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Report on

“Salt water prawn farming (fish farming) at Rewari lakhnor farmer's unit in- collaboration with Growel Formulation Pvt Ltd.”

Date: 06/09/2023- 05/10/2023

Venue: Farmer's unit Lakhnor, Rewari

Event Type: Field Project

Mode of Activity: Offline

Target Group: III-Semester Students of SOAS

Organized by: School of Agricultural Sciences in collaboration with Growel Formulation Pvt Ltd

Faculty organizers: Dr. Parita, Dr. Deepak Kumar

Number of Participants: 33 (All students of SOAS)

School of Agricultural Sciences in collaboration, K.R Mangalam University, Gurugram organized a field project on Salt water prawn farming (fish farming) at Rewari lakhnor farmer's unit in-collaboration with Growel Formulation Pvt Ltd at farmer's unit in Lakhnor, Rewari on 6th September, 2023. It was one month project (6/09/2023 to 5/10/2023) to learn about the farming practices of prawns under the guidance of Growel Formulation Pvt Ltd. All faculty members along with students of SOAS visited the farm. The objective of this report is to provide an overview of the field project and highlight key outcomes and recommendations.

Topics Covered:

- Introduction to Prawn Farming
- Prawn Species and Their Characteristics
- Pond Preparation and Management
- Feeding and Nutrition
- Water Quality Management
- Disease Prevention and Control

- Harvesting and Post-Harvest Handling
- Marketing and Business Strategies

2. Methodology:

The sessions were conducted through a combination of lectures, practical demonstrations, and interactive discussions. Participants were provided with training materials, including hand-outs and presentations, to enhance their learning experience. Practical exercises and field visits were organized to provide hands-on experience and reinforce theoretical knowledge. Following are the aspects that are covered in the whole training methodology:

1. Introduction:

- Definition and significance of prawn farming
- Global and regional market trends and demand for prawns

2. Prawn Farming Techniques:

- Different methods of prawn farming (e.g., extensive, semi-intensive, and intensive)
- Selection of suitable prawn species for farming
- Pond preparation and maintenance
- Water quality management
- Feeding and nutrition requirements
- Disease prevention and control measures

3. Economic Considerations:

- Cost analysis of setting up a prawn farm
- Market potential and profitability assessment
- Marketing strategies and distribution channels

4. Environmental Impact:

- Sustainable practices in prawn farming
- Environmental considerations and mitigation measures
- Impact on local ecosystems and biodiversity

3. Key Outcomes:

Participants gained a comprehensive understanding of prawn farming techniques, including pond preparation, feeding, water quality management, and disease prevention. Practical demonstrations and field visits allowed participants to observe and practice the skills learned during the training. Participants expressed satisfaction with the training content, delivery, and overall organization.

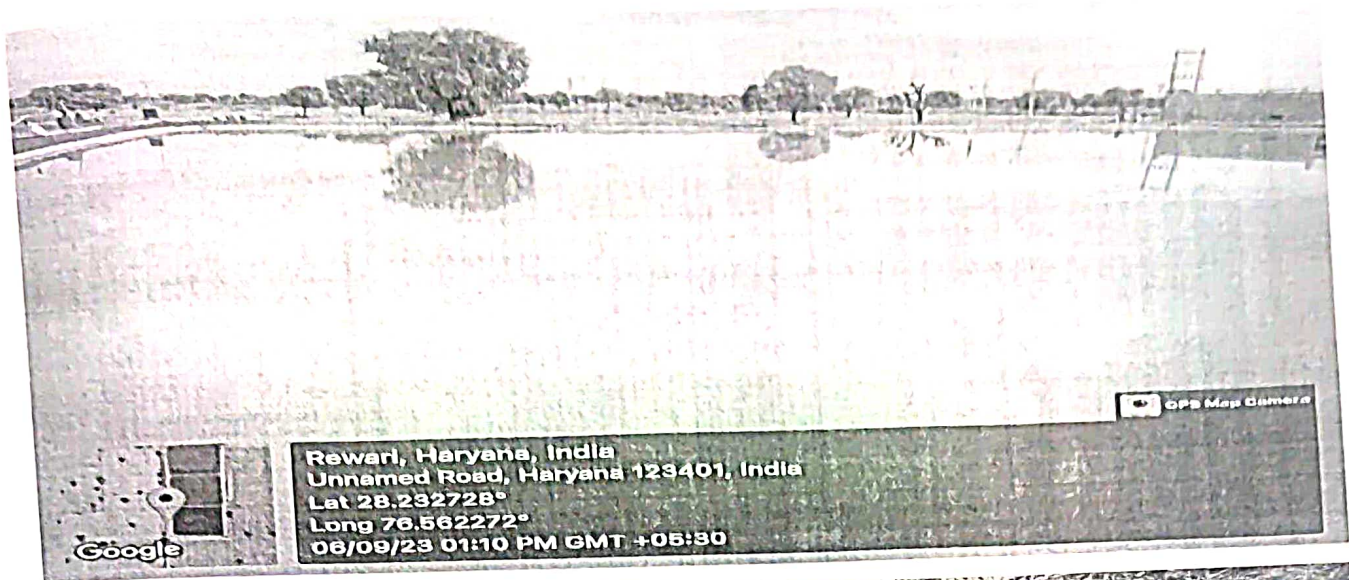
4. Recommendations for the students:

