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Socio-economic impact of broom cultivation in Mawkaphan village, East Khasi Hills district, Meghalaya

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Abstract

Broomgrass is an important semi-domesticated non-timber forest produce of Meghalaya. Broom grass (*Thysanolaena maxima*), a perennial non-timber forest product, holds both ecological and economic importance in hilly terrains. Its dense root system stabilizes fragile slopes, reducing soil erosion and water runoff, while its branches provide raw material for broom-making industries that sustain rural employment. In Meghalaya, particularly Mawkaphan village, broom grass cultivation has expanded rapidly since 2018, driven by favorable market prices and its viability as a cash crop. This study examines the socio-economic impacts of broom grass cultivation, highlighting income generation, employment opportunities, and improvements in living standards such as education and housing. Using descriptive statistics and the simple percentage method, findings reveal that broom grass has significantly transformed village livelihoods, elevating household income, enhancing access to amenities, and strengthening educational opportunities. Beyond economic benefits, the practice preserves traditional cultivation, positioning broom grass as both a livelihood resource and a cultural heritage in this region of Meghalaya.

Keywords: Broom Cultivation, Mawkaphan, Socio-Economic Impact, Livelihood

1. Introduction

Broom grass (*Thysanolaena maxima*) is a perennial, non-perishable, non-timber forest product that thrives throughout the year, particularly in hilly regions with steep topography. Its branches are widely utilized for broom-making, making it an important resource for both household use and commercial purposes. Tiwari et.al (2012) identified broom grass as an important non- timber forest product in Meghalaya, India. The research explored its growth patterns and marketing channels, emphasizing its vital role in supporting the economic livelihoods of local communities. Ecologically, broom grass plays a crucial role in soil preservation across exposed hilly terrains. As noted by Alam et al., (2017), it has been recognized as a valuable non-timber

forest product that integrates well with hill farming and agroforestry systems. It requires minimal labour inputs while offering highly appealing financial returns (Pachas et al, 2020). Sahoo (2009) emphasized that the need for higher production and income to cope with socio-economic challenges yields sustainable benefits for households engaged in home-garden broom grass cultivation.

It was further revealed (Molavi et.al, 2025) that the production of broom has enhanced the income of cultivating families and has generated employment opportunities on a seasonal basis (Niveditha & Yadav, 2016) yet it is hindered by scarcity of resources and difficulty in accessing suitable markets. Economic returns have consistently emerged as the most influential motivating factor, making broom grass the most favourable choice among various forest products. Moreover, broom grass provides multiple additional benefits beyond its primary use (Hobbes et al, 2007). Similarly, Ramakrishnan (1984) noted that unlike other grasses primarily used for hut construction, *Thysanolaena maxima* contributes directly to broom-making, thereby enhancing household income.

Shangpliang (2012) revealed that harvesting, drying, and processing wild-grown broom grass—primarily undertaken by Khasi women—plays a vital role in sustaining rural livelihoods. A study in South Africa (Shackleton & Campbell, 2012) also found out that middle aged and elderly women are actively engaged in broom trade that has diversified livelihood opportunities, helping low-income families in alleviating their hardships, meeting their essentials and supporting their children's educational requirements. An attempt was also made to investigate (Annisa et al., 2025) how the palm frond broom business played its role in enhancing the well-being of the people, determine the strategies and patterns of management implemented, and study the pros and cons of carrying out the business.

The favourable EP slopes and temperate climatic conditions have facilitated the transformation of broom grass from a wild botanical resource into a vital partial commercial crop. By succeeding traditional shifting cultivation practices, this transition has profoundly reshaped the agrarian landscape and restructured rural household income patterns (Lapasam & Tiwari, 2015; Nonglait et al., 2024). Existing studies on agricultural diversification in Northeast India highlight the important role of non-timber forest products (NTFP) - in alleviating poverty and saving food for the whole community (Ozukum et al., 2025). Furthermore, the integration of these crops into the market has shown a drastic shift or transition from the traditional jhum cultivation to commercial crop to meet industrial demands (Kramsapi et al., 2025). Such shifts are often accompanied by heightened household dependence on commission agents, underlining the need for structured government intervention to optimize financial returns for primary producers (Pandey et al. 2022). While the existing literature suggests that transitions toward market-oriented cash cropping reshape rural household welfare, this remains underexamined specifically within Mawkaphan village, pointing to the need for a detailed investigation into how household profiles—including education, material assets, and family size—shape the adoption of modern agricultural practices (Dkhar & Raghuprasad, 2024; Reang et al., 2024). More broadly, non-timber forest product (NTFP) income has been shown to contribute substantially to household welfare across Northeast India, accounting for an estimated 19–32% of total household income in the region's humid tropics (Saha & Sundriyal, 2011), with education level, gender, and family size repeatedly identified as key determinants of how such income is generated and used (Dash & Behera, 2016; Talukdar et al., 2021). This income is also recognised as having an equalising effect on rural welfare, narrowing disparities between poorer and wealthier households even though its contribution is frequently omitted from formal poverty assessments (Fisher, 2004; Mamo et al., 2007). These regional

benchmarks provide a useful comparative baseline against which the income, education, and housing outcomes reported for Mawkaphan can be assessed.

