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Growth and Development of Aquaculture in Andhra Pradesh- A Study

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Abstract: *The state of Andhra Pradesh has around 8.11 lakh inland water bodies which encourage inland fish production. However, there is a fluctuating trend in the growth of inland fish production was recorded during the study. It is evident that the ANOVA p-value is recorded more than 0.05 of alfa which indicates the variation in growth during the study period. The major reasons behind the fluctuations in the fish production was due to fall in tiger shrimp which was attacked diesis due to high usage of anti-biotic and other chemicals therefore many of the importing countries like japan, Australia, USA and middle Asia further consequent years the tiger shrimp was replaced Vanami as caused to increase in the production. Therefore, it is suggested that the producer should concentrate on quality product to improve marketing facilities.*
Key words: *inland fish, anti-biotic, marketing facilities*

Introduction

An attempt is made in this paper to analyse the pattern of the Growth and Development of Aquaculture in Andhra Pradesh during the 2005 – 06 to 2014 – 15. Aquaculture is the fastest growing food-producing sector in the world. It is developing, expanding and intensifying in almost all regions of the world. The global population is increasing, thus, the demand for aquatic food products is also increasing. Production from capture fisheries has levelled off and most of the main fishing areas have reached their maximum potential. Sustaining fish supplies from capture fisheries will, therefore, not be able to meet the growing global demand for aquatic food and aquaculture is considered to be an opportunity to bridge the supply and demand gap of aquatic food in most regions of the world.

Aquaculture in India has a long history. The traditional practice of fish culture in small ponds in eastern India is known to have existed for hundreds of years; significant advances were made in the State of West Bengal in the early nineteenth century with the controlled breeding of carp in bundhs (tanks or impoundments where riverine conditions are simulated). Fish culture received notable attention in the state of Tamil Nadu (formerly Madras) as early as 1911, and subsequently, states such as Bengal, Punjab, Uttar Pradesh, Baroda, Mysore and Andhra Pradesh initiated fish culture through the establishment of Fisheries Departments and support to fishers and farmers for expansion of the sector.

Importance of Aquaculture

As the human population continues to grow, finding means to feed those people is one of the most important challenges faced around the globe. Even

in troubled economic times, men, women and children need to eat. And a healthy diet, high in protein is necessary to ensure that growing population does not succumb to sickness and disease. Fish and other aquatic organisms fit the model for healthy sources of protein.

Harvests of wild sources of fish, crustaceans and other aquatic species cannot keep up with the demand presented by the growing human population. Trying to match demand through commercial fishing interests would eventually result in over-fishing and the loss of those species entirely. Therefore, while aquaculture is required to meet the human demand, it also relieves the strain on wild species to allow them to continue to be a significant source

Review of Literature

In the book "Economics of Brackish Water Shrimp Culture", the author, Andrew Palaparthi, (1999), has attempted an analysis of economic aspects of brackish water shrimp culture in Andhra Pradesh. This is a case study of shrimp farms in the Krishna district of the state. The author observes that aquaculture, particularly brackish water shrimp, has the potential to be instrumental in bringing about socio-economic uplift and rehabilitation of economically weaker sections in villages by providing income and employment. With all favourable conditions like private enterprise, infrastructure, organizational support by the state, financial support by nationalized banks, abundant natural resources, favourable environment etc., Andhra Pradesh is all set to bring in 'shrimp revolution' in the country. The study gives a detailed account of role of fisheries in the economy, fisheries potential of the state, evolution of brackish water shrimp culture in the state, its present status etc.

Khadervijaya; Sattiadhas R. & Mohamad leasim H. –(2004)- Role of women in fisheries in coastal Eco-system of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu 15-12-2004 States that fish eaters in the study area comprise 47 per cent of the total Population ranging from 237 per cent in Tamil Nadu to 85 per cent in Kerala. Though the position of Tamil Nadu in terms of numbers of coastal districts and possession of coast line including the number of landing centers is envious, the number of fish eaters in the state is minimal. Andhra Pradesh employs 32 per cent of its fisherwomen in fish caring / drying / net making and 27 per cent in processing plant works.

