



Research Article

ECONOMIC PERFORMANCE OF BI-VOLTINE SILKWORM REARING FARMERS IN CHITRADURGA DISTRICT

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Abstract: Karnataka is known as the fables land of 'Sandal and silk', has more than 45.35 percent of the total area under mulberry cultivation contributing over 44.25 percent of silk produced in the country. Mulberry occupies an area of 91,491 hectares with a production of 9,8,222 M.T of raw silk. About 87 percent in the states mulberry area and 93 percent of its cocoon production is concentrated in traditional areas of Karnataka Mysore, Kolar, Chitradurga, Bangalore, Tumkur and Mandya districts. The study was conducted in the year 2017-2018 in Molakalmuru, Challakere and Hiriyur taluks of Chitradurga district in Karnataka. From this study among the 120 respondents most of the Bi-voltine silkworm rearing farmers (40.00 %) were found to be in medium level of economic performance followed by low (33.33 %) and (26.66%) high level of economic performance. The total gross income of the Bi-voltine cocoon production for 100 DFLs is Rs 44,415 and Income over variable cost is Rs22235.15 and Net income is Rs5957.83. Whereas, returns per rupee of expenditure is 1.15 for Including mulberry and depreciation cost and excluding mulberry and depreciation cost of Net income is 34491.16. Whereas, returns per rupee of expenditure is 4.47. The relationship between innovativeness, economic motivation, extension agency contact and extension participation were found to have significant association at 1 percent level of significance.

Keywords: *Economic performance, Sericulture, Innovativeness, Depreciation*

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Introduction

Sericulture is one of the main farm activities in the drought prone area of Chitradurga district of Karnataka providing regular income to the rural people. Since two to three decades, a good number of innovative and highly productive technologies. Raising management efficiency or improving the quality of human factor is of paramount importance and will open up new vistas for farmers and make possible for them to achieve substantial gains in farm income. Raising the quality of human factor is the fundamental problem which needs to be carefully tackled to solve the long run problems of under developed agriculture was to be found. Being rural based labour-intensive industry sericulture is ideally suited for improving the social and economic standards of the poor. India is the second largest producer of silk after China and biggest consumer of Raw silk and silk fabric. In India Karnataka stands first in area 20,89,447 ha and 2,85,233 M.T production. Sericulture in Karnataka is being practiced mainly in southern part of the state for many decades. Now, it is spreading across the state especially the rearing of Bi-voltine silk worms in non-traditional sericulture areas of the Karnataka state. Bi-voltine silk production has been one of the priority sectors of Indian silk Industry to make sericulture a sustainable commercial activity by meeting the international silk standards, enhancing productivity and processing of cocoons rearing of Bi-voltine silk worms plays a significant role but its production is yet to meet the targets. Karnataka is known as the fables land of 'Sandal and silk', has more than 45.35 percent of the total area under mulberry cultivation contributing over 44.25 percent of silk produced in the country. Mulberry occupies an area of 91,491 hectares with a production of 9,8,222 M.T of raw silk. About 87 percent in the states mulberry area and 93 percent of its cocoon production is concentrated

in traditional areas of Karnataka Mysore, Kolar, Chitradurga, Bangalore, Tumkur and Mandya districts. Studies on the economic performance and level of profits obtained by adopting the hybrid variety of Bi-voltine silkworm rearing in Karnataka are scanty and the research conducted elsewhere cannot be generalized to all situations, particularly to the different crop enterprises and climatic situations, which are location specific. Hence, owing to the increasing importance of hybrid Bi-voltine silkworm rearing and its importance in rural areas, the present study was undertaken with the following specific objectives: To analyze the economic performance of Bi-voltine silkworm rearing farmers and .to know the association among socio-economic, psychological and communication characteristics of farmers with their economic performance.

Material and Methods

The study was conducted during March-April 2018 and an Ex-post facto research design was followed to assess the Bi-voltine Silkworm rearing farmers. Chitradurga district was selected purposively owing to more area and production under Bi-voltine silkworm rearing and assured irrigation facility. Chitradurga district has six taluks, out of which Molakalmuru, Challakere and Hiriyur taluks were selected purposively for the study considering the higher area under Bi-voltine silkworm rearing practices. Frequency, simple percentage, mean, standard deviation and zero order correlation test was used and personal interview method was followed for collection of data from sericulturists.

