

Eri Silk Rearing As a Land Base Livelihood Strategy: Experience of a Rural Household

Abhijit Hazarika, Balin Hazarika

Abstract: While discussing about different measures of employment creation, the different Eri-culture activities can be brought into consideration as some of these measures. The Eri-culture activities have embedded with all the essential features of an effective employment generating measure. As per Government statistics, in the state of Assam a substantial number of people are engaged in different Eri-cultural activities. Most of these have been operating at the primary level of the whole Eri-culture process as the cocoon producers or rearers. But the findings of several earlier research works on Assam's Eri Culture sector have shown that the earning from this particular activity is very low. While these rearers have been providing the principal ingredient towards the whole Eri Silk industry of the state and helping in strengthening nation's overall Eri Silk export, a reality check regarding their financial health is quite essential. In general people usually prefer for those activities for earning their livelihood which are the most remunerative/income generating ones. So that they can attain the desired and positive changes in their economic and financial wellbeing. Considering this, this particular study is designed to examine the sustainability and effectiveness of Eri Silk rearing activity as a land base livelihood strategy for a rural household.

Key words: Employment, Eri-culture, Rearers, Low earning, Land base livelihood strategy

I. INTRODUCTION:

Across the economies of African, American and South Asian nations, the Silk Industry has demonstrated itself as an effective tool of employment generation. A large number of tribal and rural people (specially women) of these countries have found employment in this industry (1*). Similarly, in the context of Indian economy, the Silk Industry provided employment to 8.28 million persons during 2014-15. An overwhelming 90% of the employment is generated in the rural areas and the contribution of women is about 54%. (2*)

India, with its contribution towards all of the four major varieties of commercial silk i.e. Eri, Muga, Tasar and Mulberry, has secured the second place among the world's Silk producing nations. In the year 2015-16, among the four varieties of silk produced in India, the Mulberry silk accounts for 71.79% of the country's total silk production. After this, the Eri silk has occupied the second place in accordance to its share in total silk production which is 17.74 % (3*).

In the context of Eri Silk, among all the regions of the country, the North East of India is known as its original home.

Assam, the gateway state of the North East India, has been recognised as the leading producer of nation's total Eri silk. In the year 2010-11, Assam had produced a total of 8, 10,980 kgs of Eri silk, and this has increased to 25, 54,780 kgs in the year 2015-16. Apart from that a total of 1,82,979 people of the state engaged in Eri-culture activity in 2010-11, and this was later increased to 4,25,382 in 2015-16 (4*). These statistics have showed that a significant number of engagement provided by the Eri culture sector in the state of Assam, but at the same time there are also exists some other findings which have showed a complete opposite picture about this sector. The data obtained from the Statistical Handbook prepared by the Department of Statistic of Government of Assam have showed that –

Year	No. of family engaged	Raw cocoon production in MT	Average production of raw cocoon
2010-11	182979	1107.68	6.05 kg
2015-16	425382	3317.28	7.80 kg

The average annual production of raw Eri cocoon, in the state of Assam, was 6.05 kg in the year 2010-11. This was increased to 7.80 kg in the year 2015-16. Income that rearers use to earn from such lower levels average annual cocoon production are certainly not sufficient enough to sustain their livelihoods. Several earlier research works on the Eri-culture sector of Assam have already showed that the earning from rearing activity is very low. People usually prefer for those activities for earning their livelihood which are generally the most remunerative/income generating ones. So that they can achieve the desired and positive changes in their economic and financial wellbeing. After considering these two particular years annual average cocoon production, the sustainability and effectiveness of Eri Silk rearing activity as a livelihood strategy is unsure. Among the different Eri-culture activities, the rearing part has remained at the low end of the whole value chain. Keeping this fact in mind this particular study is undertaken with a view to gain some deeper insight about the sustainability and effectiveness of Eri silkworm

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1. International Sericultural Commission
2. Sankar & Gurung (2015) ' Sericulture Scenario in SAARC Region: A re-emerging industry for poverty alleviation in SAARC Region Synthesis'
3. 'Notes on the performance of Indian Silk Industry and Functioning of Central Silk Board as on 1st October 2016
4. Statistical Handbook (2011) and (2016), Assam - rearing activity as a livelihood strategy and also focuses on exploring the underlying causes that have been upsetting the effectiveness of this activity in the concerned site of the study.



