

## Shifting Cultivation in Tripura – A Critical Analysis

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### Abstract

*The present paper describes the status of shifting cultivation in Tripura (North-East India) and reviews the works done on various alternative farming systems in the state. It portrays the perception of tribal people usually called them 'Jhumia', about jhum cultivation and why they are still practicing it though Govt. of Tripura has banned this practice long ago and also emphasize the impact of jhum cultivation in different aspects of natural and human environment and issues relating to it. This paper ultimately focuses on how to cope up from this matter. It also explains the negative and positive aspects of shifting cultivation. It also illustrates many other possible alternatives that may be acceptable by the Tribal people of Tripura as modified shifting cultivation practices in the hilly parts of Tripura and factors responsible for failure of jhum cultivation.*

**Keywords:** Shifting Cultivation, Jhumia, Environment, Tripura

### Introduction

Shifting cultivation or slash and burn agriculture (locally called as Jhum) is the main form of agriculture in the hilly parts (locally called as Tilla) of Tripura in the north-eastern region of India by the indigenous people. The total geographical area in Tripura is almost 10491.69 sq. km and located 22°56' N to 24°32' N latitudes and 91°09' E to 92°20' E longitudes. In view of the mountainous terrain, settled cultivation constitutes only a small portion of the total cultivated land, which is generally restricted to the nearby river valleys as Tripura hill ranges are part of Himalayan Mountains. Topographically Tripura consists of a number of hill ranges, hillocks and hilly terrains interspersed with wide fields. Heavy rainfall, rich flora and fauna, fertile fields and tropical hot and humid climate and tropical evergreen deciduous forest have drawn numerous groups of people to Tripura from different directions since time long past. This natural environment attracted people in groups to enter Tripura in different waves from the long past. At present Tripura is a place, where besides 19 tribal groups. Tripura has a big tribal population near about 31.1 % (census 2001). In India, shifting cultivation is variously known as adiabik in Arunachal Pradesh, dawarin Madhya Pradesh, panda by the Myrias of Bastar in

Madhya Pradesh, dabi, komon, pamadohi, or bring among the Bhuiyas of north Orissa, gudiao dhongarchar in south Orissa, jhum in Assam and Tripura. The Reangs of Tripura use hooknismong as a synonym for jhum. Jhumming as a system of crop husbandry has been an ancient one and more prevalent in the hilly terrains in this part of the world. Geographically, this culture is mostly found in the tropical rainforests characterized with heavy rains and hot weather (Jones & Darkenwald, 1950). Jhum cultivation to the tribes of Tripura has over the years been not just an economic activity; rather it is a way of life. "The whole process of Jhumming is clean and keeps the tribal in the open, enjoying the cool mountain breeze, singing and dancing. No wonder the tribal refuses to go down to the valleys to lead a more 'settled' life on the paddy field! Work and leisure for him are not two distinct and mutually opposing entities; they are two sides of the same coin" (Saigal, 1978). Jhum cultivation also is known as shifting cultivation as because the Jhum cultivators have to go on shifting their field in cyclic rotation after normally for one year or two years, if soil fertility sustains. It is also known as slash and burn or Rotation Farming. This analysis unearths the impact of rubber plantation on socio-economic life of Jhumias.

Yet one can easily understand that this practice is prevalent mostly due to lack of viable alternative employment opportunities. Jhumias are tribal's who practice shifting cultivation or jhumming. In Tripura over 10,039 hectares of land are under jhum cultivation a decade ago. Over the years the jhum economy has undergone many changes-land available for jhumming has decreased; leading to a shortening of the jhum cycle and a fall in incomes.

### Shifting (Jhum) Cultivation in Tripura

Although practices under shifting vary widely in different hilly parts of Tripura basically in the deep forested areas and the variability in practices are largely tribe-specific, the shifting cultivation in its any form invariably involves clearing of vegetation, and then slashing and burning the plant parts including debris (Tripathi and Barik, 2003). Most of the tribal people, who are commonly called Jhumias, are not purely so. A number of tribal people have taken to settle plough cultivation. Some are in the processes of becoming sedentary farmers. But both of these categories of people do some amount of jhumming. Different classes of shifting cultivation in the area may be classified into three categories namely 'Jhumias by choice' (the tribals those who have permanent land to do jhum), 'initial Jhumias' (the tribal people those who have reclaimed some amount of land for partially doing jhum) and 'Pure Jhumias' (tribal people who entirely depend on jhumming for production of their food and do not have any plain land for settled cultivation. Jhum cultivation to the tribes of Tripura has over the years been not just an economic activity; rather it is a way of life.

