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Orignal Article

Comparative Economics of Fish Co-operative Societies for Production and Marketing of Exotic and Local Breeds of fish for in Kabirdham districts of Chhattisgarh

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Abstract

Study has examined that comparative economics of Fish Co-operative Societies to production and marketing of exotic and local breeds of fish in Kabirdham districts of Chhattisgarh. The sampling has based on stratified randomly selected samples of Fish Co-operative Societies in study area. The selected sample of exotic breeds Fish Co-operative Societies has 06. However, the selected sample of local breeds' fish producer has 10 fish cooperative societies. The required primary data have been collect from the selected respondent by the survey method during the year 2015-19. The fish productivity of exotic breeds of samples Fish Co-operative Societies is 32.91qt per ha. However, the fish productivity of local breeds of samples Fish Co-operative Societies, is 18.53 qt per ha, respectively. The per hectare cost of exotic breeds of samples fish farmer, is Rs 61555.74 per ha, per ha respectively. However, the per hectare cost of local breeds of fish of samples Fish Co-operative Societies, is Rs 39041.93 per ha, respectively. The net return of exotic breeds of samples Fish Co-operative Societies, is Rs 149836.01 per ha respectively. However, the net return of local breeds of samples Fish Co-operative Societies is Rs 49383.59 per ha respectively. The cost benefit ratio of exotic breeds of samples Fish Co-operative Societies is 2.50: 1 respectively. However, in case cost benefit ratio of local breeds of samples Fish Co-operative Societies is 2.05: 1. The four marketing channel have been adopted in the study area and the most of the fish cooperative societies have sold the fish in channel fourth and sold quantity of fish, by fish cooperative societies is 3489.00 qt. and 72.92 percent in the channel fifth. Net received price and incurred marketing cost of samples Fish Cooperative Societies are Rs 5000 & Rs 000 per qt, Rs 5900 & Rs 195.00 per qt, Rs 8499.45 & Rs 1888.86 per qt and Rs 8490.19 & Rs 1443.99 per qt in the channel first, third, fourth and fifth respectively. the marketing efficiency and producer share in consumer rupees of Fish Cooperative Societies are 100.00 % & 100 %, 19.48 % & 75.00 %, 1.05 % & 68.77 % and 3.79 % & 73.96 % in the channel first, third, fourth and fifth respectively. It has observed that the channel first has most efficient for fish cooperative societies. The major socio economics constraints found that, restriction on medicine, feed and manure, lease processed poaching of fish and consumption & fish disposal etc. in the fish production, which in a weak position the fish production of both groups of fish producers. Fish producers are faced various constraints i.e. water stress, lack of the improved production technology unavailability of market and poor marketing facilities and poor credit and fiancé availability, poor storage facility and social and villager class conflict.

Keywords: Cost; Return; Cost Benefit Ratio; Local and Exotic Breeds of fish; Marketing cost; Marketing Efficiency and Producer share in consumer rupee.

Introduction

The first fishermen' Co-operative society had organized under the name "Kerala Machhimar Co-operative Society" in districts Ratnagiri of Maharashtra during 1913. After this fishermen co-operative society had established in Madras and Bengal in 1918. Fisheries co-operatives are functioning both in marine and inland sector. The structure of fish co-operative society varies from state to state. Co-operative helped the fishermen for using their resources and promote better with sustainable management of the fisheries themselves. These societies were undertaking the ponds or reservoir on behalf of leased hired as temporary, or permanent. Moreover, societies conduct the different activities like fish production, transportation, input arrangements, harvesting, and marketing of the produce etc. Society also severed for providing services like as credit, cold storage, warehouses and improved technology etc.

The major fish producing countries in the world are China, India, Indonesia, Vietnam and Bangladesh. The contribution of world aquaculture production of China is 45468.960 thousand tonnes, India contributes 4881.0 thousand tonnes, Indonesia contributes 4253.9 thousand tonnes, Vietnam contributes 3397.1 thousand tonnes and Bangladesh 1956.9 thousand tonnes. The net work of 429 FFDAs have brought about 8.08 laces hectare of water area under modern fish culture operation benefiting approximately 13.86 lacs beneficiaries.

The rapid growth of the sector has generated huge employment opportunity for professional. Skilled and semi skilled workers for the different supports activities such as, construction and the management of the farm, hatcheries, feed mills, processing unit etc. It has been estimate that over 300,000 jobs have been generate in the brackish water sector alone in the main and supporting areas for shrimp culture. Although, information on exact numbers involved in aquaculture is not available.