II. THEORETICAL FRAMEWORK:

Livelihoods are the survival strategies that have been developed by humans considering the availability of different assets or resources necessary for their effective execution. The livelihood assets covers human capital, social capital, natural capital, physical capital and financial capital. The strength of a given livelihood is not only measured by its productive outcomes, but equally by its resilience to shocks, seasonal changes and trends. More gradual and often predictable, trends in politics and governance, technology use, economics, and availability of natural resources, can pose serious obstacles to the future of many livelihoods. (5*).

Livelihoods depend on availability of assets and access to assets. The lack of access to such assets in turn disturb the effective execution of the livelihood strategies. Often an individual need the provision of assets/resources required for successful execution of a chosen livelihood strategy. One of such asset is the land. In the context of the rural households, access to land has certain positive impact on their livelihoods. The rural households of a particular region usually have a diverse range livelihood strategies based on land before them which they can pursue in accordance to their requirement and capacity. Habitually these households choose those land based livelihood actives which can provide them higher return.

The Rural Development Institute (RDI) of USA, have conducted field research in several Indian states (Karnataka, West Bengal, Andhra Pradesh, and Uttar Pradesh) for examining the significant role that land plays in the livelihoods of India's rural poor. Through the field research they have found that the agricultural labourer families with relatively small (1700-2600 square feet), well-developed house-and-garden plots were producing enough vegetables, fruit, and milk on their homestead plots to meet or significantly exceed their household nutritional needs of these products. Apart from direct household consumption, these households received about Rs 11,000 of annual income from the sale of products from their house-and-garden plots. (6*).

III. OBJECTIVE OF THE STUDY:

The present study is driven by the following basic objective –

- A) *Assessing the effectiveness of Eri Silkworm rearing activity as a land base livelihood strategy.*
- B) *Identification of underlying causes that have been acting as deterrents restricting the effectiveness Eri Silkworm rearing activity as a livelihood choice?*

IV. METHODOLOGY:

The methodology section outlines the plan and method that how the study is conducted. This includes sample and location of the study, data and Sources of data and analytical framework. The details are as follows;

(A) Sample and location of the study

In Assam a total of 1,82,979 people engaged in Eri-culture activity in the year 2010-11, and this was increased to 4,25,382 in 2015-16. Of this 41.32% are belong to the Scheduled Tribe category. (4*) Most of these people are the Cocoon producers or Rearing operating at the primary level in an unorganized and informal set up. As these people have been operating within an unorganized and informal setup so there is no record of information with the help of which these rearers can be identified. In the absence of a definite sampling frame regarding the Eri Silk rearers, the required sample for the purpose of this work have drawn by adopting the snow ball sampling technique.

The present study is based on the rearers of the Alupara village of Gohpur Sub-division. Gohpur is one of the two sub-divisions of the newly formed Biswanath district of the Indian state of Assam. A total of 18 Eri Silk Rearers of the Bodo community of this village (schedule tribe) have considered as the sample of this study.

(B) Data and Sources of Data

This paper is based on primary data. The primary data for the purpose of this study are collected through structured schedule via the means of the survey of the identified sample respondents. The collected data are presented through tables and necessary statistical tests are performed to interpret and analyse them.

(C) Analytical framework:

For assessing the efficacy of the return generated from Eri Silkworm rearing activity, comparison of its return/income with an established benchmark is essential. Benchmarks/standards which have already been designed and implemented by the state, for assessing the effectiveness of income in prevailing economic situation of the region, can be used in making such comparisons. In this context, the established income standards for defining The Tendulkar Committee has advocated a monthly per capita consumption expenditure of Rs. 972 as the poverty line at the all India level.(7*). This per capita consumption expenditure have determined at price level of the year 2011-12. In this study this particular consumption expenditure is determined at the price level 2018.

