CHAPTER–8

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

8.1. INTRODUCTION:

The contribution of fishculture to the total workforce of India and Assam, employment generation in the production of fish, contribution of fishculture as well as changes in contribution to the GDP of India and NSDP of Assam have been analysed elaborately in different chapters. Spatio-temporal variations in seed fish and consumable table fish production in Assam have also been analysed. In addition to that role of various financial agencies in advancing credit to the fishculturists and role of government in developing fishculture in Assam, the economic and non-economic problems of fishculture and its possible solutions have been examined in some previous chapters. This chapter is devoted to describe the major findings of the forgoing study and also to throw some light on the policy conclusions emanated from the whole analysis and finally some recommendations have also been provided on the basis of the findings of the study.

8.2 SUMMARY OF FINDINGS:

The major findings of the study are given below

First of all, aquaculture has become the worlds' fastest growing food producing sector with an annual growth rate of 10 per cent since 1981. Asia contributes about 91 per cent of the world's total aquaculture production with China, India, Japan, Republic of Korea, the Philippines, Indonesia, and Thailand as top contributors.

Secondly, India is home to more than 10 per cent of global fish biodiversity with 2200 species of fish and shellfish in the marine and inland water. India is the third largest producer of fish as a whole and second in inland fish in the world with 5.97 per cent share in total production of fish next to China and Indonesia and 9th position in marine fish. Inland fish production in India depends mainly on carp culture that accounts for around 80 per cent of the total inland fish production and proved sustainable at different levels of production over the years. Percentage contribution of India to world's fish

production (both marine and inland) has marginally increased from 3.70 in 1950 to 93.4 million tonnes in 2014. In case of marine fish, contribution of India to world marine fish production is negligible. However, in case of inland fish, India has been contributing around ten (10) percent to world's inland fish production during the last 64 years.

Thirdly, percentage contribution of marine fish to total fish production in India has declined continuously from 71.01 per cent in 1950-51 to 34.67 per cent in 2014-15. In other words, percentage contribution of inland fish to total fish production has increased from 28.99 per cent in 1950-51 to 65.33 per cent in 2014-15. In the year 2000-01, percentage contribution of inland fisheries to total fish production has surpassed marine fish production and since then the gap has been widening. It is due to acceptance of scientific rearing of fish, especially carp fish by a large number of educated youths in the states of West Bengal, Andhra Pradesh, Assam, etc.

Fourthly, percentage contribution of NE India to India's total production of inland fish has been declining over the years. Although production of inland fish production in NE India has increased around two times during 2000-01 to 2014-15, percentage contribution has declined from 7.78 per cent in 2000-01 to 6.11 per cent in 2014-15. It is because of higher growth rate of production of inland fish in the states of West Bengal, Andhra Pradesh, etc. Among all the NE Indian states, Assam is the dominant state in the production of inland fish during 2000-01 to 2014-15. It contributed around 71 per cent to total NE India's production of fish in 2000-01 to 2014-15. Sikkim is the lowest producer of fish among the N.E. states.

Fifthly, among all the states and union territories of India, Assam ranked 11th position in the production of fish in 2014-15. However, Assam stood 6th in the production of inland fish among all the states and union territories in the same year. Assam is a land of 216 species of fish. The most important thing is that 76 species of fish of Assam are considered as ornamental fish and most of them are able to establish demand in the international market.

Sixthly, production of fish in Assam has increased from 1.55 lakh tonnes in 1995-96 to 2.83 lakh tonnes in 2014-15. Although production of fish has increased in Assam, percentage contribution of Assam to total production of India's fish production has declined from 3.13 per cent in 1995-96 to 2.81 per

cent in 2014-15. In case of inland fish also, its contribution has declined from 6.91 per cent in 1995-96 to 4.31 per cent in 2014-15. It is because of higher growth rate of production of fish in states like West Bengal, Andhra Pradesh, Uttar Pradesh, etc.