The total aquaculture production in India is 4881.00 thousand tonnes which is 10 percent of world aquaculture production. India is the second largest country and coverers the 0.5 to 3.0 per hectare productivity (Annual report 2016-17) of fish in the world aquaculture production. The share of inland freshwater and aquaculture is departed 46 percent in 1980 and covers 85 percent in total fish production. Fresh water aquaculture has overwhelming 10 folds growth, from 0.37 million tonne in 1980 to 4.03 million tonnes in 2010 with in an annual growth rate of over 6 percent. Freshwater aquaculture contributes 95 percent of the total aquaculture production.

Three Indian major carps i.e. Catla (catla catla) Rohu (labia rohita) and Mrigal (cirrhines mrigala) contribute the bulk production to the extent of 70 to 75 percent of the total fresh water fish production followed by silver carp, grass carp, common carp, and catfish farming in second important group contributing the balance of 25- 30 percent.

Aquatic resources have reported in India consist of 29000 km of rivers 03 million ha of estuaries, 3.15 million hectare of reservoirs, 0.9 million lacks water and lagoon, 0.2 million ha of flood plain wetland, 0.72 million hectare of upland lake and 2.02 million 2.0 Kilometer are of exclusive economic zone (EEZ). The sea surrounding area in India includes 8,129 Kilometer of cost line, which includes those of Andaman, Nicobar and Lakshadweep Iceland (Ayyappan-2011).

The national mean production level from still water ponds has gone up from 600 kilogram per hectare & per year in 1974 to over 2900 kilogram per hectare & per year at present and several farmers have even demonstrating, higher production level of 8-12 tonnes per hectare & per year (handbook of fisheries and aquaculture, ICAR publication, India).

Chouhan S.K. and Sharma S.K. (1993) The authors has concluded that, the main factors responsible for co-operatives success were close linkage between cooperative societies and state government, fishing ban during breeding months, use of recommended size of gillnets, provision of regulated market and remunerative prices, strong authoritative system, proper and quality of dissemination of improved technology, provision group insurance policy at subsidized premium etc.

Bhatt, R. (1996) examined that the role of cooperatives in marine fisheries sector in the Dakshin Kannada district of Karnataka and find that cooperatives have developed into major institution in only the developed of port fish market centers, capable of influencing the credit and output markets.

D' cruz S.T. (1998) studied and reported that the co-operative umbrella of Matasyafed comprises 292 primary co-operative societies with an average membership of 502, covers about 75 percent of active fishermen of the state. On an average 12.5 percent active fishermen of the state were provided soft loan assistance for acquiring means of production through integrated fisheries Development project (IFDP). The improving trend of the performance indicators of IFDP and the attempt for resources

mobilization of the Rs. 210 cores under IFDP phase IV for the period 1996-2002 are expect to provide impetus for the take off in the co-cooperativisation processed of Matsyafed.

B. Ganesh Kumar, Datta, K. K., Joshi P.K. (2008) revealed that the total marketing cost of auctioner, wholesaler and retailer, vendor, marine fisherman, cooperative society and contractor/fresh water fisherman co-operative society have been found to be Rs. 0.98, Rs. 8.89, Rs 6.61, Rs. 4.50, Rs. 6.00 and Rs 3.51 respectively. The marketing efficiencies for Indian measure crops (IMC), sardine and seer fish have found to vary from 34 percent to 74 percent depending on the length of marketing channel. The marketing efficiency has found more in the case of marine species than fresh water species. The fishermen share in the consumer rupees has shown variation across species, marketing channels and markets.

Specific objectives

This study has attempt in this direction determines the following specific objective.

- To analyze the growth rate of area, production and productivity of fish in Chhattisgarh.
- To work out the cost, return, and profitability from fish production in the study area.
- To examine the marketing cost and price spread under different marketing channel of fish.
- To find the constraints in production and marketing of fish, and suggest suitable measure to overcome the problems.

Methedology

Multistage stratified random sampling procedure has been adopts in this study. There was two stratum divide to all random selected respondent. The participants have selected randomly from each stratum until the decided sample size i.e. sixteen respondents has selected in the entire blocks of Kabirdham district by random sample method. However, randomly select the several special sample i.e. twelve fish producers, twelve fish producer trader, twelve village trader, eight retailers, four wholesalers in the marketing analysis. However, randomly select the several special sample i.e. four fish co-operative societies include some consumers in constraint analysis of the study area. The primary data have been collect through the personal interview from select sample fish cooperative societies. However, secondary data have been collect through personal contact from journal, internet, and information of fish to directorate of fishery, Chhattisgarh, and deputy directorate of fishery, Kabirdham district. In addition, primary data has concerned about marketing and constraints i.e. local fish producer trader, village trader, wholesalers, retailers, and others market functionaries for analysis of fish marketing. Put the question to ask the sample fish producers from structure questionnaire & schedule at time of interview for gathered to primary information. The filled questionnaire & schedule are check and scrutinized immediately after the interview and the collect information. The collect information is edit and delete for the purpose to fulfill the research objectives. The statistical tools have been use in analysis of collected data. Data have entry in the excel spreadsheet and cleaned for irregularities, the cleaned data has been summarize in to descriptive format in term of frequencies, percentage and averages. The data relating to each management and marketing regime have assembled and reduced to comparable form by using the different statistical tools. Then information has processed and tabulated for use the research analysis.