Monthly per capita consumption expenditure in Rural areas in 2011-12 prices	Monthly per capita consumption expenditure in Rural areas in 2018 price
Rs. 972	Rs 1368

5. IRP and UNDP India 'Guidance note on recovery: Livelihood)
6. Tim Hanstad, Robin Nielsen and Jennifer Brown ' Land and Livelihoods: Making land rights real for India's rural poor'

4. Statistical Handbook (2011) and (2016), Assam - and measuring the poverty level of the nation recommended by the Tendulkar Committee in the year 2011 is considered to be the appropriate one.



The amount of minimum monthly consumption expenditure for the sample rearers' households are calculated by considering the actual number of the members of each of the rearers' household. The rearers here assumed as the sole earner of their households while assessing the effectiveness and sustainability of Eri Silk rearing activity as a land base livelihood strategy.

The sustainability and effectiveness of the Eri Silk rearing activity is dependent on availability of host plant leaves (necessary for feeding the Eri Silkworm). This particular factor single handedly control the whole rearing activity. So apart from the 'Per Capita Consumption Expenditure' there are a few other factors like host plant leaves, plantation areas of host plant and quantity or volume of cocoon production corresponding to the plantation areas etc. also have been considered for this the study. The 'Castor plant' is recognized as the prime host plant in Eri Silkworm rearing activity, therefore this particular study emphasized on data relating to this particular host plant.

For the purpose of calculating the estimated quantity of host plant (castor) leaves from the possible plantation areas, and estimated quantity of cocoon production, the information provided by the Handloom and Textile Ministry of Assam are considered. One hectare of land under plantation of the Castor plants can produce 12 tons of leaves. And the quantity of Eri cocoon production per year per acre of castor plantation is 40 kgs. (8*)

Table showing the volume of Eri cocoon production and corresponding plantation area of primary host plant as per the statistics of Government of Assam

Plantation area of host plant	Corresponding rearing capacity
1 acre	480 DFLs
1 hectare	1186.08 DFLs

Table showing average quantity of Eri cocoon production/DFL

DFLs	Corresponding average quantity of Eri cocoons produced
480 DFLs	40 kgs
100 DFLs	8.33 kgs

Table showing corresponding quantity of primary host plant leaves i.e. castor leaves against the specific plantation areas

Plantation areas	Corresponding annual quantity of Castor leaves (in metric tons)
1 Acre	4.85633 MT
1 Hectare	12 MT

Source: <https://hts.assam.gov.in/frontimportantdata/parameters-of-eri-and-muga>

In the state of Assam the area of land is measured in 'Bigha', and 1 bigha is equal to 14,400 sq.ft. Whereas 1 hectare is equal to 1,07,639.104 sq. ft. i.e. in 1 hectare is equal to 7.47 bighas. Again 1 hectare is equal to 2.47 acre. Therefore in 1 acre there are 3.02 bigha.

As from the plantation area of 1 acre a rearer obtains 4.85633 MTs of castor leaves through which he/she can rear 480 DFLs. This can produce 40 kgs of Eri Cocoons annually. If this converted into 'Bigha' then in 1 bigha 1.6080 MTs of castor leaves can be obtained and which can produce 13.25 kgs of Eri cocoon.

V. INTERPRETATION AND DISCUSSION:

During the study it is observed that all of the sample Eri Silk rearers are dependent on external sources for the procurement of necessary host plant leaves required for rearing purpose. Though all of these rearers have certain area of homestead land with their households, which they can use for plantation of the host plant, but none of them has an own plantation area.

For evaluating the sustainability and effectiveness of Eri Silk rearing activity as a land base livelihood strategy, the analysis and interpretation of the primary data is made under two different situations i.e. A) i) *sustainability and effectiveness of Eri Silk rearing activity with the present volume of annual cocoon produced by using host plant leaves collected from external source* and A) ii) *sustainability and effectiveness of Eri Silk rearing activity with the estimated volume of annual cocoon produced from host plant leaves of the possible planation area on available homestead land.*

A) i) *Sustainability and effectiveness of Eri Silk rearing activity with the present volume of annual cocoon produced by using host plant leaves collected from external source:*

The rearers are assumed as the sole earner of their households while assessing the effectiveness and sustainability of Eri Silk rearing activity.

