I

A STUDY OF MARKETING OF BROOMS IN AIZAWL DISTRICT

(A DISSERTATION SUBMITTED FOR THE AWARD OF THE DEGREE OF MASTER OF PHILOSOPHY IN ECONOMICS)

BY

ZAIREMMAWII

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AIZAWL, MIZORAM – 796004, Phone: 0389-2330708, Fax: 0389-2330709

Dr. Lalrinthanga 08731916129 (M)
Associate Professor
Department of Economics

CERTIFICATE

This is to certify that the dissertation entitled '**A Study of Marketing of Brooms in Aizawl District**' submitted by Zairemmawii has been written under my guidance. This dissertation is the result of her investigation into the subject sited above and was never submitted to any other University for any research degree.

(Dr. Lalrinthanga)
Associate Professor
Department of Economics
Mizoram University

DECLARATION

I, Zairemmawii, hereby declared that the subject matter of this dissertation entitled **'A Study of Marketing of Brooms in Aizawl District'** is the record of work done by me. To the best of my knowledge and believe the contents of the dissertation is not based on any work done by others scholars for the degree of M. Phil or else and that this dissertation has not been submitted by me or any other for research degree in any other University Institutions.

This is being submitted to Mizoram University for the degree of Master of Philosophy in Economics.

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(Zairemmawii)

Scholar

(Prof. Lianzela)

Head of Department

(Prof. Dr. Lalrinthanga)

Supervisor

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Brooms have been used for centuries to sweep up, in, and around the home and workplace. They may be made from a variety of materials, both man-made and natural. Man-made bristles are generally of extruded plastic and metal handles. Natural-material brooms may be constructed of a variety of materials, including brush, but generally include stiff grasses such as broomcorn and/or sotol fibre. Broomcorn brooms have been made for at least 200 years and are considered superior brooms. Plastic brooms merely move dirt around; however, broomcorn stalks actually absorb dirt and dust, wear extremely well, and are moisture-resistant. Broomcorn brooms are the most expensive of the manufactured brooms.

Broomcorn is actually a variety of upright grass of the species sorghum referred to as *Sorghum vulgare,* or *S. Bicolour variety technicum*. The botanical name of a broom is Thysanolaena maxima which belongs to the family of Graminae and cultivated for its stiff stems. Broom bristles are derived when these stiff, tasselled branches that bear seeds on the ends are harvested and dried. They can be used for animal feed. The tasselled stalks, used in the manufacture of brooms, can grow 2-8 ft (0.61-2.4m) tall. Sorghum is specially valued in hot and arid climates due to its resistance to drought.

The traditional Indian broom is a kind of grass plant that grows a plenty all over India as a weed. The grass has a long, thin but durable stem that hardens as it dries, dotted with bunches of small but sharp needles that grows thick at

the crown of the stem. The purpose of broomstick has not faded away despite the change in lifestyle in rural homes, or for that matter, the urban. The polythene duster or the long-handled ones or the rougher versions made out of reeds in coconut fronds do not clean as well as the bushy grass brooms do.

Broom production technical process is simple and the project can be initiated with proper planning and moderate capital investment. The production is a wide and vast industry as per the types of the products. It has many advantages. Degraded jhoom land becomes productive because broom grass survives on any kind of soil. In fact, the biomass produced by the plant actually increases the fertility of the soil. Besides, with an alternative source of income, the villagers need not cut down forests to support themselves.

The broom grass can be grown even on marginal lands, wastelands and jhum fallow. Its cultivation can promote the sustainable use of fragile and degraded lands. It grows well on a wide range of soils varying from sandy loam to clay loam. The planting can be done by seeds or rhizomes. Some people also collect and transplant the wild seedlings for propagation. However, it is considered better to get quality seedlings from reputed nurseries.

The culms arise centrifugally during the peak growing season (April to July) and bear inflorescence (panicle) on shoot apex at the end of vegetative growth. The inflorescence that is about 30-90 cm long resembles a fox-tail and is used as broom. And this is sold as broomsticks.

Broom corn is one of those natural products that are so perfectly adapted for the uses to which they are put, that no substitute has been, or is likely to be, found for it. In toughness, elasticity, sufficient, but not too great rigidity, lightness, and ease with which it is manufactured, it excels all other materials used for brooms. Besides these qualities, it is so easily procured as to be within the reach of everyone, and can be grown over such a wide extent of country, that its culture, at least, whatever may happen to its commerce, can never be a monopoly.

Brooms are required in each house, therefore, it has sufficient demand throughout the country and marketing is not a problem. The majority of the production is from subsistence farming areas and dispersed collection from the forest, which are inaccessible to transport networks and markets. It is a high volume crop and there is glut in the market during the harvesting season which reduces the local price. Whole sale trading of brooms is a highly monopolized activity. Major portion of income goes to the traders and middlemen. The farmer gets very meagre amount i.e., about 35 per cent of the retailers price. Further, its demand in the area of production is very less as other alternatives of brooms are also available locally. Therefore, to improve the economy of people and region, the system of cooperative marketing needs to be developed. The Forest Corporation can play a good role in this venture.

More than 250 million households in India use brooms made of natural grass to sweep floors. Each household uses 3.3 brooms per year. These brooms tend to lose grass seeds, causing fine particles itself.

Brooms were often used in matrimony rituals to symbolize a union. Enslaved African-Americans married one another in a civil ceremony referred to as “jumping the broom” in which the couple would literally jump over a broom to signify matrimony. Today, African-Americans occasionally recreate this custom by jumping over a broom at weddings, using specially handmade and decorated brooms for this purpose. These brooms then become a centre piece within the new household.

Broom is a unique gift, an eco-friendly product that brings the rural and urban communities closer to nature from the start of each day as one cleans the floor with broom grass every morning. Cultivation of broom grass is comparatively easy and requires only small financial inputs. So, this has many advantageous for the cultivators because most of the cultivators belong to the poor family. Broom grass cultivation has the potential to generate local employment and can be used to enhance income.

1.2 BROOMS IN MIZORAM

Broom is an important minor forest produce that grows in the wild area of Mizoram. It is an important non-timber forest resource. The cultivation of broom is a good profitable enterprise. It is a perennial, high value, non-perishable cash crop and has great economic potentialities in the economy especially in hilly areas.

There are three varieties of broomstick in Mizoram. They are:

i)Phiahpui

ii)Phiahfang

iii)Phiahthir

Mizoram Forest Produce Marketing Agency (MIFMA) purchases broomsticks at Vairengte on the Mizoram-Assam border and in turn sold to Shree Shyam Trading Company, New Delhi and the North East Regional Marketing Corporation, Govt. of India Enterprise, Guwahati. According to MIFMA, Rs.3 crores has already been used to purchase these broomsticks and some families have received incomes of up to Rs.3 lakhs from their sales.

Awareness campaigns have been carried out in different villages from time to time covering different subjects like replacement of shifting cultivation with Broom Grass Cultivation, imparting training to farmers the art of broom grass cultivation, harvesting, drying, sorting, grading and packaging of broom sticks. MIFMA obtained permission from the Government of Mizoram for collection of broom sticks from all the eight Forest Divisions in 2006-07, 2007-08, and 2008-09.The broom sticks collected by villagers from the forest were helped sold to buyers from outside the state. MIFMA had a tie up with different companies such as Vibhava Industries of Karnataka, Shri Shyam Trading Company of Delhi, Gala Brushes Limited of Mumbai, Brahmaputra Brooms of Guwahati and NERAMAC (Government of India Undertaking). It encourages farmers to give up their traditional farming system of shifting cultivation and

start broom grass plantation. Response from farmers is overwhelming. MIFMA has identified sites for construction of storage and go-downs at various locations in the state and the State Government have been approached for free allotment of these sites free of cost.

Aizawl Press Club today played host to the signing of a memorandum of understanding between Mizoram Forest Produce Marketing Agency and Hubli-based Vibhava Industries for sale of hill broomsticks. Mizoram has a potential of harvesting 7,000 quintals of dry broomsticks every year. At present the forest department gives land on *mahaldari* (contract) system to the highest bidder, mostly comprising people from the plains of Cachar.

Mizoram Intodelh Project Marketing, Director Lalnghinglova, who was present during the signing of the MoU, said that after much speculation the state government had come up with the idea of creating a marketing agency that could sell forest produce to companies.

T. Lalthlengliana, chairman of the marketing agency said the agreement would prove to be a boon for rural farmers. ‘The farmers will earn a good margin of profit by selling the broomsticks to the agency, which will, in turn, sell them to private companies’ he said. At present, the state forest department earns less than Rs 10 lakhs from the broom mahals it has in its 10 divisions.

Lalthlengliana said farmers in the state are now turning to the cultivation of broomsticks as it is more profitable than cultivation of vegetables and rice. The MoU lies down that Vabhava Industries would impart training on grading,

packaging, drying and collection of broomsticks while the marketing agency would take care of the collection, grading and transportation, the cost of which would be borne by the Karnataka Company.

The farmers of the North-east, the traders and the middlemen are part of an industry that poses a huge business opportunity. It continues to define the lives of a large segment of India, as they learn to recognize its benefits not only for themselves and their customers, but for the environment as well.

Meghalaya roughly produces 30,000 metric tonnes of brooms, while Assam produces 20,000 metric tonnes. Nagaland produces 25,000 metric tonnes, Mizoram 15,000 metric tonnes, Arunachal Pradesh and Sikkim roughly accounts for 10,000 metric tonnes and 25,000 metric tonnes respectively.

Organised trade is taking place in Meghalaya and Mizoram. In Mizoram, state government's flagship programme New Land Use Policy is opening marketing channels for the broom industry. Mizoram government has formed monitoring cell under this policy to monitor the progress and market of the broomstick.

Hnam Chhantu Pawl, major broomsticks manufacturer in Mizoram has entered into an agreement with exporters from Delhi, Bihar, Maharashtra, Punjab and UK. Farmers in Mizoram have sent consignment of 40,000 broomsticks to Russia in 2011. Over 3583 farmer's households are involved in this sector in Mizoram alone.

Hnam Chhantu Pawl has made formal agreements with exporters from Delhi, Bihar, Maharashtra, Punjab and UK. “Each exporter would need at least one truckload of broomsticks per month”, the source said. Mizoram have brooms, which are natural grass in the hilly state, in abundance. Expert said that brooms found in Mizoram are in great demand in the international market. Mizoram made the first major broomsticks export when a consignment of 40,000 broomsticks was sent off to Russia in the early 2011. The market was facilitated by monitoring cell under the state government’s flagship programme New Land Use Policy.

Mizoram Broom Industry Ltd has already tied up with five companies to market the Mizoram-produced broomsticks. But the industry is yet unable to meet the companies demand. Broom cultivation is the most opted trade under the NLUP soil and water conservation sector. In Serchhip district, 265 families are engaged in broom cultivation and produced 293 quintals of brooms in 2011. “We are hopeful that the annual product would double this year” an official in Soil and Water Conservation Department said. Kolasib district in northern Mizoram, which has the largest number of families doing broom cultivation, has produced 5428 quintals of broomsticks, 3918.19 quintals in green form and 1510.67 in dry form. As many as 965 families in 43 villages in Kolasib district are engaged in broom cultivation which has the largest number of families doing broom cultivation, has produced 5428 quintals of broomsticks, 3918.19 quintals in green form and 1510.67 in dry form. Under broom cultivation, value of broomstick production has gone up from Rs. 37 lakhs in 2009-10 to Rs.

14.26 crore by 2013-14. Increase in the income of broom grass farmers have gone up by 75 per cent as compared to pre commencement of NLUP.

Many Truck loads of broom are being transported yearly to other parts of the country which is very costly & in great in demand. Surprisingly, no cultivation has yet been taken up commercially. Though, it gives a good return with minimum efforts. The farmers are not aware of its multipurpose uses. Its penicle portion only i.e., broom is collected from the jungle and used by every household. In recent advancement, the plant has been identified as a potential multipurpose grass for agro-forestry specially for checking the soil erosion. In modern farming, it can be fitted best as a great barrier for soil erosion than any other crop. All degraded, wasteland or spaces between orchard can be utilizes for potential and profitable broom grass cultivation.

1.3 ROLE PLAYED BY HNAM CHHANTU PAWL

Hnam Chhantu Pawl, an NGO, was formed on the 3rd March, 1994 by 6 members with R. Lalhmangaiha being the founder President. It was registered under Firms and Societies Registration Act, 1976 in the year 1995. This organisation has its headquarters in Electric veng, Aizawl, and its main workshop at Republic Veng, Aizawl. Presently, it has more than 500 members across the state. The main objective of this organisation is to train the local unemployed youth for self-employment through broomstick making, fibre

processing, cane and bamboo works, and other handicraft items. The product of these trained youths would be bought by the organisation, if they do not find market for their produce. It had also imparted training to more than 3000 local youths till date.

Before Hnam Chhantu Pawl entered the marketing of brooms, the entire broom market in the state was at the hands of few license holders (issued by the government) who outsourced the task to non-local commission agents. The system was found unprofitable for the producers as the prices were controlled by a network of few traders. To counteract the pricing monopoly power of these traders, Hnam Chhantu Pawl decided to step into the business of broom marketing in 1998 and has continued till date. Before, the existing market price was Rs. 3 per Kg; but when the Hnam Chhantu Pawl bid the prevailing price by offering Rs. 6 per Kg, the market price abruptly increased to Rs. 9 per Kg. This clearly indicates the role of this organisation in protecting poor farmers from price fluctuations.

Hnam Chhantu Pawl has opened 10 collection centres throughout the state, where the farmers can sell their produce instead of transporting it to the headquarters for further processing. It charges a uniform price, i.e., Rs. 40 per Kg (2103-14), in all these collection centres. As mentioned earlier, one of the main objectives of this organisation is to give training to unemployed youths for self employment in making broomstick and other products of broom. These trained youths operate the collection centres and do the needful, like drying, cleaning, etc., before sending the produce to the headquarters in semi-

processed forms. The commodity received in semi-processed form from these collection centres would further be processed by grading, weighing, packaging, and binding/wrapping with plastic in the main workshop of the organisation. Having done all these processes of value addition, the final products are collected by agents of wholesalers from outside the state like Delhi, Mumbai, Rajasthan, and Guwahati. It was stated that these agents are ready to come at any time when there is enough stock of broomsticks and other products. According to a reliable source, wholesalers dealing in Mumbai and Rajasthan are exporting the products they purchased from Mizoram to other countries like Iran, Afghanistan, etc.

1.4 SIGNIFICANCE AND SCOPE OF THE STUDY

Hill broom making is a source of livelihood for large number of tribal community. Economics are worked out based on average costs and these may vary moderately from location to location and required to be modified. Prime Minister Narendra Modi's launch of the Swachh Bharat Abhiyan has evolved much posing with brooms. There is a great demand of brooms from other states of India as well as from the international. But, till today, the production of broomstick in Mizoram could not meet even the immediate demand for broomsticks. Therefore, to improve economy of the people in the state and region, the system of cooperative marketing needs to be developed.

Any individual can initiate broom production from any location considering the availability of the raw materials. Broom plants are the natural vegetation of Mizoram. Most of the producers used it as their main occupation. This has helped many farmers in increasing their income yearly. Broom is used in every household and public place in Mizoram as well as outside Mizoram as a means of maintaining cleanliness.

Project can be initiated as small scale basis. In this study, it is attempted to analyse that before getting into broom marketing, it is important to craft a business plan. First thing we need to decide is the product. What exact type of broom we will be producing. Decide whether we will purchase broomsticks as raw material or we will produce that also at our premise and to determine our business objective and marketing strategy.

Aizawl district is one of the eight districts of Mizoram state in India. The district is bounded on the north by Kolasib district, on the west by Mamit district, on the south by Serchhip district and on the east by Champhai district. The district occupies an area of 3,576.31 square kilometres (1,380.82 sq. mi). According to the 2011 census, Aizawl district has a population of 404,054. This gives it a ranking of 557th in India (out of a total of 640). The district has a population density of 113 inhabitants per square kilometre (290/sq. mi). Its population growth rate over the decade of 2001-2011 was 24.07 per cent. Aizawl has a sex ratio of 1009 females for every 1000 males and a literacy rate of 98.5 per cent.

Since the proportion of person engaged in broom cultivation is negligible, despite it plays an important role to generate income and employment. With keeping in mind about the contribution of broom cultivation, the study is therefore confined to the role and performances of such cultivation. The research was concentrated in Aizawl district only due to various limitations for the study.

