

**ADUSUMILLI GOPALAKRISHNAIAH & SUGAR CANE GROWERS
SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU**

An Autonomous College in the Jurisdiction of Krishna University, Machilipatnam

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DEPARTMENT OF ZOOLOGY

INTERNSHIP CONTENT & SYLLABUS

III BSC AQUACULTURE

2022-2023

INTERNSHIP PROJECT REPORT ON

**A Study on Fish species Cultured at Arugolanu Aqua Farms, Krishna District,
Andhra Pradesh with Special Reference to Genetically Modified Fishes**

**Submitted to
Department of Zoology**



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**In partial fulfillment for the award of Degree of Bachelor of Science in Aquaculture
(B. Sc. ABC)**

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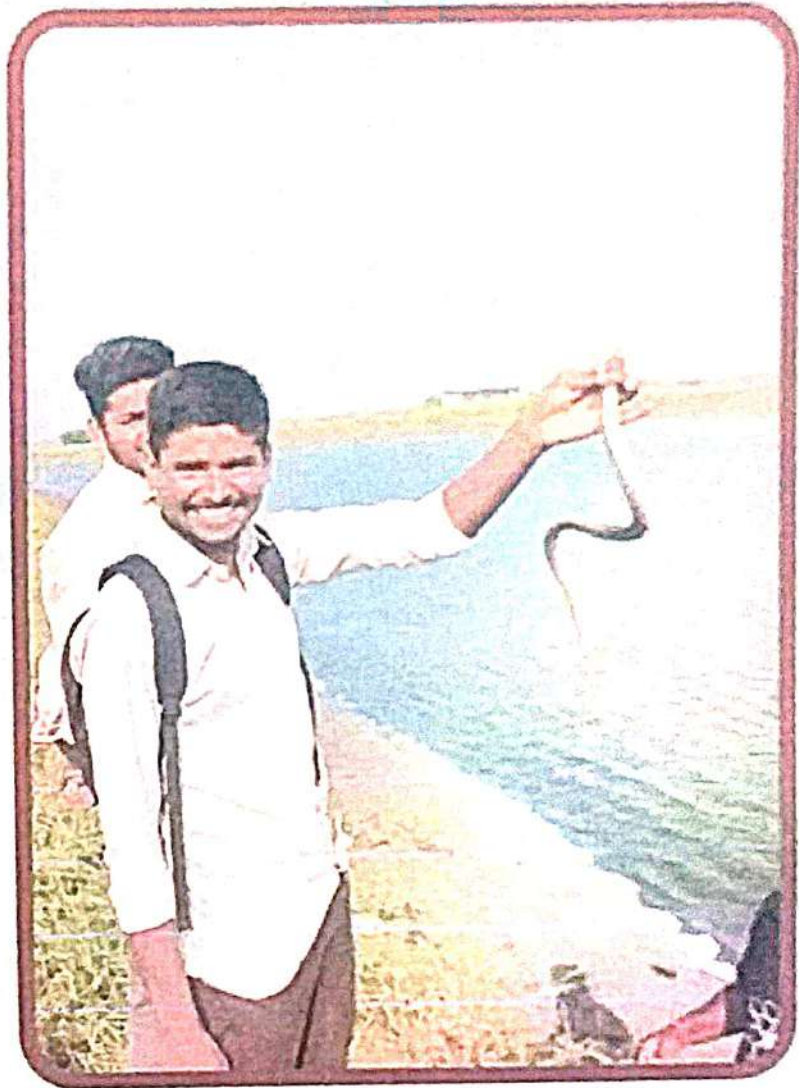
INTRODUCTION

Aqua culture is defined as the cultivation of aquatic plants and animals in environments like sea, river, lake or artificial environments [ponds, tanks] with marine, brackish or fresh water for feeding purposes obtaining bioactive compounds.

In this regard, it is important to note that aquaculture is not only intended to produce food but also bioactive compounds [anticancer essential fatty acids proteins etc.] through seaweed or sea cumpers farming or biofuels by micro algae culture fresh water fish farming was further developed during the by providing details on pond construction and management techniques the choice of species to form their diseases and their diet carp dominated the artificial ponds.

During the first five decades of the 20th century colonists introduced and then formed other species. During the 1970s marine species aquaculture enjoyed a revival thanks to new lighter more hard-wearing and less expensive building materials and the use of floating cages rather than expensive glasses and cast-iron salt-water ponds however this new facility turned out to be commercially non-viable and the optimization and stabilization of marine fish.

Production is a major concern in the following decade the start of the 21st century saw aquaculture take on the great importance worldwide according to a report on fishing and aquaculture by the food and agriculture organization of the united nations [FAO]in 2016 in terms of global production volume that of formed fish aquatic plants combined surpassed that of captured fisheries in 2013.



Observation



DISCUSSION AND CONCLUSION

Some classical genetic methods such as mass selection or family selection used to improve the productivity of common carp have produced poor results, hybridisation experiments were carried out based on the crossbreeding of different genotypes. The crossing experiments used different strains of cultivated common carp maintained in the live gene bank of the Fish Culture Research Institutes in different parts of the world.