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Sl. No	Name of tribe	Population	Percentage
1.	Tripuri or Tripura	250382	55.57
2.	Reang	64722	14.36
3.	Jamatia	34192	7.59
4.	Chakma	28662	6.36
5.	Halem	19076	4.23
6.	Noatia	10297	2.28
7.	Mog	13273	2.94
8.	Lushai	3672	0.81
9.	Uchai	1061	0.21
10.	Kuki	7775	1.72
11.	Garo	5559	1.23
12.	Munda	5347	1.18
13.	Orang	3428	0.78
14.	Santal	2222	0.49
15.	Khasia	491	Negligible
16.	Bhil	169	Negligible
17.	Chimal	Nil	Nil
18.	Bhutia	3	Negligible
19.	Lepcha	175	Negligible

Source: Government of Tripura, Department of Tribal welfare

### **Area under Shifting Cultivation**

the area under shifting cultivation in Tripura as estimated by different organizations and agencies hold opposing views significantly. According to the Task Force on Shifting Cultivation, Ministry of Agriculture (1983), the annual area under shifting cultivation was 223 sq. km, fallow period is 5-9 years, minimum area under shifting cultivation one time or other was 1115 sq. km and No. of families practicing shifting cultivation was 43000 but as per the estimates of Forest Survey of India (1999), the cumulative area (million ha) of shifting cultivation (1987 to 1997) was 0.06. Shifting cultivation has been the main source of livelihood for most tribes of North-eastern hills as well as Tripura hills and a sizeable portion of population in the hills of Tripura still depending on jhum cultivation. It is not only the source of livelihood but also has high cultural importance among the people of Tripura. In the comparison of shifting cultivation in north-east India, the tribes of Tripura is having very low ratio among the north-eastern states.

### **Impact of Shifting Cultivation in Tripura**

North-east India is a hilly region and Tripura is a part of it. Being a hilly terrain, the people those who are living in the hills or uplands practice shifting cultivation as they don't have alternative source to cultivate and produce crops. The impact of jhum or shifting cultivation is having good and bad aspects which are as follows-

#### **Positive Aspects of Shifting Cultivation**

Shifting cultivation facilitates the tribal people to preserve their rich cultural traditions and diversity as jhum cultivation is interwoven into the cultural and tradition of near about 19 tribes those inhabit basically in the hilly parts of Tripura especially in Dhalai and North Tripura district. Shifting cultivation is a labor intensive and low subsidy based farming system, provides an assured source of food production and security to the nourishment level of the Jhumias in the hilly parts of Tripura. Shifting cultivation in its traditional form may also put in towards the conservation of agro-biodiversity, principally the native food crops like rice, various vegetables and even different fruits. They usually cultivate 8-10 varieties of crop items in a particular jhumming land, in that way they can produce more food in a single time-frame. Shifting cultivation practices in Tripura also shows an effective form of land use pattern as they are using limited space for optimum production in a specific time. In the process, a small piece of jhumming land accomplishes almost all the needs of Jhumias and reduces his reliance with other allied activities or external inputs. Besides burning and slashing in the jhumming plots, other cultural performs followed in shifting cultivation like controlling the weeds, soil-borne pathogens and other diseases of crops and they also practice their indigenous religion customs like offering something their Gods and Goddesses when they cut their grown crops/ products. Topographically Tripura consists of a number of hill ranges, hillocks and hilly terrains interspersed with wide fields, application of modern technologies have certain limitations and more over Tripura is a landlocked state of India and the physical infrastructure of this state is not well established, so the Jhumias are not used the modern agricultural tools and chemicals and pesticides. So in this way, they are not damaging the chemical properties of soil as well as they have their own cultivation process to do Jhum which also prevent soil erosion a bit or partially. Therefore, jhum cultivation is having some positive aspects and Govt. of Tripura allows tribal people to do jhum in some extent but through improved and modern way as jhum provides base for low external input agricultural technologies.

#### **Negative Aspects of Jhum Cultivation**

Problems relating to shifting cultivation through slash and burn are not new in Tripura. As early as 1876, W.W. Hunter in his book, 'Statistical Account of the Hill Tipperah' had marked that the "regression of forests had already started in hills because of shifting cultivation practiced by almost the whole population numbering less than 50000 who were all tribals". Jhum cultivation starts with cutting and burning of trees and leads to degradation of forest or deforestation in the hilly areas where they used the land to do jhum. Deforestation has negative effects on the environment which ultimately leads to climate change which nowadays a matter of global concern and many international, national and regional level agencies are working on it. Deforestation may also affect the flora and fauna which existing in the forest. One of the most vital negative environmental impacts of shifting cultivation is the damage that causes to the soil system. It accelerates the soil erosion manifold. Besides causing air pollution due to burning, shifting cultivation is responsible for loss of soil nutrients and useful soil fauna and microbes. Burning of slash lowers soil acidity, organic matter and total nitrogen, but enhances phosphorus and cations.

