



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(5): 475-480
© 2023 TPI
www.thepharmajournal.com

Received: 08-02-2023
Accepted: 10-03-2023

Ramesh Pamula
Fisheries Field Officer,
Hanamkonda, Telangana, India

Dr. M Kumara Swamy
Faculty of Economics
Department, KU, Telangana,
India

G Bhasker
Professor, Department of
Economics, Kakatiya
University, Warangal,
Telangana, India

Nur Mohammed Mollah
Fisheries Extension Officer,
Matiali Development Block,
West Bengal, India

Satyanarayana Boda
Department of Fishery
Economics and Statistics, FFSc,
WBUAFS, Kolkata, West
Bengal, India

Podili Venkateswarlu
Department of Fishery
Economics and Statistics, FFSc,
WBUAFS, Kolkata, West
Bengal, India

Corresponding Author:
Ramesh Pamula
Fisheries Field Officer,
Hanamkonda, Telangana, India

Management of fish seed and prawn juveniles supply in Telangana state: A study

Ramesh Pamula, Dr. M Kumara Swamy, G Bhasker, Nur Mohammed Mollah, Satyanarayana Boda and Podili Venkateswarlu

Abstract

India is one of the largest fish producing county in the world after China and Indonesia and shares 7.58% to the global production, contributing 1.24% to India's gross value added (GVA) and 7.28% (2018-19) to the agricultural GVA, fisheries and aquaculture contain to be an important source of food, nutrition, income and livelihood to millions of people. Fisheries sector in India has shown impressive growth with an average annual growth rate of 10.88% during the year from 2014-15 to 2018-19. This sector provides livelihood to about 25 million fishers and fish farmers at the primary level and twice the number along the value chain. Fish being an affordable and rich source of animal protein, is one of the healthiest options to mitigate hunger and nutrient deficiency. The present study on Management of Fish Seed and Prawn Juveniles supply in Telangana State – A Study has been undertaken to highlight the emerging issues for the development of fisheries sector with special reference to the utilization of available natural resources and seed supply management and the arising problems to produce and supply the fish and prawn seed within the state to the maximum possible extent. Therefore it is a modest attempt to study on the management of opportunities and challenges to develop the seed production in available resources.

Keywords: Nutrition, value added, global production, natural resources, fish seed

Introduction

Many countries in the world adopting effective strategies to develop the aquaculture to increase the share in their GDP and also per capita consumption of fish. The Global aquaculture alliance editorial manager James Wright has focused many blue dimensions of aquaculture to meet the growing demand of fish consumption. The demand on aquaculture will not only be on the quantity but also on the quality safety and species diversity of the fish produced. This can be achieved through expansion, intensification and by improving the efficiency while utilization of resources, adopting the scientific technologies and innovative techniques, with a greater emphasis on minimizing the environmental impacts. Global aquaculture has expanded at an average annual rate of 8.9 percent since 1970 making of the fastest growing food sector. It is a well-established fact that most of the non-vegetarians and even vegetarians prefer fish because its nutritional importance and health concerned issues. Global food production amounted to 177.8 million MTs in 2019 and it is projected to reach above 200 million MTs in 2029 because fish is becoming one of the most widely consumed foods in the world.

India is one of the largest fish producing county in the world after China and Indonesia and shares 7.58% to the global production, contributing 1.24% to India's gross value added (GVA) and 7.28% (2018-19) to the agricultural GVA, fisheries and aquaculture contain to be an important source of food, nutrition, income and livelihood to millions of people. Fisheries sector in India has shown impressive growth with an average annual growth rate of 10.88% during the year from 2014-15 to 2018-19. This sector provides livelihood to about 25 millions fishers and fish farmers at the primary level and twice the number along the value chain being an affordable and rich source of animal protein is one of the healthiest options to mitigate hunger and nutrient deficiency.

Telangana Government has been initiating a development plan to increase the fish production and productivity by providing backward and forward linkages to relevant markets, ensuring self-sufficiency in fish seed production, improving the livelihood conditions of fishers, and ensuring the availability of hygienic fish to consumers at affordable prices.

