

Jhumias Rehabilitation in Tripura: A Comparative Analysis of Plantation Models

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Abstract

Traditionally, shifting cultivation has been a major occupation of the native tribes of Tripura, which is ingrained in their social and cultural activities. The practice, however, was replaced by the introduction of plantation crops cultivation, which is the core model used for the jhumias rehabilitation programme by the state government. It is regarded as a successful model in rehabilitating beneficiary owing to the regular flow of income and year-round employment opportunities. The present study finds that cultivation of plantation crops like banana, mango, pineapple, lemon and rubber are economically viable; whereas tea plantation is non-feasible.

Keywords: *Jhuming, Rehabilitation, BC Ratio, Rubber*

1. Introduction

In Tripura as well as other states of the northeastern region of India, shifting cultivation is commonly called jhum or 'hook' by the native tribes. Indigenous people residing in the sloppy hill forests of the state and pursuing such livelihood practices were traditionally called jhumias. The phrase 'jhumia' does not refer to any particular community but is a generic term used for tribal people reliant upon jhuming as a primary source of livelihood (Prasad, 2005). Jhuming had occupied the heart of the tribes of Tripura becoming their primary source of occupation for ages. The system was adopted by them for thousands of years and had an essential place in their religious practice (LRI, 1990) and their cultural life was also developed and centred on jhum activities (Ramakrishnan & Patnaik, 1992). Lewin (1870) observed that a jhumia household could easily earn their requirements from jhum cultivation and have sufficient leftover for festivals, family puja expenses, sickness, garments, and ornaments. However, the technique was questioned on its feasibility to cope with a rapid increase in population pressure, along with the declining jhum cycle and its yield, which often failed to meet the need of the cultivators' family (Reddy, 1999). The system yielded enough to feed them when land was fertile and in abundance to sow jhum seeds (Ganguly, 1969) inducing self sufficiency (Dasgupta, 1986). Besides, jhum cultivation in Tripura was affected by the inflow of migrants from the neighbouring areas, mainly erstwhile East Pakistan (Bangladesh), who were mostly non-tribals (Bhowmik, 2013). The growth of population caused heavy pressure on land resulting into marginalisation of the native tribes whereby the jhum cycle declined from 27-30 years to 2-3 years (Choudhury, 2012) resulting in low yields and low income (TWD, 1991)

despite the arduous and hard labour input (Darlong, 2012). The partition of India during 1947 forced a major crisis on the tribal populace of Tripura because of the quick decline of the forest timber business. Naturally, several tribal households, dependent on forest products, were left with no alternatives apart from being solely dependent on jhuming. Devvarman (1999) considered such people as first category of tribals who needed intervention for rehabilitation. The second group/category requiring rehabilitation support were those with mainstay in jhuming and with subsidiary dependence upon forest resources for secondary income/livelihood option. These categories of people generally lacked plain land and were hardly accustomed to plough cultivation though they possessed plenty of jhum land. There was yet another third group for whom jhuming was the secondary income source mainly pursued to meet deficit arising out of indebtedness to moneylenders; unfortunately, these categories of people often turned out to be full-fledged jhumias over time. Therefore, the need for alternative livelihood for these tribal jhumia households had been emerging and eventually demand for rehabilitation started brewing; but the resettlement did not happen abruptly. Several government departments and agencies have been the implementators of the rehabilitation projects which encompassed various economic activities like wetland agriculture, animal husbandry, plantations, etc. These goals were often targeted under the ambit of the Five-year plans and introduction of plantation and horticulture crops like rubber, coffee, tea, banana, cashew, black pepper, spice trees etc. on jhum fields in the sloppy terrains were considered as promising alternatives. The Tripura Tribal Areas Autonomous District Council (TTAADC) and the Department of Tribal Welfare, Government of Tripura often coordinated the attempts initiated by several government agencies like- Rubber Board, Tea Board, Department of Horticulture and etc. Considering the approaches and stated goals of these rehabilitation models, it can be seen that the crux focus has been dual- firstly provide an immediate improvement in the quality of living and secondly, wean away the jhumias from shifting cultivation to alternative livelihood models. In Tripura, rehabilitation of jhumias is often considered a success mainly following the successful implementation of natural rubber (NR) plantations project among the tribal landless shifting cultivators. The Rubber-based development models emerged stronger and viable than the other plantation crops owing to the marketing and technical support system from the NR promoting agencies and institutions which ensured regular employment as well as regular flow of income to the beneficiaries through the positive farm business income. The economic returns from NR cultivation, even at the higher elevations, provided better returns as compared to other non-rubber farming activities and thereby became the most crucial income source of smallholder cultivators (Bhowmik & Chattopadhyay, 2018; Chouhan, Kuki & Bhowmik, 2019). Similarly, rubber-tea intercropping was found to be more profitable as compared to tea monoculture for plantations with shorter rotation age of less than 24 years. In contrast, for plantations with longer rotation age, tea monoculture was more beneficial than the mixed pattern (Guo et al, 2006). Moreover, income generated from horticulture crops was found to be higher than non-horticultural crops and emerged as a highly profitable activity in the rural areas (Kamei, 2013 & Basu, 2014). In this context, it may be noted that the adoption of resettlement programmes by the beneficiaries were often a challenge owing to the unfamiliarity of the crops and its associated maintenances (Choudhury, 2012). Cultivation of horticultural crops like pineapple and other fruits were often resisted due to their perishable nature. Lack of marketing knowledge and processing facilities of such crops were considered as risks and unattractive to them. Inadequacy in infrastructure facilities, processing and marketing opportunities often cause huge wastage of perishable crop's production mainly pineapple in Tripura, which made pineapple less attractive than rubber (Krishna, 2012). The rehabilitation scheme provides for allotment of small plantations to the beneficiary households who are expected to provide their own and family labour for the future production process. The beneficiaries are also provided training for the agro- plantation

