From Chief Editor’s Desk

Non-Timber Forest Products (NTFPs) occupy an important place in the rural economy of Tripura and other north-eastern States. NTFP Centre of Excellence (NCE) was established under Tripura JICA Project with the broad objectives:

- to develop database on NTFPs and their management;
- to promote NTFPs as a means of livelihood for the masses on a sustainable basis;
- to facilitate marketing of NTFPs;
- to train forest fringe dwellers in farming, cultivation and management of NTFPs; and
- capacity building of the forest dependent communities on utilization of NTFPs and their value addition.

NCE carries out its activities under the broad functional areas of (i) Bamboo and Cane Research and Production (ii) NTFP Research and Production; and (iii) Value Addition and Marketing.

Excellence in service sector has three dimensions: total customer satisfaction, continuous improvement and conscious and sustained efforts by both customer and service provider to achieve these. For NCE, which is essentially envisaged to be a leading service provider in the NTFP sector in the entire North-east, dissemination of information and awareness to target groups is an important strategy to achieve its objectives with constructive exchange of views among stakeholders.

NCE has decided to publish a monthly Newsletter MANJARI (acronym for Mobilizing Attention to NTFPs and JFM Cs Among Rural Institutions) with an aim to establish linkage and share knowledge pool on various aspects of NTFPs among the field practitioners, managers, researchers and other stakeholders. While NTFPs are a particular focus, articles on a wide range of NTFP topics will be covered by receiving valuable contributions from the scientists, experts and field managers. The Newsletter will be published in simple language which can attract the attention of the rural institutions like JFMCs, NGOs, SHGs, social groups, students, entrepreneurs and policy makers.

Broom grass is one of the major NTFPs 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 Forest 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 practice 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 forests alone.

Experience gathered so far also shows that there is already in existence a well thought-out and very customized grass-root level institutions of JFM Cs, whose potential can be harvested to build up capacity for not only trade in NTFP to the advantage of such marginalized sections of the society, but also beyond. It is in this context that NCE has chosen the theme of its inaugural issue as Broom Grass.

Hope this Newsletter will be useful in generating awareness about NTFPs, the need to conserve them as a resource, that they are not inexhaustible, and will result into concrete time-bound action by the stakeholders and resource managers.

- Angshuman Dey
MESSAGE

I am very happy to learn that NTFP Centre of Excellence is going to publish the inaugural issue of a monthly newsletter ‘MANJARI’ to highlight the status and development of non-timber forest produces (NTFPs) in Tripura and other north-eastern States.

The forest fringe dwellers of Tripura are largely dependent on NTFPs for their livelihood. Forests of Tripura has been a store house of major economically important NTFPs like bamboo, medicinal and aromatic plants, fruits, tubers, barks, grasses and fibres. These NTFPs such as fuljhari, wild elaichi, mucona, gandhaki, etc., have fetched considerable additional income to forest dependent communities and have the potential to improve their financial status substantially. To ensure sustainability, NTFP species would need cultivation and harvesting in a scientific manner. MANJARI will surely provide an effective forum to sensitize the stakeholders and provide information on all these issues.

I congratulate the editorial team for their efforts in compiling and bringing out the Newsletter every month. I am sure that the Newsletter would be of immense value to grassroot level managers and to those for whom it is meant.

I wish all the best for its publication.

(Naresh Chandra Jamatia)
Broom Grass - The Wonder Plant at a Glance

Pawan K Kaushik* and Dr. Santosh Kumar**

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Common Names: Tiger grass, Broom grass and Bouquet grass

Vernacular Names: Jhadughas (Hindi); Amlisco (Nepalese); Taza (Nishi); Kamgang (Adi); Epapani (Apataki); Phooljhadu(Assamese and Bengali) Nakshi (Kokborok), and Rema (Bengali-Barak Valley).

Scientific Name: Thysanolaena maxima (Roxb.) O. Ktze, (Family: Poaceae) Thysanolaena comes from Greek word ‘thysan’ meaning fringe, and ‘laena’ meaning cloak, in reference to fringed bracts (lemmas) in the inflorescence.

Distribution: Endemic to Tropical Asia; India—especially Meghalaya, Assam, Arunachal, Mizoram, Nicobar Islands, West Bengal (Darjeeling), Tripura—throughout, abundantly in the districts of North Tripura and Dhalai; Bangladesh, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Myanmar, New Guinea, Nepal, Sri Lanka, Thailand, Vietnam and Philippines up to an elevation of 1,600m.

Plant characteristics: C3 species; grow up to 3 m tall, stems solid; Flower panicles 60-90 cm long, huge and drooping.

Habit: Evergreen, tall, rhizomatous, tufted perennial grass; has solid, smooth and rounded culms; wild but suitable for cultivation too; grass clump is in tussock (bunch) form; culms arise centrifugally, green when young, brownish green at maturity.

Habitat: Grows in shady hill slopes, rocky soil structure, damp steep river banks, valleys; wide range of agro-climatic conditions in varying soil type.

Regeneration: Natural – by seed dispersal and rhizomes. Artificial – tillers of wild plants proliferated for nurseries and plantations. Planting Season – April-May, once planted may continue viable production till 8 to 12 years. Annual Harvesting – Dec. to March in three phases based on different stages of maturity.

Uses: Multipurpose non-perishable Non-Timber Forest Produce (NTFP); soft brooms, handicraft, organic paintbrush (panicles); palatable fodder (leaves); biofencing, harvested broom sticks in fencing, fuel, wall building materials; checking soil erosion (fibrous roots), pulp and paper; medicine- roots used in bronchitis, skin boils (Rai, 2003) anthelminthic, anti-microbial (Mahato and Chaudhary, 2005), flatulence (Jana and Chauhan, 2010), flowers in rheumatic pain and skin swelling (Maity et al., 2004); weed suppressor (Khisw et al., 1999); support stake for trailing crops, reedpens (Bhuchar, 2008); landscape and ornamental purposes (Ramm Botanicals, 2009); mulching, roofing materials (Bishit and Aahlawat, 1998) and wrapper for steamed foods; substrate for the cultivation of oyster mushroom (Srijumpa, 2002); dyed panicles in carnival costumes and decorative extenders (Fetalvero et al., 2011).