Aquaculture is among the fastest growing sectors in terms of generating income and employment. In fact after Karnataka and Tamil Nadu, Telangana ranks 3rd in terms of inland fishery resources and 8th in terms of overall fish products in the country. This sector currently supports the fisher community of 35.00 lakh persons. This includes 3, 50,533 active fisher men and women who are organized into fisheries cooperative societies for their overall wellbeing and benefit. There are 4,908 fisherman societies with 3, 50,533 numbers spread over the entire state. The production of fish in 2020-21 is estimated as 3.37 lakh m. tonnes with worth of Rs. 4,844.67 crores.

Total water spread area of Inland water bodies (which includes No. of reservoirs 98 and tanks 34,773) spread over 9.40 lakh Ha. These includes 1618 aquaculture ponds spread over 9800 Ha, and river and canals running a length of about 4818 km. and also with construction of new irrigation projects like Mega irrigation projects and Mission Kakatiya programmer which leads to formation of additional area of 0.9 lakh Ha., thus total area will gone up. The present fish yield is very low to the tune of about 350 kg/ha in spite of their higher production potential of 1000-1250 kgs/ha due to several reasons/constraints.

Further, Culture based Capture fisheries & Aquaculture being recognized as the sunrise sector for meeting the growing demand of the State in years to come, both horizontal and vertical expansion of inland fisheries & land based Aquaculture are being envisaged as flagship programme and also State water bodies have immense potential for fish production, however, the potential of these bodies for fish is yet to be tapped in this direction, it is essential need to bring more management strategies and plausible interventions for holistic fisheries development, so as to provide gainful employment to the fishermen community, fish farmers and also to supply hygienic fish food to the public at large.

Methodology

At this juncture the present study on Management of Fish Seed and Prawn Juveniles supply in Telangana State – A Study has been undertaken to highlight the emerging issues

for the development of fisheries sector with special reference to the utilization of available natural resources and seed supply management and the arising problems to produce and supply the fish and prawn seed within the state to the maximum possible extent. Therefore it is a modest attempt to study on the management of opportunities and challenges to develop the seed production with its own resources. The study has been undertaken with the following objectives.

1. To study the present status of fisheries development in India and Telangana.
2. To explore the available natural and human resources in the state of Telangana to the fisheries sector.
3. To discuss the production and distribution of fish seed in the state.
4. To explain fish production, value of production and the Government expenditure and utilization of water bodies for the seed production and supply of seed in the state.
5. To suggest some policy measures to overcome the problems to establish seed production units in Telangana state

This study is based on field study observations, reports, discussion with fishermen community, public representatives, research scholars and the relevant data is also collected from the websites, socio-economic outlook Telangana 2020 and various articles published in National and International journals, newspapers, etc.

The following tables clearly explains about the status of fisheries development for the last 5 years period on various aspects of the fish seed production and prawn juveniles supply to the available water bodies in Telangana State. What are the aspects which should be examined for the sustainable development of fisheries in Telangana and what are the loopholes which are observed in the field study are also identified to overcome the emerging problems of the fish seed production, and budget allocation to strengthen the fisheries sector to create multi-dimensional employment opportunities to the younger generation and to legged have a better, healthy and more comfortable living of the common people.

Table 1: Particulars of Water Spread Areas in Telangana

Sl. No.	Type of Water bodies	NOS.	Total Water Spread Area (T.W.S.A.), (in Ha.)
1.	Reservoirs	82	2,02,136
2.	Tanks		
a)	Departmental Tanks > 100 acres ayacut	4,647	3,04,160
b)	Gram Panchayath tanks < 100 acres ayacut	24,574	2,69,293
	Total	29,303	7,75,589

Source: Government of Telangana, Fisheries Department, 2021-22.

Telangana State has possessed vast and potential natural resources particularly the availability of fresh water in the form of tanks / ponds (both seasonal and perennial), reservoirs, rivers and canals is plenty for the growth of fish production with suitable climatic conditions. The total water spread area in 29,303 water bodies consists of 7, 75, 589 Ha of water spread area. Among these the highest number of water bodies 24,574 are under preview of Gram Panchayat tanks with 2, 69, 293 the water spread areas followed by departmental tanks about 4647 with water spread area of 3,04,16 Ha. The water spread area about 2, 02,136 Ha in 82 reservoirs will be available for the growth of fish production. The Grama Panchayat tank if the tanks more than 100 acres

ayacut will have the feasibility of change from G.P. to departmental preview for effective management of the fisheries production. In addition to the above said irrigation sources. There are certain water bodies earmarked by the irrigation department for the development of fisheries which are not identified by the fisheries department may be added to the existing water spread areas. Still there are 2226 aqua culture ponds covering 3500 Ha and spread over of 4818 kms long canals and rivers.