Encourage participants to apply the knowledge and skills acquired during the training in their respective prawn farming operations. Provide ongoing support and guidance to participants through follow-up sessions or consultations. Consider organizing advanced-level training programs to further enhance participants' expertise in prawn farming.

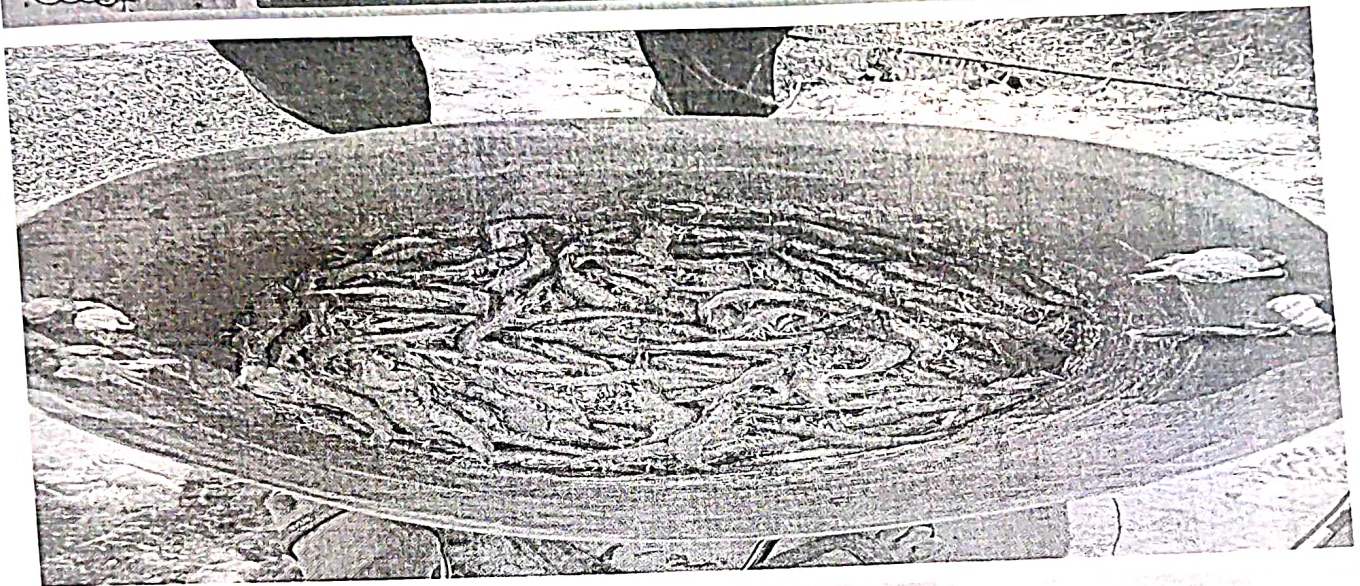
Prawn Farming Training has equipped the participants with valuable knowledge and skills to improve their prawn farming practices. We are confident that the training will contribute to the growth and success of the participants' prawn farming businesses.

