



RESEARCH ARTICLE

Shifting Cultivation to Settled Agriculture: Land Ownership Rights and Cropping Pattern in Meghalaya, Northeast India

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ABSTRACT

The traditional shifting cultivation areas in Meghalaya have been undergoing changes in their agricultural landscape along with the rest of the North Eastern Hill Region (NEHR). This study from ten villages of Meghalaya analyses the land ownership rights and cropping patterns of the shifting cultivators vis-à-vis settled agriculturists. Overall, significant differences have been observed in the land owned, total area cultivated and the type of crops between the shifting cultivators and settled farmers. This establishes the transitions in the jhum landscape and their increasing dependence on the market economy whilst also throwing light on influence of the land tenure on the choice of land use system. The cropping pattern indicated that settled farmers who had higher tenure security as compared to shifting cultivators reduced the acreage under subsistence crops and preferred to grow high value cash crops. With the support of various schemes and programmes on cultivation of marketable crops, it is inevitable that the jhum landscape would be dominated by monoculture of commercial crops, hence, provisions should be made with a community-led approach or participatory consultation for settled systems so as to promote multi-cropping system whilst building the resilience of the sedentary cropping system. Notably, harmonization of common property regime under traditional customary tenure arrangements with individual rights in settled agricultural systems is indispensable to ensure transition is inclusive of landless farmers.

Key words : shifting cultivation; Land ownership; Cropping pattern; Meghalaya.

Shifting cultivation (SC) variously termed as “slash-and-burn agriculture,” “swidden,” and “rotational bush fallow agriculture,” is called “jhum” in India (FAO, 2010). Across the world, it has been practised over an area of 280 Mha, predominantly by racial and ethnic minorities, tribal groups, and aborigines who belong to the generic category of “Indigenous people (Heinimann et al. 2017). Jhum was practised on 110 million hectares of land by 200 million people in Asia alone (Karki, 2017, Heinimann et al., 2017). Shifting cultivation is so ingrained in the lives of those who practise it that any modifications are certain to have a substantial impact on their way of life (FAO et al., 2015). As pointed out by Behera et al., (2016) the commercialization of modern cash crop had significant impact on the production and consumption patterns, availability, diversity of food, increased the cash income and also it had a severe implication on the

dietary diversity of the rural populace. The major crops in shifting cultivation include varieties of hill rice, maize, millets, along with a large array of vegetables, tubers and leafy vegetables (Kurien et al., 2019). It also includes cash crops such as ginger, turmeric, jute and cotton. The plot is mostly cultivated for a period of one year and a typical jhum cycle of 4-9 years is most prevalent (Manjunatha et al., 2019). There has been profound marginalization of jhum cultivation and its cultivators as more priority was placed in cash-based livelihoods (Cochran, 2008).

The shifting cultivation system always boasted of a higher cropping diversity; a rich biodiversity of thirty-nine (39) crops was reported from West Garo Hills, 20 farmer selected land races land 43 crops species from Arunachal Pradesh (Tangjang, 2009; Pandey et al., 2021; Payum et al., 2021). The shifting cultivation practice varies from one agro-ecological

area to another. With a multi-cereal resource base made up primarily of upland rice, maize, millet, and other coarse grains, the *jhum* farmers rely heavily on their own production to support their basic needs. However, due to low productivity and lack of adoption of modern farming methods (Bihari *et al.*, 2012), they haven't been able to produce enough in recent years to satisfy their needs all year round (ICIMOD, 2021). Hence, it is imperative that they transition from subsistence farming system such as *jhum* cultivation to settled systems that are economically more viable and environmentally suitable. Interestingly, in the practice of SC, the community ownership and participation that comes with it heavily influences the social organization and thereby the crop landscape in the *jhum* plots. Additionally, the concept of 'sense of place' among tribal communities, i.e., connections with the natural environment and a dearth of alternative occupations have been purported to be factors that perpetuate the practice (Pandey *et al.*, 2021). Furthermore, there existed ambiguity over the laws (customary laws) unique to the region or community, regulations, management and categorization of the areas under *jhum* which affected the upland farmers by restricting their control, decisions and investments in such plots which amplified the negative effects of the land use practice (ICIMOD, 2021).

Hence, the present study attempts to understand the changing agricultural and livelihood patterns in the traditional shifting cultivation areas in the state of Meghalaya with the main objective of understanding the land ownership patterns and their influence on the consequent cropping system among the indigenous *jhum* farmers.

METHODOLOGY

The key data used in this study was gathered from in-depth household surveys, focus groups, and field research. The districts, blocks, and villages were chosen using a multi-stage sampling approach. Ten villages from two districts of Meghalaya viz. West Khasi Hills and West Garo Hills, were purposefully chosen in the first stage based on the areas with a preponderance of shifting cultivators that were going through changes in terms of land-use practices after discussions with the competent authority. Following the selection of the villages, 250 respondents were chosen at random from the same locales, ensuring that the economic, social,

geographical, and cultural situations experienced by the two categories of farmers were comparable. There were four focus group discussions (FGDs), one in each block, with the participation of the village leaders and local farmer representation groups. 122 households (48.80%) of the total 250 respondents did not diversify into settled activities and were categorized as *jhum* farmers or shifting cultivators, whereas 128 households (51.20%) belonged to the group of settled agriculturists. Traditional agricultural methods throughout the course of a year, cropping patterns, and land tenure structures common in *jhum*-dominated parts of Meghalaya were investigated to better understand the *jhuming* systems. The data divided into two groups of farmers was used to make inferences using descriptive statistical tools like averages and percentages.