Shrimp culture in India had its origin in Nellore district, Andhra Pradesh; in 1978 at Duggarajapatnam in a two ha water area (Rao and Krishnan, 2001). Commercial scale shrimp farming using semi-intensive methods started only in the late 1980s and early 1990s with setting up of large ventures in the coastal region of Andhra Pradesh and Tamil Nadu. About 11, 90,000 ha along the Indian coastline were found suitable for shrimp culture (Rao and Ravichandran, 2001). About 1,56,500 ha were covered by tiger shrimp culture and shrimp production increased from 1,13,700 MT in 2000-01 to 1,27,170 MT by 2001-02 (Anon, 2002a).

Mud crab culture has been taken up as an important source of income generation in coastal rural sectors of Kerala, Tamil Nadu and Andhra Pradesh (Suseelan and Anil, 1998). Crab culture and fattening practices followed were 10

described by Ahilan (1999), Anil (1997) and CIBA (1997a). Mud crab farming has been taken up in coastal rural sectors of Tamil Nadu, Andhra Pradesh and Kerala as an important source of income generation for they command good price in the international market (Suseelan and Anil, 1998) and fetch the country good foreign exchange. Unutilised or underutilised water bodies in the country could be used for crab farming (Sathiadhas et al., 1996).

Murthy (2002) reported that the polyculture of freshwater prawn with carps has almost entirely been replaced by prawn monoculture. He reported that about 35000 ha of ponds were devoted to freshwater prawn culture in India and about 22000 ha in Nellore district of Andhra Pradesh alone. Selvaraj and Kumar (2003) predicted that freshwater prawn production in India could increase to 50000 mt/year by 2010. Several established freshwater prawn farmers and hatchery operators in Andhra Pradesh and Tamil Nadu have been promoting and assisting similar development in other Indian states (Nandeesha 2003; Susheela, pers. comm 2004).

Objectives

1. The present paper is aim to observe the growth and development of fish Production in the state of Andhra Pradesh

2. To find of the practical problems in improve the growth of aqua production.

Methodology

Secondary data is used to the study. Item wise we are collected data through MPEDA values in production and volume in production etc. statistical tools such as mean and annual growth rate models are used in the analysis.

1. Mean ($\overline{X}$): The mean value is obtained by adding together all the items and by dividing this total by the number of items.

$$\sum \overline{X} = X1 + X2 + X3 + \ldots\ldots\ldots Xn = Xn$$
$$N \quad N$$

Where,

$\overline{X}$ = Arithmetic value

$\sum \overline{X}$ = Sum of all the Variables

N = Number of variables

2. **Compound Growth Rate:** It works out change for a given period on the basis of the base year and the end year values, i. e,

$$g = [\left\{\frac{K_1}{K_0}\right\}^{1/t} - 1] \times 100$$

Where K1 and K0 represents the values of variables at the end and basic year respectively,
't' is the time period between the base year and end year, and
'g' represents the compound growth rate.

3. **Simple Growth Rate:** It merely gives the per cent increase over the previous year i.e.

$$g = \left\{ \frac{K_t - K_{t-1}}{K_{t-1}} \right\} \times 100$$

g = Growth Rate,
Kt, Kt-I are the values of variables, and
K in year's t and t-1 respectively

Formulation of Hypothesis:

H1 = There is continuous improvement in inland fish production during the study.

H0 = There is no continuous improvement in inland fish production during the study.

Analysis of the Study

Fishery Sector of Andhra Pradesh

Andhra Pradesh is strategically located on the South-Eastern coast of India and is the natural gateway to East and South East Asia. The state has a population of around 4.95 crore. Andhra Pradesh has fertile river basins, extensive canal system and conductive agro climatic conditions for fishery promotion. The state has 974 kms of coastline and is one of the largest producers of marine products. The state's coastline is also dotted with numerous major and minor ports and has a long sea faring tradition.

The Government of Andhra Pradesh has identified the Fisheries sector as a Growth Engine for social economic development of the new State of Andhra Pradesh. The Vision 2029 Programme promotes the rational exploitation and utilization of the State's fishery resources in a manner consistent with the overall goal of sustainable development. In this context a comprehensive fisheries policy is indispensable and therefore the Government of Andhra Pradesh has considered it necessary to specifically to undertake a Fisheries Policy with a view to determining the nature and scope of current priorities; the role and contribution of the Fisheries Sector to meet these priorities; the strengths; potentials and constraints of the sector and the requirements to make the sector more responsive to the current demands on it.

