SWIDDEN CULTIVATION AND THE DEVELOPMENT PROGRAMMES IN NORTH-EAST INDIA

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(A Study Among the Karbis of Assam)

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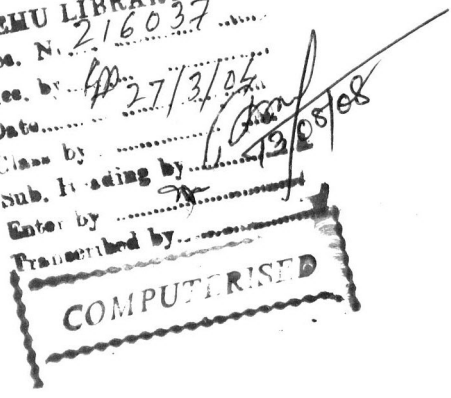

Swidden Cultivation and The Development Programmes in North-East India

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In Memory of My

Mother, Golap Prabha Das

and

Brother, Pradip

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FOREWORD

I am happy to learn that Dr.Girindra Nath Das has arranged for the publication of the book titled, *Swidden Cultivation and the Development Programmes in North-east India (A study among the Karbis of Assam).*

The book is substantially based on his doctoral dissertation. It is a commendable addition to our knowledge of Economic anthropology with special reference to some socio-economically relevant aspects of the age-old practice of shifting axe cultivation vis-a-vis the Government-sponsored *Integrated Jhumia Development Programme* (IJDP).

Nowhere else we find the close inter-relationship between ecology, economy, technology of production and society better visible than among the swiddening population.

Swidden cultivation, also known as 'Slash and burn' or shifting cultivation represents a distinct stage in the history of man's exploitation of his environment. It seems to have been well established during the neolithic period more than 10,000 years ago. It has been reinforced as a system continually with experience of the people practising it. It has been enriched by the exuberant spirit of the people living in close proximity with nature. According to Food and Agricultural Organization, it is defined as, " the custom of cultivating clearance scattered in the reservoir of natural vegetable (forest or grass or wood land) and of abandoning them as soon as the soil is exhausted and this includes in certain areas the customs of shifting homesteads in order to follow the cultivators, searching for new lands". It is estimated that all over the world around 200 million people derive their food crops by practising shifting cultivation over some 3600 million hectares of land.

Swiddening is widely practised in the hill areas of North-east, Southern Orissa and Northern Andhra Pradesh. It is also prevalent in isolated pockets in Madhya Pradesh, Maharashtra, Bihar, Kerala and Tamil Nadu. In the North-

east it is generally known as *jhum*. Various groups of people however, have their own nomenclatures for it.

In India, at present more than 4 million hectares of land has been reported to be covered under swiddening ; and around 6 lakh tribal families are practising this type of cultivation over a million hectares annually.

Despite the fact that in the practice of *jhum* cultivation there is optimal utilisation of natural resources, the forces of modernisation and the process of fast change; and an acute pressure of increased population have brought to relief the relative inefficiency of this form of agriculture. Besides low productivity, this system has been held responsible for disturbing ecological balance by causing disproportionate deforestation. This in turn has been causing huge soil erosion in the areas where this system is in practice. Soil erosion due to water flow, constant high velocity winds and shifting cultivation, extensively practised by the tribal population in the North-east has been a major cause of worry.

Taking into consideration the adverse effects of shifting cultivation, the Government of India and the concerned State Governments have embarked upon a good number of schemes in the successive Five Year Plans to regulate and control the practice in the highly affected areas of the country.

The *Integrated Jhumiya Development Programme* (IJDP) is such an attempt to wean the Jhumias away from the practice of shifting cultivation in the two Autonomous Districts of Karbi Anglong and North Cachar Hills in Assam by providing them with alternative means of livelihood.

By taking require to intensive field investigation ; and on the basis of relevant secondary data, Dr. Das, in the present study makes a sincere attempt to highlight the salient features of the programme as well as to have an empirical assessment of the overall impact of the project on a major hill tribe, namely, the Karbis, inhabiting Karbi Anglong district, Assam.

In the process, he has also very relevantly provided a few suggestions for being considered by the concerned authorities while formulating and implementing various *jhum* control programmes.

In the study, the author has very meticulously taken into consideration all possible parameters like ecology, economy, technology of production and socio-cultural milieu of the *jhum* practitioners to make the understanding a holistic one.

I am confident, the publication will be useful not only for the social scientists, but also for social workers, voluntary agencies, development administrators and educators, planners and all others, concerned with the welfare of our socio-economically backward tribal brethren. The book will be of interest to the general readers as well.

(R.K.Kar)

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PREFACE

Swidden cultivation, commonly referred to as *jhum* in North-east India is a very primitive method of food production which evolved after the food-gathering stage of human civilisation. Significantly, it is still in existence among the people living in tropical and sub-tropical regions of the world. However, recent studies conducted by distinguished scholars, expert committees and other authorities reveal that at present, such an age-old practice has a relatively more detrimental impact on the economy and the surrounding environment than its beneficial aspects.

Taking into consideration the adverse effects of swidden cultivation, the Government of India and the concerned State Governments have embarked upon a good number of schemes under the different Five Year Plans to regulate and control the practice in the highly affected areas of the country.

The *Integrated Jhumia Development Programme* (IJDP) is such an attempt to wean the *jhumias* away from the practice of shifting cultivation in the two autonomous districts of Karbi Anglong and North Cachar Hills of Assam by providing them with alternative permanent means of livelihood. The present study intends to highlight every aspect of the programme in detail and tries to assess the overall impact of the programme on a major hill tribe viz., the Karbis, inhabiting the Karbi Anglong district of the State of Assam. As a matter of fact, the study was undertaken by me for my doctoral research at the Dibrugarh University.

The study now brought out in a book form has been possible due to constant help and active co-operation received from various individuals and organisations at different periods of time. At the very outset, I would like to express my deep sense of gratitude to my guide, Dr. R.K. Kar, Professor, Department of Anthropology, Dibrugarh University, Assam who has

supervised the entire study with minute details in spite of his busy schedule of work. He has been, in fact, a source of inspiration and a guiding spirit in my endeavour.

I record my indebtedness to Late Dr. B.N. Bordoloi, former Director, Assam Institute of Research for Tribals and Scheduled Castes, Guwahati who has instilled the idea of research activities in the most interior and in hospitable tribal areas of the two autonomous hill districts of Assam since the beginning of my professional career.

While collecting relevant data in relation to my study, I received immense help from the Project Co-ordinator, IJDP, Office of the Development Commissioner, Hill Areas of Assam, Dispur; Project Officers (IJDP) of both the Karbi Anglong Autonomous Council, Diphu and North Cachar Hills Autonomous Council, Haflong and a good number of officials of other Development Departments located in the two hill districts of Assam. I offer my sincerest thanks to all of them.

During my field visits the people of all the IJDP Centres have extended full co-operation including hospitality without which the dream of completing the present task would not have been fulfilled. I owe my indebtedness to them.

Shri Sing Kro, B.A., an employee of the District Primary Education Programme (DPEP), Karbi Anglong has helped me with great enthusiasm in various stages of the work including field trips to the centres. I offer my thanks to him.

I acknowledge with thanks the help and co-operation extended by Shri Purnananda Bharali, M.A., District Research Officer, Dibrugarh; Late Ananda Chandra Nath, M.Sc., Shri Sanjib Tarafdar, B.Lib. Sc., Shri Samir Choudhury and Shri Tarini Kalita, all from the Directorate of AIRTSC, Guwahati ; Shri Bishnu Prasad Handique, M.Sc., Govt. Boys' Higher Secondary School, Diphu ; Shri Deba Gogoi, Office of the Deputy Commissioner, Karbi Anglong, Diphu and Shri Siba Nath Sarmah, Late Jogen Kalita and Shri Dilip Kumar Brahma of my own establishment, in a number of ways at different phases of the work.

I am deeply indebted to my father, Shri Santopal Das, who is a constant source of inspiration for me not only in this endeavour but also in every sphere of my life. My wife Chitralekha, daughter Rijumani and son Biswajit deserve appreciation for their encouragement in early completion of the work.