Seventh, the district of Barpeta stands at 4th among all the districts of Assam in the production of table fish in 2015-16. Production of fish in the district has increased from 9528 M.T. in 1995-96 to 19730 M.T. in 2015-16. It is also reported that 60 per cent of the total production of fish is contributed by capture from rivers, perennial *beels* and ponds and rest 40 per cent is contributed by private pond fisheries. However, Barpeta district ranked 3rd in 1995-96 and 2015-16 although it ranked first in the production of seed fish in some middle years.

Eight, China is the major fish producing country as it contributed 31.87 per cent of global fish production in 2000 and has been successful in occupying topmost position among all the countries. It's contribution to global fish production increased to 46.92 per cent in 2015. India, which was in 4th position in the year 2000 with 5,689 thousand tonnes of production of fish had reached 3rd position in 2015. Major inland fish producing countries in the world during 1995 to 2014 are China, India, Indonesia, Vietnam, Thailand and Bangladesh. India had been successful in occupying 2nd position in inland fish production during 1995 to 2014 with continuous rise in production of inland fish. Major top marine fish producing countries in the world are China, Peru, Japan, Chile, USA and Indonesia.

Nine, average annual growth rate of fish production in India was the highest during 1950-55 with 7.71 per cent and the lowest during 1970-75 with 0.31 per cent. Average annual growth rate of marine fish production in India was the highest during 1955-60 with 8.11 per cent and the lowest during 1960-65 with negative growth rate of -1.31 per cent. During this negative growth of marine fish production during 1960-65, average annual growth rate of inland fish production in India reached the highest growth rate with 12.45 per cent. The lowest average annual growth rate of inland fish production in India was recorded at 2.57 per cent during 1975-80. For the rest of the world, average annual growth rate of fish was the highest during 1955-60 with 6.73 per cent while it was the lowest during 1975-80 with 1.53 per cent. For marine fish

production, highest average annual growth rate for the rest of the world was recorded during 1950-55 with 7.34 per cent while negative growth rate was recorded at -1.76 percent during 2005-09. Conversely, in case of inland fish production, highest average annual growth rate for the rest of the world was recorded during 1950-55 with 10.46 per cent while the lowest growth rate was recorded at 1.85 per cent during 1955-60.

Ten, among all the states and UTs, Gujarat produced the largest amount of marine fish in India amounting to 6.98 lakh tonnes followed by Andhra Pradesh with 4.75 lakh tonnes and Kerala with 4.72 lakh tonnes in 2014-15. Least producer of marine fish in India was Lakshadweep with 13.2 thousand tonnes in 2014-15. Ahead of Lakshadweep was Daman & Diu with 28.7 thousand tonnes and Andaman & Nicobar Island with 36.9 thousand tonnes in 2014-15.

Eleven, in respect of the production of inland fish, Andhra Pradesh ranked the topmost position among all the states and UTs in India with 14.89 lakh tonnes in 2014-15 followed by West Bengal with 14.38 lakh tonnes and Uttar Pradesh with 4.94 lakh tonnes in 2014-15. Assam ranked 7th position in the production of inland fish in India in 2014-15. There were few states like Dadra & Nagar Haveli, Daman & Diu and Lakshadweep where inland fish production was nil in 2014-15.

Twelve, in the production of fish as a whole, Andhra Pradesh ranked first with 19.64 lakh tonnes followed by West Bengal with16.17 lakh tonnes and Gujrat with 80.99 lakh tonnes in 2014-15. Position of Assam was twelve among all the states and UTs with 2.82 lakh tonnes in 2014-15. Production of fish was nil in Dadra & Nagar Haveli.

Thirteen, West Bengal holds the first position in the production of seed fish production among all the states and UTs with 16717 million fry in 2014-15 followed by Andhra Pradesh with 6718 million fry and then Odisha with 5557 million fry. Assam ranked 4th position among all the states and UTs in 2014-15.