Few glimpses of the activity

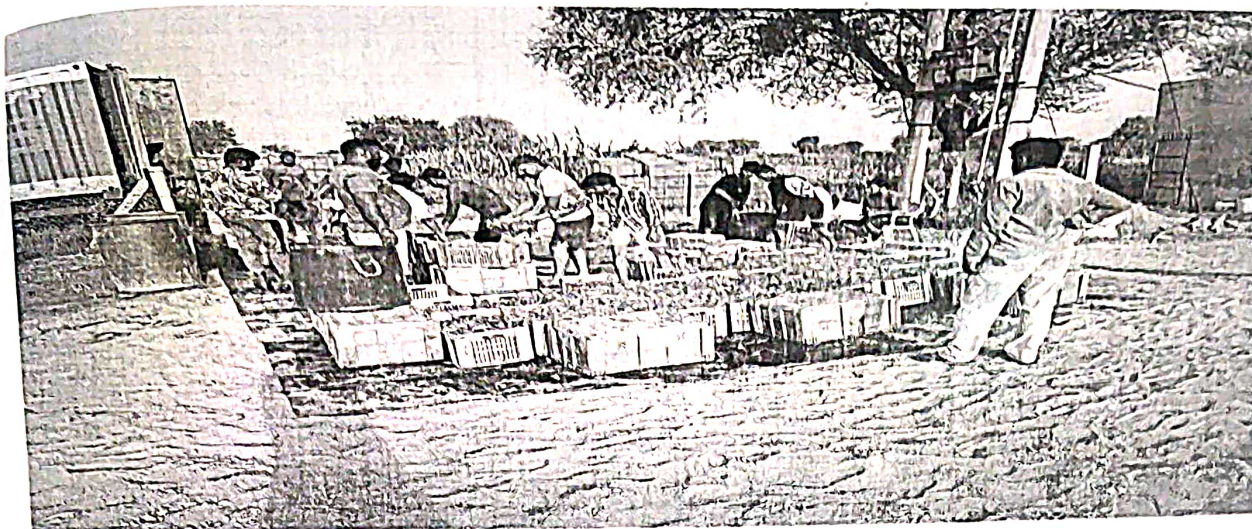


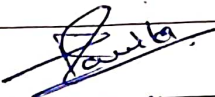
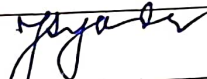
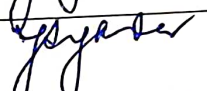
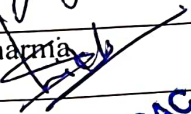


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K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Project Report

On

Establishment of a small functional model at KRMU on Litopenaeus Vannammi (prawn culture) in-collaboration with Growel Formulation Pvt Ltd from Oct. 2023 to Nov.2023

Prepared By:

Group 1

(Sagar, Ansar Khan, Ridhi and Mohit)

Under the guidance of-

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Introduction:

Fish farming or pisciculture involves raising fish commercially in tanks or enclosures such as fish ponds, usually for food. It is the principal form of aquaculture, while other methods may fall under mariculture. Worldwide the most important fish species produced in fish farming are *litopenaeus vannamei*, carp, tilapia, salmon, and catfish. Demand is increasing for fish and fish protein, which has resulted in wide spread over fishing in wild fisheries. China provides 62% of the world's farmed fish. As of 2016, more than 50% of sea food was produced by aqua culture. Farming carnivorous fish, such as salmon, does not always reduce pressure on wild fisheries. Carnivorous farmed fish are usually fed fishmeal and fish oil extracted from wild forage fish. The 2008 global returns for fish farming recorded by the FAO totaled 33.8 million tonnes worth about \$US 60 billion. Fish farming involves raising fish commercially in tanks or enclosures, usually for food. The major freshwater farming environments in India are pond, cage, pen, rice field, sewage feed and air breathing. Polyculture is the dominant culture system practiced. The major species are carp, freshwater prawn and catfish. Basically India's aquaculture is carp-oriented and the contribution of other species is marginal. Fish culture in India can be classified as extensive, semi-intensive or intensive and stocking rate is high at 18,408 fish/ha. Both the central and state governments have come up with schemes to help the cause of the farmers. India is a large producer of inland fish, ranking next only to Japan. Out of the total inland fish production of over 3.6 million metric tons, more than 60% is contributed by fish culture in ponds and reservoirs. Fish farming is adopted by farmers on commercial scale. In order to raise the standard of living in rural, semi-urban, and urban areas as well as to contribute to the creation of an inclusive India, the prawn farming unit develops funds, and implements projects that use knowledge, creativity, and innovation. The unit works on research and consulting initiatives to advance peace, harmony, and understanding on a national, regional, and international scale as well as to improve India's constitutional democracy.