1.5 OBJECTIVES OF THE STUDY

1. To examine the existing market for brooms in Mizoram.
2. To evaluate the role of government in broom marketing in Aizawl District.
3. To identify the problems faced by the broom growers and to suggest measures to solve the problems.

1.6 HYPOTHESES

1. Output of brooms depends on the number of workers and the size of holdings.
2. Broom cultivation has a good potential for promoting the standard of living for the farmers.

1.7 RESEARCH METHODOLOGY

The study was to examine the importance of farmer's role in the contribution of economic growth in Mizoram and to examine the role played by the government in the export system of the product.

The study was based on primary data only, which was collected from different broom cultivators in Aizawl district. Data consists of purposively collected sample of 50 households who were participated in cultivation of broom. The study was conducted through questionnaires and discussions, which were filled by the surveyor. The structure of questionnaire was formed to know information about their marketing process and income pattern of the farmers. The collected data was analysed by employing appropriate statistical techniques.

1.8 TENTATIVE CHAPTERISATION

Chapter I : Introduction

Chapter II : Review of Literature

Chapter III : Overview on the situational broom market

Chapter IV : Broom marketing in Aizawl District : An empirical analysis

Chapter V : Findings, Suggestions and Conclusion

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CHAPTER 2

REVIEW OF LITERATURE

2.1 INTRODUCTION

Some literature has been reviewed to get knowledge of how they studied about brooms, the importance of using and the possibility of earning livelihood. Most of the reviewed study demonstrated that broom cultivation has been commonly practised in north east India. Many of them are using for their source of earning income and knew much better the profit of cultivating broom. As it has many advantageous for earning income, they had been practising more widely. Some of the available literatures are as follows.

2.2 REVIEWED LITERATURES

Bisht et.al (1998) states that brooms are required in each house, therefore, it has sufficient demand throughout the country and marketing is not a problem. The majority of the production is from subsistence farming areas and dispersed collection from the forest, which are inaccessible to transport networks and markets. It is a high volume crop and there is glut in the market during the harvesting season which reduces the local price. Wholesale trading of brooms is a highly monopolized activity. Major portion of income goes to the traders and middlemen. The farmer gets very meagre amount i.e., about 35 per cent of the retailers price. Further, its demand in the area of production is very less as other alternatives of brooms are also available locally. Therefore, to improve the economy of people and region, the system

of cooperative marketing needs to be developed. The Forest Corporation can play a good role in this venture.[1]

Shankar et.al (2001) mentioned that broom grass (Thysanolaena maxima) is a perennial, high value, non-perishable Non-Timber Forest Product (NTFP) that can grow on degraded, steep or marginal land. A multipurpose crop, only its panicle is used for making brooms. Farmers use its stem as a building material or as fuel and fodder, for mulching or staking crops or sell it to the paper pulp industry. The leaves and tender shoots are used as fodder in times of scarcity. Cultivation of broom grass on marginal lands unsuitable for food production can generate additional household income. Broom grass farming can be part of an agro forestry system to regenerate degraded land. In India and Nepal, the market for brooms is well established with a high demand. Its non-perishable nature makes broom grass a suitable cash crop in areas which is not well connected to markets. However, farmers interested in broom grass farming have to consider the availability of transportation to take the bulky brooms to the market. Initial investment cost is that of the broom grass slips. Farmers can source slips from earlier plantations. Variable cost is that of labour. On steep land, in the first year, 135 person-days at NPR 200 ($2.27) each person day are needed, for a total variable cost of NPR 27,000 ($306.32). In subsequent years, 95 person-days at NPR 19,000 ($215.56) are needed for maintenance, harvest and bundling the brooms. Cultivation of 1 ha of broom grass produces 450 brooms in the first year and 3,619 brooms in the fourth year, in one season,

[1] Bisht N.S. & S.P Ahlawat (1998), 'Broom Grass', State Forest Research Institute, Department of Environment and Forests, Government of Arunachal Pradesh.

which sell for NPR 42 ($ 0.48) each. Gross agricultural margin averaged over a period of four years is NPR 25,500 ($289.30) per ha. Rate of return per day worked is NPR 189 ($2.14).[2]

Sanders (2004) in his article state that for many U.S. manufacturers of brooms, brushes and mops, that prospect isn't at all appealing. Products — especially mops — imported from exotic locales such as Indonesia, China and Sri Lanka are making competitive conditions increasingly difficult for U.S. manufacturers. And while non-U.S.-made products have had a presence in North America for years, manufacturers told Sanitary Maintenance that the inroads these products are making are having a greater impact on the overall market than ever before. But with little in the way of recognized industry standards in place for quality or labelling, the brooms, brushes and mops markets have become a virtual free-for-all. Imported goods are affecting every broom, brush and mop manufacturer. The push by U.S. manufacturers to differentiate their products from foreign goods is not the only market trend apparent in the broom, brush and mop industry today. Manufacturers are also contending with a number of trends, attempting to make sense of how they will affect their businesses. Broom, brush and mop manufacturers are under great pressure. Inflationary increases have hit manufacturing hard in recent months;

[2] Shankar, U., et.al (2001), 'Ecology and economics of domestication of non-timber forest products: an illustration of broomgrass in Darjeeling Himalaya. Journal of Tropical Forest Science, vol. 13, No. 1, pp. 171-191, p. 174.

the cost of raw materials - gas and cotton, for example - has seen a recent price hike, and the effects of the recession are residual.[3]

Dogan et.al (2008) states that 19 plant taxa belonging to 12 different families were used as brooms in the five countries i.e. Bulgaria, Turkey, Azerbaijan, Saudi Arabia and Yemen. Among these species, Sorghum bicolor (broomcorn) was determined to be used extensively by municipal authorities for sweeping streets (Bulgaria) and by individuals for houses (Turkey and Azerbaijan). Erica sp. (tree heath) is commonly preferred by municipal authorities for sweeping streets in many areas of Turkey. Asteraceae is the largest family, represented by five species used as brooms. It is followed by Plumbaginaceae and by Poaceae with two species.[4]

Rintluanga (2009) state that the vast area under forest cover comprises valuable flora and fauna. More than 400 medicinal plants and 22 species of bamboo have been reported to exist. The important forest produce of Mizoram, mostly in the form of raw materials, are bamboo, timber, firewood, sun grass, canes and broomsticks. The total forest produce during 2005-2006 was valued Rs 257.97 crores. Broomsticks grows wild in Mizoram become an important revenue source of Mizoram, and presently domesticated.[5]

[3] Sanders, Seiche (2004), 'Are imported brooms, brushes and brooms lowering the bar?'
[4] Dogan, Yunus et.al (2008) 'Plant taxa used as brooms in several southeast European and west Asian countries'.
[5] Pachuau, Rintluanga (2009), 'A study in Comprehensive Geography', Northern Book Centre, New Delhi.

Uma, Shankar et.al. (2011) states that extraction of non-timber forests produce (NTFPs) is an effective conservation strategy to safeguard biological diversity while enhancing rural income. However, excessive harvests may lead to the extinction of species populations or alternatively domestication by the rural people. Domestication is likely to be facilitated if the species is adaptable, market demand is greater than the production in natural populations, profitably from cultivation is high, and there are not many job opportunities or sufficient agricultural landholdings with the forests dwellers. Owing to these circumstances, broom grass has been domesticated in Darjeeling, Himalaya. It promotes a sustainable use of fragile and easily degradable lands, provides fuel wood and fodder during lean periods and generates income from its infructescence, commonly used as broomstick. Broomstick plantation has a cycle of about six years in which five annual harvests are taken. Broomstick yield in terms of number of culms, dry matter and length of culms rises up to the third harvest and declines thereafter.[6]

Kuntala et.al (2011) in their study revealed that in North eastern hilly region, about 25,6083 sq. km. area (altogether 33 districts) was affected by jhum which on account for 7.76 per cent of the country's total geographical area. With the increasing ecological awareness, plantations have been emphasized for the reclamation of degraded lands. Planting of non timber forest produce (NTFP) can be a means of sustainable land management for reclamation of such land.

[6] Uma, Shankar et.al (2011), 'Ecology and Economics of Domestication of Non-Timber Forests Products: An Illustration of Broom Grass in Darjeeling Himalaya' Journal of Tropical Forest Science 13(1):171-191 (2001).

Broom grass (Thysanolaena maxima) is one of such NTFP species that are directly useful to the mankind and can form the basis of economic upliftment of rural areas where land degradation and depletion of forest wealth takes place at a faster pace. This grass is considered as multipurpose, non-perishable cash crop that can withstand in harsh environmental conditions and can grow in steep rocky mountain slopes, shallow soil, drought and high rainfall conditions. The yield of broom mainly depends upon the quality of planting material, type of land and cultural practices adopted. They stated by following the appropriate strategy to enhance the productivity. The cultivation of this grass can wean away the practice of shifting cultivation and reduce the dependence of people on forests.

A field experiment was conducted during the period of 2006-09 in Deohari Rangpi Village, Nilip Block and Raising Rangpi village, Rongmongwae block of Karbi Anglong district, Assam. Progressive height of the seedlings of T. maxima was recorded from April, 2007 to January, 2009 for two consecutive years. In both the year of cultivation maximum value of height was recorded in selected individuals (126.4m and 121.4m). Growth was observed significantly less in 1m spacing than the other two spacing regime. Better performance of growth was recorded in plots situated in Deohari Rangpi village as compared to Raising Rongpi village. Present investigation revealed highest performance of yield in 2m spacing (36.40 kg) trial of followed by 2.5m spacing (35.04 kg). Performance of selected individual was recorded better while least value of yield was observed in locally available individuals. Total return of Rs.9110/-

was found in the site Deohari Rangpi village and Rs.8200/- in Raising Rangpi village. Study revealed that a profit of Rs 8873/- was found in cultivation of selected varieties of broom grass. Comparatively more fertile soil in Deohari Rongpi Village may be the reason for better growth of the crop.

Broom grass is a suitable non timber forest produce for the tropical low hills of North East India where land degradation and depletion of forest wealth takes place at a faster pace. This multipurpose grass is indeed a handy species which can thrive in wider and harsher conditions, check soil erosion sustain land management and can be used as a tool for reclamation of degraded jhum land.[7]

Lowder (2012) mention in his article that household cleanliness begins and ends at the tips of a brooms fibres, whether they're natural or synthetic. A good, stiff bundle of stick and straw can make equally easy work of a crumb-strewn kitchen or a porch sagging with the weight of autumn leaves. Modern broom making truly began, however, with the rise in cultivation of a previously underappreciated crop that would soon be called 'broomcorn'. A species of tasselled grass (sorghum vulgare) that somewhat resembles the sweet corn plant, broomcorn's seeds and fibres had previously been used for animal feed and not much else.[8]

Kallungal (2012) in his article state that in Kerala, women themselves were engaged in making broomsticks at their homes during leisure time by trimming

[7] Kuntala et.al (2011), 'Sustainable Management of Degraded Jhum Fallow Through Plantation of Thysanolaena Maxima (ROXB.) O. KTZE (BROOM GRASS) in Different Spacing Trial', Vol. 4, No. (1 & 2), 2011 Rain Forest Research Institute, Jorhat.
[8] Lowder, J.Bryan (2012), 'How the Broom Became Flat, A History of the Study Household Essential'.

coconut twigs and tying them using a dry frond of the coconut tree. But the outbreak of various diseases and attack from pests like red palm weevil and rhinoceros beetles which feed on the young unopened fronds in the central crown of the palm and tender coconut leaves, had held back the women and cottage industries from making broomsticks from the locally grown coconut twigs. There is a huge demand for the traditional coconut broomsticks among the housewives in rural and urban areas in Kerala. Now, women do not have enough time to devote themselves to work of this kind. Also, getting good quality coconut twigs is not an easy task in Kerala compared to Tamil Nadu, where fine quality and durable raw materials are available in the coconut farms and broomstick-making is a cottage industry there in Kerala.[9]

Sanjib (2012) in his article state that broom has a comparative advantage of tolerance to harsh environmental conditions such as steep rocky mountain slopes, shallow soil, drought and high rainfall conditions. It is suitable to grow on waste lands, jhum fallow land, as well as in homesteads. It is a multipurpose crop, the inflorescence is used as Brooms and stems are used as wall building materials. The fibrous root system of the plant is useful in checking soil erosion on steep slopes.[10]

Jose E.M (2012) in his article state that the booming broomsticks industry in Meghalaya is yet to get the agriculture produce tag although broom grass, the raw material, is grown in plenty in all parts of Meghalaya and large quantities

[9] Kallungal, Dhinesh (2012), 'TN Broomsticks 'sweeping' Kerala market', The Indian Express.
[10] Sanjib (2012), 'The broom grass-a profitable cash crop for north east India' Humpty Dumpty.in.

of the brooms find their way into markets of Assam and other Northeast states. The total annual production of broomsticks in Meghalaya is 40,000 metric tonnes. While some are sold in the domestic markets, others are in great demand in other north eastern states. But the agriculture department is not keen on developing the industry as broom grass prevents the growth of other plants and affects the ecology. Broomsticks have been grown under various social forestry schemes in the past through efforts of the social forestry wing of the forest department. The stand of the Meghalaya forest department is that even if broom grass is grown on people's land, it will still be considered forest produce. This prevents the sale of broomsticks in an organised way like other agriculture produce, thereby affecting cultivation of broom grass by the farmers. Moreover, for growing the grass, the farmers have to stop cultivating other agriculture and horticulture items.[11]

Konwar (2013) state that broom grass has emerged as the most widely cultivated cash crop in the hills of the Assamese district. Commonly known as *Jharu*, it is grown in the Jhum fallow by people of the Tiwa, Karbi and Khasi communities as a mixed crop for its inflorescences — groups or clusters of flowers — that are used for making brooms. It also provides fuel and fodder during the lean period every year. Broom grass is a unique gift, an eco-friendly product that brings us closer to nature at the start of each day.[12]

[11] Jose, E.M. (2012), 'Agri tag eludes broom industry', The Telegraph.
[12] Konwar, Ritu Raj (2013), 'Sweeping the Hillside', The Hindu.

Singh et.al (2013) in their article states that broom grass is an important minor forest produce of Meghalaya grows in the wild in almost all parts of the state. Whole sale trading of brooms was a highly monopolized activity. Major portion (65 per cent) of consumers' price goes to the traders and middlemen. The price fixation of the produce should be carried out through open auction method. At present maximum share of produce directly taken by commission agent. Therefore, to improve economy of the people in the state and region, the system of cooperative marketing needs to be developed.[13]

Rasingam L. et.al (2013) states that each region and community has their unique techniques and choice of species in the manufacture of household implements. Brooms are one of the highly used tools in a household and exist in many forms. They may be soft and hard brooms, big and small brooms, which are made depending on the specific requirements and also the available resources. According to their use, different names are given to them (yard broom, small broom, threshing floor broom etc). Large quantities of brooms are used in India annually and most are made of grasses, palms and bamboos. Broom making is an important forestry enterprise in several parts of the country and also an important source of income and provide rural employment to local communities.[14]

[13] Singh, Ram et.al (3013), 'Minor Forest Produce and Marketing: A Case Study of Broom Grass in Meghalaya.

[14] Rasingam L. et.al (2013), Indigenous brooms used by the aboriginal inhabitants of Nilgiri Biosphere Reserve, Western Ghats, India.

Prakash (2013) state that Meghalaya is a home to a population of 2,306,069 inhabitants (census 2001) with about 5780 villages. The people in Meghalaya find their source of livelihood in agriculture and allied activities. The broom plant is a major forest-based resource for the farmers here and is distributed widely throughout the state of Meghalaya. It is commonly found on the hills, damp steep banks along ravines and on sandy banks of the rivers. Set in a hilly landscape, Meghalaya is divided into 7 districts – East Khasi Hills, West Khasi Hills, East Garo Hills, West Garo Hills, South Garo Hills, Ri Bhoi, and Jaintia Hills. The biggest advantage for the farmers in Meghalaya is the cultivation of broom-grass which is easy and requires less financial investment. Broom grass grown in the hills is made available to traders in a nursery at Karbi Anglong district of Assam, which are sent to Guwahati by small companies. Usually traders purchase the produce only between February-April. A bundle of 1 kilogram of broomsticks contains about 3-4 sticks and costs Rs.20-22. In the off season, the same is sold for Rs.30-40. To the small and marginalized farmers broom cultivation is an economic activity that sustains their seasonal livelihoods.