Fourteen, fishery sector has been contributing a good amount to GDP of India for a long time. Though there is a drastic fall of share of agriculture to GDP of India since 1970-71, the contribution of fisheries to GDP at current prices has been increasing. The share of fishery sector to GDP at current prices of India had increased from 0.62 per cent in 1970-71 to its highest level at 1.18

in 2000-01 and then fell to 0.92 percent in 2013-14. It was due to increase in both of the production of especially inland fish as well as the increase in prices of fish. During the same time, the share of fishery sector to the GDP from agriculture had increased significantly from 1.46 per cent in 1970-71 to 5.58 per cent in 2013-14.

Fifteen, whole sale inland fish price index considering 1993-94=100 has increased more than three times from 127.30 in 1996 to 389.70 in 2009 while whole sale price index of marine fish increased slightly higher than double from 143.30 in 1996 to 298.90 in 2009. It means that whole sale price index of inland fish increased more than marine fish during 1996 to 2009 based on 1993-94 as base year. Initially during 1996 to 1997, although whole sale price index of marine fish was higher than that of inland fish, it was relegated in the successive years. It may be because of lower demand of Indian marine fish both in national and international markets in comparison to inland fish.

On the other hand, considering 2004-05 as base year, whole sale price index of marine fish increased at a higher rate than inland fish during 2005-2011. Considering 2004-05 as base year, whole sale price index of inland fish has increased more than double from 113.70 in 2005 to 291.4 in 2017 while whole sale price index of marine fish increased from 98.40 to 236.60 during 2005 to 2011.

Sixteen, contribution of fishery sector to NSDP at current prices increased from Rs. 69139 Lakh in 2004-05 to Rs. 550751 lakh in 2014-15. In terms of percentage to NSDP, its contribution also increased from 1.46 per cent in 2004-05 to 3.14 per cent in 2014-15. In absolute terms, it increased by nearly eight times while in percentage to NSDP, it increased by two times. But at constant prices of 2004-05, contribution increased from Rs. 69139 lakh to Rs. 94383 lakh in 2013-14 and in percentage terms, it decreased from 1.46 per cent in 2004-05 to 1,28 per cent in 2013-14. Although the contribution of primary sector to NSDP both at current prices and constant prices of 2004-05 decreased from 35.04 in 2004-05 to 28.72 per cent and 25.98 per cent in 2013-14 respectively, percentage contribution of fishing to primary sector at current prices and constant prices increased from 4.18 per cent in 2004-05 to 6.91 per cent and 4.93 per cent in 2013-14 respectively. It is because of higher growth

rate of fish production and its price level than other sectors of the economy of the state.

Seventeen, in the world aquaculture, 56.6 million people were engaged in capture fisheries and aquaculture in 2014 out of which 36 per cent were engaged full time, 23 per cent part time and the remainder were either occasional fishers or of unspecified status. In 2014, out of world population engaged in fisheries and aquaculture, 84 per cent were from Asia; 10 per cent from Africa and Latin America and 4 (Four) per cent from Caribbean. Among the fish farmers, Asia is the dominant. The share of Oceania, North America, Europe, Africa and Latin America and the Caribbean were negligible. Out of 18 million fisherman of the globe, 94 per cent were from Asia. It means all the other regions contributed only 6 per cent to the family of global fishermen.

Women accounted for 19 per cent of all people directly engaged in the primary sector in 2014. But their share increased to half of the workforce when secondary sector (e.g. processing, trading) was included.

Eighteen, total number of family members engaged in fishing occupation was 67.3 lakh in 1992 which increased to 1.45 crores in 2003. In other words, the growth was more than double within the period. In the year 1992, out of total fishermen, share of male was the highest with 35.44 per cent, followed by children and female with 35.13 per cent and 29.42 per cent respectively. In the same year, the distribution of fishermen between rural and urban varied widely. The share of rural fishermen in total fishermen was 88.15 per cent while remaining 11.65 per cent were in urban areas. In the year 2003, the share of male and female declined to 32.42 per cent and 27.85 per cent respectively, while that of children went up to 39.73 per cent. The share of rural fishermen went up to 91.73 per cent in 2003. In other words, the share of urban fishermen declined to 8.27 per cent.