Since 1965 more than 100 crossing combinations have been tested under different production conditions. For the most important quantitative characteristics such as survival, growth, feed conversion, slaughter value and quality of meat three outstanding hybrids had been identified.

Researchers examining this possibility concluded that hybridization of transgenic fishes with closely related species represents potential ecological risks for wild populations and a possible route for introgression of a transgene, however low the likelihood, into a new species in nature.

INTERNSHIP PROJECT REPORT ON

**A Study on Cultured Fish Species at Arugolanu Fish Farms, Bapulapadu
Mandal, Krishna District, Andhra Pradesh, their Demand and Market value**

**Submitted to
Department of Zoology**



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A Study on Cultured Fish Species at Arugolanu Fish Farms, Bapulapadu Mandal, Krishna District, Andhra Pradesh, their Demand and Market value

INTRODUCTION

Aquaculture Status in Andhra Pradesh

In recent decades, aquaculture has boomed in Andhra Pradesh. The State has become one of India's largest producers of farmed fish and shrimp. Among the reasons for the boom is a major expansion of inland aquaculture farms along rivers and canals where people once raised crops. Aquaculture ponds appear dark green when farmlands are converted, generally brown in coastal areas and with mangrove forests are lighter green. Nowadays Tilapia, Catla, Rohu & Pangus and other types of finned fishes are commonly raised in the farms. Shrimps like *Letopenaeus vannamei* and *Penaeus monodon* are cultured.

The Indian government established the first aquaculture ponds in 1970's around Lake Kolleru. Since then, the initial success at these projects has made aquaculture an appealing and profitable choice for many farmers in the region who regularly dealt with crops being flooded, the intrusion of salt into water used for irrigation and Bay of Bengal cyclones. The state of Andhra Pradesh accounts for about 70% of India's shrimp Production. Aquaculture being the fastest food production sector in world with an estimated production of about 170 million tons. The fish production from capture fisheries (96 million tons) is almost stagnant for many decades. The additional demand for fish consumption must be achieved only through aquaculture. The current fish production from aquaculture has increased from 44 million tons (2005) to 82 million tons (2018) and it is sharing almost 45% at total global fish production but this production level is not sufficient to fulfill the demand (FAO, 2020).

Aquaculture also called fish farming or mariculture the propagation and husbandry of aquatic plants animals and other organisms for commercial, recreational & scientific purposes. This includes production for supplying other aquaculture operations, for

providing food and industrial products for stocking spot fisheries, for supplying aquatic bait animals, for stocking free-fishing operations for providing aquatic organisms for ornamental & for supplying feedstocks to the pharmaceutical and chemical industries. Aquaculture has been in existence since at least 500 BC. However only since the mid-20th century it has assumed commercial importance. The rapid expansion of aquaculture is due to the production of relatively high priced species frequently consumed as fresh products. Examples are shrimp, crayfish, Prawns, trout, salmon & oysters. However, there is also an increase in production at catfish, carps and tilapia, which are reared in extensive low-energy systems.

Some of these fresh water fish are also utilized in aquaponics, a hybrid system that combines aquaculture with the hydroponic cultivation of plants. The fish wastes are used to feed the plants. The late 20th Century led to the economically successful aquaculture of lobsters. The growth of world aquaculture has been stimulated by a number of factors, including populations increase, dietary shifts, and advances in aquaculture technology. Limits to the natural supply of ocean resources have also encouraged a growing role for aquaculture in helping to meet increasing demands for fish and Shellfish.

Aquaculture can be conducted in completely artificial facilities built on land, as in the case of fish tank, pond's, aquaponics and raceways, where the living conditions are on human control such as water quality (oxygen), feed, and temperature. Alternatively they can be conducted on well sheltered shallow waters near shore of a body of water where the species are either cultured in cages, racks or bags and are exposed to more diverse natural conditions such as water current.

CONCLUSIONS

The aquaculture industry must work towards ways and means of efficiently managing and utilizing local feedstuff resources, such as by improving processing methods, increasing digestibility and nutritional value, extending shelf life and freshness, and by developing formulations specific for each species, culture system.

In the future, dual-culture practices will prevail in India. While large-scale commercial farming needs to be further developed, smallscale farming must not be allowed to suffer. A comparative study of these two sub-sectors is yet to be conducted. Marketing may be used as an effective tool to segregate production according to source and to sell the products in markets that serve different groups of consumers.

INTERN SHIP PROJECT REPORT ON

Study of Fish Pond Design and Lay out with Special Reference to Maintenance of Stocking Ponds and Fish Harvest at Arugolanu, Krishna District, Andhra Pradesh

**Submitted to
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Partial fish harvesting:

- When different age group of the fish species or different combination are reared together in pond, the fish are bound to manual to table size at different times.
- Partial harvest of pond should be done with appropriate mesh size.
- Matured fish can be selected for market sale or family consumption while undersized once should be return to the pond.



