iJRASET
International Journal For Research in Applied Science and Engineering Technology

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

**Volume:** 6 **Issue:** IV **Month of publication:** April 2018

**DOI:** http://doi.org/10.22214/ijraset.2018.4815

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887*
*Volume 6 Issue IV, April 2018- Available at www.ijraset.com*

# Cost and Benefits of Sericulture Farmers of Ramanagaram District of Karnataka

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***Abstract:*** ***Sampling frame work Purposive stratified random sampling was adopted in the study area. Three taluks are selected from the districts in the study area i.e., Kanakapura Channapatna and Ramanagara taluks the farmers were randomly chosen for the study. The primary data required for the study 250 A Comparative Economic Analyses of Plot System. In Kanakapura Taluk total sample 100 farmers out that 90 farmers are Multivoltine Silk rearing farmers 10 farmers are Biovoltine silk rearing farmers. In Channapatna taluk total sample 90 farmers out that, 80 are Multivoltine silk rearing farmers 10 farmers are Biovoltine silk rearing farmers. In Ramanagar Taluk total sample 60 farmers are Multivoltine Silk rearing farmers 10 farmers are Biovoltine Silk rearing farmers using structured schedule through personal interview. In this study Cost and return structure is analysed by primary data collected from the sample respondents similarly the annual net income from the Multivoltine Silk rearing farmers The total cost of production for 100 DFLS was Rs. 22997, with gross returns of Rs. 35128 and net returns of Rs. 12130. Across regions, highest cost was seen in Ramanagara (Rs. 36103), followed by Kanakapura (Rs. 24591) and Channapatna (Rs.20966) whereas net returns was highest in Ramanagara (Rs. 22997), Kanakapura (Rs. 12322) and Channapatna (Rs. 11526). Cost and returns of Bivoltine cocoon production. The highest cost was incurred by General category of farmers (Rs. 26194) followed by OBC (Rs. 25374), ST (Rs. 23564) and SC (Rs. 23146). The highest net returns was seen among, General (Rs. 14192), followed by OBC (Rs. 13747), SC (Rs.11548) and ST (Rs. 9618). The overall cost and returns was Rs. 24241 and Rs. 12786 respectively. The major reason for practicing the mulberry cultivation is Income throughout the year, followed by employment thought the year, realize more by products and can supplement feed for livestock***

## I. INTRODUCTION

Constitutes one of the important agro - based pursuits with which rural population is associated from ancient times. Sericulture of India enjoys well established status which guarantees both direct and indirect employment to various stakeholders and aids in augmenting their income in some of the states, where as in other states it serves as a full-fledged avenue for earning livelihood. Although sericulture sector provides sufficient returns to the farmers in less possible time, yet it does not involve possession of larger land holdings, sufficient capital & investment incentives or adequate farm infrastructure, but has an ample employment generating potential. The reduction of rural poverty continues to be a paramount goal of the developing countries like, India as the majority of the poor population still resides in these areas. The World Bank, for example, estimates that more than 70 per cent of the world's poor live in rural areas. So far, various strategies have been pursued to address this concern and among the major ones is rural employment creation. The agriculture sector, however, has been confronted with a number of factors that have limited its potential for generating new jobs in rural areas. It is, therefore, necessary to focus on a broader spectrum of the rural economy through improved ways and means. Thus the establishment of rural based industries like sericulture, in particular, can be very effective tool for providing success to landless farmers and can also in a long way address the problems of rural women who can also make their earnings through its practice.

Thus, India has a distinct advantage of practicing sericulture all through the year, yielding a stream of about 4 – 6 crops as a result of its tropical climate. In India, sericulture is not only a tradition but also a living culture. It is a farm-based, labour intensive and commercially attractive economic activity falling under the cottage and small-scale sector. It particularly suits rural-based farmers, entrepreneurs and artisans, as it requires low investment but, with potential for relatively higher returns. It provides income and employment to the rural poor especially farmers with small land-holdings and the marginalized and weaker sections of the society. Several socio-economic studies have affirmed that the benefit-cost ratio in sericulture is highest among comparable agricultural crops.

### *A. Background of the Study*

Sericulture has been promoted as an agro-based, labour intensive rural oriented cottage industry in the country, providing gainful employment mainly to the weaker and marginalised sections of the society. It is a highly remunerative occupation requiring little

capital investment. It is estimated that sericulture can generate employment @11 man days per kg of raw silk production (in on-farm and off-farm activities) throughout the year. In China 20 million farmers and 5 lakh people are occupied by sericulture and silk processing industry. In India 59000 villages providing employment to 6 million people from the farm sector and silk processing industry are practicing sericulture. Employment and income generation is primarily among the disadvantageous groups, i.e., women, SCs, STs and minorities and other marginalized groups are also substantially involved. In the year 2016-17 the cumulative employment generation from sericulture sector were 92.40 lakh persons when compared to 68.17 lakh persons during 2009-10 (CSB, 2016-17). Moreover, 55-60percent of the Sericultural activities is undertaken by rural women. CSB has in its CDP programme designed for XI Plan period, a special scheme for Women in Sericulture viz. Women Empowerment (CSB, 2011).

Over the last six decades Indian silk industry has registered an impressive growth, both horizontally and vertically. Plans and schemes implemented by Central and State agencies and relentless efforts of thousands of dedicated persons in the fields of research and extension have helped in this context. For instance, the age old multivoltine hybrids have been replaced by Multivoltine Bivoltine and Bivoltine hybrids. The sericulture has witnessed a quantum jump in raw silk productivity. The average yield of 25 kgs of cocoons/100 DFLS in the recent past has increased and currently the average yields are in the range of 60 – 65 kgs/100 DFLS. The new technology, besides doubling yields has also led to qualitative improvements in cocoon production with considerably reduced renditta and has also helped break the climate barrier. Pramanik et al., (1996) studied the generation of agricultural employment potential in the adopted village as a result of transfer of modern high yielding technologies. As a result of the area under high yielding varieties of rice increased by 8per cent, an additional employment was generated at the same pace through more engagement of farmers in cultivation of this crop. It was observed that 10 per cent and13.33 per cent of additional man days was generated in 1992 and 1993, respectively over1991.