Marketing broom grass is easy since Meghalaya offers a vast linkage of all the villages to the wider regional or national market through their local market. In the months of December, January and February these local markets are flooded with broom sticks and the middlemen are the potential buyers. Earlier there used to be no fixed price and it was dependent completely on the price quoted

by the middlemen. Now that the market has developed, a stronger framework is used.[15]

Ghosh (2013) states that bamboo and broom grass cultivation as alternative of other forest based plantations changes the lives of Jhumias in rural areas of Tripura through the Centre for Forest Based Livelihoods and Extension (CFLE) of Agartala. CFLE under the banner of Indian Council of Forestry Research and Education (ICFRE) has initiated a comprehensive plan to boost broom grass plantation in some selected hilly area of Tripura.

CFLE's Regional Director Pawan Kumar Kaushik encouraged farmers to take to planting of Broom Grass and 'Arhar' plants under Agro-forestry model on a large scale and add value to their finished products. The Centre for Forest-based Livelihood and Extension (CFLE) at Gandhigram in Agartala has begun supplying mother plants of various important species for homestead nurseries and issuing bamboo treatment machines for establishment of Demo Centres in two village clusters.

Giving details of the broom grass plantations in Tripura Pawan Kumar Kaushik said, about 2500 plants can be planted in a hector of land and minimum of 1 kg flowers is expected from one plant of broom grass after 10 months without application of any fertilizers. He said, three broom or 'phul-jhadu' are made from 1 kg flowers and every 'Jharu' are selling in the market at a cost of Rs 25 including other materials like plastic bar and lazes.

[15] Prakash, Bhanu (2013), 'The Broom Broom Enterprise', Enterprise Travelogue.

Being in a row of systematic plantation, broom flowers are harvested easily. The data collected from the fields reveal that the efficiency in collection increases by three times in comparison of collection from wild scattered plants, said Kaushik. CFLE observed that harvesting by plucking is harmful and suggested the farmers to cut from the ground level to facilitate emergence of new tillers in adequate manner. The base of the tillers so collected will replace the bamboo pieces used to strengthen handle of brooms. Presently, they use 1.5 tonnes of bamboo to supply one truck of brooms. This may reduce the transportation cost also as a result of decrease in weight and volume. About 1600 plants of 'Arhar' (Arul) per ha are intercropped with Broom Grass and the farmers get 700 gm pulse per plant, which yields income of Rs 40 per plant. In Tripura, it has been spread all over the state and the density of its occurrence varies with the topography. Broom grass commonly found on the slopes of hills especially grows well in the rocky structure, in the damp steep banks along ravines and on sandy banks of the rivers.

Broom grass yields at least 25 to 30 years, Productivity increases till 5th year and then becomes constant for 10 to 15 years. The green manuring through intercropping 'Arhar' may maintain the productivity for a longer period and may extend till 25 years. A farmer easily gets Rs 1.5 lakhs in a year through the plantation of broom grass along with plantations of 'Arhar' plants, said Atanu Saha, Deputy Conservator of Forests (DCF). [16]

[16] Ghosh, Subrata (2013), 'Earning Livelihood Through Inter-Cropping Broom-Grass With Arhar'.

Kaiser (2013) state that the U.S. demand for broomcorn has declined with the rise in sales of synthetic brooms. About half of the current national need for broomcorn is being met by imports from Mexico, another key factor contributing to the decline in domestic acreages. It may not be possible for Kentucky growers to compete with broomcorn wholesalers; however, there are still a number of artisans and craftsmen who pride themselves in making quality brooms by hand. These entrepreneurs, many of whom use imported broomcorn, may be interested in a readily available local supply. As with any specialty product, it is best to identify a market before planting the crop. [17]

Vikram (2014) in his article highlight that different brooms are made and used by different communities, like grass brooms by Banjaras and bamboo brooms by Harijans. They are made from a wide variety of materials, like grasses, reeds, date palm and coconut leaves, some local, some transported from across India. Brooms are big business, with huge volumes sold every and possibly major money made by a few businessmen. Yet the actual brooms are still mostly handmade, by families who do it for basic sustenance, and with women doing much of the work. Broom grass was a perfect environmentally sustainable supplementary crop for villagers and the forest department took samples to trade fairs outside the state to develop interest. Broom grass cultivation has succeeded to the point where conflict may be developing about its future. Some Meghalaya legislators want it given an agri-product label which will enable it

[17] Kaiser, Cheryl & Matt Ernst (2013), 'Broomcorn', Cooperative Extension Service, University of Kentucky College of Agriculture, Food and Environment.

to get agricultural subsidies. But the department is apparently loath to let go of a product it feels it has developed and which should come under its control.[18]

Singh (2014) in his article state that Northeast India owing to its favourable climatic conditions is the single largest producer of broom in the country. The demand for broom is increasing following growing the craze of the clean India mission. The broom industry of the Northeast India is over Rs 100 Crore. Government owned North Eastern Regional Agricultural Marketing Corporation Limited (Neramac) is flooded with inquiries from buyers from different cities of India including Delhi, Lucknow and Mumbai. NERAMAC which procures broom sticks from farmers of the Northeast India sells roughly 100 to 200 tones every year. However in recent tender they have put 60 MT of open broom and over 1.5 lakhs finished broom for sale.[19]

Kaushik et.al (2014) states that Thysanolaena maxima (Broom grass) is a tall, perennial rhizomatous, tufted grass has solid, smooth and rounded culms with huge and drooping inflorescence. In Indian northeast region, it is considered as multipurpose, non-perishable cash crop. The mature inflorescence of T. maxima is used for making brooms that has sufficient demand in each and every household throughout India. Beside brooms, it is used as fuel, fodder, raw material in paper industry and in the construction of traditional houses. This non-timber forest produce species has a very good potential in generating

[18] Vikram, Doctor (2014), 'Brooms in Highlight: Tracing the History of a hand-made tool that will remain a part of our lives', The Economic Times.
[19] Singh, Bikash (2014), 'Narendra Modi's Swachh Bharatweapon "Broom" comes from north east India'. The Economic Times.

local employment and can turn into a profitable enterprise, with a potential to enhance rural income with minimum efforts and management. The grass can be successfully grown in the hilly tracts even in the degraded jhum fallow lands in the region. It is a multipurpose species which provides brooms, fuel, and fodder and has high soil conservation value. The brooms made out of this grass are more durable than other plants such as Cocos nucifera and Phragmites species. Its cultivation can also promote the sustainable use of fragile and degraded lands. The productivity of grass depends on quality of planting material. Broom grass substantially reduces water runoff and soil loss from degraded land. Cultivation of broom grass on degraded jhum fallow has good prospect to arrest environmental degradation. In view of its multiple uses, high economic returns with minimum input and availability of large area under abandoned jhum lands, its cultivation will uplift the socio-economic conditions of jhumias and other rural communities in North East Region.[20]

Gyamtsho (2014) studied the area of southern Bhutan. He studied a group of three villages named Rateypani under Gakidling Gewog of Sarpang Dzongkhag and is a home to 450 people. Their source of livelihood is mainly from agriculture and other cash crops. Broom grass from the forest is an alternative source of income to the farmers of this community. To exploit the economic potential of this grass, a group of 38 households came together for sustainable management and marketing of broom grass from the village of Kalikhola, Rateypani and Dauty. The group planned to sell broom grass

[20] Kaushik, P.K et.al (2014), ''A Viable Model for Broom Grass Cultivation and Management in Tripura'.

collectively to interested traders, or export to neighbouring towns outside the country.

The group sought the support of the Rural Livelihood Project, supported by HELVETAS Swiss Intercooperation. The proposal was accepted through the project's support for "Rural Development Initiatives". These are initiatives that contribute towards increasing household income and can be technology interventions, enterprise development ideas or small scale infrastructure support. A resource assessment was carried out and found that 10.85 acres of private land was under broom grass cultivation by the 38 households.

2,376 bundles of soft broom were displayed at the collection point by the group members of three villages. In early 2014, an Indian traders based in the town (Sarpang bazaar) closest to the villages agreed on a maximum of Ngultrum 30 per bundle of broom. The brooms were sold to the trader who further exported them to India. The 38 households earned Nu. 0.69 million from the sale.

With the experience from the past year, the group planted about 122,000 seedlings on 15 acres of land. The income from this additional area will be about Nu.2.70 million by 2016. The community plans to use all the marginal land for broom grass plantation, and strengthen trade relation with existing Indian traders. At the same time, the group seeks to explore clients from districts beginning with Thimphu (capital) and Punaka and Wangdue.[21]

[21] Gyamtsho, Karma (2014), 'Broom Grass: A Source of Income', Geog Forestry Extention Officer, Gakidling Geog, Sarpang Dzongkhag.

Lapasam et.al (2015) highlights that Thysanolaena maxima is a wild grass cultivated by the farmers of Meghalaya. When the demand for broom increased, many erstwhile shifting cultivators got motivated to take up cultivation of this plant. In this paper, they report the findings of field experiments conducted to investigate the effect of plant density on growth and yield of T. maxima. The experiments were laid in Mynska village of Meghalaya and the study was conducted between July 2012 and February 2014 using Randomized Complete Block Design with four replicates and five spacing treatments. The study revealed that the growth and yield parameters are not impacted by plant density during the first year of its growth. During the second year, the effect of density on growth and yield became pronounced and 1.5x2.0 m spacing gave optimum number of tiller, tiller diameter, internodal length, leaf number, panicles number, harvest index and height and diameter of tussock. The yield of panicles was however maximum in the treatment 1.0x1.0 m spacing.

The study concludes that up to two time harvests 1.5x2.0 m spacing may be adopted if farmers are interested for green biomass (fodder). However, for optimum production of broom grass panicles (broom), 1.0x1.0 m spacing is most appropriate. Thysanolaena maxima (Roxb.) Kuntze (family popularly known as broom grass, is an important non forest product and grows in almost all parts of south and southeast Asia up to an elevation of 2000 m and climatic conditions ranging from tropical to subtropical. It grows wild in the hills of the north eastern India and in Darjeeling and Sikkim Himalayas. In the last two

decades, the demand for broom have increased manifold. This motivated many erstwhile shifting cultivators to take up cultivation of this plant, resulting into increased income. T. maxima are immensely important, both ecologically and economically for the hill dwellers of northeast India. It is a multipurpose species with its inflorescence (panicle) used for tying brooms, leaves and tender shoots for forage, and woody stem for fuel, paper pulp, reed-pens, mulch material and support sticks in crop fields for peas, beans and other trailing crops. Broom grass forms tussocks.[22]

Llewellyn (2015) states that broom grass are a significant source of income for subsistence communities, primarily for the women who collect it to manufacture and sell them as brooms across Nepal. In addition to providing cash income when sold as brooms the plant provides a variety of uses to the farmers such as, the leaves provide green forage for livestock, the roots promote soil conservation, and the dried up stems can be used as stakes to support growing vegetables. Broom grass has had a direct impact in preventing frequent landslides, helping retain ground moisture and fertility, and improving soil quality by reducing soil erosion. Broom grass has the ability to crowd out invasive species when intercropped and is beneficial in retaining soil nutrients to re-grow vegetation.

[22] Lapasam et.al (2015), 'Effect of Plant Density On Growth and Yield of Thysanolaena Maxima :An Important Non-Timber Forests Product of Meghalaya', International Journal of Current Research, Vol. 7, Issue, 07, pp.18193-18196, July, 2015.

Aditya Rabha explains why growing broom grass is so attractive. (Tadulkar 2016)[23] From 1 bigha he plans to extend his broom cultivation to three bighas. All we need to do, he says, is fence our fields and clean it. No other costs required. Fence, too, is only required to keep away cattle as broom grass is a delicacy for cattle. Being confined to paddy farming has its own ups and downs for farmers.

Climatic conditions favour the Northeast which roughly grows more than 125,000 tonnes of broom grass a year. The non-perishable and perennial plant panicle is harvested once in a year between January and March. From plucking, sun drying and packaging, all it requires is two weeks of labour. Yes, sunlight is the soul of harvested broom and cold weather or rain is the curse. Quality takes a plunge if harvested brooms are exposed to fog or water. The life span of quality broom is up to 15 months. Ali's group supplies about 50 tonnes every year to retailers in Delhi, Mumbai and Hyderabad.

Niveditha et.al (2015) have studied broom grass that is one of the among non-timber forests products gathered by the tribals of Srikakulam district, Andhra Pradesh. The study documented the process of making brooms and its economic viability. The study recommends cultivation of broom grass on a large scale as an effective source for income generation for tribals areas in Andhra Pradesh. Collection of the data was mainly based on interviews, interactions and field surveys undertaken in seven mandals (viz. Seethampeta, Kothuru, Bamini, Hiramandalam, Pathapatnam, Meliaputti and Mandasa) of

[23] Talukdar (2016), 'Sticking to the Broom', The Eastern Today.

the district during January 2014 to April 2015. The data on procurement quantity and price of the broom was obtained from the Girijan Co-operative Corporation Limited (GCCI, Vishakhapatnam) for the last 12 years. A total of 25,668 tribal households were involved in broom making with ST population of 1,10,331 in the study area. Monthly income due to broom making is about Rs. 9000 per month during the season, which varies depending on the individual's skill and seasonal climatic conditions. On an average, one person can make 20-30 brooms per day. They bundle about 30-40 brooms into a set and carry them on their head to a nearby shandy for sale. The brooms produced are procured by GCCI of the Srikakulam district for onward transport to local and non-local markets and may even be exported.

The private traders reach shandy points early to buy the brooms. If price is not fixed by the GCCI, private traders may procure it for very less price. GCCI is protecting the interest of the tribals by fixing a base price. If they receive a better price, they sell it to private traders, which is the main reason for fluctuation in the procurement quantity of the GCCI. The tribals are aware of the base price fixed by the GCCI officials such as shandy inspectors. From the data it is obvious that there is an increase in the quantity of brooms made and the price per broom. The cost of the broom declined during 2011-12 due to poor quality of brooms. The price fixed by the GCCI is considered base price but in practice brooms are often sold at a higher rate in shandies than what was fixed by GCCI.

The present study envisages and recommends the following three - i) broom grass cultivation in tribal areas to increase income with minimum output and labour ii) to develop mechanical tools to cut the terminal culms with panicles to make the culms into bundles, tying and packing and iii) minimum support price of GCCI should be increased rationally. Brooms are essential and continuous requirement in every house and hence cultivation of broom grass on marginal lands which are unsuitable for food production will enhance household income. [24]

Thanga L.T. James (2016) states that broom grass is found and grown on damp steep banks, sandy banks of rivers, and on the slope of hills. The topography of Mizoram is thus favourable for the cultivation of broom grass. Broom has emerged as one of the important produce because every household requires it. It enjoys substantial demand throughout the country and abroad. Moreover, as this commodity could be stored for a very long time, the producer can avail the benefits of temporal price variations and demand change.

In Mizoram, though broom grass is available throughout the state, they are relatively more abundant in the forest divisions of Kolasib, Kawrthah, and Darlawn. An interesting fact is that the price of broom grass is at most times higher in these forests divisions than in other divisions. The cultivation and harvesting of broom grass is controlled by the Divisional Forest Officer. There used to be a *mahaldari* system at work in the broom making avenue but was

[24] Niveditha, T M A and P Balarama Swamy Yadav (2015), 'Short Communication", Indian Journal of Natural Resources and Resources, Vol. 7(2), June 2016, pp. 181-184.

suspended in 2010 in hopes of attaining a more sustainable and profitable system of commercialising the state's forest resources. Moreover, in a step to protect the local farmers from exploitation, individuals from other states are denied harvesting permit. However, the local permit holders often sell their permits to other individuals mostly from other parts of the country. This has been reported to inhibit the local manufacturers in strive for a higher level of production and its subsequent profit.