Similarly, in Mawkaphan village the chosen study area, crops such as broom grass, bay leaf and black pepper are the major crops grown abundantly. Broom grass is a rich natural resource of the village which had experienced a surge in its cultivation particularly from 2018 due to its good price in the market which had also supported the livelihood of the locals to a large extent. The entire process of its cultivation and marketing involves various processes and activities which offers seasonal employment to the people of the area. Simultaneously, the lifestyle of the farmers has greatly improved as compared to before and they have better access to basic facilities.

Additionally, studies related to broom cultivations in other areas of Meghalaya has been conducted in the past years however in Mawkaphan being a broom covered area; no such study has been taken up so far. Therefore, it is in the context of the preceding explanations, that the present work seeks to investigate the impact that broom cultivations has brought on the day-to-day life of the people focusing on the economic and social aspects as well as to build a general understanding of the village as a broom dominated area.

2. Study area

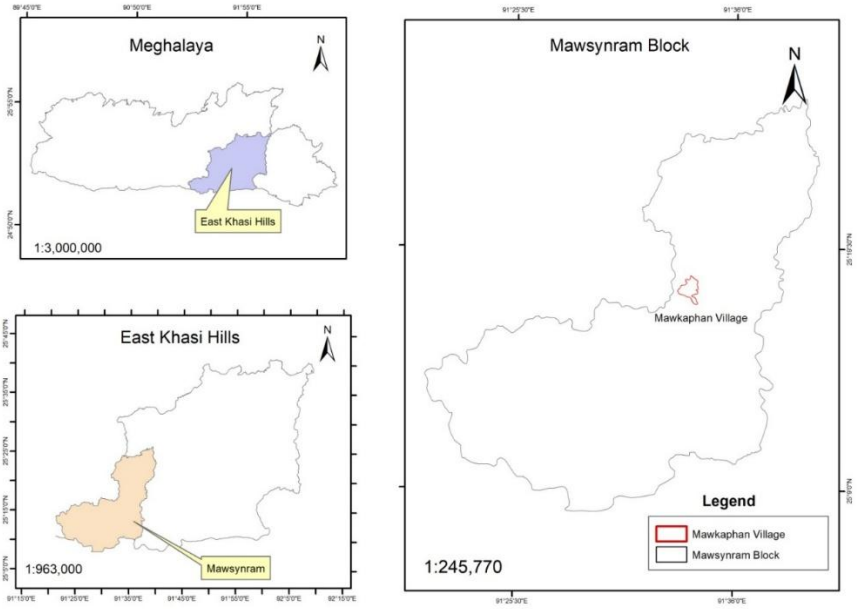


Fig.-1: Location of Study Area

Mawkaphan is a village under the Mawsynram C&RD Block, located in the western part of Mawsynram Town (Figure 1). It lies at an altitude of 1103 metres above sea level, between 25˚08'N & 25˚33'N latitude and 91˚21'E & 91˚45'E longitude (Baidya et al., 2014), characterized by sloping and hilly terrain within the Mawsynram Block of Meghalaya, India. The village lies approximately 5.8 km from Mawsynram at an altitude of about 700 metres. The natural landscape is undulating, giving the area a scenic and elevated appearance.

A distinctive feature of the village is its broomstick plantations, commonly grown on the hilly slopes. These plantations not only sustain the local economy but also reflect the adaptation of agriculture to sloping terrain. Man-made features are closely integrated with the natural landscape, both modern and traditional houses (97 in total) are scattered across the slopes, built in harmony with the land's gradient. Overall, the topography reflects a close relationship between the land and the lifestyle of its people.

Mawkaphan shares the climatic conditions of nearby Mawsynram, one of the wettest places on Earth. The average temperature hovers around 15.7°C, with partly cloudy skies and high humidity levels of about 95%. A gentle breeze of 1.07 metres per second is common. Winters are cool, with evening temperatures dropping to around 10°C, while daytime conditions remain pleasant (Meghalaya Basin Development Authority, n.d.).

The village forms part of the Sonai-Wah Mawblei and Phudwisdei micro-watersheds. The terrain is highly uneven, with slopes ranging from 25% to 180%. Numerous small tributaries flow north–south, eventually merging with the main streams Sonai-Wah Mawblei and Phudwisdei.

The major streams act as primary drainage channels, while smaller tributaries dissect the slopes. Due to steep gradients and sparse vegetation, the area is vulnerable to erosion, a concern highlighted in studies under the Integrated Watershed Management Project (IWMP) (Meghalaya Basin Development Authority, n.d.). The soils of Mawkaphan are typically acidic, coarse-textured, and highly permeable. Depth varies from shallow to deep, with erosion common due to hilly topography and limited vegetation cover. Laterite soils dominate, formed through intense rock weathering. These soils are rich in iron and clay but deficient in phosphorus, posing challenges for sustained agricultural productivity (Meghalaya Basin Development Authority, n.d.).