Due to decline of jhum cycle, the soil fertility and top soil cover in the jhumming lands has been diminishing to a certain extent that it is not naturally possible to get back its previous fertility and other things which eventually converts the jhumming plots into degraded wastelands. The net changes in soil available for nutrient pool from pre-cropped stage through slashing, burning and subsequent cropping result in substantial lowering of carbon, nitrogen and magnesium. Most shifting cultivation practices are subsistence level farming system having very low output/ input ratio compared to other farming systems/ methods. The clearing of forest areas at regular and frequent intervals for shifting cultivation results in the loss of primary forests and formation of secondary forests. This causes substantial loss to tree diversity and associated vegetation those are adapted to primary forests. Excessive shifting cultivation may cause serious soil erosion and sometimes may lead to flood. This continuous process of forest degradation in the hilly parts of Tripura may result the less average rainfall, scanty rainfall and also uncertainty in the monsoon rainfall and for this temperature is increasing day by day and effects on human life as too much hot is not suitable for work. Shifting cultivation may also affect the ecological balance of the forest as Jhumias are responsible for that as they are living near the nature and doing jhum. Due to reduction of cycle to 2–3 years, the resilience of ecosystem has broken down and the land is increasingly deteriorating. The area under natural forest has declined; the fragmentation of habitat, local disappearance of native species and invasion by exotic weeds and other plants are some of the other ecological consequences of shifting agriculture. With reduction in crop yield, the families start moving to other virgin areas. Therefore, shifting cultivation (human intervention) is considered to be the single most important factor may cause all sorts of environmental degradation in the hilly parts of Tripura.

### **Complexity to Wean Away Tribal People from Jhum Cultivation**

The badly consequences of jhum cultivation on the environment are well-established scientific facts. Such conclusions are based on the scientific data and researches conducted world-wide including north-east India (FAO, 1984; Tawnenga et al. 1997). The state Tribal Welfare Department, Agriculture Department, Rubber Board of Tripura, many organizations etc are gathering informations about jhum cultivation and other allied activities of tribal people those are staying in the hilly parts of Tripura. Many Jhumias are also very well acquainted to it but still they are doing jhum or shifting cultivation. The existing land tenure system and ownership pattern has been viewed as the most important factor for restoring jhum or shifting cultivation in north-east India as well as Tripura. Besides, being a hilly region and a land-locked state, the people those who are existed in the hilly terrain, the only source of food production is jhum or shifting cultivation as there is no substitute source to meet the tribal people's food and other needs. In addition, jhum cultivation is a way of life those who are living in the hilly parts of Tripura and moreover it is a fundamental element of cultural ethos of the tribal in Tripura since from the pre-historic period. Considering all these factors, it has never been easy to formulate an alternative landuse model for the tribal people's those who are engaging in jhum cultivation in the hilly terrain of Tripura. So the tribes, living in the hilly parts of Tripura, like to engage themselves in jhum cultivation as their tradition and culture belong with it.

### **Efforts Made to Check Shifting Cultivation in Tripura**

Several jhum and Jhumia rehabilitation schemes have been implemented in the north-eastern region since independence by the state and central governments to check shifting cultivation in the region. Tripura also has a fairly long history of jhum control and Jhumia rehabilitation programmes. The first plan has drawn up in 1953-54 in which Jhumia family was allotted 5 acres of arable land and grant of Rs. 500/- for land development and purchase of essentials to support settled farming. The examples of such schemes are watershed development projects in shifting cultivation areas (implemented by the Ministry of Agriculture, Govt. of India), Soil Conservation schemes of Govt. of India, Tripura Jhumia Rehabilitation Scheme of Govt. of Tripura, Forest Department of India and Tripura, projects of various Funding agencies and different landuse policies of Govt. of Tripura. However, most of these schemes could not reach desired level of success due to structural constrains, less literacy rate among the tribes (though the new generation is now educating), alternative source of livelihood, availability of plain agricultural land etc.

The concern of the Govt. of India for controlling the jhum (shifting) cultivation is reflected in its agricultural and forestry policies from time to time. For instance, both the Forest policies notified during the post-independent period, viz.

