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# **Pattern, persistence, and alternative livelihood strategies associated with jhum cultivation in West Garo Hills district, Meghalaya, India**

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## **ABSTRACT**

Jhum cultivation is the oldest farming practice approach evolved in the Neolithic period. This is also known as the slash and burn method for its process of operation. The system is considered to be the first stage in transit of human being from hunter to food gatherer to crop cultivators. In the North-East India, jhum cultivation is still prevalent in its hilly regions. It is a tradition practiced by Garo community in the West Garo Hills district of Meghalaya, India. Considering the uniqueness of the agricultural practice, this paper tries to examine its process and pattern, factors contributing persistency of jhum cultivation and alternative livelihood plans adopted by the native community over time. While jhum remains integral part of the livelihoods and cultural identity of the Garo community, concerns have emerged regarding deforestation, soil erosion, biodiversity loss, and declining agricultural productivity associated with this practice. Government policies and scientific interventions have aimed to promote sustainable alternatives such as agroforestry, mixed cropping, and improved land management techniques in the area. This study highlights the need for a balanced approach that integrates traditional ecological knowledge with modern sustainable practices, ensuring both environmental conservation and the socio-economic well-being of local farming community.

**Key words:** Jhum cultivation, Pattern and process, Alternative livelihood

## **Introduction**

Jhum cultivation is a common practice among millions of people in upland areas of South and South-east Asia in order to meet their demands for livelihood, nutrition, and food security. In Asia alone, an estimated 200 million people practiced jhum in 110 million hectares of land (Karki, 2017, Heinemann *et al.*, 2017). The area under shifting cultivation varies annually as the plot size per household is dependent on the size of the family based on the principle of "mouths to feed" (Government of India, 2018; ICIMOD, 2021). Few studies suggest adoption of a

form of settled agriculture by upland farmers in the jhum areas of the north-eastern region of India does not mean that the same farmers have given up jhum cultivation, as a jhum cultivator may continue the traditional agricultural practice whilst adopting and accommodating multiple settled cultivation practices (Choudhury, 2013; ICIMOD, 2021; Government of India, 2018). In 2010, the area under jhum cultivation in north-eastern region accounted to be of 8771.62 sq. km which constituted 85 % of the total of jhum cultivated area in India (Government of India, 2014). The people of Meghalaya are mostly agriculturists with more than 80 % of the population de-

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pended on it (Government of Meghalaya, 2022) and both settled and jhum agriculture has been practiced by the population of the state (Deb, 2013). According to an estimate, about 8400 sq. km. area was under jhum cultivation in North-east India during 2010-11, out of which Meghalaya had a share of 448.99 sq. km., i.e., 4.36 % of the total geographical area of the state (Government of India, 2018). The total area was again estimated at 237.87 sq. km under current jhumland 422.68 sq. km belongs to abandoned jhumland category in 2015-16 of the state Meghalaya (Government of India, 2019). This depicted the persistence of the practice of this type of cultivation in the state of Meghalaya. The Khasis, Jaintias and Garos are the major tribes of the state. The other tribes found in the state like Rabhas, Boros, Hajongs, Kochs, Dalu etc. are minor in number. According to Garos, tradition they came originally from Tibet and after wandering long time in North Bengal and Brahmaputra valley they finally settled down in Garo Hills. They entered to the Garo Hills under the leadership of Abong- Naga and his wife Silme-Doka and first settled at Nokrek peak, and subsequently they scattered to the different parts of Garo Hills to earn their livelihood from agriculture and its allied activities. Because of the hilly terrain, Garo people have traditionally used the jhum agriculture method. However, this agricul-

tural system cannot meet their current needs. The residents in the study region are looking for alternative sources of income and livelihood.