Broom Grass in the Eyes of a Poet

An Unsung Saga

I grow and flourish
Over the boundless vast lands
To be plucked for sustenance
by some poor hands

Sorted with efforts, bundled
Taken around and sold
Oh the crafty artisan hands
Give me shape and mould

Displayed in style grand
For all to see a nice find
I proudly smile and bend
For eyes searching and kind

To make them nice and clean
Taken to my true home
I know how much I mean
In India or in Rome

My work is the first lesson
For all common or renowned
To live in a healthy fashion
with happiness to be crowned

Offering livelihood to poor
To deprived and those in need
Bring wealth at their door
My words you all should heed.

Dhruba Gurung
Scientist
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Broom grass grows naturally in the hilly terrains of the northeastern region. It can withstand a wide range of agro-climatic and harsh environmental conditions such as high rainfall, low temperature, steep rocky mountain slopes with varying soils from sandy loam to clay loam having a pH range of 5.3-9.3. 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.

Selection of best performing planting materials having desirable characters can boost the productivity of crops. Broom grass can be propagated with the help of cut rhizomes in the early summer months. Seeds have the potential for large-scale propagation through simple conventional method (seed dispersal). Being a recently domesticated plant, little is known about its growth features, productivity, and plantation management by the farmers. Here an effort has been made to describe the cultural practices of the species for efficient use by the farmers.

Natural regeneration, propagation and cultivation:

Broom grass is naturally regenerated through seeds in wild habitat. The seeds mature during Feb. to March and disseminate by wind or water to long distance due to their light weight. The seedling establishment and growth are good in exposed areas like landslides and freshly disturbed soil specially near road construction sites where light is naturally available.

Methods of Propagation

A. Propagation by seeds:

Seed nursery: After senescing the inflorescence, seeds are obtainable during March. Seeds can be collected from the panicles at maturity and can be stored in dry condition for 2-3 months. Well hoed moist bed of rich soil measuring 2m x 1m is prepared and 5-10gm seeds are broadcasted by covering it with a thin layer of sand and thatch grass during the month of March-April. Proper watering is essential. After two to three weeks the seeds start germinating. Transplanting of seedlings is done to poly bags or other beds after 4-6 week of germination when it produces 2-3 leaves. The poly bags should be filled with a mixture of top soil, sand and farm yard manure (FYM) in 1:2:1 ratio. Watering is done regularly and seedlings are planted during the next rainy season.

B. Propagation by rhizomes:

Clumps of healthy tussocks are selected from natural stock. In March-April, rhizomes are uprooted and the upper portion is cut up to 12-15cm long having bud-sprouts. Culms should be cut with rhizome portion and raised in nursery bed/poly bag with soil, sand and FYM in the ratio of 1:2:1 or directly in the field.

Cultivation:

Broom grass can be cultivated easily on marginal lands, wastelands and jhum fallow. It prefers sandy loam to clay loam soil. Field is prepared before March. Pits of diameter 30-50cm are dug in the field and left for one month for weathering. The seedlings should be planted at a spacing of 2m x 2m in comparatively dry and plain land, 2.5m x 2.5m in fertile hill slopes, jhum lands, riverine and damp steps. Sprouted rhizomes from the nursery are transplanted within three months and plantation should be done with the onset of monsoon during April-June when soil has sufficient moisture. 1600 to 2500 seedlings are required for planting one hectare area. FYM (2 kg per pit) are mixed in each pit soil before planting. FYM can be

Transplanting of seedlings in polybags

Quality offset collected from healthy tussocks
applied in soil during the second year also to get a better yield.

Wild seedlings can also be collected for on-farm cultivation on commercial basis and split rhizomes from the existing clumps can be used which is again easy to get. However, it is better to be sure about the quality and growth of existing clump with long panicle (broom/jharu). Else it is better to get quality seedlings from reputed nurseries for commercial cultivation. The rhizomes are easy to transport to long distances for propagation as well as for plantation. The cut ends of culms can be dipped in melted wax to prevent drying and decaying. A small clump of rhizome having 2-3 culms with 4-5 nodes is good for planting and gives cent per cent result. The sprouted seedlings/rhizomes are ready within two months for transplanting to the field. Panicle initiation takes place from October onwards.

**Plant Protection :**

Cut portion of the rhizome can be dipped in Carbendazim solution @ 0.1 g/l as a prophylactic measure to control fungal attack. Fencing of the field is essential to prevent damage of seedling from grazers. Two to three weeding are necessary in the first year and after that minimum care is required. Similar operations in subsequent years are necessary for obtaining better returns.

**Harvesting and Ratooning :**

The panicles from the grass are harvested from Dec. to March when the panicles become tough and its colour changes to light green or red or brown. Harvesting is done carefully just before maturity without damaging the newly sprouted shoots by cutting above the ground or hand pulled. The panicles are disjointed from culms and dried under direct sunlight for a few days. Burning of the field is necessary to boost up the sprouting of new shoots after harvesting. Yield varies with site; however, maximum yield is generally obtained from third year onwards. The ratoon of this grass can be taken up to the 5th year of planting. It is better to replant after 6th year for better economic returns.

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**Production Economics in NE Region**

**Assam**

**Economic Analysis of Broom Grass Intercropping with Pigeon Pea (Arhar) in Karbi Anglong**

Dr. Indrani P Bora

*Scientist, Rain Forest Research Institute, Jorhat, Assam, e-mail: borp@icfre.org*

Broom grass can thrive in hostile environmental conditions even in nutrient deficient soil of hill slopes. The cultivation of broom grass has an advantage to cope soil erosion, sustain land management and can be used as a tool for reclamation of degraded land. Plantation of broom grass in degraded forests and wastelands may be a better option because of its high economic return with minimum input. Availability of vast areas of degraded land under shifting cultivation in this region favors the adoption of a large-scale cultivation of broom grass.

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. In case of intercropping, the spacing of plantations varies from 2.5m x 2.5m to 5m x 5m depending on the associated crop whereas
in monoculture, the spacing is generally kept 2m x 2m. In KabiAnglong district of Assam agricultural crops such as rice, pigeon pea and millet has been grown as a mixed crop for initial year. Pineapple, tapioca and ginger are also cultivated with this grass for one to two years as mixed crop. Combination of broom grass with Jati bah and Areca nut is practiced in some areas for livelihood security in Assam. The maximum height of a tussock of this grass is attained in third year, while basal girth and culms numbers continue to increase. The increase in the number of broomstick production is directly associated with the number of flowering culms.