The subtropical climate of Mawkaphan supports diverse vegetation. Khasi pine (*Pinus kesiya*) is a dominant species, valued for its fast growth and timber quality. Broadleaf trees contribute to dense forest canopies, while black pepper is widely cultivated, often climbing on gamari and other supporting trees. The humid climate also sustains ferns, tropical palms, teak (*Tectona grandis*), and sal (*Shorea robusta*), both important timber species. Bamboo grows abundantly, serving as a resource for construction, crafts, and fuel. Broom grass cultivation is widespread, providing raw material for broom-making and supporting household trade. Fruit trees such as jackfruit, mango, and orange thrive in the subtropical environment, adding to the ecological richness and livelihood diversity of the village (Meghalaya Basin Development Authority, n.d.).

Mawkaphan has a population of 407 individuals, comprising 202 males (49.63%) and 205 females (50.37%). Children aged 0–6 years constitute 18.91% of the population (36 males and 41 females). The entire population belongs to the Scheduled Tribe (ST) category, with no Scheduled Caste (SC) population recorded. According to the 2011 Census, Mawkaphan has a literacy rate of 71.25% (290 literates, 146 males and 144 females). The illiterate population stands at 117 individuals (56 males and 61 females), accounting for 28.75% of the total. Male literacy is slightly higher at 72.28%, while female literacy stands at 70.24% (Anon, n.d.)

The economy of Mawkaphan is predominantly agrarian and labour-based. Approximately 85% of the working population is engaged in farming and manual labour. Agriculture remains the primary source of sustenance, supplemented by small-scale business activities such as local trade, shops, and sales of agricultural or handcrafted products. A few individuals are employed in teaching and government services,

contributing to education, health, and rural development. Traditional craftsmanship is a notable aspect of the local economy where villagers actively produce bamboo-based handicrafts such as cane furniture and baskets. These items not only support household incomes but also preserve indigenous skills and cultural heritage (Meghalaya Basin Development Authority, n.d.).

3. Objectives of the Study

- To study the economic impact of broom cultivations in the study area (income & employment)
- To examine the social impact of broom cultivation in items of standard of living of the people (education and housing amenities).

4. Methodology

The research project was executed in three distinct phases: pre-field preparation, fieldwork, and post-field analysis. Each phase was systematically designed to ensure methodological rigor and alignment with the study objectives.

1. Pre-Field Phase

- The researchers developed a structured questionnaire to guide data collection, ensuring relevance to the research objectives.
- The researchers undertook an extensive review of scholarly articles and related literature to strengthen the conceptual framework and refine the research tools.
- The researchers prepared instructions and guidelines for administering the questionnaire to maintain consistency during data collection.

2. Fieldwork Phase

- Primary data were collected through household surveys using the prepared questionnaire.
- A simple random sampling technique was employed to minimize bias and enhance representativeness.
- A sample size of 30 households was selected, accounting for more than 25% of the total households in the village, thereby ensuring adequate coverage for meaningful analysis.

3. Post-Field Phase

- The collected data were systematically entered into Microsoft Excel for tabulation and statistical processing.
- Descriptive statistics, particularly the simple percentage method, were applied to generate tables, charts, and graphs for clear visualization of findings.
- A study area map was prepared using ArcGIS 10.2 software, providing spatial representation and supporting geographical analysis of the research site.
- The processed data and visual outputs were interpreted to address the research objectives and derive meaningful insights.

5. Results and Discussion

(a) Seasons of Broom Farming

Broom cultivation in Mawkaphan follows a well-defined seasonal cycle. The cultivating season, observed during May and June, involves initial planting and field preparation. This is followed by the cleaning season from mid-June to mid-September, when farmers carry out regular maintenance and clearing of broom fields. The harvesting season takes place in January and February, marked by the collection of broom grass. During this season, which occurs in the winter months, broom cultivation provides the highest level of seasonal employment (Pachas et.al, 2020). Finally, the marketing season extends from March to December, during which broomsticks are sold and distributed in local as well as regional markets.

(b) Distance to Broom Fields

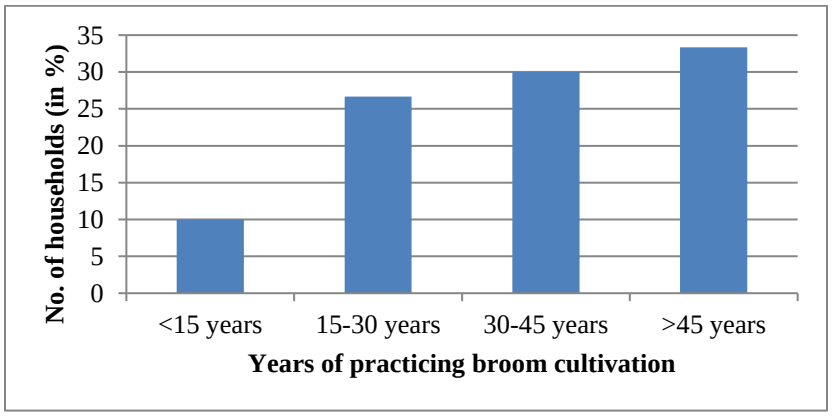
Table-1: Distance to broom fields (based on respondents' responses)

