery steps in to empower farmers to make informed, data-driven decisions promptly. The focus is on refining farm operations, optimising cultivation practices, and enhancing overall yield.

Focus on farmers' profits

Neil Wendover, eFishery's international expansion lead, highlighted the company's commitment to enhancing farmers' profitability in every market it enters.

"Our business objectives are centred on solving problems for the farmers and improving profitability through heightened productivity and efficiency. Rather than dividing the aquaculture pie, we are essentially doubling the size," he said.



eFishery aims to improve farmers' profits



AQUACULTURE PROBIOTICS EXPERT



Nu Ri
NET 200 g **BSL**
Probiotics
for water treatment

1. WATER QUALITY CONDITIONING

Best choice of *Bacillus* spp. that rapidly decompose uneaten feed, feces and other organic substances in pond water, keeps water quality optimal



2. HIGH ACTIVITY OF SPORES

No cultivation is needed. Easily adapt to the changes of surroundings and grow fast in freshwater or seawater culture farming, even under low oxygen environment



3. ESTABLISH BALANCED POND BACTERIA SYSTEM

Compete nutrition with vibrio and inhibit them to grow. Provide nutrition for probiotics in the pond, to establish a well-balanced farming system.



6. INCREASE AQUACULTURE PRODUCTION

Good quality of water prevents fish/prawn infections, making high profit of production

* COMPOSITION:

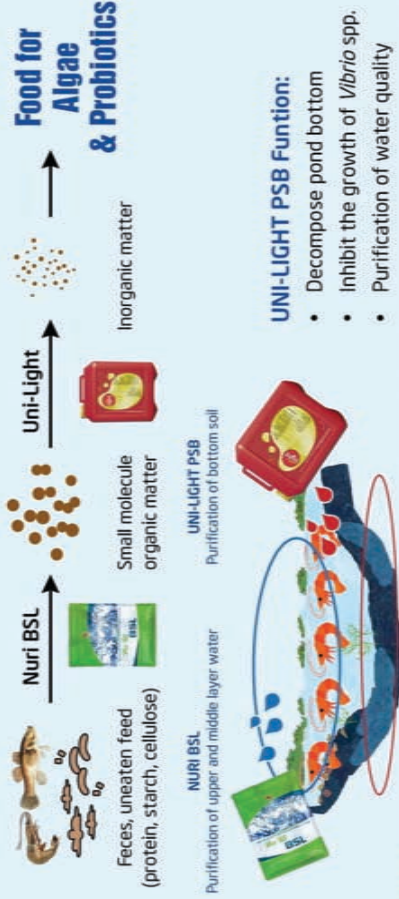
Bacillus spp. > 1 x 10¹¹ cfu/kg
(*Bacillus subtilis*, *Bacillus amyloliquefaciens*, *Bacillus licheniformis*)
Carrier (rice bran, corn gluten) 15%
Moisture 75%
10%

* STORAGE:

Keep at dry, well-ventilated condition. Avoid direct sunlight exposure and use as soon as possible once opened for best quality.

* DIRECTION OF USE:

No cultivation is needed. Apply Nuri BSL with water-soluble bag near to the working water wheel or pour into the pond evenly. Recommend apply Uni-Light PSB together with Nuri-BSL on sunny day to achieve a clear pond more efficiently.



BSL Dosage:

Quantity	For > 30 pl/m ² tiger prawn or > 80 pl/m ² Vannamei	For > 150 pl/m ² Vannamei
7 days before stocking	800 g - 1,000 g	1,200 - 1,500 g
Day of stocking	300 g - 500 g	800 g - 1,000 g
Every 7 - 10 days after stocking	300 g - 500 g	800 g - 1,000 g
		3 - 5 days / use 1,000g - 2,000g

***Dosage can be adjusted according to the water conditions and practices.

UNI-PRESIDENT VIETNAM CO., LTD

No. 16-18-20, DT 743 Road, Song Than II Ind Zone, Di An Ward, Di An City, Binh Duong Province, Vietnam.

✉ aquafeed@upvn.com.vn
🌐 www.uni-president.com.vn

"We have grown a dedicated Indian team to 50 employees with strong local leadership in place. This, together with collaborations with government entities and input suppliers, is also instrumental in navigating the unique challenges of the Indian aquaculture sector, which remains a fragmented but vast and exciting market. I am pleased that our strategic efforts have paid off, and we are on track to achieve a 10x growth," he added.

"Collaboration with the eFishery has been a game-changer for my small farm. Their innovative solutions and support have improved efficiency and enhanced the overall sustainability of my aquaculture operations. eFishery's continuous aid ensures a successful harvest, preventing the need for a panic harvest due to financial constraints," shared Veera Nageswar Rao, a fish farmer from Kakinada District and an eFishery partner.

Food security

As the first startup to be valued at over \$1 billion in the global aquaculture industry, eFishery's strategic move into India underscores its commitment to addressing the global hunger problems. "Our presence in India is a crucial step in our international expansion strategy. With a focus on technology and data-driven solutions, eFishery is leading the transformation of aquaculture value chains and contributing to the economic well-being of farmers," Huzaifah concluded.

Indian Coast Guard says it ensured nil loss of life at sea during cyclone Michaung



The Indian Coast Guard (ICG) braved the rough seas during cyclone Michaung and deployed eight ships and two aircraft to patrol the coastal waters of Tamil Nadu and Andhra Pradesh. Due to the proactive efforts of the prime maritime agency since November 27, there was no loss of life or property at sea, said an ICG statement.

The ICG ensured the safe return of approximately 3,000 boats to their respective harbours.

It also ensured the safety of more than 1,000 personnel manning the oil rigs in KG Basin. It advised merchant vessels in the area.

Disaster response teams were deployed from December 4 to 6 to mitigate and alleviate the sufferings of stranded personnel in Chennai. They were brought to safety and provided with food and

basic necessities.

"The ICG issued an advisory to all stakeholders well in advance on November 27 when the system started forming up in South-East Bay of Bengal and thereafter followed up with regular updates on developing weather and predicted the cyclone track to all stakeholders. Advisory was issued to the department of fisheries to advise fishermen not to venture into sea. Coast Guard ships at sea advised all fishing boats to return to the nearest harbour. The Coast Guard radar stations along the coast continuously broadcast advisories to all mariners through VHF radio," the statement said.

All ports on Tamil Nadu and Andhra coast had been advised to shift vessels to safer berths and sail vessels at anchorage away from the path of cyclone, it said. Oil-handling agencies

were advised to shift rigs/platforms to safer locations and undertake necessary evacuation.

ICG disaster response teams were formed and deputed to aid civil authority. The teams worked in coordination with the state disaster management authority and the Greater Chennai Corporation.

"Because of ICG's proactive action, in coordination with civil administration such as Coastal Security Group, department of fisheries, district collectors of coastal districts in Tamil Nadu and Andhra Pradesh, it was ensured that no casualty happened at sea in terms of lives and properties," the ICG said.

These measures were documented as standard operation procedures for disaster management in future, it added.



Aqua-Food Technologies, Inc.
USA



ifeed™

THE TRUE VANNAMEI FEED



Q-02140822

DEEPAK NEXGEN FOODS & FEEDS PVT. LTD.

Factory: #53/1, Koyyur Road, Bommuluru, Krishna Dist. - 521 105,
Ph: 08656 - 203399 | ifeed@nexgenfeeds.in | www.nexgenfeeds.in

International Healthcare displays its R & D products in Poultry Expo at Hyderabad

It's great to brief about the participation of International Health Care Ltd (PVS Group India) in "Poultry India Expo 2023" at Hyderabad recently. The introduction of innovative R&D products and the focus on research and development activities certified by the DSIR highlight the company's commitment to advancing the poultry industry, says a note from the company.

The featured product METABO, developed with advanced symbiotic-molecule technology, seems to have garnered significant attention due to its multifaceted benefits as an FCR improver, disease preventer, performance enhancer, and high-profit gainer in broilers, layers, and breeders. The positive response from visitors across various regions of the country indicates the potential impact of this



product in the poultry sector.

Additionally, the introduction of other feed additives like PROTOX Special, EGGRON, and GAINBRO further demonstrates the company's dedication to providing a comprehensive range of high-quality products to meet the diverse needs of poultry farmers, feed millers, and distributors.

PVS Group's extensive experience of more than 30 years, coupled with its large production

capacities and global export presence, positions it as a significant player in the animal and aqua health care product manufacturing and exporting industry.

The key poultry team's effective communication

and information sharing within the industry have contributed to the success of the event, fostering positive connections with poultry farmers and industry professionals. Dr P.V. Seshaih, CMD, Mr Arun Pamulapati (Director) and Dr Ajit Jadhav (General Manager) along with key poultry team - Mr Raheem, Mr Yoganandam, Mr R. Palanisamy, Mr Kartik, Mr Prahlad Reddy, Mr Sriram, Mr K.K.V Babu and Dr Rajesh (R & D) took part in the event.

Overall, the company's participation in the "Poultry India Expo 2023" appears to have been a fruitful endeavour, showcasing its commitment to innovation, quality, and excellence in the field of animal and aqua health care products, the note stated.





Team Agrotech

YOUR STEPPING STONES IN SUCCESS!!



Country Representative
CPM ASIA

Your Single Stop Source for

Complete Project management of Turnkey Solutions in the following areas:

1. Integrated Feed plants for Poultry, Floating Fish, Sinking Fish, Shrimps, Cattle etc.
2. Balance of plant equipments for Pre/Post processing
3. Complete Plant Automation Solution, on **GATE In to GATE Out concept.**
4. In-house design and manufacturing of Pre Fabricated steel structures for Plants, Warehouses etc.



CPM Dryer



CPM Pellet Mill



CPM Extruder

Contact Today

Team Agrotech Pvt. Ltd.

1- 4, 249, Hill Road, Gandhi Nagar,
Nagpur-10, Maharashtra, India.

M. : +91 9422803386, +91 9650559095

Ph. : +91 712 2222142

e-mail : teamagrotech@yahoo.com

Website : www.teamagrotech.com

For Queries Contact



Scan me



Vizag fishing harbour to be smoke-free zone

Visakhapatnam district officials are planning to convert the Vizag fishing harbour area into a no-smoking zone following the recent fire mishap which reduced nearly 50 boats to ashes. It was identified that even after returning from voyages, the fishermen are leaving diesel tanks full and cooking gas cylinders unattended on their anchored boats at the harbour – a recipe for disaster waiting to happen.

In these conditions, even a spark in a single boat may be sufficient to cause a chain reaction of fiery chaos due to stockage of flammable inventories in others as happened in the recent fire accident.

Speaking to ToI, Visakhapatnam fisheries joint director Shaik Lal Mohammad said they are planning to enforce no-smoking rule at the fishing harbour, considering how careless smoking can ignite combustibles like diesel, cooking gas, wooden boats, fishing nets, etc. “We want to implement it with the support of other line departments like Greater Visakhapatnam Municipal Corporation and the city police,” said the fisheries joint director.

When asked what had happened to the destroyed boats, Lal Mohammad said they earmarked a five-acre area near the 11th 12th jetty area within the harbour to breathe life back into the boats gutted by the fire and sank into the sea. “The vessels will be lifted from the deep by using heavy cranes. The bottoms

and the steel used in these boats would remain intact. About 6.5 crore was distributed to the owners of 30 boats which were completely damaged in the fire accidents. The owners of the 19 partially damaged boats got nearly 70 lakh. The nearly 376 people who work on these boats have been provided with 10,000 each,” said Lal Mohammad.

A boat caught fire after a cooking gas cylinder exploded near the Kakinada coast three days ago. However, no casualties were reported due to the timely action of the Coast Guard.

National fisherfolk forum general secretary Arjili Dasu said the Union government started implementing the Pradhan Mantri Matsya Sampada Yojana with about 25,000 crore for a period of five years, starting from 2020. “One of the key components proposed under the scheme was insurance for fishing vessels and fishermen. However, this proposed benefit is yet to reach the fishermen,” said Dasu.

Andhra Pradesh mechanised boat owners’ association president Vasupalli Janakiram said Vizag fishing harbour has about 750 mechanised boats. “The recent fire accident was a rare occurrence. Insurance will definitely help the fishermen to recoup their losses in case of any untoward incident, as some big boats cost as high as 1.2 crore,” said Janakiram.

SUBSCRIPTION ORDER FORM

Aqua International

English monthly on Aquaculture

Subscribe to
Aqua International
and Update yourself
on Aquaculture

- 1 Year (12 issues): Rs 800 2 Years (24 issues): Rs 1500
 3 Years (36 issues): Rs 2000 5 Years (60 issues): Rs 3500

Payment for subscription should be sent by Cheque/Bank Draft drawn in favour of **NRS Publications**, payable at Hyderabad.

Name of the Company:

Mr/Ms: Designation:

Address:

Place / City: State: Pin Code:

Mobile: Tel:

E-mail:

PAYMENT: Please find enclosed a
Bank Draft/Cheque No Dated

for Rs favouring ‘**NRS PUBLICATIONS**’, payable at Hyderabad, India.

Please send the magazine to the above address.

Date:

Signature

Payment may also be sent through wire transfer. Our Bank Account details are:
A/c Name: NRS Publications, **Bank Name:** ICICI Bank Limited, **A/c No:** 000805004644,
IFSC Code: ICIC0000008, **PAN No.** ABMPM6671L, **Swift Code:** ICICINBBNRI.

NATURE OF ACTIVITY (Please mark ✓ in the appropriate box)

- Farmer Hatchery Feed Manufacturer
 Healthcare & Nutrition Co. Technical Expert
 Aerators & Equipment Suppliers Consultant
 Processing / Exporter Insurance Company
 Dealer / Distributor for: Seed / Feed / Healthcare & Nutrition Products / Equipment Others

Mail this Subscription Order Form duly filled in along with payment to:

The Circulation Department,
AQUA INTERNATIONAL, NRS PUBLICATIONS
BG-4, Venkataramana Apartments,
11-4-634, A.C.Guards, Near IT Towers,
Hyderabad - 500 004, India.
Tel: 2330 3989, Mob: 96666 89554



NRS PUBLICATIONS
www.aquainternational.in

E-mail: info@aquainternational.in,
Website: www.aquainternational.in

FOR OFFICE USE

Inward No. Received on DD/Cheque No:
Date: Subscription No.: Initial:

SafMannan

Predictable performance



May the force be with you!

The information provided in this document is at the best of our knowledge, true and accurate. However, products must only be used in compliance with local laws and regulations, and we cannot guarantee freedom of use for every intended application or country. SM-AP-15-07-EN • Anilone



Safmannan® is an exclusive premium yeast fraction rich in natural active ingredients such as mannans and betaglycans. Manufactured using a unique approach in our state of the art factory, Safmannan® delivers outstanding consistency and quality, for performance you can rely on every time. Based on published research and field investigation Safmannan® helps to:

- Support natural defences
- Reduce pathogen pressure
- Promote gut function
- Mitigate stress impact

phileo-lesaffre.com

For more info, please contact:

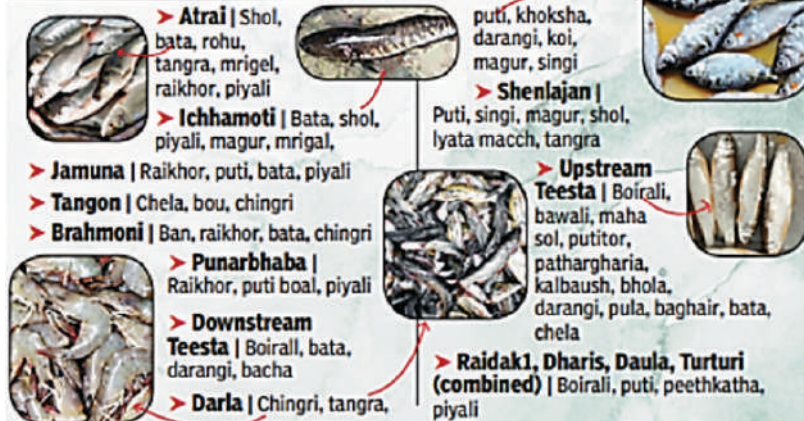
📍 Mr Suvranil Mitra 📞 +91 8478-972160



From north to south, fish varieties dwindle in 14 rivers; pollution, destructive practices to blame

RINGING THE ALARM BELL IN BENGAL

DEPLETING SPECIES



HARMFUL FISHING

- > Poison fishing** | Killing fish by mixing poison in the catch point
- > Explosion fishing** | High-decibel bombs are exploded on the surface of the water body to burst the float bladders of fish, forcing them afloat dead or unconscious
- > Fine-net fishing** | Nylons keep depositing in the water body. Fish get trapped in them

The vanishing fish species have posed a major livelihood threat to fishermen, many of whom have changed vocations and migrated to other places

Pradip Chatterjee | NATIONAL PLATFORM FOR SMALL SCALE FISH WORKERS CONVENOR

The ongoing survey in Bengal's rivers has revealed that fish species have dangerously depleted due to pollution and destructive practices. The state's fisheries minister calls for a carrot-and-stick policy to restore fish population and diversity. 25 common varieties of fish have vanished from major rivers, posing a livelihood threat to fishermen. Pollution, including from power plants, is a major concern. Poison fishing and explosion fishing have increased, putting public health at risk and destroying the fish ecosystem.