management of their farm. The aim of such approach has been part of the strategy of empowering the poor tribal by preparing them for their own opportunities, enhancing their possession of assets and by promoting enabling policy and conducive institutional environment (Islam & Quli, 2017). Thus, it becomes imperative to understand the economic viability of cash and plantations crops since these emerge as essential source to sustain farmers' interests, owing to its longer economic life spanning over multiple decades and necessitating vast resources alongside the flow of farm business income also spreading over several years (Guledgudda et al., 2010; Jayasekhar et al., 2012). Moreover, a proper understanding of cost concept is also extremely vital in the selection of limited resources regarding the choices of plantations in order to gauge the aspect of increasing farm profitability (Srivastava et al., 2017). On the contrary, the economics of major agricultural crops mostly takes account of area under the crop and the average productivity per unit area of the plant for the particular period only. Therefore, for plantation crops, owing to the vitality, diversity and business nature of production, thorough estimates of the yield and economic return were necessary to consider and plan future area expansion programmes (Chandran et al., 2015). It is in this background that the present paper stems with the broad goal to explore the economic considerations of the different plantations models used for jhumias rehabilitation programme in the state. The first specific objective of the paper is to understand the nature of marketing or selling of the product of these rehabilitated beneficiaries and the second is to examine and compare the nature of returns obtained by them from pursuing the cultivation of their specific plantation crop. Since the study is exploratory in nature primary data is the main source of information. The universe of the study comprises of beneficiaries of rubber, tea, and horticulture based rehabilitation schemes and we have used sampling technique of 'randomising the population rather than randomising the sample' (Rudra, 1989) or selecting the representative households. Samples have been drawn from 36 tribal hamlets spread over five districts of Tripura- Gomati (5), South Tripura (11), Dhalai (4), West Tripura (6) and Sepahijala (10). All the surveyed villages come under the Tripura Tribal Areas Autonomous District Council (TTAADC). The primary survey was conducted between June to December, 2018 and for deciding the sample size, we have used Yamane's (1967) formula-

$$n = \frac{N}{1+N(e)^2},$$

where, n – Sample size; N – Population size & e – Level of precision. Considering N as 51265 (number of jhumia family as per the Report of the Tribal Welfare Department, Government of Tripura, 1999 & e as 7% margin of error, we get n= 203.27.