Distance (in time)	No. of responses
<1hr	4
1-2 hrs	15
>2 hrs	11

***Source**: Fieldwork, 2025*

Majority of the cultivators reported that their broom fields are located 1–2 hours away from their homes, followed by those requiring more than 2 hours of travel (Table-1). This indicates that most broom fields are situated in the forested outskirts of the village, while only a few households maintain broom plots within their residential compounds. Studies also revealed that broom grass thrives in the highlands and forested margins (Matunhay et al., 2022 & Melynk et al., 2022) of broom covered regions. The practice of broom cultivation in Mawkaphan village demonstrates a deep-rooted continuity across generations, reflecting both economic necessity and cultural heritage.

(c) Duration of Broom Cultivation



***Source**: Fieldwork, 2025*

Fig.-2: Percentage share of years of practicing broom cultivation (household basis)

Fieldwork data indicate that approximately 33% of households have engaged in broom farming for more than 45 years, while 30% have sustained the practice for a period ranging between 30 and 45 years (Fig.2). A further 27% of households reported involvement for 15 to 30 years, and only 10% have adopted broom cultivation within the last 15 years. This distribution underscores the longevity of broom cultivation as a livelihood strategy (Sai et al., 2021 & Molavi et al., 2025) with one-third of households maintaining the practice for over four decades. Qualitative interviews further reveal that broom farming is not merely perceived as an income-generating activity but is also regarded as a cultural tradition (Cocks & Dold, 2004; Nedelcheva et al., 2007) intrinsically tied to ancestral heritage and the distinctive landscape of Mawsynram. The persistence of this agricultural activity highlights its dual role in sustaining household economies while simultaneously reinforcing cultural identity and community cohesion.

(d) Marketing and Price of Broom

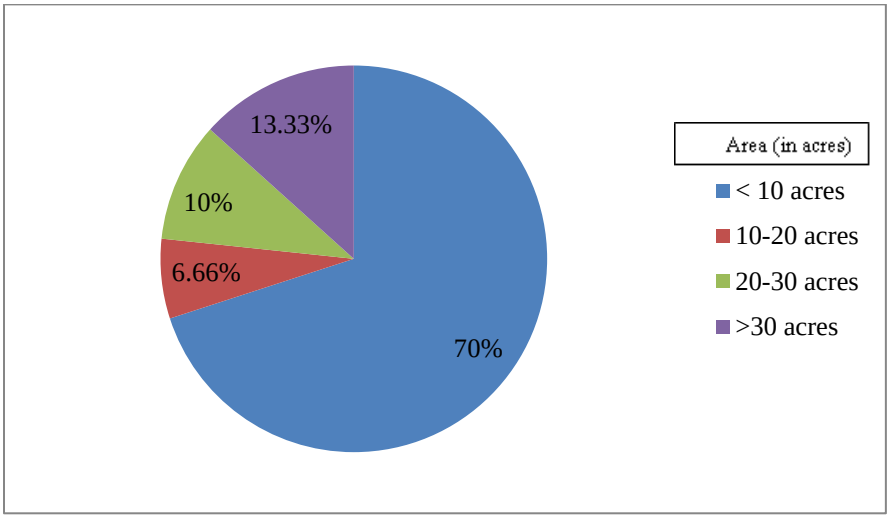
The marketing of broomsticks in Mawkaphan reveals significant fluctuations in price and profitability over recent years. At the local level, broomsticks are sold at approximately ₹30 per kilogram, after which they are transported to Mawiong in Shillong where the price increases marginally to between ₹35 and ₹40 per kilogram. Despite this modest price differential, the period of 2024–25 witnessed a sharp decline in broom prices compared to the highly profitable years between 2018 and 2023.Several factors have contributed to this downturn. This supply-side and supply-chain explanation is consistent with the sharp, single-year timing of the Mawkaphan price fall, and points to weak farmer bargaining power and an absence of cooperative aggregation—rather than demand collapse alone—as a central cause. First, the rising popularity of plastic brooms, which are perceived as cheaper, more durable, and user-friendly, has displaced demand for traditional broomsticks. It was also evident (Rocha et.al, 2023) that the production of brooms in modern times is highly dependent on advanced machines and technology that make the products more durable and efficient in comparison to the traditional brooms.