Last but not least, I am thankful to Mr. M.P. Misra, Director, Akansha Publishing House, New Delhi for publishing the book within a very short period.

In fine, I would once again like to put on record my gratitude to Prof. R.K. Kar for writing the 'Foreword' to the book.

Diphu
Karbi Anglong

Girindra Nath Das

I

INTRODUCTION

The State of Assam endowed with fertile river valleys and green mountains has been the abode of various tribes with rich cultural heritage since remote past. The tribal communities have entered into the State from their original habitats through different routes at different intervals of time and have permanently settled here. Ethnically all the tribes of Assam belong to the great Mongoloid group and linguistically they belong to the Sino-Tibetan group. The tribes of Assam may conveniently be classified into two main categories–the plains tribes and the hill tribes. The plains tribes are exclusively found in the Brahmaputra and Barak valleys of the State. On the other hand, the hill tribes are mainly concentrated in the two autonomous hill districts of Karbi Anglong and North Cachar Hills which are commonly referred to as the Hill Areas of Assam.

The Scheduled Castes and Scheduled Tribes Orders (Amendment) Act, 1976 specifies the following fourteen tribes in the two hill districts of Assam–(1) Chakma (2) Dimasa Kachari (3) Garo (4) Hajong (5) Hmar (6) Khasi, Jaintiya, Synteng, Pnar, War, Bhoi, Lyngngam (7) any Kuki tribe (8) Lakher (9) Man (Tai speaking) (10) any Mizo (Lushai) tribe (11) Mikir (Karbi) (12) any Naga tribe (13) Pawi and (14) Syntheng. Again, according to the same Act, the following nine tribes have been scheduled in the State of Assam, excluding the autonomous districts– (1) Barmans in Cachar (2) Boro, Boro-Kachari (3) Deori (4) Hojai (5) Kachari, Sonowal (6) Lalung (Tiwa) (7) Mech (8) Miri (Mishing) and (9) Rabha. According to 1991 Census the scheduled tribe population constitutes 12.82 per cent of the total population of Assam.

The Karbi Anglong district is inhabited by the Karbis, Bodos, Tiwas, Dimasa Kacharis, Rengma Nagas, Garos, Kukis and Shyams etc., while the

North Cachar Hills district is inhabited by the Dimasa Kacharis, Jeme Nagas, Hmars, Kukis, Mizos, Karbis and Khasis etc. As a matter of fact, the major concentration of the Karbis is found in the Karbi Anglong district. On the other hand, the North Cachar Hills district is predominantly inhabited by the Dimasa Kacharis.

According to 1991 Census the autonomous hill districts of Assam i.e. Karbi Anglong and North Cachar Hills together cover a total geographical area of 15,322 sq. km. out of the State's total area of 78,438 sq. km. The total population of the two districts is found to be 8,13,524 against the State's total population of 2,24,14,322. In other words, the two hill districts cover 19.5% of the total geographical area and 3.6% of the total population of the State.

The Karbi Anglong district located between latitudes 25°30′ and 26°41′ N and longitudes 92°7′ and 93°52′ E is bounded on the north by Nagaon and Golaghat districts, on the south by the North Cachar Hills district, on the east by Golaghat district and Nagaland and on the west by Meghalaya. The district happens to be the largest district in the State covering a total geographical area of 10,434 sq. km. as per 1991 Census. The total population of the district is 6,62,723. On the whole, the district covers 13.3% and 2.95% of the State's total area and total population respectively. Physiographically, the district consists of two hilly lobes which genetically belong to the Shillong plateau. The two lobes are separated by the Kopili valley. The eastern lobe is dome shaped and approximately double the size of the western lobe. The important rivers of the district are Kopili and Dhansiri. The tributaries of Kopili are Barapani, Umium, Amreng, Kolonga and Jamuna etc., while those of Dhansiri are Kaliani, Nambar, Deopani and Doigrung etc. The highest peak in the district is the Singhason (1357 metres) located at East Karbi Anglong.

The district of North Cachar Hills lies between latitudes 25° and 25°45′ N and longitudes 92°30′ and 93°30′ E. It is bounded by Karbi Anglong and Nagaon districts on the north, Cachar district on the south, Nagaland and Manipur on the east and Meghalaya on the west. The district with a total geographical area of 4,888 sq. km. covers a total population of 1,50,801, thus having 6.2% and 0.67% of the State's total area and total population respectively. The northern flanks of the Barail range and the eastern flanks of the Jayantia hills constitute the North Cachar Hills. The highest peak Hempeupet (1571 metres) is located at the Barail range. Diyung is the

longest river (170 km.) of the district. Orignating from the Barail range it flows to join Kopili at Diyungmukh. The tributaries of this river are Langting, Lumding and Mahur etc. Again, Jatinga, Jiri and Chiri, rising from the North Cachar Hills become the tributaries of Barak, the principal river of the Cachar district of Assam.

It may be mentioned here that the two hill districts were, in fact, two subdivisions of the United Mikir & North Cachar Hills district which was inaugurated on November 17, 1951 and created (vide Govt. Notification No. TAD/R 31/503/209 dated 3.11.50) by carving out certain portions of Nagaon, erstwhile Sibsagar and United Khasi and Jayantia Hills districts and the whole of the North Cachar subdivision of Cachar district. On February 2, 1970 North Cachar was declared as a separate civil district while the remaining portion, i.e. Mikir Hills subdivision was constituted into Mikir Hills district which was again rechristened as Karbi Anglong in 1976 vide Govt. Notification No. TAD/R/115/74/47 dated 14.10.76.

In accordance with the provisions of the Sixth Schedule to the Constitution of India, the North Cachar Hills District Council and the Karbi Anglong (Mikir Hills) District Council came into existence on April 20 and June 23, 1952 respectively. The powers and functions of the District Councils may be broadly divided into four heads–Legislative, Executive, Financial and Judicial. Each council has a tenure of five years. The District Council budget consists of two sections–Council Sector and State Sector. The Council Sector budget is entirely dependent upon the revenue collected through the Taxation Department of the Council while the State Sector is financed jointly by the Centre and the Government of Assam.

The Karbi Anglong district has three civil subdivisions viz., Diphu, Hamren and Bokajan while the North Cachar Hills district has two civil subdivisions viz., Haflong and Maibang. It may be noted here that Bokajan and Maibang subdivisions have come into existence on August 15, 1989 and November 17, 1987 respectively. Again, there are 4 Revenue Circles, namely; Phulani, Diphu, Silanijan and Donka in Karbi Anglong and 3 Revenue Circles, namely; Haflong, Maibang and Harangajao in North Cachar Hills. Moreover, the number of Development Blocks is 10 and 4 in Karbi Anglong and North Cachar Hills respectively. Some basic statistics in relation to the two autonomous hill districts of Assam are furnished in Table I.1 as per 1991 Census. The table shows that as per 1991 Census the scheduled tribe population in Karbi Anglong accounts for 51.56% of the

total population of the district whereas in respect of North Cachar Hills it accounts for 65.54% of the total population of the district. On the contrary, the records of 1971 Census reveal that the scheduled tribe populations numbering 2,10,039 in Karbi Anglong and 52, 583 in North Cachar Hills constitute 55.37% and 69.14% of the total population of Karbi Anglong and North Cachar Hills respectively. The tribewise population figures in the two districts as per 1991 Census are still not available. Nevertheless, to have an idea of the same, 1971 figures have been presented in Table I.2. It will be seen from the table that among the various tribal communities inhabiting the two districts the Karbis are predominant in Karbi Anglong and Dimasa Kacharis are predominant in North Cachar Hills. In fact, the Karbis and Dimasa Kacharis constitute 82.29% and 46.68% of the total scheduled tribe population of Karbi Anglong and North Cachar Hills respectively.

The main source of livelihood of the tribal people inhabiting the two hill districts of Assam is agriculture. The people carry out wet cultivation in the low lying areas. But they practise *jhum* or shifting cultivation in an extensive manner on the hill slopes.