Results and Discussion

With respect to the economic performance of Bi-voltine silkworm rearing farmers,

Table-1 Income from sericulture before adopting of Bi-voltine (from multi-voltine) silkworm rearing practices, (n=120)

SN	Years	Total batches per year	DFLs per batch	Total Production of cocoons (kg/per year)	Yield of cocoons/ 100 DFLs	Average income obtained
1	2008-2009	6	140	732	87.14	48800
2	2009-2010	6	147	780	88.43	51833
3	2010-2011	6	146	804	91.78	53617
4	2011-2012	6	148	834	93.90	55267
5	2012-2013	6	150	894	99.33	59400
	Average	6	146	808.80	92	53,783.40

Table-2 Income from sericulture after adopting of bi-voltine silkworm rearing practices, (n=120)

SN	Years	Total batches per year	DFLs per batch	Total Production of cocoons (kg/per year)	Yield of cocoons/ 100 DFLs	Average income obtained
1	2013-2014	6	197	1008	85.27	84225
2	2014-2015	6	199	1004	87.43	87071
3	2015-2016	6	200	1074	89.50	89579
4	2016-2017	7	200	1288	92.00	91992
5	2017-2018	8	200	1512	94.50	94604
	Average	7	199	1177	90	89494

Table-3 Cost of cocoon production per 100 DFLs, (n=120)

SN	Items	Quantity	Cost	Percent
A	Variable cost			
1	DFLs (Chawki)	100.00	749.58	1.94
2	Transportation cost		650.00	1.69
3	Disinfectants			
	i. Bed disinfectants (kg)	2.00	160.00	0.41
	ii. lime dust (kg)	29.62	2458.33	6.39
	iii. Bleaching powder (kg)	7.00	210.00	0.54
	Total disinfectants (i+ii+iii)		4227.91	7.34
5	Paraffin paper (Rolls)	2.00	400.00	1.04
6	Newspaper (kg)	15.00	225.00	0.58
7	Mulberry leaves (kg)	2000.00	14000.00	36.40
8	Marketing cost (Rs.) [including transportation and marketing fee]	for 90 Kg Cocoon	950.00	2.47
9	Interest on working capital (Rs.)	12%	2376.94	6.18
	Total variable cost	-	22179.85	50.34
B.	Fixed costs	-	-	-
1	Depreciation of rearing room and equipment's (Rs)	-	14533.33	37.79
2	Interest on fixed capital (Rs)	12%	1743.99	4.53
	Total fixed cost	-	16277.32	42.32
C	Total cost (A+B)	-	38457.17	100

it could be observed from [Table-1] that out of 120 farmers, Income obtained before adopting Bi-voltine silkworm rearing were worked out and shown in [Table-1], the average batches reared per year was 6, which the total DFLs per average batch was 146 and average production of cocoon was 808.80 kgs. Whereas, average yield of cocoons per 100 DFLs was 92 of which average income obtained was Rs. 53,783.40. Income obtained from the after adopting Bi-voltine silkworm rearing was worked out and shown in [Table-2], the average batches reared per year was 7, which total DFLs per average batch was 199 and average production of cocoon was 1177 kgs. Whereas, yield of cocoons per 100 DFLs is 90 and average price for one kg yield of cocoons was Rs 470. Which average income obtained was Rs. 89,494. From the [Table-3] reveals that the total gross income of the Bi-voltine cocoon production for 100 DFLs is 44,415rs and Income over variable cost is 22235.15 and Net income is 5957.83. Whereas, Returns per rupee of expenditure is 1.15 for Including mulberry and depreciation cost and Excluding mulberry and depreciation cost of Net income is 34491.16. Whereas, returns per rupee of expenditure is 4.47.

Cost of cocoon production per 100 DFLs

Cost of cocoon production per 100 DFLs were indicated in the [Table-3] revealed that the Bi-voltine silkworm rearing farmers had cost of cocoon production like, DFLs (1.94%), transportation cost (1.69%), bed disinfectants(0.41%), lime dust(6.39%), bleaching powder(0.54%), paraffin paper(1.04%), newspaper(0.58 %) and marketing cost(2.47%) respectively. From the [Table-4] reveals that the total gross income of the Bi-voltine cocoon production for 100 DFLs is 44,415rs and Income over variable cost is 22235.15 and Net income is 5957.83. whereas, Returns per rupee of expenditure is 1.15 for Including mulberry and depreciation cost and Excluding mulberry and depreciation cost of Net income is 34491.16. Whereas, returns per rupee of expenditure is 4.47.

Table-4 Returns from Bi-voltine cocoon production for 100 DFLs, (n=120)

SN	Items	Unit (Rs)
1	Gross Income	44415
2	Income over variable cost	22235.15
3	Including mulberry and depreciation cost of Net income	5957.83
4	Returns per rupee of expenditure	1.15
5	Excluding mulberry and depreciation cost of Net income	34491.16
6	Returns per rupee of expenditure	4.47

Table-5 Overall economic performance of Bi-voltine silkworm rearing farmers, (n=120)

Economic Performance	Number	Percent
Low (<559.95)	40	33.33
Medium (559.95-617.66)	48	40.00
High (>617.66)	32	26.66

The result presented in [Table-5] shows that majority of the respondents (40.00 %) of the Bi-voltine silkworm rearing farmers belongs to medium economic performance categories. Whereas, 33.33 and 26.66 percent of the respondents belongs to low and high economic performance categories, respectively.