The Government of Andhra Pradesh accords top priority to Fisheries Development and its intervention for marine, brackish water, Inland fisheries, reservoirs development and ornamental fishery trade, with a view to enhance the fish production to 42 lakh tones in the next five years from the present level of 19.64 lakh tones and to double the exports value from the present level of about Rs.16000 Crores. Government with a view to make Andhra Pradesh a hub of Fisheries, hereby introduce the Fisheries Policy 2015-2020.

Growth in Inland Fish Production in Andhra Pradesh

Table 1 and figure 1 reveals the production of Inland Fish Production Andhra Pradesh during 2005-06 to 2004-15. It is found that an aggressive growth pattern from 2006 till 2014 is found among all the states. In first 3 years though West Bengal was the top

producing state; but now it holds second position and shows a steady growth. Other top producing states are Gujrat, Kerela, Tamilnadu, Maharashtra, Karnataka indicating flat growth .

Table – 1 Production and share of Inland Fish of AP (Production in '000 tonnes)

	W. Bengal	Orissa	Andhra Pradesh	Tamil Nadu & Pondicherry	Kerala	Karnataka	Goa	Maharashtra	Gujarat	Total
2005-2006	42,336	9,739	70,669	7,036	6,883	1,843	659	683	3,322	143,170
2006-2007	42,006	9,726	75,414	5,307	5,151	1,883	654	979	3,227	144,347
2007-2008	28,000	5,410	56,557	3,438	5,903	2,119	643	946	3,149	106,165
2008-2009	27,418	3,544	29,706	4,133	4,309	2,138	511	1,130	3,107	75,997
2009-2010	33,685	6,149	41,192	2,702	7,096	1,581	319	1,274	3,652	97,650
2010-2011	40,725	7,520	65,943	4,129	8,075	2,090	320	1,628	6,392	136,822
2011-2012	45,999	11,001	126,466	14,960	8,138	841	51	2,662	6,064	216,283
2012-2013	52,581	35,294	159,083	25,815	5,175	158	63	3,513	9,393	270,819
2013-2014	53,528	13,982	213,522	27,197	3,360	573	81	4,374	10,688	322,684
2014-2015	57,370	22,539	279,727	32,786	3,840	1,122	104	6,914	30,157	434558.7
Mean	3.09	8.75	14.75	16.64	-5.67	-4.84	-16.86	26.05	24.68	11.74

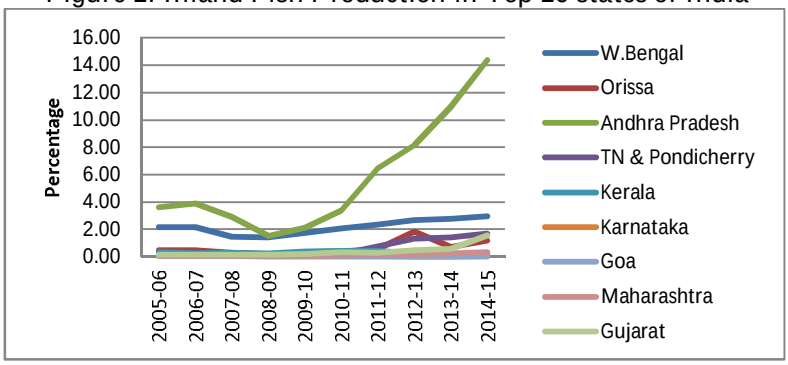
http://mpeda.gov.in/MPEDA

Table – 2 percentile growth in Production of Inland Fish in AP (Production in '000 tonnes)