Shifting Cultivation in General

Shifting cultivation is the most primitive method of cultivation and its evolution is supposed to take place during the neolithic period. "It is known through archaeological discoveries that by about 7000 B.C., there was a fundamental change in man's attitude towards environment and accidentally he became a food producer from a hunter and food gatherer. Man began to plant, cultivate and improve species of various plants by selection. Of course, domestication of animals like sheep, goat and cattle started side by side. Goardon Childe identified the neolithic farmers of the Danube Valley as nomadic cultivators. Chang also proved that the neolithic farmers of Formosa were shifting cultivators" (Bose, Ghatak & Bera, 1982 : 216).

Shifting cultivation has been defined as "any agricultural system in which fields are cleared by firing and are cropped discontinuously (implying periods of fallowing which is always in average longer than periods of cropping)" (Conklin, 1957 : 1). "The chief characteristic features of shifting cultivation are (i) rotation of fields (ii) slash and burn operation of vegetable species (iii) keeping the land fallow for a number of years for regeneration of forests (iv) use of human labour as chief input (v) non-employment of

TABLE I. 1
Basic statistics in relation to the two hill districts of Assam (1991 Census)

Sl. No.	*Item*	*Karbi Anglong*	*North Cachar Hills*
1	*2*	*3*	*4*
1	Geographical Area (sq. km.)	10,434	4,888
2	Subdivision	3	2
3	Total population	6,62,723	1,50,801
	Male	3,47,607	81,196
		(52.45)	(53.84)
	Female	3,15,116	69,605
		(47.55)	(46.16)
4	Total ST population	3,41,718	98,834
		(51.56)	(65.54)
	Male	1,75,289	51,064
		(51.30)	(51.67)
	Female	1,66,429	47,770
		(48.70)	(48.33)
5	Total SC population	27,991	3,918
		(4.22)	(2.60)
	Male	14,879	2,312
		(53.16)	(59.01)
	Female	13,112	1,606
		(46.84)	(40.99)
6	Total rural population	5,92,257	1,16,315
		(89.37)	(77.13)
	Male	3,08,543	61,870
		(52.10)	(53.19)
	Female	2,83,714	54.445
		(47.90)	(46.81)

continued .....

TABLE I.1
Basic statistics in relation to the two hill districts of Assam (1991 Census)

1	*2*	*3*	*4*
7	Total urban population	70,466 (10.63)	34,486 (22.87)
	Male	39,064 (55.44)	19,326 (56.04)
	Female	31,402 (44.56)	15,160 (43.96)
8	Total main workers	2,52,123 (38.04)	57,751 (38.30)
9	Percentage of literacy (including 0-6 year age group)	35.88	46.58
	Male	44.15	54.39
	Female	26.76	37.46
10	Density of population per sq. km.	64	31
11	Sex Ratio (Females per 1000 males)	907	857
12	Growth rate of population (1971-91)	+ 74.72	+ 98.30

(Source : *Statistical Hand Book*, Assam, 1984, Directorate of Economics & Statistics, Government of Assam, Guwahati)

N.B. : Figures shown in parentheses indicate percentages.

TABLE I.2
Scheduled Tribe population in the two hill districts of Assam (1971 Census)

Sl. No.	*Name of the tribe*	*Karbi Anglong*	*North Cachar Hills*
1	*2*	*3*	*4*
1	Mikir (Karbi)	1,72,845	4,349
2	Dimasa (Kachari)	14,797	24,545
3	Garo	9,080	59
4	Khasi & Jayantia	4,763	1,724
5	Chakma	246	150
6	Hajong	384	2
7	Hmar	13	5,367
8	Any Kuki tribe	5,937	7,587
9	Lakher	–	1
10	Man (Tai speaking)	964	–
11	Any Mizo (Lushai) tribe	347	364
12	Any Naga tribe	46	8,435
13	Pawi	6	–
14	Synteng	611	–
	Total	2,10,039	52,583

(*Source* : *Statistical Hand Book,* Assam, 1980, Directorate of Economics & Statistics, Government of Assam, Guwahati)

draught animal and (vi) use of simple implements like dibble stick, scrapper etc" (Roy Burman, 1989 : 1).

The practice of shifting cultivation is observed in the tropical and sub-tropical parts of the world. Besides India, it is found in Srilanka, Northern Burma, Thailand, Sumatra, Borneo, Indonesia, Philippines, Korea, Guatemala, Amazon, Madagascar, Keniya, Ivory Coast and New Guinea etc. In India, it is prevalent in the States of Assam, Meghalaya, Nagaland, Mizoram, Arunachal Pradesh, Manipur, Tripura, Bihar, Orissa, Madhya Pradesh, Sikkim, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Rajasthan, Gujarat and Maharashtra. However, the practice of shifting cultivation has posed a serious problem in Orissa, Andhra Pradesh and North-east India.

The procedure of carrying out this type of cultivation is that a suitable plot of land on a hill slope is selected and the trees, bamboos and shrubs etc., grown over it are cut in the winter season and these are allowed to dry under the blazing summer sun. Later on, fire is set on the debris and the ashes, thus produced, are scattered over the whole plot of land. With the advent of monsoon rain, seeds of paddy, maize and cotton etc., are broadcast over the area. Seeds of some other crops and vegetables are also put into the holes made by digging stick or other implements. Thus, mixed crop is raised over the same plot of land. Weeding also takes place. As soon as crops ripe, harvesting starts. Vidyarthi (1986 : 87) mentions the following thirteen stages adopted by the shifting cultivators: (i) selecting the forest patch or land (ii) worshipping (iii) cutting the forest growth and spreading it' for drying (iv) collecting big logs and firewood (v) setting fire to the shrubs (vi) planning or final preparation of the field for sowing (vii) sowing seeds with digging sticks or with the help of hoes (viii) weeding (ix) watching and protecting the crop (x) harvesting and storing (xi) worshipping (xii) merry-making and (xiii) fallowing.

In the North-eastern States of India shifting cultivation is commonly known as *jhum*. The cultivators practising this cultivation are called *Jhumia*. The term *Jhum* prevalent in the North-eastern region of India has most probably evolved from China. "China was known in old days by a general term *Chao-Thieus*, meaning God's Heaven-land, and even to this day, the people of northern Burma designate China by the general term *Thieus*. *Chao-Thieus* was later on shortened to *Chuh-This*, and was also pronounced as *Zuh-This*. *Chao*, *Chuh* or *Zuh* later on meant only high hill

or high land. Cultivation carried on by picking up a high hill or high land was known as *Zuh-moh* or *Zuhm* cultivation" (Nath, 1978 : 1).

The most important features of *jhum* cultivation in North-east India are–(a) Land is owned by the community but each family cultivates its own field after selecting the same jointly with the help of headman. (b) Fire is employed to clear the cut and dried up debris. *Jhuming* is not done without burning–if no fire is employed as in many other parts of India and abroad--then it is believed that the process causes relatively less damage to ecology. (c) Soil is not cultivated. (d) Community approach in certain broad operations–jungle clearance, burning crop, protection from animals. (e) Yield goes down rapidly–hence field is abandoned after 2-3 years. (f) The field remains with the *jhumia* as long as he continues to use it (Goswami, 1994 : 9).

Local names for *jhum* are prevalent among the peoples of the world. "The primitive cultivators of West Africa call it *farming* and it is known as *sartage* in the Ardennes, *chena* in Srilanka, *chitamoni* in Central Africa, *nutpa* in Central America, *karen* in Japan, *ladeng* in Indonesia, *djuma* in Sumatra and *tamari* in Thailand" (Agarwal, 1987 : 317). *Jhum* cultivation goes under a variety of names in other parts of India : *Kurwa* or *Khallu* in the Santhal Parganas, *Bewara* in Ranchi and *Palamau* in Bihar and *Podu*, *Rema*, *Dahi*, *Kaman*, *Bringa*, *Gudia*, *Dongar Chas* in Orissa; *Penda*, *Dahiya*, *Bewar*, *Guharh*, *Farhha*, *Dippa*, *Marhan*, or *Erka* in Madhya Pradesh ; and *Kondapady* in Andhra Pradesh" (Vidyarthi, 1986 : 86). In North-east India some of the local names go as; *Hichusisomoms* among the Reangs of Tripura, *Adimdik* among the Adis of Arunachal Pradesh, *Lyngkhalum* or *Shyrti* among the Khasis, *Bogma* among the Garos of Meghalaya, *Tekeonglu* among the Ao Nagas of Nagaland and *Inglong Arit* among the Karbis of Assam etc.