India is the second largest producer of silk in the World, next to China, with 16.14percent share in global raw silk production. Brazil, Thailand Uzbekistan and Vietnam are also producing silk around 3,092 M.T. in a year (CSB, 2016). Though, Indian breeds/hybrids have the potential to produce the same quality, our system of sericulture practices is entirely different from that of China. The strict maintenance of discipline and better linkage from farmers to weavers, large-scale operation of egg production, reeling and weaving using modern machineries, strict control measures for diseases, uniform adoption of new technologies, supply of required quantity of quality eggs in time to avoid the chances of contamination of young silkworm etc. make the Chinese sericulture more vibrant economically sound and sustainable. Another area of difference is that the entire production is state controlled with no open marketing/auction systems for silk cocoons and yarns Balasaraswathi et al., (2006) made a comparative analysis on the economics of mulberry and cocoon production in Dharmapuri and Erode districts of Tamil Nadu and concluded that the net returns/acre/year was higher in the former (Rs.25,629.03) than that of the latter (Rs. 17,834.33) The cost benefit ratio was 1:1.61 and 1:1.38 in Dharmapuriand Erode districts respectively.

As per the 2016-17 statistics from Ministry of Statistics and Programme Implementation, Government of India, among the traditional sericulture states, Karnataka ranked first with its total raw silk production (9571 MTs) followed by Andhra Pradesh (5974 MTs) and Assam (3811 MTs) wherein, mulberry is the major contributor among all other sources. Whereas, in the case of Vanya Silks, Eri the highest contributor (5629 MTs) followed by Tasar (3259 MTs) and Muga (171 MTs). As regards to Eri silk, Assam is the highest producer (2,612 MTs) followed by Meghalaya (614 MTs) and Nagaland (597 MTs). Similarly, Jharkhand (1088 MTs) is a major producer of Tasar silk followed by Chhattisgarh (385 MTs) and Odisha (45 MTs) in India. Although, the contribution of Muga silk is very less in the country, its major production takes place from North Eastern States, in which Assam solely produces around 126 MTs. Years 2009-10 and 2010-11 proved to be promising with reference to Vanya silk production.

Sericulture is one of the major employment generating sectors in the State and its growth has immense employment generation potential, particularly in rural Karnataka. The area under mulberry cultivation in the State was about 91492 hectares in 2016-17. The production of cocoons, quantity of cocoons marketed, raw silk production was reduced by 2.56 per cent in 2016-17 compared to 2015-16 and total employment in industry was increased by 1.70 per cent in 2016-17 compared to 2015-16. During 2014-15, the estimated mulberry silk production in Karnataka was 9570 MTs (Economic Survey of Karnataka, 2016-17). Lakshmanan et al., (1999) investigated the employment pattern and labour productivity in sericultural operations and inferred that the labour employment was more in smaller mulberry holdings, while the labour productivity was more in larger mulberry holdings. They also found more female participation in sericulture operations when compared to male labour

In the Kolar district of Karnataka, Out of total acreage wetland constituted 27.36 per cent while garden land formed 14.53 per cent. The total cost incurred for rearing of 8,000 DFLs per year was worked out to be Rs. 7,30,224.Among the total cost, maximum cost was incurred towards the mulberry leaves Rs. 4,55,000 (62.30percent). The minimum cost of expenditure was incurred towards transportation and marketing Rs 5000 (0.68 percent) and other costs were to the tune of Rs. 500 (0.06percent). The total net earnings

from 10 batches per year were estimated to be Rs. 19, 04,000 per 8,000 DFLs per year with a benefit cost ratio of 1.59. The total investment on building and equipments for rearing of 8000 DFLs per year was worked out to be Rs. 46,874. Among the depreciation cost incurred towards the equipments for rearing of 800 DFLs, the highest was contributed by mountages Rs. 25,600 during the silkworm cocoon production activities.

## II. DATA SOURCES AND METHODOLOGY

### *A. Sampling Frame Work*

Purposive stratified random sampling was adopted in the study area. Three taluks are selected from the districts in the study area i.e., Kanakapura Channapatna and Ramanagara. The taluks were randomly chosen for the study. The total sample size was 250. In KanakapuraTaluk total sample of 100 farmers were selected, of which 90 farmers are Multivoltine silk rearing farmers 10 farmers are Biovoltine silk rearing farmers. In Channapatna taluk total sample was 90 farmers, of which, 80 are Multivoltine silk rearing farmers and 10 farmers are Biovoltine silk rearing farmers. In Ramanagar Taluk total sample 60 farmers are Multivoltine silk rearing farmers 10 farmers are Biovoltine silk rearing farmers using structured schedule through personal interview. The primary data were collected on socio-economic condition, cropping pattern, size of operational holding, existing systems of mulberry cultivation , cost of cultivation, prices of inputs , cocoon yield, Secondary data on land utilization pattern, rainfall, population, workforce and irrigation were collected from State Development Departments, and Directorate of Census. The data collected were tabulated and analyzed to draw inferences for the set objectives.

## III. RESULTS & DISCUSSION

### *A. Social Category Wise*

Table1represents the region wise and social category wise cost and returns of Multivoltine cocoon production. The total cost of production for 100 DFls was Rs. 22997, with gross returns of Rs. 35128 and net returns of Rs. 12130. Among the different social categories, the highest cost was incurred by General category (Rs. 23440) followed by OBC (Rs. 23347), ST (Rs. 22217) and SC (Rs. 22217). The highest net returns was seen in General (Rs. 12575), followed by OBC (Rs. 12649), SC (Rs. 10751) and ST (Rs.9068).