The comparison of the amount of net annual return/income of the Eri Silkworm rearers with the annual consumption expenditure of their households, is made only after converting the per capita consumption expenditure into household consumption expenditure by considering the actual numbers of members of their households. The annual consumption expenditure so obtained for the household is then compared with the actual annual net return/income of the rearers.

- 'Report of the Expert Group to review the Methodology for measurement of Poverty' Government of India, Planning Commission, June, 2014
- 'Parameters of Eri and Muga', Handloom Textiles & Sericulture, Government of Assam

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Table: 1: Annual consumption expenditure of the rearers' households

Serial no.	No. of household members	Per capita per month consumption expenditure in rural areas	Annual household consumption expenditure
1	6	1368	98496
2	3	1368	49248
3	8	1368	131328
4	4	1368	65664
5	4	1368	65664
6	4	1368	65664
7	5	1368	82080
8	5	1368	82080
9	11	1368	180576
10	3	1368	49248
11	5	1368	82080
12	5	1368	82080
13	5	1368	82080
14	5	1368	82080
15	4	1368	65664
16	5	1368	82080
17	5	1368	82080
18	2	1368	32832

Source: Primary data collected through schedule

Table 2: Minimum rate of raw Eri (cut cocoons) per kg as per Central Silk Board

Price	In Rs per kg
Eri (cut cocoons)	Rs 750

Source: Central Silk Board

Table: 3: annual income earned through rearing of Eri silkworm

Serial no.	Present annual income received from rearing (in Rs)
1	18000
2	38250
3	47250
4	33750
5	45000
6	22500
7	33750
8	45000
9	90000
10	33750
11	90000
12	135000
13	45000
14	33750
15	15750
16	123750
17	18000
18	63000

Source: Primary data collected through schedule

Table 4: Effectiveness of Income earned from Eri Silkworm rearing activity

Categories of Eri Silkworm Rearers	No. of Eri Silkworm rearers	Percentage of Eri Silkworm rearers who have crossed the annual consumption expenditure level set for a rural household
Percentage of Eri Silk Worm rearers whose annual net return is above the annual consumption expenditure	4	22.22%
Percentage of Eri Silk Worm rearers whose annual net return is below the annual consumption expenditure	14	77.78%

Source: Primary data collected through schedule

Table 5: Average share of the income of the rearers and income of other earning members' income in households' total income

Share of rearers' income in total household income	28.275%
Share of other earning members' income in the total household income	71.25

The data and result obtained regarding the net annual return/income have showed that only 22.22% of the rearers have earned an annual income higher than the corresponding amount of minimum annual consumption expenditure of their households. Remaining 77.78% of the rearers have not able to cross the minimum annual consumption expenditure level of their household.

Another finding of this study has showed that the average share of the income of the rearers in the total income of their households is 28.275%. The contribution of the income earned from rearing activity in households' total income varies between 9.75% and 46.80%.

The average share of income earned from rearing activity in households' total income is found to be much more compared to the findings of earlier studies made on the same subject matter. But still the other income generating activities carried on by the remaining earning member(s) of the rearers households have the larger share in the total income of their households.

A) ii) Sustainability and effectiveness of Eri Silk rearing activity with the estimated volume of annual cocoon produced from the possible planation area on available homestead land of the rearers households:

The details estimated volume of annual production of Eri cocoon from plantation of host plants on own homestead lands of the rearers and present volume of cocoon production are shown below –

Table: 6: Estimated volume of cocoon production with host plants plantation on homestead land and present volume of production without plantation

Serial no.	Estimated volume of annual cocoon production based on the plantation of host plant on homestead land (in kgs)	Present volume of annual cocoon production with host plant leaves collected from other sources
1	33.125 kg	8 kg
2	99.375 kg	17 kg
3	79.5 kg	21 kg
4	26.5 kg	15 kg
5	39.75 kg	20 kg
6	26.5 kg	10 kg
7	19.875 kg	15 kg
8	26.5 kg	20 kg
9	79.5 kg	40 kg
10	39.75 kg	15 kg
11	39.75 kg	40 kg
12	39.75 kg	60 kg
13	26.5 kg	20 kg
14	13.25 kg	15 kg
15	53 kg	7 kg
16	6.625 kg	55 kg
17	26.5 kg	8 kg
18	26.5 kg	28 kg