Nineteen, out of all states and Union territories, maximum number of fishermen belonged to Bihar both in 1993 and 1994 followed by Karnataka in 1993 and Kerala in 1994. The position of Assam amongst the states and Union territories was 6^{th} both in 1993 and 1994. However, number of people adopting fishery as a full time occupation was the highest in Assam in 1993 and second following Kerala in 1994. The bottom six states were Dadra & Nagar Haveli, Chandigarh, Sikkim, Mizoram, Delhi, Andaman & Nicobar Islands in 1993 and

Dadra & Nagar Haveli, Chandigarh, Sikkim, Mizoram, Andaman & Nicobar Islands and Punjab in 1994.

Twenty, in the year 2001, 10.65 lakh people consisting of male, female and children were engaged in fishing occupation. Number of fishermen has been increasing continuously since then and reached 21.72 lakh in 2016. In other words, number of fishermen increased by more than double during this period. Average annual exponential growth of number of fishermen during this period was 41 per cent.

Twenty one, in India engagement of male and female in actual operation of fishing as part time and full time occupation in rural area was much higher than in urban area in 2003. The participation ratio of rural and urban people to total employment was 10.08 : 09.92. The participation of both male and female in actual operation of fishing as part time occupation is slightly higher than full time occupation. In rural areas, the participation of both male and female in actual operation of fishing as part time occupation was also slightly higher than full time occupation. However, in urban area the participation of both male and female in actual operation of fishing as part time occupation was lower than full time occupation. In case of other occupation, the engagement of people in marketing of fish is higher followed by repairing of nets, others, fish and prawn seeds and processing of fish. In case of other occupation, the percentage share of rural area was higher than that of urban area except prawn and seed fish in 2003.

Twenty two, in the year 2001, 10.65 lakh people consisting of male, female and children were engaged in fishing occupation. Number of fishermen has been increasing continuously since then and reached 21.72 lakh in 2016. In other words, number of fishermen increased by more than double during this period. Average annual exponential growth of number of fishermen during this period was 41 per cent. Like all India level, engagement of male and female in actual operation of fishing as part time and full time occupation in rural area in Assam was much higher than in urban area in 2003. However, the participation of male and female in actual operation of fishing in Assam in 2003 was completely different from the overall all India level. In Assam, engagement of people in fish culture was a full time occupation rather than a part time occupation. In case of male as well as female engaged in actual operation of fishing in rural area, the participation as full time occupation was higher than

part time occupation. On the contrary, in urban area, the participation of male and female in actual operation of fishing as part time is higher than that of full time. In case of other occupation, the engagement of male is the highest in marketing of fish, followed by repairing of nets, processing, fish and prawn seed and others. In case of distribution of engagement of male in other occupation in between rural and urban areas, the percentage of rural area was higher than that of urban area.

Twenty three, the export value of fish and fishery products of the world has doubled from US $ 71869 million to US $ 148147 million during 2004 to 2014 with an average annual growth rate of 7.5 per cent. Top ten exporters of fish and fishery products of the globe are China, Norway, Vietnam, Thailand, USA, Chile, India, Denmark, Netherland and Canada. China has been in the top most position in terms of export value of fish and fishery products during 2004 to 2014. The export value of fish and fishery products of China increased from US $ 6637 million in 2004 to US $ 20980 million in 2014 with an average annual growth rate of 12.2 percent. In terms of export value of fish and fishery products, India managed to hold six position whose export value increased from US $ 1409 million in 2004 to US $ 5604 million in 2014. Although India holds six position globally in absolute value of fish and fishery products, it ranks first in terms of average annual percentage growth rate which is 14.8 per cent.