The precise statistical data on the extent of shifting cultivation in the world are not available. "According to F.A.O's estimate (in the 4th World Forestry Congress) the actual area under shifting cultivation in the world was reported to be about 36 million sq. km. inhabited by some 200 million people" (Vidyarthi, 1986 : 86). In India, according to Kaith (1956) the total area of land utilized for shifting cultivation is 13,55,300 acres and the total tribal population dependent upon it is around 26,44,200 belonging to 109 tribal communities (Sachchidananda, 1989 : 22). According to Roy

Burman and Sharma (1970) the total area under shifting cultivation and the total population depending on it in India as per 1961 estimates are 18,42,816 acres and 18,10,400 individuals respectively (Sachchidananda, 1989 : 33). As per Dhebar Commission Report (1962), the total area under shifting cultivation in India is about 5,60,000 hectares (14 lakh acres). According to the Report of the Commissioner for Scheduled Castes and Scheduled Tribes (1961), the total area of land under shifting cultivation in India is 22,75,616 acres and the total population depending on it is approximately 25,89,401 (Bose, Ghatak & Bera, 1982 : 226). Shifting cultivation is being carried out in about 233 blocks located in 62 districts of 16 States of the country. It involves about 12% of the total tribal population of the country (Roy Burman, 1982). However, the total number of families engaged in this practice in India as shown in an article by Borthakur (1991 : 89) is furnished in Table I.3. The table reveals that among the thirteen States and two Union Territories (at present States) in India practising shifting cultvation, the total number of families engaged in this type of cultivation is highest in Orissa and lowest in Madhya Pradesh. Again, in North-east India the number of households engaged in *jhum* is maximum in Nagaland and minimum in Tripura.

The Task Force Report on shifting cultivation, Ministry of Agriculture, 1983 shows the extent of the practice in North-east Region of India, an idea of which is provided in Table I.4. The table shows that the annual area under shifting cultivation is highest in Manipur and lowest in Nagaland. Fallow period varies from 2-10 years in the region. Minimum area under shifting cultivation at one time or other is maximum in Manipur and minimum in Tripura.

From the discussions made so far it is not known clearly whether the practice of shifting cultivation is increasing or decreasing in India. However, as per estimates of 1960-61 and 1974-75 (Table I.5), "the area under shifting cultivation and population dependent on it have gone up in all the units in the North-east and Orissa. In other States it has either declined or disappeared" (Kar, 1986 : 41).

Studies conducted by various authorities reveal that the population sustaining capacity of land under shifting cultivation is extremely low. "The studies conducted in the Philippines, Malawi and Zambia including a few in India (*eg.* Bose, 1967; Ganguli, 1969 & Saha, 1970) reveal the same. For example, the estimate of Bose's study noted slightly over four persons

TABLE I.3
Number of families engaged in shifting cultivation

Sl. No.	*State/Union Territories*	*Total number of families engaged in jhuming*
1	*2*	*3*
	A. STATE	
1	Andhra Pradesh	23,200 (A)
2	Assam	58,000 (A)
3	Bihar	12,200 (A)
4	Madhya Pradesh	2,500 (A)
5	Manipur	70,000 (A)
6	Meghalaya	52,290 (A)
7	Nagaland	1,16,046 (A)
8	Orissa	1,41,000 (A)
9	Tripura	43,000 (A)
10	Sikkim	3,000 (B)
11	Karnataka	2,800 (B)
12	Maharashtra	5,000 (B)
13	Kerala	3,200 (B)
	B. UNION TERRITORY (at present State)	
1	Arunachal Pradesh	54,000 (A)
2	Mizoram	50,000 (A)
	Total	6,36,236

A–Based on Task Force on *Shifting Cultivation in India*, October, 1983.
B–Figures are approximate and based on FAO UNFPA Project 1980 (Report for India–*Population data regarding Forestry communities practising shifting cultivation and other Reports, 1992).*

TABLE I.4
Shifting cultivation in North–east Region

Sl. No.	*State*	*Annual area under shifting cultivation (sq. km)*	*Fallow period (in yrs)*	*Minimum area under shifting cultivation at one time or other (sq. km)*	*Number of families practising shifting cultivation*
1		*2*	*3*	*4*	*5*
1	Arunachal Pradesh	700	3-10	2,100	54,000
2	Assam	696	2-10	1,392	58,000
3	Manipur	900	4-7	3,600	70,000
4	Meghalaya	530	5-7	2,650	52,290
5	Mizoram	630	3-4	1,890	50,000
6	Nagaland	190	5-8	1,913	1,16,046
7	Tripura	223	5-9	1,115	43,000
	Total	3,869 (1.5%)		14,660 (5.7%)	4,43,336

Source: *Basic Statistics of North–Eastern Region*, 1990 North–Eastern Council, Shillong.

TABLE I.5
Estimated area under shifting cultivation, communities and population depending on shifting cultivation
(a) 1960-61 & (b) 1974-75

Sl. No.	*State*	*District(s) affected*	*Tribes practising it*	**Estimated area under shifting cultivation for a year (sq. km)*	**Estimated population partially depended on shifting cultivation (thousand)*
1	*2*	*3*	*4*	*5*	*6*
1	Andhra	(a)Srikakulam, Agency tracts, Visakhapattnam, East Godabari, and West Godabari	Bagata, Gadabas, Kammara, Khonds, Kotiyas, Koyas, Konda–Reddis, Konda–Dhors, Malis, Manna–Dhors, Nayaks, Rena Savarms	384	200
		(b)East Godabari, Srikakulam and Vizag	Bagata, Jataus, Konda–Dhors, Konda Kapus, Konda–Reddis, Mukha Dhara, Samantha, Savaras	173	116
2	Arunachal Pradesh	(a)Not available		600*	500*

Contd.

1	2	3	4	5	6
		(b) Kameng, Lohit, Siang, Subansiri & Tirap	Adi including the sub-groups of Gallong, Miniyong, Padam, Pasi Ashing, Bagni, Bagum, Simong and Tangam Aka, Dafla or Nishi, Hill Miri, Khowa, Mishimi, Miji, Nocte, Tangsa and Wancho	920	797
3	Assam, Meghalaya, Nagaland, Mizoram	(a) Garo Hills, United Mikir & N.C.Hills, United Khasi & Jaintia Hills, Naga Hills, Mizo (Lushai) Hills Kamrup, Nowgong, Cachar	Chakma, Garo, Jaintia, Khasi, Lushai, Lalung, Mikir, Mizo, Naga	2035	977
	Assam	(b) Karbi Anglong & N.C. Hills	Dimasa (Kachari), Garo, Kachari, Karbi or Mikir, Khasi, Kuki, Lalung & Naga	690	331

Contd.

1	2	3	4	5	6
	Meghalaya	(b) West Garo Hills, East Garo Hills, East Khasi Hills, Jaintia Hills & West Khasi Hills	Garo, Hmar, Jaintia, Khasi & Mikir	760	344
	Nagaland	(b) Khoma, Phek, Mokekchung, Mon Tuensang, Wokha & Zunhebote	Nagar, Kuki & Mikir	730	396
	Mizoram	(b) Aizawal, Chhimutuipul and Lunglei districts	Chakma, Hmar, Lakher, Mizo, Pawri & Riang	650	295
4	Bihar	(a) Singbhum Santal Parganas, Ranchi	Birija, Kharis, Norwas Mal Paharias, Sarria Paharia	436	115
		(b) Santal Parganas	Mal Paharia & Sauria Paharia	162	61
5	Karnataka	(a) Interior Mountainous tracts of Belgaum and South Kanara district	Bettakurba, Jenu Kurubam, Kumbis, Kuman Marat. Soligars	10	14
		(b) Not availabale			

Contd.