Source: Primary data collected through schedule

Table: 7: Annual household consumption expenditure and estimated income from estimated volume of cocoon production with possible plantation on own homestead land

Serial no.	Annual household consumption expenditure	Estimated annual income from rearing with plantation on homestead land (in Rs)
1	98496	74531.25
2	49248	223593.8
3	131328	178875
4	65664	59625
5	65664	89437.5
6	65664	59625
7	82080	44718.75
8	82080	59625
9	180576	178875
10	49248	89437.5
11	82080	89437.5
12	82080	89437.5
13	82080	59625
14	82080	29812.5
15	65664	119250
16	82080	14906.25
17	82080	59625
18	32832	59625

Table 8: Effectiveness of estimated income earned from Eri Silkworm rearing activity

Categories of Eri Silkworm Rearers	No. of Eri Silkworm rearers	Percentage of Eri Silkworm rearers who have crossed the annual consumption expenditure level set for a rural household
Percentage of Eri Silk Worm rearers whose estimated annual net return is above the annual consumption expenditure	8	44.44%
Percentage of Eri Silk Worm rearers whose estimated annual net return is below the annual consumption expenditure	10	55.56%

Source: Primary data collected through schedule

The primary data collected have showed that the present volume of annual cocoon production of 5 of the sample rearers, who have been using host plant leaves procured from external sources in rearing, is higher than their estimated volume of production where it's assumed that these rearers have used their homestead land for production of host plant leaves necessary for rearing. This is happened due to lower size of homestead land.

Only 8 rearers, out of total 18 sample rearers, can able to make an estimated annual income which is higher than the corresponding amount of minimum annual consumption expenditure of their households. The estimated income is based on the estimated quantity of cocoon and pupa that can be produced through the plantation of host plants on their own homestead land.

So if these rearers are going to use to the homestead land available with their household in plantation of the host plant than 44.44% of them will able to cross the household minimum annual consumption expenditure. This figure is 22.22% more than the earlier result where only 22.22% of the rearers able to make an annual income higher than the corresponding amount annual consumption expenditure of their households without using the homestead land for plantation of the host plant necessary for rearing.

But still the remaining 55.56% of the sample rearers cannot able to surpass the minimum annual consumption expenditure level of their households with their estimated annual income though it's assumed that they have used the available homestead land in the plantation of the host plant.

B) Underlying causes of 'ineffectiveness of return':

i) Lower size of landholding:

In India the income earned from agriculture was not adequate to keep as many as 53% of households out of poverty, who operated on less than 0.63 hectare of land holding. (9*)

9. 'Doubling Farmers' Incomes – Issues and Strategies for Assam', Institute of Livelihood and Research Training & NABARD
10. Economic Survey of Assam 2017-18

8. Parameters of Eri and Muga, Handloom Textiles & Sericulture, Government of Assam

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The average size of land holding per household in the state of Assam was only 1.10 hectares during the year 2014-15 and more than 85 percent of farmer families are either small or marginal farmers with average land holding of only 0.63 hectare. (10*)

In relation to the sample rearers of this present study, the average holding size of homestead land available with their household is 2.94 Bigha. So the average size of the homestead land per household is only 0.39 hectare.

Table 9: Size of the homestead land available with the rearers households

Serial no.	Available area of homestead land(in bigha)
1	2.5
2	7.5
3	6
4	2
5	3
6	2
7	1.5
8	2
9	6
10	3
11	3
12	3
13	2
14	1
15	4
16	0.5
17	2
18	2

Source: Primary data collected through schedule

ii) Requirement of large quantity of leaves to support a large scale cocoon production:

One hectare of land under plantation of the Castor plants can produce 12 tons of leaves. And the quantity of Eri cocoon production per year per acre of castor plantation is 40 kgs.(8*)

Table 10: Volume of Eri cocoon production and corresponding plantation area of host plant

Plantation area of host plant	Corresponding Quantity of Eri cocoon produced	Quantity of leaves of Castor plant produced from plantation	Corresponding quantity of Silkworm eggs (1dfl = 300 larvae)
1 acre	40 kgs	3968 kgs	480 dfls
1 hectare	98.84 kgs	12,000 kgs	1186.08 dfls

Source: <https://hts.assam.gov.in/frontimpotentdata/parameters-of-eri-and-muga>

So approximately 99 kgs of Eri cocoon can be produced on 12000 kgs of Castor leaves grown in a plantation area of 1

hectare of land. So from 1 bigha plantation of Castor plants the quantity of cocoon can be produced is 13.25 kgs, as 1 hectare is equal to 7.47 bighas of land.