Twenty four, import value of fish and fishery products globally increased from US $ 75702 million in 2004 to US $ 140616 million in 2014 with an average annual growth rate of 6.4 per cent. Top ten importers of fish and fishery products in absolute value are USA, Japan, China, Spain, France, Germany, Sweden, Italy, UK and Republic of Korea. Among all the importers of fish and fishery products, USA ranked first whose import bill increased from US $ 11964 million in 2004 to US $ 20317 million in 2014 with an average annual growth rate of 5.4 per cent. USA is followed by Japan whose import bill got an increase marginally from US $ 14560 million in 2004 to US $ 14844 million in 2014 with an average annual growth rate of 0.2 per cent. China which ranks top in exporting fish and fish products in absolute value, is also a major importer holding third position. Its import bill increased from US $ 3125 million in 2004 to US $ 8501 million in 2014 with a high average annual growth rate of 10.5 per

cent. However, in terms of average annual growth rate of import of fish and fishery products, Sweden ranks first with 13.9 per cent.

Twenty five, the annual average exponential rate of growth of demand for fish in Assam during 1996 to 2015 was 1.4 per cent, while it was 3.2 per cent in case of domestic state production (supply) of fish. It indicates that the domestic producers of fish are able to grow production of fish at a higher growth rate than that of population. It is because of both intensive and extensive fishculture activities. However, there is excess demand for fish in Assam. Thus, the gap has been made up by importing fish from states like West Bengal, Andhra Pradesh, Uttar Pradesh, etc. As a result, there is an outflow of domestic state income to other states in the name of import of fish of about Rs 200 crs annually.

Twenty six, volume of production of fish is uneven across the districts of Assam. In some districts, production is very high while; in some others it is very low. Nagaon district has always been at the top position in terms of contribution to total production of the state. The district contributed maximum 8.24 per cent of the state total production of fish in the year 1995-96. It was followed by Dhubri, Karimganj, Cachar and Barpeta with 7.48, 6.5, 6.19 and 6.14 per cent contribution respectively. These five districts together contributed about 34.55 per cent of the total fish production of the state during 1995-96. In the year 2015-16 also, Nagaon district was at the top again with an increasing share of 10.70 per cent to state total followed by Cachar, Kamrup, Barpeta, and Karimganj in the rank of 2^{nd}, 3^{rd} , 4^{th} and 5^{th} respectively. Thus, there was no radical change in the composition of top five districts during 1995-96 to 2015-16. The districts at the bottom two positions in terms of contribution to total state production were Dima Hasao and Karbi Anglong throughout the period 1995-96 to 2015-16. In the year 1995-96, it was followed by Dhemaji, Bongaingaon and Kokrajhar having shares 2.25 per cent 2.52 percent and 2.95 per cent respectively. The contribution of bottom five districts together to state total was 10.45 per cent in 1995-96. The contribution of Dima Hasao and Karbi Anglong was the minimum because fish culture was difficult to adopt in those two hilly districts.

The districts, which were contributing more to the total state production in earlier years, continued to produce and contribute more. They have been producing more because they have been enjoying the natural advantage of

climatic conditions, better marketing facilities, finance, technical know-how, etc. On the other hand, those who were lagging behind are still contributing less as they are deprived of these facilities and natural disadvantage like low water bodies or higher incidence of flood.

During 1995-96 to 2015-16, overall growth in percentage contribution to total state production of fish was the highest in Kamrup (49.41 %), followed by Nagoan (29.26 %) and Cachar (26.39 %). On the other hand, growth rate of percentage contribution to total state production during the same period was the lowest with negative value in Dima Hasao (-60.97 %) followed by Karbi Anglong (-60.85 %) and Kokrajhar (-50.25 %).

Correlations between district wise percentage contributions to total state production of fish of various years are positive significantly. It indicates that the formerly advanced districts in terms of contribution to total state production remain in advantageous position in the later years and vice versa. Moreover, the gap between advanced and poor districts has been increasing.