Though, a minimum sample size of 203 suffices, 222 beneficiary households were considered in the present study. Apart from the structured schedule, personal interviews with village elders and group leaders were held for insights. It is known that, different plantation systems provide various levels/types of financial return depending upon the nature of the crop, age, number of trees, area, climatic conditions and market behaviour of demand and supply etc. Thus, to understand the economics of the farm of different plantation crops, in the present study, the viability or feasibility of plantation farming is examined by adopting the standard tools of average business income analysis and benefit-cost ratio (BCR). Further, simple correlation coefficient was also undertaken to test the level of association between area, profitability, cost and productivity of the sample respondents. The present paper is structured in five sections including the present introduction. The second section provides us information about the socio-economic background of the respondent households. The description of the factors of production is considered in the third section while the fourth section provides insights on the economics of these farms with focus on their marketing structure and the economic returns. The concluding observations are made in section five.

2. Socio-Economic Features

Socio-economic character of a community is a vital part in determining their way of life and economic activities of the people. Thus, understanding their characteristics will provides us the true state of social welfare of the people.

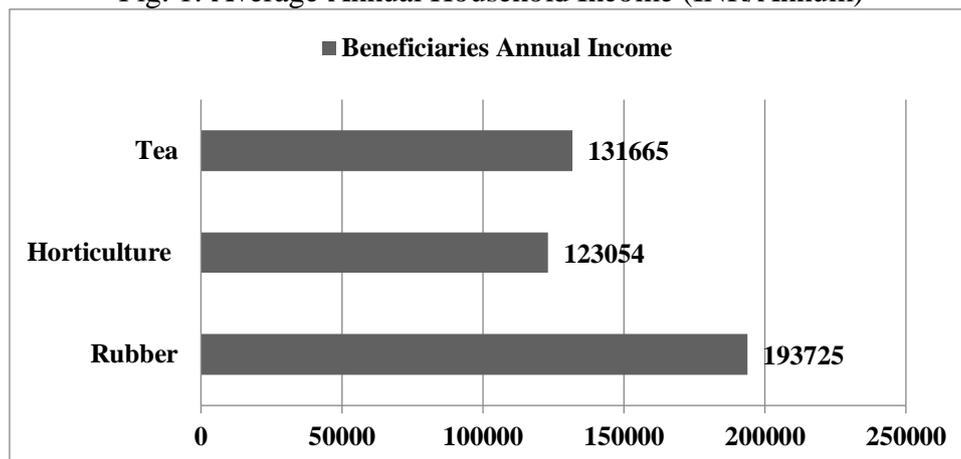
Table 1: Basic statistics of rehabilitated beneficiary

	Rubber [162]	Horticulture [21]	Tea [39]	Total [222]
Head of the household				
Male	141(87.04)	19(90.48)	34(87.18)	194(87.39)
Female	21(12.96)	2(9.52)	5(12.82)	28(12.61)
Age of the head of household				
Min	28	28	33	28
Max	95	75	100	100
Mean	57.8	46.9	60.2	57.2
Ration card				
Annapurna	3(1.85)	1(4.76)		4(1.80)
Antyodaya	25(15.43)	5(23.81)	16(41.03)	46(20.72)
BPL	62(38.27)	9(42.86)	10(25.64)	81(36.49)
APL	71(43.83)	6(28.57)	13(33.33)	90(40.54)
No card	1(0.62)			1(0.45)
Family size				
Min	2	4	1	1
Max	9	7	7	9
Mean	4.8	5.1	4.4	4.8
Type of house				
Kutchha	126(77.77)	15(71.43)	34(87.2)	175(78.83)
Tin	1(0.62)			1(0.45)
Semi-pucca	16(9.88)	5(23.81)	3(7.6)	24(10.81)
Pucca	11(6.79)	1(4.76)		12(5.41)
Concrete	7(4.32)		1(2.6)	8(3.60)
Bamboo	1(0.62)		1(2.6)	2(0.90)