Not just hilsa, initial findings of an ongoing survey has revealed that several fish species have dangerously depleted in Bengal's rivers due to rise in pollution and destructive practices like poison fishing, explosion fishing and fine-net fishing. The

state's fisheries minister has called for a carrot-and-stick policy to prevent destructive fishing and restore the fish population and diversity.

The survey has found that 25 common varieties of fish have vanished from 14 major rivers that used to supply Bengal its favourite source of protein. "The vanishing fish species have posed a major livelihood threat to fishermen, many of whom have changed vocations and migrated to other places," said Pradip Chatterjee, convenor of the National Platform for Small Scale Fish Workers (NPSSF).

"We have stringent laws on one side and abysmal ignorance on the other. Ignorance is a major obstacle to enforcing a law. If you are ignorant that you are committing something wrong, any effort to enforce the law leads to bad blood and not

awareness. Thus, we need massive public awareness among the fishermen and villagers. We have thought of a carrot-and-stick policy. We want to reward those who comply with the rules and punish those who flout them," said minister of state for fisheries (independent charge) Biplab Roychowdhury. He was speaking at a fishermen's workshop to prevent destructive fishing practices organised by Disha and NPSSF.

Moreover, pollution has always been a major

concern. Because of the Sagardighi power plant, no fish is left 40km downstream Bhagirathi. Kolaghat, which was famous for its hilsa, is now completely bereft of the species ever since the Kolkaghat thermal power plant started functioning, said Milan Das, general secretary of the Dakshinbanga Matsyajibi Forum.

According to Pradip Chatterjee of NPSSF, the practice of poison fishing — killing fish by mixing poison in the catch point — has increased, putting public health at a great risk. So has

the practice of explosion fishing, in which high decibel bombs are exploded on the surface of the water body to burst the float bladders of fish, forcing them afloat dead or unconscious. All these practices have destroyed the fish ecosystem.

"The rivers are dying, so are the fishermen. Construction across the rivers, incessant dumping of industry effluents and solid waste from households have turned rivers into drains. Besides, the destructive fishing practices have put a question mark on the food security of Bengal," said Sashanka Sekhar Dev, Disha secretary.





Haji Sayyed Naaz Valli
Managing Director

CAA Approved SPF L. Vannamei

K.G.N. HATCHERY

VEMAVARAM, THONDANGI MANDAL, TUNI COAST,
EAST GODAVARI DISTRICT, ANDHRA PRADESH - 533 401
Cell : 08106872555, 9298555786 email : naazvallikgn@gmail.com



"Farmers Satisfaction is our Motto"

**WE WISH YOU ALL A SUCCESSFUL CROP
WITH OUR QUALITY SEEDS**

Fisheries and Aquaculture Infrastructure Development Fund

To realize the potential of fisheries sector in the country, the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India has been taking up various initiatives for holistic development of fisheries and welfare of fishers. The initiatives inter-alia includes implementation of three major schemes namely (i) Centrally Sponsored Scheme (CSS) on Blue Revolution: Integrated Development and Management of Fisheries implemented during the period 2015-16 to 2019-20 with the central outlay of Rs.3000 crore and fisheries projects with an investment of Rs. 5000 crore were approved under this scheme during above said period, (ii) Pradhan Mantri Matsya Sampada Yojana (PMMSY) implemented for a period of 5 years from year 2020-21 to 2024-25 with a total investment of Rs.20050 crore and projects worth of Rs. 17527.22 crore with central share of Rs.7209.31 crore have been approved so far under this scheme and (iii) Fisheries and Aquaculture Infrastructure Development Fund (FIDF) implemented from the year 2018-19 with funds size of Rs.7522.48 crore to provide concessional finance to various end implementing agencies including State Governments/UTs for creation of fisheries infrastructure facilities and fisheries infrastructure

projects worth of Rs 5588.63 crore have been approved under this scheme.

In addition, in the Union Budget 2023-24, the Government has announced a new sub-scheme of PMMSY with targeted investment of Rs. 6,000 crore to further enable activities of fishermen, fish vendors and micro & small enterprises, improve value chain efficiencies and expand the market.

The facilities supported under the schemes for benefit of traditional fishers inter-alia include; livelihood and nutritional support for socio-economically backward active traditional fishers' families during fishing ban period, insurance cover to fishers and fishing vessels, providing boats and nets to traditional fishermen, communication/tracking devices. PMMSY supports, for supply of sea-safety kits to ensure safety of fishermen at sea, support to traditional fishers for acquisition of deep-sea fishing vessels, alternative livelihood activities like seaweed culture & bivalve culture, training & skill development, providing cold-chain and marketing facilities. Further, PMMSY provides support for creation of fishing harbours and fish landing centres facilities for safe landing and berthing of fishing boats/vessels and smooth operation of post-harvest

activities, promotion of ornamental fish rearing unit, pen culture, procurement of transport vehicles like motor cycle with ice box, cycle with ice box, three wheeler with ice box, fish retail market and fish kiosk. Besides, since 2018-19, the Government has extended facilities of Kisan Credit Card (KCC) to fishers and fish farmers to help them meet their working capital requirements.

The Pradhan Mantri Matsya Sampada Yojana (PMMSY) implemented by the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India inter-alia aims enhancement of fish production and productivity and the steps taken to boost inland fisheries and aquaculture production primarily include support for expansion of aquaculture, intensification, diversification of species, introduction of high yielding species, infusion of technology such as Re-circulatory Aquaculture System (RAS), Biofloc and Cage culture. Thrust is also given for supply of quality and disease free fish seeds through establishment of quality brood banks, hatcheries, seed rearing units, fish disease and fish farms water quality management, supply of quality feed, training and skill development to fish farmers. Under PMMSY,

during last three financial years (2020-21 to 2022-23) and current financial year (2023-24), projects worth Rs. 7263.67 crore have been approved for the development of the inland fisheries and aquaculture sector primarily aiming towards enhancement of fish production, creation of employment opportunities and income to fishers, fish farmers and other stakeholders.

PMMSY also lays special focus on training, skill development, skill upgradation and capacity building through trainings, awareness building programmes and exposure visits to various stakeholders especially fishers, fish farmers, fish workers, fish vendors, entrepreneurs, officials, fisheries Cooperatives and members of Fish Farmer Producer Organizations for various fishing, aquaculture and post harvest related activities. The Training, Awareness, Exposure and Capacity Building programmes are carried out through the National Fisheries Development Board (NFDB) in collaboration with the State/UT Fisheries Departments, Indian Council of Agriculture Research (ICAR) Institutes, Krishi Vigyan Kendras (KVKs), Central and State Universities and Colleges and Fisheries Research Stations with support under PMMSY.

This information was given by Shri Parshottam Rupala, Union Minister of Fisheries, Animal Husbandry & Dairying in a written reply in Lok Sabha.



ARCL ORGANICS LTD

64 years legacy of Bonding

The only manufacturer of PMC binder in India
SPREADING OUT GLOBALLY & INNOVATIVELY

WATER STABILITY is an IMPORTANT
criteria in **SHRIMP & FISH FEED.**

Which Binder to be used?
Here we have the answer-

AQUA STRONG BOND



AQUA STRONG BOND

ENVIRONMENT FRIENDLY
&
BIODEGRADABLE

Advantages of AQUA STRONG BOND

- Low Inclusion Level.
- Better Water Stability.
- Cost Effective.
- Better Feed Pelletting Properties.
- Less Moisture Absorbing Properties.
- It Leaves more Space in the formulation for the inclusion of other essential ingredients.
- Environmental Friendly.
- It acts as a toxin binder.
- It is Melamine Free and Dioxin Free.
- Less dust formation during transporting.

Binder to improve quality of FEED PELLETS

- Active Ingredient: Polymethylolcarbamide
- Use Level: Will vary depending upon feed type, Ingredients and processing condition

Shrimp Feed: 4 to 7 kg/ton
Fish Feed: 1 to 3 kg/ton

- Packaging: 25 kilogram, tied inner polybag with sewn outer woven nylon bag.
- Storage: Store in a cool, dry place.



Corporate Office

Budge Budge Trunk Rd, Rampur,
Santoshpur, Kolkata, West Bengal 700141
Email: Aqua@arcl.in
Phone No: 907333243 / 9339146661

Serving the industry

Since 1959

www.arclifesciences.com

14th Agriculture Leadership Awards Draws Admiration and Applause

Union Minister for Agriculture calls for Increasing Agri Exports



Union Minister for Agriculture and Tribal Affairs, Sri Arjun Munda called for a reduction of imports and augmented exports of agricultural products while addressing the 14th Agriculture

Leadership Conclave in New Delhi. He also called for enhancing the soil productivity by organic means and to increase awareness about organic products.

The 14th Agriculture

Leadership Conclave, the AT Group's annual flagship event, culminated with the presentation of 14th Agriculture Leadership Awards jointly by the Union Minister for Agriculture and Tribal Affairs, Shri Arjun

Munda and ex-CJI Justice P Sathasivam. Among the recipients were the Ministers and Secretaries from the States, CMD of the banks and institutions and top CEOs of the industry, besides experts, startups and farmers.

In his address, Shri Arjun Munda averred the importance of agriculture in India. He said that today India is number one in many agricultural commodities and under the leadership of Prime Minister, Narendra Modi, several schemes for agriculture development have been implemented. He exhorted all the stakeholders in agriculture to work in harmony to realize the intended target of prosperity in agriculture. Sh Munda termed government decision as historic to confer upon Padmashri to a dozen farmers for their innovative agriculture. He added that the Modi decision to





Skretting's Premium Range of Shrimp Hatchery Solution



- Maintains water quality
- Reduced disease risk
- High Nauplii production



- Highly digestible
- Natural functional ingredients
- Protection against pathogenic bacteria



- Advanced feed quality with cellular encapsulated DHA
- Facilitates a cleaner system while improving larval performance
- Less is more with Elevia to reduce costs

To know more contact us: +91 73047 95555

SKRETTING INDIA

Unit No. L4 04, SLN Terminus, Survey No. 133, Besides Botanical Gardens Gachibowli, Hyderabad-500032, Telangana | contact.india@skretting.com

www.skretting.in | [f Skretting-India](https://www.facebook.com/Skretting-India) | [in Skretting India](https://www.linkedin.com/company/Skretting-India)



Connect with us

'Drones can identify diseases in fish'



Kenton L Morgan, former emeritus professor of epidemiology, University of Liverpool, United Kingdom

Drones and remote sensing technology can be used in India's aquaculture sector for disease surveillance in fish and aquatic animals, according to Kenton L Morgan, former professor of epidemiology at the University of Liverpool. He said India has the potential to become a world leader in aquatic disease surveillance due to its heavy investment, trained scientists and high aquatic animal production. Morgan also highlighted the use of technologies such as quantum computers, remote sensing and big data analysis in the sector. The comments were made at the AquaEpi III conference in Lucknow, organised by the International Society of Aquatic Animal Epidemiology.

"Drones and remote sensing technology can also be used in the aquaculture sector in India for aquatic epidemiology (diseases in fish and other aquatic animals) and identify the disease in

them. India can become the world leader in aquatic disease surveillance. This is because it is invested heavily, it has trained many scientists, and it is the second most important country in the world in terms of aquatic animal production after China," said Kenton L Morgan, former emeritus professor of epidemiology, University of Liverpool, United Kingdom.

his thoughts as chief guest at the three-day international conference titled 'Aquatic Animal Epidemiology (AquaEpi III)' at ICAR-National Bureau of Fish Genetic Resources (NBFGFR), Lucknow, organised by the International Society of Aquatic Animal Epidemiology (ISAAE).

"India also has technological expertise that can use Quantum computers, remote sensing, big data analysing, machine learning among others," he added.

"As not always is it easy to locate people associated with aqua farming and many a time we don't know where the ponds are hence, using these technologies the farmers and ponds can be located through satellite. This is already happening in Taiwan, China, and Japan on an experimental basis," he added.

Along with Morgan, 24 overseas internationally renowned experts and scientists were present along with 250 delegates

in the conference as lead speakers and shared their insights and experiences in overcoming the current challenges in aquatic animal health. The conference is being organised in collaboration with the National Fisheries Development Board and the Aquatic Biodiversity Conservation Society (ABCS).

The conference aims at giving suitable recommendations for reducing disease risks and sustainable growth of the aquaculture sector," said Uttam Kumar Sarkar,

director, ICAR-NBFGFR.

J.K. Jena, Deputy Director General (Fisheries Science & Animal Science), ICAR, New Delhi in his address highlighted the role of epidemiology for diversification and management of aquaculture sector. Edgar Brun, Director, Dept. of Aquatic Animal Health and Welfare, Norwegian Veterinary Institute, Norway mentioned the importance of epidemiology research and its relevance in aquaculture development.

Centre earmarks Rs 120cr to bolster fisheries in Goa

The Union ministry of fisheries, animal husbandry and dairying has earmarked Rs 310 crore, with a central contribution of Rs 120 crore under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) for the comprehensive advancement of fisheries in Goa.

Responding to queries raised by MP Sadanand Shet Tanavade during the recent Rajya Sabha session, the Union ministry articulated a comprehensive strategy aimed at bolstering the fisheries sector's growth in Goa.

The financial support encompasses a wide array of initiatives, including support for traditional fishermen, provision of communication or tracking devices, sea-safety kits,

insurance coverage, acquisition of deep-sea fishing vessels, alternative livelihood opportunities, and comprehensive training and skill development initiatives.

Goa has reported a fish productivity of 3-4 tonnes/hectare. Under the flagship scheme of PMMSY, Goa has witnessed approvals totalling to Rs 107.9 crore over the past three years.

These approvals encompass a diverse spectrum of developmental projects, ranging from the construction of new ponds and technology-infused high-income-generating activities to the installation of cages, promotion of ornamental fisheries, establishment of fish feed mills, and procurement of deep-sea fishing vessels.

PROXY[®] PS

with Photosynthetic Formula
POND CONDITIONER



A Unique Combination
of Live Multi-strain
SOIL and WATER Probiotic

CAA Regn. No. CAA/MAY18/PRO/01684

Min Total[™]

Organic & Inorganic Minerals



- Natural Moulting
- Growth of Plankton
- Controls Body Cramp
- Pond Water Mineralization
- Shell Formation



CAA Regn. CAA/MAR2023/FA/04601



HI-TECH PHARMA[®]

Solutions for Animal Health & Nutrition

ISO 9001 : 2015 Certified

ISO 22000 : 2018 Certified

GMP Certified

email : info@hitechpharma.co
Cust. care No.: +91 97010 22555
website : www.hitechpharma.co

BACTERIOPHAGE THERAPY FOR SHRIMP HATCHERY

V PHAGES HATCHERY™

/// EFFECTIVE ON SUPERBUGS



CAA Certified Antibiotic-free Product
CAA/OCT22/PRO/04169

BENEFITS

Broodstock:
Prevents entry of opportunistic pathogens and safeguards health of this high value asset.

Artemia:
Reduces the *Vibrio sp.* load in Artemia tank.

Zoea & Mysis:
Helps in better conversion and survival.



Post Larvae:
Stagewise control of *Vibrio sp.* results in remarkable reduction of *Vibrio sp.* load in post larval tanks. This results in high health seeds.

Works as an Alternative to Antibiotics and complies with International Seafood export regulations.

BEST APPROACH TO CONTROL PATHOGENIC VIBRIOS

V PHAGES HATCHERY ✓✓
PROBIOTIC ✓
SANITISER X
DISINFECTANT XX
ANTIBIOTICS XXX

One Health unified approach for balanced welfare of people, animals and ecosystems.



BACTERIOPHAGE THERAPY TARGETS PATHOGEN

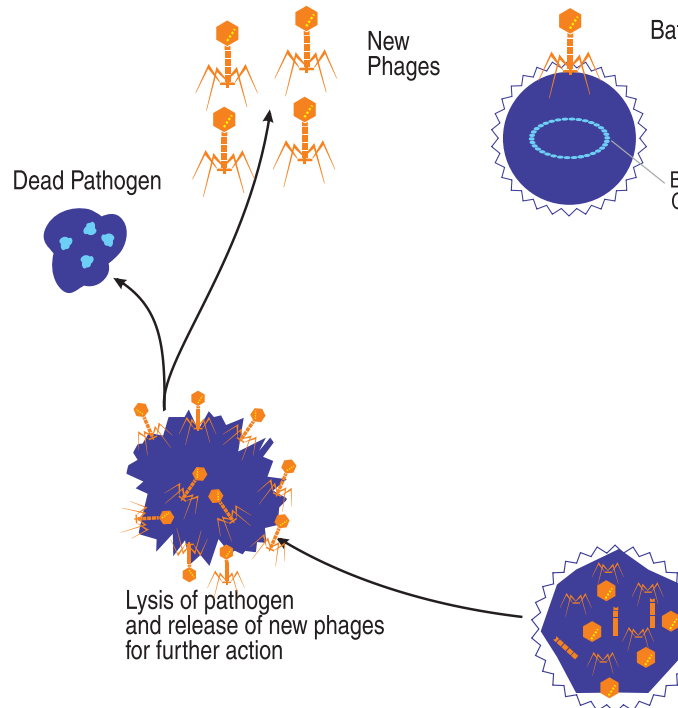
V PHAGES HATCHERY & V PHAGES GROWOUT are a cocktail of phages that are safe on aquatic animals, people and ecosystems. They are resistant to antibiotics and insecticides.