Marketing channels

The different marketing channels have involved in fish marketing and which has fish passed through different route from producer to consumer in the study area. No sufficient fish markets have available due to low level of fish production, thus most of tinny fish producer have sale the own product direct to consumer, but some medium and large fish producer have adopted the following indirect fish marketing channel in the study area.

Producer- Consumer.

Producer- Producer trader- Consumer

Producer- Village trader / Village retailer- Consumer

Producer- Fish co-operative societies or Fish self-help groups

Producer - Wholesaler- Retailer Consumer

Compound growth rate or Exponential rate

$Y= A. B^t$

$\log y= \log A + t \log B$

Compound Growth rate in percent =

(Anti log of B-1) × 100

Where, Y=Area/Production/Productivity compound growth rate,

A= Constant, B= Regression coefficient, t= time in year

Coefficient of variance = (Standard deviation) / Mean × 100

Absolute change = Value of current year – Value of base year

Relative change = (Value of current year – Value of base year) / (Value of base year) × 100

Variable cost = Labour wise cost (Pond preparation+ Feed application+ Initial liming and fertilizer application+ Seed or fingerling application+ Treatment+ Netting+ Storage cost+ Water refilling+ Repairing of bunds and embankment+ Fish rearing) + Input wise cost (Seed or fingerling+ Feed+ Lime and fertilizer+ Medicine and chemical) + Interest of working capital+ Miscellaneous material

Fixed cost = (Rent amount+ Rental value of pond+ Depreciation+ Interest of fixed capital)

Total Cost = Variable Cost +Fixed Cost

Gross Return =Total fish production × sale price of fish

Net Return = Gross return – Gross Expenses or total fish farming cost

Benefit Cost Ratio = B / C

Breakeven levels of fish produce analysis:

i. Price per quintal of fish=

[Total cost (Fixed cost + Variable cost)/(Total production]

ii. Production of fish=

[Total cost (Fixed cost + Variable cost) / (Price per unit]

Marketing information

Marketing cost

MC= C f + Cm ith 1+Cm ith 2+……+ Cm ith

Where, MC = Total marketing cost of fish marketing. C f = Cost paid by fishermen, C m ith = Cost incurred by ith middlemen

Gross margin:

M= S ith + P ith

Where, M= Gross margin, S ith = Sale value of produce for ith middlemen, P ith = Purchase value for ith middlemen.

Net Margin:

Nm ith = Pr ith – (Pp ith +Cm ith)

Where, Nm ith = Net margin of ith type of market Middlemen, Pr ith = total value of received per unit (sale price), Pp ith = per unit purchase price of produce by the ith middlemen, Cm ith = cost incurred by the ith middlemen

Farmer Price

Pf = PA- Q

Where, Pf= Net price received by the farmer, PA= Whole sale price, Q= Marketing cost incurred by the fishermen

Estimation of fish farmer's share or producer share in consumer rupees:

Ps = Pf / Pr × 100

Where, Fishermen or producer share in consumer rupee, Pf= Net price received by the farmer, Pr= Price paid by the consumer.

Estimation of the marketing pattern:

C= C f+ Cm ith 1+ Cm ith 2+… Cm ith

Where, C= Total marketing cost of producer, Cf = Cost paid by the farmers, Cm ith = Cost incurred by ith of intermediary.

Estimation of marketing efficiency:

E = O / I × 100

Where, 'E' =index of marketing efficiency, 'O' = Output (added value / market margin), 'I' = Input (marketing cost)

Constraints Analysis

Garrett's ranking technique

Percentage position = (100 (R ij –0.05)/(N j)

Where, R ij = Rank give for the ith item by jth individual, N j = Number of item rank by the jth individual.

(Asking the question to sample fish producer and others respondents rank then ranked specific problems, which have faced by fish producer then according to their own perception in this method. The assigned rank is converting into percentage position, which has subsequently transferred into Garrett score using Garrett's table. For each constraint, scores of individual respondents are add together and then divided by total number of respondents. Thus, mean score for each constraint has ranked by arranging them in descending order)

Result Discusion

Study has analyzed accordingly to objective of research. Following result have obtained the with analyses of various objectives of research. Indices of constitution and added membership in fish societies.