There are two broad marketing channels in the state, viz. traditional marketing channel (like direct sale of the products, selling to commission agents, etc.) and emerging market channels (marketing through organised marketing institutions). Since the farmers themselves can make the final product for this commodity, i.e. broomstick, and can be stored by the farmers without any technical support, it can reach the consumer directly in its final form throughout the year. Broomstick marketing channels can be reclassified into traditional channel (Channel I and II) and emerging channels (Channel III and IV). The first two channels are in practice since long time; while the remaining two channels were instituted recently with the formation of facilitator agency in the state. While the emerging channel is running in an organised manner, the traditional channel does not. It should be noted that wild brooms also contribute a significant portion of market volume in the state. Accordingly,

farmers who collect wild brooms from the forests are also considered as producers since they are in first contact with the commodity. [25]

Patil P.V et.al states that brooms were domestically produced and hand-made of tree branches, brushes, etc. The broom was an important tool in keeping the living area clean. Unfortunately, dust and ashes are part of life and perfect brooms do not exist. But since ancient times people's ambition to create better and better brooms has brought rich experience of used plants and brooms. This knowledge was passed on from generation to generation and so came to us. For economic reasons, keeping cleanness in houses, areas around houses, farmyards, streets, etc. brooms are a daily necessity. Together with the use of technical instruments for cleaning streets and yards, brooms are still in use. In recent years brooms are made with polymer material and they are not used in traditional farming system in rural areas. The function of broom is to clean floor. While performing agricultural operations in threshing yard, the grains are separated from waste threshing material. Twigs with leaves are very useful for this operation. India has different tribal communities residing in remote places and using plant resources for broom making. Making a broom is more than a plain activity, it is an art. The observations gained on a broom plant are subsequently used in the production of eco-friendly and easily degradable form.[26]

[25] Thanga L.T. James (2016), 'Marketing of Agriculture and Allied Commodities in North East India *with special reference to Mizoram',* Anshah Publishing House, LG, Pankaj Central Market, I.P Ext., Patparganj, Delhi.

[26] Patil, P.V. et.al (2014), 'Traditional knowledge of broom preparation from Bhor and Mahad region of western Maharashtra, India'.

Prasad in his article state that broomstick grass grows wild in most hilly tracts of the Raygada district of Orissa. Tribal women, through Joint Forests Management forest protection committees, have protected this grass from grazing and fire and have obtained income by selling it. However, since the trade in broomstick grass has come under state control its collection and sale have been much reduced. While the women get 1.5 to 3 rupees per kilogram of broomstick grass, the company holding the monopoly (Utkal Forest Products Ltd) is making profits of as much as 600 percent (Prasad and Saxena, 1996; Agragamee, 1997). Reduced collection has also been observed for *T. chebula,* gums and mahua (*Madhuca latifolia*) flowers since these were taken under state monopoly. However, collection of *Buchananea lanzan* and *Chlorophytum tubersum* (safed musli) has increased, perhaps to the point of unsustainability, in response to high commercial demand (Bhatnagar and Bhavsar, 1988; Prasad and Bhatnagar, 1990, 1991).[27]

[27] Prasad, Ram 'Joint forest management in India and the Impact of state control over non wood forests products'.

CHAPTER 3

OVERVIEW ON THE SITUATIONAL BROOM MARKET

3.1 INTRODUCTION

The forest cover in the country is monitored at the interval of every two years by Forest Survey of India, Dehradun based on interpretation of Satellite Imageries. Though the state is rich in forests, it has very limited dense forests. As per National Forest Policy 1998, in the hills and in mountainous regions like Mizoram, the aim should be maintain two-third of the area under forest or tree cover in order to prevent soil erosion and land degradation and to ensure the stability of the fragile eco-system. As against this goal, at present notified forests (reserved/protected areas) constitute about 38 per cent of the geographical area and even most of these are open, degraded and subject to pressure of shifting cultivation, encroachments, fire, illicit felling etc.

Based on 'India State of Forest Report-2015' published by Forest Survey of India, Dehradun about 91.47 per cent of the state's total geographical area is covered under forests and tree cover. However, the forests have suffered serious depletion and degradation due to traditional practice of shifting cultivation, uncontrolled fire, unregulated felling etc. As per the "India State of Forests Report-2015" published by Forest Survey of India, the state has 12,752 sq.km open forests.

The consumption, management and consumption of wild plants are central aspects of traditional knowledge in many human communities. Among potential uses of plants, those related to medicine and foods have central importance because they are essential to human survival. Indigenous forest dwelling communities have accumulated a rich knowledge on the uses of

various wild forest resources and forests products over the centuries. Their dependence on nature has developed knowledge which ultimately reflects in their traditional culture, religion, belief and folklore.

For economic reasons, keeping cleanness in houses, areas around houses, farmyards, streets, etc. brooms are a daily necessity. Together with the use of technical instruments for cleaning streets and yards, brooms are still in use. Planting raw material and broom manufacture continue in present days. Non-wood forest products are important to Joint Forests Management efforts for a number of reasons. First, non wood forests products are integral to the lifestyle of forest-dependent communities. They fulfil basic requirements, provide gainful employment during lean periods and supplement incomes from agriculture and wage labour. Thus non wood forests products management has clear ecological, social and economic benefits. Managing forests for multiple products including non wood forests products and adding value to them at the local level are two of the most pressing challenges facing the joint forests management programme. In attempts to optimize the production of multiple products to meet the objectives of the various stakeholders, due attention should be paid to the potential for sustainable production of non forests products in forest management efforts, including joint forests management arrangements. The true spirit of joint forests management gets translated only when forests are also managed to meet the people's needs. Traditionally, the collection of non wood forests products has been of low intensity and generally sustainable. However, as the economic potential of non wood forests products

has become apparent, the intensity of collection has increased and more significant infrastructures for trade and processing have developed. This has raised concerns for the sustainability of the resources and the distribution of the benefits derived from them.

3.2 INTERNATIONAL MARKET

In some parts of the world, broom production is a very important source of earnings for poorer individuals. They earn most of their income from this occupation particularly the women of those households. Most plants used as brooms exhibit a natural distribution. After the collected mature plants have been made into brooms, they are either sold or used by the makers themselves.

In USA, broom corn was first grown in Hadley, Mass., in the 1790s by Levi Dickinson, although another farmer may have been growing it there as early as 1773. Dickinson began making and selling brooms made from the corn throughout the county, but for several decades the industry was small. In the mid-1820s, it took off, and by the 1860s broom production was a substantial part of rural agriculture in Hampshire and Franklin counties. These brooms were widely distributed: most of Deerfield's products in the 1830s, for example, were sold in New York City. But after the Civil War, superior quality broom corn from the Midwest cut into the Massachusetts market, and by the 1880s the industry was in steep decline and had basically disappeared by 1900. Broom corn was one of the many agricultural commodities of the 1800’s that

was widely sold and replaced locally made items. Prior to the broom corn industry, brooms were made from local materials, such as split birch twigs.

Broomcorn (*Sorghum vulgare* var. *technicum*) is a type of sorghum that is used for making brooms and whiskbrooms. It differs from other sorghums in that it produces heads with fibrous seed branches that may be as much as 36 inches long.

Although the origin of broomcorn is obscure, sorghum is apparently originated in central Africa. Production of this crop then spread to the Mediterranean, where people used long-branched sorghum panicles for making brooms in the Dark Ages. Broomcorn may have evolved as a result of repeated selection of seed from heads that had the longest panicle branches. The broomcorn plant was first described in Italy in the late 1500's. Benjamin Franklin is credited with introducing broomcorn to the United States in the early 1700's. Initially, broomcorn was grown only as a garden crop for use in the home. By 1834 commercial broomcorn production had spread to several states in the Northeast and started moving west. Illinois was the leading producer of broomcorn in the 1860's, but production of the crop in that state virtually ceased in 1967. Some production has occurred in Wisconsin since 1948.

Domestic broomcorn acreage is low because of the limited demand for the crop and its vast labour requirements, particularly for harvesting. In the early 1970's, approximately 100,000 acres of broomcorn were harvested in the United States annually, with the highest acreages in Oklahoma, Texas, New

Mexico and Colorado. It is also produced in Illinois and Iowa. Half of the domestic needs for broomcorn are imported from Mexico. A ton of broomcorn brushes makes 80 to 100 dozen brooms.

A broom is a cleaning tool consisting of stiff fibres attached to (and roughly parallel to) a cylindrical handle – broomstick. Some shrubs (evergreen, semi-evergreen and deciduous) from the Fabaceae family – mainly *Chamaecytisus*, *Cytisus* and *Genista* species – are commonly referred to as brooms in Western Europe. The plants belonging to these genera show similar dense aerial parts, very small leaves and slender green stems. The original idea that brooms from different parts of the world should be collected has been realized at Laurent's World Broom Collection since 2002 at UMMA (University of Michigan Museum of Anthropology), USA, where several samples from Europe are stored. The material used for brooms is referred mainly as "plant material" and it is not classified. In Bulgaria the area for *Sorghum* cultivation never had exceeded thirty five thousand decade. One part of species is wild, but they meet together as well in a culture in the same area (9per cent). In Italy, the use of wild plants for making brooms is more common as a result of plant richness and national traditions. Making a broom is more than a plain activity, it is an art. Broom makers are familiar with broomcorn (morphological features, phenology, phytopathology, etc.). The observations gained on a plant are subsequently used in the production of brooms. In the past, plants of brooms have been growing at each house. Later, one or several humans in the village or the region start to cultivate and make brooms, as a way to living.

Small production workshops and manufactures are established gradually. Such more modern factories are present in nowadays. Their production comprises a wide range of straw brooms and brushes (for domestic and industrial use), different kinds of wooden broomsticks and details according to customers' wish. They export large quantities of the production (e.g. Greece)

Scholars have examined the impacts of Old World biota on the societies and landscapes of Mexico, Australia, New England, New Zealand, and northern Canada. This case study discusses the introduction and naturalization of Scotch broom in the landscape of southern Vancouver Island, highlighting the roles that culture and biophysical factors play in the establishment of invasive weeds. Furthermore, Scotch broom's environmental history can help to explain the history of any number of weeds introduced to British Columbia. After its initial introductions, broom quickly naturalized in the temperate, coastal regions of the province, and this resulted in rapid, localized ecological change that contributed to an increasingly Europeanized landscape. The unique biology and reproductive strategies of Scotch broom are often credited for its rapid spread. However, weeds spread in conjunction with both human and non-human factors. Biological factors alone do not explain broom's rapid naturalization. Cultural factors – including its perceived beauty, utility, and ornamental use – contributed significantly to its spread. Scotch broom is not, of course, the only European plant that has been introduced to British Columbia. Many others, including Canada thistle (Cirsium arvense), purple loosestrife (Lythrum salicaria), and tansy ragwort (Senecio jacobaea) are also Old World imports

considered to be invasive weeds. Like these, Scotch broom poses a significant threat to some ecosystems in coastal British Columbia. Consequently, some scientists have described Scotch broom as “one of the five most destructive alien plants in Canada.” Scotch broom’s invasive growth and rapid colonization of disturbed sites creates dense mono-specific stands with reduced biodiversity.

The Broom grass, scientifically known as Thysanolaena maxima has emerged as one of the most widely cultivated cash crops in Gakidling geog. It is from Poaceae family and commonly known as kucho/amlisho, in southern Bhutanese language. It is grown in the marginal fallow lands by two non-wood forest product (NWFP) groups of Sangkha and lower Muga villages.

The villagers cultivate kucho as a mixed crop for its inflorescences or clusters of flowers that are used for making brooms. It provides fodder during the lean period every year as well. Broom grass is a unique gift, an eco-friendly product that brings the rural communities closer to nature from the start of each day as one cleans the floor with broom grass every morning.

Sangkha village is the largest producer of brooms in the geog and caters to the local Indian traders. Cultivation of broom grass is comparatively easy and requires only small financial inputs. It is grown on marginal lands and wastelands. It grows well on a wide range of soils from sandy loam to clay loam. The planting can be done by rhizomes. The harvesting starts from

February and continues till March end. The product is sold during March and April.

Broom grass cultivation constitutes a source of income for Sherpa, Mongar and Rai families in the business. The Sangkha people began selling broom grass from 2012 without forming a group. They formed a NWFP group in 2013. Following this, lower Muga also formed a NWFP group. The product is sold through open auction.

Some of the challenges encountered by groups include the varied broom size and length, absence of Bhutanese bidders, only few local Indian traders were available during auction, sustainability of cane which is used in huge quantity for tying the broom and low quantity of products for supply among others.

To address the issues, it is recommended to standardise the broom size and length, explore Bhutanese and Indian bidders, carry out cane plantation, mobilise and collect products from other community forests and NWFP groups within the Dzongkhag.

The steep slopes of Amdanda, Gaighat and Sinchangghadi in Devghat VDC, Nepal were used for shifting cultivation – an agricultural land use system where land is cleared of forest and cultivated until its fertility diminishes, after which it is abandoned. This kind of land use system intensifies deforestation and forest degradation. This practice resulted in frequent landslide and soil erosion along the banks of Trishuli river adjoining Mugling-Narayanghat highway. Restoration in this area is particularly critical given that it serves as a

forest corridor to enhance the ecological connectivity of the Chitwan Annapurna Landscape (CHAL). In just a year, the degraded land is now transformed into a patch of greenery, replete with plantations of broom grass, locally known as Amriso (Thysanolaena maxima) along with other tree species. This change was brought about through the dedication of the members from 17 Leasehold Forest User (LHFU) sub groups, who planted 375 thousand Amriso rhizomes in 37.5 ha of land, i.e. nearly the size of 92 football fields. The plantation was carried out in 19 plots on June-July 2012 with the support of Hariyo Ban Program, WWF Nepal and District Forest Office (DFO), Tanahu. To further benefit from the plantation, Cottage and Small Industries Development Committee, Tanahu in coordination with DFO Tanahu trained several community members on broom making. The trainees will make brooms and sell them in the coming years, which will help them earn three times more than selling Amriso flowers directly. The yield, and thus the profits, will gradually increase in the upcoming years.

Once planted, Amriso can be used in the first year of growth and lasts for many years. Planting Amriso is an efficient method of rehabilitating degraded land and an effective way of enhancing the livelihoods of poor and marginalized communities dependent on forest and shifting agriculture.

Areas with broom grass look green throughout the year except around late winter when it flowers, and the hills are coloured in a shade of light brown. Broom Grass cultivation has also reduced the problem of soil erosion. Reduction in fires, grazing and human exploitation has also allowed the

enhancement of other trees and plants. Income from the sale of brooms made from the plant has also reduced the tradition of shifting cultivation and slash and burn for agriculture. As the Broom Grass helps to reduce soil erosion, income can be generated from the sale of brooms made from it and the leaves can be used as fodder for cattle, and does not require as much labour as other crops, local farmers are enthusiastically participating in the program. Broom Amriso is a popular non-timber forest product. It is used to make sweeping brooms, leaves provide good fodder and the stems provide fuel. It has mat-like roots that bind the soil firmly, preventing soil erosion. Amriso when planted with tree species stabilizes slopes preventing landslides and also helps to reduce the growth of invasive plant species like Lantana camara.

Grass promotion is an important method for rehabilitation of land degraded by shifting cultivation/slash and burn agriculture.

The planting of Nepalese broom grass has a direct impact on preventing surface soil erosion on steep hillsides. Broom grass grows in clumps and has many tangled up roots that grow to about one metre below the ground. This makes it highly effective in preventing soil erosion on hillsides as the grass is less likely to fall compared to other plants and trees that would have been planted there. The roots and leaves of the plant slow down water drops and the flow of water after heavy rain by absorbing the water in the soil. Growing broom grass on degraded land has been proven to help rehabilitate it as it helps retain ground moisture and promote fertility. There is no irrigation required to grow the grass and it does not produce any wastewater. No external inputs or energy is needed

to grow the plant as it only requires human labour, which can be extensive in the first year of growing. Broom grass farming is highly recommended in new shifting cultivation systems on marginal lands to repair the damage from previous slash and burn methods.

The start of Nepalese farmers growing broom grass has increased the local biodiversity in the communities. Now that the farmers have to tie up their live stock since they feed on the broom grass, other plant species in the area can successfully re-grow and multiply. Broom grass that have been planted in areas where slash and burn cultivation took place has caused tree stumps to grow branches and other vegetation to grow back. Endangered animals such as the Barking Deer and Monkey are now reappearing in the infertile slash and burn areas where they once lived, as the broom grass used to rehabilitate the soil helps promote the growth of other vegetation the animals use for food. Broom grass does not compete for land with cereal crops so they can be grown simultaneously.

The farming of broom grass has had a sincere impact on the women in the communities. It has helped women become more empowered by raising their financial status and lessening the burden of other tasks. Females in the communities perform 70 percent of the labour required for the cultivation and manufacturing of the brooms. Women's efforts to promote broom grass farming has been very important as they have started pressuring males of the family to grow the plant after seeing the income potential it has. Women carry the responsibility of the tedious tasks of collecting firewood for cooking and

fodder for animals, which can be eliminated with broom grass as the plants stocks provide firewood and the leaves provide fodder. Even though women have the added task of harvesting broom grass it is much preferred over searching for firewood and fodder.