"V PHAGES" cocktail targets against most common pathogens

• *Vibrio parahaemolyticus* • *Vibrio alginolyticus* • *Vibrio cholerae*

100 % Natural | Pathogen specific approach | 100% Effective
Easy & Safe to use | Dose dependent

ILLUSTRATION OF ACTION OF PHAGES



www.salemmicrobes.com

To order contact

+91 93448 37525

E-Mail : contact@salemmicrobes.com

A Product of



SALEM MICROBES

An ISO 9001 : 2015 Company

PHAGE TO DESTROY IC VIBRIOS

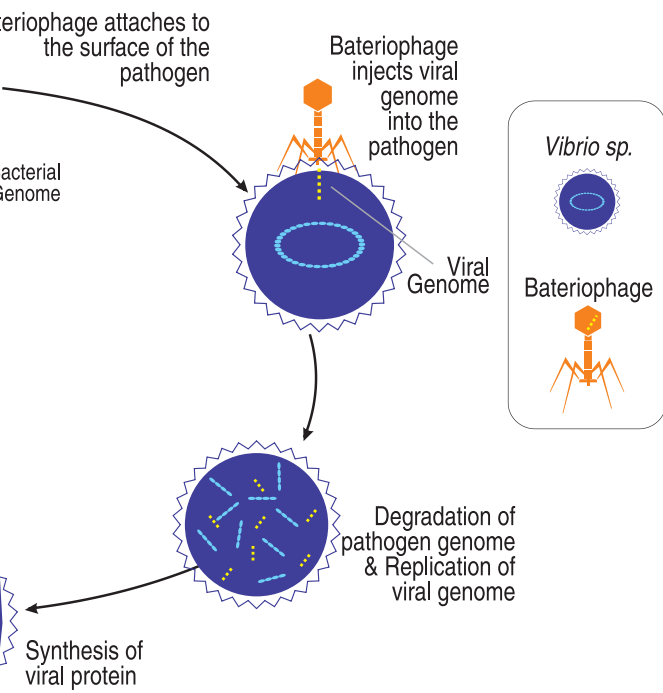
Cocktail of Phages isolated from Natural environment. Hence... This destroys the pathogenic bacteria which are even... eases the efficacy of probiotics.

enetic *Vibrio species* in Shrimp Hatchery & Farming

arveyi • *Vibrio campbellii* and other pathogenic *Vibrio sp.*

Very Fast action | Enhances Probiotic performance
Does not leave any residues

ON A TARGET VIBRIO BACTERIA



BACTERIOPHAGE THERAPY FOR SHRIMP FARMS

V PHAGES GROWOUT™

/// EFFECTIVE ON SUPERBUGS



CAA Certified Antibiotic-free Product
CAA/MAR2023/PRO/04631

BENEFITS

- Effective against Vibriosis, other Bacterial Infections and Running Mortality Syndrome (RMS).
- Effectively prevents Gut Infections and Improves feeding.
- Prevents sudden crop loss and extends Life of Pond during critical profit-making period.
- Enhances Probiotic performance.

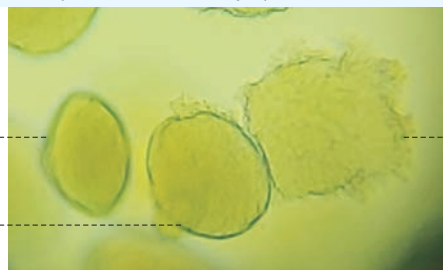
Works as an Alternative to Antibiotics and complies with International Seafood export regulations.

Stages of *Vibrio sp.* colonies infected with Bacteriophages & Progressive Lysis observed on an Agar plate, under Stereo Microscope

Colony 1 in Stage 1:
Intact Colony may be infected or yet to get infected.

Colony 2 in Stage 2:
Phage infected Colony showing Partial lysis.

Colony 3 in Stage 3:
Phage infected Colony Completely lysed, cell contents with multiplied phages spreads out in search of their host.



S PRIVATE LIMITED

Regd. Off : No. 21/10C, BajanaI Madam Street, Gugai, Salem - 636 006. Tamilnadu. India.
Customer Care : +91 8695145602 E-Mail : contact@salemicrobes.com www.salemicrobes.com

start massive level direct benefit transfer to farmers has choked the leakage and benefitted 100 million plus farming families in the country.

The two day event brought together farmers, scientists, policy makers, bureaucrats, corporates, students and entrepreneurs. There were meaningful discussions on topics as diverse as 'Policy Initiatives: Unlocking Potential of Agriculture' to 'Climate Change and Agriculture Sustainability'. The 2nd MS Swaminathan Global Leadership Award 2023 was presented to Ambassador Kenneth M. Quinn, President Emeritus, World Food Prize Foundation for his inspiring and unstinting leadership in ensuring global food security and promoting research in the area of food production.

The conclave also saw the silver jubilee celebrations of the Agriculture Today Group.

Mumbai Research Centre of ICAR-CIFT organizes training cum demonstration programme on “Value addition and hygiene and handling of fish and fishery product” under SC Sub Plan



Participants engaged in fillet preparation, Preparation of battered and breaded fish

Mumbai Research Centre of ICAR-CIFT Organizes three days training cum demonstration programme for the SC community of Maharashtra. The program, entitled " Value addition and hygiene and handling of fish and fishery product ", was conducted from 20th to 22nd December 2023 under Scheduled Caste Sub Plan (SCSP) scheme at Village-Bhimanagar Vavoshi,

Taluka-Khalapur, District-Raigad, Maharashtra The program was initiated and supported by Dr George Ninan, Director, ICAR-CIFT, Kochi, Dr A. Suresh, Principal Scientist and Nodal officer of SCSP, ICAR-CIFT, Kochi and Dr Asha K K, Principal Scientist and (SIC) Scientist in Charge MRC of ICAR-CIFT, Vashi, Navi Mumbai.

Dr Abhay Kumar, Scientist and program coordinator conducted the training cum demonstration program on “Value addition and hygiene and handling of fish and fishery product”. In this program demonstration how to maintain hygiene during handling the fish cleaning and cutting to make fillet and preparation of different value-added fish products such as fish pickles, fish ball, fish cutlets, fish fingers, and butterfly shrimp etc. The trainees were also given a chance to prepared customized fish products based on the regional preferences of the ingredients. A total of 21 participant from of

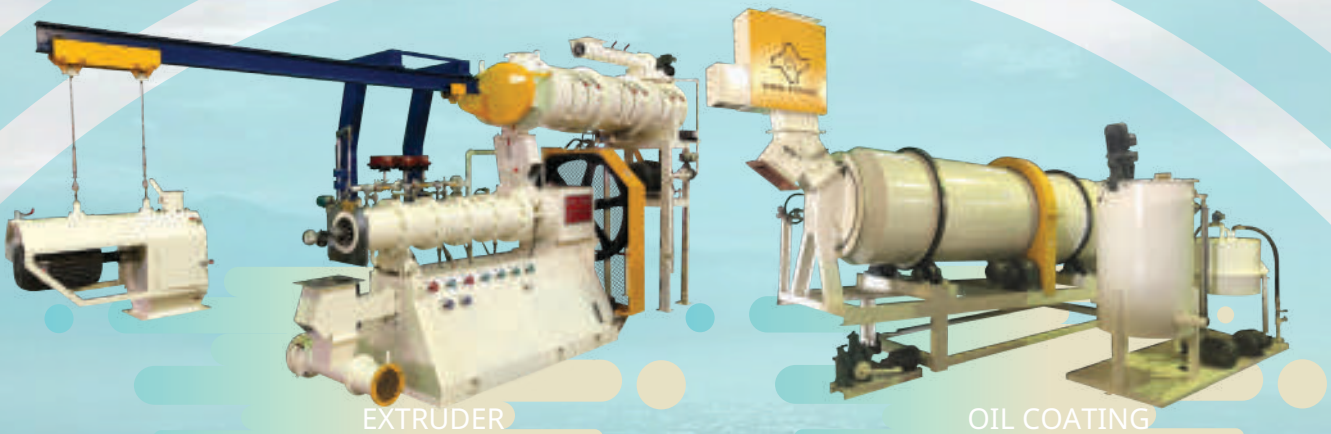
Village- Bhimnagar Vavoshi, Taluka-Khalapur, District-Raigad, Maharashtra benefited from the program. A training leaflet was distributed on the participant during inauguration function. The participants were from Panchseal Mahila Bachat Gud, Bhimanagar Vavoshi, Taluka-Khalapur, District-Raigad, Maharashtra groups, and provided processing equipment like Insulated fish bags (Developed by CIFT), Ice boxes, Meat mincer, sealing machine, weighing balance, presser cooker, Gas stove and Mixer etc.) to help them start a small food venture shortly and improve their socio-economic condition. Present of the MRC of ICAR-CIFT staffs members during training program was Dr Rehana Raj(Scientist), Shri Sharvan Kumar Sharma(Scientist), Smt. Sangeeta Gaikwad (Chief Technical Officer), Shri. Tulshiram Wagmare (Senior Technician Assistant) and Suraj Patil (Young Professional -1).



Participant with prepared fish pickle, breaded and battered products with processing equipment

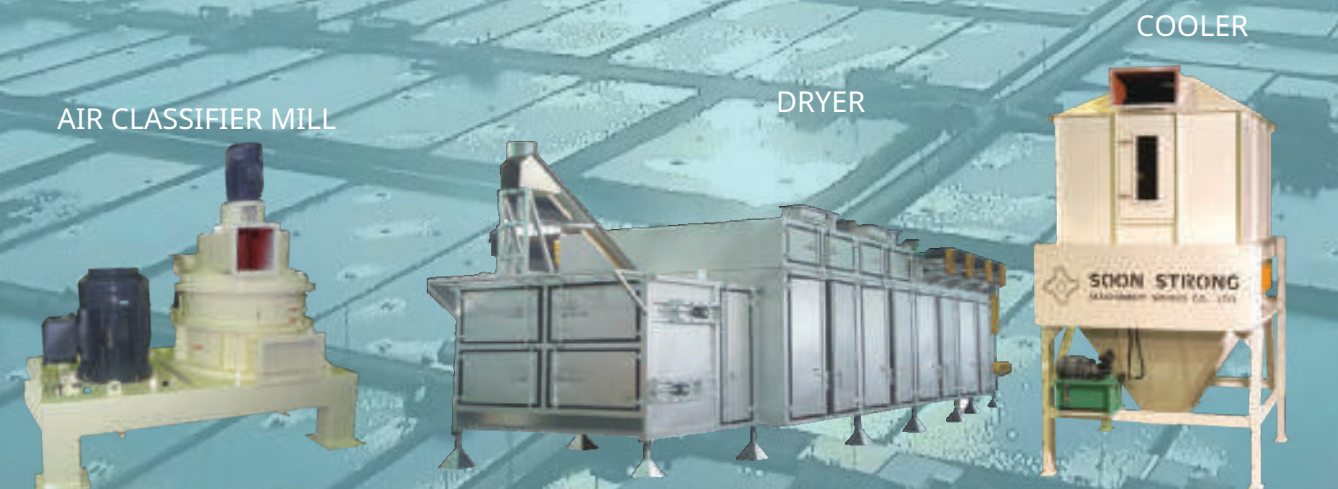
CREATING MICRO-FLOATING FEEDS

LET US BUILD AND SUPPLY YOUR PLAN FOR AQUA FEED INDUSTRY.
WE PROVIDE TURNKEY PROJECTS AND EXCELLENT SALES SERVICE



We developed ϕ 0.5-0.8 mm (dies) floating fish feeds extruder in the world and commercial production succeeded in Southeast Asia and other countries.

The Extruder can do production in continuous without dies blocking and running for 8 hours.
This tiny feeds product is suitable feeding on small fish, shrimp larval and etc.



INDIA REGIONAL AGENT
ROTSQUARE ENTERPRISES LTD.
www.rotosquare.com.tw
Email: boryu.roto@msa.hinet.net
Local contact : +91-9491383650
Dr. K.C. Patra
Email: kumuda123@yahoo.co.in



TAIWAN HEADQUARTER
SOON STRONG MACHINERY WORKS CO.,LTD.
NO.2 LUNG SHIANG 1 RD. SUA O CHEN,I-LAN TAIWAN
Tel :+886-3-9901815
Fax : +886-3-9905677
E-mail : soon.strong@msa.hinet.net



Versatile Growth promoter and Immuno
Booster in Gel Form

ALL IN ONE gel

A UNIQUE COMBINATION OF FAT SOLUBLE VITAMINS, WATER SOLUBLE VITAMINS, AMINO ACIDS, TOXIN BINDERS, HEPATO PANCREATIC STIMULANTS, ANTI STRESSORS, USFA, LDLP, APF, AND MACRO & MICRO ELEMENTS IN GEL FORM

COMPOSITION :

Vitamin-A	-	5000IU
Vitamin-D3	-	1000 IU
Vitamin-E	-	15 mg.
Vitamin-B1	-	1.86 mg.
Vitamin-B2	-	1.25 mg.
Vitamin-B6	-	0.62 mg.
Niacinamide	-	30 mg.
D-Panthenol	-	1.26 mg.
Inositol	-	10 mg.
Folic Acid	-	10 mg.
Biotin	-	15 mcg.
Vitamin-B12	-	6.25 mcg.
L-Lysine	-	175 mg.
DL-Methionine	-	150 mg.
Vitamin-C	-	200 mg.
Toxin Binders	-	200 mg.
Hepato		
Pancreatic stimulants	-	100 mg.
LDLP	-	15mg.
USFA	-	5 mg.
APF	-	30 mg.
Calcium Gluconate	-	20 mg.
Magnesium	-	25 mg.
Manganese	-	15 mg.
Cobalt	-	15 mg.
Zinc	-	25 mg.
Selenium	-	2.5 mcg.
Protein Hydrosylate	-	1000 mg.
Betaine Hydrochloride	-	1000 mg.

BENEFITS :

Improves feed conversion and growth rate. Enhances resistance against diseases. Ensures uniform growth. Neutralizes imbalances of Vitamins, Minerals, Amino Acids and Proteins Detoxify toxic materials and improves health. Improves absorption of the Calcium, Phosphorous and reduce incidence of loose shell.

DOSAGE :

50 ml per kg.
of feed or consult
your aqua technician
for specific usage
and dosage.

Presentation: 5 Ltr. & 25 Ltr.



Antibiotic Free, Steroidal Free



DOCTOR'S VET-PHARMA PVT. LTD

cG.M.P. Certified an ISO 9001:2008 Company
Survey No. 263/1, 264/1, P.R. Palem (V), Kovur (M), SPSR Nellore Dist.- 524137, A.P. INDIA.
Tel. 08622 - 210902. Email: dvpl33@yahoo.com, www.doctorlifesciences.com

Gassen Plus

Bon Ammonia and obnoxious Gasses

Shrimp / Fish performs all their body functions and growth in water. Good quality water and proper D.O. levels determines the success or failure. Good quality water, optimum D.O. level is of prime importance for health and growth of Shrimp / Fish.

Irregular water exchange, excess and leftout feed, dead algae, fecal matter, increases the organic load at the pond bottom. Accumulation of such waste absorbs available oxygen, creating anaerobic condition which leads to pollution of pond bottom. Polluted pond bottom and unhealthy environmental conditions triggers the release of toxic gasses like Ammonia, H₂S, Methane, etc, The toxicity of Ammonia, Hydrogen Sulphide, Methane attributed mainly due to unionized form. As the concentration in water increases, ammonia excretion by aquatic organism diminishes and the level of ammonia in blood and in other tissues increases. Ammonia increases oxygen consumption by tissues, damage gills and reduces the ability of blood to transport oxygen, and increases the disease susceptibility. To eliminate / overcome the above problems 'GASSEN PLUS' Yucca Schidigera, it contains Steroidal "Saponin" which help to reduce ammonia and other noxious gasses such as H₂S, Methane, etc., Microbial enzyme "Urease" Production inhibited by Saponin which leads to an increases D.O. and reduction of BOD and COD levels.

Bacterial strains such as Bacillus Subtilis, Nitrobactor, Nitrasomonas, rapidly converts ammonia into Nitrates, Nitrites and finally non-toxic Nitrogen. Hydrogen Sulphide converts into Sulphates, Sulphites and finally non-toxic Sulphur, Methane into Non-toxic carbon. This conversion reduces the obnoxious gasses in the pond bottom. Reduction of this gasses improve the D.O. level in the water and bottom.



COMPOSITION:

YUCCA SCHIDIGERA
ALOEVERA
BACILLUS SUBTILIS
BACILLUS POLYMIXA
BACILLUS LICHENIFORMIS
NITRASOMONAS
NITROBACTOR
STABILIZERS

DOSAGE : 1 Kg per Acre or
consult your Aqua Technician
For Specific Usage & Dosage

PRESENTATION: 500 gms & 1 kg



DOCTOR'S VET-PHARMA PVT. LTD

cG.M.P. Certified an ISO 9001:2008 Company
Survey No. 263/1, 264/1, P.R. Palem (V), Kovur (M), SPSR Nellore Dist.- 524137. A.P. INDIA.
Tel. 08622 - 210902. Email: dvpl33@yahoo.com, www.doctorlifesciences.com

ANTIBIOTIC FREE,
STEROIDAL FREE

Haryana Aqua Food coming up with Shrimp processing plant in North; also setting up Water Testing Lab at Sirsa

Fatehabad: Haryana Aqua Food, a fast growing company with multiple activities in aquaculture, is setting up shrimp processing plant with 20 tonnes processing capacity per day at Fatehabad in Haryana state and the plant is expected to start processing in July 2024, informed its Managing Partner Mr Ravinder Singh. It will have storage facility of 550 tonnes shrimps.