Cultivation economics of broom grass intercropped with Pigeon pea:

An experiment conducted on broom grass with perennial pigeon pea (Cajanus cajan) in Assam conditions concluded that cultivation of broom grass along with pigeon pea as nitrogen fixing green manure plant can significantly increase the nutrient status of soil and ultimately lead to higher production. Profuse growth of leafy foliage of pigeon pea and its easy decomposition plays a significant role for the enhancement of carbon content in soil. Increment of total nitrogen is due to the contribution from root nodule and addition of biomass into the soil. The model is proved suitable for degraded lands under shifting cultivation ranging from steep to moderate hill slopes in this region.

Economics was calculated by interacting with farmers of the Borpu village under Chinthong Block in Karbi Anglong district (Assam). The information gave a general idea about the economics of cultivation and can be promising to the farmers, jhum cultivators and other growers who intend to cultivate broom grass intercropped with suitable site specific crops. However, yield varies from site to site depending on soil fertility, cultural practices, labour efficiency, wages, market price, demand, etc.

Based on data collected during the first two years, the prediction analysis of cost and return of broom grass cultivation model was applied in one hectare area intercropped with perennial arhar and in monoculture. The results revealed that an income of Rs 0.80 lakh, 1.92 lakh, 3.28 lakh and 2.60 lakh in intercropping and Rs. 0.50 lakh, 1.20 lakh, 2.80 lakh and 2.60 lakh in monoculture during the 1st, 2nd, 3rd and 4th year, respectively.

Meghalaya

Broom Grass: Its Cultivation and Production Economics in Meghalaya

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In Meghalaya, broom grass was first introduced by the state forest department about three decades ago under a silvi-pastoral system in social forestry plantations for generating income during gestation periods, i.e., period between plantation and harvest of timber. Subsequently, the plant has been domesticated and cultivated on a large scale by upland farmers. This plant, therefore, provides a typical case for understanding the role of domesticated NTFPs in enhancing the livelihood of the rural poor. It grows in almost all parts of Meghalaya, where it covers an estimated area of 127km². The Ribhoi and East Khisi Hill districts account for more than 70% of the total production of brooms in Meghalaya. Broom grass cultivation is an effective instrument for the generation of cash income in rural Meghalaya, as its cultivation needs the minimum input of labour and generates a very attractive economic return.

Broom grass cultivation provides a good profit to the growers. The yield varies between 300 and 500kg 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, 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 (Table 1). 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 (Fig. 1). 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 (AIR) showed that the ratio varied between 3.19 and 3.46.

Meghalaya has now emerged as one of the largest producers and exporters of broom grass in the country. Ninety percent of the brooms produced are exported outside the State. The production of brooms in Meghalaya, from 2004 to 2009, shows that there is a trend of increase in production, price, and growers’ income (Fig. 2). This may be attributed to the expanding market for the product. The steady increase in the price shows that the price was regulated by external demand. The drop in price during 2005 and 2006 may be attributed to the doubling in the production within a year, possibly causing a glut in the market. However, during the subsequent years, when production either increased moderately or plateaued, the price continued to increase.

Broom grass cultivation has a high benefit-cost ratio and it has a very good market. Even without any external intervention, cultivators are getting good returns because of low investment and quick production, as it can be harvested annually after one year of planting. However, the major constraints in this practice are identified as inadequate credit and storage facilities to the collectors and growers. They often suffer due to low price paid to them by the local traders. Therefore, proper management regime with processing and value addition facilities can further enhance the economic growth of broom grass cultivators.

Table 1. Cost-benefit analysis for one-hectare plantation area (Rs.)

<table>
<thead>
<tr>
<th>Years</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Total (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>3,000</td>
<td>5,200</td>
<td>9,570</td>
<td>12,350</td>
<td>4,500</td>
<td>900</td>
<td>35,520</td>
</tr>
<tr>
<td>Production Cost</td>
<td>3,700</td>
<td>1,400</td>
<td>1,550</td>
<td>1,550</td>
<td>850</td>
<td>400</td>
<td>9,450</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Labour</th>
<th>1. Site Clearance</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Weeding (twice/year) &amp; Harvesting (once/year)</td>
<td>1200</td>
<td></td>
</tr>
<tr>
<td>3. Pit Digging and Rhizome Planting</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td>4. Transportation to Godown</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Materials- Small Tools and Implements</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Net Income (Rs.)</td>
<td>-700</td>
<td>3,800</td>
</tr>
</tbody>
</table>

Note: Benefit-cost ratio at 10% annual interest rate (AIR) = 3.46; benefit-cost ratio at 15% AIR = 3.32
Benefit-Cost Ratio at 20% AIR = 3.19. (Data pertain to the year 2004.)

Fig. 1: Year-wise net income from broom grass plantation

Fig. 2: Annual production of broom (dry inflorescence) and cash income to farmers in Meghalaya.
(Source: Khadi, jaitia and Garo Hills District Councils Statistical Abstracts)
Viable Practice of Broom Grass Cultivation in Arunachal Pradesh

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Broom grass abounds specially in forests of northeastern India up to an altitude of 2000 m. It grows in tussocks with a density of 4-5 tussocks per 10m² area in wild. The new culms arise from the old clumps from May-August and fallen seeds germinate during the months of April-July. It bears a long panicle. The inflorescence is about 30-100cm long, resembling foxtail shape of shoot apex which is used as broom/haru on maturity. It attains 3m height in suitable climates. Generally, leaves are bright green, 20-45cm long and 2-7cm wide with stiff hairy short petiole. The highest yield is obtained in the third and fourth year. The maximum growth takes place from 2nd year onwards when annual increment in the number of culms per tussock is very high. The yields of broom mainly depend upon the quality of planting material, type of land and cultural practices adopted. The yield obtained on plain fertile land at Lathow (Research Station of SFRI) is as follows-

<table>
<thead>
<tr>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of culms per tussock</td>
<td>13-25</td>
<td>54-78</td>
<td>213-275</td>
</tr>
<tr>
<td>Av. height of tussock (m)</td>
<td>1.56</td>
<td>2.38</td>
<td>3.26</td>
</tr>
<tr>
<td>Av. inflorescence of length (m)</td>
<td>0.95</td>
<td>1.13</td>
<td>1.23</td>
</tr>
<tr>
<td>Av. dry matter production tons/ha</td>
<td>5.41</td>
<td>8.9</td>
<td>10.4</td>
</tr>
</tbody>
</table>