Thus, the water spread areas under different sources will be more useful and suitable for the growth of fish and fish products in Telangana state. These water sources also useful for the marketing of fish products to the different places and

also useful for the development of allied activities to generate more income to the fisherman community as well as common people also.

Table 2: Particulars of fish seed and prawn juveniles supply in Telangana

SL. No.	Variety	Nos.	Supply Price (Rs.)
1.	Fish 80 – 100mm (finger lings) Fish 35 – 40mm (fry)	75 crores	72.00 Cr.
2.	Prawn Juveniles	6.47 crores	16.82 Cr.

Source: Government of Telangana, Fisheries Department, 2021-22.

The supply of fish seed and prawn juveniles particulars are presented in the table. All these supply process will be carried out through Government Tender Process for the stocking of fish finger lings (80 – 100 mm size) in perennial tanks and reservoirs, distribution of fish seed (35 – 40mm size) in seasonal tanks. Stocking of prawn juveniles in all reservoirs and selected perennial tanks. During 2021-22 period, the Government of Telangana through tenders has distributed the 75.30 crores fish seed (35 – 40mm and 80 – 100 mm size) in 23,114 water bodies with spending of Rs.72.0 crores. The stocking of prawn juveniles 6.47 crores in 182 water bodies with an expenditure of Rs.16.82 crores.

It is observed from the field data, interaction with the Fishermen Co. op. Society members and the public

representatives that the tender process will be managed by contractors from Andhra Pradesh and capturing the benefits from the tender process in the supply of fish seed. Only few contractors from Telangana are also participating in the tender process and getting 40 percent of tenders to supply the fish seeds are in their hands. Even Telangana contractors do not have sufficient fish ponds for the seed production units, ultimately they are depending on the Andhra contractors to supply the fish seed. In case of the supply of prawn juveniles, there is no single contractor from Telangana to participate in the tenders. Andhra contractors got tenders with their managerial efficiency and manipulations 100 percent tenders captured by Andhra Contractors. Some of the studies also pointed out that there is a middlemen exploitation is going on the fisheries development process which is one of the most dangerous situations and negative impact on the income generation of the fishermen community. Therefore, there is a need to plan for the welfare of the fishermen community as well as for the development of the fisheries to generate more revenue to the government and to provide employment opportunities to the many.

The following table explains the particulars of free distribution of fish seeds and prawn juvenile seeds in the available water bodies in Telangana state. The expenditure on the distribution, production and the value of production of fish and prawn during 2016-17 to 2021- 22 in Telangana state.

Table 3: Particulars of Fish Seeds Distribution, Expenditure and Production

Year	Water Bodies (Nos.)	Seeds Distribution (in cores)	Expenditure (in cores)	Production (In Tons)	Production Value (in cores)
2016-17	3,939	27.85	22.46	1,93,732	1,356.12
2017-18	11,067	51.08	44.60	2,62,252	1,993.11
2018-19	10,776	49.15	42.95	2,84,211	2,358.95
2019-20	15,715	64.08	46.63	2,99,869	2,698.82
2020-21	17,684	66.87	51.80	3,37,117	4,844.67
2021-22	23,114	75.30	72.00	3,76,142	5,410.96

Source: Government of Telangana, Fisheries Department, 2021-22.

Government of Telangana has started free distribution of fish seeds and prawn juvenile to increase the production with the maximum utilization of water resources in Telangana so as to increase the income and standard of living of fishermen community during 2016-17 fish seed distributed about 27.85 crores with the expenditure of Rs.22.46 crores by using 3939 water bodies. The production of fish in this year registered as 1, 93, 732 tones with the value of production is Rs.1356.12 crores. From 2016-17 onwards the distribution, expenditure, production and the value of production has been increasing with more number of water bodies, except 2018-19, even

though the number of water bodies and distribution of fish seed is marginally less but the production and the value of production is increased from the previous year. During 2021-22 the distribution of fish feed is 75.30 crores in 23,114 water bodies, with spending of Rs.72.00 crores production and value of production is observed as more than 3, 50,000 tones and more than Rs.5000 crores. There is a positive result with the initiation of Government of Telangana to increase not only the production value but also the income levels of the fishermen community. The water bodies covering small, medium and large scale tanks and the reservoirs.