Source: Field Survey, 2018

It should be noted the respondents were classified into three strata based on the crops given for rehabilitation. Horticulture includes beneficiaries rehabilitated with/through lemon, banana, pineapple and mango plantations. Table 1 provide us with the basic features of the sample families. We observe that 87.39 % of the total respondent households were headed by males and the incidence of female headed households was marginally more among rubber cultivators and tea growers. The minimum age of the head of the household was 28 years while the oldest was a 100-year-old tea grower. The mean age of horti-croppers was 46.9 years which is lesser than the aggregated average age, 57.2 years, indicating them to be younger than rubber and tea growers. Moreover, 36.49% of the samples were BPL ration card holders and 40.54% of samples were APL ration card holders while another 20% were from the Antyodaya category. The incidence of BPL families was more among horticulturists and APL card holders were more among rubber cultivators. The average family size was 4.8 in aggregate, however, the smallest family size was 4.4 members among tea growers and 5.1 members was highest among the horticulturist. In term of housing, kutchha (mud) houses are the predominant form with 78.83% of respondents living in such accommodation, and the lowest incidence were for houses made with tin with 0.45% of respondent dwelling in such house.

Fig. 1: Average Annual Household Income (INR/Annum)



Source: Field Survey, 2018

The annual household income of the respondents is an accumulation of income from all sources accessible to family. The average income for rubber beneficiary is Rs. 193725/- per annum is comparatively the highest among the entities. The mean income of horti-croppers and tea growers are Rs. 123054/- per annum and Rs. 131665/- per annum respectively. Fig. 1 shows that there are wide differences in the average annual household income across categories.

3. Factors of Production

It may be noted here that viability of an economic endeavour depends on a variety of factors. The plantation crops being mostly of long duration, the economics of cultivation often go beyond the realm of short run analysis of input-output relationship. However, certain basic features like size of holding, type of labour input, technological support, issues related to credit and insurance continue to remain important components of the profitability and viability issue as in standard agricultural economics framework.

Table 2: Size of holdings of plantations by beneficiaries

Size Class (ha)	Rubber	Horticulture	Tea	All crops
Marginal (< 1)	60(37.03)	16(76.19)	28(71.8)	104 (46.85)
Small (1to 2))	71(43.83)	3(14.29)	10(25.64)	84 (37.84)
Semi-medium (2 to 4)	30(18.52)	2(9.52)	1(2.56)	33 (14.86)
Medium (4 to 10)	1(0.62)			1 (0.45)
Total	162(100)	21(100)	39(100)	222 (100)

Source: Field survey, 2018; Note: Figures in parentheses indicates the percentage

Table 2 shows that the marginal size of landholding is most prominent among the respondents, with 46.85% share. Their extent is most significant among the horti croppers (76.19%) while it is lowest among the rubber (37.03%) cultivating households. Further, the small sized farms account 37.84% of the respondents. The small sized farm is the dominant form among rubber growers (43.83%) whereas, the lowest incidence is among the horticulturists (14.29%). With the increase in the size of landholding, the numbers of respondents show a decline; whosoever has larger holdings, i.e., semi-medium and medium types, are mostly from the rubber cultivation model. It may be noted that many of the beneficiaries have added up their land possession over the years owing to higher surplus generated from their initial plantation which was either marginal or small in size. In other words, 14.86% of the beneficiaries hold semi-medium sized holdings and an overwhelming majority of them are rubber growers. The sample

also consists of 1 rubber grower who has accumulated lands over the years and is currently operating a medium sized holding. Nevertheless, in short, it may be said that the jhumia rehabilitation beneficiaries are primarily small and marginal cultivators.

Table 3: Average farm size of holdings (in ha)

Type of Beneficiary	Plantation	Wetland Agriculture	Jhuming
Rubber	1.366	0.439	0.08
Horticulture	0.705	0.620	0.328
Tea	0.704	0.328	0.00