Source: Bisht & Ahlawat (1998)

Brooms are required in each house, therefore, it has a sufficient demand. The majority of the production is from subsistence farming areas and dispersed collection from the forests. Cultivation of broom grass can be a good profitable enterprise. The per ha estimates for cost of cultivation, yield and economic returns of cultivation have been worked out on the basis of experimental plantation raised at Lathow, Namsai and is as under -

Cost of broom grass cultivation engaging DLs (Daily Labours)

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>COSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jungle cutting, debris removal, ranging, clearing, stacking: 50 DLs @ Rs. 135/-</td>
<td>6,750</td>
</tr>
<tr>
<td>Digging of 1600 pits (30 cmx30cmx30cm), transportation and planting: 100 DLs @ Rs. 135/-</td>
<td>13,500</td>
</tr>
<tr>
<td>Farm Yard Manure, BHC or Gamekine @ 10 g/Plt (LS)</td>
<td>5,000</td>
</tr>
<tr>
<td>Weeding and soil working (3 times) 10 DLs @ Rs. 135/-</td>
<td>1,350</td>
</tr>
<tr>
<td>Harvesting and drying of brooms: 40 DLs @ Rs. 135/-</td>
<td>5,400</td>
</tr>
<tr>
<td>Bundling, transportation and other expenses: 40 DLs @ Rs. 135/-</td>
<td>5,400</td>
</tr>
<tr>
<td>Cost of seedlings/propagules 1600 nos. X Rs. 8/- if purchased + 15% vacancy filling</td>
<td>14,720</td>
</tr>
<tr>
<td>Total cost of cultivation for the first year</td>
<td>52,120</td>
</tr>
<tr>
<td>Maintenance cost in 2nd and subsequent years</td>
<td>Rs. 2700 per year</td>
</tr>
</tbody>
</table>

Note: The value of the fodder, fuel wood, sticks are not included in this calculation.

It is seen that, for cultivation of this grass, if daily labourers are not engaged, the cost of establishment will be very less and profit will be more from 1st year onward, and very high profit in subsequent years. The table below gives the expected yield and income from the cultivation. Cultivation of this grass can wean away the practice of shifting cultivation and reduce the excessive dependence of people on forests.

Expected yield and income from the cultivation of Broom-grass/ha

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Yield</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Av. yield of culms/tussock</td>
<td>18</td>
<td>60</td>
<td>225</td>
<td>180</td>
</tr>
<tr>
<td>2.</td>
<td>Total yield of culms (from 1600 tussock)</td>
<td>28,800</td>
<td>96,000</td>
<td>3,60,000</td>
<td>2,88,000</td>
</tr>
<tr>
<td>3.</td>
<td>Total No. of brooms or Jhadu (Av. 25 sticks/jhadu)</td>
<td>1152</td>
<td>3840</td>
<td>14,400</td>
<td>11,520</td>
</tr>
<tr>
<td>4.</td>
<td>Total income (@ Rs 30 per jhadu (Av.)</td>
<td>34,560</td>
<td>1,15,200</td>
<td>4,32,000</td>
<td>3,45,600</td>
</tr>
</tbody>
</table>
Broom Grass under Agroforestry – A Success Story of Participatory Research & Extension

Pawan K Kaushik* and Atanu Saha**

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**Deputy Conservator of Forests, Centre for Forest-based Livelihoods and Extension, Agartala, Tripura, e-mail: atanu@cfbre.org

Broom grass has a very good potential in generating local employment and can turn into a profitable enterprise, by enhancing rural income with minimum efforts and management. The brooms made out of this grass are more durable than other plants. Its cultivation can also promote the sustainable use of fragile and degraded lands. Broom grass can withstand a wide range of agro-climatic conditions with varying soil type. The grass can be successfully grown in the hilly tracts even on degraded jhum fallow lands in the region and its cultivation on degraded jhum fallow has a good prospect to arrest environmental degradation.

Benefits of Broom Grass based Agroforestry

**Tangible benefits**:
- Income generation.
- Increased livelihood opportunities.

**Intangible benefits**:
- Increased soil fertility.
- Decreased soil erosion.

In the study site, the northern region of Tripura, the farmers were motivated to cultivate the grass under agroforestry in otherwise unutilized lands available with them. A design of geometrical arrangements was prepared by following participatory decisions on suitably mixing broom grass with chilli, brinjal, and perennial arhar under agroforestry.

**Participatory Planning and Implementation**:

In North Tripura, realizing the strength of the site in Depachhera village under Kanchanpur Forest Division, the villagers were explained about the benefits of cultivating broom grass along with perennial arhar. Jhumias in the village were motivated to cultivate this cash crop.

The PRA approach while interaction and mutual consultation with the villagers resulted in planning the geometrical arrangements of different crops in suitable designs with the site-specific conditions.

**SWOT Analysis**

Based on the information collected through PRA, a SWOT analysis was exercised to assess the existing practice of Broom grass in the locality and the attributes so identified were recorded as follows -

Exercise SWOT Analysis on Broom Grass Cultivation at Depachhera in North Tripura

under agroforestry as an alternate to shifting cultivation.

In Depachhera, shifting cultivation (jhum) is practised in nearly 1/3rd area besides 2/3rd of settled cultivation and food crops are raised mainly for sustenance. Bamboo, rice, potato, maize, banana and fruits (orange, pine-apple, lemon, litchi etc.) are the main crops. 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. An appraisal during SWOT analysis reiterated the jhum practice as highly unproductive.

'Broom grass contributes the most to their annual income whereas the local jhum practice does not have potential to depend upon.'