Table 4: Particulars of Prawn Juvenile Distribution, Expenditure, Production and Value of the Production

Year	Water Bodies (Nos.)	Distribution of Prawn Juveniles (in cores)	Expenditure (In cores)	Production (In tons)	Production Value (In cores)
2017-18	11	1.08	1.38	7,783	171.22
2018-19	24	3.19	6.27	9,998	234.95
2019-20	70	3.42	6.39	10,453	261.32
2020-21	90	4.15	8.61	11,734	381.17
2021-22	182	6.47	16.17	13,827	448.99

Source: Government of Telangana, Fisheries Department, 2021-22.

The table – 4 describe the prawn juvenile, distribution particulars along with the budget allocation and spending the amount for the development of prawn culture, production and

the value of production in the state from 2017-18 to 2021-22. There is a tremendous growth in prawn juvenile production in all most all the five years. The available water bodies for the

growth and production of seed and prawn has been increased from 11 water bodies in 2017-18 to 182 water bodies in 2021-22. The distribution of prawn juvenile has been also increased from 1.08 crores in 2017-18 to 6.47 crores in 2021-22. The Government expenditure in the prawn distribution is also increased from Rs.1.38 crores to Rs.16.17 crores during the above said period. Like-wise the production is also witnessed a positive growth during this period from 7783 tones to more than 13,000 tones, and the value of production is also increased from 171.22 crores to more than 4500 crores. It is clear that in absolute terms all the aspects of study shows that there is a positive growth. But in relative terms there is a wide scope to increase the production and the value of production in monetary terms. It seems there are certain short falls in the management of the prawn juvenile production and distributional aspects.

Despite of same managerial deficiencies, the Government of Telangana took much interest to develop the fisheries so as to eradicate poverty of the fishermen community and see the fishermen community will lead a comfortable life with the generation of income from the fisheries development activities. It is a greatest thing that the government is planned successfully distributed fish seeds about 75 crores and prawn juvenile about 6.47 crores. During the six years period Government spent Rs.280 crores for the free distribution of fish seed. During 2021-22 the supply and distribution fish seed in about 23,000 water bodies with the expenditure of Rs.72 crores. The gross value of fish production through free supply of fish seed, the government is able to mobilize Rs.13,251 crores of fish production. It is an interesting observation pointed out here is that the supply of fish seeds and prawn juvenile will be organized, through tender process. The middlemen or the fish seed contractors who got tenders are unable to have own or Government fish ponds in Telangana state to supply in all water bodies. About 95 percent of fish and prawn seeds are supplied by the other states particularly from Andhra Pradesh. There are many disadvantages, through this process because, the expenditure incurred on the transport, quality, quantity, medical problem, mortality, long distance etc., are the burden on the part of Telangana Government. This kind of burden will be affected on the budget, production, productivity and the value of production of fish and prawn.

The Government of Telangana fish seed farms are able to supply about 5.0 percent of seed only. Some more Government seed farms are leased out but they are not supplying the seeds. Thus there is every need to develop certain management techniques to avoid middlemen exploitation, proper management for effective utilization of financial, technical, human and natural resources which are available in Telangana.

Development of fisheries largely depends on the effective management of natural resources, fish and prawn seed production centres (Hatcheries), technical guidance, training programmers, labs for disease diagnosis, water quality parameters testing, human resource development, Research and Development activities etc. All these activities will be carried out only when there is sufficient technical and non-technical staff. After reorganization of districts, more staff members should be allotted / sanctioned for the effective management. At present the technical and non-technical staff is insufficient to cater the needs of the development of fisheries sector as well as the welfare of the fishermen