Students of School of Agricultural Sciences established a demonstration model on prawn farming at School of Agricultural Sciences Field, K. R. Mangalam University Campus to gain

knowledge about prawn/fish farming and become a prawn/fish farming entrepreneur. Student exposure training already has been conducted at Rewari prawn farming unit.

Objectives:

- To understand packages & practices about the production the pran fish.
- To understand the feeding and maintenance problems during fish farming
- To know the management of low cost protein rich, nutritive, palatable and easily digestible human food.
- Providing new species and strengthening stocks of existing fish in natural and man-made water-bodies through artificial recruitment.
- Production of ornamental fish for aesthetic appeal.
- To understand effective utilization of aquatic and land resource.
- Recycling of organic waste of human and livestock origin.
- Providing means of livelihood through commercial and industrial aquaculture.

Production Technology:

A. Preparing the Pond

The optimum size of the pond is rectangular with size varying from 0.1 to 2.0 hectares with a depth ranging from 2.0 -3.0 meters.

B. Soil and water

The soil type in the pond and its fertility status very much in our country. However the best soil for the fish pond for the fresh water fishes especially the carps is alluvial soil with neutral pH ranging between 6.5 to 7.5. Though the soil type cannot be changed except in the long range plans, the pH has to be brought to neutral if the pond soil and water are saline, alkaline, sodic or acidic.

C. Aquatic weeds

Most of the aquatic weeds in the fish pond are undesirable. They not only take away the

nutrients but also upset the oxygen balance in the water by releasing carbon dioxide into the pond during the night. Aquatic weeds also obstruct the movement of fishes as well as the netting operations. The aquatic weeds may be free floating surface weeds, submerged weeds, rooted emergent weeds, marginal shallow water weeds and algae. All these weeds have to be eradicated.

D. Unwanted fishes

The unwanted fishes in the ponds may be predatory or weed fishes. They compete with cultured fish for feed, nutrients and space. These predatory and weed fishes can be eliminated through repeated netting of the pond. Another method of eradicating the above mentioned unwanted fishes is to drain out the whole water from the pond and eliminating all of them manually and refill the pond with water. In big fisheries the only effective method of eradicating the unwanted fishes is the use of fish toxicants.

E. Fertilizer Application in the Pond

Maximum fish production is achieved by the efficient soil and water management in the fish pond especially by maintaining the natural productivity of the pond. The natural productivity is maintained by the regular manuring and fertilizer application in the pond so that all essential nutrients for the growth of aquatic micro and small organisms (both plant and animal types) are supplied which directly or indirectly serve as feed for the fishes. Liming and manuring are the two main types of fertilization of the fish pond.

F. Selection and Stocking of Carps

About 15-20 days after the initial manuring selected species of the carps are introduced into the pond. When several species of fishes are reared together in the same pond in an intensive way it is called composite fish culture.

Depending on the number of species the ratio of the species will vary. Generally six carp species are reared together. They are: Catla, Rohu, Mrigal, Silver Carp, Grass Carp and Common Carp.

a. Stocking size

The survival of the fingerlings introduced into a particular pond depends very much on their size: bigger the size greater will be the survival rate and vice versa. The fingerlings stocked should have a size of 10 to 15 cm.

b. Time of stocking

If any toxicant material for the eradication of the unwanted fish has been used then stocking of the fish should be done only after the toxicant effect is completely over. Generally by two to three weeks the toxicant effect will be over. From the temperature point of view the best time to stock the pond will be- when the water in the pond is within the optimum range of 20 to 30centigrade. Obviously temperatures below 18o C and above 30°C will affect the growth of the fish. Hence stocking is avoided in winter and summer months.