Source: Field survey, 2018

Table 3 indicates the average land utilisation for cultivation by the beneficiaries. For the rubber respondents, the average size of land under the crop is (1.366 ha), which is the highest. The average size of land cultivation under horticulture (0.705 ha) and tea (0.704 ha) is below one hectare. Further, most of them also practice plain land cultivation as well as shifting cultivation (jhuming) to meet their needs of food grains. The plain land cultivation system has the largest average size of cultivation among the horticulture respondents (0.620 ha) followed by the rubber cultivators with an average land size of 0.439 ha. The average size of wetland agriculture area among tea croppers is 0.328 ha and interestingly they also do not have any land under jhuming. Unexpectedly, the jhuming areas in possession to horticulturists are higher than the rest. Also, to be noted is the non-existence of jhuming land among tea-growers. The practice is completely wiped away among the tea beneficiaries and negligible among rubber beneficiaries, in accordance with the government objective of weaning jhumias away from further cultivation of jhuming. Apart from the technical support, an important component for successful agriculture-based economics mechanism is the facility of credit. Table 4 shows the extent of beneficiaries obtaining credit from institutional sources for production purpose. It is observed that 99 respondents (44.59%) had obtained institutional credit in that particular year to finance the operational cost. The extent of credit seekers is highest among rubber croppers (51.23%) and lowest among tea-growers (25.64%). It is also seen from Table 4 that there are 12 agencies providing credit to the respondents. Bandhan Bank is the most prominent among them with 42 instances of which maximum is for the rubber growers (37) followed by horticulture (3) farming communities. The operational system followed by that particular agency is people-friendly because no collateral is needed to avail loan and the repayment procedure is extremely simple such that the bank agent goes to the respective villages and collects the money from the borrowers, once in a week. Similarly, the role of Tripura Gramin Bank is also worth-mentioning as we observe 32 instances of credit obtained, of which rubber (24) is the highest.

Table 4: Source and Extent of Institutional Credit (in Nos.)

Financial Institutions	Rubber	Horticulture	Tea	Total
Bandhan Bank	37	3	2	42
Tripura Gramin Bank	24	2	6	32
Kisan Credit Card (SBI)	5			5
ASA International Microfinance India Pvt Ltd	4			4
Self Help Group	3	1		4
Larsen & Toubro Finance	2			2
Ratnakar Bank Ltd	1			1
United Bank of India	2			2
Housing Development Finance Corporation	2			2

Ujjivan Small Finance Bank	2			2
Tripura State Cooperative Bank			2	2
Tripura Schedule Tribe Corporation	1			1
Total	83 (51.23)	6 (28.57)	10 (25.64)	99 (44.59)

Source: Field survey, 2018

Interestingly, several private sector banking and non-banking financial corporations have also been the source of finance for these beneficiaries. On the other hand, the incidences of nationalised banks are extremely limited among the respondents. Nonetheless, the respondents opine that micro-financing system of the organised financial sector had been cooperating directly with the farmers in ensuring timely loans which acted as a discouragement for the prevalence of money lenders in and around the tribal villages.

Labour usage

Table 5 demonstrates that the respondent farms use both family as well as hired labour in the production process. 54 farms depend solely on family labour while 17 farms use hired labour exclusively. One (1) rubber grower has a share cropper. The rest 150 farms (67.57% of the total) are functional using both family as well as hired labour. Actually, hired labour is used to supplement family labour. This form of using a combination of two types of labour is the most prevalent form for all the three rehabilitation models. The extent of use of family labour is highest among horti-croppers and least among tea-growers. The largest proportion of use of hired labour is found in the tea growing farms (20.51%). The only rubber farm using a share cropper can be considered a special case where the sharecropper does all the manual jobs, and the product is distributed equally between the garden owner and the tapper. However, with the sizeable use of family labour it can be said that the rehabilitation models are operational mainly on family-based farming and thereby acting as the primary source of livelihood to the beneficiaries.

Table 5: Labour employment pattern (in Nos of farms)

Structure	Rubber	Horticulture	Tea	Total
Family	44	5	5	54
Hired	9		8	17
Both	108	16	26	150
Share	1			1
Total	162	21	39	222

Source: Field survey, 2018

Table 6 indicates the combination of both male and female within the family as the most preferred form of labour to carry plantation works across all the plantation-based rehabilitation models. Still, if we look specifically, the inclination over male labour in the family remains the first choice, which is an indication of the male-dominated household. The number of exclusively male laboured family farms (38) as compared to female laboured family farm (18) is overwhelmingly more for rubber plantations. Similar is the case for family laboured tea plantations. However, for the hired labour format, most of the farm hired from both the genders. The exciting part is that female labour is more preferred than male labourer when the demand for hired labour arises mostly because of lower wages for female workers as is seen for rubber (male- female ratio is 19:27) as well as horticulture farms (male-female ratio is 1:3).