Proportionate change of constitution and added membership of fish cooperative societies in Kabirdham district has analysed during the year 2010-11 to 2014-15 (period five years) and presented in table 5.3 II. It has observed that, constitution of fish cooperative societies in Kabirdham district has found to be highest proportionate change with magnitude of 183.33 and to be lowest proportionate change with magnitude 33.33 percent. Added membership of fish cooperative societies in Kabirdham district has found to be highest with magnitude 179.37 percent and lowest proportionate change with magnitude of 19.07 percent. However, proportionate change of constitution and added membership of fish cooperative societies in Chhattisgarh was analysed during the year 2004- 05 to 2012-13 (period nine years) and presented in table 5.3 -I. Constitution of fish cooperative societies in Chhattisgarh has found to be highest proportionate change with magnitude of 116.87 and to be lowest proportionate change with magnitude of 100.00 percent. Added membership of fish cooperative societies in Chhattisgarh has found to be highest proportionate change with magnitude of 125.97 and to be lowest proportionate change with magnitude of 100.00 percent.

Variability in Constitution and added membership of fish societies and self-help groups:

Variability estimated by coefficient of variance for constitution and added membership of fish cooperative societies in Kabirdham district and Chhattisgarh has analysed and presented in table 5.6. It has observed that, during the year 2010-11 to 2014-15 (period five years) variability estimated by coefficient of variance for constitution of fish cooperative societies in Kabirdham district has found to be magnitude of 70.013 and 43.474 percent respectively. During the year, 2010-11 to 2014-15 (period five years) variability estimated by coefficient of variance for constitution of fish cooperative societies in Chhattisgarh has found to be magnitude of 12.490 and 12.069 percent respectively. However, it has observed that, during the year 2004-05 to 2012-13 (period nine years) variability estimated by coefficient of variance for added membership of fish cooperative societies in Kabirdham districts has found to be magnitude of 96.364 percent and 33.047 percent, respectively. During the year, 2004-05 to 2012-13 (period nine years) variability estimated by coefficient of variance for added membership of fish cooperative societies in Chhattisgarh has found to be magnitude of 14.653 percent. Therefore, it has concluded that the added membership has more variable than the Kabirdham district to chattishga state and constitution has more Variable than the Kabirdham district to chhattishgarh state also. Compound Growth rate of adding membership and formation of Fish self help groups

The compound growth rate of constitution and adding membership of fish co-operative societies of the Chhattisgarh has showed positive & significant but compound growth rate of constitution and adding membership of the Kabirdham district has showed the negative & significant. during the years 2013-15: (from table 5.9 & 5.10).

Fish production cost measure for sample fish producer in study area. The fish production cost have compute to fish producer work out independently fish co-operative societies. Fish production cost of exotic breeds of fish co-operative societies have Rupee 62939.01 per hectare. However, fish production cost of local breeds fish co-operative societies have, Rupee 39963.91 per hectare. Perusals of this table reveal that fish productions have needed in labour varied degree of different production practices. However, family labour has the main work force sources of labour requirements. The required labour has used i.e. hired human labour and machine labour for many an operation has to be finished in specific time. The entire type of fish producers have used the most of labour in pond preparation, feeding, netting and seed application practices in together local and exotic breed of fish production. Under variable cost, labour wise involved cost in pond preparation of exotic breeds fish co-operative societies have Rupee 1809.27 per hectare with 2.88 percent.

However, feeding expenses of exotic breeds, fish co-operative societies have Rupee 474.22 per hectare with 0.74 percent. However, netting expenses of exotic breeds fish co-operative societies have Rupee 1340.20 per hectare with 2.13 percent However, seed application expenses of exotic breeds fish farmers, fish co-operative societies have Rupee 301.54 per hectare with 0.48 percent. Labour wise cost in pond preparation of local breeds fish co-operative societies Rupee 1484.08 per hectare with 3.71 percent. However, feeding cost of local breeds fish co-operative societies Rupee 426.02 per hectare with 1.06 percent. However, netting cost of local breeds fish co-operative societies have, Rupee 965.19 per hectare with 2.38 percent. However, seed or fingerling application cost of local breeds fish co-operative societies has Rupee 230.18 per hectare with 0.57 percent. Under the variable cost in material wise seeds or fingerling cost of exotic breeds fish

co-operative societies have Rupee 41172.60 per hectare with 65.45 percent. However, feeds cost of exotic breeds fish co-operative societies Rupee 1385.30 per hectare with 2.20 percent. However, interest of working capital of exotic breeds fish co-operative societies have Rupee 5293.85 per hectare with 8.42 percent. Material wise cost in seedling or fingerling of local breeds fish co-operative societies have Rupee 25104.55 per hectare with 64.26 percent. However, Feed cost of local breed fish co-operative societies have Rupee 1252.34 per hectare with 3.13 percent. However, Interest of working capital of local breed fish co-operative societies Rupee 3276.27 per hectare with (8.19 percent). Under the fixed cost in pond rent of exotic breeds co-operative societies Rupee 2744.84 per hectare with 4.35 percent.