Second, broom cultivation faces stiff competition from alternative cash crops such as bay leaf and black pepper, both of which have experienced increasing market demand and higher price trends. This aligns with Banos's study (2007), which found that other commercial crops were cultivated alongside tiger grass in the same field, and make 20 percent contribution to the farmer's supplementary income and had the potential to yield greater profits than broom grass (Mendes et.al, 2025). Finally, the absence of government intervention or institutional support (Anam et.al, 2020) has exacerbated the vulnerability of broom cultivators, leaving them exposed to market volatility and declining returns. This sustained price drop has had profound socio-economic consequences (Pachas et.al, 2020), significantly reducing household profits and compelling many farmers to diversify into alternative crops in search of more stable and lucrative income sources (Yadav et.al, 2026). The authors found out that most farmers in Nepal have switched to broom cultivation, as it gives more profit, thereby superseding cereal cultivation

The shift away from broom cultivation not only reflects economic adaptation but also signals a potential erosion of traditional livelihood practices that have historically shaped the agrarian landscape of Mawsynram. To address these challenges, targeted government intervention is essential (Molavi et al., 2025; Matunhay et al., 2022 & Anam et al., 2020). Measures such as minimum support price schemes for broomsticks, the establishment of cooperative marketing networks to strengthen farmers' bargaining power, and the promotion of crop diversification strategies can help stabilize incomes while safeguarding traditional practices. Additionally, integrating broom cultivation into broader rural development and livelihood programs would ensure that farmers benefit from institutional support, market linkages, and

sustainable resource management. Such policies would not only mitigate the adverse effects of price volatility but also reinforce the socio-cultural significance of broom cultivation in the region.

(e) Area under Broom Cultivation

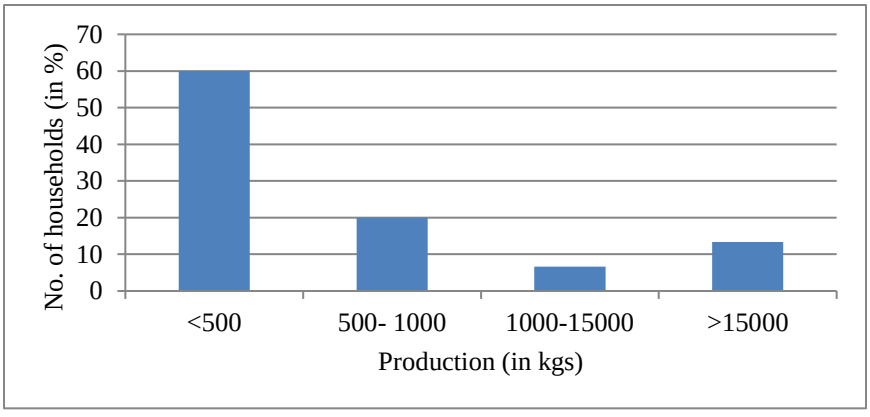


***Source**: Fieldwork, 2025*

Fig.- 3: Percentage share of area under broom cultivation (household basis)

Most farmers in Mawkaphan village amounting to 70 percent, cultivate broom on small plots of less than 10 acres, constrained by limited landholdings and poverty (Righi & Foltran, 2016). In contrast, wealthier households representing about 13% of the population manage larger plots exceeding 30 acres (Fig.3), often utilizing both community and private lands for broom cultivation to maximize profits. The decline in broom prices has compelled many smallholders to shift their land use toward more lucrative crops such as bay leaf, black pepper, and oranges.

(f) Broom Production and Employment Opportunities

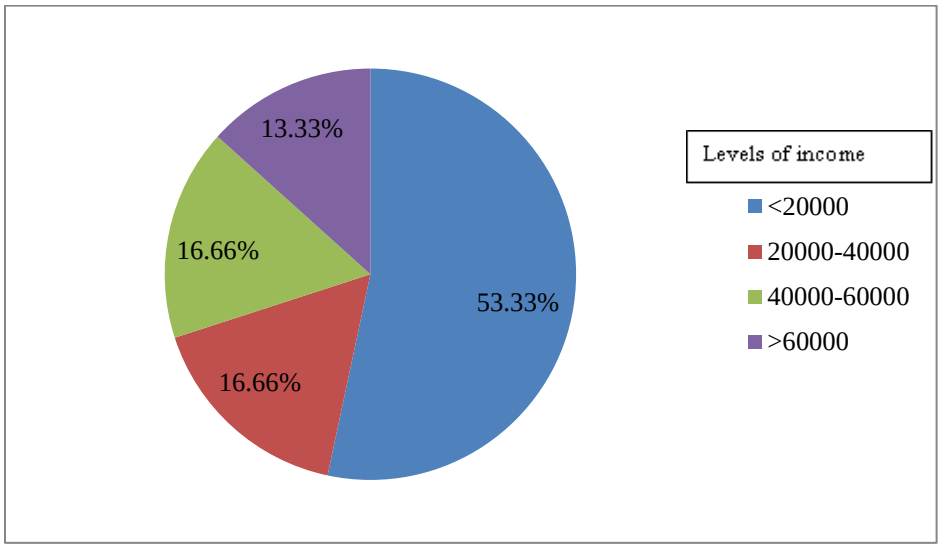


***Source**: Fieldwork, 2025*

Fig.-4: Percentage share of broom production (household basis)