Talking to *Aqua International* Editor M.A. Nazeer, he informed that the processing plant machinery is coming from Vijayawada, Andhra Pradesh and refrigeration machinery from Frick India Limited, Gurgaon, Haryana.

Haryana Aqua Food is also setting up Water Testing Lab and RTPCR along with DNA testing and automatic water testing facilities at Sirsa cotton market, Dabali road, near Dalbir stadium, Sirsa.

Mr Ravinder Singh did his MBA with HR and Marketing and was in government service for twelve years and three months in Rural Development Department, Haryana State and had resigned to the job on 30 December 2022 to fully concentrate on business development in aquaculture in northern region of the country. He started aquaculture activity on 11 January 2018 and in a short span of time became

Aqua International Editor M.A. Nazeer had interview with different dealers and stakeholders in northern region of India



Mr Ravinder Singh, Managing Partner, Haryana Aqua Food Group

a noted personality in Northern region of the country. Within 5 years the company achieved good progress.

Head quartered at Fatehabad, Haryana Aqua Food has business activity with shrimp farming, feed, health care products and aerators distribution since 15 March 2018 in Haryana, Rajasthan, Punjab and western Uttar Pradesh states. They have branches at Gothaya Badi, Kalanwali, Malout, Mansa, Karnal and Rawatsal. The company deals with products of Cargill Feed, Deepak Nexgen, Sanzyme Biologics, Himalaya Wellness, Tablets India, Anique and Century Aquaculture.

Future plans and targets:

The acceptance of our products from the customers in the market is good and we compare our products with one of the best in the industry, said Ravinder Singh. We adjoin

Ravinder Singh advised farmers to make the culture sustainable according to time and requirement.

HAF group of companies

1. Haryana Aqua Food, Fatehabad, Haryana.
2. Punjab Aqua Food, Malout, Punjab.
3. Puran Aqua Food, Gothaya Badi, Rajasthan.
4. Sirsa Aqua Food, Kalanwali, Haryana.
5. Mansa Aqua Food, Jhuniar, Punjab.
6. Karnal Aqua Food, Karnal, Haryana.
7. Sanjay Aqua Food, Norang Desar, Rajasthan.

He said that they supplied 2,850 tonnes of shrimp feed (2,650 tonnes Cargill feeds & 200 tonnes i-feed) and 500 tonnes of fish feed in north India.

Customers supported us when we were in financial crisis in the year 2020 during corona time.

Mr K. C. Dash, General Manager of Sanzyme Biologics also helped us in aquaculture sector, he added.

with only good quality manufacturing companies and our future plans and targets are to establish aqua water testing lab and shrimp processing plant in northern region of India.

As a distributor, Ravinder Singh wants to be a bridge between the company and the farmers and provide good service to the farming community.

Haryana Aqua Food achieved Rs 87 crore business turnover in the calendar year 2023.

We also take harvested shrimp from the ponds of farmers and we lifted 2,170 tonnes of raw material in 2023.

For Effective Branding & Promotion of your Products & Services in Indian Aquaculture Sector
Advertise in

Aqua International
English Monthly on Aquaculture

Haryana, Punjab Govts supporting shrimp culture

Ramrai Trading grown up to Rs 40 cr company in four years

Sirsa, Haryana:

Government support from both Haryana and Punjab states is good and the farmers are getting one time subsidy of 60% for ladies and 40% to gents of Rs 15 lakhs project cost for 2.5 acres for the past two years for shrimp farming, said Mr Manish Kumar, Managing Partner, Ramrai Trading Company located at Chormar Khera, Sirsa district, Haryana.

Mr Manish Kumar along with his partner Mr Gurdeep Singh has developed Ramrai Trading Company as a potential dealer with the supply of Shenglong Feed and medicines of eight companies like Godrej, Devi, Envoyzyme, Salem Microbes, Synergy, and



Manish Kumar, Managing Partner, Ramrai Trading Co.

aerators of Nandini Gears and JK Finner.

Ramrai Trading was started in 2020 and today according to Manish the company has sold 2,300 tonnes of Shenglong Feed. In 2023 calendar year the company achieved a business turn over of Rs 30 crore with feed, seed,



Gurdeep Singh, Partner, Ramrai Trading Co.

medicines and aerators. They supplied 80 million seeds of Shenglong, JJ, Venture and Saptagari in 2023.

Manish Kumar, 34 years age, did his M.F.Sc from Pantnagar University, Uttarakhand in 2016. With fisheries academic background, he joined

Avanti Feeds and worked there for four years, and in 2020 he quite the job and started his own business in aquaculture industry. Now it is fourth year that I am in the business and I am very satisfied with the business growth in aquaculture – first year I could sell 100 tonnes of feed; second year in 2021 sold 1,000 tonnes and in the third year, 2022, of 2,500 tonnes of feed. This year in 2023 I could sell 2,300 tonnes of feed a little less than last year due to low market condition, stated Manish.

He feels that seed quality is not good with the hatcheries. Shrimp raw material price is not stable and its going down, whereas feed and other inputs prices have gone up.

We primarily need profitable price for shrimps

Answering to a question for a solution, Manish replied: We primarily need profitable price for harvested shrimps. We should not depend completely on export of shrimps, it can be 60% on exports and 40% of shrimps should be consumed in the domestic market in India.

Setting up Cold Storage facility soon

Govt is giving subsidy for setting up cold storage facilities and with in two months we want to setup 50 tonnes capacity cold storage facility for shrimps alone in this area, he added.

Ramrai Trading Company is supplying feed and other inputs to 100 farmers in Haryana and 20 farmers in Punjab. He urged the stakeholders and the farmers that all should

Shrimp Sector Profile in Northern Region of India

- ▶ Area in Shrimp culture in Northern region of India: Around 4000 acres in Rajasthan, Haryana & Punjab.
- ▶ Shrimp Feed market in North: About 12,000 tonnes
- ▶ (Haryana, Rajasthan & Punjab), over 10 feed companies supplying feed.
- ▶ No. of Dealers for supply of Feed, Health & Nutrition products, Aerators and other inputs: About 25.
- ▶ No. of Shrimp Processing Plants: Nil.
- ▶ No. of Sales & Technical Service Professionals: About 65.
- ▶ No. of Technical Consultants: 1; Nitin Pipralia.
- ▶ Seed, Feed, Health & Nutrition products, Aerators, P-Line etc come from outside the region.
- ▶ Seed Supply: Shrimp seeds come from the coast of Andhra Pradesh & Tamil Nadu. Farmers report that in 2023 they also received EHP affected seed.
- ▶ FCR Achieved: 1.3 to 1.4
- ▶ Annual Shrimp production: About 8,500 tonnes in 2023 calendar year. 3,000 tonnes less production done in 2022.
- ▶ Govt support: Good, Subsidy 40% to gents and 60% to ladies.
- ▶ Farmers want antibiotic test to be done for harvested shrimp material to prevent rejection of exports consignment.

focus on supplying quality seed and better price to harvested raw material. If farmer cannot get profit and make money, the industry cannot flourish, the young business man Manish stated.

According to him the total feed sales in the three states of Haryana, Punjab and Rajasthan is 12,000 tonnes with 5,000 acres in shrimp culture and 1,500 farmers with shrimp culture in 2.5 acres to 20 acres each.

Shrimp seed to this area comes mostly from Andhra Pradesh and Tamil Nadu states. Harvested shrimp material from northern region goes to Andhra Pradesh, West Bengal, Odisha, Gujarat and Mumbai.

Farmers got Rs 220 a kilo on an average for shrimps – Rs 170 a kg for 100 count; Rs 260 a kilo for 40 count and Rs 320 a kilo for 30 count.

Manish has his wife Sanju Devi and a daughter Agrima. He has parents Anganpal and Sudha Devi besides three brothers and a sister.

Arniwala, Fazilka district, Punjab: Mr Hardev Singh, Proprietor, Aman Aqua started Vannamei Shrimp farming in 2018 with 2.5 acres area in Arniwala village, Fazilka district, Punjab and got 8 tonnes shrimp yield in 1.5 acre water area. I got Rs 385 per kg live shrimp and it was a good price with less expenses, and I got good profit in the crop. As I was happy with the production and the rate for harvested shrimp, I expanded the farm to 15 acres. Till 2022, I got good yield of 30 count

Guru Nanak Trading Co and Punjab Sea Foods get Rs 60 cr turn over

Dealer is the backbone of this industry: Rajveer Singh

Fazilka, Punjab: Mr Rajveer Singh (Karan), Proprietor, Guru Nanak Trading Company and Punjab Sea Foods said that he is planning to set up shrimp processing plant in small scale in Punjab. He is already having ice plant / cold storage facility for shrimps.

Rajveer Singh, a native of Abohar in Punjab did his B.Tech in Electrical Engineering and in 2012 started Fish farming in Fresh water.

In 2018, he started distribution company Guru Nanak Trading Company with supply of



**Rajveer Singh (Karan),
Proprietor, Guru Nanak
Trading Company and Punjab
Sea Foods**

feed, seed, medicines and equipment in aquaculture of Growel Feeds, Provet, Poseidon, VNA Products,

Mayank Aqua Products, Neospark and Biomed. The acceptance of products and services by farmers is good, he stated.

Guru Nanak Trading Company achieved a business turn over of Rs 30 cr, while his other company Punjab Sea Foods had a turn over of over Rs 30 cr. Dealer and Distributor is the backbone of this industry, stated Rajveer Singh.

Rajveer Singh told that he got lot of motivation from his father and could become whatever he is there today because of my father.

Hardev Singh finds Shrimp farming profitable



Hardev Singh

in 150 days time and the rate was Rs 300 per kg live weight, said the upcoming farmer Hardev Singh.

In 2023, the farmer could get 25 tonnes of shrimp production with a rate of 250 to 300 a kg. Seed quality was not upto the mark in the just concluded season, he stated.

The farmer says that shrimp farming is very good than agriculture who has 20 acres of agriculture producing rice and wheat.

Now a days the prices of the inputs in shrimp culture is gone up, feed is sold at Rs 98 a kg and electricity charges at Rs 7 per unit. Farmer can get reasonable profit if feed prices come down and electricity charges are brought down to Rs 2 to 3 per unit. Shrimp raw material prices should be at Rs 400 a kg as cost of production is coming close to Rs 300, the farmer stated.

Overall shrimp culture is good here in Punjab region and it will continue to grow further. We have 200 acres of shrimp farming in our area with 30 farmers. We

get feed from Growel and seed from Golden Marine, Hilton, RP and Dr Attar. We go for seed stocking from March to July 10 and have 130 to 150 days culture period and get 3 to 3.5 tonnes of shrimp production per acre, he informed.

Hardev Singh has a good academic background of Masters in Physical Education and presently doing his Ph.D in Physical education. He has his wife, a son and a daughter.

Punjab government is giving subsidy of 40% to male and 60% to female, SC and ST candidates which comes to Rs 14 lakh project in a hector unit. The subsidy is given at the end of first crop in one time.

**Royal Health Food gets Rs 8 cr turnover in 2023;
aims at Rs 15 to 20 cr in 2024**

Big Processing Cos should set up processing units in North

Sri Mukhtsar Sahib, Punjab: Mr Karan Kalra, Proprietor, Royal Health Food, a successful and fastest growing farmer-cum-entrepreneur in aquaculture in northern region of India said that big processing companies like Castlerock, Sea Saga, Forthstar, UKM, West Coast, Zeal Aqua, Silver, BMR, Waterbase, Avanti, Devi Seafoods, Sandhya Marine etc with 3000 to 4000 tonnes of processing capacity need to establish two to three process plants in our region. We need to create confidence among farmers and then only this industry can grow further and the farmers can earn decent profits.

Karan Kalra started shrimp farming in 2018 with 8 acres in Sri Mukhtsar Sahib, Punjab and added another 5 acres in 2020. In 2022 he expanded it to 10 acres farm. Now he is planning to develop it to 80 acres shrimp farming with nursery and Biofloc tanks for better survival of shrimps.

In 30 acres, he achieved 2.5 to 4.5 MT tonnes production per acre on an average with the seed of Golden Marine Harvest, feed and suppliments of Waterbase. I got 1.2 to 1.4 FCR with 30 to 40 count in 110 to 135 days, said Karan Kalra.

I faced lot of challenges to produce 23 to 24 count shrimps but found it



**Karan Kalra, Proprietor,
Royal Health Food**

difficult to dispose off the material in north as we did not have good buyers in November and December 2022 after Diwali festival. We depend on traders for raw material lifting. All the farmers in north India suffered due to lack of buyers for shrimp material, Karan Kalra stated.

We had Rs 410 for 30 count, Rs 364 for 40 count and Rs 500 for 25 count on an average, but we have to sell the material at low price in 2022, and the same thing happened in October and November 2023 and it was a big tragedy to the shrimp farmers when they had to sell their produce at a much lower price. We have only one crop in a calendar year because of which we all go for big count of 25 to 30 count to have viability and survival. But due to lack of demand for higher count. It is not viable in shrimp farming in north for 50 to 70 count as we have only one crop in a calendar year, he stated adding that in Andhra Pradesh farmers have two

to three crops in a calendar year and they get good viability and profits.

Lack of processing facility in North India is set back to the farmers though shrimp production is happening in over 4000 acres of area with an annual production of 12000 tonnes of shrimps. We need processing plants here. We do not have lifting vehicles fleet to transit material to processing plants, we had to wait 2-3 days for the vehicles. In case of emergency, we have to sell our material at Delhi at a very low price. Consumption of shrimps is very low in North India and Delhi. All the three states Haryana, Punjab



Shri Ravi Kalra, Industrialist and Founder of Royal Health Food and Ex Chairman, Solvent Extraction Association, Punjab; Ex Chairman, Punjab Rice Millers Association and Ex Chairman, Self Financed B Ed College of Education, Punjab passed away on 16 February 2023. He left behind his son Karan Kalra and a daughter.

and Rajasthan depend on Delhi market incase of emergency.

Royal Health Food achieved a turn over of 8 crores in 2022 to 2023 and his expecting to have 15 to 20 crores business in 2023 to 2024.

Read and Advertise in

Aqua International

English Monthly Magazine

**Annual Subscription
Cost: Rs. 800**

To subscribe, Contact:

NRS Publications

BG-4, Venkataramana Apartments,
11-4-634, A.C. Guards,
Hyderabad - 500 004, Telangana, India.
Tel: 040-2330 3989 • Mobile: 96666 89554
Email: info@aquainternational.in

Rajkumar Sharma, Karan Kalra and Geekay Group joint venture to set up R & D Centre for Shrimp Pond Biofloc Technology



Rajkumar Sharma, receiving Best Fish Farmer Award in 2022 from Dr J.K. Jena, Ravi Shankar and Dilip Kumar, CIFE, Mumbai

Malout, Punjab: Mr Rajkumar Sharma, Proprietor, Sharma Feed Supplements Trading Company, Mr Karan Kalra, Proprietor, Royal Health Food and Mr Y. Siddhartha Reddy, ... Geekay Group have joined for a joint venture to set up a 10 acres R & D Centre for Shrimp Pond Biofloc Technology for seed rearing and HDP Farm with high density culture to be located in northern region of the country.

Talking to Aqua International, Mr Rajkumar and Mr Karan Kalra said that Geekay Group will provide technology to reduce cost of production, best seed quality and to increase survival rate for the joint venture project. In future they want to go for shrimp hatchery with inland water R & D project, and also to set up shrimp processing plant in two years time at Malout, Punjab with the help of Punjab Govt. and its Fisheries department. The

project will be technically supported by Guru Angad Dev, Veterinary and Science University, Ludhiana, Punjab. Cost of the project will be approximately Rs 70 crores.

Mr Rajkumar Sharma is presently dealing with the feeds of Abis Exports and Godrej Agrovet. Sharma Feeds Supplements Trading Co is also supplying shrimp seed of Seven Star, SB Marine and Golden Marine besides health and nutrition products, Aerators and P-Line products.

Rajkumar is also annually buying 500 tonnes of harvested shrimp material from Punjab, Haryana, Rajasthan and Uttar Pradesh in northern region of India. In 2024 he is planning to expand it to 2,000 tonnes shrimp material. He gives material to different processing plants like Sea Saga, Forth Star, Caestlerock, VKM, Volka, IFB, Devi Seafoods and Sandhya Marine.

Rajkumar started his business in aquaculture in 2013 with Indian Major Carp (IMC) fresh water fish farming in Shamkhera village, Malout Talluk, Sri Muktasar Saheb district in Punjab in 16 acres area and got a production of 2.5 tonnes per acre. In 2016, he started fish farming in Punjab in 3 acres area and now expanded it to 36 acres. He has plans to make it 100 acres shrimp farming by 2024.

In 2021, he did SPF Tiger Shrimp farming in 1.5 acres on trial basis and extended it to 5 acres in 2022 which got him 16 count with 2 tonnes production per acre.