However, rental value of pond cost in exotic breeds fish co-operative societies Rupee, 1500 per hectare with 2.38 percent. However, depreciation of pond in exotic breeds fish co-operative societies Rupee 274.48 per hectare with 0.44 percent. However, interest of pond in exotic breeds fish co-operative societies, Rupee 188.11 per hectare with 0.30 percent. However, pond rent cost of local breed fish co-operative societies Rupee 2504.68 per hectare with 6.25 percent. However, rental value of pond for local breed of fish co-operative societies Rupee 1000 per hectare with 2.50 percent. However, depreciation of pond for local breed of fish co-operative societies, Rupee 250.46 per hectare with 0.63 percent. However, Interest of fixed capital in pond of local fish co-operative societies, Rupee 169.78 per hectare with 0.41 percent. Involved minor cost of fish production have water refilling, watchman, and treatment in both type of exotic and local breeds, fish co-operative societies.

Observed that all fish producer have major expend in seeds and feeds in material wise cost however, pond preparation, storage, netting, water refilling in labour wise and others i.e. feeding, pond rent, and fingerling application for exotic and local breeds of fish producers. Ninety percent working cost are consider in local and exotic breeds of both fish producer.

Profitability measure in fish production of sample fish producers in study: Gross return, net return, cost benefit ratio, fish production, selling price, total cost, cost of production, and Break-even point in fish production of sample fish producers for local and exotic breeds have calculated independently. Fish producers have common trend that used more recourses and rise more production of exotic breeds in the study area. Fish production of exotic of fish co-operative societies has 32.91 quintal per hectare. However, fish production of local breeds fish co-operative societies have 18.53 quintal per hectare. Price of exotic breeds fish co-operative societies have Rupee Rupee 6422.86 per quintal. However, fish production of local breeds fish co-operative Rupee 4771.78 per quintal. Fish production cost of exotic fish co-operative societies have, Rupee 62939.01 per hectare. However, fish production cost of local breeds fish co-operative societies Rupee 39963.91 per hectare. Gross return of exotic breeds fish co-operative societies Rupee 206173.80 per hectare. However, gross return of local breeds fish co-operative societies Rupee 88421.08 per hectare.

Net return of exotic breeds fish co-operative societies Rupee 136234.79 per hectare,. However, Net return of local breeds fish co-operative societies Rupee 48457.17 per hectare. Net return for local breeds have low than exotic breeds due to price of exotics breeds is high and its productivity is also high. Cost benefit ratio of exotic breeds fish co-operative societies have 2.15:1. However, cost benefit ratio of local breeds of fish co-operative societies has 1.21:1. Cost of fish production of exotics breeds fish co-operative societies have Rupee 1912.45 per hectare. However, cost of fish production of local breeds fish co-operative societies Rupee 2156.71 per hectare. Break-even points of exotic breeds fish co-operative societies have 9.79.

However, break-even points of local breeds fish co-operative societies have 8.36:(from table 5.6). Fish production of local breeds has low then the exotic breeds due to low productivity in nature, using the improper practices of fish production; apply natural feeding practices, improper and un-recommended dose in local breed fish production by fish producer in the study area.

Cost distribution in fish production of sample fish producer in study area: The cost distribution during production by local and exotic breeds of fish produce have obtained more than ninety percent expense in working cost out of total cost however more than seventy-five percent expense in material wise cost out of total working cost respectively. Labour wise cost of exotic breeds fish co-operative societies have Rupee 9030.73 per hectare with 15.52 percent. However, labour wise cost of local breeds fish co-operative societies have Rupee 5274.68 per hectare with 14.56 percent. Input or material wise cost of exotic breeds fish co-operative societies Rupee 43907.76 per hectare with 75.51percent. However, input or material wise cost of local breeds fish co-operative societies have, Rupee 27488.04 per hectare with 75.87 percent. Working cost of exotic breeds fish co-operative societies have Rupee

58232.42 per hectare with 92.59 percent. However, working cost of local breeds fish co-operative societies have Rupee 36038.99 per hectare with 90.10 percent. Fixed cost of exotic breeds fish co-operative societies have Rupee 4706.59 per hectare with 7.47 percent. However, fixed cost of local breeds fish co-operative societies have Rupee 3924.92 per hectare with 9.80 percent. Fish production cost of exotic breeds fish co-operative societies have Rupee 62939.01 per hectare. However, fish production cost of local breeds fish co-operative societies Rupee 39963.91 per hectare: (from table 5.7).