Consequently, the majority of farmers produce less than 500 kilograms annually, a reflection of fragmented and marginal landholdings. Only 13% of households, typically wealthier farmers with larger plots, achieve production levels above 1,500 kilograms (Fig.4). The sharp price fall in 2024 further reduced broom output, as many households replaced broom fields with more profitable alternatives. Wealthier farmers, however, continue large-scale cultivation, mitigating risks through diversified crop portfolios. Despite these challenges, broom cultivation remains a vital source of rural employment. This is in consistent with the findings of Shackleton & Campbell (2007) which indicated that although broom cultivation earns them a small income, people are actively engaged in this activity to mitigate their poverty. It sustains livelihoods across multiple stages, including field maintenance, harvesting (often involving women), transport of broomsticks for drying and marketing, trade by vendors and traders, and tenancy arrangements where wealthier households rent fields to landless farmers. Overall, broom cultivation supports a year-round employment chain involving labourers, tenants, drivers, and traders, thereby contributing significantly to the socio-economic fabric of Mawkaphan village. Such a finding is in line with the Nwosu et. al (2019) study where they found that broom cultivation has given employment opportunities to the jobless masses in rural areas.

(g) Income from Broom Cultivation



***Source**: Fieldwork, 2025*

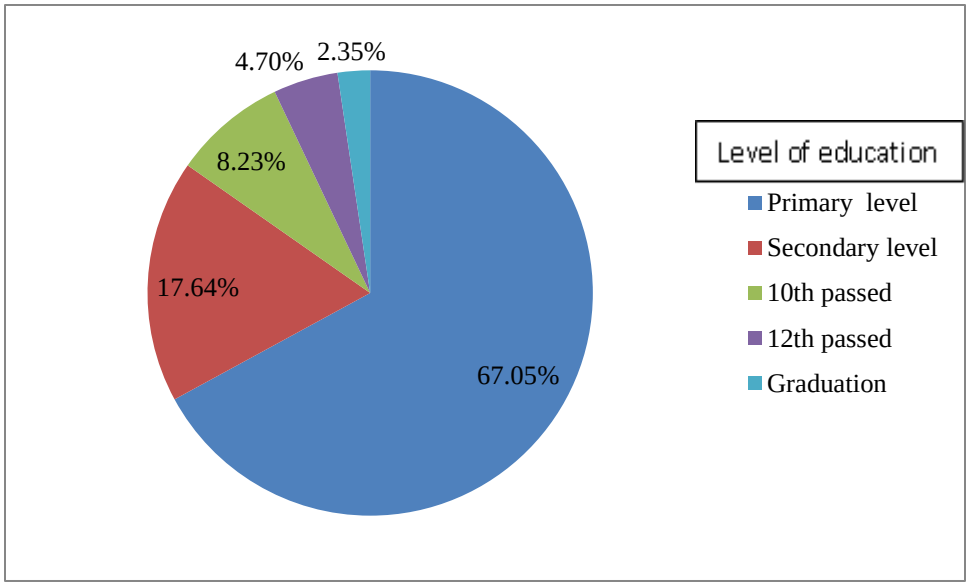
Fig.-5: Percentage share of income from broom cultivation (household basis)

Since the price of broom drops drastically during 2024-25, this is also clearly reflected in the amount of income generated from this agricultural activity. The lowest amount of income of less than 20,000 thousand rupees accounts for the largest number of households of 53.33 percent (Fig.5). While the highest amount of income of more than 60,000 thousand rupees can be observed in only 13.33 percent (Fig.5) of the total households in the study area. In fact this highest amount is much smaller in comparison to the years before 2024 where the farmers earn a maximum profit of more than 1 lakh rupee in a year. A sharp fall in the price of broom for two consecutive years as well as the shifting to other types of crop cultivation is the main reason responsible for the large amount of low income. In aligning with this finding, Rahmayani et.al (2025) study highlighted that a diminished selling price is a significant issue faced by broom cultivators.

Those households getting the highest amount of income are the few rich sections who are cultivating broom on large plots of land; however, they revealed that this year's amount is the lowest level of income that they have derived so far. Overall, this is an indication that the contribution of broom cultivation in the current year is on the declining trend.

(h) Educational Status

Educational status serves as a critical indicator of socio-economic development within a community. It reflects the degree of formal learning attained by the population, ranging from the lowest to the highest levels.