### Study area

The Garo Hills district of Meghalaya lies in the western side of the state representing 36.4 % of the state of Meghalaya (Yadav, 2015). The district headquarters is Tura, which is the second largest town in the state after Shillong (westgarohills.gov.in). The district occupies an area of 2811 km<sup>2</sup> (District Statistical Handbook 2020, West Garo Hills district, Tura) and its population is 4,96,586 (2011) census. It is bounded by Assam in the north and north-west and Bangladesh in the south, North Garo Hills district, East Garo Hills district and South Garo Hills district in the east and South-West Garo Hills district in the west (Fig. 1). At present there are five indigenous Garo clans, viz. Sangma, Shira, Momin, Marak and Areng and each clan having a number of sub-clans. The Garo people have been practicing matrilineal form of society (Hazarika, 2013). The Garos call jhum cultivation as "a~ba" (Lyngkhoi, 2023).

### Objective of the study

The objectives of the work are to: (i) study the process and pattern of jhum cultivation in the Garo hills region, (ii) know the factors contributing persistency

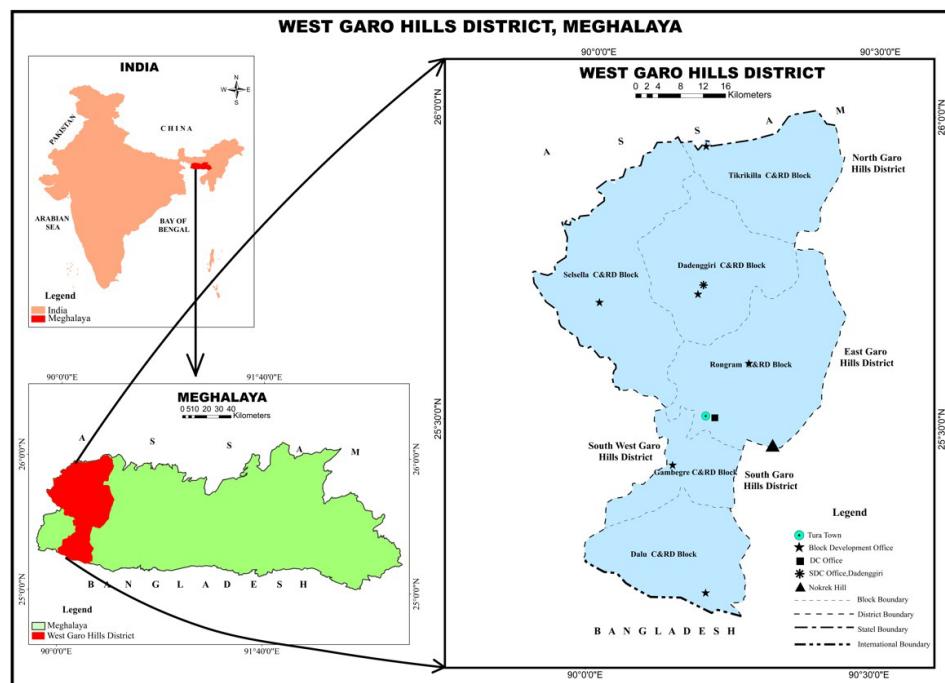


Fig. 1. The study area

of jhum cultivation in the district, and (iii) study the alternative livelihood strategies adapted/possibilities to adapt by the native community.

### Methodology

Both primary and secondary data is used in the study. The primary data are collected at the field level through interview by purposively designed questionnaire cum schedule. The secondary data are collected from census reports, annual reports of government department, journals, relevant books, newspapers, various published and unpublished official and non-official documents.