	W. Bengal	Orissa	Andhra Pradesh	Tamil Nadu & Pondicherry	Kerala	Karnataka	Goa	Maharashtra	Gujarat	Total
2005-2006	-	-	-	-	-	-	-	-	-	-
2006-2007	-0.79	-0.13	6.29	-32.58	-33.62	2.12	-0.76	30.23	-2.94	0.82
2007-2008	-50.02	-79.78	-33.34	-54.36	12.74	11.14	-1.71	-3.49	-2.48	-35.96
2008-2009	-2.12	-52.65	-90.39	16.82	-36.99	0.89	-25.83	16.28	-1.35	-39.70
2009-2010	18.60	42.36	27.88	-52.96	39.28	-35.23	-60.19	11.30	14.92	22.17
2010-2011	17.29	18.23	37.53	34.56	12.12	24.35	0.31	21.74	42.87	28.63
2011-2012	11.47	31.64	47.86	72.40	0.77	-148.51	-527.45	38.84	-5.41	36.74
2012-2013	12.52	68.83	20.50	42.05	-57.26	-432.28	19.05	24.22	35.44	20.14
2013-2014	1.77	-152.42	25.50	5.08	-54.02	72.43	22.22	19.68	12.12	16.07
2014-2015	6.70	37.97	23.67	17.05	12.50	48.93	22.12	36.74	64.56	25.74

Source: table-1

Figure 1: Inland Fish Production in Top 10 states of India



Among the states, the highest annual average compound growth was recorded by 26.05% in Maharashtra and lowest by -16.86% in Goa. In case of Andhra Pradesh the growth rate was recorded by

14.75% which was 11% at the aggregate growth of the states.

Further, it is found that the percentile growth of the fish production among the states during the study was shown in table 2. It is found from the table that there is no unique growth during the study. It is observed that the annual growth in Andhra Pradesh was fluctuated as the lowest and highest growth by 47.86% in 2011-12 and -90.39% in 2008-09 according to the study. The similar trend is found in some other states like Orissa, Goa and Gujarat.

Item wise Inland fish Production in Andhra Pradesh

Table 3 indicates the item wise fish production in the state of Andhra Pradesh during the period 2005 – 06 to 2015-16. It found from the table that growth of quantity of aquaculture production was varied from 29.04% in dried items and 5.36% in freeze Squid during the study.

Table – 3: Item wise Inland fish Production in Andhra Pradesh (in tonnes '000)

Item	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Fr. Shrimp	145180 (32.17)	137397 (25.21)	136223 (29.11)	126039 (23.82)	130553 (21.84)	151465 (21.16)	189125 (25.30)	228620 28.04)	301435 (34.47)	357505 (38.60)	373866 (44.94)
Fr. Fin Fish	182344 (40.40)	270751 (49.67)	220200 (47.05)	238544 (45.09)	260979 (43.65)	312358 (43.63)	347118 (46.44)	343876 (42.17)	324359 (37.09)	309434 (33.41)	228749 (27.50)
Fr.Cuttlefish	49651 (11.00)	55701 (10.22)	45955 (9.82)	50750 (9.59)	63504 (10.62)	59159 (8.26)	54671 (7.31)	63296 (7.76)	68577 (7.84)	82353 (8.89)	65596 (7.88)
Fr. Squid	52352 (11.60)	47252 (8.67)	34172 (7.30)	57125 (10.80)	61445 (10.28)	87579 (12.23)	77373 (10.35)	75387 (9.25)	87437 (10.00)	69569 (7.51)	81769 (9.83)
Dried items	14167 (3.14)	24293 (4.46)	22414 (4.79)	31688 (5.99)	47053 (7.87)	79059 (11.04)	53721 (7.19)	72953 (8.95)	67901 (7.76)	70544 (7.62)	43320 (5.21)
Live items	2568 (0.57)	2478 (0.45)	2498 (0.53)	3434 (0.65)	5492 (0.92)	5208 (0.73)	4199 (0.56)	4373 (0.54)	5080 (0.58)	5488 (0.59)	5493 (0.66)
Chilled items	5060 (1.12)	7200 (1.32)	6541 (1.40)	21453 (4.06)	28817 (4.82)	21118 (2.95)	21278 (2.85)	26868 (3.30)	19755 (2.26)	31404 (3.39)	33150 (3.98)
Total	451322 (100.00)	545072 (100.00)	468003 (100.00)	529033 (100.00)	597843 (100.00)	715946 (100.00)	747485 (100.00)	815373 (100.00)	874544 (100.00)	926297 (100.00)	831943 (100.00)