In Philippines, there is no problem in marketing soft brooms as long as these are good in quality. It can be sold within the community where it is produced. Brooms are sold in retail at P40/pc and wholesale at P35/pc. Price may increase depending on the decoration. Panicles can be sold to producers in the locality at P18 per bundle (can make one broom). During lean months, store panicles or brooms while waiting for a better market price.

3.3 MARKET AT NATIONAL LEVEL

Earlier, in India, people used to collect straw or hill broom grass on hillsides, heathens and riparian areas with much difficulty. Being a minor forest produce, the forest department had imposed restriction on its collection. As result, it was difficult to collect hill broom grass aplenty to make a good number of brooms for sale.

Later, panchayats were given the rights for collection and marketing of hill broom grass. The government also thought of its cultivation with a view to create huge employment opportunities for the local populace.

In 2011-12, the government promoted hill broom grass cultivation under the Mahatma Gandhi National Rural Employment Guarantee Scheme

(MGNREGS) and provided training to some enthusiastic famers. Initially, farmers were provided financial assistance upto Rs 1.23 lakh per hectare. The government also provides help to build barbed barricades and supply pesticide, chemicals and fertilizer. As per a rough estimate, over 2,500 seeds are raised in a hectare while a broom can be made out of 10 bunches of grasses.

In Assam, the raw material to make broomsticks comes in gunny bags and Maredumilli in Rampachodavaram Agency area in the district. A 50-kg-bag of dry grass used in the broom costs Rs. 2,000. After wastage, they get only 40 kg. A handle is made for a comfortable grip and buyers have a wide range of varieties to choose from. Most villagers secure additional raw material like plastic pipes, coconut sticks and wire from places like Vijayawada. Every household generates between 250 and 400 brooms every day which is then weighed. Each bag of grass is used to make 150 to 200 brooms of four different varieties and the price ranges from Rs. 30 to Rs. 60. Citing financial constraints, broom growers said that the banks should come forward to give loans and the government must look into the issue. The agent who helps the villagers secure raw material, also assists them in sale of their product.

Broom Grass is one of the major non timber forests products (NTFP's) in Tripura, Meghalaya and other north eastern states. Anybody who has travelled in the hill roads of north-east in winters must have been amused by its beautiful inflorescence dotting the hillsides. NCE has been facilitating its scientific harvesting and trade on a pilot basis since 2010-11. In 2013-14, JFM beneficiaries under 19 Forests Ranges operated by NCE alone have earned an

income of Rs. 226.54 lakh and the total volume of collection was 459 metric ton. In absence of proper sensitization, the practise of harvesting broom grass by plucking is adversely impacting its regeneration. If managed scientifically, and appropriately regenerated, an estimated 6000 metric ton of the grass can be harvested annually from Tripura's alone.

In the northern region of Tripura, it is found in wild and used to be maintained by local JFMC for collection of flower. In view of remarkably reduction in grass production by approximately 50 per cent (NCE Internal Report 2013), within a period of three years, the farmers were motivated to cultivate the grass in unutilized lands under agro forestry. A design of geometrical arrangements was prepared following participatory decisions on suitably mixing Broom grass with Chilli, Brinjal, and perennial Arhar under agro forestry. Apart from the jhum the villagers are mainly dependent on NTFPs like broom grass, bamboos for agarbatti sticks and edible shoots and sugandhmantri which they collect from wild. Broom grass contributes the most to their annual income whereas the local jhum practice does not have potential to depend upon. Collection and sale of broom grass from wild had been comparatively a profitable practice where they only need to invest labour and time as no initial investment is involved. Presently, due to unsustainable harvest and lack of management of natural stock, production of broom grass has been reduced to 59 per cent within three years during 2010 to 2013 (NCE Internal Report, 2013). Prior to intervention from the local government, the villagers were engaged to deal with the market to sale broom grass collected from forests. In the year 2010,

realizing the significant market potential available for the product, the government took initiative to reorganize its marketing to help improve the livelihood dependence. The JFMCs (Joint Forest Management Committees) were authorised to collect and sale broom grass. At the same time, a platform for the buyers and sellers was also provided so as to develop assured and better market linkages broom grass as main crop has an organized market in the region and fetches a subsistence income to the growers annually even up to 12 to 15 years. The model may be renewed gradually and productivity can be maintained by selective replacement of old and unproductive clumps by planting new grass slips as and when required. Thus, the model could be practised as a much viable and sustainable practice in the region.

Broom grass is locally known as ‘phooljharu’ in Tripura. It is one of the major non-timber forest products. This broom grass occupies an important place in Tripura’s rural economy. Increasing deforestation and the unscientific plucking of broom grass has adversely impacted in its regeneration.

To overcome this, the Pecharthal Broom Makers Society, of Dephacherral Hamlet in remote Kanchanpur sub-division of North Tripura took the initiative of launching a pilot project of collecting broom rhizomes from the wild and planting it in an abandoned Jhum plot with the assistance of Jhumias. In local parlance of Tripura, a Jhumia is a tribal who practises shifting cultivation or “Jhuming”. It is also appropriately referred to as “slash and burn” cultivation. These first time broom grass cultivators were provided technical and marketing

support by the Centre for Forest-Based Livelihood and Extension. Financial help came from an external funding agency.

Birala has said that they made a pilot project for cultivation since sufficient broom grass is no more available in the jungle. At present, there are many broom grass cultivators but for the first time during 2012-13 they started the cultivation in one hectare area in Depacherra. In that plot, they also planted chilly, brinjal, banana and pulses and all together made profit of Rs.2,50,000 from that plot. People from various places came to see their plot and were so happy that they also doing the same.

The success of the Pecharthal Broom Makers Society has encouraged many others in the area to get involved in the trade of cultivating broom grass and making brooms with the harvest. Today in Depacherra there are at least five self-help-groups (SHGs) involved in broom grass cultivation through joint forest management (JFM). Most of the members of these SHGs are women from tribal families who were involved with jhum cultivation which is not much profitable and a threat to the forest.

At present these women of after completing their household chores work in the SHGs during their leisure hours gets involved in making brooms and the extra income helps in running their families and educating their children.

With the increasing demand for broom from various parts of the country large areas of abandoned jhum fields have now been converted to broom grass plantations which has not only helped in rejuvenation of the greenery and soil

conservation but also giving good economic returns to these once jhumia families of Tripura.

Broom grass is one of such species that can be grown as a cash crop in Arunachal Pradesh for its inflorescences that are used for making brooms. It also provides fuel and fodder during lean period. The brooms of this grass are more durable than those made from other plants such as Cocos nucifera and Phragmites species. Its cultivation can promote the sustainable use of fragile and degraded lands.

The broom derived from mature inflorescence has sufficient demand in each and every household throughout the country and is more durable than those made of other plants. The whole demand and supply of the broomstick has been fulfilled only from the natural stock. A large scale collection of panicles before senescence and dispersal of seeds from brooms impoverishes the soil seed bank. Hence, there is an increasing need to cultivate broom grass commercially to meet the ever-increasing demand. Broom grass can be grown either as monoculture or intercropping with agricultural and plantation crops to improve soil conditions and generate additional income that ultimately lead the upliftment of livelihood of rural poor.

Broom grass cultivation provides a good profit to the growers. The yield varies between 300 and 500 kg of broom material per hectare, depending upon the quality of planting materials, spacing, fertility of the land and the cultural practices adopted for maintenance. The yield also differs according to the age

of the plantation. The highest yield of inflorescence is obtained from three and four year old plants, which is about 2 kg per plant. The yield then begins to decline, and in the fifth year, the average yield is 1.5 kg, while in the sixth year, only 0.5 kg of produce per plant is obtained. Similarly, the production costs differ for different years. During the first year, the grower has to invest in small tools, implements, and labour, resulting in the highest production cost. The growers start earning from second year onwards. From one hectare area, the grower can generate an annual profit ranging from Rs. 500 to 11,000 solely from the sale of the inflorescence as brooms. The benefit obtained by the growers varies according to labour efficiency, wages, soil fertility, cultural practices, market price and demand. The benefit-cost ratio calculated at 10, 15, and 20 per cent annual interest rates showed that the ratio varied between 3.19 and 3.46.

Cultivation of broom grass offers a lot for rural livelihood as well as environmental security particularly in north east region. A policy intervention is also needed in regard to encourage sustainable harvest by regulating the market price based on quality grading, and also its cultivation by providing incentives to the growers with higher price for their produce. This will increase the overall productivity in turn.

Broom grass has a sufficient demand nationwide. The price of broomstick depends on the quality of the product and is virtually decided by the commission agents/brokers. These agents usually have control over the market prices which differs from one area to the other. Similar to any other

commodity, demand and supply plays major role in price settlement. Being a high volume crop, ample supply in the market during the harvesting season reduces the local price. Wholesale trading of brooms is a highly monopolized activity. Major portion of income goes to the traders and middlemen. The farmer gets very mearge amount i.e., about 35 per cent of the retailers-price as its demand in the area of production is very less as other alternatives of brooms are also available locally. Hence, about 65per cent of the consumer's rupee goes to different intermediaries of broom grass prevailing in the market.

Broom cultivation is an economic activity to the small and marginalized farmers that sustains their seasonal livelihoods. If generate an annual profit ranging from Rs 500 to 11,000 solely from the sale of the inflorescence as brooms from one hectare area. However, the benefits vary according to labour efficiency, wages, soil fertility, cultural practices, market price and demand. Mizoram has also taken giant leap in broom collection with as high as 735 metric tonnes in the year 2013. Cooperative MarkFed (Marketing Federation of Tripura) has similarly taken care of marketing of broom grass in Tripura with significant achievements. Besides, the NTFP Centre of Excellence, Tripura has also intervened in a big way in 19 forests ranges in Tripura to facilitate the collection and trade.

Growing broom stick has double benefits, people are realising. Besides it being a revenue earner, it takes the pressure off forest-based products like sand and timber. In Meghalaya, growers were getting huge returns from this non-timber forest produce. In Kamrup, Meghalaya, where unemployment is high, this

could be the game-changer. The move to grow broom grass has a big ecological angle to it. In Meghalaya, people abandon slash-and-burn farming for broom cultivation. Then, it takes away the anthropogenic pressure alarmingly mounting on the rivers for sand. Broom grass cultivation stops soil erosion on hilly slopes.

Climatic conditions favour the Northeast which roughly grows more than 125,000 tonnes of broom grass a year. The non-perishable and perennial plant panicle is harvested once in a year between January and March. From plucking, sun drying and packaging, all it requires is two weeks of labour. Yes, sunlight is the soul of harvested broom and cold weather or rain is the curse. Quality takes a plunge if harvested brooms are exposed to fog or water. The life span of quality broom is up to 15 months.

In different regions of Maharashtra state brooms are prepared with locally available plant material. Documentation of these resources have not given attention in past. In this respect, Bhor and Mahad regions of Western Maharashtra, surveyed for traditional agricultural practices and recorded broom plants are used for different operations which includes households as well as agriculture. The total number of species used as brooms are 11, belonging to Verbenaceae, Lythraceae, Arecaceae, Fabaceae and Thymelaeceae, Malvaceae, Oleaceae families from localities of Bhor and Mahad. Some plants belonging to Pteridophytes are available in western Ghat region and easy for broom preparation. India has different tribal communities residing in remote places and using plant resources for broom making.

It has been three years since Sumani Jaghodi a tribal resident of Mandibisi village, Rayagada district; Orissa led a successful struggle of hill broom collectors in the district. She still cannot believe that her modest broom could overturn an enormously skewed forest law of the state. Till March 2000, the forest department had sole rights to bind and sell hill broom grass in Orissa. It procured this minor forest produce from the collectors - mostly tribal women - and then sold it to traders, who marketed the final produce much to the primary gatherer's' detriment. Sumani says that they calculated the traders' profits and concluded that they could get the same money by binding and marketing brooms themselves. So, in 1995 with the support of a local non-government organisation Agragami, she formed a group of women primary collectors called Mandibisi Mahila Mandal (mmm). In about five years, the group succeeded in turning things in the hill broom collectors' favour.

Hill broom grass (*thysanolaena maxima*) is found in a few Orissa districts, including Rayagada. This district can produce upto 5,000 quintals of hill broom per annum. That means an employment opportunity of one-lakh woman-days if the average collection potential per woman-day is taken as 6 kilogrammes (kg). Processing the broom means an additional opportunity for 1,80,000 woman-days if the average production of brooms per woman-day is 10 -- at the rate of three brooms per kg of the raw material. But recollects Sumani says that they walked 15 to 20 kilometres (km) through deep forest and hilly slopes to source the grass. Before March 2000, this was hardly rewarding. Her daily income from about 10 kgs of grass was mere Rs 25 while traders got around Rs 50

from it. The movement started in 1995 when Mandibisi Mahila Mandal applied for permission to procure and sell broom grass but got no response from the authorities. In defiance the organisation procured around 174 quintals of the broom grass from primary collectors. The district authority termed this illegal since the Tribal Development Co-operative Corporation (TDCC) was the leaseholder for broom grass in the area. The corporation seized the 'unauthorised procurement' with help from the local police. But Mandibisi Mahila Mandal now had popular support: the movement had spread to neighbouring villages. In 1996, the organisation appealed against the seizure and managed to get back some brooms. The government also advised Mandibisi Mahila Mandal to apply for a lease to procure broom grass after TDCC's lease expired.

Nagaland is known for its abundance of flora and fauna, which remain mostly untapped. At Dibuia village and her neighboring villages like Waromung and others under Changkikong range, the villagers are doing brisk business by harvesting and exporting the abundant broom grass which are exported to other states, especially Assam.

Broom grass is harvested only once a year, during the months of February and March. After the harvest, they are sun dried, bundled and sold to agents from Mariani in the truckloads.

It is learnt that these broom sticks which are exported to Assam find their way to other states like Gujarat, Rajasthan and even abroad, where broom grass

does not grow in abundance. Longchar disclosed that he started the business since there was a lot of demand from Assam. It may be noted that gathering the broom grass is not an easy task, as villagers have to enter the deep forests to collect them. Harvesting the broom grass is a once in a year affair and so the villagers cannot invest much on this viable cash crop, until nature regenerates them over the months. Increasing deforestation and the unscientific plucking of broom grass has also adversely impacted in its regeneration. There are reports that this year's quantity of broom grass harvested is lesser than last year's by a few thousand kilograms.

In Nagaland, trade of this economically viable grass remains in a stage of infancy. However, stories from other states regarding the trade of broom sticks are a sign of encouragement for the Nagaland State Government to facilitate cultivators here. Take for instance the case of Tripura, where broom grass occupies an important place in the state's rural economy. The broom grass cultivators were provided technical and marketing support by the Centre for Forest-Based Livelihood and Extension. Financial help came from an external funding agency, enabling cultivators to earn money in terms of Lakhs.

The traditional Indian broom is a kind of grass plant that grows a plenty all over India as a weed. The grass has a long, thin but durable stem that hardens as it dries, dotted with bunches of small but sharp needles that grows thick at the crown of the stem. Come January, women collect broom plants from forest fringes in the taluk which are later cut and conditioned to make a fine broom.

Tied in bunches, the broomsticks can fetch them anywhere between Rs 8 and Rs 10 per stick at markets. This provides a meagre income to women.

The women collect the broom grass that grows wild on the edges of farms and any open land, beat them on the ground to get rid of the seeds and chaff, and dry the stems in the sun. Broomstick vendors make a beeline for the village during this time to buy brooms from these women. They are later neatly packed and sold at higher prices in town.

3.4 MARKET IN MIZORAM

The Environment and Forest Department has a substantial contribution to the economy of the State. Putting aside the intangible benefits from forests and wildlife, the tangible/direct benefits which are being tapped by local people of the State are innumerable. The contribution of Environment and Forest Department in terms of economy or revenue during the last financial year and the current year may be shown as below:

3.4.1 REVENUE RECEIPT:

The revenue collected by Environment and Forest Department during 2014-15 and 2015-16 (up to December 2015) is shown in table 3.1.

Table 3.1 Revenue receipt for broom cultivation of Mizoram during 2014- 15 to 2015-16

YEAR	AMOUNT (IN LAKH)	REMARKS
2014-15	329.09	
2015-16 (up to December 2015)	98.69	Substantial amount of revenue is anticipated during the remaining financial year of 2015-16 as broomstick and Anchiri are being tendered in various forests divisions.

Source: Economic Survey 2016

The environment and forest department has been preparing/executing working plans for territorial divisions for scientific and sustainable management of forests. As of now, we have four approved working plans (Kawrthah, N.Vanlaiphai, Lunglei and CADC) and working plan for 5 Divisions have been prepared submitted to Regional Office of MoEFCC, Shillong. Working plan for the remaining 4 Divisions are under preparation.