In 2018, Rajkumar also encouraged farmers in Rajasthan to take up shrimp farming and supplied shrimp seed, feed, chemicals, P-Liners and supplements with total consultancy. He is supporting farmers in 1200 acres in Rajasthan and he claimed that 75% of harvested shrimp material in the state is taken by Sharma Feed Supplements



Rajkumar Sharma, Proprietor, Sharma Feed Supplements Trading Co.

Trading Company.

Biofloc tanks system helps to get 2 crops in a year
Rajkumar introduced Biofloc tanks with nursery system in Punjab in 2022 and found it successful this system has good future in north. We can reduce expenses for production, instead of 120 days the farmer can get 25 grams weight with in 90 days and can save 30 days expenses on feed, medicines etc. Farmers can take 2 crops in a calendar year with biofloc tanks system.

Mr Rajkumar Sharma received Best Fish Farmer Award from CIFE, Mumbai on 10 July 2022. He is the senior most aquaculture farmer-cum entrepreneur in north India. Two success stories were prepared about him in 2017 and 2018 by GADVASU University, Ludhiana, Punjab. Another success story is in process by Punjab Fisheries department.



Shrimp Farming will get a Boost if Processing Plants come in Haryana

Gurpreet Singh of GSM Trading Company says that Shrimp farming is his passion and he wants to take it up to a bigger level, but getting disappointed with rate down of shrimp material

Mithri, Sirsa District:

Aquaculture industry will be survived if one or two good processing companies and material buyers come to Haryana. And all the stakeholders of the sector should join together to achieve this target. If a processing plant comes in Haryana state, it will boost the development of shrimp farming in north India, said Mr Gurpreet Singh, Proprietor, GSM Trading Company located at Mithri, Sirsa District.

Gurpreet Singh who did his M.Sc in Information Technology from Sirsa started shrimp farming in 2018 with 2.5 acres area and he was very happy till 2021. He went upto 50 acres farming with Vannamei.

In 2023, he did farming in 30 acres and got 80 tonnes of shrimp production with 30, 40 & 50 count. He lost 2 lakhs per acre.

We did not have proper support from processors

Getting higher production in north is not a problem, we get better than Andhra Pradesh. I harvested 4 tonnes of shrimps per acre with 22 to 25 count and sold at Rs 220 to 260 a kilo. Getting remunerative price is the problem here. Rate was good in September 2023 with Rs 370 per kg of 30 count, later it fell down. Total market here is in the hands of middlemen and agents. They highjack the system. No processor comes here and we did not have proper support from processors, the farmer-cum-entrepreneur Gurpreet Singh stated.

If farmer is benefitted, all feed, medicines, aerators and processors will get benefitted and the industry will flourish, he stated.

GSM Trading Company is dealing with feed, medicines and aerators of Devi Seafoods, APC Nutrients, Sagar Aquaculture and Sagar Biocare. He sold 1200



**Gurpreet Singh, Proprietor,
GSM Trading Co**

tonnes of Devi feed in 2022 and in 2023 he could sell only 750 tonnes of feed. GSM had a turnover of Rs 20 crore in 2022 and in 2023 calendar year it came

down to 12 crore. He is also planning to go for a moderate size processing plant.

Shrimp farming is my passion and I wanted to take it up to a bigger level, but I am getting disappointed with the rate down of shrimp material, higher feed rates (Rs 95 per kilo) and low quality of seed, Gurpreet told. He started with shrimp farming and then expanded his business into trading. Now a days production cost is increasing leading to losses in shrimp farming, he explained.

HAPPY NEW YEAR 2024

DEALERSHIP ENQUIRIES WERE INVITED

Aquaculture Health Care Products

ZEST ANIMAL SOLUTIONS

14-35, Jhansi Arcade, M. G. Road, Poranki
Vijayawada-521137, Andhra Pradesh, India

+91 9346532428 / 7680909299
 info@zestas.in

You should always Work to Inspire others, Rest of Things will Fall in Place !

Vishal Ghotane's interesting journey from Reliance Retail to Shrimp Feed

Like every parent has dilemma for their children after 12th standard, same was the case with me. My father wanted me to be an Engineer and myself wishing to become Agriculturist .. and in between I landed in Fisheries at Ratnagiri in 2000 to 2001 all of first year was roaming from Taxonomy, Biology, Anatomy, Bombay Dock of Mumbai Coast to Hilsa of West Bengal. In second year with the help of seniors and teachers finalized to complete course and did M.B.A.

After the course, there was no looking back and completed fisheries in 2005 and got awarded 'Best Fisheries Graduate' in 2005 batch all India. At the same time cleared all India ICAR Fisheries exam and secured 20th rank all India, and got selected for M.B.A (Master of Fish Business Management) program at CIFE, Versova, Mumbai in 2005 to 2007, which was designed by MANAGE (Hyderabad) especially for fisheries students.

While pursuing Masters in Fish Business Management at CIFE thesis with topic "Value Chain in Fisheries" – Seed production to end consumer how price changes and factors which affect the same in Freshwater, Marine Water and also in export marketing. This was an opportunity to learn insights of fisheries business – Seed production at hatcheries (IMC, Shrimp), Production of



**Vishal Ghotane, ASM,
Cargill Aqua Nutrition**

Farm size Fish and Shrimp, Marketing, Export and how value of fish seed less than 5 paise gets converted into Rs 70 per kg of fish. The thesis work was accomplished under guidance of Dr Ananthan from CIFE & Co guide Dr Samar K Dutta from IIM, Ahmedabad, also lot of juniors and seniors helped me complete this tremendous task. At the time of thesis submission he got interview call from Reliance Retail.

Retail industry was in upcoming and next boom in India and Reliance wanted to set up a speciality non-veg retail chain format "Delight Proteins Ltd" in India. I joined as Assistant Manager on 5 February 2008 at Reliance, Pune where in start from day one works started on planning the store layouts. That day was very special to me since it was an eye opener to help understand difference between student and as an employee jokes apart.

Journey in Reliance Retail Pune was making up of self & how much you can

stretch. Whatever we learned in books in MBA organizational behavior, consumer behavior, pricing actions, promotions, customer relations all was a day to day activity. Understanding customer requirements, planning procurement, quality, in time supply of 30 to 40 fish varieties right from Mackerel to Pabda and trout to sardine was not a simple task. But operations support of Reliance in supply chain, team from HO and my General Manager Dr Praharaj and colleagues Pinaki & Sandip along with store team of 75 people made this journey like piece of cake. By 2010 we had launched 10 stores in Pune and then was transferred Reliance head office, Ghansoli, Mumbai to look into National Fish procurement team for purchase of 72 stores all India and also assist Mumbai stores in sales promotion.

After joining Reliance Ambition Group, Mumbai and worked as consultant for Maharashtra Fisheries Development Corporation on successful implementation – first Cage Culture Project in Maharashtra and setup of 24 cages at Tarli Dam – Satara, Mula Dam at Ahmednagar.

The knowledge in setting up of new cage culture sites helped me a lot in Indepesca Aquaculture Pvt Ltd, for handling 50 cages at Dhasai Dam, Murbad and set up of new 50 cages at Barvi Dam,

Badlapur. The biggest hurdle was not production of Tilapia and Pangasius, but to sell in domestic market where market was totally unorganized and middlemen dominating trade. Even the achievement of more than 90% survival from stocking to harvesting was jeopardizing due to sale price of produce, Tilapia at Rs 80 per kg and Pangasius at Rs70 per kg.

To overcome this, I started discussing with small retailers in Badlapur, Murbad, Kalyan, Andheri and Panvel about their requirements, problems, consumers and their requirements and understood that we need to develop live fish retail value chain. Herein a special story I would really like to explain about Riyaz bhai, a small vendor from Saki Naka, Andheri. He used to come with small tempo having 1 IBC tank taking 150 kg live Tilapia and 40 kg Pangasius in 200 kg barrel. We provided all kind of support in size of fish as per season, conditioning of fish prior transport to avoid mortalities, timing of dispatch morning at 3:30 am or night at 11:00 pm all to get him sales and attract retail consumers. You all will be astonished to know that a person selling hardly 2,400 kgs fish per month started sales from tempo, then purchased Bolero pickup then purchased 2 Eicher trucks and his average per day sale was 2,000 MT that too live fish and monthly sales above 25,000 kgs. This achievement endure more confidence in myself & help me understood that sheer patience, hardwork and right approach can help you scale impossible heights.

From June 2016 to November 2017 worked in West Coast Frozen Foods Pvt Ltd, Mumbai, Maharashtra, as Deputy Manger - Sales for Cage and Farm produce established whole network of live fish retailers across Raigad, Mumbai and Pune.

From 2008 to 2017, I worked in Retail, Cage culture & production of Tilapia & Pangasius, Sales of freshwater and shrimp produce, but have never been close to Shrimp culture in any way. And opportunity came as Assistant Manager - Sales for Shrimp Feed in Gujarat from Cargill India Pvt Ltd. Cargill, a global MNC having diverse business across globe and in India under Cargill Animal Nutrition were producing shrimp feed at Rajahmundry, Andhra Pradesh plant and focused only in Andhra and East India markets.

It was again a start from zero since Cargill was coming first time to West Coast of India, since Gujarat market was near to about 1 Lakh tonnes in 2016 & 2017 respectively. The same and proven approach understanding customers, building relations and trust, technical support started from 2018. In the first year itself converted major Avanti Feeds dealer Tej Aqua to Cargill, CP dealer, United Feeds to Cargill and corporate farmer Dr Manoj Sharma to Cargill and sales of approximately 450 MT from Gujarat market. In 2019 expanded to Saurashtra and also in Maharashtra & Goa which yielded per annum sales of 1000 MT.

Gujarat market was credit driven and Maharashtra market was dominated by CP & Avanti. So focus was

laid on understanding the underlining requirement of farmer whether it is technical support in seed selection, site selection, man power requirement, credit support, sales support etc. The one to one contact with each and every farmer helped build trust and confidence and then from 2021 started conversion of corporate farmers.

Sharad Sir (Avanti Dealer and Corporate farmer) converted to Cargill in 2021, slowly other small farmers also entrusted their trust in Cargill. With the help of strong technical backing of Cargill HO & SMT team had small Farm Group Meetings, Online technical sessions and support. In Maharashtra farmers Cargill farmers are spread across Safala, Raigad, Ratnagiri, Sindhurg etc. In 2022 Cargill shrimp feed topped sales in Maharashtra crossing the then market leaders and same was suit in 2023 being market leader in Maharashtra.

In 2021, Cargill provided opportunity to lead North India (Haryana, Rajasthan and Punjab) market where in we have achieved shrimp feed sales of 450 MT till 2020. With same old road map understanding customer & farmer with full support of dealer Haryana Aqua Food and dedicated field team with enthusiastic and 24 x 7 support provided by our North India lead Deepak Sharma, Cargill crossed 1000 MT in 2021, crossed 2000 MT + in 2022 and in present year 2023 will reach near about 3000 MT. This is accomplished with total support of Cargill HO, SMT, cross functions team, RSM Mr Jerald and our Commercial Director Animesh sir.

Cargill claims 2,500 tonnes of feed supply in 2023 in North

Fatehabad: Mr Deepak Sharma, Key Account Manager, Cargill India Pvt Ltd informed that his company supplied 2,500 tonnes of Cargill feed in 2023 and the total shrimp feed market in northern region of the country is 12,000 tonnes.

Our dealer Ravinder Singh Garhwal, Haryana Aqua Food, has 4 godowns at Gothyabadi Rajasthan, Malout, Punjab, Sirsa, Kalanwali, Haryana, Mansa, Punjab and at Karnal, Haryana with effective services to the farmers. We are providing all Equipment, Feed, Seed, P-Line, Technical Services and Consultancy Services to shrimp and fish culture, he added.

Cargill is supplying shrimp and fish feed in north India.

Born in Mujaffarnagar, Uttar Pradesh and did his B.Sc, Zoology - Botany from



Deepak Sharma, Key Account Manager, Cargill India

CCS University, Meerut; B.V.Sc & AH from NDUAT, Kumarganj, Faizabad and M.F.Sc from ABVH University, Bhopal, Mr Deepak Sharma started his career with Pancham Aquaculture Farm, Safala, Maharashtra in 2010 and worked for 3 years. Later he worked in Waterbase Ltd for 4 years at Gujarat and then Godrej Agrovet for 6 months.

Since September 2017 Deepak Sharma is working in Cargill India Pvt Ltd, based at Fatehabad, Haryana.

To further support farmers in North India, Cargill is establishing full fledged lab in Sirsa, Haryana with the help of our dealer Haryana Aqua Food. Now farmers will get all facilities right from water quality parameters to PCR, disease detection all at a single location. More than INR 30 lakhs have been invested to provide all farmers support with single view point to help farmer successful.

Cargill aims to be sustainable player and market leader in North India and will target sales of 5,000 MT in coming years and along West Coast especially in Maharashtra

will target sales of 3,000 MT in coming years.

Working across all diverse industry from 2008 to 2023, one thing is sure ... you should always work to inspire others, rest of things will fall in place.

Born on 16 September 1982 in Roha, Raigad district in Maharashtra, Vishal did his schooling in Roha – SSC in 1998, HSC in 2000. His wife Kavita is working as Agriculture Supervisor, Department of Agriculture, Govt of Maharashtra in Roha Taluka, Raigad district, Maharashtra, and they have a sweet daughter Aaradhya, father Vithal and mother Vanita.



Hengrun HR Series Extruder

Suitable for all kinds of floating & sinking aquatic feed
The screw permutation is adjustable to fit different formulation.
Advanced automatic touch screen control system

Model	HR165	HR118X2	HR145X2	HR168X2
Capacity(t/h)	3-5	3-6	6-10	10-15
Type	Single-screw	Twin-screw	Twin-screw	Twin-screw



Hengrun HRHG (FB) Series Rotating-Type Dryer

Moisture evenness $\leq 1.5\%$
Use only one-third power compared to other competitors.



ZHANJIANG HENGRUN MACHINERY CO., LTD

Add: Shapo Industrial Zone, Suixi, Zhanjiang, Guangdong,
China (524300)

E-mail: hirin_co@126.com

Tel: +86 759 7770818 Fax: +86 759 7769088

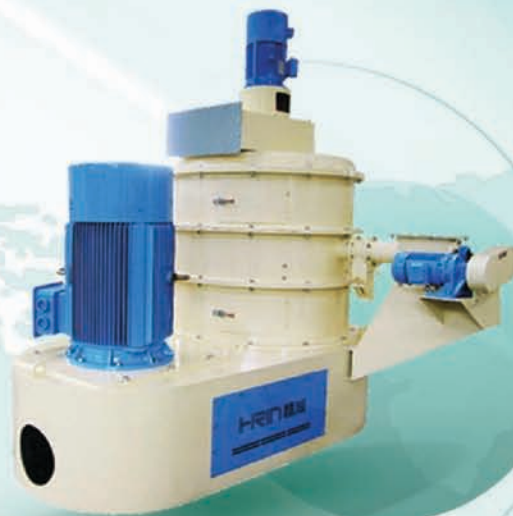
Web: www.hirin.cn

Professional Feed Machinery Manufacturer



Hengrun SWFL Series Vertical Pulverizer

Vertical shaft with no-screen grinding, Bearing no maintenance. The production is uniform and the fineness is adjustable (Range from 40~200 mesh.)



Hengrun HRYTZ Series Vacuum Sprayer

Totally enclosed spraying space, Precision & Efficient spraying proportion widely ranged from 2%-30%.



Global shrimp production forecast of 5.6 million metric tons is slightly lower for this year



Darryl Jory
Ph.D., Editor Emeritus
Email: darryl.jory@globalseafood.org



led by Brazil, Mexico and Venezuela will add about 500,000 MT to world production in 2023.

The Pacific white shrimp (*Litopenaeus vannamei*) continues to strongly dominate global production, while black tiger shrimp (*Penaeus monodon*) production keeps increasing and is contributing an estimated 550,000 MT in 2023 and projected to grow to close to 600,000 MT in 2024.

Asia

Shrimp production in Asia is projected to decline by slightly over 3 percent in 2023, the first annual decrease in a decade, but is projected to recover by close to 4 percent in 2024. These numbers are based on the lower of two estimates for China (about 1.06 MMT) in 2023; with the higher estimate for China (about 2 MMT per

Overall results of the 2023 survey of the global farmed shrimp industry suggest that after a strong 2022, the industry will see a modest supply decline of about 0.4 percent in 2023, and a more optimistic outlook for next year with an expected growth of 4.8 percent predicted for 2024. Photo by Darryl Jory.

India, Vietnam and Indonesia; these countries will account for about 74 percent of global production in 2023. Other important producers in Asia – including Thailand, Malaysia, Philippines, Myanmar and others – will contribute around 840,000 MT. And in Latin America, other producers

This article summarizes the annual Global Shrimp Aquaculture Production Survey and Forecast report from the Global Seafood Alliance, jointly prepared with Gorjan Nikolik of Rabobank and presented at the recent Responsible Seafood Summit 2023 held in Saint John, New Brunswick, Canada.

Survey results indicate that the world's production of farmed shrimp in 2023 will likely be slightly lower (down 0.4 percent) at around 5.6 million metric tons (MMT) than in 2022, but that it is expected to grow by about 4.8 percent in 2024 to close to 5.88 MMT.