1	2	3	4	5	6
6	Kerala	(a) Attappady, Amosn, Valluvanad Taluk, Malabar district	Irular, Kurumbas, Kurichains Mudugar, Paniyan	40	10
		(b) Palghat	Kurumbas and Mudugar	19	16
7	Gujarat Maharashtra	(a) Dang dist. and in some parts of Surat dist., Kelaba dist., South Chanda Division, Janjira subdivision	Bhil, Kumbi, Kakanis Mavcai Varhli Halkki Kethari Kumari, Maratha Maria Gond, Thakur, Wakhals	298	25
		(b) Not available			
8	Madhya Pardesh	(a) Durg, Bastar, Chhindwara, Chanda, Balaghat, Nandia, Raigarh	Agariya, Baiga Bharia, Gond, Korva, Kodaku, Madia, Majhwar, Mawasi	90	30
		(b) Bastar	Hill Maria	81	15
9	Manipur	(a) Hill areas	Angami, Kabui Kacha Naga, Mariang, Tangkhul	216	183

Contd.

1	2	3	4	5	6
		(b) East Dist, North Dist., South dist., Tangnopal & West District	Anal, Chothe, Hmar, Kabui, Kacha Naga, Lamgang, Mao Maring, Paite, Simte, Tangkhul, Thadou, Vaiphui and Zou	600	293
10	Orissa	(a) Keonjhar, Sundergarh, Denkanal, Sambalpur, Kalahandi, Ganjam, Koraput	Bhuiya or Bhuyan, Bhunkia Gadaba, Jatapu, Juang, Koya, Khonda, Kotia Poroja, Saora	1600	937
		(b) Baudh-Khonsmals, Dhenkanel, Ganjam, Keonjhar, Kharagpur, Sundergarh	Shuiya Bondo Proaja, Didayi, Kaluhanoi, Sambalpur	2298	706
11	Tamil Nadu	(a) Coimbatore district, Nilgiri district	Kadar, Kurumbas, Malasar, Pulayans Paniyans	12	22
		(b) Not available			

Contd.

1	2	3	4	5	6
12	Tripura	(a) Sadar, Khowai, Kailashahar, Kamalpur, Dharmanagar, Udaipur, Sonemura, Belonia and Amarpur subdivision	Chakma, Garo, Halam. Jamatia, Kuki, Lushai, Mog, Noatia, Reang, Tripuri	467	196
		(b) North Dist., South Dist. and West District	Chakma, Halam, Jamatia, Lushai, Mag, Noatia, Reang and Tripuri	620	246
	Total (a)			6184	3309
	(b)			13263	3606

* Figures for Arunachal for 1960-61 interpolated by the author for comparison purposes.

Source: 1. Shifting Cultivation in North-East India, published by North-East India Council for Social Science Research, 1976.
2. Report on population Data regarding forestry communities practising shifting cultivation in India (UFA/UNEPA project)

N.B. : The table is reproduced from Kar (1986 : 54)

per square kilometre (Kondakata in Abujhmar Hills, M.P.) to 16 persons per square kilometre (Mamphui village in Mizoram). According to Ganguli, the population sustaining capacity of land under shifting cultivation is noted as six persons per sq.km supposing 50% of the areas amenable to the shifting cultivation. Saha's studies (in Mikir Hills and Mizo Hills) estimate the capacity to be between three to nine persons per sq. km. provided 50% of the area is available for shifting cultivation. It is clear enough that a wide gap remains between the food grains production under shifting cultivation and the population dependent on it. The future gap will be wider still" (Jha, 1988 : 24).

While dealing with the carrying capacity of land under shifting cultivation Majumdar (1990 : 28) refers to these factors: 1. Cultivating factor (i.e. length of the fallow period). 2. Nature of the crops produced (i.e. proportion between crops produced for domestic consumption and crops produced for sale). 3. Standard of living of the population dependent on shifting cultivation. Citing examples from Meghalaya in respect of paddy yields, Majumdar (1990 : 28) opines, "in Meghalaya yield of paddy in shifting cultivation is 461 kg/ha. and if we take the average size of a holding under shifting cultivation as 0.50 ha utilized by a family of 5 members, we find that per capita production of paddy is as low as 46 kg per year which is sufficient for one person barely for three months. From all the factors noted above, it is proved beyond doubt that shifting cultivation has been uneconomic in most of the areas even for people with a very low standard of living. To counteract this, provided they do not have any other alternative, the only way left to the shifting cultivators is to take larger and larger plots by more and more shortening of the fallow period. This only enhances the destruction of forests and consequent evil of soil erosion and ancilliary maladies".

In ancient times the *jhum* cycles were of longer duration due to low density of population. As a result, the land could recuperate its lost fertility. At present, the cycles have become shorter and shorter due to increase of population. Therefore, the land cannot recuperate its lost fertility and the production from the *jhum* fields decreases. The fallow period in respect of shifting cultivation in the North-eastern States has already been furnished in Table I.4. "Theoretically, zones having good soil, high temperature, high rainfall and gentle slope should require less time for completing the regeneration of forests. But whenever land-man ratio is disturbed, people disregard conventional rules by many adjustments, one

of which is 'reducing the cycle of regeneration'. The Hill Maria of Abhujmar Hills can wait for 16 years for regeneration of forests because of their low density of population. On the contrary, though there is not so much ecological variation, Juang of Keonjhar due to their high density of population cannot wait for 10-12 years for regeneration. The same is true for Ganjam, Srikakulam, Koraput and Visakhapatnam districts also" (Bose, Ghatak & Bera, 1982 : 219). Moreover, shifting cultivation leads to soil erosion, silting up of river beds causing devastating floods in the plains, destruction of forest wealth and ecological imbalance etc. "Shifting cultivation which is practised in the North-eastern region has proved to be a menace. Besides decline in economic yield, the system has resulted into a series of serious environmental problems. There has been altercation in species composition and large scale invasion of exotic weeds. Local climate-species have got eliminated from *jhum* fields and are confined only to protected forests. Thus, many of them are threatened and endangered" (Boro, 1996).

The traditional ownership pattern of land under shifting cultivation is generally community oriented. "We know that the concept of territorial rights and exclusive command of the community over the resources therein had developed at a very early stage in the history of mankind. This principle has remained more or less inviolable in all communities practising shifting cultivation. The individual has only usufractuary right over the field which he cultivates for a limited period. The most important characteristic feature is, therefore, the community action and participation in the entire economic activity in the relevant area. The social organization of the people is built around the concepts of community worship community participation and commual responsibility" (Kar, op cit. : 46). In this connection it may be mentioned here that some tribes practise the system of private ownership of land. " As for example, among the Zemi Nagas of the North Cachar Hills there are traditional land owners called *kadepeo*. A *kadepeo's* land not only includes *jhum* sites and land suitable for settled cultivation situated in and around the village, but village sites as well. For occupation of land at village sites and for cultivating land at *Jhum* sites the villagers have to pay rent in kind (to him) usually @ 5 kg per annum. There are also lands which are exclusively owned by the six clans of the Zemis. Only the remaining *Jhum* sites are owned by the community" (Bordoloi, 1990 : 240).

It may, however, be emphasized that shifting cultivation has been an integral part of the life and culture of the various tribal communities. As

a matter of fact, most of the socio-cultural and religious aspects are intimately connected with this system of cultivation. "Certain social, cultural and even religious functions are associated with certain aspects of agricultural operations in shifting cultivation, e.g. *Agalmaka*, before burning of *Jhum*; *Ahaia*, after harvesting, *Rongchugala*, before harvesting and *Wangala*, after completion of all operations in *Jhum*, are celebrated in Garo Hills. Stephen Tyler (1974) observed that shifting cultivation is not just an alternate form of land use or a set of agricultural practices, but it implies the whole nexus of people's religious belief, attitude, self-image and the tribal identity. In Nagaland, connected with agricultural operations are the *Tsakro*, the old man who begins the sowing operation; and *Lidepfue*, the old woman who helps in reaping the crop. Since several festivities are associated with shifting cultivation, abandoning of the practice would mean leaving these functions and festivals. Agriculture is that sector of human activity in which there is greatest interaction between the environment and the culture which has grown in and from it (Schlippe, 1956). All cultures are intimately linked with the mode of subsistence" (Sharma and Prasad, 1994 : 9).