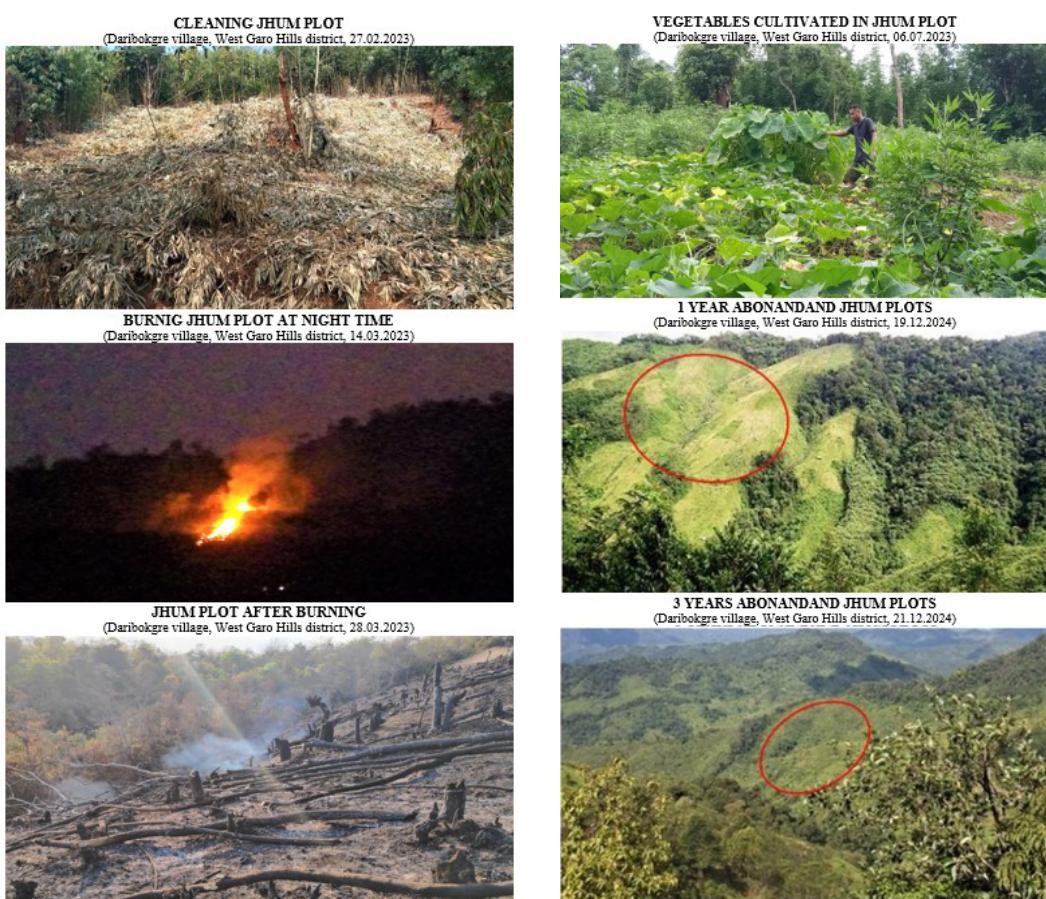
### Discussion

#### Process and pattern of jhum cultivation in the Garo hills

The Garo community of Meghalaya follows two

major types of agricultural practices, such as jhum or slash and burn agriculture, and settles cultivation. Jhum is practiced in and around hilly terrain, and terrace cropping is practiced in foothills along with plantation and limited narrow valleys and plains offers the scope for settled crop cultivation (Fig. 2).

The process of jhum cultivation starts at the end of winter season. Suitable plot of land is selected winter season. Suitable plot of land is selected by the village head or family head on a hillslope from the month of November to January (*Jabilsi-Roro*). After selection of land, the forest cover is cut and cleared by the farmers. It is left for getting dried up under the sun. The study area, generally rain free condition prevails in the months of February and March (*Dongro* and *Galmak*), and the cultivators burn the moisture free dried forest from the middle of March to middle of April (*Galmak -Migi*). The burning pro-



Source: Photographic documentation during the field survey by the author, 2023-24

Fig. 2. Steps involved with jhum cultivation

cess is done in the late afternoon and evening time and it continues up to midnight. The burned ashes are transformed into a kind of potash. Unburned jungles are turned into organic manure. In the area, pre-monsoon rain starts from the middle of April (*Migi*). Rainfall made the jhum plots free from debris and heavy logs. Rain also makes the soil soft and muddy. The process of sowing seed in the field starts from April to May (*Migi to Kilgi*). Shovels and hoes are used for cultivation. The entire jhum cultivation process is associated with some local rituals. Weeding takes place in jhum fields in the month of July (*Wasosi*). Harvesting process is started in the month of August (*Sampang*) and ends up to November (*Jabilsi*). The different stages of jhum operations are followed by Garo community as a part of their traditional practice (field survey, 2022-24).