Advantages of partial harvesting:

- There is minimal waste water discharge into the environment with associated metabolites and waste products.
- The removal of layer stock from the system allows the smaller fish to increase in size more rapidly.
- There is no production time lost because the pond has not been completely drained.
- Bigger able to control the needs to the market place.
- A greener approach to water conservation.

CONCLUSION

Although pond culture still predominates, the use of raceways, tanks, cages, and recirculating system has increased. Regardless of the culture system, planning is essential for successful aquaculture. Next, the aquaculturist must completely understand the type of production facility being used. Each aquaculturist has to select carefully the best equipment for his or her facility and be knowledgeable in the use of the equipment. The design and lay out of the fish ponds help the aqua farmer to get higher yields in less area.

INTERNSHIP PROJECT REPORT ON

A Case Study on Semi intensive Practice of *Litopenaeus vannamei* (White Leg Shrimp) in External R&D Farm, Ramapuram, Nandivada Mandal, Gudivada, Krishna District, Andhra Pradesh

**Submitted to
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OBJECTIVES

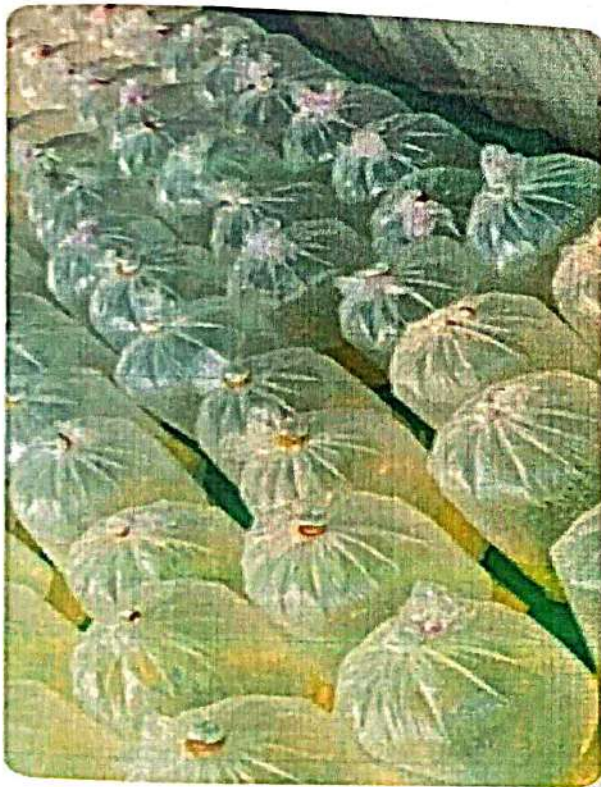
- The primary objective of all shrimp farmers is to develop an environmentally friendly shrimp farm and a 100% eco-friendly shrimp farm.
- To produce more yield per acre year.
- To use technology that could be developed in maintaining shrimp farm.
- To know about feed management practices that reduces FCR.
- To use SPF and SPR *L. vannamei* in Ramapuram ponds.
- The ponds used are mandatory to be lined with black 30 to 40 ml, high density polyethylene liners.
- More broadly the aim of shrimp culture production is to sustainably increase the supply and value of shrimp from culture systems enhancing earnings for farmers improving the socio-economic conditions of local communities in shrimp farming areas and increasing foreign exchange earning.
- To make a financial profit by the production of a marketable commodity.
- To grow shrimp in closed enclosures like ponds to marketable size by providing them feed, aeration, and maintaining a healthy environment.

transportation is longer than 6 hours, small bags of ice should be added into the boxes to reduce the water temperature and maintain it at 20-22°C.

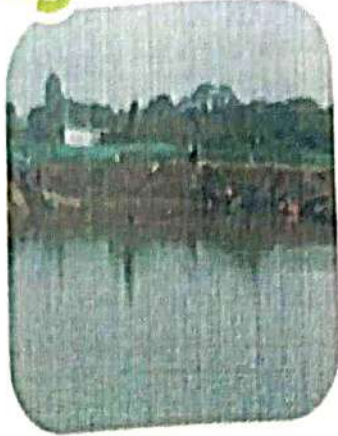
- ❖ The densities of PL in a bag are 1,000-2,000 seed/l for PL 15 and 500-1,000 PL/l for PL 20. The ideal time for transportation is in the early morning or evening to avoid excessively high temperatures during the day, unless a covered vehicle is used.

(2) Acclimatization:

- ❖ To eliminate stress, the seed should be maintained in water of constant salinity for at least is went prior to transfer. The adjustment of salinity by about 3 ppt daily is advisable. Acclimatization of seed to the water PH and temperature of the pond daily is must be rendered upon arrival.
- ❖ The techniques are used for gradual acclimatization of seed to the water conditions in the pond. The first method is accomplished by placing the seed and water from the transported bag into a tank at the side of a pond.