Table 6: The gender-differential in workforce (in Nos of farms)

Programme	Family labour participation			Hired labour participation		
	Male	Female	Both	Male	Female	Both

Rubber	38	18	96	19	27	71
Horticulture	1	2	18	1	3	12
Tea	5	1	25	5	2	27

Source: Field survey, 2018

It should be remembered that wage level for the hired labourers across the farms ranged from a low of Rs. 150 per day to a high of Rs. 350 per day. However, considering the category wise distribution, it is seen that the range for wages at the tea farms was Rs 175/day with the minimum and maximum being Rs. 300/day respectively. The range of daily wage for horticulture farms and rubber plantations are both 150, but the minimum and maximum for them varies. Rs. 150/day is the least wage paid at horti- farms, while at rubber plantations the minimum wage paid is Rs. 200/day. The highest wage rate at rubber plantations Rs. 350/ day, whereas it is Rs. 300/ day at the horti-farms. The mean wage rate is highest at rubber plantations, Rs. 253.70/ day. The mean wage for tea plantations was Rs. 236.9/day whereas for horti-farms, it was the lowest, Rs. 220.24/day. The standard deviation was highest (51.00) for the horti-cropping units.

5. Economics of Farm

Marketing Structure

Success in plantation and cultivation depends on the assurance and distance of market enjoyed by the beneficiaries as it determines the quantum of profitability. Table 7 is divided into two panels. Panel A shows where are the beneficiaries selling? For rubber, it is seen that there are three options to the farmers- i) home, which is synonymous to farm gate, ii) local market and iii) collection centres. It is further seen that the marketing behaviour of the rubber respondents are mainly- at the market (34.57%), selling at home (30.25%) and collection centre (25.31%). These three options has certain degree of acceptance, further, there are some beneficiaries, who use multiple system- both home and market as well as home and collection centre and even market and collection centre, however, with lesser rates of incidence. The conventional way of marketing horticultural products is direct sale at the local market (66.68%) Around 9.52% each sell off their product at the market and the village retail shop. One horticulture beneficiary sell his product as part of contract farming. The most popular option available for the small and beneficiary tea growers are to sell their leaves to the tea processing factory (41.03%). Almost 31% of them sale from their home while the choice of the local market (28.2%) is the least popular form of marketing behaviour of the tea respondents.

Table 7: Marketing behaviour of the beneficiaries (in %)

	Rubber	Horticulture	Tea
(A) Sold at			
Local Market	34.57	66.68	28.2
Home	30.25	4.76	
Collection centre	25.31		
Home & market	6.17	4.76	
Home & collection centre	3.09		
Collection centre & market	0.61		
Farm		9.52	30.77
Village retail Shop		9.52	
Contract		4.76	
Factory			41.03
Total	100	100	100

(B) Sold to			
Local trader	62.35	61.90	46.15
Market broker	8.64		33.33
Agency	24.07		
Agency & market broker	4.94		
Consumer		14.29	
Local trader & consumer		23.81	
Cooperative society			2.57
CTC			17.95
Total	100	100	100

Source: Field survey, 2018

Panel B indicates- to whom are the beneficiaries selling? For rubber the beneficiaries have three options. 62.35% of them sell to the local trader, while 24.07% of them sell their product to the various institutional agencies like TRPC and RPS available in the vicinity. More than 8% of the respondents are tied to the market brokers working for some other large traders while around 5% uses both brokers as well as agencies. Regarding horticulture, the scenario is different. Since horticulture products are consumer-friendly, they can be disposed of at the village level without difficulty, as they are directly consumable. The options are local trader and final consumers. 61.90% opt for selling to local trader, while 23.81% generally sell to both local traders and consumer while the rest 14.29% sells directly to consumers. The leading buyer for tea is the local trader (46.15%) followed by the brokers (33.33%). Almost 18% of the tea beneficiaries prefer selling to Central Tea factory Corporation (CTC) and a few also goes to cooperative societies. The popularity of the local trader across products is due to the fact that they travel across the villages to buy the produce and sometimes offer advances to the croppers to discount in the future date.

Economic Viability

Table 8 provides us with the basic economic indicators of the farm. The cost of production includes the imputed cost of family labour, which has been computed by the product of the number of family labour days and the prevalent market wage for hired labour in the area.