From the above data it is evident that in the absence of plantation initiatives by the rearers on a large scale, the -

- rearers at local level could not think of increasing the volume/scale of cocoon production. And till that the return generated from Eri Silkworm rearing activity will not be sufficient to overcome poverty level.

iii) Inadequate plantation of Castor under the local Eri Concentration Centers:

Most of the eri-culturists of the state of Assam are poor and work on the basis of their family labour. Most of the rearers collect leaves of the host plant from the surrounding area (without incurring any monetary expenses) or from their homestead land or from Eri Concentration Centres (ECC). (11*)

The government of Assam has made arrangements to encourage the Eri silk producers through establishing Eri Concentration Centres (ECCs). At present there are 94 numbers of Eri Concentration Centers (ECCs) in the state, of which 5 centers are established at Biswanath District. The state Government had established these ECCs with a view to help the eri rearers with disease free layings and supply of host plant leaves in their need for increasing production. (11*)

Out of these 5 Eri Concentration Centers, the Malipur and Kamdewal EEC are in the immediate vicinity of the study area. As per the land record of June, 2017 provided by the Dept. of Sericulture, Govt. of Assam, out of total allotted land of 3.10 hectares of Malipur EEC, 3 hectares had been put in use for the plantation of the Host plants. And out of the total allotted land of 9.10 hectares of Kamdewal EEC, 9 hectares had been put in use for the plantation of the Host plants. But unfortunately the total number Castor plants planted in both of these EEC were not sufficient to encourage and support a large scale production of Eri Cocoons locally.

Name of EEC	Name of the District	Year of establishment	Area under EEC (in Hect.)	Area under plantation (in Hect.)	No. of Host Plant i.e. castor(as per land record as on June, 2017)
Malipur	Biswanath	1974	3.10	3.00	700
Kamdewal	Biswanath	1973	9.10	9.00	1600

Source: Directorate of Sericulture, Handloom Textiles & Sericulture, Government of Assam;

www.sericulture.assam.gov.in

- Utpal Kumar De and Manjit Das 2010 in "Economics of Sericulture in Assam: A Comparative Analysis of Three Cultivars"-

The total number Castor plant available with these two EECs is 2300 (as on June, 2017). From 2300 Castor plants hardly 2760 kgs of leaves can be obtained for the Eri Silkworm rearing activity. And this available quantity of leaves is not at all sufficient to support a large scale production of eri cocoons locally.

iv) Reliance on wildy grown host plants (Castor) for supply of leaves necessary for rearing activity:

The availability of host plant leaves (necessary for feeding of the Eri Silk Worm) is the controlling factor in Eri Silkworm rearing activity. Every living being needs to food to survive, and so does the Eri Silkworm.

The current mode of Eri Silkworm rearing in the study area is entirely dependent on wildy grown host plants (i.e. Castor). The Castor plants take 2 to 3 months to regrow, and with the increasing dependency on these wildy grown Castor plants for Eri Silkworm rearing activity accompanied by the lack of plantation efforts of the host plant, the Castor plants once found abundant have become inadequate in the study area. Interestingly the rearers have not been able to address this issue and hence the shortage of wildy grown Castor plants continues which is the key element affecting the entire rearing process.

Several recent research works on the Eri culture sector in the state of Assam have brought forward numbers of issues that has been faced by the eri culture sector of Assam. Among these issues the issue of lack of natural resource in the form host plant is significant, as the availability of the host plants leaves has a direct impact on the size and quality of eri cocoon production.