Across regions, highest cost was seen in Kanakapura (Rs. 24591), followed by and Ramanagara (Rs. 23386), Channapatna (Rs. 20966) whereas net returns was highest in Ramanagara (Rs. 22997), Kanakapura (Rs. 12322) and Channapatna (Rs. 11526).

Table 1. Category wise Cost and returns of Multivoltine cocoon production

| Region | Particulars | Social categories | | | | |
|---|---|---|---|---|---|---|
| | | SC | ST | OBC | GM | ALL categories |
| Channapatna | Total cost | 18060.13 | 17803.92 | 21771.38 | 20846.22 | 20966.46 |
| | Gross returns | 29193.79 | 26269.23 | 33343.40 | 33980.45 | 32493.31 |
| | Net returns | 11133.65 | 8465.31 | 11572.02 | 13134.23 | 11526.85 |
| Kanakapura | Total cost | 21965.42 | 28823.58 | 24538.39 | 27889.28 | 24591.92 |
| | Gross returns | 32243.41 | 36569.40 | 37739.94 | 38311.75 | 36914.38 |
| | Net returns | 10277.99 | 7745.82 | 13201.55 | 10422.47 | 12322.46 |
| Ramanagara | Total cost | 24558.97 | 20755.72 | 23742.94 | 21398.70 | 23386.60 |
| | Gross returns | 35474.04 | 31106.99 | 37210.37 | 36008.27 | 36103.62 |
| | Net returns | 10915.07 | 10351.27 | 13467.43 | 14609.57 | 12717.02 |
| Grand Total | Total cost | 21549.51 | 22217.45 | 23346.94 | 23440.10 | 22997.48 |
| | Gross returns | 32300.80 | 31285.46 | 35996.26 | 36015.98 | 35128.21 |
| | Net returns | 10751.30 | 9068.01 | 12649.32 | 12575.88 | 12130.73 |

Source: - field survey

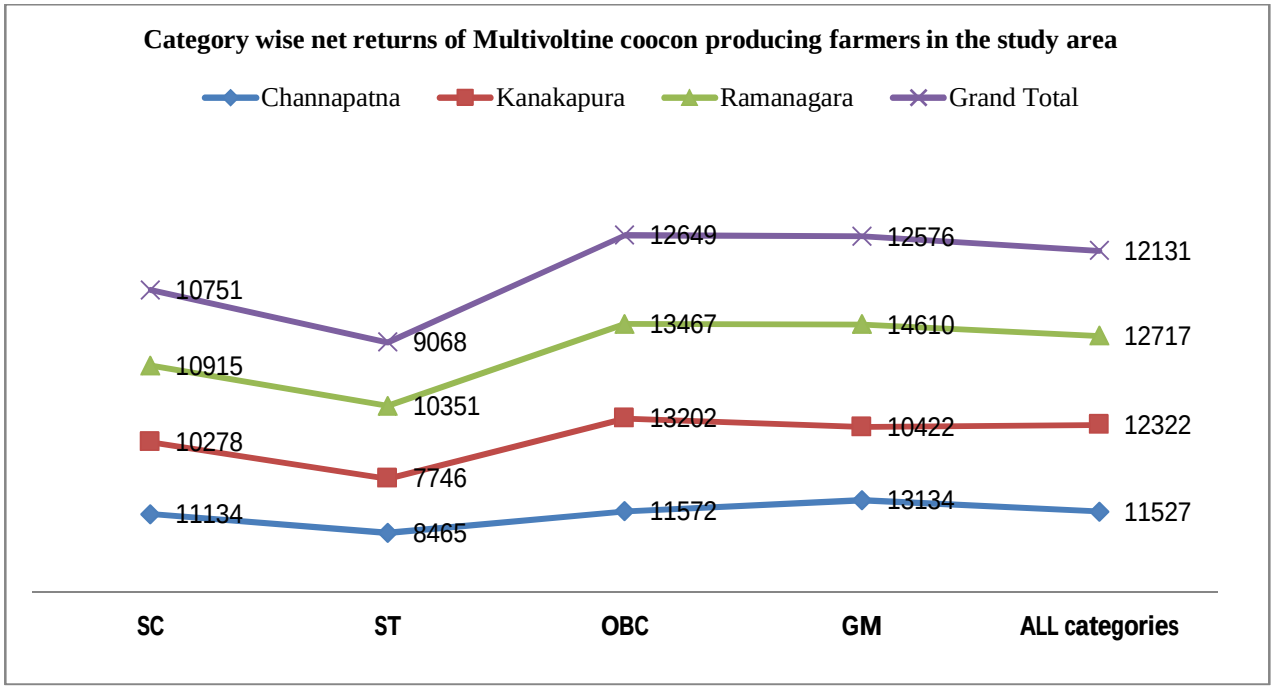


Fig. 1:- Category wise net returns of Multivoltine cocoon producing farmers in the study area.

*B. Education Wise*

Table 2 represents the cost and returns of Multivoltine cocoon production across various educated groups. The total cost incurred on 100 DFL cocoon production was highest among individuals with primary school education (Rs. 25279) followed by SSLC (Rs. 22828) and illiterate (Rs22432).

The highest net returns was realized by farmers with post graduation (Rs. 15948) followed by primary education (Rs. 12581) and SSLC (Rs. 12553). The least net returns was realized by farmers educated up to PUC (Rs. 10977).Across the regions the total cost is more in case of Kankapura (Rs 24591) followed by Ramanagara (Rs 23386) and Channapatna (Rs.20966) and net returns is more in case of Ramanagara (Rs 12717) followed by Kanakapura (12322) and Channapatna (11526).