G. Feeding of Carps

Feeds for the carps may be of two types: natural feeds and artificial feeds. The natural growth of flora and fauna in the pond can be increased by regular manuring. commercial fish rearing cannot be successful if one depends only on the natural feed generation. Hence supplementary feeding should be provided to the carps. The feeding of carps also is easier as they can be fed on most of the by-products like rice polish, wheat bran, oil cakes, vegetable wastes and other farm wastes.

H. Water Management

In the water management first of all proper depth of the water should be maintained always in the pond. An average depth of 6.5 to 10ft depth should be maintained in the case of six species composite fish culture. Care should be taken to avoid decomposition of large amount of organic matter at the bottom of the pond. In intensive fish culture such accumulation of organic matter is inevitable. It can be removed every year after draining out the water, from the pond.

1. Harvesting and marketing

Harvesting can be done either by partially draining water out of the pond through an outlet point, or by repeat netting. It is preferable when the fish attain an average weight of 750 grams, though common species can attain weight in excess of a few kilos. Farmers sell their catch in local markets. Fish is a perishable commodity and cannot be kept for a long period of time without proper arrangements of preserving them. Big farmers sell their catch to wholesalers, who pass it on to local suppliers from whom the retailers buy.

Principles of Prawn Farming:

Aquaculture is the farming of aquatic organisms such as prawns, fish, crustaceans, mollusks, and aquatic plants. Aquaculture involves cultivating freshwater and saltwater populations under controlled conditions, and can be contrasted with commercial fishing, which is the harvesting of wild fish. Successful aquaculture takes into consideration the biology of the aquatic species such as feeding, water flow and temperature needs, and disease prevention and engineering design like water source and water quality study, pond and tank containment systems, water filtration and aeration. Common products of aquaculture are catfish, tilapia, trout, crawfish, oysters, shrimp, and salmon, and tropical fish for aquariums.

A. Prawn Farming Pond

Prawn farming is a technique used in science to create many products using prawns . "Prawn-farming" is what aqua-culture is. Pisciculture or prawn farming is a process of breeding, raising, and transporting of prawns for domestic and commercial purposes. Prawn tops the list when it comes to healthy and nutritional food options as they are a rich source of proteins and other

Recommended feeding rate for shrimp based on body weight

Shrimp Live Body Weight (g)	Recommended Feeding Rate (% body weight/day)
2 – 3	8.0 - 7.0
3 – 5	7.0 - 5.5
5 – 10	5.5 - 4.5
10 – 15	4.5 - 3.8
15 – 20	3.8 - 3.2
20 – 25	3.2 - 2.9
25 – 30	2.9 - 2.5
30 – 35	2.5 - 2.3
35 – 40	2.3 - 2.1

C. Harvesting

Harvesting of fish means the complete removal of prawn from the pond at the end of production. A single stocking and a single harvesting are the common practice in existence. However, the technique of partial harvesting and restocking is now being practiced and has been found to yield better results in terms of prawn production per unit area. Bigger size prawns should be harvested and sold in batches and the pond should immediately be restocked with the same number of fishes of such species.



D. Market Potential:

Prawns are important commodity accounting for 19% of international seafood trade. India is becoming a leading country in aquaculture production and trade. There is rise in demand of dried prawns as there is growth in demand of ready to eat foods. With the rapid urbanization, hectic work schedules, nuclear families and increased number of working members of the family, there is evidence of healthy production of prawns and shrimp market. Rising health concern is also one factor boosting the growth of prawn market, health benefits of prawns include rich in omega 3 Fatty acid, improved brain and bone health. During covid period there is rise in consumption of prawns and shrimps due to the fact that it will help fight the diseases owing to the presence of antioxidants. Manufacturers are producing various prawns snack products such as chips, wafers and cracker. Prawn and shrimp snack industry is growing because of easy availability, long shelf life, nutrition as well as taste. Hence with increase in such product there is also increase in demand of dried prawns as they are used as raw material. Prawns are not just used in food industry but also in pharmaceutical and cosmetics industry. Prawn has carotenoid astaxanthin

which is used in anti-ageing and sunscreen by reducing ageing in the skin related to UV rays. Due to these properties manufactures are planning to use prawns in cosmetics products. The Indian Government is promoting sustainable farming practices to produce high-quality 'sustainable' in order to minimize the environmental effects of prawn & shrimp aquaculture. Moreover, the Seafood Exporters Association of India (SEAI) and the Marine Products Export Development Authority (MPEDA) are supporting the export of prawn products such as dried, especially for ready-to-eat and ready-to-cook products.