Table 8: Economic Indicators of the beneficiary farms (in Rs /Hectare)

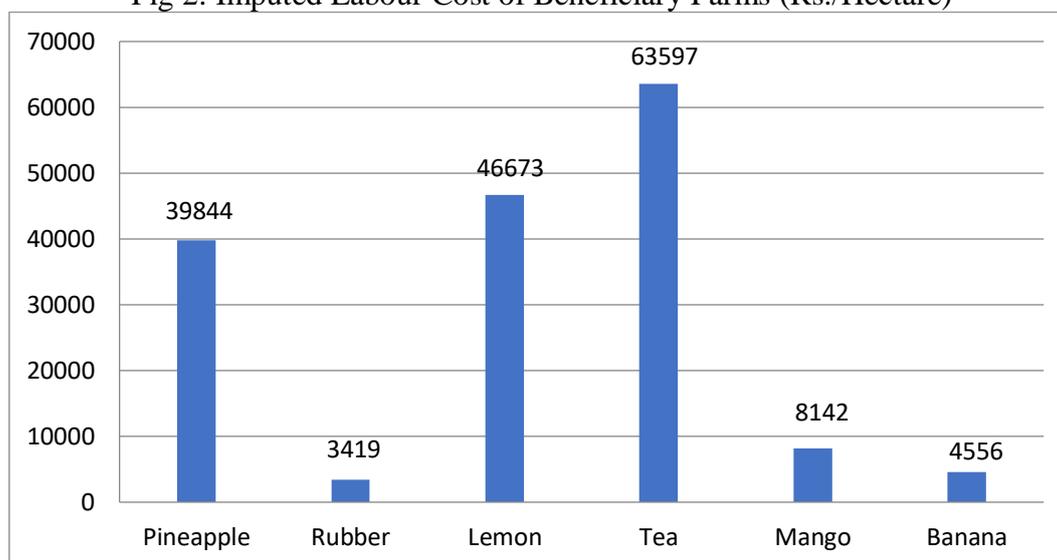
Crop	Average Cost	Average Revenue	Average Business Income	BC Ratio
Rubber	36985	107409	70424	2.90
Tea	117574	105224	- 12350	0.89
Lemon	93152	276216	183064	2.97
Banana	9804	48739	38935	4.97
Mango	15526	71423	55897	4.60
Pineapple	80469	242187	161718	3.01

Source: Field survey, 2018

Table 8 shows that the average cost of production is highest for tea farms, Rs.117574/ hectare, while the least expenditure is for Banana plantations, Rs. 9804/ hectare. The average revenue for the farm is highest for Lemon, Rs. 276216/ hectare and least for Banana, Rs. 48739/ hectare. The average business income per hectare is highest for lemon, Rs. 183064/ hectare, while for pineapple; the business income is Rs. 161718/hectare. The return is surprisingly negative for tea, Rs. (-) 12350/hectare. The BC ratio is found to be highest for Banana followed by Mango. These two crops have low operational cost as well as lower return; however, in terms of ratio they are higher. The BC ratio for lemon, rubber and pineapple are similar with the rates being

2.97, 2.90 and 3.01 respectively. As expected, the BC ratio for tea is 0.89. The negative business income and unfavourable benefit cost ratio at the tea farms can be understood from the fact that the imputed cost of labour input is highest for tea, Rs. 63597/hectare as seen in Fig. 2. The imputed labour cost for rubber farms are the least, Rs. 3419/hectare while for banana and mango it is also quite similar, Rs. 4556/hectare and Rs. 8142/hectare respectively. The costs for family labour for pineapple and lemon plantations are Rs. 39844/ hectare and Rs. 46673/hectare respectively.

Fig 2: Imputed Labour Cost of Beneficiary Farms (Rs./Hectare)



Source: Field survey, 2018

Considering the fact that the imputed cost of family labour accrues to the beneficiary household itself, we see that the spread of total business income (business income + imputed labour cost) changes for the better.