Table 2 .Education level wise Cost and returns of Multivoltine cocoon production

| Region | Particulars | Education level | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Illiterate | Primary | SSLC | PUC | Graduate | Post-graduation | Total |
| Channapatna | Total cost | 20055.64 | 25535.64 | 19762.78 | 19376.47 | 18229.56 | 19097.23 | 20966.46 |
| | Gross returns | 29592.93 | 35789.80 | 30794.58 | 28811.23 | 30706.10 | 31909.70 | 32493.31 |
| | Net returns | 9537.29 | 11254.16 | 11031.80 | 9434.76 | 12476.54 | 12812.46 | 11526.85 |
| Kanakapura | Total cost | 23078.48 | 26832.38 | 24570.30 | 21663.91 | 24285.80 | 28874.72 | 24591.92 |
| | Gross returns | 34320.98 | 37867.99 | 36962.59 | 32909.88 | 38187.37 | 46272.69 | 36914.38 |
| | Net returns | 11242.50 | 11035.62 | 12392.29 | 11245.97 | 13901.57 | 17397.98 | 12322.46 |
| Ramanagara | Total cost | 25616.67 | 23729.79 | 22167.19 | 21475.14 | 23176.48 | 23268.21 | 23386.60 |
| | Gross returns | 37473.15 | 35082.53 | 36700.68 | 33895.27 | 33560.69 | 35729.80 | 36103.62 |
| | Net returns | 11856.47 | 11352.74 | 14533.49 | 12420.13 | 10384.22 | 12461.59 | 12717.02 |
| Grand Total | Total cost | 22432.71 | 25279.99 | 22828.59 | 20847.49 | 21700.48 | 22160.92 | 22997.48 |
| | Gross returns | 31926.74 | 37861.38 | 35382.20 | 31825.20 | 34242.26 | 38109.78 | 35128.21 |
| | Net returns | 9494.03 | 12581.38 | 12553.61 | 10977.71 | 12541.78 | 15948.86 | 12130.73 |

Source: - field survey

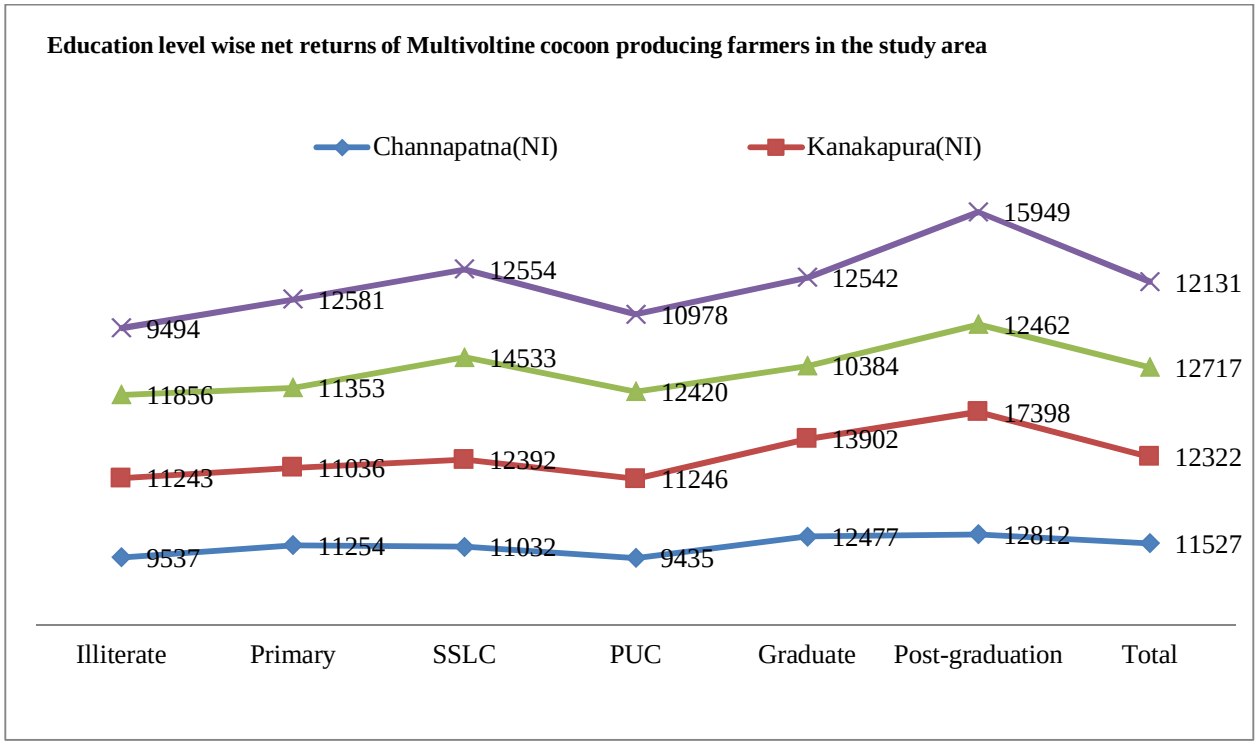


Fig. 2:- Education level wise net returns of Multivoltine cocoon producing farmers in the study area.