community. The fishermen community in Telangana belonged to backward classes and majority people are illiterates, they do not have complete knowledge about the government schemes, technical knowledge and management of disease diagnosis. Therefore they need effective guidance from the Government officials. The following table shows the sanctioned, filled and vacant position of staff pattern in the state before bifurcation of the districts. The officials of the fisheries department categorized to look after the day to day administration by the permanent employees, contract based technical background employees and out sourcing employees non-technical. As per the data available from the Commissioner of Fisheries that the total no. of posts sanctioned is 498 (technical and non-technical) out of which 308 employees are working and still 198 posts are to be filled. It is noted that 115 technical posts are vacant and also causing many disadvantages to the fisheries sector. Even in approved contractual employees 9 posts are vacant. Other category of approved employees on out sourcing basis are working in the department are 16. Prior to the bifurcation of the districts, sanctioned and approved technical

+ Non-technical are 703 employees and working employees are 505 still 198 posts are vacant. Out of 198 vacant posts 124 vacant posts are from technical cadre. This kind of situation is one of the hurdles for the management of fisheries production. After bifurcation of the districts, it is suggested for the strengthening of fisheries production and productivity viz., every district should have one AD / DFO with supportive staff, every constituency should have one Fisheries Development Officer and in every mandal there should be one field man and one fisherman for effective guidance and training wherever necessary to the fishermen community and also to improve the production and productivity of the aqua culture products to generate more income and revenue to the community as well to the government of Telangana.

Advantages of Local Fish Seed Farms Development:

- Maximum utilization of available water bodies.
- Strengthening of Govt. Fish seed farms.
- Employment will be created to technical fisheries graduates, diploma holders and non-technical persons particularly the fishermen community.
- There is a wonderful scope to encourage and fish farmers in the development of Fish production as well as the fish seed production.
- Proper survivability, higher level of production, low mortality and loss of transport cost will be covered.
- There is a wide variation in the price of fish seed.

If it is produced in our state the cost of fish seed is at very low, compared with other places.

Development Perspectives Fisheries Sector in Telangana State: Sufficient water bodies available to the production of Fish in Telangana State.

- There are about 30 Govt. Fish seed farms with sufficient water and land are under fisheries department.
- Well established cooperative societies in Telangana State viz., 4,908 societies with 3,50,533 members. It shows there is unlimited supply of human resources.
- Favourable environment for the potential growth of IMC (Indian Major Carps) E.C. exotic carps, murrels, Tilapia, Scampi, Vannamai, Jayanthi Rohu, Ammur carp, etc.

- Rivers, reservoirs, large tanks feasible for the development of cage and pen culture.
- There is a wider scope for the diversification of farming community from agriculture sector to Fisheries to involve them into fish seed production, Fish production as well as in processing and marketing of fish and fishery products.
- Strengthening of fisheries sector in Telangana State will create ample opportunities in the development of ancillary industries like net mending units, processing, fish feed plants, transport, cold storage and marketing. So that the fisheries development process will be continued and sustainable in the near future as it is happened in W.B., Kerala, Tamil Nadu, Karnataka and Gujarat.

Disadvantages of procuring fish seed from other state:

- Procuring poor quality seed.
- Poor Survivability.
- Loss of transport charges.
- High mortality rate.
- Due to change of environment the fish seed of other states are unable to grow properly with this Telangana environment. (Growth of fish is low, mortality rate is high, survive is also problem).
- If the entire required seed production takes place in Telangana, high growth, less mortality and the damage will be very less, the price is also very less.
- Higher price to be paid to suppliers of other states (price variation is high) If fish seed production takes place in Government Fish Seed Farms in Telangana State.

Major Issues

- Scarcity of well qualified and trained manpower at Ground Level and High Cadre Level.
- No proper utilization of Govt. Fish Seed Farms.
- Nearly 90% of Cadre strength / employees has come from Non Science Background.
- Very weak research, teaching and information centres.
- Improper utilization of water resources.
- Lack of fish / prawn disease diagnostic centres and Govt. Aqua Labs.
- Poor Hygienic Fish markets / cold storages.
- In sufficient Fishermen / Fish farmer's technical training centres.
- Less number of awareness programmes conducting on better management practice of fresh water, fish / prawn culture.
- No fresh and direct recruitment to fisheries graduates since 2011 in Telangana State.
- Maximum utility of all water resources require for the production of fish and prawns in Telangana State.
- Proper technical guidance should be provided to fisherman, Fish farmers about disease diagnosis, awareness on better management practices in fish and prawn culture, improved marketing information will be provided.