Marketing pattern of local and exotic breeds of fish in study area: Local and exotic breeds of fish producer have adopted different marketing pattern. Fish production of exotic breeds of fish co-operative has, 2554.00 quintal. However, fish productions of local breeds of fish co-operative societies has, 2375.00 quintal. Fish consumption of exotic breeds of fish co-operative societies has 54.00 quintal. However, fish consumption of local breeds of fish co-operative societies has 108.00 quintal. Sold quantity of exotic breeds of fish co-operative societies has 2500.00 quintal. However, sold quantity of local breeds of fish co-operative societies has 2267.00 quintal. Marketed surplus of exotic breeds of fish co-operative societies has 2500.00 quintal. However, marketed surplus of local breeds fish co-operative societies has 2267.00 quintal: (from table 5.8). While marketable surplus of both local and exotic breeds of fish have not estimate due to unavailable of information.

The marketing channels and disposal pattern of fish in study area: It has observed that used the important disposal patterns in existing study. The samples fish producer has disposing the fish in different marketing channels. Fish passed from consumer to producer through various marketing channel in study area: (from table 5.9). The fish cooperative societies have used four marketing channels for disposal of produced fishes. Sell quantity of sample fish co-operative societies have 127.00 quintal, 598.00 quintal, 3489.00 quintal and 553.00 quintal in marketing channels first, third, fourth and fifth respectively. However, average received prices by fish co-operative societies have Rupee 6972.41 per quintal. However, it has observed that 58.963 percent quantity sold of fish co-operative societies and sold highest quantity of fish in channel fourth: (from table 5.10). Thus, it has concluded that the fish co-operative societies have preferred the channel fourth for disposal of fish in the study area.

Market analysis of fish co-operative societies: The marketing analysis have examined and analyzed the adopted marketing channel of fish co-operative societies i.e. first, third, fourth and fifth. However, included contents have Producer or farmer price, marketing cost, market margin, difference of farmers & consumer prices, Retailer sale price, marketing efficiency and producer share in consumer rupee of fish farmer: (from table 5.12.2). Producer or farmer price of fish co-operative societies has Rupee 5000.00 per quintal, Rupee 5900.00 per quintal, Rupee 8499.45 per quintal and Rupee 8490.19 per quintal in channel first, third, fourth and fifth respectively. However, marketing cost of fish co-operative societies has Rupee 000 per quintal, Rupee 195.00 per quintal, Rupee 1886.74 per quintal and 1443.93 per quintal in channel first, third, fourth and fifth respectively.

However, market margin of fish co-operative societies has Rupee 000 per quintal, Rupee 1905.00 per quintal, Rupee 2017.45 per quintal and Rupee 1566.87 per quintal in channel first, third, fourth and fifth respectively. However, difference of farmers price and consumer price of fish co-operative societies have Rupee 000 per quintal, Rupee 2100.00 per quintal, Rupee 3904.19 per quintal and Rupee 3009.81 per quintal in channel first, third, fourth and fifth respectively. However, retailer sale prices of fish co-operative societies has Rupee 5000.00 per quintal, Rupee 8000.00 per quintal, Rupee 12403.64 per quintal, and Rupee 11500.00 per quintal in channel first second third fourth and fifth respectively. However, marketing efficiency of fish co-operative societies has 976.92 percent, 106.93 percent and 108.44 percent in channel third, fourth and fifth respectively. However, producer share in consumer rupee of fish co-operative societies has 100.00 percent, 73.75 percent, 68.52 percent and, 73.82 percent in channel first, second, third, fourth and fifth respectively. The channel first has not any marketing cost and market margin due to absent of the Intermediateries. Therefore, channel first is most efficient channel.

Constraints: The yield rates of fish in Chhattisgarh and Kabirdham districts have below than the yield potential and target production level of national and international level. Therefore, break the stable trend of yield per unit of water area in the study area. However, one of the furthermost problems of the production gap between the existing production technique and scientific based production technology. The prevailing production gap of the fish producer in Kabirdham districts is not only loss every their earning capacity but their standard of living has been also going down. However, the fish producer should become aware

about the improved technology, sold of fish through improved marketing system seem willing to adopt but their poor economic condition, unavailability of resources and other obstacles do not allow them to go away for new technology. The sampled fish producer faces the many problems and constraint in fish production and marketing. The faced problems have analyzed by garrets score ranking technique in the study area.