<table>
<thead>
<tr>
<th>Strengths (S)</th>
<th>Weaknesses (W)</th>
<th>Opportunities (O)</th>
<th>Threats (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Can flourish in variety of soils and lands of the locality.</td>
<td>- Cost of subsidiary raw material for making broom is very high.</td>
<td>- Suitable site conditions.</td>
<td>- A good quantity of broom grass is damaged due to squirrels.</td>
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<td>- Good quality raw materials (1 kg of Broom grass can make 3 numbers of brooms).</td>
<td>- Role of middle man could not be eliminated.</td>
<td>- Good quality broom grass produced in terms of flexibility.</td>
<td>- Fog and rain can spoil the harvested product while drying.</td>
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<tr>
<td>- Yield is also higher as compared to other areas in the state as well as in the region.</td>
<td>- The profit margin reduces while selling the product in retail.</td>
<td>- Availability of lands on hill slopes suitable for broom grass cultivation.</td>
<td>- Susceptible to termite attack.</td>
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<td>- The policy suggesting it to grow on wastelands and steep slopes will not hamper the practice much.</td>
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<table>
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<tr>
<th>Score of Weightage</th>
<th>Positive attributes</th>
<th>Negative attributes</th>
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<tr>
<td><strong>S</strong></td>
<td><strong>O</strong></td>
<td><strong>W</strong></td>
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<td>76%</td>
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SWOT Analysis of Broom Grass cultivation in Depachhera, North Tripura
where they could harvest only 3 kg paddy from 1 kg seeds by investing labour and care for at least 4 to 5 months. Collection and sale of broom grass from the wild had been comparatively a profitable practice where they only need to invest labour and time and no initial investment is involved. Presently, due to unsustainable harvest and lack of management of natural stock, production of broom grass got reduced to 59% in three years time (2010 to 2013) from the wild.

Description of the model:

This model aims to produce broom grass as a primary product along with by-products as fodder besides generating an additional income by intercropping perennial arhar, brinjal and chilli. The slips of grass collected from wild were planted in 2m x 2m spacing. Perennial arhar was intermixed by sowing seeds following the same spacing with broom grass plantation. With regard to utilizing the interspaces available during initial years, and lean period (March to June) in subsequent years, the vegetable seeds like brinjal and chilli were also sown at 2m x 2m as under storey crop along with broom grass and arhar.

First year of cultivation: The rhizome of broom grass of wild habitat was collected and cultivated in the cleared fields. To ensure higher economic returns, selection of desirable and superior individual was taken care. The criteria for selection of superior individuals are the height of tussock, inflorescence length and number of culm/tussock. Broom grass was planted during April, 2013. Peak vegetative growth was observed during July-Sept, 2013. The productive period started with the flowering of the plant from Oct to Feb.

Weeding was done twice in initial phase of establishment. The inflorescence became ready for harvest by Dec-Jan and the harvest continues until March.

The other crops viz. arhar, brinjal and chilli were raised through seeds by dibbling and maintained by applying simple operations like weeding, soil working, compost application, etc.

Second Year of cultivation: The maximum height of a tussock attained presently (Sept, 2014) up to 5-8 ft while basal girth and no. of culms continued to increase (no. of tillers increased by twice). Yield of flowers is expected to increase due to increment of productive culms per tussock in 2nd year of cultivation.

Economics under Agroforestry

The panicle known as Arjun flower collected for making a broom is a primary product and has an organized market linkage in Tripura as well as in other neighbouring States in the region. The dry ‘Arjun Phul’ (broom grass panicles) are sold as raw material to local and national entrepreneurs on wholesale basis. The secondary products like pulse and vegetables also have access to local markets besides meeting their domestic consumption when harvested during March to July every year.

The results of field data analysis and participatory observations recorded from sample plots at Depachhera, Pecharthal in the year 2013-14, enables the farmers to understand the economics of broom grass under agroforestry when intercropped with other crops. Economics has been worked out on the basis of data collected for first year. Projections have been made for the same model existing in the field for the second year based on the data collected so far and observations recorded so far in participation with the group of practicing farmers. The estimate could be realized very soon, just after 4 months from now. Details, at a glance, are as under -

**Economics of the model in first year**

In upper storey component 2500 plants of broom grass planted under intercropping with Perennial arhar, chilli, brinjal and banana in an area of 1 hectare (Arhar, Brinjal and Chilli intermixed in the interspaces).

- Total expenditure/ha: Rs. 57,700/-
- Total return/ha: Rs. 2,04,250/-
- Net Return: Rs. 1,46,550/-

(Last year sale price - Broom grass flowers @ Rs. 45/kg, Arhar - Rs. 30/kg, Brinjal - Rs. 20/kg, Chilli - Rs. 30/kg and wage rate - Rs. 200/- per manday)
Economics estimated for second year

- Total expenditure/ha: Rs. 29,900/-
- Total return/ha: Rs. 2,20,500/-
- Net Return: Rs. 1,90,600/-

(In second year chilli and brinjal plants are not there because of substantial shade of the main crops. The no. of arhar plants also reduced to 625/ha (25%) due to wind damage after first harvest and also due to competitions with broom grass under huge but centrifugal expansion in second year)

It is to mention that expenditure for each crop mentioned here includes all initial costs (on cleaning and preparation of site, collection of planting materials, bamboo fencing etc.). Rent of land, as standard, Rs. 10,000/ per ha per year is also included along with other recurring expenditures i.e., planting, cost of seeds and sowing, watering, harvesting, packaging etc.

Adaptability of the Model - On-farm Extension:

Extension of the model has got a vast scope in the locality. With an aim to popularize the model and extend it to other farmers’ fields, an on-site meeting was organized where a total of 25 farmers participated. Though the plot exists inside the village, down a hill slope, most of the farmers were visiting the plot for the first time. While taking part in participatory appraisal for economic evaluation of input and output, they were much anxious to know about the net income. The farmers were highly motivated to take up this practice on their own land. And thus, a list of all the farmers was prepared along with their available land details for extension of model in the next season. The leading farmer being the owner of the plot, has also promised to help them by providing arhar seeds and broom grass slips at nominal costs to extend the practice for better business opportunities in the locality.

Realizing the benefits, other 10 farmers started practicing this model on their own lands in the village. Another group of farmers from Mohanpur (West Tripura) also visited the site and have adopted this practice on a trial basis for testing its performance under a different site condition.

Traditionally, the forest dwellers collect broom flowers from their common lands in the wild and therefore competition amongst the collectors certainly exists. The insecurity prevailing due to such competition instigates them to not leave opportunity to others and hence they do not wait for its maturity many a times. As a result, the immature panicles are also harvested by compromising with its quality. This unsustainable harvest takes place by damaging both the product and the plants in the initial phase of harvest, which not only affects the quality but also the yield in forthcoming phases of subsequent phases of harvests. Whereas, whenever farmers take up cultivation on their allocated lands, it minimizes insecurity and internal competition. At the same time, broom grass is grown and harvested in a scientific manner, allowing the panicles to mature properly so that panicles of better quality as well as quantity can be harvested which in turn fetches them higher price for their produce.