Table 3. Farmer category wise Cost and returns of Multivoltine cocoon production

| Region | Farmer category | | | | | |
|---|---|---|---|---|---|---|
| | Particulars | Marginal Farmers | Small Farmers | Middle Farmers | Large Farmers | Total |
| Channapatna | Total cost | 20604.20 | 21853.45 | 20797.05 | 20479.75 | 20966.46 |
| | Gross returns | 28662.37 | 33895.39 | 31770.25 | 33547.98 | 32493.31 |
| | Net returns | 8058.17 | 12041.95 | 10973.21 | 13068.23 | 11526.85 |
| Kanakapura | Total cost | 23856.72 | 26811.84 | 24115.23 | 23702.57 | 24591.92 |
| | Gross returns | 34143.47 | 41225.68 | 36481.58 | 35796.07 | 36914.38 |
| | Net returns | 10286.75 | 14413.83 | 12366.35 | 12093.50 | 12322.46 |
| Ramanagara | Total cost | 26246.55 | 23038.21 | 22492.23 | 22424.60 | 23386.60 |
| | Gross returns | 33576.64 | 35604.81 | 37049.77 | 37656.30 | 36103.62 |
| | Net returns | 7330.09 | 12566.60 | 14557.54 | 15231.71 | 12717.02 |
| Grand Total | Total cost | 23505.52 | 23873.88 | 22814.63 | 21967.96 | 22997.48 |
| | Gross returns | 32403.11 | 36871.01 | 35157.21 | 35303.92 | 35128.21 |
| | Net returns | 8897.58 | 12997.13 | 12342.58 | 13335.96 | 12130.73 |

*C. Based on Category Of Farmers*

Across the farmers category, highest cost was incurred by small farmers (Rs. 23874) followed by marginal farmers (Rs. 23505), middle farmers (Rs. 22814) and large farmers (Rs. 21968). The net returns were highest among large farmers (Rs. 13335), small farmers (Rs. 12997), medium farmers (Rs. 12342) and marginal farmers (Rs. 8898). The overall cost and net returns was Rs. 22997 and Rs. 12130 respectively. Highest cost incurred by Kanakapura farmers (Rs 24591) followed by Ramanagara (Rs 23386) and Channapatna (Rs 20966) and in case of Net returns it is more in Ramanagara (Rs 12717) followed by Kankapura (Rs 12322) and Channapatna (Rs 11526).

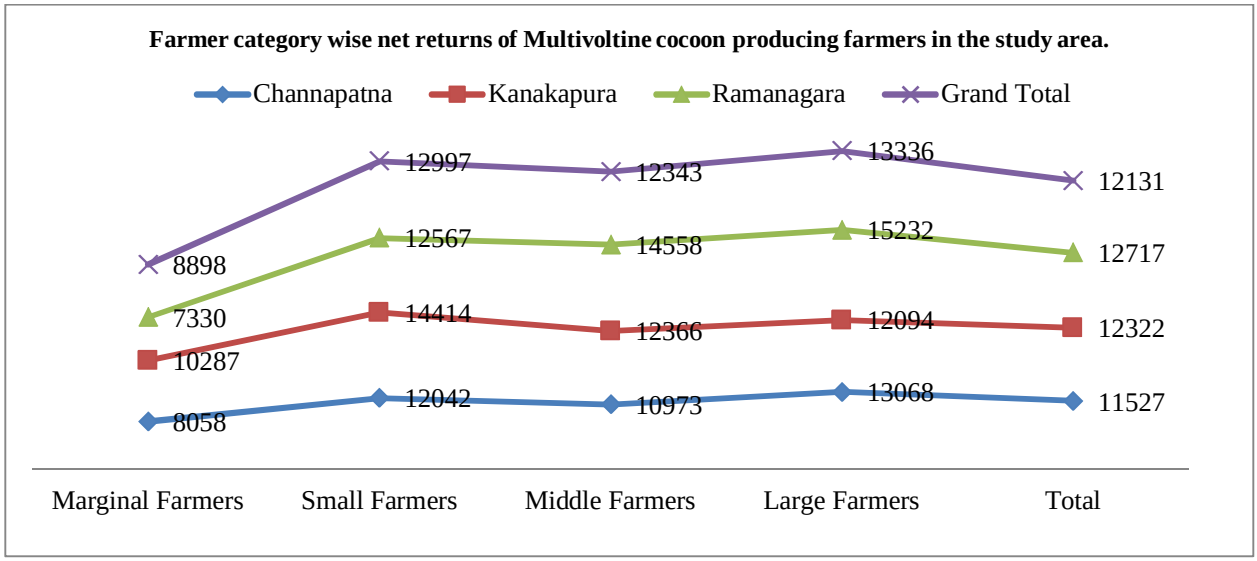


Fig. 3:- Farmer category wise net returns of Multivoltine cocoon producing farmers in the study area.

*D. Based on Gender*

Table 4gives gender wise cost and returns of Multivoltine rearing (100DFls). The highest cost was incurred by male farmers (Rs. 23295) whereas Rs. 21674 was incurred by women. Net returns was highest among women farmers (Rs. 12321) followed by men (Rs. 12087). The overall cost and returns was Rs. 12717 and Rs. 12130 respectively. The highest cost was more in case of Kanakapura (Rs 24591) followed by Ramanagara (Rs 23386) and Channapatna (Rs 20966) and in case of returns it is more in Ramanagara (Rs 12717) followed by Kanakapura (Rs 12322) and Channapatna (Rs 11526). Except the total cost in the Kanakapura all costs and returns are statistically significant at the rate of 5.00 percent level of significance.

Table 4. Gender wise Cost and returns of Multivoltine cocoon production

| Region | Gender wise | | | | |
|---|---|---|---|---|---|
| | Particulars | Female | Male | t-test | p- value |
| Channapatna | Total cost | 19768.93 | 21377.55 | 2.41 | 0.032 |
| | Gross returns | 30296.61 | 33247.39 | 2.86 | 0.041 |
| | Net returns | 10527.68 | 11869.84 | 3.17 | 0.046 |
| Kanakapura | Total cost | 24641.30 | 24587.03 | 2.18 | 0.061 |
| | Gross returns | 37801.96 | 36826.59 | 2.72 | 0.048 |
| | Net returns | 13160.65 | 12239.56 | 4.17 | 0.049 |
| Ramanagara | Total cost | 22899.16 | 23534.94 | 1.91 | 0.031 |
| | Gross returns | 37629.31 | 35639.27 | 2.97 | 0.023 |
| | Net returns | 14730.14 | 12104.32 | 2.81 | 0.037 |
| Grand Total | Total cost | 21674.90 | 23295.71 | 3.61 | 0.024 |
| | Gross returns | 33996.74 | 35383.34 | 3.83 | 0.039 |
| | Net returns | 12321.84 | 12087.63 | 4.17 | 0.044 |