***Source**: Fieldwork, 2025*

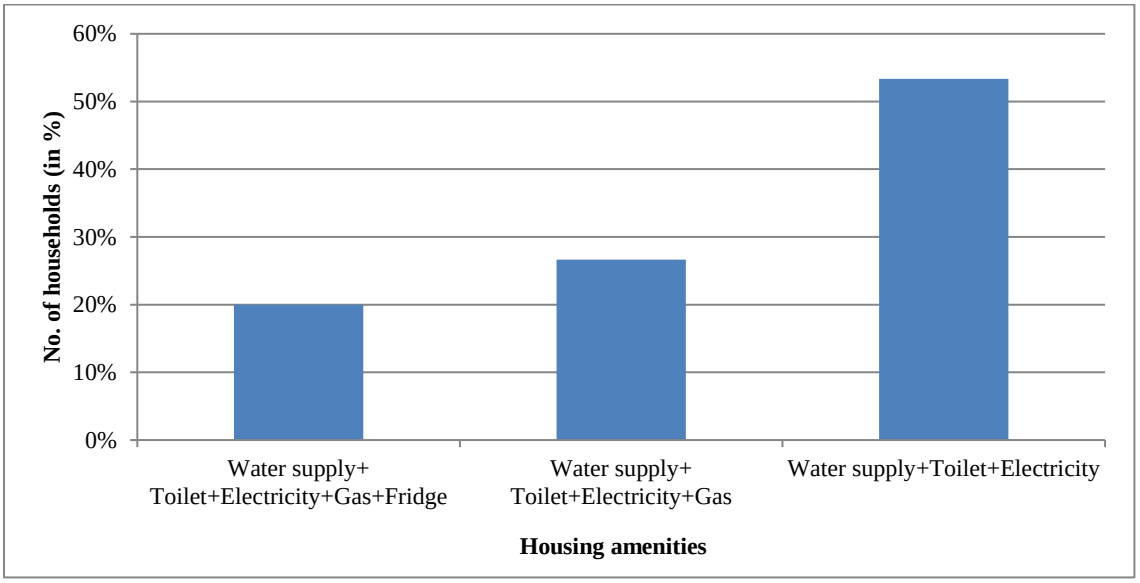
Fig.-6: Percentage share of education levels in Mawkaphan village (household basis)

Majority of the population has attained the primary level of education, accounting for 67.05%, followed by the secondary level at 17.64% (Fig.6). The predominance of primary-level education is largely attributed to the sizable child population currently enrolled in elementary schools. Field observations reveal that the educational status of children and youth has improved considerably compared to earlier decades, when school attendance was minimal. This is a correspondence to a study by Ganimian & Murnane (2016) which indicates that educational attendance and achievement have improved due to reduced school fees and expanded educational options. Conversely, most elderly and adult individuals attained education only up to the primary level, primarily due to financial constraints during their childhood. Evidently, studies (Dearing et al., 2024; Xie, 2023) indicate a close link between educational attainment and financial constraints, particularly childhood poverty. Higher levels of education—such as matriculation (10th), higher secondary (12th), and graduation—constitute a small proportion of the population. Graduates account for 2.24% of households (Fig. 6), reflecting limited access to advanced education in the village.

(i) Improvement in Educational Status

The income generated from broom grass cultivation has played a pivotal role in enhancing educational opportunities in Mawkaphan. This is also evident from studies (Shackleton & Campbell, 2007; Nwosu et al., 2019) that show earnings from this economic activity have played a significant role in supporting the education of farmers' children. Earnings from activities such as field maintenance, harvesting, transportation, and marketing of broomsticks have enabled households to meet educational expenses, including school fees, uniforms, and books. This financial support has reduced dropout rates and facilitated regular school attendance. Some families have even been able to send their children to better schools outside the village, thereby broadening educational exposure. Therefore, broom cultivation not only sustains livelihoods but also contributes to the long-term socio-economic development of rural communities by improving access to education.

(j) Housing Amenities



***Source**: Fieldwork, 2025*

Fig.-7: Percentage share of household amenities (household basis)

The housing amenities serve as a proxy for assessing the social status of households. More than 50 percent of households possess only basic amenities such as water supply, toilets, and electricity (Fig.7). These households typically belong to low-income families engaged in small-scale broom cultivation, with limited earnings. Their livelihoods are heavily dependent on agriculture and daily wage labor, making them vulnerable to agricultural failures. In contrast, about 20 percent of households (Fig.7) enjoy a higher standard of living, with access to both basic and luxury amenities, including gas connections and refrigerators. These households are generally wealthier, owning larger landholdings and multiple broom fields, thereby generating higher revenues. Closely aligning with this finding, it was revealed (Rahmayani et.al, 2025) that broom cultivation played a crucial part in upgrading the housing welfare by boosting income from broom related businesses. Consequently, the livelihood of the tribal people has witnessed a great transformation (Swamy & Rao, 2019). Additionally, they diversify income sources through handicrafts, grocery retailing, and teaching in schools. This economic diversification has enabled them to

procure more essential and comfort items, reflecting their elevated social status (Falk, 2025; Abate et.al, 2025; Schilpzand & Smits, 2024).