Among all the 23 districts of Assam, top five districts in terms of production of fish were Nagaon, Dhubri, Karimganj, Cachar and Barpeta in 1956-96. The percentage contribution of each district to total fish production of the state was at least 6.14 per cent. Whereas, five bottom districts were Dima Hasao, Karbi Anglong, Dhemaji, Bongaigaon and Kokrajhar. Their contribution at individual level to state total was barely three per cent. Among the top five districts, there was no change in the top most position during 1995-96 to 2015-16. Similarly, among the bottom districts Dima Hasao and Karbi Anglong were in the lowest level throughout the period.

Twenty seven, like table fish production, there was wide variation in the production of seed fish production across the districts of Assam during 1995-96 to 2015-16. In the year 1995-96, Nagoan district alone contributed around 50 per cent of state total seed fish production. It is followed by Karimganj and Barpeta with 21.04 per cent and 12.45 per cent respectively. On the contrary, the districts which contributed least to the state total are Dima Hasao, Kamrup and Sibsagar with nil, 0.2 and 0.6 respectively. In the year 2015-16, again Nagaon district was at top position. It was followed by Karimganj district whose percentage contribution increased to 29.89 per cent and Barpeta district whose percentage contribution decreased to 16.32. Among the least contributors to

state total seed fish production were Dima Hasao and Kokrajhar. Their contribution were nil over the years. The contribution of Karbi Anglong district was also negligible, though not nil. As Karbi Anglong and Dima Hasao are hill districts, production of seed fish is not easy. In case of Kokrajhar district, it is *Bodo* tribal dominated district. The tribal people are not interested to pursue fish culture. Therefore, production is almost nil.

During 1995-96 to 2015-16, overall growth in percentage contribution to total state production of fish was the highest in Goalpara (1973.35 per cent) followed by Kokrajhar (776.22 per cent) and Kamrup (703.63 per cent). Though Goalpara district ranked top among all the districts in growth rate its contribution to state total was even lower than three per cent throughout the years. Growth rate is highest because of its start from a very low level to a reasonably high level. On the other hand, growth rate of percentage contribution to total state production during the same period was the lowest with negative value in Dima Hasao (-100 per cent), Karbi Anglong (-98.84 %) and Nalbari (-96.06%).

Correlations between district wise percentage contributions to total state production of seed fish of various years are significantly positive. It indicates that the formerly advanced districts in terms of contribution to total state production remain in advantageous position in the later years and vice versa. Moreover, the gap between advanced and poor districts has been widening.

Twenty eight, the inequality in the production of seed fish and table fish across the districts is due to various factors like number of hatchery, registered *beel* fishery, registered river fishery, percentage of rural population and proportion of Muslim population.

Twenty nine, majority of rearers in Assam, particularly in the district of Barpeta depend on their own financial capabilities. Out of 120 seed fish rearers, 104 (86.66 %) families are dependent on their own finance. Next to self finance, Village Mahajan is found to be the important source of finance of seed fish culture in the district with 77.5 per cent. As a source of finance of seed fish culture, relatives as well as banks have a negligible role as their contribution is only 3.33 percent. It indicates that institutional sources are neglecting the seed fish culture activities of the district. Whoever has got loan from banks, they are rich rearers having enough land and other properties. Both state and central

government have taken number of schemes for the overall development of fishculture in Assam.

Thirty, fishculture both seed fish and table fishculture in Assam has been suffering from economic as well as non-economic problems. Among the non-economic problems, some of the most important problems for seed fish culture are recurrent flood, illiteracy and negative attitude of the society. Similarly, the economic problems may be mentioned as lack of eco hatchery, lack of finance, lack of capital, lack of technological improvement and training, marketing problem, etc.

For table fishculture, non economic problems are recurrent flood, illiteracy and negative attitude of the society and poor implementation of law. Among the economic problems of table fish culture, financial problems, uncertainty, land, rising input prices, competition from low-priced imported fish, low R& D activities, unorganised marketing problems, lack of insurance, etc. are noticeable.