Source: - field survey

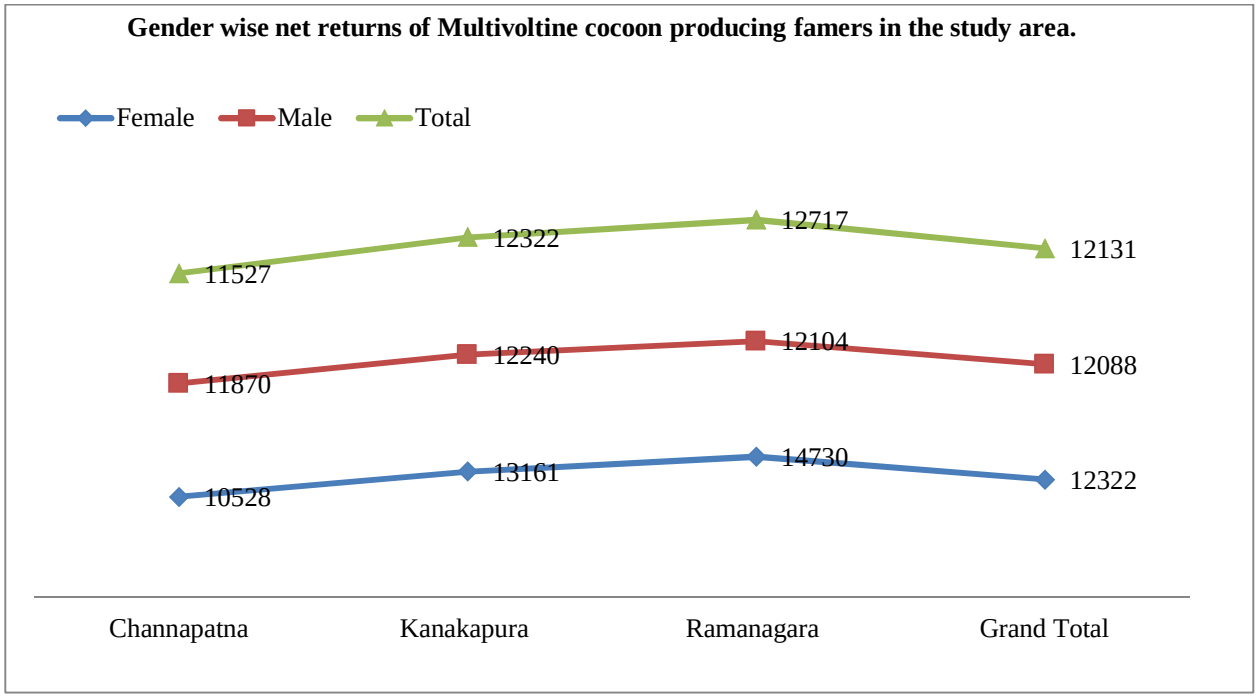


Fig.4:- Gender wise net returns of Multivoltine cocoon producing famers in the study area.

Table 5. Gender wise Cost and returns of Bivoltin cocoon production

| Region | Parameters | SC | ST | OBC | GM | ALL categories |
|---|---|---|---|---|---|---|
| Channapatna | Total cost | 19398 | 18883 | 23661 | 24426 | 22100 |
| | Gross returns | 31356 | 27861 | 36238 | 37410 | 34250 |
| | Net returns | 11958 | 8978 | 12577 | 12983 | 12150 |
| Kanakapura | Total cost | 23592 | 30570 | 26668 | 27531 | 25921 |
| | Gross returns | 34632 | 38786 | 41016 | 42342 | 38910 |
| | Net returns | 11039 | 8215 | 14348 | 14811 | 12989 |
| Ramanagara | Total cost | 26378 | 22014 | 25804 | 26638 | 24651 |
| | Gross returns | 38102 | 32992 | 40440 | 41748 | 38055 |
| | Net returns | 11724 | 10979 | 14636 | 15110 | 13404 |
| Grand Total | Total cost | 23146 | 23564 | 25374 | 26194 | 24241 |
| | Gross returns | 34693 | 33182 | 39121 | 40386 | 37027 |
| | Net returns | 11548 | 9618 | 13747 | 14192 | 12786 |

Source: - field survey

*E. Cost and Returns Of Bivoltine Cocoon Production*

Table 5represents category wise cost and returns of Bivoltine cocoon production. The highest cost was incurred by General category of farmers (Rs. 26194) followed by OBC (Rs. 25374), ST (Rs. 23564) and SC (Rs. 23146). The highest net returns was seen among, General (Rs. 14192), followed by OBC (Rs. 13747), SC (Rs. 11548) and ST (Rs. 9618). The overall cost was more in the case of Kanakapura taluk i.e., Rs. 25921 followed by Ramanagara (Rs. 24651) and Channapatana (Rs. 22100) and but when we look into net returns it was more in Ramanagara (Rs. 13404) followed by Kanakapura (Rs. 12989) and Channaptna (Rs. 12150).

*F. Problems Faced By Mulberry Production Of Sample Farmers.*

Table 6 represents the problems faced by the sample farmers in mulberry production. In case of Kanakapura region, the major problems as indicated by the total number of farmers were water, manure and insect related problems (23%), insect related problems

(175), labour problems (7%). In the case of Channapatna, similar problems were indicated as constraints in mulberry production. Same was the case of Ramanagara. On the whole, 21 per cent of the farmers indicated problems due to water and manure, 15 per cent indicated problems due to insects, 10 per cent indicated problems due to labour and a small portion of the farmers indicated problems due to electricity, rainfall, weeding related problems, problems and due to temperature.