The top five producers in 2023 include, in order, Ecuador, China,

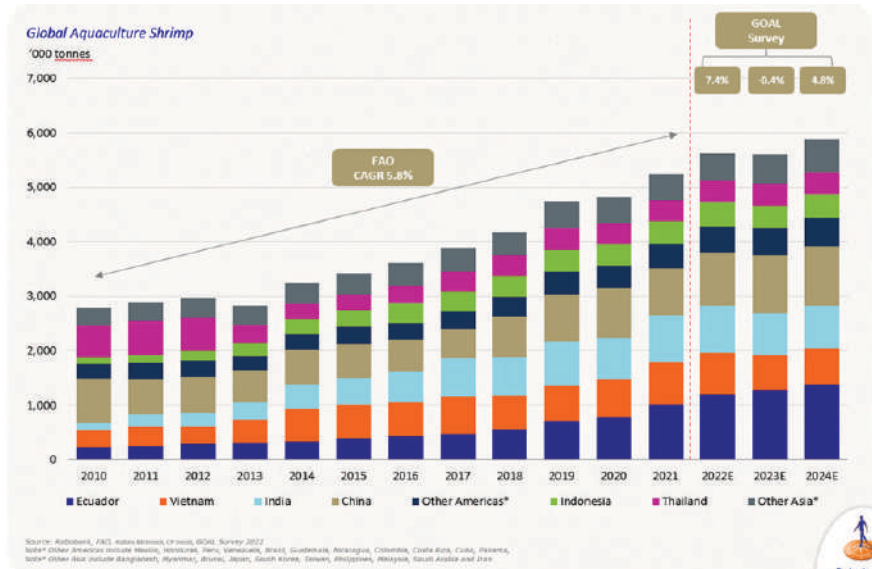
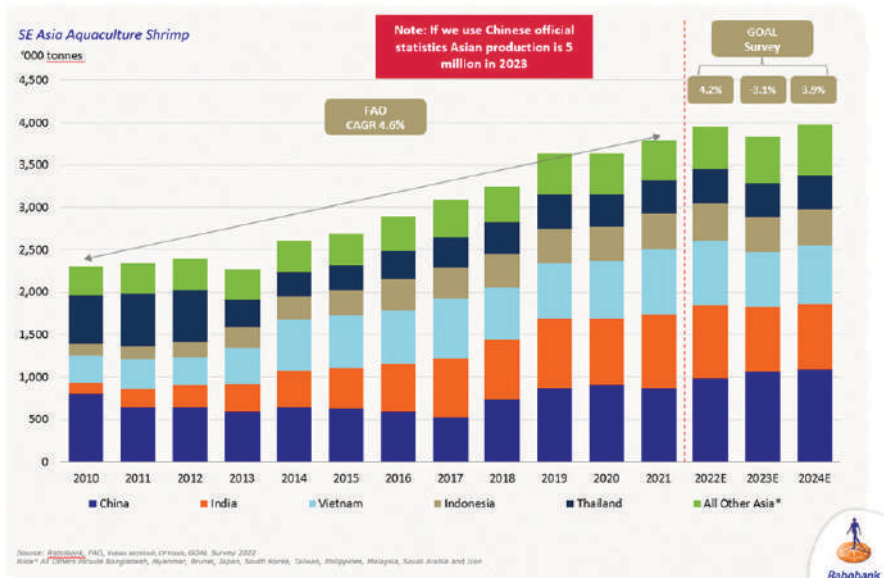


Fig. 1: After a strong 2022, the global shrimp supply will be flat or slightly lower in 2023; but a return to growth is expected in 2024.



Asia’s total shrimp supply is expected to decline in 2023, the first decline in shrimp production since 2013.

other sources), Asia’s total for 2023 could be close to 5 MMT. The industry in China is reportedly expanding rapidly with the use of greenhouses and RAS technology, which allow year-round production in many areas where open ponds traditionally produced only one crop annually.

India’s production of vannamei is contracting sharply in 2023 (possibly by 12 percent or so) but its monodon production appears to continue expanding, a sustained trend over recent years. Some recovery (about 2 percent) for its vannamei production is expected in 2024. Similarly, Vietnamese production of vannamei in 2023 is expected to contract by up to 15 percent in 2023, with an expected recovery next year of possibly over 5 percent. Indonesia will likely see a relatively lower contraction for vannamei of about 5 percent in 2023 and a projected recovery of over 3.5 percent in 2024. All these countries are top producers of not just vannamei but also monodon.

Black tiger shrimp continues its strong comeback across Asia, led by Vietnam, China, India and Indonesia. A decisive factor in this revival – considering that monodon was the top farmed species for many years and up to the early 2000s – is the relatively recent commercial availability of specific pathogen-free (SPF) vannamei lines and broodstock.

Latin America

Shrimp production in Latin America, the other major global producing region after Asia, is estimated to be at least 1.8 MMT, and could possibly reach 2 MMT in 2023, led by Ecuador, the top global producer during the last few years. Other major producers in the region include Brazil, Mexico, Venezuela, Peru, Honduras, Nicaragua and Guatemala. In general, despite production expansions in Ecuador, Brazil, Mexico and Venezuela, the growth rate of production in Latin America appears to be declining.

For Ecuador, some survey data appears to suggest a possibly slight slowdown in 2023, but the most

recent data indicates that production in 2023 will be close to 1.49 MMT with continued growth projected for 2024. After a strong 16 percent growth in 2022, growth in 2023 and 2024 is projected to be around 14 percent p.a. based on the latest data, with 2024 production likely surpassing 1.5 MMT. The industry in Ecuador has benefitted very significantly from major investments in genetic improvement, farm technology – particularly automatic feeders and mechanical aeration – a strong industry association, the recent development of a huge export market in China, in addition to strong industry vertical consolidation among a dozen major companies. And Ecuador, along with India, reportedly have the industry’s lowest production costs.

Other regions

Various shrimp species are farmed in some form or other in several countries around the world, and sometimes involving some small volumes of minor aquaculture species like Pacific blue shrimp, banana prawn, Indian white shrimp and Kuruma shrimp; some of these species support major fisheries.

Notably among producers outside the two major producing regions are Saudi Arabia and Iran with vannamei productions of 60,000–70,000 MT each in 2023; and Australia and Madagascar with monodon

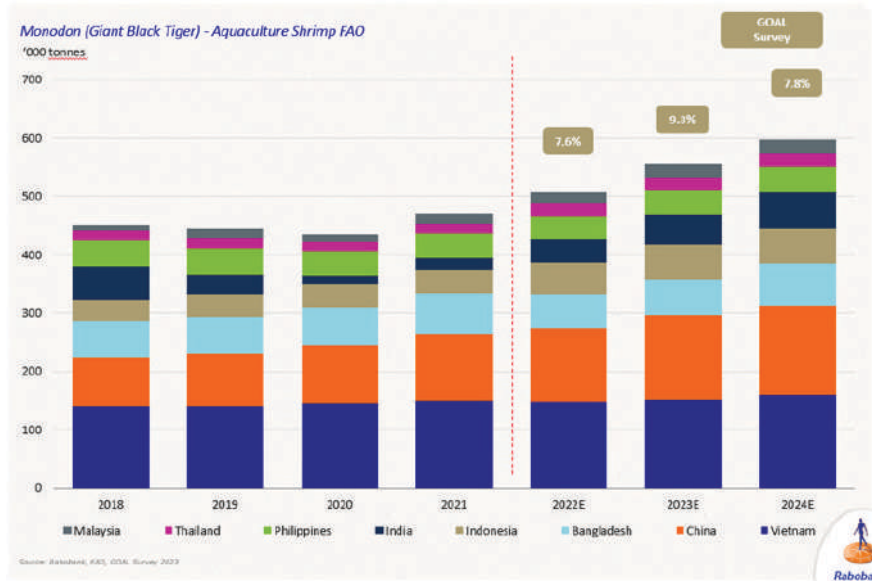


Fig. 3: The black tiger shrimp comeback continues across Asia.

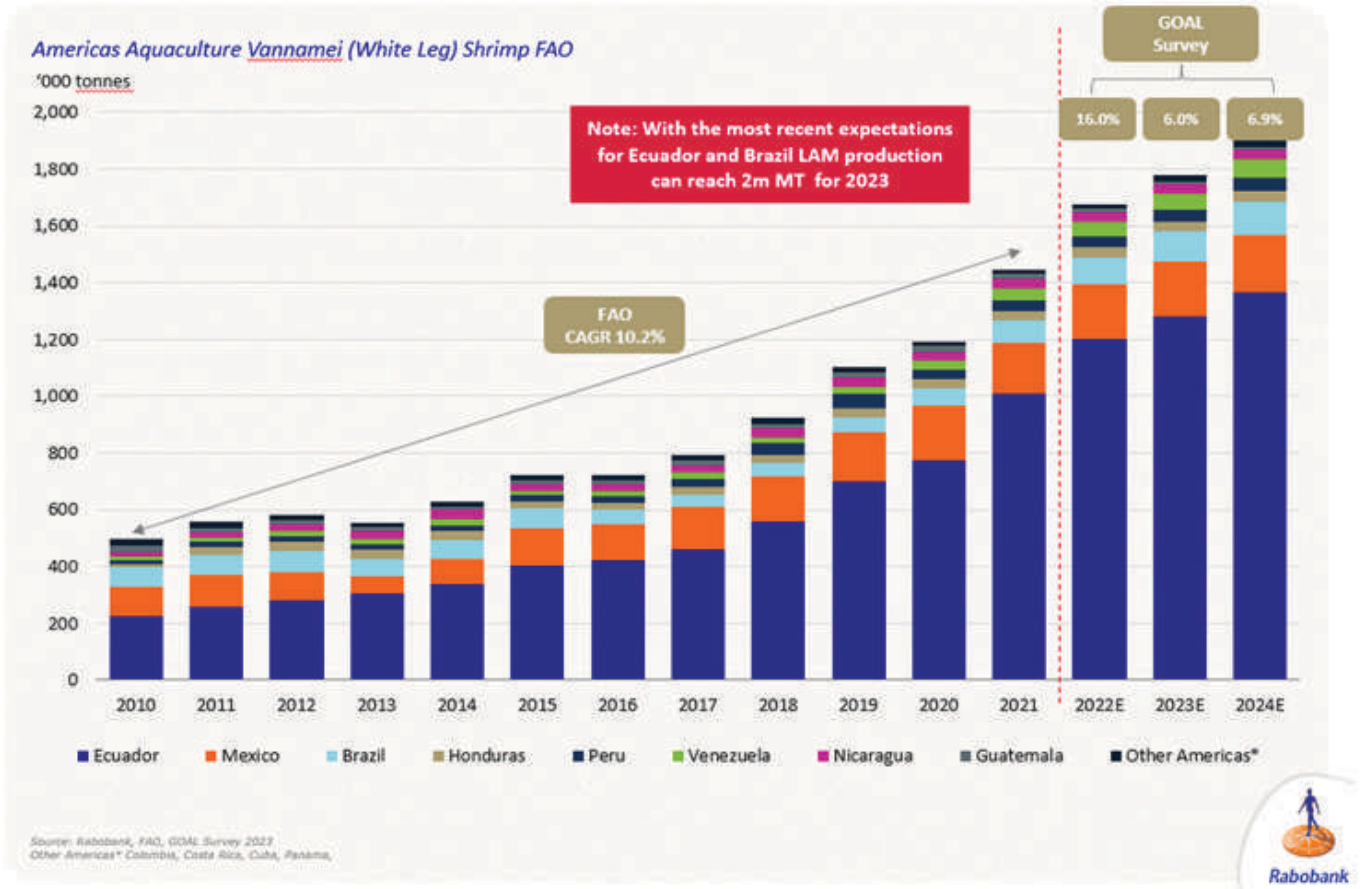


Fig. 4: The Americas is still undergoing considerable expansion in production, but the shrimp supply growth is slowing down.

productions of around 10,500 and 5,000 MT, respectively, in 2023.

Perspectives

Based on survey responses, shrimp market prices are back to the number 1 concern in 2023; feed costs, market access, disease prevention and broodstock quality were the second to fifth top concerns. Market prices were also the top concern in the 2021 survey, while in the 2022 survey, feed cost was the main issue heading into 2023.

Overall, results of our 2023 survey of the global farmed shrimp industry indicate that after a strong 2022, the industry will see a modest supply decline of about -0.4 percent in 2023, and a more optimistic outlook for next year with an expected growth of 4.8 percent predicted for 2024.

There is significant potential to expand farmed shrimp production with the substantial gains achieved in recent years in genetic improvement, feeds and feeding and production technologies. However, as the global

economy continues recovering from the pandemic impacts, shrimp markets must be able to absorb more production while equitably benefiting every component of the value chain.

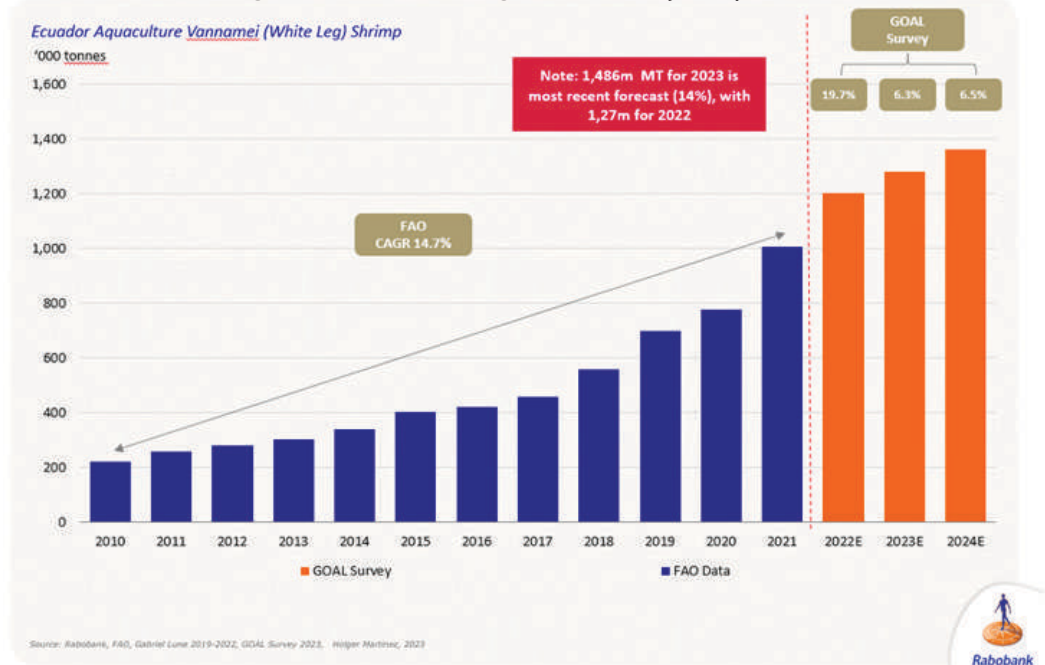
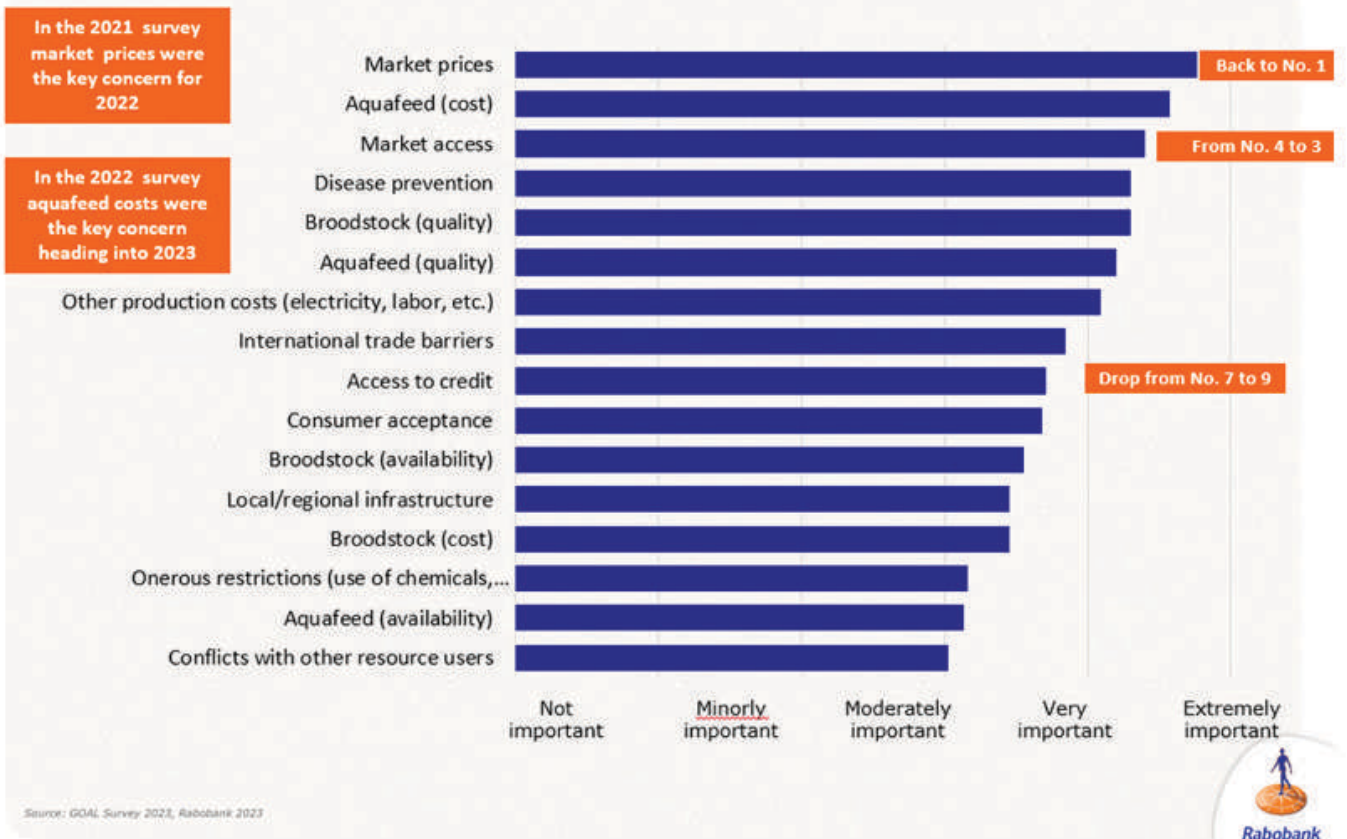


Fig. 5: Ecuador's shrimp industry, the world's largest exporter, seems to be slowing down, albeit still with a high growth rate.