Conclusion:

Cultivation of Broom grass offers a lot for rural livelihood as well as environmental security particularly in Northeast Region. The model of extension approach discussed here has been observed to be effective. The model is highly suitable for the climatic conditions of northern Tripura and thus, could also be extended to other Sub Tropical Hill Regions of Northeast India. A policy intervention is also needed in regard to encourage sustainable harvest by regulating the market price based on quality gradings; and also its cultivation by providing incentives to the growers with higher price for their produce. This will increase the overall productivity in turn.

Inferior produce from wild: improperly harvested at immature stage. Superior produce from own farm: properly harvested at maturity.
Broom Grass Marketing in Northeastern States of India

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Broom (Jhadu) is a commercial product derived by bundling dried inflorescences collected from broom grass which can be stored or transported to distant places. Thus, broom grass can be grown as a cash crop in the north eastern region to promote sustainable use of fragile and degraded lands; and generate local livelihood opportunities.

**Marketing scenario**

Broom grass has 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 play a major role in price settlement. Being a high volume crop, ample supply in the market during the harvesting season reduces the local price (Singh et al., 2013). 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% of the retailers’ price (Bisht and Ahlawat, 1998) as its demand in the area of production is very less as other alternatives of brooms are also available locally. Hence, about 65% of the consumer’s rupee goes to different intermediaries of broom grass prevailing in the market (Fig. 1).

Broom cultivation is an economic activity to the small and marginalized farmers that sustains their seasonal livelihoods. If

![Fig. 1 Distribution of price paid by the consumers for broom grass product](image)

broom cultivation is promoted on a large scale it will help in development of the NE region by providing employment and thus contributing to the national growth as a whole. 90% of the brooms produced are exported outside the region with Guwahati serving as a prime centre of trade. The brooms are exported in a raw and unprocessed form to various parts of India. According to the traders operating from Guwahati, the brooms are also exported to Pakistan, Middle East, and European countries such as France, Italy, and Germany. Among the Northeastern States, Meghalaya can easily claim to be the ‘broom capital’ of India.

According to Tiwari et al. (2012) the grower in Meghalaya can 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 tons 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 NTTP Centre of Excellence, Tripura has also intervened in a big way in 19 forest ranges in Tripura to facilitate the collection and trade.

As per current market trend a bundle of 1 kg of broomsticks containing about 3-4 sticks is sold around Rs. 20-25 while the

same may fetch Rs. 30-50 in the off season. An analysis of the market trend of broom grass in recent years exhibits it to be a stable commodity devoid of major market fluctuations (Fig. 2). Average broom grass price at present is around Rs. 55,000 per metric ton while top grade material can reap as high as Rs. 80,000 per metric ton.

**Problematic areas in marketing**

The marketing chain of broom grass originates from collectors/ producers and normally moves through a number of intermediaries consisting of local commission agents or brokers, retailers, traders before reaching the consumers. There is a

‘The majority of the production comes from subsistence farming areas and collection from dispersed forests, which are generally inaccessible to transport networks and markets.’

Decentralized Supply Centres in Northeast Region

‘The collectors/producers and consumers suffer in the whole trading process while others flourish.’
considerable gap between the wholesale and retail prices (as high as Rs. 60-70 per broom) in those places. Sometimes collectors move their produce through LAMPS/PACs and State Federations which deal with traders directly. However, the proportion of this channel remains low due to unidentified reasons. The main grey areas in the marketing of broom grass have been summarized below:

**Ample supply of produce in harvest season**: Generally the supply floods the market during the harvesting season which results in low returns to the collectors.

**Lack of storage infrastructure facilities**: Imperishable product like this should be protected through establishment of proper storage infrastructure which is not present.

**Unorganized producers**: The poor tribals and marginal farmers remain completely unorganized falling prey to the commission agents offering extremely unreasonable prices of the produce.

**Trade monopolization by brokers/retailers**: Virtually all the trade of broom grass has been dominated by the brokers/retailers. Markets move under their monopoly at the cost of producers.

**Low level of centralized collection despite large production**: Despite broom grass having large production all over the north east, very limited centralized collection is taking place.

**Difficulty in transport of produce by producers themselves**: The poor collectors/producers cannot afford transportation of their produce to faraway places where higher returns may be possible.

**Improper processing resulting in low price**: Processing of the produce is a major issue. Many times improper processing is being done. According to some traders, the grasses of Tripura contain roots while plucking which lowers the quality and subsequently the demand.

**Arbitrary grading by the retailers**: Another problem is that each trader has his own specification both in terms of raw grass on colour, length and manufactured brooms on length and weight.

**Preference of traders for broom grass rather than finished product**: Most of the traders deal in raw grass rather than manufactured brooms as taking readymade brooms won’t be cost effective for them. This hampers product development and value addition at local level.

**Competition from other alternative products**: Broom grass also suffers from significant competition from the alternative products available in the NE region.

**The remedies**

The overview of the problems associated with broom grass marketing reveals that immediate concrete steps are needed to tackle them for the benefit of the poor collectors and development of the sector in the NE region. An efficient marketing mechanism should be developed in cooperative mode ensuring optimal profit sharing at one end and strengthening of local institutions, infrastructure and product development enterprise in the region itself on the other. The Forest Development Corporations can play a good role in this venture.

**Broom grooming: A business to depend on for many SHGs as a main occupation**

The price fixation of the produce should be done through open auction method ensuring that maximum number of broom grass producers bring their produce in the regulated market rather than selling it to commission agents. The grasses should be sold in advance to the processors by auctioning. In addition to this, establishing storage infrastructure facilities for the products like broom grass, may be another support to the sellers. It will result in checking the trade monopoly by the local agents purchasing the produce at low cost during the harvest season.

Cluster for collection, processing and value addition may be established. A mechanism may be followed for the payment of the collection wages to the collectors at this level. Drying of the broom grass should be done in a scientific way and turning of the bundles should be done regularly to ensure uniform drying. This will ensure proper price in the market. It is high time for thinking in holistic perspective of NE region for NTFP management with establishment of market linkages and giving impetus to development of product based enterprises in place of produce based one. In fact, a unique brand of broom made in the Northeast Region should be established.
Strategy for Boosting up the Broom Grass Sector in Tripura
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Broom Grass, panicles of which make soft brooms, has an enormous potential for growth in Tripura through responsible management, area extension, proper harvest and processing, value addition and robust marketing strategy. Some issues relevant in this context are outlined hereunder:

**Propagated & management:**
- Planned extension of area under broom grass through artificial regeneration on private and forest land including areas allocated under the Forest Rights Act, 2006, wherever feasible
- Introduction of overlapping working circles for Broom Grass in management plans of Forest Divisions for sustainable management of natural stock and plantations.