Broomstick production in Mizoram has been broadly divided into three regional circles by the Environment and Forest Department, Mizoram. The three regional circles are:

i) The Northern Circle

ii) The Southern Circle

iii) The Central Circle

The Northern Circle consists of the states of Kolasib, Mamit, Darlawn and Kawrthah. The Southern Circle consists the states of Lunglei and Tlabung and the Central Circle consists the states of Aizawl, Thenzawl and Champhai. The revenue receipt for the broom cultivation in the three regional circles can be illustrated in table 3.2(a), 3.2(b) and 3.2(c).

It is estimated that the price of broomstick per Quintal is Rs. 294.88 during 2013-14. But during 2014-15, it goes down to Rs. 159.61 per Quintal according to the data collected from *the Environment and Forest Department, Mizoram*. During 2013-14, the market price is highest at Kawrthah which is around Rs. 746 Quintal. The highest market price during 2014-15 is Rs.702.50 Quintal at Tlabung. The revenue receipt of broom cultivation during 2012 – 2016 can also be stated in table 3.3. The receipt which is collected from the Mahal can also estimate and data was collected from the Environment and Forest Department of Mizoram. The receipt can be shown in table 3.4.

Broomstick cultivation has been started in Mizoram from 1996. It is a state flagship programme of New Land Use Programme (NLUP). It was introduced by NLUP in 2011.

In 2011, 40,000 broomsticks were sent to Russia. The broomsticks were manufactured by Mizoram Broom Industry Ltd, set up by T Lalengthanga and B T Nghinglova. The market was facilitated by monitoring cell under the state government's flagship programme New Land Use Policy. The broom industry had tied up with five companies to market the broomsticks. B T Nghinglova

said they received order for one lakhs broomsticks which they could not meet at one time. Hundreds of families in Kolasib district have opted for broomstick cultivation under the New Land Use Policy.

Table 3.2(a) Receipt of Broom cultivation in Northern Circle, Mizoram

NORTHERN CIRCLE								
YEAR	**KOLASIB**		**MAMIT**		**KAWRTHAH**		**DARLAWN**	
	Qnt	**Amt**	**Qnt**	**Amt**	**Qnt**	**Amt**	**Qnt**	**Amt**
2012-13	3967	1510915	479.5	293650	1065	119200	142	99400
2013-14	3982	1078923	793	264650	121	90300	563	158908
2014-15	6169.83	912583	2069	254000	70	49000	1493	240855
2015-16	3614	2143391	969	1546900	1374	824600	210	517600

Table 3.2(b) Receipt of Broom cultivation in Central Circle, Mizoram

CENTRAL CIRCLE						
YEAR	**AIZAWL**		**CHAMPHAI**		**THENAWL**	
	Qnt	**Amt**	**Qnt**	**Amt**	**Qnt**	**Amt**
2012-13	27	9450	n.a	n.a	15	10500
2013-14	50	5000	n.a	n.a	n.a	n.a
2014-15	496	52900	56.41	9070	263	33400
2015-16	128	12800	106	16024	2324	1016600

Table 3.2(c) Receipt of Broom cultivation in Southern Circle, Mizoram

SOUTHERN CIRCLE						
YEAR	**LUNGLEI**		**TLABUNG**		**VANLAIPHAI**	
	Qnt	**Amt**	**Qnt**	**Amt**	**Qnt**	**Amt**
2012-13	n.a	n.a	60	42000	n.a	n.a
2013-14	4	400	67	47250	n.a	n.a
2014-15	180	126000	84.3	59010	n.a	n.a
2015-16	294	405000	150	800720	43	2100

Table 3.3 Abstract of Revenue Receipt of Broomstick during 2006-2012

YEAR	UNIT	QUANTITY	AMOUNT(IN RS)
2006-07	Qtls	1.05	1,466.00
2007-08	Kgs	10.00	140
2008-09	___	___	___
2009-10	___	___	___
2010-11	Qtls	1780	1209585
2011-12	Qtls	3742	16,22,117

Table 3.4 AMOUNTS RECEIVED FROM MAHALS

YEAR	AMOUNT (IN RS)
2004-05	5,38,600.00
2005-06	8,57,920.00
2006-07	11,91,625.00
2007-08	10,11,407.00
2008-09	8,50,257.00
2009-10	32,16,000

Source: Environment and Forests Department, Aizawl, Mizoram.

CHAPTER 4

BROOM MARKETING IN AIZAWL DISTRICT: AN EMPIRICAL ANALYSIS

4.1 INTRODUCTION

The interest and knowledge of plants used by native people have increased in recent years, and there is a lot of information throughout the world. The field of study of plants used in household products is one of the most interesting ones and it is not always easy for species to be identified.

For centuries, the brooms have been used for cleaning houses, ovens, fireplaces, yards, streets, as ritual tools as well as for some special functions. It is one of the most important tools one needs to have. For a long period, brooms were domestically produced and hand-made of tree branches, brushes, etc. The broom was an important tool in keeping the living area clean. Unfortunately, dust and ashes are part of life and perfect brooms do not exist. But since ancient times people's ambition to create better and better brooms has brought rich experience of used plants and brooms. This knowledge was passed on from generation to generation and so came to us.

For economic reasons, keeping cleanness in houses, areas around houses, farmyards, street, etc. brooms are a daily necessity. Together with the use of technical instruments for cleaning streets and yards, brooms are still in use. Planting raw material and broom manufacture continue in present days.

Making a broom is more than a plain activity, it is an art. Broom makers are familiar with broomcorn. The observations gained on a plant are subsequently used in the production of brooms. It grows rapidly, crowding out native plants

and preventing re-growth, retarding or preventing the growth of many under storey species, preventing the re-growth of forests, leading to a dramatic loss of diversity. It forms dense thickets, shelters feral animals, reduces food for native wildlife, blocks paths and creek lines.

Cleaning of houses and courtyards is a daily activity in most households in the Indian subcontinent and is almost ritualistically followed in many communities. The brooms are traditionally made by plant species as a general practise. Brooms are one of the highly used tools in a household and exist in many forms. They may be soft brooms and hard brooms, big and small brooms, which are made depending on the specific requirements and also the available resources. Large quantities of brooms are used in India annually. It is an important forestry enterprise in several parts of the country and also an important forestry enterprise in several parts of the country and also an important source of income and provides rural employment to local communities.

Broom grass is a type of crop where for its cultivation, all other trees and shrubs need to be cleared. Thus the forests are cleared for its cultivation. This type of monoculture reduces biodiversity in the environment. Biodiversity being the fundamental factor for survival of traditional food, its disturbance results in the loss of flora and fauna which includes wild edibles that are part of the traditional food.

4.2 AN EMPIRICAL ANALYSIS

As mentioned in the methodology, we conducted field survey with the help of questionnaire among 50 households. As broom cultivation has not been introduced so far, more families do not started formerly. Among the households conducted from the survey, 31 families started broom cultivation from 2012 and the remaining 19 families started from 2013.

4.2.1 Broom Marketing System:

After conducting field survey among 50 households in Aizawl District, we have seen the data from table 4.1 that 25 respondents i.e., 50 per cent of the broom growers sold their products to Mahal as they can purchase more expensive than the other buyer. And again, 17 respondents i.e., 34 per cent sold their products in the local market and some put on sale by themselves. The remaining 8 respondents i.e., 16 per cent sold their products to Hnam Chhantu Pawl because their purchasing rate of the product is very cheap. The data is presented in table 4.2.1 and analysed accordingly:-

4.2.1 Broom Marketing System in Mizoram

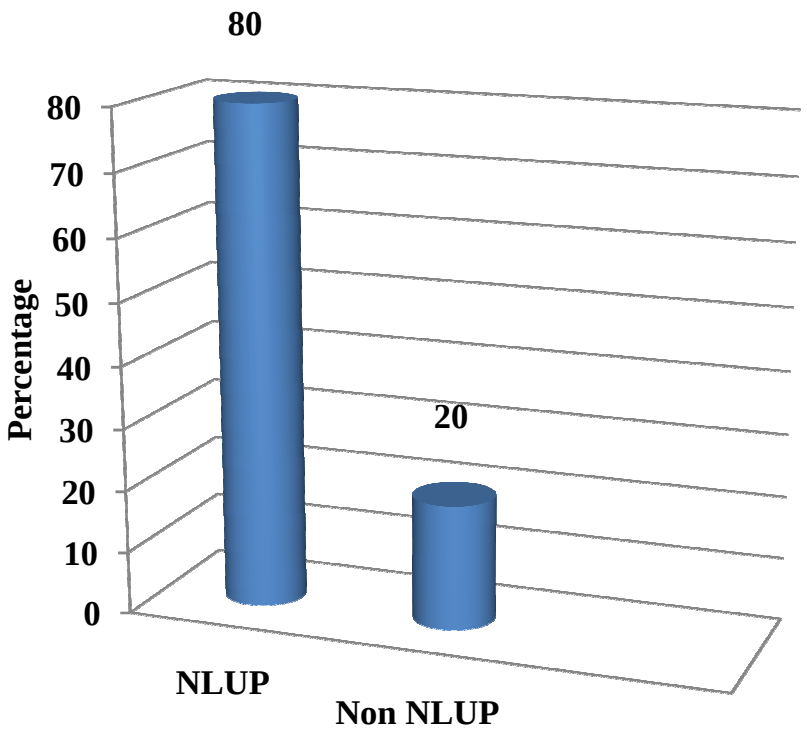
Buyers	No. of Respondents	Percentage
Mahan	25	50%
Private	17	34%
Hnam Chhantu Pawl	8	16%
Total	50	100%

Source: Field Survey, 2016

4.2.2 Financial support under Broom Cultivation:

The policy of NLUP was earlier launched on a modest scale in 1984-85 and assistance given was Rs.3,000/- per beneficiary. When the Congress party was in power from 1990-91 to 1997-98, NLUP was again launched and the amount of assistance was increased to Rs.30,000/- Rs.40,000/-. There is a hope that this system will create an atmosphere of healthy competition among the departments in the implementation of NLUP. The beneficiaries under NLUP must utilize the assistance received by them (in cash or in kind) only for the purpose to which it is granted. They should always remember that it is to their benefit to correctly utilize the assistance. Under the NLUP there are different kinds of trade/activities that can be opted by the beneficiaries and here, broom cultivation is also included.

4.2.1 Financial support under broom cultivation



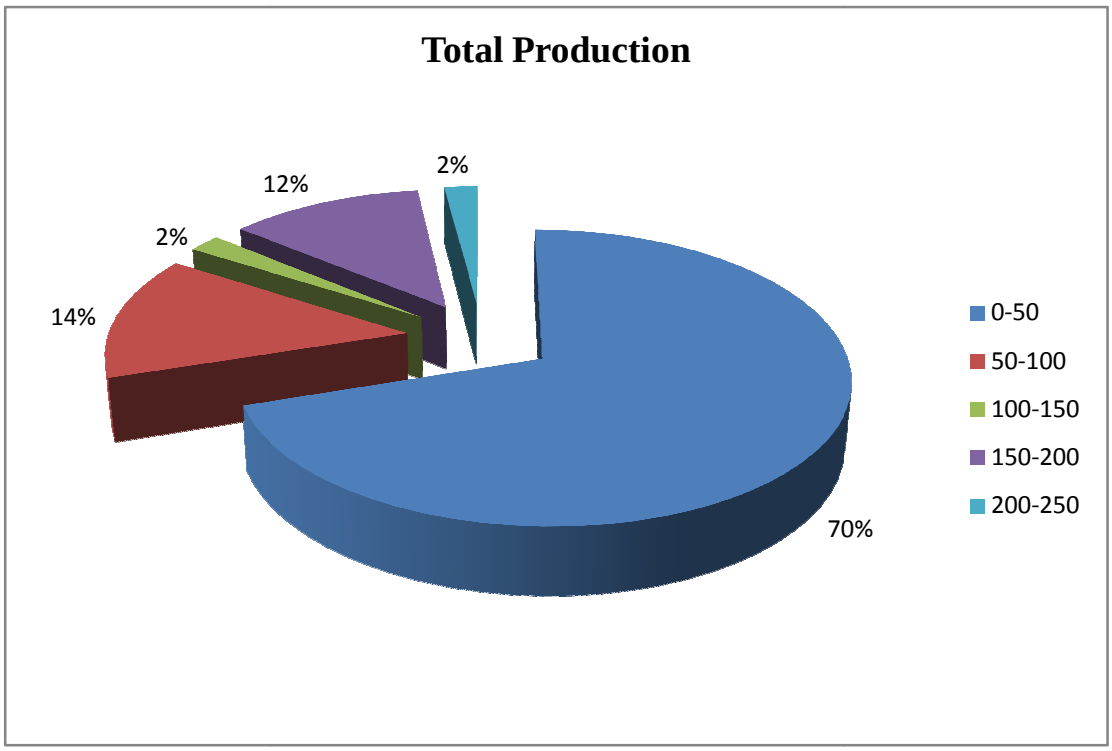
Source: Field Survey 2016

As shown from diagram 4.2.1, 80 per cent i.e., 40 households have received NLUP. It is observes that from the diagram, the cultivators who possess financial beneficiaries from the government policy i.e., NLUP has the higher level of production and therefore enhanced their income.

4.2.3 Total production of Broom

The total product estimated from 50 samples collected from Aizawl district was 2887 Quintals.

4.2.2 Total production under broom cultivation



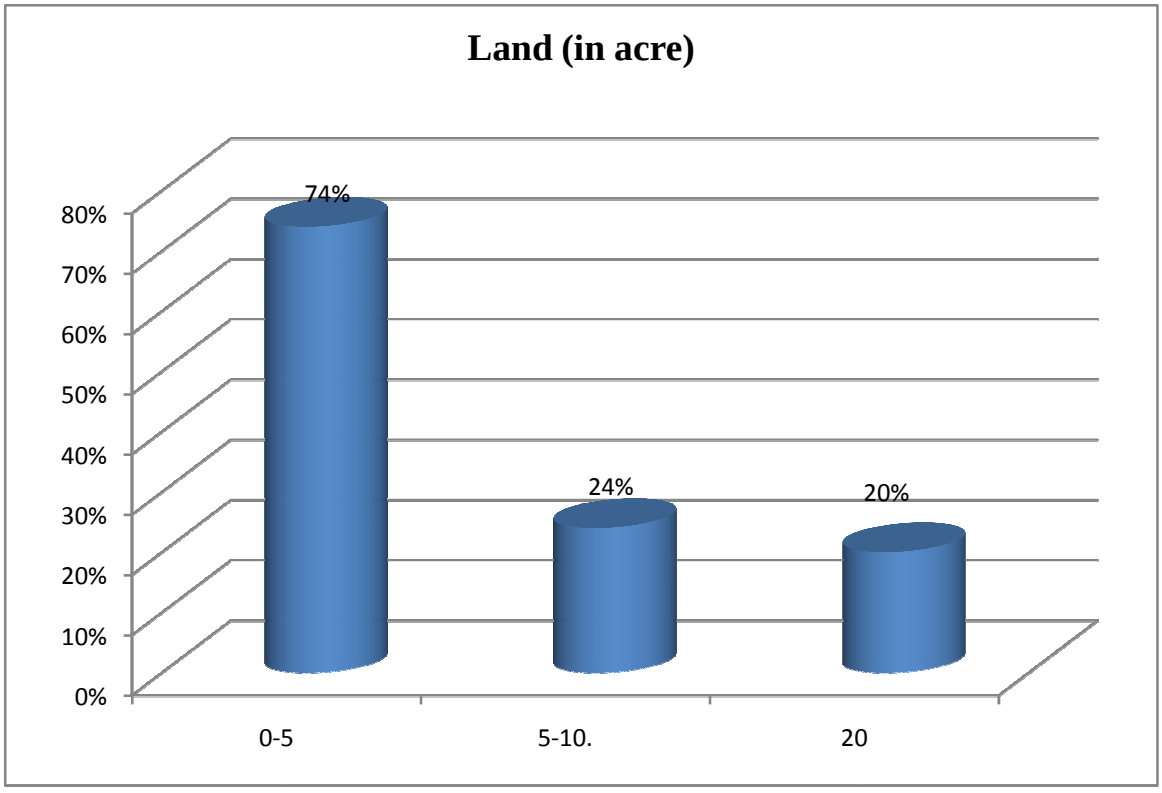
Source: Field Survey 2016

From the diagram 4.2.2 majority of the cultivators produced the highest level of production. Out of the 50 sample, majority of the production below 50 quintal is accounted for 70 per cent. Likewise, between 50-100 quintals was produced by 14 per cent of the sample, between 100-150 quintals by only 2 per cent, between 150-200 quintals by 12 per cent and between 200-250 quintals, there are again only 2 per cent.