Harvesting at Ramapuram



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CONCLUSIONS

- There are vital factors to be borne in mind while selecting a site for the farming.
- There are 7 ponds at Ramapuram which are names as R1,R2,P1,P2,P3,P4,P5
- Water colours in these ponds are light green. Which indicates light green is plankton growth development.
- Water parameters are at optimum level as required for culture of shrimp, so the site selected is much suitable for shrimp culture.
- Budamerru canal, a water source for our farms is prone to floods from Krishna River, but our farms didn't receive any flood waters till now as this streaks about 68km away from the main Krishna river.
- The topography of our ponds is well suited for shrimp culture.
- The transport facility is good for our ponds. The transport vehicles will stop at a distance of 400m from the farms from this location we carried prawn seed and feed to the original location.
- There is uninterrupted power supply through 82 kilo watts generator capacity.
- The inlet of the ponds is separate for each pond. There are 6 main pipes connected to a central pipe.
- A bird fencing and nets are present.
- Bio-Security measures are strictly followed in our ponds.
- Before entering the ponds, one has to wash their hands & legs with 0.1% KmnO_4
This solution is also prepared by us as at the site.
- Godrej feed is used at the farm.
- As there is transport facility L.Vennamei is marketed at regular timings.

INTERNSHIP PROJECT REPORT ON

A Case Study on Culture of *Litopenaeus vannamei* (Pacific White Leg Shrimp) at Arugolanu Aqua Farms, Krishna District, Andhra Pradesh with an account on Harvesting and Transportation

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INTRODUCTION

Shrimp farming in India, till 2009, was synonymous with the mono culture of tiger shrimp, *Penaeus monodon*. About 1, 90,000 ha brackish water area have been developed for shrimp culture in the country. Since 1995 culture of *P. monodon* is affected by White Spot Syndrome Virus (WSSV) and the development of shrimp farming has been stagnant. Most of the South East Asian countries like Thailand, Vietnam, and Indonesia were also culturing *P. monodon* and since 2001-02 onwards most of them have shifted to culture of exotic White leg shrimp, *Litopenaeus vannamei* because of the availability of Specific Pathogen Free (SPF) and Specific Pathogen Resistant (SPR) brood stock. In India, Pilot-scale introduction of *L. vannamei* was initiated in 2003 and after a risk analysis study large-scale introduction has been permitted in 2009.

L. vannamei in Andhra Pradesh

For over 25 years *Penaeus monodon* was the mainstay of Indian aquaculture but since *Litopenaeus vannamei* introduction in 2009, its production and culture area has gradually decreased and that of *Litopenaeus vannamei* has increased in India especially in Andhra Pradesh.

Potential for development of L. vannamei culture

The production of *L. vannamei* shrimp is concentrated in East Godavari, West Godavari, Krishna, Prakasam and Nellore state districts. Andhra Pradesh produces more than half of the country's farmed shrimp and still has a lot of potential to exploit this resource by expanding culture to low salinity waters and through the rehabilitation of abandoned farms in Krishna district. Currently, Srikakulam (the northernmost district of the Andhra Pradesh Coastline) is considered as the 'sunrise' of the state's shrimp farming.

Challenges for sustainable L. vannamei farming

The growth of *L. vannamei* in the state has been impressive but for further expansion and sustainability the main issue is the lack of availability of quality seed from Specific Pathogen Free brood stock. By 2015, in Andhra Pradesh the CAA has given permission to 192 *L. vannamei* hatcheries and the Government of India permitted 17 hatcheries for nauplii rearing in facilities outside the jurisdiction of the CAA. For the last couple of

years, *L. vannamei* farms started to develop their own brood stocks from grow out ponds and began producing seed; these seed are sold in the market as SPF and due to the lack of proper testing facilities is impossible for farmers to know the real quality of the seeds. Disease outbreaks are another issue that *L. vannamei* farming is facing nowadays; they have increased the economic risks and slowed the industry's development. The White Spot Syndrome Virus (WSSV) and Yellow Head Virus (YHV) resulted in catastrophic losses in Asian and Latin American shrimp farms. However, no major disease outbreaks have been registered in Andhra Pradesh.

White Spot Syndrome Virus (WSSV), White Faces Syndrome (WFS), Loose Shell Syndrome, Black Gill Disease (BGD), Running Mortality Syndrome (RMS) and White Muscle Disease (WMD) are the most common diseases that have affected *L. vannamei* in Andhra Pradesh. And most recently, Enterocy to zoonhepatopenaci (EHP) which does not cause mass mortalities but has been shown to reduce growth. Globally, the feed prices are gradually increasing as a consequence of the rise of raw materials and fishmeal price hikes and Andhra Pradesh shrimp producers are resenting this situation, reflected in the increment of their operational costs.

In Andhra Pradesh, small farm holdings are the most common. Price fluctuations and the lack of information on international prices and demand have generated economic losses for small-scale producers. The uncertainty of market prices has made farmers unable to buy high quality feed, which is very costly. In addition, the quality of more economical feed is often unknown and has to be tested but there is a dearth of technical manpower and laboratories. The shrimp farming industry in the region has been consolidated over the years, but to achieve sustainability it is necessary to increase the Aquatic Quarantine Facilities (AQF) and create more SPF brood stock and nauplii rearing centers.