Table 6: Problems faced by Mulberry production of Sample Farmers.

| Problems in Mulberry production of the Respondents | Kanakapura | Channapatna | Ramanagar | Total |
|---|---|---|---|---|
| Electrical Problems | 1(1.00) | 5 (5.56) | - | 6 (2.4) |
| Insects problems | 17 (17.00) | 13 (14.44) | 8 (13.33) | 38 (15.20) |
| Labour problems | 7 (7.00) | 15 (16.67) | 4 (6.67) | 26 (10.40) |
| Rain problems | 4 (4.00) | 7 (7.78) | 2 (3.33) | 13 (5.20) |
| Scarcity of Manure | 7 (7.00) | 6 (6.67) | 6 (10.00) | 19 (7.60) |
| Water, Manure and Insects | 23 (23.00) | 19 (21.11) | 11 (18.33) | 53 (21.20) |
| Problems of Rain and Labours | 7 (7.00) | 4 (4.44) | 1 (1.67) | 15 (6.00) |
| Problems of Weeding | 1 (1.00) | 4 (4.44) | 3 (5.00) | 7 (2.80) |
| Problems of Temperature | - | 3 (3.33) | - | 3 (1.20) |
| Problems of Financial and Water | 5 (5.00) | 6 (6.67) | 4 (6.67) | 15 (6.00) |
| Problems of Wages | 15 (15.00) | 1 (1.11) | 12 (20.00) | 28 (11.20) |
| All of the Above | 13 (13.00) | 7 (7.78) | 7 (11.67) | 27 (10.80) |
| Total | 100 | 90 | 60 | 250 |

Source: - field survey

Note: - Figures in the parenthesis are percentage to total

*G. Problems Faced By Mulberry Cocoon Of Sample Farmers.*

Table 7 indicates the problems faced by the farmers due to mulberry cocoon production. In Kanakapura region, majority (27%) of the farmers mentioned, low quality mulberry leaves as a constraint in cocoon production, followed by Uzi problems (235), Sunnakattu (175), and Haluthonde disease (2%). In Channapatna region, 22 per cent of the farmers mentioned uzi as problem, followed by problem in maintaining suitable temperature (14%), sappe disease (12%), and Haluthonde disease (9%). In Ramanagara, 33 per cent of the farmers indicated low quality mulberry leaves as a problem, 17 per cent of the farmers indicated uzi problem, 1 0per cent of the farmers indicated sunnakattu as a constraint. On the whole, 26 per cent of he farmers mentioned, low quality mulberry leaves as a problem, 21 per cent indicated uzi problem, 12 per cent mentioned sunnakattu as a constraints

Table 7: Problems faced by Mulberry Cocoon of Sample Farmers.

| Problems of Production of Cocoon of the Respondents | Kanakapura | Channapatna | Ramanagar | Total |
|---|---|---|---|---|
| Low quality mulberry leaves | 27 (27.00) | 18 (20.00) | 20 (33.33) | 65 (26.00) |
| Problems of Uzi | 23 (23.00) | 20 (22.20) | 10 (16.67) | 53 (21.20) |
| Sunnakattu | 17 (17.00) | 6 (6.70) | 6 (10.00) | 29 (11.60) |
| All of the Above | 31 (31.00) | 14 (15.60) | 21 (35.00) | 66 (26.40) |
| Haluthonde disease | 2 (2.00) | 8 (8.90) | 1 (1.67) | 11 (4.40) |
| Sappe Diseases | - | 11 (12.20) | 0 | 11(4.40) |
| Suitable Temperature maintenance | - | 13 (14.40) | 2 (3.33) | 15 (6.00) |
| Total | 100 | 90 | 60 | 250 |

Source: - field survey

Note: - Figures in the parenthesis are percentage to total

Table 8: Problems faced by farmers at the time of marketing of Cocoon

| Problems of other market of the Respondents | Kanakapura | Channapatna | Ramanagar | Total |
|---|---|---|---|---|
| Price Instability | 31 (31.00) | 12 (13.33) | 16 (26.67) | 59 (23.60) |
| Price Difference | 50 (50.00) | 52 (57.78) | 35 (58.33) | 137 (54.80) |
| Not good price | 4 (4.00) | 12 (13.33) | 3 (5.00) | 19 (7.60) |
| Bus problems and corruption | 1 (1.00) | 1 (1.11) | 1 (1.67) | 3 (1.20) |
| Low Cocoon Measurements | 14 (14.00) | 13 (14.44) | 5 (8.33) | 32 (12.80) |
| Total | 100 | 90 | 60 | 250 |

Source: - field survey

Note: - Figures in the parenthesis are percentage to total

*H. Problems Faced By Farmers At The Time Of Marketing Of Cocoon*

Table 8 indicates the marketing related problems faced by the farmers. Price instability was mentioned by 31 per cent of the farmers in Kanakapura, 13 per cent of the farmers in Channapatna and 16 per cent for the farmers in Ramnagara. Price difference was indicated by 16 per cent fo the farmers in Kanakapura, 13 per cnt in Channapatna, and 15 per cent in Ramnagara. Low price was mentioned as a problem by one of the farmers in Kanakapura, 13 per cent in Channapatna, and 5 per cent in Ramanagara. Low cocoon measurement was problem in all the regions with 14 per cent, in Kanakapura and Channapatna and 8 per cent of the farmers in Ramanagara.