Source:MPEDA

Figure – 2 Item wise fish Production in Andhra Pradesh

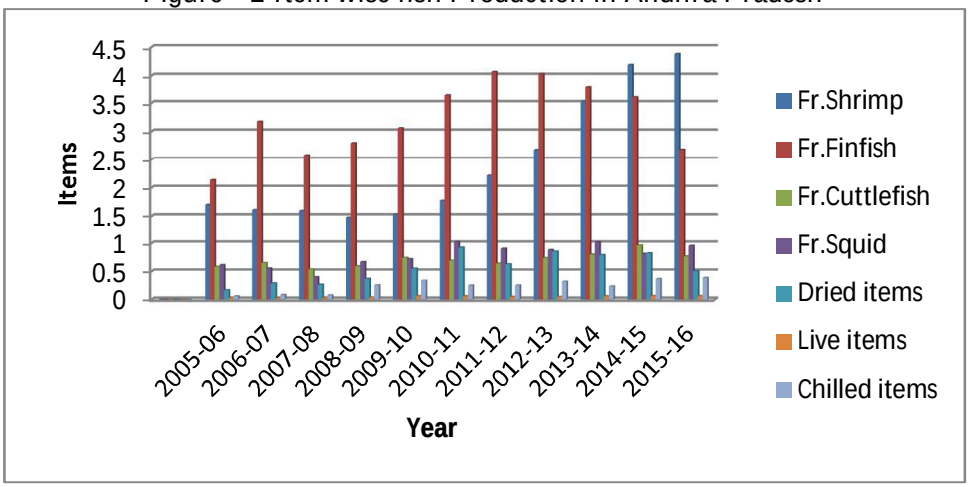


Table 4.Growth of Item wise Inland fish Production in Andhra Pradesh

Year	Fr. Shrimp	Fr. Fin Fish	Fr.Cuttlefish	Fr. Squid	Dried items	Live items	Chilled items	total
	1	2	3	4	5	6	7	8
2005-06	-	-	-	-	-	-	-	-
2006-07	-5.36	48.48	12.19	-9.74	71.48	-3.50	42.29	20.77
2007-08	-0.85	-18.67	-17.50	-27.68	-7.73	0.81	-9.15	-14.14
2008-09	-7.48	8.33	10.43	67.17	41.38	37.47	227.98	13.04
2009-10	3.58	9.40	25.13	7.56	48.49	59.93	34.33	13.01
2010-11	16.02	19.69	-6.84	42.53	68.02	-5.17	-26.72	19.75
2011-12	24.86	11.13	-7.59	-11.65	-32.05	-19.37	0.76	4.41
2012-13	20.88	-0.93	15.78	-2.57	35.80	4.14	26.27	9.08
2013-14	31.85	-5.68	8.34	15.98	-6.93	16.17	-26.47	7.26
2014-15	18.60	-4.60	20.09	-20.44	3.89	8.03	58.97	5.92
2015-16	4.58	-26.08	-20.35	17.54	-38.59	0.09	5.56	-10.19
	p-value 3.3614							

Source: Table-3 t

Table 4 reveals the growth of Item wise Inland fish Production in Andhra Pradesh during 20045-06 to 2015-16. It is found that the aggregate growth 20.77% of inland fish production was highest in 2007-08 and next by 19.75% in 2010-11 was recorded. However, there is a fluctuating trend in the growth of inland fish production was recorded during the study. It is evident that the ANOVA p-value is recorded more than 0.05 of alfa which indicates the variation in growth during the study period.

The major reasons behind the fluctuations in the fish production was due to fall in tiger shrimp which was attacked diesis due to high usage of anti-biotic and other chemicals therefore many of the importing countries like japan, Australia, USA and middle Asia further consequent years the tiger shrimp was replaced Vanami as caused to increase in the production.

Conclusion

Andhra Pradesh has fertile river basins, extensive canal system and conductive agro climatic conditions for fishery promotion. The state has 974 kms of coastline and is one of the largest producers of marine products. The state's coastline is also dotted with numerous major and minor ports and has a long sea faring tradition. Besides, the state has around 8.11 lakh inland water bodies which encourage inland fish production. . However, there is a fluctuating trend in the growth of inland fish production was recorded during the study. It is evident that the ANOVA p-value is recorded more than 0.05 of alfa which indicates the variation in growth during the study period. Therefore, it is suggested that the producer should concentrate on quality product to improve marketing facilities.

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