National Forest Policy 1952 (NFP 1952) and National Forest Policy 1988 (NFP 1988) and recently Forest Right Act 2006 (FRA 2006) have emphasized the need to check shifting cultivation and provide forest based livelihoods to the tribal people who are practicing jhum cultivation in the hilly parts of Tripura and try to get back the jhum plots through rehabilitating the affected areas by Jhumias. The NFP 1952 states that ‘tree lands in agricultural areas and their importance in rural economy’ (section 17) and ‘concern for damage caused to forests by shifting cultivation’ (section 23) and the NFP 1988 states that ‘concern for adverse effects of shifting cultivation on environment and land productivity’ (section 47) and ‘to contain the areas already affected and rehabilitation through energy plantation and social forestry’ and FRA 2006 affirms that It is important for securing livelihoods of the forest communities those who are usually dependent on forest products and forest lands and for strengthening local self governance of forests and natural resources.

In order to deal with the problems of jhum or shifting cultivation, Govt. of India has also constituted two task forces, one in the year 1983 and the other in the ministry of Environment and Forests in 2001. Besides estimating the area under jhum or shifting cultivation in the country, the task forces suggested a sustainable approach to manage the jhum cultivation adopting a holistic and integrated approach. The big concentration of Jhumia families was in Dhalai and South District. The following table shows a clear decline in the number of Jhumia families though it has increased from 1968 to 1987 but after that it is declining due to varied Govt. schemes.

**Table 2: Number of Households and Persons Dependent on Jhum, Tripura, 1968 to 2007**

Year	Source of the Estimate	No. of Households	No. of Persons (in lakh)
1968	J.B. Ganguly	25000	
1978	Benchmark Survey (1978)	46854	2.59
1987	Benchmark Survey (1987)	55049	2.88
1999	Department of Tribal Welfare	51265	
2007	Forest Department	27278	1.36

Source: TDHR, 2007; pp-37

### **Managing jhum Cultivation through Rehabilitation Programme**

The major public policy intervention in favour of forest dwellers has been to rehabilitate and resettle Jhumia families. The first attempts to settle Jhumias were made by the Raja of Tripura, who set up the Kalyanpur Reserve in 1931. The reserve was situated in a fertile area outside forests and was intended to induce Jhumias to take to the plough. Tenancy laws were enacted to protect tribal rights over land. The immigrants, who moved, however, were mainly non-tribals.

The post-Independence period saw a spate of attempts to settle Jhumias into occupations that were integrated into the mainstream peasant economy. The Congress Government set up colonies where Jhumias were given land to carry out plough cultivation. Through the ‘Shifting Cultivation Control Scheme’, a centrally sponsored scheme, each family was to be granted a piece of cultivable land and Rs 500 as initial capital. Each settlement or ‘colony’ was designed to provide basic amenities to the tribal people. A total of 59 colonies were established by 1969. The success of the programme was, however, limited, since 37 per cent of the settled families failed to take to the plough. Most of these measures failed to curb jhum cultivation in forested areas. By the 1980s, nearly 1.2 lakh acres were occupied by tribals in reserved, proposed reserved and protected forest areas; 1 lakh acres were utilized for cultivation alone and the rest was used for homestead and other purposes. The challenge of rehabilitation was thus a large-scale one, and had to be implemented in accordance with the Forest (Conservation) Act 1980. Since land for rehabilitation was scarce outside forested areas, the State Government soon realized that non-agricultural forest-based options had to be pursued. The Government of Tripura has taken innovative approaches towards the development of tribal livelihood systems. The number of families involved in four major plantation schemes clearly shows that raising rubber plantations has been one of the important means of Jhumia rehabilitation. The rubber plantation project was conceived as a lucrative alternative to jhum cultivation. The Tripura experiment is modeled on the experiences of the Kerala rubber economy, where ‘Rubber for the Poor’ project attempted to provide tribal basically Jhumias and other marginal tribal farmers with a steady income.

**Table 3: Benefits of Beneficiaries through Rubber Plantation**

year	Area under tapping (ha)	Beneficiaries	Production (MT)	Sale processing (Rs/ lakh)	Paid to processing (Rs/ lakh)	AV. Per beneficiaries (Rs/ha)
2003-04	921	1335	1025	491	270	20250
2004-05	1044	1396	1036	474	363	25989
2005-06	1182	1514	1584	930	938	33458
2006-07	1336	1564	1742	1176	938	59976
2007-08	1345	1723	1627	1422	1020	59180
2008-09	1394	1874	1873	1395	1195	63768