4.2.4 Acre of Land

Diagram 4.2.3 shows that 74 per cent have land between 0-5 acres, 24 per cent have 5-10 acres and 20 per cent have 20 acres of land. As indicated in the diagram, most of the cultivators were holding a land of an area at the narrowest. It is therefore concluded that the higher the land area of cultivation has resulted in the higher rate of production.

4.2.3 Acre of land in broom cultivation



Source: Field Survey, 2016

4.2.5 Employment generated under Broom Cultivation

The employment opportunity made by the broom cultivation can be shown in table 4.2.2.

Table 4.2.2: Employment under Broom Cultivation

No. Of Unit	People Employed
50	249

Source: Field Survey, 2016

The table 4.2.2 indicates that there are 249 workers engaged in the broom cultivation. By taking their average, 4.98 workers were provided employment opportunities by each unit under broom cultivation.

4.2.6 Selling price of Brooms

Table 4.2.3 Selling price of brooms

AMOUNT	NO. OF RESPONDENTS	PERCENTAGE
Rs.10-Rs.20	1	2%
Rs.20- Rs.30	5	10%
Rs.30-Rs.40	18	36%
Rs.40-Rs.50	4	8%
Rs.50-Rs.60	19	38%
Rs.90-Rs.100	3	6%
Total	50	100%

Source: Field Survey, 2016

Table 4.2.3 shows that the selling price of broom is different among different broom growers. Between Rs.10-Rs.20 there are 2 per cent sellers, between Rs.20-Rs.30 there are 10 per cent, between Rs.30-Rs.40 there are 36 per cent, between Rs.40-Rs.50 there are 8 per cent, between Rs.50-Rs.60 there are 38 per cent and there are also 6 per cent who sells between Rs.90-Rs.100. There is differences in the market price of their products, but it was known that the broom growers who used to sell their product at a higher rate enjoyed a higher level of profit.

4.2.7 INCOME OF THE BROOM GROWERS

Table 4.2.4 Income earned by the broom growers

INCOME	NO. OF RESPONDENTS	PERCENTAGE
< Rs.1000	2	4%
Rs.1000-Rs.5000	16	32%
Rs.5000-Rs.10000	5	10%
Rs.10000-Rs.15000	6	12%
Rs.15000-Rs.20000	4	8%
Rs.20000-Rs.25000	4	8%
Rs.25000-Rs.30000	2	4%
Rs.30000-Rs.35000	3	6%
Rs.35000-Rs.40000	1	2%
>Rs.45000	7	14%
Total	50	100%

Source: Field Survey, 2016

Broom production is harvested once in a year. So, we calculate their income annually. And the result shows that some income is quite low. They do not produced sufficient quantity of broom because of a narrow land area. Cultivators who possessed a vast area of land for cultivation of broom has a potential to enjoy a higher level of income and profit.

ESTIMATION OF OUTPUT

The chief aim of any productive activity is to maximise output. But the level of output differs from region to region, from village to village and also from farm to farm. The level of output depends, to a large extent, on relative factor endowments. But the output of broom output is dependent mainly on two factors like land and labour. As such the productivity of land and labour are estimated below:

SIZE OF HOLDING AND OUTPUT

Since land is the basic productive factor, the level of broom output is largely dependent upon the size of land under cultivation. It is generally assumed that larger size of holding means larger output and vice versa. Thus, the level of output is supposed to be positively related to the holding size. On the basis of this assumption, the regression of output (Y) on the holding size (X) is estimated as follows:

$$Y = 125 + 14.14X$$

(t=3.35)

R^2=0.79

F=11.28

Where Y refers to output and X refers to holding size.

The estimated parameters have the expected values and are statistically significant. Correspond to a unit increase in holding size, the level of broom output increases by 14.14 quintals. So, the equation gives empirical support to our hypothesis that the level of output is dependent upon the size of holding.

EMPLOYMENT AND OUTPUT

Labour is an indispensable input in each and every live of production. As such, the output of broom also depends largely on the number of labour employed on the farm. Hence, more employment of labour means more production and vice versa. Besides, the quantum of labour employed in the production process furnishes income and hence the means of livelihood of those who get employment.

On the basis of this assumption, the regression equation of output on employment of labour is estimated by means of ordinance least squares method. The estimated equation is as follows:

$$Y = 125 + 11.97E$$

(t=3.58)

$R^2=0.81$

F=12.86

Where Y stands for output and E stands for employment of labour.

The estimated parameters have the expected signs and values which are also statistically significant. Thus, correspond to a unit increase in the employment of labour, the output level of broom increases by 11.97 quintals. So, this equation has given empirical support to our hypothesis that output depends upon the level of employment of labour.

CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS OF THE STUDY

While studying 'A Study of Marketing of Brooms in Mizoram', various data and information have been collected and there can be some findings and suggestions that evolved from the study. After having a detail study, some findings and suggestions are given are below:

- The study reveals that there is a positive relationship between the total production and number of workers which means that the total production increases with the increase in the number of workers. During the study period, the total product has shown an increasing rate of 11.97 quintals which shows that more employment of labour means more production.
- The study found out that the level of output is positively related to the size of holdings. The estimated parameters have the expected values and are statistically significant correspondent to a unit increase in holding size. The level of broom output increases by 14.14 quintals. So, the equation gives empirical support to our hypothesis that the level of output is dependent upon the size of holding.
- Since broom cultivation has provided number of employment opportunities in Mizoram, it ensures that income must be enhanced for the workers. A supplement income will therefore promote the standard of living of the people. Thus, there is a potential for the promotion of standard of living for the farmers under broom cultivation.

- Since brooms have been used in every household, there is a great demand largely from the other states as well. So, the marketing system is not a problem. Yet, we could not provide the immediate products demanded from other states all at once.
- Among the broom buyers particularly highlighted from the study, Mahal has been the largest buyer so far i.e., 50 per cent because the broom cultivators can sell their products to them at a more profitable rate as compared to other buyers. The broom cultivators have to choose them certainly as they get a chance to gain more benefit by selling it at a higher price.
- 34 per cent from 50 households were selling their products to the local market because their production is limited by the pocket- sized lands in which they cultivate the brooms. As they get an opportunity to sell it directly, readymade booms are made which are then sold off by the cultivators themselves.
- Government have prepared a marketing system for broom cultivators through Hnam Chhantu Pawl. But the data shows that they are the fewest buyers i.e., 16 per cent probably because they bought it at a cheap rate. Every producer wants to have more benefit from their products since they use it for their main source of income. So, they have to choose the buyers who are willing to buy it at the most profitable rate.

- Among 50 broom cultivators, 80 per cent has received the government scheme called New Land Use Policy. This has resulted in increasing the production of brooms.
- The selling price of brooms varies exceedingly to each of the broom cultivators because there is no fixed market price. From the data collected, the lowest rate of selling price is Rs. 7 and the highest rate is Rs. 100.
- Our study reveals that broom growers have been approached by various private traders who offers them a more handsome amount than the Hnam Chhantu Pawl did. Most of these investors come from outside the state which resulted in the farmers selling their products to these willing investors from outside. However, this inadvertently disrupted the flow of benefit for the state as more and more farmers are selling their products to these investors who are equally willing to do a pick up from the fields.
- It is also one of the main findings that broom easily catches fire and so the broom cultivators lose their brooms in forest fires and thus, could not meet their expected rate of production.
- Brooms are used for feeding animals and it is being used in many countries especially for cows. So, there are many instances where cowherds pilfer the brooms without the knowledge for feeding cows before they gather. This had led to the reduction of the production.

- Among 50 households, 35 families have produced less than 50 Quintal, 7 families have produced between 50-100 Quintals, and 6 families produced between 150-200 Quintals, between 100-150 Quintals and 200-250 Quintals are produced both by 1 family.

5.2 SUGGESTIONS

After careful analysis of the marketing of brooms in Mizoram, there are some suggestions for the improvement of the marketing system. If some improvement has been made, some of the problems faced by the broom growers will be solved and the marketing system will be in a more proper condition. Some suggestions made by the study are as follows:

- Proper storage facilities are highly required in Mizoram which will enable the broom cultivators to keep a surplus that will be sold at the time of scarcity.

- Throughout the year, broom is in high demand in and out of the state, therefore, the sale and export of brooms is not a difficult task. Besides this, it will have more increasing sales if cooperative market structure is provided in every locality. Moreover, it will also be easier for us to buy at any time according to our needs.

- The government has provided some aided funds i.e. NLUP to the farmers to improve and increase their production. But due to improper distribution of funds, some of the broom growers have faced problems in terms of hiring labourers. So, it is suggested that there should be proper distribution of this fund.

- Regulated market is needed everywhere to relieve the immediate need of the people. If the state government had taken up proper regulations in this field of trade, it will be the government that will gain the most from it.

- There is no fixed price of brooms planned by the government. So, different prices have been charged on the same products. Therefore, it would be beneficial if the government could plan a fixed price of brooms.

- If the cultivators could carefully look after the yard by hiring a regular keeper, most of the broom growers would be able to save their products from being stolen.

- The government should increase the purchasing price of brooms in order to reduce the selling of brooms to willing buyers from outside the state. This will in turn accelerate the economy of the state.

5.3 CONCLUSION

This paper reports a study of broom cultivation carried out in Aizawl district, exploring the production, financial profitability and marketing of brooms products, the problems and suggestions as well as their potential contribution to employment opportunity. A sample survey was conducted 50 randomly selected with personally interviewed and questionnaire. Broom cultivators views on major problems and suggested measures to improve are also collected. Broom cultivation will generate more domestic revenue, exporting products and employment if suggested measures are taken and expanding market facilities in both the local and domestic markets. I hope that this paper will be a step toward taking the findings to the people.

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APPENDIX

QUESTIONNAIRE FOR ANALYSIS OF BROOM CULTIVATION

Name: _____

Address: _____

Phone No. _____

1. When do you start broom cultivation?

2. Where do you sell your products?

3. By what amount do you sell (per kg/per quintal)?

4. What is the quantity production during 2012-2015?

2012	2013	2014	2015

5. Do you receive any fund from NLUP?

6. Is the production increase from receiving the fund?

7. Do the government promote or help you in the marketing system?

8. What is the average income from broom cultivation in 1 year?

9. Any problem?

ABSTRACT

A STUDY OF MARKETING OF BROOMS IN AIZAWL DISTRICT

(A DISSERTATIOM SUBMITTED FOR THE AWARD OF THE DEGREE OF MASTER OF PHILOSOPHY IN ECONOMICS)

BY

ZAIREMMAWII

TO

THE DEPARTMENT OF ECONOMICS

SCHOOLS OF ECONOMICS, MANAGEMENT

&

INFORMATION SCIENCES

MIZORAM UNIVERSITY

2016

INTRODUCTION

Brooms have been used for centuries to sweep up, in, and around the home and workplace. They may be made from a variety of materials, both man-made and natural. Man-made bristles are generally of extruded plastic and metal handles. Natural-material brooms may be constructed of a variety of materials, including brush, but generally include stiff grasses such as broomcorn and/or sotol fibre. Broomcorn brooms have been made for at least 200 years and are considered superior brooms. Plastic brooms merely move dirt around; however, broomcorn stalks actually absorb dirt and dust, wear extremely well, and are moisture-resistant. Broomcorn brooms are the most expensive of the manufactured brooms.

Broomcorn is actually a variety of upright grass of the species sorghum referred to as *Sorghum vulgare*, or *S. Bicolour variety technicum*. The botanical name of a broom is Thysanolaena maxima which belongs to the family of Graminae and cultivated for its stiff stems. Broom bristles are derived when these stiff, tasselled branches that bear seeds on the ends are harvested and dried. They can be used for animal feed. The tasselled stalks, used in the manufacture of brooms, can grow 2-8 ft(0.61-2.4m) tall. Sorghum is specially valued in hot and arid climates due to its resistance to drought.

Broom production technical process is simple and the project can be initiated with proper planning and moderate capital investment. The production is a wide and vast industry as per the types of the products. It has many

advantages. Degraded jhoom land becomes productive because broom grass survives on any kind of soil. In fact, the biomass produced by the plant actually increases the fertility of the soil. Besides, with an alternative source of income, the villagers need not cut down forests to support themselves.

The broom grass can be grown even on marginal lands, wastelands and jhum fallow. Its cultivation can promote the sustainable use of fragile and degraded lands. It grows well on a wide range of soils varying from sandy loam to clay loam. The planting can be done by seeds or rhizomes. Some people also collect and transplant the wild seedlings for propagation. However, it is considered better to get quality seedlings from reputed nurseries.

The culms arise centrifugally during the peak growing season (April to July) and bear inflorescence (panicle) on shoot apex at the end of vegetative growth. The inflorescence that is about 30-90 cm long resembles a fox-tail and is used as broom. And this is sold as broomsticks.

More than 250 million households in India use brooms made of natural grass to sweep floors. Each household uses 3.3 brooms per year. These brooms tend to lose grass seeds, causing fine particles itself.

BROOMS IN MIZORAM

Broom is an important minor forest produce that grows in the wild area of Mizoram. It is an important non-timber forest resource. The cultivation of

broom is a good profitable enterprise. It is a perennial, high value, non-perishable cash crop and has great economic potentialities in the economy especially in hilly areas.

Broomstick production in Mizoram has been broadly divided into three regional circles by the Environment and Forest Department, Mizoram. The three regional circles are:

i) The Northern Circle

ii) The Southern Circle

iii) The Central Circle

The Northern Circle consists of the states of Kolasib, Mamit, Darlawn and Kawrthah. The Southern Circle consists the states of Lunglei and Tlabung and the Central Circle consists the states of Aizawl, Thenzawl and Champhai.

MIFMA obtained permission from the Government of Mizoram for collection of broom sticks from all the eight Forest Divisions in 2006-07, 2007-08, and 2008-09.The broom sticks collected by villagers from the forest were helped sold to buyers from outside the state. Awareness campaigns have been carried out in different villages from time to time covering different subjects like replacement of shifting cultivation with Broom Grass Cultivation, imparting training to farmers the art of broom grass cultivation, harvesting, drying, sorting, grading and packaging of broom sticks.

Organised trade is taking place in Meghalaya and Mizoram. In Mizoram, state government's flagship programme New Land Use Policy is opening marketing channels for the broom industry. Mizoram government has formed monitoring cell under this policy to monitor the progress and market of the broomstick.

Hnam Chhantu Pawl, major broomsticks manufacturer in Mizoram has entered into an agreement with exporters from Delhi, Bihar, Maharashtra, Punjab and UK. Farmers in Mizoram have sent consignment of 40,000 broomsticks to Russia in 2011. Over 3583 farmer's households are involved in this sector in Mizoram alone. Expert said brooms found in Mizoram are in great demand in the international market. Mizoram made the first major broomsticks export when a consignment of 40,000 broomsticks was sent off to Russia in the early 2011. The market was facilitated by monitoring cell under the state government's flagship programme New Land Use Policy.

Mizoram Broom Industry Ltd has already tied up with five companies to market the Mizoram-produced broomsticks. But the industry is yet unable to meet the companies demand. Broom cultivation is the most opted trade under the NLUP soil and water conservation sector. In Serchhip district, 265 families are engaged in broom cultivation, and produced 293 quintals of brooms in 2011. "We are hopeful that the annual product would double this year" an official in Soil and Water Conservation Department said. Kolasib district in northern Mizoram, which has the largest number of families doing

broom cultivation, has produced 5428 quintals of broomsticks, 3918.19 quintals in green form and 1510.67 in dry form. As many as 965 families in 43 villages in Kolasib district are engaged in broom cultivation which has the largest number of families doing broom cultivation, has produced 5428 quintals of broomsticks, 3918.19 quintals in green form and 1510.67 in dry form. Under broom cultivation, value of broomstick production has gone up from Rs. 37 lakhs in 2009-10 to Rs. 14.26 crore by 2013-14. Increase in the income of broom grass farmers have gone up by 75% as compared to pre commencement of NLUP.