CONCLUSION

Shrimp survival and growth rates in this region are impressive considering the dimensions of the ponds, stocking densities and lack of water exchange.

However, while presently these ponds are showing better than average results despite minimal biosecurity and water management more attention will be required in the future to ensure strict biosecurity and best management practice. It is also essential that extensive training programmes are offered to farmers to maintain the sustainability of the industry.

The potential of shrimp culture in Andhra Pradesh is extraordinary; it generates a great number of direct and indirect jobs in the region, represents a great opportunity for rural development and brings a significant economic impact. Thus, it is important for all shrimp farmers to practice responsible aquaculture by only purchasing seed from authorized hatcheries, implementing strict biosecurity protocols and following strict quarantine measures and best management practices in culture systems. This way crop losses will be reduced, as well as the risk of disease outbreaks. Andhra Pradesh has the possibility to become an aquaculture hub in India, that's the reason why the State government has considered incentives and subsidies to foment aquaculture and its sustainability.

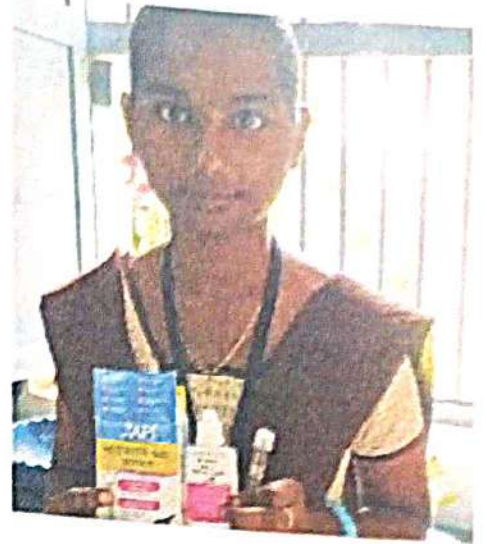
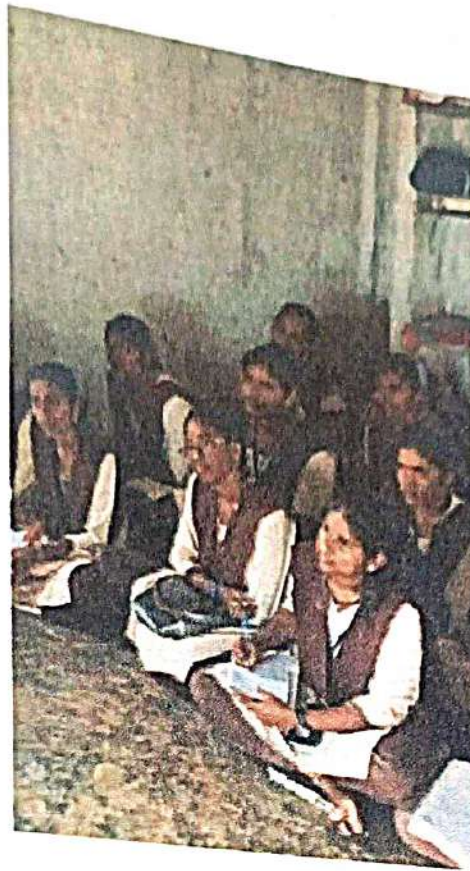
FEED MANAGEMENT

Protein requirement varies between 25 to 40% depending on the density. Marine source protein was more effective than plant source. Lipid requirement is around 6-8% with 2% marine unsaturated fatty acids and 0.25 to 0.4% of cholesterol. Feeding rate is between 6.6 to 16% for 1 gm of shrimp which will be reduced to 2% for 15 gm shrimp. Optimal feeding frequency is between 2 and 6 in a day with maximum percentage of feed distributed in the evening and night rations. Check trays are used to monitor the feed consumption and the feeding ration is adjusted accordingly. FCR levels of 1.1 to 1.4 are expected.



CHECK TRAYS

- Check trays are typically used to avoid overfeeding in aquaculture production systems.
- We are having five ponds and they are named p1, p2, p3, p4, p5. we installed two check trays in each pond check tray-a and check tray-b .
- The use of check tray prevents feed wastage.
- The feed can be increased or decreased by observing the amount of feed consumed by the shrimp in the check trays.



INTERNSHIP PROJECT REPORT ON

A Study on the Feed Management and its Effect on Life Cycle of *Litopenaeus vannamei* at Arugolanu Aqua Farms, Krishna District, Andhra Pradesh

**Submitted to
Department of Zoology**



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**A Study on the Feed Management and its Effect on Life Cycle of *Litopenaeus vannamei*
at Arugolanu Aqua Farms, Krishna District, Andhra Pradesh**

INTRODUCTION

Shrimp farming is one of the most rapidly expanding aquaculture sectors in Asia, China and India. *Litopenaeus vannamei* is a decapod crustacean which is native to the Eastern Pacific Coast of Central and South America from Tumbes, Peru in the South to Mexico in the North.