Jhumming is the most labor-intensive task of all the agricultural operations on the hill slope. Not only men, the women folk also take part in this operation in West Garo Hills District. Before the onset of monsoon, towards March or beginning of April, the dried debris is burnt in situ. Before burning, a fire line is cleared around the field. Burning is often repeated for any unburn materials which are first collected in heaps. The seed mixtures are used for different jhum cycles and may vary considerably. Some 8 to 10 crops types are sown together in the same field. Seeds of pulses, cucurbits, vegetables and cereals are mixed with dry soils in the sites, in order to ensure their uniform distribution and broadcast immediately after the first burning. *Meraku* (maize) seeds are dibbled at regular intervals amongst other crops. Similarly, *Mi* (paddy) is sown into the crop mixture by dibbling, using a long stick after the first rainfall, during mid-April. Before sowing starts, evil spirits are worshipped and sacrifices are made for a good crop harvest and prosperity to the family. *Karek* (a variety of bean), *Te. e* (melon), *Misi* (millet), *Akaru* (bottle gourd), *Gominda*,

(pumpkin), *Gao* (a variety of sour plant used in curry), *Sosru* (sponge gourd), *Jalik* (chilly), *Jingka* (ridge gourd), *Dorai* (lady's finger), *Baring* (brinjal), *Galda* (a variety of plant used in curry), *Ta'a* (yam), *Genasi* (a variety of bean), *Tamilang* (sweet potato), *Baring Bilati* (tomato), *Bellik* (a variety of bean), etc. also sown in the jhum plots. Crops like ginger, colocasia, tapioca, bananas are also sown intermittently, and at random, throughout the growing season. After clearing and burning the fellows, the plot is utilized for one to three years except when a garden of banana, pineapple or orange is maintained after the first year of mixed cropping. Weeds pose a great problem with the starting of the rainy season in April and May. Under the long jhum cycle, the problem is not as severe as those under short jhum cycles, where many weeds particularly *Imperata cylindrica* which keep sprouting from underground rhizomes and are difficult to eradicate. Frequent slashing keeps it under control during the cropping season. Hand hoeing is usually done twice during the cropping season mainly by women. In West Garo Hills District, the farmers are practicing jhum cultivation individually. There are very few places where it is done on community basis (as observed through field survey, 2022-24).

#### **Factors contributing to the persistency of jhum cultivation**

In the year 2000, jhum spread over 1328 km<sup>2</sup> in the West Garo Hills district of north-eastern India, but by 2015 the area was down to only 112 km<sup>2</sup> (Pandey, 2022). From another study it was found that from 14,984.74 ha to 8,391.25 ha between the year 2016 and 2023 (estimated by the researcher based on satellite image data of Sentinel-2, 2016-2023). People of West Garo Hills district is still practicing jhum cultivation despite of some alternative livelihood option like- rubber plantation, areca nut, orange and cashew nut plantation, etc. Some of the major reason

**Table 1.** Comparison between jhum cultivation and settled farming

Aspect	Jhum Cultivation	Settled Farming
Capital Investment (/hectare)	5,000 –15,000	20,000 –80,000+
Land Preparation	Manual clearing, slash-and-burn	Ploughing, leveling (machinery used)
Seeds	Traditional varieties	High-yield/improved varieties
Fertilizers & Pesticides	Usually not used	Commonly used
Irrigation	Rain-fed, no infrastructure	Borewells, canals, drip /sprinkler setup
Tools/Equipment	Basic tools (sickles, machetes)	Tractors, pumps, harvesters (shared/owned)
Infrastructure	None or minimal	Storage units, fencing, transport access

behind practicing the method is found as follows:

#### **Simple and cheapest method**

In all six (6) blocks of the West Garo Hills district, 492 household surveys were carried out for the study, 380 of which were involved with jhum cultivation and 112 of were with settle cultivation. Primary survey concludes in Table 1. It is evident from the primary survey that jhum method need not site preparation cost, no costs for seeds, fertilizer, pesticides, irrigation or infrastructure (table 1). Since family members (3 to 4 member from each family) are participating, there is no labor cost. Therefore, jhum method is considered as the simple and cheapest method.