REVIEW OF LITERATURE

Bisht et.al (1998) states that brooms are required in each house, therefore, it has sufficient demand throughout the country and marketing is not a problem. The majority of the production is from subsistence farming areas and dispersed collection from the forest, which are inaccessible to transport networks and markets. It is high volume crop and there is glut in the market during the harvesting season which reduces the local price. Wholesale trading of brooms is a highly monopolized activity. Major portion of income goes to the traders and middlemen. The farmers get very meagre amount i.e., about 35 per cent of the retailers price. Further, its demand in the area of production is very less as other alternatives of brooms are also available locally. Therefore, to improve the economy of people and region, the system of cooperative

marketing needs to be developed. The Forest Corporation can play a good role in this venture.

Sanders (2004) in his article state that for many U.S. manufacturers of brooms, brushes and mops, that prospect isn't at all appealing. Products — especially mops — imported from exotic locales such as Indonesia, China and Sri Lanka are making competitive conditions increasingly difficult for U.S. manufacturers. And while non-U.S.-made products have had a presence in North America for years, manufacturers told Sanitary Maintenance that the inroads these products are making are having a greater impact on the overall market than ever before. But with little in the way of recognized industry standards in place for quality or labelling, the brooms, brushes and mops markets have become a virtual free-for-all. Imported goods are affecting every broom, brush and mop manufacturer. The push by U.S. manufacturers to differentiate their products from foreign goods is not the only market trend apparent in the broom, brush and mop industry today. Manufacturers are also contending with a number of trends, attempting to make sense of how they will affect their businesses. Broom, brush and mop manufacturers are under great pressure. Inflationary increases have hit manufacturing hard in recent months; the cost of raw materials — gas and cotton, for example — has seen a recent price hike, and the effects of the recession are residual.

Rintluanga (2009) state that the vast area under forest cover comprises valuable flora and fauna. More than 400 medicinal plants and 22

species of bamboo have been reported to exist. The important forest produce of Mizoram, mostly in the form of raw materials, are bamboo, timber, firewood, sun grass, canes and broomsticks. The total forest produce during 2005-2006 was valued Rs 257.97 crores. Broomsticks grows wild in Mizoram become an important revenue source of Mizoram, and presently domesticated.

Lowder (2012) mention in his article that household cleanliness begins and ends at the tips of a brooms fibres, whether they're natural or synthetic. A good, stiff bundle of stick and straw can make equally easy work of a crumb-strewn kitchen or a porch sagging with the weight of autumn leaves. Modern broom making truly began, however, with the rise in cultivation of a previously underappreciated crop that would soon be called 'broomcorn'. A species of tasselled grass (sorghum vulgare) that somewhat resembles the sweet corn plant, broomcorn's seeds and fibres had previously been used for animal feed and not much else.

Sanjib (2012) in his article state that broom has a comparative advantage of tolerance to harsh environmental conditions such as steep rocky mountain slopes, shallow soil, drought and high rainfall conditions. It is suitable to grow on waste lands, jhum *fallow* land, as well as in homesteads. It is a multipurpose crop, the inflorescence is used as Brooms and stems are used as

wall building materials. The fibrous root system of the plant is useful in checking soil erosion on steep slopes.

Jose E.M (2012) in his article state that the booming broomsticks industry in Meghalaya is yet to get the agriculture produce tag although broom grass, the raw material, is grown in plenty in all parts of Meghalaya and large quantities of the brooms find their way into markets of Assam and other Northeast states. The total annual production of broomsticks in Meghalaya is 40,000 metric tonnes. While some are sold in the domestic markets, others are in great demand in other north eastern states. But the agriculture department is not keen on developing the industry as broom grass prevents the growth of other plants and affects the ecology. Broomsticks have been grown under various social forestry schemes in the past through efforts of the social forestry wing of the forest department. The stand of the Meghalaya forest department is that even if broom grass is grown on people's land, it will still be considered forest produce. This prevents the sale of broomsticks in an organised way like other agriculture produce, thereby affecting cultivation of broom grass by the farmers. Moreover, for growing the grass, the farmers have to stop cultivating other agriculture and horticulture items.

Konwar (2013) state that broom grass has emerged as the most widely cultivated cash crop in the hills of the Assamese district. Commonly known as *Jharu,* it is grown in the Jhum fallow by people of the Tiwa, Karbi and Khasi communities as a mixed crop for its inflorescences —

groups or clusters of flowers — that are used for making brooms. It also provides fuel and fodder during the lean period every year. Broom grass is a unique gift, an eco-friendly product that brings us closer to nature at the start of each day.

Singh et.al (2013) in their article states that broom grass is an important minor forest produce of Meghalaya grows in the wild in almost all parts of the state. Whole sale trading of brooms was a highly monopolized activity. Major portion (65 per cent) of consumers' price goes to the traders and middlemen. The price fixation of the produce should be carried out through open auction method. At present maximum share of produce directly taken by commission agent. Therefore, to improve economy of the people in the state and region, the system of cooperative marketing needs to be developed.

Prakash (2013) states that Meghalaya is home to a population of 2,306,069 inhabitants (census 2001) with about 5780 villages. The people in Meghalaya find their source of livelihood in agriculture and allied activities. The broom plant is a major forest-based resource for the farmers here and is distributed widely throughout the state of Meghalaya. It is commonly found on the hills, damp steep banks along ravines and on sandy banks of the rivers. Set in a hilly landscape, Meghalaya is divided into 7 districts – East Khasi Hills, West Khasi Hills, East Garo Hills, West Garo Hills, South Garo Hills, Ri Bhoi, and Jaintia Hills. The biggest advantage for the farmers in Meghalaya is the cultivation of broom-grass which is easy and requires less financial

investment. Broom grass grown in the hills is made available to traders in a nursery at Karbi Anglong district of Assam, which are sent to Guwahati by small companies. Usually traders purchase the produce only between February-April. A bundle of 1 kilogram of broomsticks contains about 3-4 sticks and costs Rs.20-22. In the off season, the same is sold for Rs.30-40. To the small and marginalized farmers broom cultivation is an economic activity that sustains their seasonal livelihoods.

Marketing broom grass is easy since Meghalaya offers a vast linkage of all the villages to the wider regional or national market through their local market. In the months of December, January and February these local markets are flooded with broom sticks and the middlemen are the potential buyers. Earlier there used to be no fixed price and it was dependent completely on the price quoted by the middlemen. Now that the market has developed, a stronger framework is used employment to local communities.

Llewellyn (2015) states that broom grass are a significant source of income for subsistence communities, primarily for the women who collect it to manufacture and sell them as brooms across Nepal. In addition to providing cash income when sold as brooms the plant provides a variety of uses to the farmers such as, the leaves provide green forage for livestock, the roots promote soil conservation, and the dried up stems can be used as stakes to support growing vegetables. Broom grass has had a direct impact in preventing frequent landslides, helping retain ground moisture and fertility,

and improving soil quality by reducing soil erosion. Broom grass has the ability to crowd out invasive species when intercropped and is beneficial in retaining soil nutrients to re-grow vegetation. The grass also possesses numerous medicinal properties that are essential in subsistence communities.

SIGNIFICANCE AND SCOPE OF THE STUDY

Hill broom making is a livelihood for large number of tribals. It is a common household item. Economics are worked out based on average costs and these may vary moderately from location to location and required to be modified. Prime Minister Narendra Modi's launch of the Swachh Bharat Abhiyan has evolved much posing with brooms. There is a great demand of brooms from other states of India as well as from the international. But, till today, the production of broomstick in Mizoram could not meet even the immediate demand for broomsticks. Therefore, to improve economy of the people in the state and region, the system of cooperative marketing needs to be developed.

Any individual can initiate broom production from any location considering the availability of the raw materials. Broom plants are the natural vegetation of Mizoram. Most of the producers used it as their main occupation. This has helped many farmers in increasing their income year by year. Broom is used in every household and public place in Mizoram as well as outside Mizoram as a means of maintaining cleanliness.

Project can be initiated as small scale basis. In this study, it is attempted to analyse that before getting into broom marketing, it is important to craft a business plan. First thing we need to decide is the product. What exact type of broom we will be producing. Decide whether we will purchase broom sticks as raw material or we will produce that also at our premise and to determine our business objective and marketing strategy.

Aizawl district is one of the eight districts of Mizoram state in India. The district is bounded on the north by Kolasib district, on the west by Mamit district, on the south by Serchhip district and on the east by Champhai district. The district occupies an area of 3,576.31 square kilometres (1,380.82 sq. mi). According to the 2011 census, Aizawl district has a population of 404,054. This gives it a ranking of 557th in India (out of a total of 640). The district has a population density of 113 inhabitants per square kilometre (290/sq. mi). Its population growth rate over the decade of 2001-2011 was 24.07 per cent. Aizawl has a sex ratio of 1009 females for every 1000 males and a literacy rate of 98.5 per cent.

Since the proportion of person engaged in broom cultivation is negligible, despite it plays an important role to generate income and employment. With keeping in mind about the contribution of broom cultivation, the study is therefore confined to the role and performances of such cultivation. The research was concentrated in Aizawl district only due to various limitations for the study.

OBJECTIVES OF THE STUDY

1. To examine the existing market for brooms in Mizoram.
2. To evaluate the role of government in broom marketing in Aizawl district.
3. To identify the problems faced by the broom growers and suggest measures to solve the problems.

HYPOTHESES

1. Output of brooms depends on the number of workers and the size of holdings.
2. Broom cultivation has a good potential for promoting the standard of living for the farmers.

RESEARCH METHODOLOGY

The study was to examine the importance of farmer's role in the contribution of economic growth in Mizoram and to examine the role played by the government in the export system of the product.

The study was based on primary data only, which was collected from different broom cultivators in Aizawl district. Data consists of purposively collected sample of 50 households who were participated in cultivation of broom. The

study was conducted through questionnaires and discussions, which were filled by the surveyor. The structure of questionnaire was formed to know information about their marketing process and income pattern of the farmers. The collected data was analysed by employing appropriate statistical techniques.

TENTATIVE CHAPTERISATION

Chapter I : Introduction

Chapter II : Review of Literature

Chapter III : Overview on the situational broom market

Chapter IV : Broom marketing in Aizawl District : An empirical analysis

Chapter V : Findings, Suggestions and Conclusion

Bibliography

EMPIRICAL ANALYSIS

ESTIMATION OF OUTPUT

The chief aim of any productive activity is to maximise output. But the level of output differs from region to region, from village to village and also from

farm to farm. The level of output depends, to a large extent, on relative factor endowments. But the output of broom output is dependent mainly on two factors like land and labour. As such the productivity of land and labour are estimated below:

SIZE OF HOLDING AND OUTPUT

Since land is the basic productive factor, the level of broom output is largely dependent upon the size of land under cultivation. It is generally assumed that larger size of holding means larger output and vice versa. Thus, the level of output is supposed to be positively related to the holding size. On the basis of this assumption, the regression of output (Y) on the holding size (X) is estimated as follows:

$$Y = 125 + 14.14X$$

(t=3.35)

$R^2=0.79$

F=11.28

Where Y refers to output and X refers to holding size.

The estimated parameters have the expected values and are statistically significant. Correspond to a unit increase in holding size, the level of broom output increases by 14.14 quintals. So, the equation gives empirical support to our hypothesis that the level of output is dependent upon the size of holding.

EMPLOYMENT AND OUTPUT

Labour is an indispensable input in each and every live of production. As such, the output of broom also depends largely on the number of labour employed on the farm. Hence, more employment of labour means more production and vice versa. Besides, the quantum of labour employed in the production process furnishes income and hence the means of livelihood of those who get employment.

On the basis of this assumption, the regression equation of output on employment of labour is estimated by means of ordinance least squares method. The estimated equation is as follows:

$$Y = 125 + 11.97E$$

(t=3.58)

R^2=0.81

F=12.86

Where Y stands for output and E stands for employment of labour.

The estimated parameters have the expected signs and values which are also statistically significant. Thus, correspond to a unit increase in the employment of labour, the output level of broom increases by 11.97 quintals. So, this equation has given empirical support to our hypothesis that output depends upon the level of employment of labour.

FINDINGS

- The study reveals that there is a positive relationship between the total production and number of workers which means that the total production increases with the increase in the number of workers. During the study period, the total product has shown an increasing rate of 11.97 quintals which shows that more employment of labour means more production.
- The study found out that the level of output is positively related to the size of holdings. The estimated parameters have the expected values and are statistically significant correspondent to a unit increase in holding size. The level of broom output increases by 14.14 quintals. So, the equation gives empirical support to our hypothesis that the level of output is dependent upon the size of holding.
- Since broom cultivation has provided employment opportunities, it ensures that income must be enhanced for the workers. A supplement income will

therefore promote the standard of living of the people. Thus, there is a potential for the promotion of standard of living for the farmers under broom cultivation.

- Since brooms have been used in every household, there is a great demand largely from the other states as well. So, the marketing system is not a problem. Yet, we could not provide the immediate products demanded from other states all at once.
- Among the broom buyers particularly highlighted from the study, Mahal has been the largest buyer so far i.e., 50 per cent because the broom cultivators can sell their products to them at a more profitable rate as compared to other buyers. The broom cultivators have to choose them certainly as they get a chance to gain more benefit by selling it at a higher price.
- 34 per cent from 50 households were selling their products to the local market because their production is limited by the pocket- sized lands in which they cultivate the brooms. As they get an opportunity to sell it directly, readymade booms are made which are then sold off by the cultivators themselves.
- Government have prepared a marketing system for broom cultivators through Hnam Chhantu Pawl. But the data shows that they are the fewest buyers i.e. 16 per cent probably because they bought it at a cheap rate. Every producer wants to have more benefit from their products since they use it for their main

source of income. So, they have to choose the buyers who are willing to buy it at the most profitable rate.

- Among 50 broom cultivators, 80 per cent has received the government scheme called New Land Use Policy. This has resulted in increasing the production of brooms.
- The selling price of brooms varies exceedingly to each of the broom cultivators because there is no fixed market price. From the data collected, the lowest rate of selling price is Rs. 7 and the highest rate is Rs. 100.
- Our study reveals that broom growers have been approached by various private traders who offers them a more handsome amount than the Hnam Chhantu Pawl did. Most of these investors come from outside the state which resulted in the farmers selling their products to these willing investors from outside. However, this inadvertently disrupted the flow of benefit for the state as more and more farmers are selling their products to these investors who are equally willing to do a pick up from the fields.
- It is also one of the main findings that broom easily catches fire and so the broom cultivators lose their brooms in forest fires and thus, could not meet their expected rate of production.
- Brooms are used for feeding animals and it is being used in many countries especially for cows. So, there are many instances where cowherds pilfer the brooms without the knowledge for feeding cows before they gather. This had led to the reduction of the production.

- Among 50 households, 35 families have produced less than 50 Quintal, 7 families have produced between 50-100 Quintals, and 6 families produced between 150-200 Quintals, between 100-150 Quintals and 200-250 Quintals are produced both by 1 family.

SUGGESTIONS

- Proper storage facilities are highly required in Mizoram which will enable the broom cultivators to keep a surplus that will be sold at the time of scarcity.

- Throughout the year, broom is in high demand in and out of the state, therefore, the sale and export of brooms is not a difficult task. Besides this, it will have more increasing sales if cooperative market structure is provided in every locality. Moreover, it will also be easier for us to buy at any time according to our needs.

- The government has provided some aided funds i.e. NLUP to the farmers to improve and increase their production. But due to improper distribution of funds, some of the broom growers have faced problems in terms of hiring labourers. So, it is suggested that there should be proper distribution of this fund.

- Regulated market is needed everywhere to relieve the immediate need of the people. If the state government had taken up proper regulations in this field of trade, it will be the government that will gain the most from it.

- There is no fixed price of brooms planned by the government. So, different prices have been charged on the same products. Therefore, it would be beneficial if the government could plan a fixed price of brooms.

- If the cultivators could carefully look after the yard by hiring a regular keeper, most of the broom growers would be able to save their products from being stolen.

- The government should increase the purchasing price of brooms in order to reduce the selling of brooms to willing buyers from outside the state. This will in turn accelerate the economy of the state.

CONCLUSION

This paper reports a study of broom cultivation carried out in Aizawl district, exploring the production, financial profitability and marketing of brooms products, the problems and suggestions as well as their potential contribution to employment opportunity. A sample survey was conducted 50 randomly selected with personally interviewed and questionnaire. Broom cultivators

views on major problems and suggested measures to improve are also collected. Broom cultivation will generate more domestic revenue, exporting products and employment if suggested measures are taken and expanding market facilities in both the local and domestic markets. I hope that this paper will be a step toward taking the findings to the people.

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