E. Benefits of Prawn Farming:

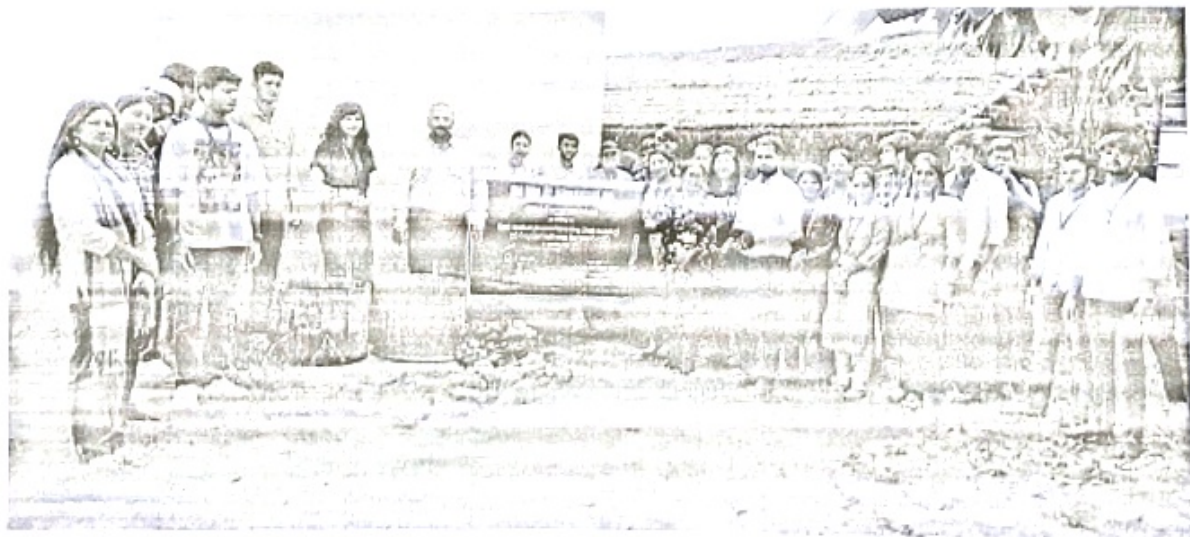
- Prawn farming does not require a lot of resources; a small concrete tank is enough to start with.
- The farmed prawn grows under supervision to increase their nutritional value. Therefore, the quality of this prawn is superior to the wild ones.
- There is a wide variety of prawn suitable for farming. Thus, the owners of the prawns can select the best kind of fish that will be profitable for them.
- People can transform any poor and infertile piece of land into a prawn pond and earn money.
- Demand for prawns is increasing with passing days. Therefore, people can start prawn farming by allocating some space to their existing farms. It will increase their income substantially.
- Prawn farming has low-risk factors as the fishes are under confinement. This makes sure that the outsiders cannot access the place and catch prawn.
- Since the prawn are safe in the prawn tanks, people do not need to catch wild prawn on a large scale. It helps in restoring natural ecosystems.
- Another importance of prawn farming is that it provides employment.

F. Outcomes:

Prawn farming /fish farming is a developing industry in India. Knowing a thorough knowledge about prawn industry is important to develop this industry. Although this is a one

month of training session I received lot of experience as well as exposure in prawn farming and fish farming. This training program helped to gained knowledge about prawn farm setup and monitoring. This report includes, brief introduction about the prawn industry, hatchery, prawn farming and prawn biology. So, through this training program I got massive and valuable opportunity to expose prawn farming and its management. As well as we gather big experience to our lives.

Geotag and Non-Geotag Photograph





Dr. K. K. K. K.