RESULTS AND DISCUSSION

Land ownership rights of shifting and settled agricultural households : Common ownership of land is a distinct feature among the tribal communities of the shifting system where the traditional head of the community acts as the custodian of land and is privy to all matters relating to the common land (Lahiri and Das, 2010; Shimray, 2012; Nongkynrih, 2014). Hence, to capture the variations in tenure arrangements, both categories of farmers were further classified into Khasi Hills (farmers belonging to the Khasi community) and Garo Hills (farmers belonging to Garo community). The shifting cultivators mostly possessed no land titles and were largely cultivating on common land. Among the shifting cultivators, almost the entire land (93.85%) belonged to the community with an average of 97.43 per cent in Khasi hills and 85.23 per cent in Garo hills (Table 1). The tenure security expressed in percentage denoted the secure rights over land, a

Table 1. Land ownership rights of the shifting cultivators (ha)

Particular	Khasi Hills	Garo Hills	Overall
Common land (clan/community)	1.57(97.43)	0.57(85.23)	1.07(93.85)
Owned	0.07(4.43)	0.10(14.77)	0.09(7.46)
Leased-out	0.03(1.86)	0.00(0.00)	0.02(1.31)
Total cultivated land (1+2-3)	1.61(100.0)	0.67(100.0)	1.14(100.0)
Tenure security (% of owned land over total cultivated land)	4.43	14.77	9.60

Figures in parentheses are per cent to total

higher value meant that the cultivators had more lands under owned land. The tenure security in Garo hills (14.77%) was slightly higher than the cultivators in Khasi hills (4.43%) and the overall was found to be 9.60 per cent which showed that a shifting cultivator owned only one-tenth of the total cultivated land.

Table 2. Land ownership rights of the settled cultivators (ha)

Particular	Khasi Hills	Garo Hills	Overall
Common land (clan/community)	0.90(65.07)	0.40(19.63)	0.65(38.05)
Owned	0.39(28.45)	1.64(80.73)	1.01(59.53)
Leased-in	0.14(10.23)	0.16(7.86)	0.15(8.82)
Leased-out	0.05(3.74)	0.17(8.22)	0.11(6.41)
Total cultivated land (1+2+3-4)	1.38(100.0)	2.03(100.0)	1.70(100.0)
Tenure security (% of owned land over total cultivated land)	28.45	80.73	54.59

Figures in parentheses are per cent to total

Table 2 illustrated the land ownership pattern among the settled cultivators. There was a huge difference in the tenure security of the settled cultivators in Khasi hills (28.45%) and Garo hills (80.73%). Two-third of the total cultivated land among the settled cultivators in Khasi hills (65.07%) belonged to the community whereas it was one-fifth for the settled cultivators in Garo hills. The opposite is true in case of owned land where less than one-third of the total land in Khasi hills (28.45%) and four-fifth of the total cultivated land in Garo hills (80.73%) were owned by individual households. The total cultivated land under settled cultivation was higher in Garo hills (2.03 ha) as compared to Khasi Hills (1.38 ha). This showed that the settled cultivators in Khasi hills were still highly dependent on *jhum* cultivation even as they have diversified their cropping pattern to include broom grass and settled paddy. Additionally, this could also be attributed to the practice where the land under the major settled crop in Khasi hills *i.e.*, broom grass may revert back to the community after the crop is harvested and the land is no longer put to use.

There was a significant negative difference in the area of the common land being cultivated between the two farmer groups which implied that in the absence of owned land, the shifting cultivators would have a higher tendency to continue shifting cultivation rather than sedentary farming (ICIMOD, 2021). A positive significant difference was observed in the amount of

land owned between shifting and settled cultivators which could emphasize that farmers who owned lands were more inclined to adopt settled agricultural practices (Table 3). A statistically significant positive difference was observed in the total area cultivated between the shifting and settled households which showed that the area under settled cultivation was marginally higher and that majority of the land was owned or leased-in by individuals. Moreover, tenure security was found to be positively significant which was found to be consistent with the above findings that the ownership rights over the land played a key role in the adoption of settled farming (Singh *et al.*, 2006; ICIMOD, 2021). Dressler *et al.* (2017) reported that land-use policies were the most important driver in the transition between agricultural systems.