Value added to Fish production

The growth and employment in Fisheries sector will be developed with filling of required technical staff. As present 20.00 lakh people are getting employment directly and indirectly with this sector. The estimated production of 10.0 lakh tones per annum will be possible with the full pledged

technical staff and there is a possibility of creation of employment about 35.0 lakh people with the value added to the fish production.

The involvement of women, tribal women, fish farmers and other SHG member in the processing of fish and fishery products ready to eat any ready to cook fish and fishery products, like dry fish, fish pickle, prawn pickle, fishery chips in production and marketing of the above said products. Export of these products to other countries will also additional advantage to increase the earnings from international trading activities. This kind of assignment not only provide large scale employment with sufficient income to about 15.0 lakhs people and the state government also able to generate 10,000 cr. per annum from fishery sector. The share of income to GDP will also increase sufficiently.

As per aspirations of the people to get nutrition food from Fish and Fish products, the government should also take steps to increase the fish production and also make available at affordable price to all the sections of the people. Now people are realized and coming forward to consume fish as an important nutrition food. It is proposed that the effective growth performance of fisheries sector largely depends on the availability of technical staff in the department. The present technical staff is insufficient to reach the target. So there is a need to fill up at least 498 staff as per government records. Among these 498 required staff is BFSC – 200, DFSC 150 and IFTC 148 persons should be appointed immediately.

Conclusion

The study on the management of fish seed and prawn juveniles supply in Telangana State clearly stated that, The State of Telangana has immense potential for development of Inland Aquaculture with the availability of rich and diverse natural resources and ideal climate conditions. Commercial land based Aquaculture is yet to take off in a big way in the state. Inland Fisheries and Aquaculture Sector definitely provide ample opportunities and employment generation to the many.

Further there are many challenges and problems which are hurdles for the development of fisheries. All these issues are mentioned in the above paragraphs. There is a need to have integrated fisheries development plan by declaring some of the selected and potential areas as Fish Economic Zones like Manairu, Godavari belt, Krishna river belt, Kaleshwaram backwater areas and other places. More budget should be provided to develop the own seed Fish ponds, utilization of existing fish ponds, training to the fishermen community, marketing of aqua culture products and providing infrastructure facilities to fish farmers like transport, communication and awareness programmers and supply of electricity on par with the tariffs of the agriculture sector in the other states for the sustainable development of fisheries in the state.

References

1. Narasimha Ramulu K, Benarjee G. Fish production trends in certain Reservoirs – A Study in the North Telangana Districts of Telangana State, International Journal of Science and Research (IJSR). 2015;4:1.
2. Fisheries fast growing sector in Bangaru Telangana, March 9th, The Hans India; c2016.
3. Socio-economic outlook Government of Telangana; c2021.

4. www.nfdb.gov.in
5. Baird IG, Integrating Community-Based Fisheries Co-Management and Protected Areas Management in Lao PDR: Opportunities for Advancement and Obstacles to Implementation, Evaluating Eden Series, Discussion; c2000. p. 14-22.
6. Evans L, Cherrett N, Pems D. Assessing the impact of fisheries co-management interventions in developing countries: A meta-analysis, Journal of Environmental Management. 2011;92(8):1938-1949.
7. Thompson PM, Lessons from community-based fisheries management in Bangladesh. World Fish Center, Dhaka, Bangladesh; c2004. p. 20.
8. Socio-Economic out Look Telangana; c2020.
9. Government of Telangana, Fisheries Department, Booklet; c2021-22.
10. Annual Reports. DAHD; c2016-17.
11. Fisheries sector is fast growing in Bangaru Telangana, 14th Oct, The Hans India; c2015.
12. Cunningham PD, Extending a co-management network to save the Mekong's giants, Mekong fish catch and culture. Mekong River Commission. 1998a;3(3):6-7.
13. Jentoft S, McCay BJ, Wilson DC. Social theory and fisheries co-management, Marine Policy. 1998;22(4-5):423-436.
14. Pomeroy R. The government as a partner in co-management. Douglas, W. Nielsen; c2003.
15. Commissioner of Fisheries, TS presentation; c2022 Oct 31.