Market prices are the clear No. 1 concern in 2024

Region	CAGR 2010-2021	2022 expected	2023 expected	2024 expected
India	18.5%	0.3%	-12.4%	2.0%
Ecuador	14.7%	19.7%	6.3%	6.5%
Vietnam	8.4%	-2.4%	-15.1%	5.6%
China	0.7%	13.0%	8.8%	1.9%
Indonesia	10.5%	4.8%	-5.1%	3.6%
Thailand	-3.4%	5.3%	-2.2%	1.3%
Total	5.8%	7.4%	-0.4%	4.8%

Source: Rabobank, 2022

Rabobank

Fig. 7: After a very strong 2022 modest supply decline predicted for 2023 and optimistic for 2024.

Harnessing AI Tools for Advancements in Marine Fisheries Research & Management

Email: divyameril@gmail.com

Divya. M¹, Karthik. N², Rujan. J³, Shamini. S², Porkodi. M⁴ and Felix. S⁴

*¹Department of Aquatic Environment,
St. Devasahayam Institute of Fisheries Science and Technology, Kanyakumari*

*²Department of Fisheries Resource Management,
St. Devasahayam Institute of Fisheries Science and Technology, Kanyakumari*

*³Department of Economics, Extension & Statistics,
St. Devasahayam Institute of Fisheries Science and Technology, Kanyakumari*

*⁴Department of Aquaculture,
St. Devasahayam Institute of Fisheries Science and Technology, Kanyakumari,
Tamil Nadu, India*

Abstract:

Artificial intelligence (AI) is revolutionizing the marine fisheries industry by enabling data-driven solutions to address critical challenges. This article explores the multifaceted applications of AI in marine fisheries, including fish stock assessment, marine protected areas and biodiversity monitoring. AI technologies, such as machine learning and data analytics, facilitate real-time monitoring, predictive modelling, and informed decision-making, ultimately promoting sustainable fishing practices and resource management. The introduction outlines the significance of AI in marine fisheries, while the overview emphasizes the importance

of marine fisheries for global food security and economies. Threats to marine ecosystems, such as overfishing, by-catch, and habitat destruction, underscore the urgent need for sustainable practices. The article delves into specific AI applications, highlighting their potential benefits and referencing relevant research. The section on AI in marine biodiversity monitoring provides a comprehensive list of AI tools and their uses. The conclusion summarizes the key takeaways, emphasizing the importance of stakeholder collaboration in overcoming ethical and regulatory challenges. AI in marine fisheries presents a promising path towards a sustainable and responsible future

for our oceans, with AI as a key ally in preserving marine ecosystems and supporting the livelihoods of fishing communities.

Introduction

Artificial intelligence (AI) has emerged as an innovative technology in several kinds of industries, including marine fisheries. In the context of marine fisheries, artificial intelligence (AI) refers to a variety of techniques such as computer vision, machine learning, and data analytics that are used to collect, process and analyse huge amounts of data from multiple sources. This data may include information on fish populations, environmental conditions, vessel tracking and market trends. AI

technology in marine fisheries offer real-time monitoring and decision-making, assisting fishermen and fisheries managers in making informed decisions on fishing practises, resource conservation, and market tactics. AI can provide vital insights into fish behaviour, migration patterns and population dynamics by processing and analysing data. It can also help forecast changes in the marine environment, such as ocean temperature and water quality, which are important factors influencing fish habitats. Furthermore, AI helps to promote sustainable fisheries by reducing by catch, over fishing, and increasing the efficiency of fishing operations. AI systems can help discover and categorise different fish species by combining underwater drones and automated image identification with them. This ensures that only the target species is collected while causing the least amount of damage to non-target species. It empowers stakeholders with the insights and tools needed to navigate the complexities of our oceans while striving for a more sustainable and responsible approach to fishing and marine resource management.

Marine Fisheries: Overview

Marine fisheries are essential for global food security and economic development. They are an important source of nourishment for millions of people worldwide, as well as a source of income for innumerable fishing communities. However, the current situation of marine fisheries reveals a complicated and demanding landscape. Marine fisheries supply a large amount of the world's seafood. In 2020, marine fisheries contributed to more than 33.7% of the global animal protein intake, with millions depending on them for sustenance and employment. The annual economic value of the global seafood business is estimated to be in the billions of dollars.

Threats to Marine Ecosystems

Despite their critical role, marine fisheries are under severe threat from a range of issues, including:

Overfishing: Overfishing, driven

by high demand and unsustainable practices, has depleted fish stocks in many regions. The Food and Agriculture Organization (FAO) estimates that over 30% of global fish stocks are overfished.

By-catch: The incidental capture of non-target species, known as bycatch, results in the waste of countless marine creatures, including dolphins, turtles, and seabirds.

Habitat Destruction: The fishing industry can lead to habitat destruction, including damage to coral reefs and other sensitive ecosystems.

Climate Change: Rising sea surface temperatures and ocean acidification due to climate change are impacting the distribution and abundance of fish species.

Illegal, Unreported and Unregulated (IUU) Fishing: IUU fishing undermines conservation efforts, jeopardizes fish stocks, and threatens the livelihoods of legitimate fishers.

Need for Sustainability: The unsustainable exploitation of marine resources is not only ecologically detrimental but also economically shortsighted. Fisheries that are managed unsustainably face the risk of collapse, leading to long-term economic losses for the industry and food insecurity for communities reliant on seafood.

Applications of AI in Marine Research

The processing and autonomous examination of camera-based fish samples have greatly improved in recent machine learning developments. Artificial intelligence (AI) uses machine-learning algorithms to evaluate data on fish populations obtained from optic-based sampling, eliminating the requirement for manual annotation of photographs (Allen et al, 2021). The ability of AI to efficiently monitor and handle fish population samples has proven to be an essential tool for modern monitoring programmes aimed at protecting vulnerable marine populations. Researchers are now evaluating the greater impact of constraints on marine ecosystems

in a short period of time due to the increasing environmental stresses by anthropogenic activities and climate change. Fortunately, AI has potential to reduce the need for manual data collection for emerging research questions. Artificial Intelligence (AI) can be applied to various aspects of fisheries to improve efficiency, sustainability, and resource management. Here are some key applications of AI in fisheries:

AI applications in Fish stock assessment

A crucial factor for assessing the health of our oceans is the quantity of living fish present in a certain area's waters. Without accurate information regarding the number of fish in their fisheries, small-scale fishermen in many countries' coastal waters are virtually operating in the dark. Coastal communities and their governments are unable to develop management strategies that will contribute to the long-term health and productivity of their oceans without adequate data. AI tools can estimate fish populations, their growth rates, and overall health more accurately than traditional methods (Honarmand Ebrahimi *et al.*, 2021). AI enabled autonomous underwater vehicles can monitor fish movements and provide fishery management up-to-date information. AI has the ability to forecast how climate change will affect the distribution and abundance of fish species, evaluate the degree of uncertainty in stock assessments for a given fish species, and assist managers in making better decisions. AI suggests temporary fishing bans in areas where fish populations are at risk of depletion due to overfishing and also can estimate the risk level associated with different fishing practices and provide recommendations for sustainable management.

AI applications in Marine Protected areas

Automated monitoring facilitated by AI can provide a cost-effective solution to provide tools for monitoring impacted and restored ecosystems over more relevant spatial and temporal scales. AI-

equipped remotely operated vehicles (ROVs) and autonomous underwater vehicles (AUVs) can collect information about fish populations and their environments. Underwater cameras and sensors can be used by AUVs to track fish migratory patterns, observe fish behavior and evaluate coral reef health. AI can identify illegal, unreported, and unregulated (IUU) fishing activity by analyzing radar and satellite images. (Khokher et al., 2022) AI-based algorithms can identify vessels engaged in suspicious fishing activities, helping authorities enforce fishing regulations Real-time vessel surveillance systems with AI features assist authorities in ensuring compliance with fishing regulations and prevents overfishing.

The study of fish movement patterns and habitat utilisation is facilitated by AI in acoustic telemetry. Real-time data on ocean conditions is provided by AI-driven buoys and sensors to assist sustainable fisheries management (Barbedo,2022). Fishermen can use smartphone apps with AI to quickly and accurately identify the species of fish they catch, assisting in compliance with regulations. Artificial intelligence systems utilise data on ocean currents and sea surface temperatures to forecast fish movement and dispersal. AI powered Bycatch reduction systems automatically release non-target species from fishing nets, reducing waste and the impact on ecosystems.

AI in Marine Biodiversity Monitoring
AI is a promising tool for monitoring marine biodiversity. It can significantly enhance our ability to understand, protect, and conserve marine ecosystems. It's also used to identify the specific patterns on whale shark marks, flukes, and fins. It is revolutionary for educating the public about species identification (as in iNaturalist) and has the potential to automate biodiversity monitoring by analyzing images and videos. The additional benefit of using photographs is that they may be archived for use in future studies and cause no disruption to biodiversity (Ditria et al., 2022). Here are some ways in which AI can be used for this purpose:

S.No	AI Tools	Uses
1	iNaturalist	Image recognition technology to identify the plants and animals Data is automatically published to GBIF (Global Biodiversity Information Facility)
2	MerlinID	Help to identify birds
3	Ecotaxa	It is a system for Identification Plankton images using AI.
4	Linne Lens	Uses a smartphone software to identify different organisms, particularly fish, in real-time from records. With the use of images and videos, it is able to count and identify the species.
5	CoralNet	AI (deep neural networks) to analyse benthic images. It is used to semi-automated annotation of benthic images of coral and rocky reefs.
6	Fathom Net	Used to detect marine species
7	Squidle [±]	New Australian platform for marine image storage, mapping and annotation supported by Schmidt Ocean Foundation and Australian Integrated Marine Observing System
8	VIAME	AI tool developed by NOAA. Fishes are identified via images and videos
9	CORaiL	The “CORaiL platform” uses video to monitors growth of transplanted corals on concrete reefs.

Conclusion

The integration of artificial intelligence (AI) in marine fisheries represents a promising avenue for advancing sustainable fishing practices, improving resource management, and enhancing the overall efficiency of the industry. AI-powered technologies, such as machine learning and data analytics, enable better data collection, real-time monitoring, and predictive modelling, ultimately leading to more informed decision-making. By

aiding in the reduction of overfishing, by catch, and habitat damage, AI has the potential to help preserve marine ecosystems and support the livelihoods of those dependent on fisheries. However, the successful implementation of AI in marine fisheries requires a collaborative effort among stakeholders, including governments, scientists, and the fishing industry, to address ethical and regulatory challenges while harnessing the full potential of AI for the sustainable future of our oceans.

References:

Allen, B., McGough, A. S., & Devlin, M. (2021). Toward a framework for teaching artificial intelligence to a higher education audience. *ACM Transactions on Computing Education (TOCE)*, 22(2), 1-29.

Honarmand Ebrahimi, S., Ossewaarde, M., & Need, A. (2021). Smart fishery: a systematic review and research agenda for sustainable fisheries in the age of AI. *Sustainability*, 13(11), 6037.

***More references can be provided on request.**

Rooftop Aquaponics: The Future of Urban Farming

Sampa Baidyan, Asst Professor, Department of Aquaculture, College of Fisheries, Lembucherra

As our world becomes increasingly urbanized, the demand for fresh, locally grown produce is on the rise. However, the limited availability of land in cities poses a significant challenge for traditional agriculture. In response to this challenge, rooftop aquaponics is emerging as a sustainable and innovative solution, offering the promise of a greener and more self-sufficient urban future.

The Rise of Urban Agriculture

Urban agriculture is not a new concept. For centuries, people have found ways to grow food in the heart of cities, whether in community gardens, small plots of land, or even on their windowsills. In recent years, however, urban agriculture has experienced a renaissance, driven by concerns about food security, environmental sustainability, and the desire for fresh, local produce.

Rooftop farming takes urban agriculture to new heights—literally. It transforms otherwise underutilized rooftops into productive spaces for growing crops and raising fish through a system known as aquaponics.

Understanding Rooftop Aquaponics

Aquaponics is a sustainable farming method that combines aquaculture and hydroponics. In a rooftop aquaponics system, fish are raised in tanks, and their waste-rich water is circulated to grow beds where plants are cultivated. The plants, in turn, filter and clean the water, which is then returned to the fish tanks. This closed-loop system creates a symbiotic relationship between fish and plants, with each benefiting the other.

Key components of a rooftop aquaponics system include:

- 1. Fish Tanks:** Rooftop aquaponics systems typically use fish such as tilapia, catfish, or trout. These fish provide not only food but also nutrient-rich water for the plants.
- 2. Grow Beds:** Containers filled with growing media where plants are cultivated. Expanded clay pellets, gravel, and coconut coir are common choices for media.
- 3. Pumps and Plumbing:** These components circulate water between the fish tanks and grow beds, ensuring a constant flow of nutrients for plant growth.
- 4. Aeration:** Providing oxygen to the fish, usually achieved through air stones or diffusers.
- 5. Biological Filter:** Beneficial bacteria break down fish waste into plant-friendly nutrients.

Advantages of Rooftop Aquaponics

- 1. Space Efficiency:** Rooftop aquaponics utilizes otherwise unused urban spaces, making it an ideal solution for densely populated areas.
- 2. Resource Efficiency:** The closed-loop system uses significantly less water than traditional farming and reduces the need for synthetic fertilizers.
- 3. Fresh, Local Produce:** Urban dwellers can enjoy locally grown, organic produce, reducing the carbon footprint associated with transporting food from rural areas.
- 4. Educational Opportunities:** Rooftop aquaponics projects often serve as valuable educational

tools, teaching city residents about sustainable agriculture and environmental stewardship.

- 5. Climate Resilience:** Rooftop farming can help cities become more resilient to climate change by providing local food sources and reducing the urban heat island effect.

Challenges and Considerations

While rooftop aquaponics holds immense promise, there are challenges to overcome. These include ensuring structural integrity, managing water quality, and addressing local regulations and permits related to rooftop farming. Additionally, the initial setup can be costly, but over time, the savings in food costs and the environmental benefits can outweigh these expenses.

The Future of Rooftop Aquaponics

Rooftop aquaponics is more than a trend; it's a glimpse into the future of urban farming. As cities continue to expand and the importance of sustainable food production grows, rooftop aquaponics offers a practical, efficient, and environmentally friendly solution. It empowers urban dwellers to take control of their food sources and build resilient communities in the face of an ever-changing world.

In the coming years, we can expect to see more rooftops transformed into lush, productive gardens, symbolizing the harmony of nature and urban living. Rooftop aquaponics is not just a way to grow food; it's a pathway to a more sustainable, resilient, and green future for our cities.

** References can be provided on request.*

Significance of food safety inspection for a seafood industry: An overview

Email: venkat@niftem-t.ac.in

Panoth Abhirami and N Venkatachalapathy

Department of Food Engineering, NIFTEM- Thanjavur.

Introduction

The consumption of seafood is highly recommended as a part of a healthy diet because it is a potential source of protein with high biological value, Vitamins, unsaturated fatty acids, and minerals such as phosphorous or calcium. Furthermore, seafood intake is related to a low risk of pulmonary diseases. Despite these health benefits, generally, seafood contains many pathogenic microorganisms introduced during processing or after processing. These microbes can cause severe foodborne outbreaks. According to the report from WHO, it is revealed that seafood is one of the high-risk categories causing foodborne illness.

The major hazard involved in sea foods is biological hazards. Even though the microbial contamination of seafood can occur at any processing stage, from the capture to intake, practices followed by food handlers may have a significant role in contamination and foodborne illness. Improper handling and inadequate hygiene are the most prevalent reasons for foodborne infections (Baptista et al., 2020).

There are a variety of harmful microorganisms and different forms of deterioration in sea foods. Although spoilage microbes are mostly not harmful, they can alter a product's colour, flavour, odour, appearance, and longevity. Conversely, pathogenic microorganisms may cause illnesses or generate toxins, making them disease-causing agents. Decreased

shelf-life, qualitative degradation, and in certain cases, the safety of the sea foods is associated with chemical and enzymatic alterations. Safety in the seafood industry will be ensured by rapid cooling, quick freezing and stable low-temperature storage by inhibiting microbial growth and slowing down deleterious alteration in color, appearance and texture.