Cropping pattern of the shifting cultivators and settled agriculturists : A significant difference was noticed in the number of crops grown, the area under subsistence crops and the area under cash crops between the shifting cultivators and settled agriculturists. On an average, 20 crops were grown by shifting cultivators and 14 crops were grown by settled cultivators in an area of 1.14 ha and 1.70 ha per household, respectively. The transformation from shifting to settled agriculture saw the specialisation in certain crops which was evident in the reduction of the number of crops on settled farms (Table 4). It was also clear that the cropping pattern shifted from food crops to cash crops which depicted the change from subsistence farming to commercial farming as the area under subsistence crops saw a decline (0.34

Table 3. Land ownership rights on land of the shifting and settled households

Particulars	Shifting (ha)	Settled (ha)	Mean difference
Common land (clan/community)	1.07(93.85)	0.65(38.05)	-0.42**
Owned	0.09(7.46)	1.01(59.53)	0.93***
Leased-in	-	0.15(8.82)	0.15
Leased-out	0.02(1.31)	0.11(6.41)	0.09 ^{NS}
Total cultivated land (1+2+3-4)	1.14(100.0)	1.70(100.0)	0.56***
Tenure security (% of owned land over total cultivated land)	9.60	54.59	44.99

*** significant at 1% and ** significant at 5% level of significance, NS-non significant

Table 4. Cropping pattern of the shifting and settled households

Particulars	Shifting	Settled	Mean difference
No. of crops grown	19.92	13.70	-6.22***
Area under subsistence crops (ha)	0.83	0.49	-0.34***
Area under cash crops (ha)	0.31	1.21	0.90***
<i>Cropping diversity</i>	No of crops/HH	No of crops/HH	
Cereals	2.79	1.91	-0.89***
Pulses	2.99	1.03	-1.96**
Oilseeds	1.95	1.23	-0.71**
Fruits and vegetables	6.25	3.30	-2.95**
Tuber	3.81	2.64	-1.17 ^{NS}
Spice	1.92	1.27	-0.65 ^{NS}
Fibre	0.22	0.40	0.18**
Plantation	-	1.92	1.92

HH-stands for household, ***significant at 1%, **significant at 5%, NS-non significant

ha) contrary to the increase in area under cash crops (0.90 ha). The finding was congruous with the study of *Behera et al. (2016)* in Meghalaya which reported the dominance of cash crops in the sedentary systems.

A significant decline in the total area indicated the reduction in the acreage of crops meant for household consumption in the transformation from shifting to settled agriculture and the reliance on the market for meeting the demand for food. This gives rise to challenges such as food and nutritional security which have also been termed second-generation issues of agricultural transformation (*ICIMOD, 2021*). Additionally, the low productivity of staple crops in the region could lead to higher dependence on food imports (*Behera et al., 2016*). Hence, to avert risks, shifting cultivators continue to grow subsistence crops as this allows them a continual harvest of different crops throughout the year.

The changeover from shifting cultivation to settled agriculture saw a reduction in six crop groups viz. cereals, pulses, oilseeds, fruits and vegetables, tuber and fibre whereas the number of spice and plantation crops per household increased. However, the decrease in the total number of crops was significant in cereals, pulses, oilseeds, fruits and vegetables and fibre but insignificant in tuber crops which could imply that the reduction in tuber crops had no correlation with the adoption of settled farming. The same can be said for the increase in the number of spice crops. Plantation

crops were grown only in areas where market is easily accessible and as most shifting cultivators reside in remote areas with poor road connectivity, these were mostly grown by settled cultivators. However, it may be noted that the cropping pattern indicated that farmers who had diversified their farming activities preferred to grow high value cash crops and this represents a paradigm shift from traditional agricultural land-use system to market oriented agricultural system. Most of these sedentary landscapes were dominated by a single crop against a mosaic of crops in the *jhum* plots. Similar findings have been reported by in other areas of the North East Hill Region (NEHR) (*Bhuyan and Teyang, 2015*).

CONCLUSION

This study shows that the traditional *jhum* cultivation areas in Meghalaya have been undergoing changes in their agricultural landscape along with the rest of the NEHR, where farmers have adopted market-oriented, non-food crops to realise higher economic returns and improve their standard of living. The shifting community had successfully incorporated traditional crops which had high commercial value which were mostly permanent in nature such as arecanut, cashewnut, black pepper, lowland paddy, broom grass and ginger as a monocrop in shifting plots to meet the out-of-pocket expenses in lieu of subsistence *jhum* crops. Cash crops were widely adopted since they did not only enhance the income of the *jhum* farmers but also increased the opportunity cost of shifting cultivation practice, as it opened up opportunities for agro-based entrepreneurship within the village(s) and create new market linkages by virtue of the cash crops. With the support of various schemes and programmes on cultivation of commercial crops, it is inevitable that the *jhum* landscape would be dominated by these crops, hence there must be a conscious approach in facilitating sustainable transitions through incorporation of local commercially viable crops or enterprises. Provisions should be made with a community-led approach or participatory consultation for settled systems in which local products having high commercial value such as such as ginger, pineapple, citrus fruits, banana, cotton, cashew nut and rearing of silkworms and piggery could be encouraged. Particularly, harmonization of common property regime under traditional customary tenure arrangements with individual rights in settled agricultural systems is indispensable to ensure transition is inclusive of landless farmers. An

important consideration should also be to refrain from monoculture but promote mixed cropping thereby building resilience of the settled systems.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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