Shifting Cultivation in Karbi Anglong

The approximate ratio of hills to plains in the district of Karbi Anglong is 60 : 40. The people practise wet cultivation in the plains area. The hills area includes State Reserved Forests, District Council Reserved Forests and the Unclassified Forests. The Unclassified Forests may again be subdivided into hills and low lying forest lands. "While in the hills the tribal people practise *Jhuming*, in the low lying forest lands other types of cultivation are carried on by making the land suitable after proper reclamation. So far as the hills are concerned the tribal people think themselves to be the common owners and the District Council Authority does not interfere with this common ownership. In the low lying forest lands, where people undertake cultivation, they may apply for ownership right to the District Council Authority. If the Authority grants this right of ownership, it is well and good and in case of refusal conflicts develop. The people rather consider it to be an infringement on their rights in the forest" (Bordoloi, 1991 : 207).

The Report of National Commission (NCA) Part IX on Forestry, 1976 reveals that in the Assam Hills, the total area affected by *jhum* is 4,98,000 hectares and area under *jhum* at one time is 69,000 hectares. Again, the

total number of tribal families involved in *jhuming* is 58,000. Detailed break-up of the figures in respect of the two hill districts is shown in Table I.6. The table reveals that the total area of land affected by *jhum* is 4,15,000 hectares in Karbi Anglong and 83,000 hectares in North Cachar Hills. The number of tribal families involved in *jhuming* is 45,000 and 13,000 in Karbi Anglong and North Cachar Hills respectively. Again, land utilisation in the two hill districts of Assam during 1978-79 as shown by Barman (1990 : 221) is furnished in Table I.7. The table shows that the total *jhum* area is 21,853 hectares in Karbi Anglong and 6,475 hectares in North Cachar Hills as per Report of Assam Agricultural Commission, 1975. The number of *jhumia* families is 20,000 and 7,000 in Karbi Anglong and N. C. Hills respectively.

According to Bordoloi (1990 : 238) the estimated *jhumia* families in Karbi Anglong district are 23,400 in 1976 on the basis of 1971 Census enumeration. Again, Bhattacharjee (1990 : 234) has estimated the *jhumia* families in the district to be 29,424 in 1979.

In this context it may be mentioned here that the Assam Remote Sensing Application Centre (ASTE Council) has carried out a satellite survey of shifting cultivation in the Assam hills. It indicates that "the practice of *jhuming* in the two hill districts of Assam has been widespread and is intensifying in the recent years. The study is carried out for two different time periods viz., 1986-87 and 1993-94 using the data from the satellite IRS-IB (LISS II) and Landsat (TM) on 1 : 50,000 scale. It reveals that in the Karbi Anglong district the current area under *jhum* has increased from 13,583 hectares (1.302 per cent of total geographical area) in 1986-87 to 69,125 hectares (6.625 per cent of total geographical area) in 1993-94. The corresponding figures for the N.C. Hills district are 22,807 hectares (4.67 per cent of geographical area) and 69,447 hectares (14.21 per cent of geographical area) in 1986-87 and 1993-94 respectively. With regard to the abandoned *jhum* areas of 1-5 years cycle covered with scrubs or grasses, the figures for Karbi Anglong district are 26,367 ha (2.52 p.c. of geographical area) for 1986-87 and 39,661 ha (3.8 p.c. of geographical area) for 1993-94. In N.C. Hills the increase from 65,682 hectares (13.44 per cent) in 1986-87 to 71,023 hectares (14.53 per cent) in 1993-94 is observed. Evergreen and semi ever green forests in the Karbi Anglong district has been reduced from 27.64 per cent in 1986-87 to 22.9 per cent in 1993-94. The corresponding figures for the N.C. Hills district are 26.78 per cent and 18.975 per cent respectively. Deciduous forests (*Sal* and Teak) also show

TABLE I.6

Jhuming in the Assam Hills and the number of Tribal Famillies involved (1976)

Sl. No.	*Name of the district*	*Area affected by jhum (000 ha)*	*Area under jhum at one time (000 ha)*	*No. of tribal families involved (000)*
1	*2*	*3*	*4*	*5*
1	Karbi Anglong (Mikir Hills)	415	54	45
2	North Cachar Hills	83	15	13
	Total	498	69	58

TABLE I.7

Land utilisation in the Assam Hills during 1978-79 (Area in hectare)

Sl. No.	*Item*	*Karbi Anglong*	*North Cachar Hills*
1	*2*	*3*	*4*
1	Geographical Area	10,33,200	4,48,000
2	Area under forest	2,73,514 (26.5)	63,339 (12.9)
3	Barren & unculturable land	6,33,032 (61.3)	4,04,975 (82.8)
4	Net area shown	1,26,654 (12.2)	20,686 (4.3)
5	Total cropped area	1,45,559 (14.1)	22,186 (4.5)
6	Area sown more than once	18,945 (13)	1,500 (6.5)
7	*Jhum* area*	21,853	6,475
8	*Jhum* area as per cent of net area shown	17	29
9	No. of *Jhumia* families*	20,000	7,000

*Figures furnished by respective District Councils quoted in the *Report of Assam Agricultural Commission,* (1975), Govt. of Assam, pp 143-44.

Source : Directorate of Economics and Statistics, Govt. of Assam, Guwahati.

Note : Figures shown in the brackets indicate the percentage of the total geographical areas of the respective districts.The percentages in Sl. No. 6 is calculated out of the figures in Sl. No. 5.

N.B. : The table is reproduced from Barman (1990 : 221).

a decrease from 8122 hectares in 1986-87 to 5251 hectares in 1993-94 in the Karbi Anglong district as against 17,310 hectares in 1986-87 and 10,371 hectares in 1993-94 in N.C. Hills district. Pure bamboo strands also showed a decline in Karbi Anglong district from 12,192 hectares (11.67 per cent of geographical area) in 1986-87 to 10,562 hectares (10.012 per cent of geographical area) in 1993-94 as against 81,704 hectares (16.72 per cent of geographical area) in 1986-87 to 63,542 hectares (13 percent of geographical area) in 1993-94 in the N.C. Hills district. For mixed bamboo the figures are 4,65,296 hectares (44.59 per cent) in 1986-87 as against 3,48,882 hectares (33.43 per cent) in 1993-94 in Karbi Anglong district and corresponding figures for N.C. Hills district are 93,680 hectares (19.16 per cent) in 1986-87 and 78,932 hectares (16.14 per cent) in 1993-94 respectively. The study also indicates considerable increase in the scrub land due to loss of soil fertility as a result of *jhuming* and degradation of forest areas. The total area affected by *jhum* cultivation (including current *jhum*, abandoned *jhum*, mixed bamboo and scrub land) has increased from 56.95 per cent to 60.10 percent in Karbi Anglong district and 46.51 percent to 56.18 percent in N.C. Hills district respectively. This clearly indicates intensification of *jhuming* practice in the Assam Hills" (*The Assam Tribune*, 1996).

From the foregoing discussion it may be said that although various authorities have provided statistical data relating to *jhum* land and the number of tribal families involved with it in different ways, precise data in connection with *jhum* are not available. It may be mentioned here that preparation of land records by conducting a Cadastral Survey was initiated in the Karbi Anglong district during the Fifth Plan. But all the villages have not yet been covered.

The traditional village council of the Karbis plays an important role in the management of *Jhum* lands. "Among the Karbis it is the village council (*Me*) constituted by the elderly persons and presided over by the Gaonbura (the village headman) which manages the *Jhum* land. The *Me* distributes Jhum land to each family according to its need. Lands in this district have never been managed by tribal chiefs nor are they the virtual owners of the land like the Mizo Chiefs" (*Bordoloi*, 1986 : 130).