- ▶ Identification of hazards in sea food industries are crucial to implement effective control measures to obtain safe seafood for consumption.
- ▶ Organoleptic inspection systems cannot detect hazards in sea foods; however examination at the point of processing sea foods is important to maintain food safety.
- ▶ HACCP, GMP, GHP guidelines must be implemented in sea food industry, monitored at regular intervals and verify according to the norms.
- ▶ It is equally important to abide by all the regulations related to the export or import of sea foods.

Following Best Management Practices (BMPs) aboard commercial fishing vessels at aqua farms, harvesting, handling/processing, storage, and transport is the initial stage in ensuring safety. The seafood industry uses a hazard management food quality program called Hazard Analysis Critical Control Point (HACCP) to avoid, eliminate, or control possible hazards present in sea foods (Jahncke 2016).

Role of food inspector in a seafood industry

Inspection in the seafood industry is a key step to ensure safety in the seafood industry. A qualified auditor can audit the industry to examine the hygiene practices, HACCP implementation, PRPs and production process and raise noncompliance if any hazards are present. Auditing in the seafood industry involves the inspection of the given parameters.

- Production procedures
- Production amenities and premises
- Health fitness of food handlers
- Personal hygiene practices
- Pest control
- Raw materials
- Hazard accessing facilities
- Temperature of storage facilities

Identification of hazards

Seafood processing is the process related to aqua fish between the time the fish is caught and delivered to the consumers. Any possibly foreign substances that are not typically

present in food and can harm humans is generally termed a hazard.

Physical hazards

Physical hazards can result in serious consequences such as choking, bleeding, and piercing of tissue in the oral cavity, throat, abdomen, and intestines. Gum injury and broken teeth are also possible. The occurrence of physical hazards at different levels should be monitored and controlled. Some of the physical hazards are enlisted below (Figure 1).

Control measures for physical hazards

- Visual examination
- Use of sieves, filters, magnets and installation of metal detectors, x-rays
- Following personal hygiene by the food handlers
- Periodic checking of the equipment to make sure that no parts are missing

Chemical hazards

The hazard associated with the chemical contamination of seafood is growing due to the daily increase in chemical pollutants. Metals such as lead and dioxins are two common pollutants considered harmful to the environment. Even though they already exist in the environment, anthropogenic effects might raise their level. Toxins generated by fungus and algae, such as ciguatoxin, can also be contaminants. Food additives, such as preservatives and color-retention agents that are knowingly added to foods, can also be considered

chemical pollutants in seafood. The pollutants, such as acrylamide and heterocyclic amines, can also be produced during processing or cooking.

Human health risks have been associated with the residue of agricultural chemicals left behind after using pesticides and prescription drugs while cultivating and storing food crops and animals. However, adequate usage guidelines and their presence can potentially manage these pollutants. Additionally, certain naturally occurring dietary ingredients, such as phytohaemagglutinin and allergenic compounds, might behave as contaminants (ICAR).

Table 1 : Types of chemical hazards in sea foods (ICAR)

Naturally occurring	Unintentional	Intentional
Allergens	Pesticides	Antibiotics
Micotoxins	Fungicides	Sulphites
Histamine	Fertilizers	Nitrites
Ciguatera Poison	Toxic metals	Food Additives
Shellfish toxin		

Critical Limits for Chemical Hazards

Table 2: Critical limits for some chemical hazards present in seafood (ICAR)

Chemical Hazard	Critical limit
Histamine in fish	10 mg/100g
Tetradotoxin	< 1-2 mg/100g
Saxitoxin	80µg /100g
Sokadoic acid	0 – 60µg/100g
Tetracycline	0.1ppm
Oxytetracycline	0.1ppm
Trimethoprim	0.05ppm
Oxolinic acid	0.3ppm

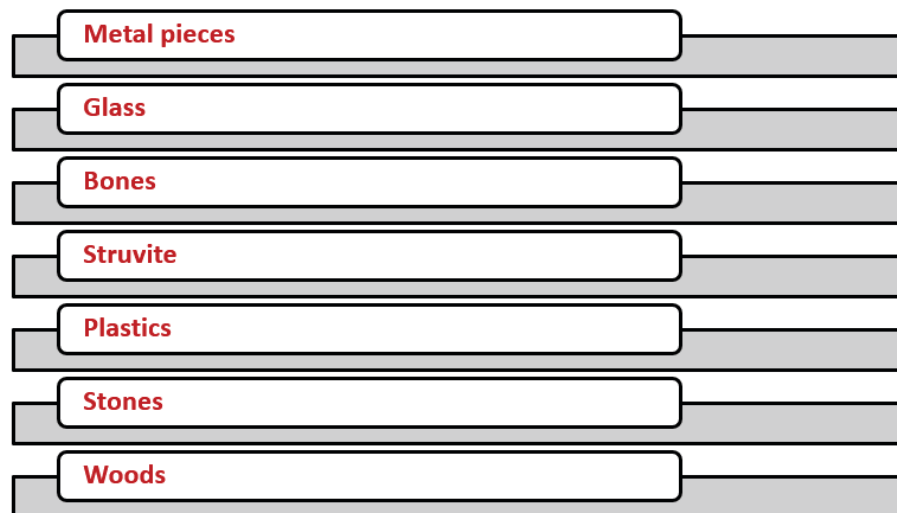


Figure 1 Physical hazards in the seafood industry

Biological hazards

Like any other food product, seafoods have the risk of spreading parasite, bacterial, and viral pathogens that can lead to illness. These contaminants are obtained from a variety of sources, including (1) the natural aquatic surroundings, which is mostly faecal contamination, (2) industry, the retail sector, restaurant, or domestic preparation and processing (Syron et al. 2019).

Table 3: Biological hazards in the seafood industry

Biological hazards	Type of Marine food
<i>Clostridium botulinum</i>	Fish
Norovirus	Shell fish
<i>Vibrio cholerae</i>	Fish
<i>Listeria monocytogens</i>	Salmon
Hepatitis A virus	Raw clams
<i>Salmonella spp</i>	Fish, Shell fish

Process of inspection

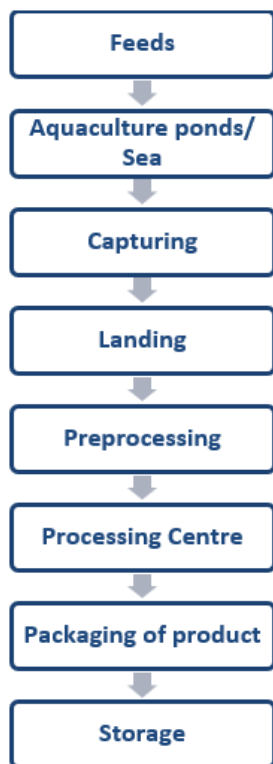


Figure: 2 Processing in the seafood industry

The raw materials, components, processing procedures, storage, and distribution are all checked for potential risks in the seafood production operation. Disease-causing organisms, poisons, environmental pollutants like pesticides, chemicals such as (lubricants, cleaners and sanitizers) and physical hazards like glass, metal pieces, and wood are just a few risks. A crucial control point is established for each risk, where the possible issue with food safety is managed. At each crucial control point, records are preserved so that inspection authorities may be sure the HACCP system is working to produce safe food. Certain sanitation procedures must be carried out as a safety precaution and documented (Hicks 2016).

Allergies and intolerances

An allergy to consuming some kinds of seafood is uncommon and is more frequently linked to certain people at risk due to other health issues. Although they are harder to identify and record, shellfish allergies, differentiated as immune system reactions rather than inability to digest food, seem more common. Some are allergic to shell fishes. Identification of allergic food components must be identified before (Hicks 2016).

Low-temperature storage

The growth of harmful microbes can be slowed down by maintaining seafood cool at 40°F or lower, and thorough cooking will eliminate any pathogenic bacteria that may be present. Food safety also includes important components like adequate sanitation and cleanliness. Cross-contamination throughout the cooking process due to poor food handling techniques and cleanliness might result in foodborne disease. Cross-contamination is dangerous when bacteria are spread from one food to another through cutting boards, utensils, or hands. Keep raw fish and its fluids apart from already cooked or ready-to-eat meals while storing or preparing it to avoid cross-contamination.

Notable hazards associated with seafood and its critical limit

Due to biological and chemical risks in seafood, import denials and refusals from nations including the USA, Russia, Japan, and the European Union are increasing, causing the seafood industry to suffer significant financial losses. The USA frequently rejects imported seafood due to Salmonella, Listeria, or illicit veterinary medications. The presence of heavy metals, veterinary drug residues, histamine content, unwanted materials, biotoxins, poor packaging, inaccurate labelling, inappropriate health certificates, unapproved colours or additives, and organoleptic features are among the alert notices listed on the European Union’s Rapid Alert System for Food and Feed (RASFF) webpage. Most of the objections from Japan in recent months were brought on by the presence of ethoxyquin and furazolidone (AOZ) in prawns.

As per the Food Safety Standards Act of 2006, various fish and other sea foods standards are given in section 2.6 of the Food Safety Standards Regulation 2011. These include Frozen squid, Frozen shrimp, Frozen lobster, Dried shark fins, parts of Frozen finfish, Frozen fish fillets, Salted fish/dried salted fish, Smoked fishery products, Frozen cephalopods, Canned Fishery Products, Sardine Oil, Ready –to-Eat Finfish or Shell Fish Curry in Retortable Pouches, Fish Pickle, Frozen Minced Fish Meat, Edible Fish Powder, Frozen clam meat, Live and Raw Bivalve Molluscs, Freeze dried prawns, Sturgeon caviar, Fish sauce, Quick Frozen Fish Sticks (fish fingers), Fish Portions and Fish Fillets - Breaded or Fresh, Battered, and Quick Frozen Raw Scallop Products.

Additives are not permitted in fresh fish or other fresh fish products. However, the maximum level of sulphites mentioned in crustaceans is 100ppm. Noncompliance raised for process hygiene criteria leads to implementing corrective actions, whereas noncompliance with food

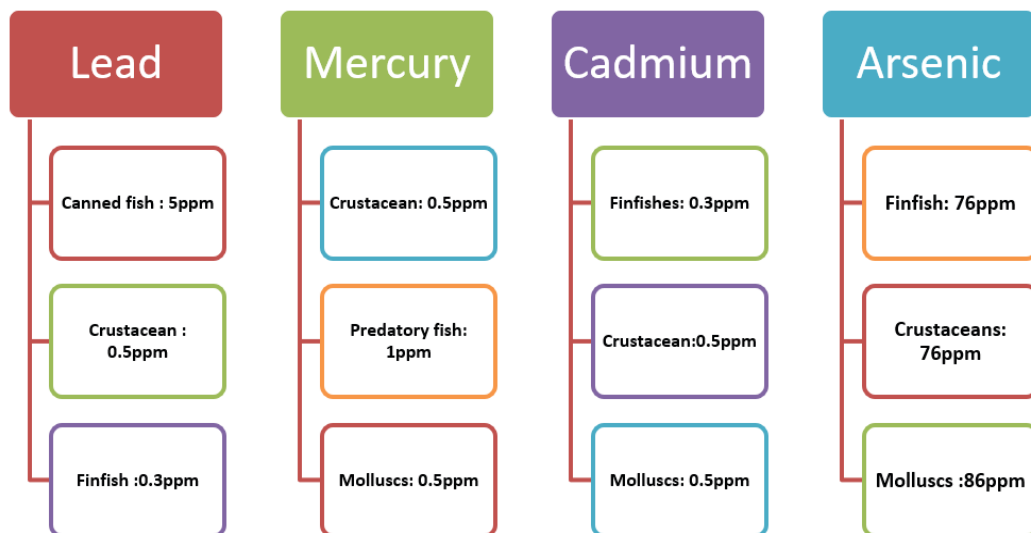


Fig 3: Limits of heavy metals in different seafood

safety criteria in which the presence of microbes directly leads to withdrawal or rejection of the seafood from the market. The limits of heavy metals in the sea foods are illustrated in Fig3.

The limit of polychlorinated biphenyls for inland and marine fishes is 2 ppm, however the limit is 0.5 ppm for marine fishes. Many marine fishes have the potential to cause Histamine fish poisoning. The histamine level can be in the range of 100-200ppm. Chemical contamination is a bigger problem even if a pesticide is not permitted in aquaculture since water is a sink for all toxins. Quinalphos (0.01 ppm) and carbaryl (0.2 ppm) are mentioned in the most recent FSSR. A default tolerance level of 0.01 ppm is used for all other pesticides. The maximum tolerance limit for ampicillin is 0.01ppm in fish, and amoxicillin is 0.05ppm.

Implementation of an effective HACCP plan

The Hazard Analysis Critical Control Point (HACCP) system finds, assesses, and eliminates major risks to the safety of food. HACCP does not guarantee zero risk. It is a methodical technique to reduce the likelihood of food safety risks. Once designed, a HACCP plan is not necessarily the best strategy. When necessary, it must be changed. HACCP is a continual procedure that focuses mostly on hazards. HACCP must be used from farm to table. OPRP, PRP, SOP, GMP, GHP, GAP and SSOP, are all included in the HACCP program. HACCP performs its duties using a scientific methodology.

SOP, SSOP, GMP, and other PRP are applied before HACCP plans. Pre requisite programs concentrates on staff, equipment and facilities, and relates with employee hygiene, sanitizing and cleaning protocols, waste collection, pest management, and equipment selection. It also handles issues including personnel training, water storage and shipment safety, plant cleanliness, and general plant environment control that are not directly connected to food production (Gehring and Kirkpatrick, 2020).

Conclusion

Most environmental health concerns related to seafood safety should be controlled at harvest or at the site of capture. With a few notable exceptions, organoleptic inspection systems cannot detect hazards. However, examination at the point of processing is crucial to maintaining the safety of seafood, no proof that intensifying inspection efforts at this stage will significantly lower the prevalence of seafood-borne illness. However, properly

identifying hazards associated with the sea foods is crucial to determining the CCP and establishing critical limits, thereby eliminating hazards. The food inspector must examine each stage in the processing, and the documents must be recorded for audits. It is equally important to abide by all the regulations related to the export or import of sea foods.

***References can be provided on request.**

AVAILABLE FROM OUR READY STOCKS

AVAILABLE FROM OUR READY STOCKS:

- SPIRULINA POWDER SPRAY DRIED, CHOLESTROL
- YUCCA SCHIDEGERA - 80% & 30%
- SODIUM PERBORATE MONO, SODIUM PER CARBONATE, CALCIUM, PEROXIDE, TRIPLE SALT, HYDROGEN PEROXIDE, etc.
- BKC - 50%, GLUTRALDEHYDE - 50%, FORMAL DEHYDE - 37%, CETRAMIDE SOLUTION, PROPIONIC ACID etc.
- IODINE, POTASSIUM IODIDE, EMULSIFIER
- FERROUS SULPHATE, MANGANESE SULPHATE, MAGNESIUM, SULPHATE, ZINC SULPHATE, COPPER SULPHATE, COBALT SULPHATE, ZINC OXIDE, MAGNESIUM OXIDE, SODIUM SELENATE, AMMONIUM, MOLYBDATE, CHROMIUM etc. FLAVOURS, COLOURS, VITAMINS
- PROBIOTICS & ENZYMES
- PEPTONE, BEEF, BILE, MALT, PROTEIN, LIVER & YEAST EXTRACTS
- STARCH, DEXTROSE, DCP, TALC, KAOLIN, TSP, CALCIUM & OTHER BASE MATERIALS
- CHARCOAL, VITAMIN C, CALCIUM PROPIONATE, EDTA, CMC, GELATIN, GENTION VIOLET, MALCHITE GREEN.

Kindly contact for any requirements in Aqua Culture, Veterinary and Poultry Industry.

NIHAL TRADERS PVT LTD

3-3-66, Flat no. 103, Sikhara Heights, Besides Manjira Hotel, Chappal Bazar, Hyderabad - 500 027, T.S., India.
Ph: 040-2465 6968, 2474 6534, 2465 0253
Tele Fax: 040-2465 8097, Mobile: 98480 40025
Email : nihaltraders@yahoo.com; www.nihaltraders.com



microbasta

Plot No. 4/328, Sivapatham Street, Mel Ayanambakkam, Chennai - 600 095 . INDIA. Customer Care: +91-9445211141 / customercare@microbasia.com

FECPI

SOLUTION FOR SUSTAINABLE
AQUA CULTURE.....



Our all Products are Registered with CAA as Antibiotic-free Product

Imported and Marketed by

FECPI India Pvt. Ltd.

No.94/1A1, Ground Floor,
Ambattur – Vanagaram Main Road, Ayanambakkam
Next to Apollo Hospital, Vanagaram, Chennai – 600 095, Tamil Nadu



Email: info@fecpi.co.in | visit us at: www.fecpi.in




YeaMOS

Natural source of Beta-Glucan & MOS

- Relieve stress such as high density, water quality fluctuation (low oxygen, pH and temperature change) etc.
- Enhance non-specific immunity and reduce mortality.
- Regulate intestinal flora, reduce the risk of pathogens infection.



 Andy Xiao (Mr.) Mobile/WhatsApp: +86 135 1727 2877  xiaoxt@angelyeast.com

 168 Chendong Avenue, Yichang, Hubei, P.R. China  +86-717-6306097  en.angelyeast.com