**Harvest, value addition & marketing:**
- Plucking of broom grass panicles may be restricted during December to February for good quality. Harvest within one week of flowering and before pollination provides the best raw material for soft brooms.
- Proper drying of harvested material is essential to ensure quality. Harvested panicles may be loosely laid out in thin layers on top of raised bamboo platforms for drying under the sun for up to 5 days between 9 am till 4 pm when the stock is returned to store/godown to avoid deposit of dew which can spoil the colour and quality of stock.
- The State Cooperative Marketing Federation Limited (MarkFed) of Tripura is entrusted by the Forest Department for harvest and marketing of broom sticks from a few selected Forest Ranges. MarkFed engages its grassroots level marketing/agriculture credit societies (members of MarkFed) - LAMPS and PACS - for harvest, drying and bundling of broom grass involving local JFMCs for sale of dried broom grass. While this practice may continue as per agreed terms and conditions in selected Ranges; MarkFed should plan for value addition in phases involving JFMCs for sale of the finished product - soft brooms - within 2-3 years.
- Rest of the Forest Ranges may be allocated to registered traders/processors through open tender organized by Forest HQ; and the allocation may be communicated on or before 10th August to allow sufficient time for advance action. Harvest of broom grass, processing and value addition may be conducted by assigned traders/processors through JFMCs; and for this, JFMCs and assigned traders may, through mutual agreement, select suitable SHGs constituted of members of JFM households for processing and making of soft brooms.

**Training and capacity building:**
- Training on proper harvesting, drying and storage of broom grass may be conducted by the Forest Department under NAP. Hands on training on broom making and packaging may be conducted by concerned traders/processors; and this stipulation may be included in tender notices and agreements between Forest Department and traders (processors).

“Rs. 2 lakh... Yes, now it has been possible to grow grass and earn a minimum of Rs. 2.00 lakh every year from one hectare of degraded land”
- Birala Chakma, a practicing farmer & JFMC President, Depachhera, North Tripura
Broom grass has good potential in promoting the rural livelihood thereby improving the socioeconomic condition. Their cultivation is site specific; therefore, selection of a suitable variety is very important for ecological and economic benefits. The production of quality planting stock for specific uses will help in development of this cash crop.

Research updates

Bio-engineering for soil conservation

It was noticed that broom grass can be effectively used in bioengineering as an effective and low cost measure. Sharma et al. (2001) and Mathema and Singh (2003) found out that plots treated with broom grass can reduce water runoff and soil loss by up to 88% as compared to bare land. Kaffo (2005) evaluated the performance of broom grass along with four other grasses as a bioengineering device and found to have an excellent catch, moderately useful armor, excellent reinforce and moderately useful support. Effective spacing of Broom grass for bioengineering purposes is 2.4 m in plain and 1.8 m in slope with maximum effective rooting depth of 0.5 to 1 m. Its root binds up to 5.19 m3/soil (Kaffo, 2005). Broom grass substantially reduces water runoff and soil loss from degraded land. Conservation Value (CV) of 53.1% and 58.0% were recorded for water runoff and soil loss, respectively (Bhuchar, 2001).

Effect of stone bunds and vegetative barriers like Broom grass; Vetiveria zizanioides and Saccharum spp. on erosion, crop yield and soil properties in degraded hill slopes was studied in Eastern India. Broom was found to be an effective vegetative barrier in controlling soil erosion, improving crop yield and restoring soil fertility (Sudhishri et al., 2008).

Agroforestry research:

Broom grass has necessary characteristics and the potential to be incorporated in different agroforestry systems. By doing so, the rural communities can be able to improve the overall ecological condition and benefit economically by setting up a cottage (broom) industry at individual and/or community level; alternatively the foliage can be used as a good fodder (Bhuchar, 2001).

Studies have been undertaken on intercropping and it has been seen that soil fertility and productivity are better when broom grass was planted with perennial arharas a sole crop (ICFRE, 2008). A potential model has been developed under agro-ecological based broom grass agroforestry practices, which is much suitable in Tripura as well as other Sub Tropical Hill regions of Northeast India.

Broom grass is successfully used in Contour-Hedgerow Intercropping Agroforestry Technology (CHIAT) a farming technology used in reducing soil erosion and improving soil fertility (Khisa, 2001).

Cultivation of tiger grass on agriculture terrace margins improves forage production and soil conservation without affecting the productivity of the crops. It was reported that 1 kg of fresh rhizome planted at a distance of 1 m x 1 m yielded about 16 ton/ha of aboveground biomass in the third year of plantation (Bhuchar, 2008).

Eco-physiological evaluation:

An eco-physiological evaluation of broom grass: a multipurpose, perennial grass of high fodder value was studied by Bhuchar (2001) and found that it grows in a wide range of habitats (soil pH: 5.3-9.3; moisture:11.6-37.6%; carbon: 0.4-2.7%); the plants resemble C4 types as Kranz anatomical features were absent; maximum growth was recorded during September and retranslocation efficiency was high; rhizome was formed during winter season; the plants are susceptible to long duration of frost; Chl. a/b ratio in the leaves of field grown mature plant was less than 3.0, as reported in many C4 species; plants could be propagated through use of cut rhizomes during winter and early summer months (May); biomass of rhizome/ slip propagated clumps was maximum during the 3rd year and declined thereafter; chlorophyll fluorescence was affected by low temperature; the photosynthetic efficiency of the plants was more during the winter season when they were kept inside a polypit at ambient and elevated CO2 concentrations, the rate of photosynthesis of both seedlings and mature clumps increased with increasing PPFD up to 2000 PAR (when other conditions were favorable). At elevated CO2 net photosynthesis was higher than that at ambient concentration. At 330 µmol mol-1 CO2, maximum photosynthesis was observed at 25°C, as compared to 30°C for 700 µmol mol-1 CO2 concentration.

Phyto-remedy

Broom grass has the phyto-remediation potential in waste water treatment and stabilization of mined out areas. Tiger grass can be planted in degraded soils where other plants do not grow (Nicholson et al., 2008).