Source: TRPC Official Handbook

### **Factors Responsible for the Failure of jhum Rehabilitation Scheme in Tripura**

Jhumia rehabilitation scheme has achieved its goal in some extent and resettled Jhumias in alternative livelihoods but still in the Hilly parts of Tripura, the tribal people are doing jhum cultivation. The facts those are responsible for that are following-

- ▶ Conceptualization and formulation of this scheme done unilaterally without involving the Jhumias as Govt. took this decision without knowing their interest.
- ▶ Testing of scheme as pilot projects had not been done as it is necessary before implementing it.
- ▶ Successful participation of the target population to generate a sagacity of belongingness has not done properly.
- ▶ Poor research back-up.
- ▶ Less integrated approach.
- ▶ Lack of harmonization.
- ▶ Sustained and intensive training to both scheme operators and Jhumias.
- ▶ Lack of popularization of alternative livelihood approach for eradication of poverty.

### **The Ideal Approach to Progress Shifting Cultivation**

There can be two approaches to successfully manage the shifting cultivation in the states of north-east India. Tripura is a tiny state of north-east India and tribal people are practicing jhum cultivation in the hilly parts of Tripura. Considering the socio-cultural importance of jhum in the life of the people of Tripura, the most excellent strategy could be to modify and improved the jhum cultivation in a scientific way using modern agricultural tools and seeds to enhance the productivity and meet the necessities of the Jhumias. On the other hand, the existing forms of jhum cultivation may be replaced by new alternative schemes and programmes such as ideal landuse, horticulture landuse, livestock farming, fish farming, agro-industries, mushroom farming, sericulture, floriculture and piggery farming. While transforming and improving the existing jhum, the following aspects must be taken into consideration such as soil and water conservation, maintenance of soil fertility, crop diversity and high yielding seeds, food security, market linkages and deforestation as it is led to the climate change which nowadays a matter of global concern.

### **Aspects of Shifting Cultivation to be Managed for Effectiveness**

In order to effectively manage the shifting cultivation, certain aspects pertaining to jhum cultivation need to be looked into for appropriate policy intervention and action. The issues to be considered for effective management of shifting cultivation in Tripura are follows-

- ▶ Declining availability of forests and farmlands per households as population is increasing day by day and this for human intervention that people are clearing the forest areas and settled over there as space is constant in this world.
- ▶ Emerging governmental policies and legal frameworks on landuse and land rights that affect tribal population those who are practicing jhum cultivation in the hilly parts of Tripura.
- ▶ Various Governmental policies are implementing to promote cash crop plantations in the hills.
- ▶ Encourage market and export oriented production.

- ▶ Development in education leads to migration of new generation in the urban areas for better opportunities lead to labour shortage for shifting cultivation as new generation don't like to practice jhum cultivation rather it is done by the aged persons whose age in between 40-60 years.
- ▶ Recognize jhum cultivation as a form of agro-forestry having two distinct phases – cropping and fallow phases.

### **Bamboo Plantation in Tripura**

Bamboo was raised in pure block plantations in the land of tribal beneficiaries and as one of the species mix in shelter belt of the new rubber plantations with financial assistance from Tripura Bamboo Mission since 2008-09. The Mission provided funds for 12 ha but the corporation as far created 33 ha of bamboo plantation

### **Improvement of Shifting Cultivation through Modern Technology in Tripura**

Certain technological guidelines and principles those have been successfully applied in different parts of the world for the rehabilitation of shifting cultivation are listed below-

- Maximize both cropping and fallow period and provide good varieties of seeds.
- Identify innovative technologies, institutions and policies that can address two fundamental challenges – poverty eradication of tribal people (Jhumias) and protection of environment.
- Adoption of wide spectrum of fallow management strategies.
- Minimizing the slash and burning process of jhum cultivation and stop cutting the forest and start doing afforestation.
- Accelerate fallows (fallow vegetation to be improved with nitrogen fixing trees to enrich the soil fertility).
- Managed and enriched fodder fallows that it may use by tribal fallows to improve their socio-economic status.

### **Conclusions**

Considering the lack of settled agricultural field, irrigation facilities, remoteness, high cost, labour and energy input involved in terrace cultivation, and in absence of other viable alternatives to shifting cultivation, the tribal population (aged people) of hilly Tripura are still continued to depend on shifting cultivation for their subsistence livelihood due to lack of floodplains for settled agriculture, increasing population growth, ecological fragile and hilly terrain of more than 30<sup>0</sup> slope. If the jhum cultivation is still continuing in its present form then land degradation, ecological balance, deforestation, soil loss and fertility, destabilization of slopes may happen and the impoverished living conditions of resource-poor upland farmers are bound to worsen with time as they don't have alternative sustainable livelihoods to feed their stomach.

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