*I. Suggestions To Improve The Present Production And Marketing Systems*

Table 9 indicates the various suggestions provided by the farmers to improve production and marketing systems. On the whole, 36 per cent fo the farmers mentioned control agent as a suggestion. This was mainly mentioned by farmers in Channapatna (435) and Ramnagar (42%). about 25 farmers in Kanakapura. About 27 per cent for the farmers suggested price stability as a suggestion; it was indicated by 29 per cent of the farmers in Kanakapura and 25 per cent in Ramanagara and 16 per cent in Channapatna. Provide to high yield product was mentioned by 27 per cent of the farmers in Ramanagar, 14 per cent in Channapatna and 28 per cent in Ramanagara. The other suggestions were Continue supply of electric supply, Control of disease for mulberry production and good price for cocoon.

Table 9: Suggestions to improve the present production and marketing systems

| Suggestions to improve the present production and marketing system | Kanakapura | Channapatna | Ramanagar | Total |
|---|---|---|---|---|
| Continue of electrical supply | 10 (10.00) | 5 (5.56) | 3 (5.00) | 18 (7.20) |
| Control agent | 25 (25.00) | 39 (43.33) | 25 (41.67) | 89 (35.60) |
| Price Stability | 29 (29.00) | 15 (16.67) | 15 (25.00) | 59 (23.60) |
| Control of Disease for Mulberry Cultivation | 4 (4.00) | 8 (8.89) | - | 12 (4.80) |
| Provide to High yield product | 27 (27.00) | 13 (14.44) | 17 (28.33) | 57 (22.80) |
| Provide to Good Price for Coccon Production | 5 (5.00) | 10 (11.11) | - | 15 (6.00) |
| Total | 100 | 90 | 60 | 250 |

Source: - field survey

Note: - Figures in the parenthesis are percentage to total

*J. Policy Recommendations*

*1)* The net income of Biovoltine silk rearing farmers gives relatively higher income as comparing with Multivoltine silk rearing farmers hence; it is advisable for the farmers to switch over to Biovoltine silk rearing system of mulberry cultivation.

*2)* Rearing of Sericulture is potential sector and it gives good remuneration as well as income and employment so, Government should encourage farmers give incentives .

*3)* At the same time, appropriate market led extension strategies should be identified to popularize the mulberry cultivation.

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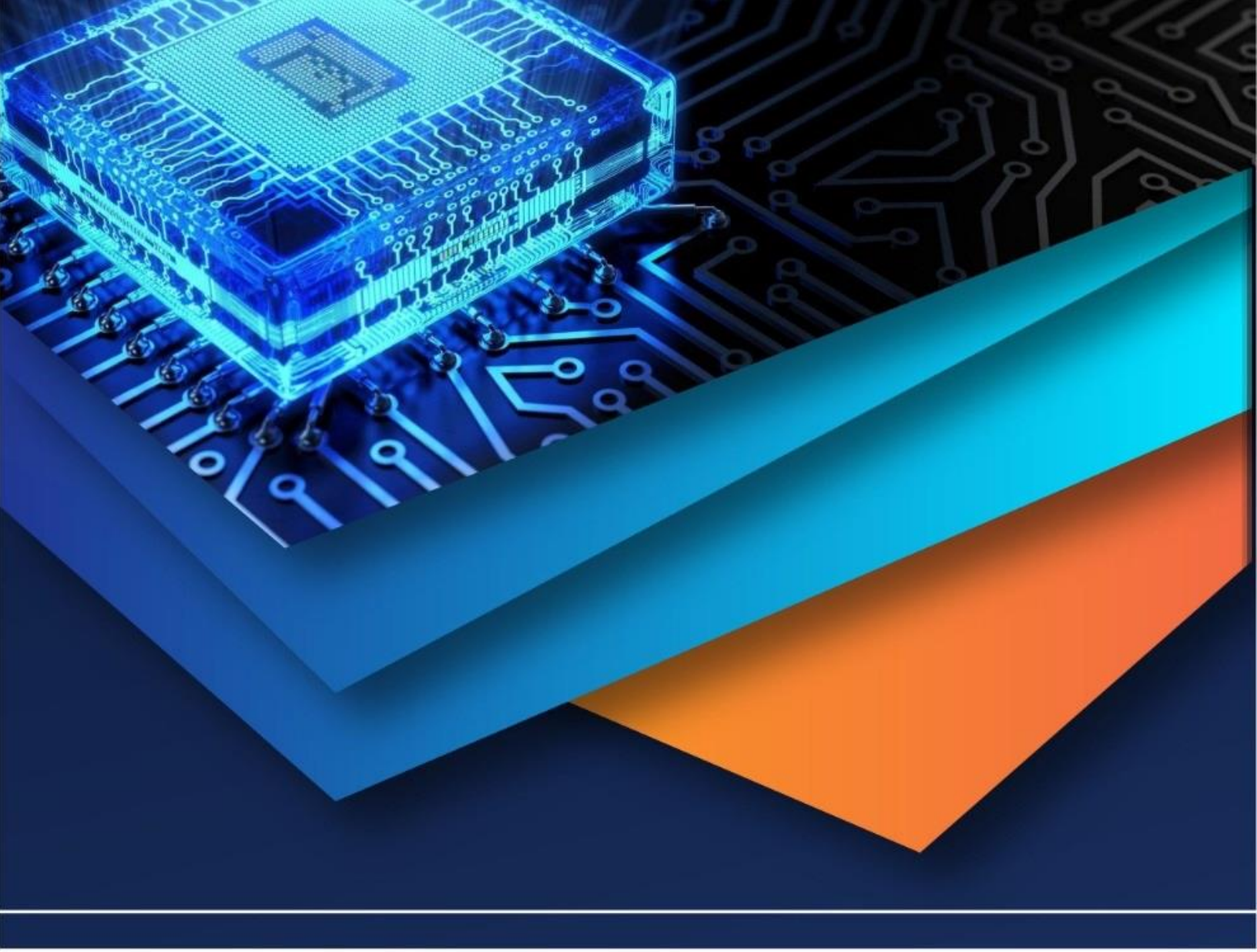

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