Potentiality in climate change aspects:

Broom grass is the best adapted species for climate change due its fibrous roots(Khadka, 2011). Due to this there has been significant rise (83%) in tiger grass cultivation during the past three decades and a large portion of land is used for this purpose because these grasses fetched the villagers a better price (Lyngdoh and Baishya, 2010). Higher efficiency in nutrient uptake in spite of its low nutrient demand per unit dry matter production and diverting significantly greater proportions of dry matter as well as nutrients to below ground tissues make it a highly drought resistant species (Saxena and Ramakrishnan, 1983).
Future research needs

Excessive harvests lead to the loss of genetic diversity in the species; this may in turn lead to extinction of species populations (Shankar, et al., 2001; Pandit et al., 2008). It has been observed that the productivity decrease after 3 years. Broom grass is susceptible to rodent attacks particularly if the underside are not cleared at least thrice a year (Fetalvera et al., 2011). Studies should be carried out to deal with the problem so that the productivity doesn’t decrease during the third and subsequent years.

Literature on broom grass being scanty in respect of intra specific variation, genetic improvement, development of cultivars, cultivation practice, etc; and considering its potential for improved livelihood of rural poor in Northeast Region, systematic work on genetic improvement and development of suitable cultivation technique should receive the priority it deserves.

Conclusion / Recommendations

The species has a huge potential and is of great significance in improving the rural livelihood. It has enormous importance in soil conservation and holds promise in medicine, phytoremediation and climate change adaptation. The increased use to which the species is subjected to and biotic pressure and developmental activities are leading to depletion of its genetic resources. Domestication of the species can contribute to economic growth and will also improve ecological needs of the communities. This will in turn help in conserving the species diversity and gene pool of the species. Thus cultivation of broom grass should be done in man-made forests and in other land use systems. Moreover due to the buildup of nutrients broom grass are susceptible to rodent attacks particularly if the underside are not cleared at least thrice a year. So the species if managed on a specific cycle can improve the productivity of the species.
Abstract

Conservation and marketing of Broom Grass in Tripura as an economic foundation of forest dependent people
by Mihir Baran Choudhury

The author gives an overview from NTFP traders’ perspectives, of collection and marketing of Broom grass in Tripura, the efforts made by NTFP Centre of Excellence and other agencies in the past in collection and marketing of Broom grass which have benefited the forest dwellers and others. The author feels that regular scientific harvesting of Broom grass is essential for regeneration and greater quantum of investment in this sector. A comprehensive NTFP Policy for the State will go a long way in developing this important resource of the State and will fetch more returns for the forest dependent people. Views expressed are personal.
NTFPs IN EVENTS

World Bamboo Day Program

Centre for Forest-based Livelihoods (CFLE) observed World Bamboo Day at their campus on 18th September, 2014. Community Livelihood Nursery (CLN) owners promoted by CFLE formed the largest contingent of participants. G.S. Raju, (CEO & PD Tripura-JICA Project) while presiding the inaugural session, applauded the zeal of the participants to take up cause of bamboo conservation. Angshuman Dey, Director, NTFP Centre of Excellence, emphasized the need of ‘dolou’ (Schizostachyum dulloo) bamboo conservation and suggested adoption of suitable measures to raise their planting material. Pawan K. Kaushik, Regional Director, CFLE, emphasized on an urgent need to link these nurseries to the plantation programs of the region. The farmers and artisans reaffirmed their commitment in spreading the message of Bamboo Development to their respective villages for livelihood promotion and eco-restoration.

Interaction Workshop on ‘Registration of Geographical Indications in Tripura’

The NTFP Centre of Excellence, Tripura-JICA Project in association with CFLE, Agartala and GI Registry, Chennai organized an awareness program at Hatipara Forest Complex, Gandhidham, Agartala on 28th April, 2014.

The Director, NCE, Agartala, delivered his welcome address in honor of all dignitaries and delegates. Dr. Ashok Kumar, Addl. PCCF (Protection), Govt. of Tripura, inaugurated the event.

Shri Chinnaraja G Naidu, Assistant Registrar of Trade Marks & GI, GI Registry, addressed on “Overview of GI registration process and activity in India” covering Pre-TRIPS scenario including Geographical Indications of Goods (Registration and Protection) Act, 1999. He also discussed the pros and cons of GI Registration, recent developments and initiatives in the field of geographical indications, with a particular emphasis on GIs for non-agricultural products. Smt. Nandini Dholepat, FRLHT, Bangalore, threw light on “Identifying GIs and their Business Aspects”. She emphasized on registration of products in identifying GIs, road map for GI registration, action plan of GI registration, benefits to the regional development, judiciary & legal protection. Shri Prashanth Kumar, S.B., Examiner of GI satisfied the audience by replying the queries raised by the delegates. The Regional Director CFLE presented a detailed list of potential items of GI in Tripura for discussion and short listing of priority items.

Dr. V. K. Bahuguna, Principal Secretary, Forests, Agriculture and Animal Resources, Development Department, while chairing the session as a Chief Guest suggested the ‘Kali Khasa Rice’, Queen Pine Apple, Jampui Orange, Milk of Indigenous small cows of Tripura, apart from other potential items for GI registration.

NCE consults stakeholders ahead of broom grass collection season 2014-15

A consultative meeting of broom stick traders, forest field staff and other stakeholders was held on 20 October 2014 in JICA Project Conference Hall at Agartala. Shri G S Raju, Additional PCCF and CEO & PD, JICA Project chaired the meeting. Achievement of 2013-14 in collection, primary processing and marketing of broom grass was reviewed. A total of 459 metric ton of broom grass worth Rs 226.54 lakh was collected and marketed during 2013-14 under NTFP Centre of Excellence. Experiences on various aspects were shared by the stakeholders. Important lessons learnt were also discussed, which included review of existing practice of harvesting broom grass, dealings among traders, JFMCs and others and scope of facilitation by forest department. It was highlighted that scientific method of harvesting should be adopted to ensure quality of product and regeneration of the resource.
References:


Acknowledgement

The editors acknowledge valuable contributions of the Authors in this issue and Dr. Thiru Selvan, Asstt. Professor, Dept. of Forestry & Biodiversity, Tripura University for rendering his help in bringing out this special issue on broom grass.

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Front Cover Photos:

The Arhar - Broom Grass model after 7 months of planting at Depachera, Kanchanpur Forest Division. (Upper)
Freshly harvested inflorescence under sun drying (Lower)

The contributing authors may please refer to the website for details of forthcoming themes and send articles for the next issues.