#### **Cultural factor**

The people continue to perform jhum cultivation as part of their tradition; their forefathers had practiced it from centuries. Everything evolved and refined based on experience, the basis of traditional knowledge. Some believe that this culture and associated celebrations enhance the fertility of the earth and that it will result in abundant plant growth.

Wangala, a Garo harvest festival, is celebrated with grandeur and gaiety to satisfy the gods. It has been observed that Jhum is not simply an economic activity, but also inextricably linked to certain aspects of the community's Spiritual identity.

#### **Lack of Financial Support**

Lack of financial services is a major barrier in livelihood issues such as maintenance of jhum cultivation, poverty alleviation, conservation, and income generation, in addition to other development impediments. Traditional land tenure is regarded positively as a restricting security for loans. However, this looks to be an explanation for poor performance and unwillingness to extend loans. As a result, the farmers are compelled to maintain their traditional practice of jhum.

#### **Lack of integrated multi-disciplinary approach**

Various developmental agencies are implementing jhum control programs in isolation, lacking coordination through a multidisciplinary approach. Lack of institutional consultations results in personality-based consultations, alienating traditional systems and knowledge from decision-making and governing processes. As a result, farmers are marginalized and do not prefer to participate in developmental

works uninitiated by govt. and public organizations.

#### **Mix cropping**

The jhummi as are self-sufficient in a way because they consume the crops from their own jhum fields, like rice, millet, maize and vegetables, so that their requirement for daily consumption is fully met. Also, the presence of different crops in the same plots conducive to pest management due to genetic diversity and the sequential harvesting of crops is an effective way of managing many species over both space and time. This approach contributes to agro-ecosystem stability, besides showing better orientation of nutrient use efficiency.

#### **Lack of technological awareness**

In a district where ethnicity is important and there is a general resistance to bringing in outside workers, the continuation of jhum cultivation practice would be heavily influenced by the type of developmental activity supplied. The failure to raise awareness and the non-introduction of upgraded technology that is area specific and needs based will only enhance farmers' desire to oppose change and strategically detached with jhum.

#### **Alternative strategy to reduce jhum cultivation**

With the changing trend of climate, increase in population, aspiration of the new generation and emergence of alternatives livelihood strategies of the communities in the plain from the adjacent states, aspiration towards this practice is gradually declining in the district. It is obviously reflected from declining areas under jhum cultivation from 14,984.74 ha to 8,391.25 ha between the year 2016 and 2023 (estimated by the researcher based on satellite image data of Sentinel-2, 2016-2023). Under such circumstances possible alternative strategies for livelihood for the area may be adapted as follows:

1. The jhum cultivation which practiced traditionally in West Garo Hills district has been reduced substantially, and under such circumstances the following activities may prove to be the possible mode for alternative livelihood in the contemporary socio - spatial and economic context: (i) Horticulture – cahewnut, areca nut, rubber plantation, pineapple and orange plantation, and (ii) introduction of economically benefiting schemes for piggery and poultry farming, etc.
2. Handloom weaving activities among young women in rural areas, combined with suitable

- training, marketing, and financial support. From the primary survey (2024) it was found that, out of 380 jhumma household, 29 households are engaged with commercial handloom weaving sector. But earlier they are only depending on jhum cultivation for financial support.
3. Preservation/storage facilities for locally accessible horticulture produce must be developed with affordable transport and marketing facilities to stop exploitation of farmers.
  4. Tura town can create fruit canning/processing industries for orange, ginger, guava, pineapple, lemon, cashewnut, tapioca, jack fruit etc. to add values to locally available agro products.
  5. To carry out public hearing cum educational programs in the interior 'jhummia' (cultivators those who carious out jhum) villages of West Garo Hills district to motivate them for alternative livelihood or value addition to the traditional jhum practice.
  6. Bench terraces with irrigation are an efficient way to lure jhummias to settled agriculture.
  7. Unplanned coal and sand extraction to be stopped in the West Goro Hills district. A systematic and scientific approach of coal and sand extraction will be implemented. This would help to create jobs while also providing jhum farmers with additional source of income.
  8. Not only is it vital to controlled traditional jhum agriculture, but also to educate and increase awareness about the family planning method by extending health care facilities in the remote areas of the district to enhance the quality of family life and control the population size.