Faced constraints about village pond utilization: Fish producer have faced various constrains in village pond utilization i.e. satisfaction level of selection criteria for beneficiaries, finishing leased duration, conflict between villagers and fish producers and satisfaction level for process of lease rate determination etc. in the study area (from table 5.23). The fish farmer opinion about the problem of village pond utilization have find with the direct interview. Garrett's score has greater than twenty-four listed in descending order by faced problem of fish self-help groups. It has inferred that, constraints faced by fish self-help groups have i.e. satisfaction level of selection criteria for beneficiaries, finishing lease duration or period, conflict between villagers and fish producers, conflict between community and fish produce and satisfaction level for process of lease rate determination with obtained Garrett's score have i.e. 60, 40, 75, 50 and 24 respectively. However, conflict between villagers and fish producers has major problems than followed the constraints conflict between community and fish produce and satisfaction level of selection criteria for beneficiaries of fish self-help groups.

Faced constraints about pond preparation: Fish producer have faced various constrains in village pond preparation i.e. application level of soils testing, labour availability, application of silt and predators removing, pond utilization and pond repairs in the study area (from table: 5.24). The fish farmer opinion about the problem of pond preparation have find with direct interview. Garrett's score has greater than twenty-four listed in descending order by faced problem of fish self-help groups. It has inferred that, constraints faced by fish self-help groups have i.e. application level of soils testing, labour availability, application of silt.

Faced constraints about seed, feed, manures and fertilizers: Fish producer have faced various constrained about seed, feed, manures and fertilizers i.e. seed availability, feed availability, transportation, utilization knowledge of feeds & manures, utilization knowledge of fertilizer application and manures, application of manure and fertilizer application,

Faced constraints about disease, predators and weed: Fish producer have faced various constrained about disease, predators and weed i.e. disease, predatory, weed, and skin problem in the study area. Perennial water bodies of pond have a number of predatory animals i.e. snakes, tortoise and frogs, which cause extensive damage to seed population predatory fish species found in perennial water bodies of pond include Murrells, goby, featherbacks singhi, magur, freshwater shark, climbing perch and several catfishes. The aquatic weed infestation is the most issue of both cases in fish production of local and exotic breed.

Also the fish production has suffer the not only the infested aquatic weed and predators but suffer the diseases of fish like as viral disease swim bladder infection has been faced by all category of fishes. The farmer opinion about disease, predators and weed have find with the direct interview (from table: 5.26). Garrett's score has greater than twenty-seven listed in descending order by faced problem of fish self-help groups. It has inferred that constraints faced Constraints faced by fish self-help groups have i.e. disease, predatory, weed, and skin problem with obtained Garrett's score have i.e. 57, 43, 73 and 27 respectively.

However, weeds have major problems than followed the constraints disease and predators of fish self-help groups. Most of fish producer have faced the aquatic weed problem and predator fish in the pond. The predators' fish has eaten the domesticated fish in the pond so create the heavy losses in the fish yield. while weed infestation and predator problem have common in each type fish producer in the study area.

Farmer perceptions about Extension rendered services by FFDA: Fish producer have faced various constrained perceptions about Extension rendered services by FFDA i.e. adopting level of advising by FFDA (technical information), satisfaction level of training programme and Panchayat & FFDA officer setting to conflict in the study area. The farmer opinion about perceptions about Extension rendered services by FFDA has found with the direct interview (from table 5.27). Garrett's score has greater than thirty listed in descending order by faced problem of fish self-help groups. It has inferred that, constraints faced by fish self-help groups have i.e. FFDA advising (technical information), satisfaction level of training programme and with obtained Garrett's score have i.e. 70 and 50 respectively. However, FFDA advising (technical information) has major problems then followed problems the satisfaction level of training programme of fish self-help groups.

Most barriers found in fish production have lack of awareness, low attendance of training programme and improper technical advice provided by FFDA in study area.

Faced constraints about natural calamities and human creative problems: Fish producer have faced various constrained natural calamities and human creative problem i.e. natural calamities (Drought & floods), human creative (Thrift & quarrels) and water stressing in the study area. The farmer opinion about natural calamities and human creative problems has found with the direct interview (from table 5.28). Garrett's score has greater than thirty-one listed in descending order by faced problem of fish self-help groups. It has inferred that, constraints faced by fish self-help groups have i.e. natural calamities (Drought & floods), human creative (Thrift & quarrels) and water stressing with Garrett's score 70, 50 and 31 respectively.

However, natural calamities (Drought & floods) has major problems then followed problems the human creative (Thrift & quarrels) and water stressing of fish self- help groups. Natural calamities and human creative problems have most barriers in the fish farming. Natural calamities include that flood, drought and some infected, viral diseases and human creative problems includes that thrift of fishes, water refilling stress and village & community conflict. Water stressing is most common problems of fish production in off-season of rain by fish producers in the study area and predators removing, pond utilization and pond repairs with obtained Garrett's score have i.e. 24, 75, 50, 40, and 60, respectively. However, labour availability has major problems than followed the constraints pond repairs and application of silt & predators removing of fish self help groups. Labour availability has common constraint faced by all groups of fish producers