It has been introduced widely around the world since the 1970s but especially since 2000, as it has become the principle cultured shrimp species in Asia. *Litopenaeus vannamei* has been anthropogenically introduced as an aquaculture species to several area of the world wide to which it is not native (eg- USA, Brazil, various Caribbean and pacific Islands, China, India etc). *Litopenaeus vannamei* has also been cultured in indoor recirculating aquaculture system (RAS).

SHRIMP CULTURE IN INTERNATIONAL WIDE

Top three countries in shrimp culture: -

- 1.China
2. India
- 3.Thailand

India's position in shrimp culture: -

India is the second largest country in shrimp aquaculture production in the world. Shrimp now make for 67% of India's seafood exports of \$7.8 billion according to the sea food exports association of India.

In 2009-10 they formed a minuscule percentage. Around 45% of the shrimp exports is to the united states followed by China the European Union and Japan.

SHRIMP CULTURE NATIONAL WIDE

Land:

India's shrimp farming area is around 160,000 hectares. Shrimp now make for 67% of Indian sea food exports of \$7.8 billion according to the sea food exports association of India. In 2009-10 they formed a minuscule percentage. Around 45% of the shrimp exports.is to the united states followed by China the European Union and Japan. India's shrimp farming area is around 160,000hectares.

Shrimp culture in India: -

- In the seventy's fishermen started concentrating on counting prawns more commonly known as shrimp due to high profitable return on the same on account of their export value.
- Brackish water prawn farming started in a big way during 2091-94 especially in the costal district of Andhra Pradesh and Tamil Nadu water temperature 26-32°C water parameters; optimal level.
- A major step towards large scale shrimp aquaculture took place soon after the first use of brackish water farming was demonstrated in West Bengal by the central inland fisheries institute under the India Council of Agriculture Research (ICAR) IN 1973.

Growth rate for shrimp in India:

1. Weekly growth rate will be 1.5g other aspects are same that of the tiger shrimp.
2. The *L. vannamei* shrimp attain 20-25kg size within 90-120 days depending on the stocking density.

Top three States in India: -

- West Bengal
- Orissa
- Andhra Pradesh

Position of Andhra Pradesh in shrimp culture: -

- Andhra Pradesh is the third state in shrimp aquaculture production in the country.
- Even as seafood growth is expected to slow down to 17% during 2019-20 from 20% recorded during the past two years.
- *L. vannamei* exports from Andhra Pradesh will make the state a leading hub for aquaculture exports.
- Andhra Pradesh, specifically; the Krishna, West Godavari and East Godavari districts, account for 25% of the country aquaculture. It leads in shrimp farming, with production of over 300,000 tonnes of pacific whittail or vannamei in 2018.
- The state leads in seafood exports, with shrimp accounting for close to 95% of exports.

Land for shrimp culture in Andhra Pradesh

- In the past few years, thousands of such ponds have come up in East Godavari district and many of them are illegal.
- Shrimp rearing in water that is more saline than sea water is called brackish aquaculture.
- Apart from East Godavari, three other districts-West Godavari, Krishna and Guntur- contribute almost 75% of the shrimp production in the region.
- The state with the largest area under brackish water area in the state increased from 20,000 to 56,009 ha, according to the data from the fisheries department.
- The official adds that the current area under illegal brackish water in the state is more than 1,00,000 ha.

Growth of shrimp culture in Andhra Pradesh: -

- The vanammei shrimp attain 20-25g size within 90-120 days depending on stocking density.
- As it lives in water column, majority of the stock is harvested by cast netting and drag netting which reduces overcrowding and stress
- Production of 6-10 ha can be obtained with a survival rate of 80%.

Area of Andhra Pradesh under cultivation:

West Bengal--- 34,660

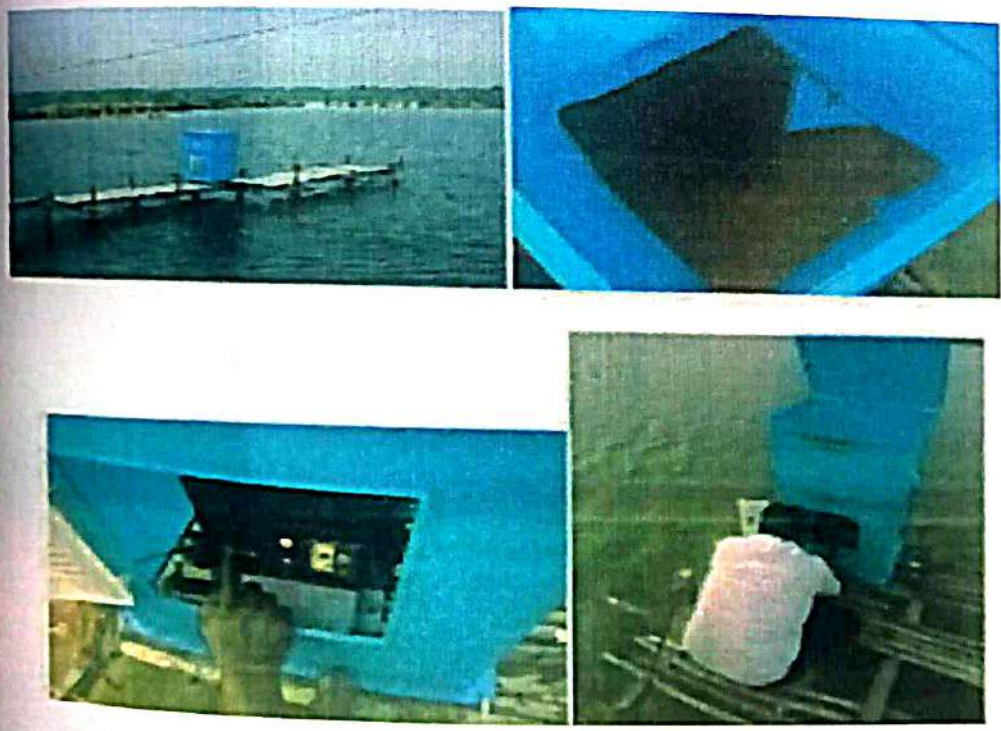
Orissa-----11,000

Andhra Pradesh—50,000

followed for every 10 to 14 hours a day on usual food which includes feeding during night time is most advisable. The DO value will drop in the night time so it is desirable to add DO drops.

Care must be taken by the farmers to consider shrimps health and regular monitoring is important in controlled percentage in order to increase the growth and viability, without over feeding. Such requirements are so called as automatic feeders for controlled in time by varying the feeding system that can affects the growth of the shrimps. Almost all the shrimp farms, the feeding is completely by hand and it's a time-consuming process. The difficulties arise for shrimps by receiving diseases from unrestrained quantity of feeds, resulting to harmful harvests.

The arrangement is insensible in terms of provision in the feeds, with respect to time. It will allow adaptable feed quantity and period helpful in perpetuation of the shrimp's health because little portion of feeding at planned intervals and exact feeding at suitable times. It will also avoid the over spoiling by discharging the right amount of food, at programmed times and assures well fed, healthy shrimps. Hence, the current investigation was aimed to assess shrimp performance fed with using automatic feeder and boat feeding ponds.



CONCLUSION

The Project work was conducted to evaluate the growth performance of shrimp at various feeding level and to approximate the contribution of natural productivity to growth by decreasing feeding inputs below the standard feeding Rate.

Result of this is to demonstrate the importance of optimizing shrimp feed management by evaluating shrimp growth response and feed Conversion ratio across a range of inputs.

- Farmers almost always use manufactured compound aqua feeds, and very few utilize
- supplemental feeds such as trash fish, small shrimp, or used fertilizers to enhance the natural productivity of the culture systems.
- Results indicate that feeding Shrimp with the standard feeding rate leads to an increased growth.
- The compound aqua feeds that were used had a protein content of 36-42 percent.
- The protein content of these feeds is higher than that required by the species.
- The development and use of compound aqua feeds has been a major factor in the global expansion of shrimp farming, and efficient feed management is critical to maintain and improve the financial and environmental viability of the industry.
- There is still much potential to improve and optimize responsible and efficient feed management practices that can be species specific, area specific and even season specific, to optimize production efficiency, minimize environmental impacts, promote maximum biosecurity, and promote cost-efficiency and profitability.
- Phase-to-phase feeding programmes must be designed to target the best feed nutrient profile and feed presentation at a specific culture stage, environmental and rearing condition.
- Culture challenges such as disease, poor water quality, and high stocking densities can be minimized with the proper feed design.

- On the other hand, feeds must be aligned to account for the availability of natural food in ponds in order to spare critical and expensive nutrients, such as proteins, vitamins and minerals.
- There were no significant differences in survival, ranging from 93.9-96.9%.
- Growth results indicated that at the end of the culture period, shrimp fed with the maximum feeding level had significantly higher shrimp biomass gain than with shrimp fed with less of the standard feeding rate
- Choosing an effective feeding practice requires understandings of biological aspects of culture species and economic changes associated with each type of feeding strategies.
- Hence, selection of feed management strategies will depend on the financial status and outcome expectancy of each farm
- As feed management is critically linked to growth, survival and economic returns, more research should focus on feed management and its influence on production and economic efficiency for this species
- Shrimp weekly gain was significantly higher in treatments than those fed with less standard rate.

INTERN SHIP PROJECT REPORT ON

A Study on Pre-Stocking Management Practices at Arugolanu and Pedalingala Fish Ponds, Krishna District, Andhra Pradesh, for High Yield & Economic Profits

**Submitted to
Department of Zoology**



Submitted by

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(B. Sc. ABC)**

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**A. G & S.G. SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE, VUYYURU
(An Autonomous college in the jurisdiction of Krishna University)
Accredited by NAAC with "A" Grade**

**2022-2023
November 1st 2022 to 16th February 2023**

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A Study on Pre- Stocking Management Practices at Arugolanu and Pedalingala Fish Ponds for High Yield and Economic Profits.