Table 9: Descriptive Statistics of Total Business Income (in Rs /Hectare)

Crop	Mean	Standard Deviation	Coefficient of Variation	Minimum	Maximum
Rubber	73843	74868	101.39	- 101563	408919
Tea	51247	82340	160.67	- 84787	267837
Lemon	229737	330768	143.98	37881	818119
Banana	43491	27115	62.35	8750	99375
Mango	64040	99892	155.98	3331	179331
Pineapple	201562	236439	117.30	34375	368750

Source: Field survey, 2018

Table 9 shows that the average total business income for tea plantations turns not just positive but becomes higher than that for banana also. On the other hand, it is highest for lemon plantations. However, all these plantations indicate high degree of dispersion. Nonetheless, even ignoring cost for family labour, we find that the total business income for several tea and rubber plantation farms remained negative, which is certainly owing to the particular character of that farm and cannot be generalised. Nonetheless, to sum up, it may be said that the economics of farm indicate most favourable result for horticulturists while the status of tea planters are most vulnerable. Table 10 shows that profitability, cost of production and productivity are all inversely related to the size of the farm. The traditional farm size debate holds good even in Tripura. The negative correlation coefficient between profitability and area

is significant at 5% level of significance, while the negative correlation is even stronger between cost and area. The value of $r = -0.276$, is significant at 1% level between area and productivity, suggesting that the yield rates of small beneficiary farms are higher. The statistically significant negative relationship between profitability and cost as well as the significant positive correlation between profitability and productivity and between cost and productivity are in expected lines.

Table 10: Correlation Matrix between Economic Variables

	Area	Profitability	Cost
Profitability	-0.149 (0.026)		
Cost	-0.201 (0.003)	-0.335 (0.000)	
Productivity	-0.276 (0.000)	0.815 (0.000)	0.273 (0.000)

Source: Field survey, 2018

5. Concluding remarks

It is understood that the patriarchal nature of the jhumia society remains and head of the family head is aged above 50 years. Most of them possessed APL ration cards with the average size of family being more than 4 members. Among the beneficiary households kutcha houses were the most prominent. The average of the annual household income is highest for rubber beneficiaries. We also find that the economics of the farm also varies among the various plantation models; however, the commonality stands in the form of dominance of marginal and small sized plantations across all crops. Further, the average farm size is highest for the rubber planters and least for tea growers, while farm size for wetland agriculture is largest among the horticulturists whereas, it is smallest among the tea beneficiaries. Interestingly, some of the rubber and horticulture croppers do practice jhum till date. However, it should be noted that the incidence of shifting cultivation among the tea growers was not observed. They were completely weaned away from it. The roles of various institutional banks in ensuring timely availability of credit to respondents has been a positive intervention in eliminating or rather reducing the hegemony of village money lender. Beneficiaries mostly access Bandhan and Tripura Gramin Bank for institutional credit support owing to the customer friendly service and hassle-free loan repayment system. Labour input is generally from the family but they do hire labour during the cleaning, collection and plucking and that too preferably females due to wage differentials. Local markets are the preferred point of sale for most of the rubber planters and horticulturists, while majority of tea cultivators sell at nearby tea factories to minimise intermediary costs and commissions. Interestingly, the most common buyer of rubber, horticulture and tea outputs are found to be the local trader. The various types of horti-plantations like lemon, pineapple, mango and banana indicate positive returns and adds to the economic strength of the beneficiaries. Rubber plantations are also found to remunerative. The negative business returns and non-viable BC ratio for tea is more because of inclusion of imputed cost of family labour. For family farms, the returns are definitely positive. However,

the wide variations in the economic returns from the plantations of the rehabilitated beneficiaries is a matter of concern from the aspect of equity. The significant inverse relationship between area and productivity in rehabilitation can be ascribed to the subsistence economic condition of the planters which limits use of productivity inducing capital input. Nonetheless, to sum up, it can be said that the plantation based rehabilitated beneficiaries faced several hurdles as part of the emerging agrarian challenges yet they have survived in the long run as most of the interventions have been positive and fruitful and ensured monetary growth to the beneficiaries and added to the development process of the state. The economic viability of their farms has ensured that they moved away from the vulnerabilities of slash and burn cultivation. Several of the off-springs of these rehabilitated beneficiaries have had the benefit of education and other development interventions and the instances of inter-generational occupational mobility are found to be in plenty. However, the plantation-based models being operational through a single crop do often expose these poor tribal farmers to the vagaries of market and therefore from the policy aspect, mixing up crop for rehabilitation programmes may be considered in the days ahead.

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