Manjit Das in his Doctoral work (2007) "Problems and Prospects of Ericulture in Assam with special reference to Barpeta District" had stated that fact of shortage of Eri feeds is another important problem faced by the rearers who are interested to engage in the rearing activities. In another study, Utpal Kumar De and Manjit Das (2010) in "Economics of Sericulture in Assam: A comparative Analysis of three cultivars", had mentioned that "As in some places, Eri activities are limited by the availability of the castor leaves.....".

v) Use of existing homestead land in other income generating activities:

The rural households of a particular region usually have a diverse range livelihood strategies based on land which they can pursue in accordance to their requirement and capacity. Habitually these households choose those land based livelihood actives which can provide them higher return. Likewise in this particular study, the homestead land available with the rearers' households, have been observed to be used in the production of products like vegetables, tea, beetle nut etc.

Table: 11: Comparison of estimated annual income received from rearing with the annual average income received from the other uses of homestead land

Serial no.	Estimated annual income from rearing based on plantation of host plant on homestead land (in Rs)	Present annual income from other uses of homestead land
1	74531.25	12000
2	223593.8	78000
3	178875	100000
4	59625	40000
5	89437.5	60000
6	59625	40000
7	44718.75	30000
8	59625	40000
9	178875	120000
10	89437.5	60000
11	89437.5	60000
12	89437.5	60000
13	59625	40000
14	29812.5	20000
15	119250	80000
16	14906.25	10000
17	59625	40000
18	59625	40000

Source: Primary data collected through schedule

A portion of these homegrown vegetables are used for direct household consumption. By selling the remaining portion of vegetables, beetle nuts and tea leaves, these households usually receive the above average amount annualized income. The above table has showed that the estimated annual incomes which the sample rearers supposed to receive from Eri cocoon production with possible plantation of host plants on their homestead land is higher than the present amount annual income received by their household from the other uses of their homestead land in every single cases.

vi) Lower number of rearing batches:

The rearing Schedule for Eri Silkworm as per the Sericulture manual of Govt. of Assam has showed that the rearers of the state can rear maximum of 6 batches of Eri Silkworm in a year.

Batches	Date of hatching/brushing	Date of maturing	Date of moth emergence
1 st batch	March 16 to 18	April 8 to 10	April 21 to 23
2 nd batch	May 4 to 6	May 22 to 24	June 5 to 7
3 rd batch	June 16 to 18	July 4 to 6	July 17 to 19
4 th batch	July 28 to 30	Aug 16 to 20	Aug 31 to Sep 5
5 th batch	Sept 14 to 17	Oct 16 to 19	Nov 3 to 6
6 th batch	Nov 18 to 20	Dec 23 to 25	Jan 15 to 17

Source: 'Sericulture Manual - Standard Operating Procedures' (2002), Directorate of Sericulture, Assam



But in the context of the sample rearers, they have been observed to engage themselves in Eri Silkworm rearing activity for a maximum of three to four batches in a year.

VI. CONCLUSION:

It is true that the Eri culture sector has provided employment to the unemployed of the state but because of its low income nature it have failed to address the issue of poverty efficiently. Like the findings of earlier a few research works, the findings of this particular study have also directed towards the low income generating ability of Eri Silkworm rearing activity. Further this study also has examined the underlying factors which have caused this.

From the findings of this particular study it has become crystal clear that there cannot be a significant increase in the income of these rearers without any significant increase in the quantity/volume of cocoon production. To increase the quantity/volume of cocoon production the rearers will require uninterrupted supply of castor plant leaves in adequate quantity. So there is the necessity of large plantation area of castor plant. But without having the provision of sufficient land on their own, these rearers cannot even think of creating such a large plantation.

As each of the sample rearers' household has certain area of homestead land, and in the absence of other significant alternative use they can use this homestead land to create a group based plantation collective through the pool of land. By creating a pool of homestead land available with the rearers' households, the rearers can make the provision of adequate plantation areas, which is otherwise not possible on their individual efforts. This will in turn help them to avail the provision of a large supply of Castor leaves throughout the year without depending on any other external sources for its supply. This large quantity of castor leaves can easily support a large scale of eri cocoon production locally.

But before using the homestead land for plantation purpose, the rearers must have to consider about the opportunity cost of other land based livelihood activities which their households have been pursuing since long. As none of the households will prefer to pursue another livelihood strategy at the cost of the other significant land based income generating livelihood strategies.

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