INTRODUCTION TO AQUACULTURE

Aquaculture is the farming of aquatic plant and animals in controlled environments. The culture and harvest of aquatic animals & plants usually for food and fiber, is also called water farming. It is the controlled cultivation of aquatic organisms such as fish, crustaceans, molluscs, algae and other organisms of value such as aquatic plants. Aquaculture involves cultivating freshwater, brackish water and salt water populations under controlled semi natural conditions, and can be contrasted with common fishing, which is the harvesting of wild-fish. Mariculture, commonly known as marine farming refers specially to aquaculture practice in seawater habitats and lagoon, opposed to in freshwater aquaculture. Pisciculture is a type of aquaculture that consist of fish farming to obtain fish product as food. Aquaculture can also be defined as the breeding, growing, and harvesting of fish and other aquatic plants, also known as farming in water. It is an environmental source of food and commercial product which help to improve healthier habitats and used to reconstruct population of endangered aquatic species. Technology has increased the growth of fish in coastal marine waters and open oceans due to the increased demand for Seafood.

Importance and It benefit of Aquaculture

Accounting to research by National Ocean Service the Aquaculture as the process of breeding, rearing, and harvesting of aquatic creatures including fish, shellfish, algae and other marine organisms in types of water atmospheres. With the increased demand of Seafood delicacies worldwide and technologies advances, it has become possible to grow food in coastal marine waters and the open ocean. Aquaculture, to be more precise, is skillful process of nurturing aquatic organisms for human consumption. It goes in the same line to agriculture, it we replace plants to live stock with fishes. Studies proved that

aquaculture has brought immense positive impact on the global food production industry. Some of the amazing benefits of aquaculture are mentioned below.

1. Rich source of micronutrients and animal protein.

Aquaculture (on fish farming) is considered as a great source of protein. Fish fulfills the day today necessity of animal protein to more than 1 billion people worldwide with poor resources which is a product of aquaculture. Micronutrients, found in fishes, also impact for proper cognitive and physical development of children. Thus, aquaculture helps in overall development of people worldwide.

2 It conserves the aquatic population:

Aquaculture helps in preserving the population of wild aquatic plants and other organisms by averting the extinction of such species which is caused by Unrestrained mistreatment.

3 A nurturer of biodiversity and ecosystem

It is another great benefit of aquaculture. The techniques of aquaculture have resulted the discovery of ways in which diverse aquatic organisms and plants can coexist naturally. Thus, aquaculture helps in decreasing environmental waste and augment the proper functioning of the ecosystem.

4 Employment opportunities.

Aquaculture also brings various career opportunities. As an emerging field of Career, aqua farming will create ample Job opportunities. To sum up the aquaculture is an emerging industry for fish farming and Aquatic fertilization.

Observation of fish



CONCLUSION

The aquaculture industry must work towards ways and means of efficiently managing and utilizing local feed stuff resources, such as by improving processing methods, increasing digestibility and nutritional value, extended shelf life and freshness, and by developing formulations specific for each species culture system.

INTERN SHIP PROJECT REPORT ON
Semi intensive Practice of *Litopenaeus vannamei* (White Leg Shrimp) in External R&D Farm, Ramapuram, Nandivada Mandal, Gudivada, Krishna District, Andhra Pradesh.

Submitted to
Department of Zoology



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Check tray at Ramapuram



Shri G. Srinivas Reddy, ICRAR



SAMPLING AT RAMAPURAM PONDS



Harvesting at Ramapuram



CONCLUSIONS

- There are vital factors to be borne in mind while selecting a site for the farming.
- There are 7 ponds at Ramapuram which are names as R1,R2,P1,P2,P3,P4,P5
- Water colours in these ponds are light green. Which indicates light green is plankton growth development.
- Water parameters are at optimum level as required for culture of shrimp, so the site selected is much suitable for shrimp culture.
- Budamerru canal, a water source for our farms is prone to floods from Krishna River, but our farms didn't receive any flood waters till now as this streaks about 68km away from the main Krishna river.
- The topography of our ponds is well suited for shrimp culture.
- The transport facility is good for our ponds. The transport vehicles will stop at a distance of 400m from the farms from this location we carried prawn seed and feed to the original location.
- There is uninterrupted power supply through 82 kilo watts generator capacity.
- The inlet of the ponds is separate for each pond. There are 6 main pipes connected to a central pipe.
- A bird fencing and nets are present.
- Bio-Security measures are strictly followed in our ponds.
- Before entering the ponds, one has to wash their hands & legs with 0.1% KMnO_4
This solution is also prepared by us as at the site.
- Godrej feed is used at the farm.
- As there is transport facility L.Vennamei is marketed at regular timings.