Faced constraints about natural calamities and human creative problems: Fish producer have faced various constrained natural calamities and human creative problem i.e. natural calamities (Drought & floods), human creative (Thrift & quarrels) and water stressing in the study area. The farmer opinion about natural calamities and human creative problems has found with the direct interview (from table 5.28). Garrett's score has greater than thirty-one listed in descending order by faced problem of fish self-help groups. It has inferred that, constraints faced by fish self-help groups have i.e. natural calamities (Drought & floods), human creative (Thrift & quarrels) and water stressing with Garrett's score 70, 50 and 31 respectively. However, natural calamities (Drought & floods) has major problems then followed problems the human creative (Thrift & quarrels) and water stressing of fish self- help groups. Natural calamities and human creative problems have most barriers in the fish farming. Natural calamities include that flood, drought and some infected, viral diseases and human creative problems includes that thrift of fishes, water refilling stress and village & community conflict. Water stressing is most common problems of fish production in off-season of rain by fish producers in the study area.

Faced Constraints about the finance and insurance services: Fish producer have faced various constrained finance and insurance services i.e. loan or fund availability, high Interest or utilization, Insurance conflict and subsidy in the study area (from table 5.29). The farmer opinion about finance and insurance services i.e. loan or fund availability, high Interest or utilization, Insurance conflict and subsidy has found with the direct interview. Garrett's score has greater than twenty-seven listed in descending order by faced problem of fish self-help groups. It has inferred that, constraints faced by fish self-help groups have i.e. loan or fund availability, high Interest or utilization, Insurance conflict and subsidy with Garrett's score 57, 43, 73 and 27 respectively.

However, Insurance conflict has major problems then followed problems the loan or fund availability and high Interest or utilization of fish self help groups. Most of fish producer has faced the loan availability and insurance conflict. Government subsidy scheme and other facility have operated unfair and biased so loan supply has affected in the study area.

Faced Constraints about the marketing and disposal: Fish producer have faced various constrained about the marketing and disposal i.e. transportation, price, payment, delay payment, selling, satisfaction level to market information and storage in the study area (from table: 5.30). The farmer opinion about marketing and disposal i.e. transportation, price, payment, delay payment, selling, satisfaction level to market information and storage has found with the direct interview. Garrett's score has greater than twenty-two listed in descending order by faced problem of fish self-help groups. It has inferred that, constraints faced by fish self-help groups have i.e. transportation, received price, payment, delay payment; selling, satisfaction level to market information and storage with Garrett's score have i.e. 66, 35, 22 , 50, 58, 43, and 78 respectively. However, storage has major problems then

followed problems the transportation, selling and delay payment of fish self help groups. The facing problems by fish producer have transportation, large number of Intermediateries, high rate of market fee, storage fee, late information market price and other information, bias transfer of payment and delay payment not gating the appropriate price of fish in the study area.

Conclusion

Investigation it could be concluded that, Growth rate among area, production and productivity. The production and productivity of growth rate has high than the area. However, the most of local and exotic breeds of fish cooperative societies have expended in fish production. Local and exotic breeds of fish cooperative societies have more expenses in material cost than the labour wise and others cost.

All type of local and exotic breeds of fish cooperative societies have more than ninety percent expenses in working cost and seventy-five percent expenses in material wise costs. Fish production of the fish cooperative societies of exotic breeds has high than then local breeds of fish. Sale price of the fish cooperative societies for exotic breeds have high than local breeds of fish. Gross returns of fish cooperative societies of exotic breeds have high than local breeds of fish. Net return of fish cooperative societies of exotic breeds have high than local breeds of fish. Cost benefit ratios of the fish cooperative societies of exotic breeds have high than local breeds of fish.

Five marketing channel have adopted in fish marketing in study area where fish disposed between producer to consumer. Disposal of fish among fish cooperative societies were preferred marketing channel fourth and fifth. Channel first have highest producer price, Channel four have highest marketing cost, Channel fifth have highest marketing margin, Channel first have highest producer share in consumer rupee and marketing efficiency. So channels first has more efficient and profitable than other adopted marketing channels but fish cooperative societies has prefer the channel four due to more economic in marketing view.

The major socio-economic constraints of the fish cooperative societies have discovered the fish production of local and exotic breeds in the study area. Obtain constraints i.e. unavailability good quality of seed and fingerling, lease problems, social conflict, weed infestation and disease, water stress, natural and human create problems and Improper provide the extension training and services by F.F.D.A. (Fish farmer development authority) and poor & irregular financing services. In addition restriction of use of medicine, feed, manure & fertilizers, leasing process and poaching by society and community. The marketing constraints of fish for local and exotic breeds of fish i.e. transportation, selling, market information, price, storage, fish rearing, retail and wholesale market both poor marketing system.

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