(k) Long Term Benefits of Broom Cultivation

Broom cultivation offers significant long-term benefits, particularly when market prices are favorable and cultivation is undertaken on a large scale. This is evidenced (Tiwari et al., 2012; Alam et al., 2013) by the annual interest rates for broom grass cultivation, which were found to be 3.46, 3.32, and 3.19 at interest rates of 10%, 15%, and 20%. This indicates that the benefits from harvesting and moving to wholesale marketing double and can increase tenfold after processing. With proper value addition—such as packaging and marketing—profits can be substantially enhanced, given the low-cost and high-potential nature of broom farming. Similarly, studies (Jasetra & Widayaningsih, 2022; Ikhwan et.al, 2024) have shown that broom making has led to value addition through effective packaging techniques and efficient marketing strategies. There is also an effort to enhance internet connectivity in villages to facilitate online marketing. The activity provides steady income with minimal maintenance costs and generates employment across multiple stages of production. Environmentally, broom cultivation has mixed impacts: positively, it prevents soil erosion and supports biodiversity; negatively, it depletes soil fertility, leaving land stony, hard, and dry.

(l) Ways to Promote Broom Cultivation in the Village

Promoting broom grass cultivation in Mawkaphan can significantly uplift rural livelihoods and strengthen the local economy. Effective strategies include:

- Institutional Support: Ensuring farmers receive government funds and schemes dedicated to broom cultivation. Field interviews revealed that although the Hill Farmers' Union (HFU) initiated discussions with farmers and collected data for scheme applications, no tangible support has yet materialized. Given that the 2024–2025 price collapse appears driven substantially by farmers' weak bargaining position relative to intermediaries rather than by demand collapse alone, the most immediate and lowest-cost step is to convert the HFU's existing but stalled engagement into a functioning village or cluster-level aggregation body, allowing producers to sell collectively rather than individually to traders at Mawiong. This requires no new infrastructure and could be implemented before the next harvesting season.
- Infrastructure Development: Provision of irrigation facilities, storage spaces for drying broomsticks, and access to quality planting materials would motivate farmers to expand cultivation.
- Market Access: Reducing dependence on distant markets such as Mawiong (Shillong) by establishing local trading centres in the Mawsynram area. This would lower transportation costs, provide quicker returns, and enable reinvestment in cultivation.
- Research and Extension: Introducing scientific practices in planting, harvesting, post-harvest management, and marketing to improve productivity and sustainability.
- Diversification as Risk Management: Rather than treating farmers' recent shift toward bay leaf and black pepper as a sign of broom cultivation's decline, extension services could formalise intercropping of broom grass with these already-compatible cash crops on the same plots, since

black pepper in Mawkaphan is already grown on supporting trees within broom-covered terrain. This would let households hedge against the price volatility evident in the 2024–25 downturn without abandoning broom cultivation outright, converting an ad hoc survival response into a deliberate, supported livelihood strategy.

- Value Addition at the Village Level: Currently, broomsticks leave Mawkaphan as raw, unfinished material and are bound and finished in Shillong, where the ₹35–40/kg price is realised. Supporting basic broom-binding and finishing cooperatives within the village—rather than only at Mawiong—would allow producers to capture a larger share of this margin directly, and would also position the village to access higher-value finished-broom markets, including export channels, which currently account for a meaningful share of India's broom trade.

6. Conclusion

Broom cultivation has significantly contributed to the socio-economic transformation of Mawkaphan village, enhancing livelihoods and providing a dependable source of income. Despite the setback faced by farmers during 2024–25 due to price fluctuations, broom remains an important means of sustaining daily life. The region's climatic and topographical conditions are highly favourable for this crop, underscoring its potential to support sustainable livelihoods. Because the gains in education and housing documented in this study were built primarily during the high-price years of 2018–2023, continued price volatility of the kind seen in 2024–25 poses a direct risk of reversing them—for instance, through renewed dropout pressure if household income falls below the threshold that currently funds school fees and supplies. This makes price stabilisation not merely an economic concern but a precondition for sustaining the social gains the study identifies. However, continuous cultivation has led to soil fertility depletion, posing long-term risks to agricultural sustainability. Broom grass cultivation in Mawkaphan exhibits both positive and negative environmental impacts. On the positive side, it plays a significant role in soil conservation by stabilizing slopes through its dense root system. This, in turn, helps in reducing soil erosion, particularly in areas characterized by steep terrain and heavy rainfall like Mawsynram, popularly known as the wettest place on earth. Additionally, broom grass contributes to biodiversity by supporting vegetation cover and maintaining ecological balance in hill ecosystems.

However, despite these benefits, certain negative environmental consequences are evident. Continuous cultivation of broom grass over time leads to the depletion of soil fertility, as nutrients are not adequately replenished. Furthermore, prolonged monoculture practices contribute to land degradation, resulting in hard, stony, and less productive soil conditions.

In this context, it is imperative to undertake systematic and scientific research to develop eco-friendly cultivation practices that mitigate environmental degradation while maximizing economic returns. Equally, government intervention is crucial to stabilize market prices and safeguard farmer interests, thereby enabling the revival of broom farming. Such coordinated efforts between research institutions, policymakers, and local communities will not only strengthen the socio-economic fabric of Mawkaphan but also ensure a resilient, sustainable, and promising future for its agrarian society.

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