8.3. CONCLUSIONS AND POLICY IMPLICATIONS:

Although fishculture has been a practice of rural folk since time immemorial, it has not flourished sufficiently and at the same time, people have not left it. From the forgoing analysis and observations, the following conclusions and recommendations can be made for the overall development of the fishculture in Assam.

First of all, irrespective of seed fish, table fish or ornamental fish this sector is in the hands of uneducated or semi educated people. Educated youths are not interested to this sector either because of hard labour or low status accorded to this occupation. Until and unless educated youngs are not involved in this occupation, this sector cannot be developed. Fishculture can yield more income than a III or IV grade government or private job if it is organised in a proper way.

Secondly, permanent solution to the problem of flood in Assam is necessary for the growth of this sector. It cannot be done by one individual or by the fish farmers. Either Central or State Government or both of them will have to come forward to solve this problem permanently. Once this problem is solved, risk and uncertainty involved in this occupation will decline to a great

extent and more and more people will be involved in this occupation. Success of fishculture in Andhra Pradesh or West Bengal is due to non-occurrence of frequent flood.

Thirdly, insurance to the rearers at low premium can boost this sector as it will also reduce the risk associated with this occupation. If insurance to their activity will be there, they may not hesitate to go for expanding their business. The employees of the insurance company may come forward to meet the farmers as most of them are unaware of those facilities.

Fourthly, availability of institutional credit at low or subsidized rates of interest to the rearers at their need is necessary. If necessary, bank employees may have to advance loan to the fish culturists without collateral security.

Fifthly, for the development of seed fish culture, adequate number of eco-hatchery must be constructed in those areas where this activity is concentrated. It will help the seed fish rearers to produce seed fish at the right time at low cost which help them to supply seed to the table fish rearers on due time.

Sixthly, more and more rural fish culturists must be trained by trained experienced and successful fish rearers and experts in this sector. The success story of successful fish rearers will encourage the existing fish rearers to adopt scientific method of fish rearing and the rural youths who are interested in fishculture to pursue as a source of livelihood.

Seventhly, new market both within and outside the nation has to be explored especially for ornamental fish of Assam. E-commerce of ornamental fish can help in the expansion of this market.

Eight, development of road transport facilities in the rural areas is necessary for the overall development of fishculture in Assam. As seed fish has to be sent live to the destination in one hand and table fish is also perishable on the other, therefore, improvement in road conditions from rural to urban areas will help the fish rearers immensely.

Nine, the information gap between the Government and the rearers, regarding sources of finance, availability of modern technology, market etc. should be bridged by a network of publications, audio-visual aids like radio & television, public meeting etc. This will, in turn, help emergence of entrepreneurs from the new generation. For that purpose also responsible departmental officers with proper technical knowledge and managerial ability

may be appointed to integrate production, marketing and other development activities in relation to fish culture.

Ten, no industry can prosper unless it is backed by research and extension services. Therefore, research and extension services of the fish culture should be expanded. The wide gap between the research institutions and rearers should be reduced and laboratory results should be brought to the rearers. The government may also take required steps to include fishculture course in the syllabus at the Higher Secondary and College level as an elective subject with provision for necessary facilities. This process would motivate the increasing educated youths towards this occupation. Madhab Choudhury College, a premier higher educational institute has started already Diploma Course on fishculture as Community College in the year 2018 where educated youths have joined from different areas of Assam.

Eleven, from the overall analysis, it can be safely argued that there is a good prospect for the development of fishculture in Assam which can provide larger scope for the generation of employment and income in the rural areas. For the adequate progress of it, necessary arrangements are to be there for the removal of the limitations faced by this sector. Steps taken by the government so far is found to be not much productive and there is also the lack of persistent cooperation.

Finally, co-operation of various sections like officers, traders, rearers, etc. engaged in activities related to fishculture is necessary for the successful growth of the sector.