The relationship between economic performance of Bi-voltine silkworm rearing farmers with the independent variables.

The relationship between innovativeness, economic motivation, extension agency contact and extension participation were found to have significant association at 1 percent level of significance whereas, the annual income, attitude towards sericulture, achievement motivation, scientific orientation, risk orientation, and mass media participation were found to be significant at 5 percent level of significance with economic performance. The remaining variables such as Age, Size of family and social participation had non-significant association with entrepreneurial behavior.

Table-6 Relationship between economic performance of Bi-voltine silkworm rearing farmers with the independent variables, (n=120)

SN	Characteristics	Correlation coefficient
1	Age	0.058 ^{NS}
2	Education	0.288**
3	Annual income	0.212*
4	Size of family	0.145 ^{NS}
5	Attitude towards sericulture	0.231*
6	Innovativeness	0.298**
7	Achievement motivation	0.246*
8	Scientific orientation	0.222*
9	Economic motivation	0.368**
10	Risk orientation	0.261*
11	Social participation	0.010 ^{NS}
12	Mass media participation	0.214*
13	Extension agency contact	0.296**
14	Extension participation	0.281**

**Significant at 1 percent level, *Significant at 5 percent level, NS Non-Significant

Conclusion

The results revealed that majority of the respondents (40.00 %) of the Bi-voltine silkworm rearing farmers belongs to medium economic performance. Whereas, 33.33 and 26.66 percent of the respondents belongs to low and high economic performance categories, respectively. The total gross income of the Bi-voltine cocoon production for 100 DFLs is Rs 44,415 and Income over variable cost is Rs22235.15 and Net income is Rs5957.83. Whereas, Returns per rupee of expenditure is 1.15 for Including mulberry and depreciation cost and Excluding mulberry and depreciation cost of Net income is 34491.16. Whereas, returns per rupee of expenditure is 4.47. The relationship between innovativeness, economic motivation, extension agency contact and extension participation were found to have significant association at 1 percent level of significance.

Application of research: Bi-voltine silkworm rearing is highly profitable compared to other conventional multi-voltine varieties. There is a bright prospect for expansion of Bi-voltine silkworm rearing in the coming years. Therefore, the present study is an effort to bring out a clear picture of the existing situation with respect to economic performance of production of Bi-voltine silkworm rearing farmers. Therefore, the results of the study will be useful to all the concerned for developing strategies to increase area under Bi-voltine silkworm rearing, productivity and increasing profits. The sericulturists should be in regular contact with the farm scientists, sericulture extension officer, demonstrator etc., for knowing more about the Bi-voltine silkworm rearing practices which will help them in increasing the knowledge, cocoon, yield, income by adoption of Bi-voltine silkworm rearing practices. The major problem faced by respondents are not timely and inadequate supply of inputs, exploitation by the middlemen and lack of marketing facility. Hence the Karnataka State Department of Sericulture should arrange for timely supply of adequate inputs, avoid the middlemen and provide good marketing facility for the sericulturists.

Research Category: Sericulture.

Abbreviation: DFLs- Disease Free Layings

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Study area / Sample Collection: Molakalmuru, Challakere and Hiriya tehsils of Chitradurga district of Karnataka, India

Cultivar / Variety name: Nil

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

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References

- [1] Ganeshprasad T. S. (2010) *Ph. D. Thesis (Unpub.)*, Univ. Agric. Sci., Bangalore, India.
- [2] Gopala H.S. (2006) *Analysis of adoption productivity and economic performance of ground nut growers*, M.Sc. (Agri.) Thesis, (Unpub.), Univ. Agric. Sci., Bangalore, India.
- [3] Laxmi B.B. (2012) *M.Sc. (Agri.) Thesis (Unpub.)*, Univ. Agric. Sci., Bangalore, India.
- [4] Rogers E.M. (1983) *the Free Press*, New York, 28-30.
- [5] Srinivasa G., Kumaresan P. and Vijaprakash N.B. (2008) *Indian J. Sericulture*, 47 (1), 29-33
- [6] Supe S.V. and Singh S.N. (1969) *Dynamics of National Behaviour of Indian Farmers*, new heights publishers and distributors, IARI, New Delhi.
- [7] Waman G.K. and Patil P.S. (2000) *Maharashtra Journal of Extension Education*, 19, 104-108.