The mode of operation of shifting cultivation *(Inglong Arit)* practised by the 'Karbis may be presented in the following manner:

Initially a suitable plot of land is selected on a hill slope in the month of February *(Thang Thang)*. After selecting the plot, the trees, bamboos

and other plants and shrubs etc., grown over it are cut and the rubbishes are left for getting dried up under the scorching sun. In the month of April *(Jangmi)* these are burnt to ashes. In the months of May *(Aru)* and June *(Vosik)* the plot of land is made free from the debris and heavy logs, if unburnt are placed aside. Ashes are scattered over the whole area and as soon as rains start, seeds of paddy and some other crops like maize and cotton etc., are broadcast over the ashes. The exercise is associated with the collective singing of lively love songs *(Bongoi Alun)*. Moreover, seeds of various crops and vegetables are put into the holes made by hoe. In fact, the Karbis use to cultivate mixed crop in a plot of land. When the paddy starts growing, they observe *Choklim Kanthur* by worshipping *Longle–A–Hii* Arnam with the hope that wild animals like monkeys and elephants will not destroy paddy fields and the members of the household will not suffer from illness. Generally weeding *(Sok Karlu)* takes place in the month of July *(Jakhong)*. Ahu paddy (*Soksu*) is ready for harvesting in the month of August *(Pai–Pai)*. Again, *Sali* paddy begins to bear cereals in the month of September *(Chiti)* and it is harvested in the month of October *(Phre)*. The paddy thus harvested is stocked in the *jhum* courtyard in the month of November *(Phaikuni)*. Paddy is thrashed in December *(Matijong)* and the thrashed paddy is brought home by the males in basket *(Mantung)* in January *(Arkoi)*. The well-to-do families observe *Sok Keroi Kekan* on the occasion. Girls are not allowed to dance in this festival.

The different stages of *jhum* operations as practised by the Karbis are as follows:

1. *Ritkepan* – The felling of trees and clearing of the undergrowths
2. *Mekekai* – The burning of the debris
3. *Arhikkarhi* – The removal of half-burnt logs
4. *Rik* – Sowing of various types of seeds
5. *Sok Karlu* – Weeding of plants
6. *Sok Kerot* – Harvesting

Tools and implements used for the purpose by the people are very simple. These include spade *(Ku)*, dao *(Nopak)*, sickle *(Nokekrengsu)*, hoe *(Kuso)* and axe *(Chow)* etc. They also use mortar *(Long)* and pestle *(Longpum)* for the purpose of dehusking paddy.

In the past the people shifted their villages frequently in search of *jhum* land. At present, this tendency of shifting the whole village in the neighbourhood of the *jhum* site has been reduced to a great extent.

The period of *jhum* cycle which is a vital factor in productivity has rapidly declined in the district. "In bygone days *jhuming* was not so unproductive as it stands to-day. Because in the past the *jhum* cycles were of longer duration from 10 to 15 years, and hence the land could replenish its lost fertility during this period. But now-a-days owing to increasing pressure of a growing population on land the cycles have become shorter from 4 to 7 years, and as such, it cannot replenish its lost fertility to the soil. Therefore, the yield is also less". (Bordoloi, 1972: 55).

On the basis of a socio-economic survey conducted in a Karbi village, Kanther Terang in the year 1966, Saikia (1968 : 67) comments, "The *jhum* cultivation limits expansion of the village economy. The practice involves great waste in terms of destruction of forests which results in soil erosion. *Jhuming* as a system of farming is highly labour intensive and the output per acre and per worker is extremely low. Such a primitive form of agriculture is not compatible with economic change and development".

Review of Literature on the Studies of Shifting Cultivation

Studies on shifting cultivation have been carried out by various authorities including social scientists, agronomists, forestry experts, soil scientists and ecologists from time to time. A good number of articles on this subject have also come out in the reputed journals, weeklies and research bulletins etc.

So far as the North-eastern region of India is concerned, the Agro-Economic Research Centre for North-east India, Jorhat, the North Eastern Council, Shillong and ICAR Research Complex for NE Hill Region, Shillong have taken keen interest on the study of various aspects of the shifting cultivation.

On the basis of the socio-economic survey of Kanther Terang (a Karbi village in Karbi Anglong) conducted in the year 1960, Ray (1969 : 68) comments, "*Jhuming* or shifting cultivation is of course a much-discussed and, to some extent, a controversial subject. There seems, however, to be no serious difference of opinion about the fact that the practice involves great waste in terms of soil erosion and destruction of

forests. Another point, which does not appear to have received so much attention, is that *jhuming* as a system of farming is highly insufficient in the sense that output per acre and output per worker in *jhuming* are both extremely low. This peculiar feature, namely, that of combining a high degree of labour intensity with an even higher degree of land extensiveness, makes the system unsuited to any but a most primitive economy. It is true that the evolution of *jhuming* method marked an important change in the history of development of agriculture. But the practice has long become outdated and is in any case not compatible with economic change and development".

The socio-economic resurvey of Khejurbond, a Dimasa village in North Cachar Hills reveals, "Average *jhum* land per household in 1983 is found to be 0.68 hectare as against 1.46 hectares in 1977. The realisation of the wasteful use of *jhum* land and uneconomic production are responsible for decline in area under *jhum* cultivation" (Borah, 1985 : 47).

In a study on the problems of agricultural development in the Hill Areas of Assam, Goswami and Saha (1969 : 20) have mentioned, "*Jhuming*, a shifting form of cultivation is predominant against settled farming. This form of cultivation is wrongly thought to be a way of life. In actual fact, *jhuming* is the only feasible way of raising food from rugged hill slopes. But where the tribal people have found alternative better system of farming, they have accepted the alternative. It is well known that the Apatanis cultivate wet paddy in irrigated field, the Angami Nagas grow rice from terraced field even in steep slopes. 75% of the Khasis and about 40% of the Garos have already given up *jhuming* in favour of settled farming. As a matter of policy, we shall have to create conditions favourable for gradual change from hunting and gathering to settled agriculture. As such, it shall not be looked down upon, rather, where shifting cultivation will be the only system of using hill slopes, it should be made scientific. *Jhum* cultivation should not be allowed in steep slopes and catchment areas of the hills. In the abandoned *jhum* fields, afforestation shall have to be made with the initiative of the Forest Department so that the soil erosion and flood (in the plains below) is minimised".

The socio-economic survey of Mawtnum (1963-64), a Khasi village of Meghalaya, reveals, "The influence of *jhuming* is gradually declining because of its low return of output per acre and per man hour and this has

been amply indicated by the small number of households (only 17.14% of the total) pursuing *jhum* cultivation in the village. Another reason for weaning away influence of *jhuming* may also be well-attributed to the fact that the village has assumed more or less the character of a settled village with no further intention of shifting elsewhere in future. With it the economic implication of settled farming in the area appears to have been more enhanced than before" (Gohain, 1969 : 157).

While dealing with the socio-economic study at Banshidua, a Garo village of Meghalaya, Saha & Barkataky (1969 : 230) opine, "In a pre-industrial society under the conditions of limited resources, as population increases, agriculture also changes from extensive land use as in case of *jhuming* to intensive land use as in settled farming. The process affects the entire agricultural structure, in particular the land tenure system, pattern of cropping, and tools and implements. But in respect of input-output relationship, the change becomes most spectacular. In *jhuming,* there is very little inputs except human labour and home produced seed (which also embodies only human labour), but in settled agriculture the inputs are many and varied. The output is very much dependent on other inputs except labour. The labour's input-output relationships in jhuming and settled farming may weigh with the shifting cultivators in case of change to the latter system. While rising population pressure and deteriorating productivity of *jhuming* are compelling the people to fall upon settled farming, the fall in return to labour (marginal productivity labour, we may say) will act as a disincentive to adoption of settled farming. Thus, if the *jhumias* are left to their fate and the process is allowed to operate automatically, the distress of the people will be quite great. Undernutrition, disease, famine and consequent loss of life will be the results. Viewing the prospect from both economic and humanitarian standpoints, the process should not be allowed to go unheeded. This underlies the importance of planned change over from *jhuming* to settled farming".

The North Eastern Council, Shillong has initiated "interactions with the State Governments of the North Eastern Region as also other Central Organisations operating in the region on the problems of shifting cultivation and sponsored a number of schemes putting emphasis on the varied aspects of the intricacies of the *jhuming.* The NEC sponsored schemes have highlighted among other things (a) protection of the forests for maintaining

the ecological balance in the region (b) permanent settlement of the jhumias as a solid solution (c) sufficient support to the cultivators in the form of subsidised fertilizers, pesticides, seeds and traction power (d) improvement of communication links" (*Hazarika*, 1988 : 18).