## Conclusion

Jhum cultivation or shifting cultivation remains an integral part of the traditional agricultural system in the West Garo Hills district of Meghalaya. While it provides livelihood and sustenance to the indigenous communities, its long-term sustainability is increasingly challenged by factors such as deforestation, soil degradation, and reduced fallow jhum cycles. The environmental consequences of jhum demand a balanced approach that integrates traditional knowledge with modern sustainable agricultural practices. Agroforestry, improved fallow area management, and alternative livelihood options can help mitigate negative impacts while preserving the cultural significance of this age-old practice. Conti-

nuity of research in the *jhum* fields also very important. Future policies should focus on promoting sustainable land-use strategies that ensure both ecologically sustainable environment and necessary socio-economic well-being for the local communities.

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**Conflict of Interest:** The author declares that there is no conflict of interest.

## References

- Choudhury, D. 2013. Why Do Jhumiyas Jhum? Managing Change in Shifting Cultivation Areas in the Uplands of Northeastern India in Agriculture and a Changing Environment Perspectives on Northeastern India, in Sumi Krishna (Ed.) 2013. Agriculture and a Changing Environment in Northeastern India, Routledge. Pp- 78-100
- Deb, S., Lynrah, M.M. and Tiwari, B.K. 2013. Technological Innovations in Shifting Agricultural Practices by Three Tribal Farming Communities of Meghalaya, Northeast India. *Tropical Ecology*. 54(2): 133-148.
- Government of India. (2014). Statistical Year Book-2014, Ministry of Statistics and Programme Implementation. New Delhi.
- Government of India. (2018). Shifting Cultivation: Towards a Transformational Approach; Contributing to Sustainable Development in Indian Himalayan Region. NITI Aayog India, New Delhi.
- Government of India (2019). Wasteland Atlas of India 2019, Department of Land Resources, Ministry of Rural Development, New Delhi, 2019, pp. 1–246.
- Government of Meghalaya (2022). Agri Scenario, Department of Agriculture, Meghalaya.
- Hazarika, M. K. 2013. Deforestation in Garo Hills and its impact. *The Echo*. ISSN 2278-5264 Volume-I, Issue-IV.
- History of West Garo Hills district, Retrieved 11.02.2023 <https://westgarohills.gov.in/>
- Heinimann, A., O. Mertz, S. Frolking, A.E. Christensen, K. Hurni, F. Sedano, L.P. Chini, R. Sahajpal, M. Hansen, G Hurtt. 2017. A Global View of Shifting Cultivation: Recent, Current, and Future Extent. *Agricultural Economics*. 42 : 207–220. DOI: 10.1111/j.1574-0862.2010.00507. x.
- International Centre for Integrated Mountain Development (ICIMOD). (2021). Quantifying the Extent of Shifting Cultivation: An Urgent Need to Revisit and Revise Land Use and Land Cover Classifications.

- Policy Brief, Kathmandu, Nepal.
- Karki. 2017. Policies that Transform Shifting Cultivation Process: Linking Multi-stakeholder and Participatory Processes with Knowledge and Innovation”, in M. F Cairns (Ed.). 2017. Shifting Cultivation Policies: Balancing Environmental and Social Sustainability. CABI, Wallingford, U.K.
- Lyngkhoi, D.R. 2023. Factors Associated with Shifting Cultivation in Meghalaya: Policy Perspective Probit Approach. *Indian Journal of Agricultural Economics.* Volume 78, Number 2.
- Pandey, D. K., Momin, K.C., Dubey, S.K. and Adhiguru, P. 2022. Biodiversity in agricultural and food systems of jhum landscape in the West Garo Hills, North-eastern India. *Food Security.* 14: 791–804. <https://doi.org/10.1007/s12571-021-01251-y>.
- Yadav, P. K. 2015. Slash and Burn Agriculture: Environmental Intimidation in Garo Hills. *Science reporter.* pp-29-32.