While referring to alternative land use systems for replacement of *jhuming*, Prasad, Singh & Varma (1990 : 143) note, "The system (shifting cultivation) in the present context has become not only unproductive but also hazardous to the environment. Exposure of rocks due to soil erosion, heavy silt load in stream and drying of perennial water resources, loss of plant nutrients, loss of forestry resources, loss of flora of human and animal importance, are some of the major hazardous effects of the shifting cultivation. ICAR Research Complex for NEH Region is working on various alternative farming systems to shifting cultivation on watershed basis. Alternative land uses are agriculture, horticulture, livestock, forestry, fishery and combination of these. These are being supported by mechanical conservation measures like contour bunding, bench terracing, contour trenching, half-moon terracing, small check dams and grassed waterways etc. Out of the various land use combinations under trials the best and ideal system suited to hill slopes is, it seems to be, agri-horti-silvipastoral system. The system comprises agricultural land use towards the foothills, horticulture in the mid portion of the hill and silvipastoral land use towards the top of the hill. Land development may cost about 190 man days/ha. Such land uses are expected to retain over 90 per cent of annual rainfall in situ with negligible soil losses from the system."

Various experiments have also been carried out by the Agricultural Research Station, Diphu to provide alternative to shifting cultivation. In this respect Sarma et al (1996) opine," Efforts are being made to find out improved practices identical to jhuming, but more productive and less injurious to soil and environments. Improved technologies in the place of shifting cultivation in the *jhum* land have already been identified and recommended for general cultivation. The technologies include (1) replacement of traditional varieties by the improved ones, (2) use of manures and fertilizers to maintain soil fertility, (3) inclusion of perennial horticultural crops along with agronomic crops to encourage settled cultivation, (4) judicious crop selection and placing them in scientific manner for better production and utilization of land. It was reported that

growing pineapple, turmeric, ginger and arum in the border; and rice, maize, sesame and cotton in line across the slope in the middle, significantly out-yielded traditional *jhum* in terms of rice-equivalent yield (Sarma et al. 1995: 196-201)."

Under the technical guidance of Roy Burman, an Ao Naga village named Warmung was investigated by Ao in the year 1966. In this context Roy Burman (1970 : 325) observes, "Shifting cultivation by slash and burn method is by far the most important type of agriculture followed in the village. The following reasons were given by the villagers for their attachment to shifting cultivation: (1) Nature of the terrain is unfit for wet or terrace cultivation (2) Plots for wet cultivation are small and scattered (3) Fear of wild animals to reach the scattered plots fit for wet cultivation (4) Difficulty in making roads to reach the scattered plots fit for wet cultivation at long distances (5) Rivers are deep and it is difficult to construct irrigation channels (6) Lack of finance for irrigation."

With regard to the prevalence of shifting cultivation in Arunachal Pradesh, Dutta (1989 : 42) comments, "Although alternative measures to *jhum* cultivation have been in the offing the prospect of complete abolition of shifting cultivation is very bleak mainly due to the nature of the topography coupled with the traditional attachment of the people to the age-old system. In fact, the entire socio-cultural life of the people is very intimately connected with *jhuming* since time immemorial."

Referring to *jhum* among the Wanchos of Tirap district of Arunachal Pradesh, Sachchidananda (1988 : 61) concludes, "Shifting cultivation cannot be viewed as an economic activity since all economic relations are set in a social framework. The entire social life of the community may revolve round the practice of swiddening. But each case of swiddening has to be studied in its specific historical, physiographic and socio-political contexts. Among the Wanchos it is closely integrated with their political and social systems. The Chief holds absolute power over land commonly owned and distributes land to heads of households according to their needs as well as their capacity to cultivate the land. Since no private ownership of land is acknowledged, there is no incentive among the people to the development of their land as they would like to enhance their own income. Endemic wars and rains in the past increased the powers of the

chief. If people had to supplement their income, it was only their working as casual daily labourers in road connection work or in various plantations. In some cases even in the Wancho area, people are aware of the soil erosion and they have devised mechanisms to reduce it to the minimum. Lastly, there is the question of availability of plains land upon which people can be resettled. In view of these factors it has not been possible to reduce the coverage of swiddening in the Wancho areas. But it is not the faith in traditional practices and rituals that are responsible for this."

Besides, Ganguly (1969) conducted a study on the economics problems of the *jhumias* of Tripura. Saha (1970) made a detailed study on the economics of shifting cultivation in Assam.

Kaith (1956)* carried out a study on the extent of shifting cultivation practised by various tribes of India with emphasis on the number of tribal households involved with it, total area of land utilized and various crops cultivated. Roy Burman and Sharma (1970) made a study on the shifting cultivation practised by the different tribes of the country. Bose (1967) provided a comparative study in respect of carrying capacity of land under shifting cultivation in South Mizoram, Keonjhar Hills and Abujhmer Hills. Nag (1958) highlights the economic system of the Baigas of Madhya Pradesh. Mahapatra and Kiranbala (1972-73) and Patnaik (1977) dealt with shifting cultivation prevalent in Orissa. Vidyarthi (1963)* highlighted nature-man-spirit complex among the Malers of Bihar.

The practice of shifting cultivation has been a controversial matter among the scholars. Some are in favour of it while others are against this practice. Chaturvedi, the former Inspector General of Forests to the Government of India carried out an investigation into the forestry problems in Assam in the year 1953 and remarked that shifting cultivation could not be held responsible for soil erosion. Elwin (1964 : 81) opines, "It is sometimes said that the floods which from time to time devastate the plains of Assam are due to the practice of *jhuming* in the NEFA (Arunachal Pradesh) hills. But this cannot be so, for the conditions of rainfall, humidity and temperature in the *jhum* areas of NEFA are so favourable that no clearing remains without a vegetal cover for any length of time. Immediately after any area goes fallow at the close of the cropping period, it is covered

* Cited in Sachchidananda (1989 :5).

with some kind of vegetation which checks erosion and the run-off of rain-water. Moreover, the area under cropping at any one time is estimated at only 3 to 4 per cent of the total area of the Agency. It is the loss of soil fertility rather than the danger of erosion and leaching, which is the real problem". Shivaraman, the Adviser to the Programme Administration of the Planning Commission in 1957 opined, "It is a mistake to assume that shifting cultivation in itself is unscientific land use. Actually, it is practical approach to certain inherent difficulties in preparing a proper seed bed in steep slopes where any disturbance of the surface by hoeing or ploughing will result in washing away of the fertile top soil. The tribal people, therefore, take care not to plough or disturb the soil before sowing. The destruction of weeds and improvement of tilth necessary for a proper seed-bed are achieved with the help of fire. In most of the interior areas, where communication is not developed and not sufficient land suitable for terracing is available *jhuming* alone can be done for the present and as such every effort should be made to improve the fertility of the *jhum land"* (*Bhowmick,* 1990 : 106).

On the other hand, various allegations against this method of cultivation have also been reported. While giving evidence before the Partially Excluded Areas Enquiry Committee of Orissa Mr. Nicholson, the Conservator of Forests maintained, "The damage done to the forests by shifting cultivation is serious and that only under certain conditions where the area of land available is large and population small, such cultivation does little harm". Dr. N.L.Bor, Forest Botanist in the Forest Research Institute at Dehradun in his presidential address to the Section of Botany of the Indian Science Congress in 1942 observes, "Of all practices initiated by man, the most noxius is that of Shifting Cultivation". He attributes the cause of soil erosion in the Assam Hills to the practice of shifting cultivation. Another writer in reviewing the *Report of Forest Administration in Assam for 1940-41 in Nature* 1942 calls shifting cultivation, "the most wasteful of agricultural methods" (Gohain, 1994: 188).

In tune with these observations, Majumdar (1990 : 31), from an anthropological intensive investigation maintains, "We should not deny the fact that shifting cultivation is becoming more and more destructive of ecological balance and we should not argue for its continuance by saying

that it is a way of life and that destroying the way of life will mean destroying the people themselves. The shifting cultivators have themselves understood that their method of cultivation is fighting a losing battle and that is why, they themselves are trying to adopt other methods or whenever opportunity offers change over to other occupation."

Under the circumstances, it has been imperative on the part of the Government and other concerned agencies to take appropriate measures to regulate and control this practice for a long- term welfare of the *Jhumias*, inhabiting the different parts of the country. An overall idea about the different schemes taken up in this direction in the Karbi Anglong district in Assam has been provided in the next chapter. The problem at hand for the present study has also been spelt out in *Chapter Two*.