

## 'Pati bet', *Schumannianthus dichotomus* (Roxb.) Gagnep. -A raw material for preparation of livelihood supporting handicrafts

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Rural people of the district of Cooch Behar, West Bengal are involved in making various crafts using raw material prepared from the wetland plant known as 'Pati bet', *Schumannianthus dichotomus* (Roxb.) Gagnep. and they earn a considerable amount of money for livelihood. Pati, used as raw material for preparation of crafts, is obtained from the bark of pati bet stem locally christened as Bet. Bark is processed through a series of cumbersome effort blended with unique techniques for which artisans require both skill and expertise, apart from specific tools used for respective activity. 'Sital Pati', a notable and durable mat is one such important craft among other domestic articles such as hand bags, purse, hat, seat, prayer seat, school bag, hand handled fan, etc. which embody the beauty of craftsmanship. This article documents the processing of bark from pati bet and its use in making various crafts in order to protect the right of common people; which, otherwise, may lose its validity of being indigenous in course of time as supposedly to be claimed by others as their own.

**Keywords:** Pati bet, *Schumannianthus dichotomus*, Marantaceae, Raw material, Handicrafts, Livelihood.

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### Introduction

A substantial number of rural population in Cooch Behar district, West Bengal seeks supplementary employment opportunity on a sustainable basis to support livelihood by preparation of a variety of handicrafts made from 'Pati Bet'. The perennial wetland shrub with scientific name, *Schumannianthus dichotomus* (Roxb.) Gagnep. belonging to the family Marantaceae, is also known as 'Murta' or 'Mustak', or 'Pati pata', or 'Pati jung' or 'Pati doi' in some regions of Bangladesh and Assam, India<sup>1-3</sup>. A sizable area of wetland swamps has been brought under 'Pati bet' cultivation<sup>2-4</sup>, considered to be a part of aquaculture practice.

The 'Pati bet' plant is the source of raw material as supporting rural cottage industry prevalent not only in Cooch Behar, but also is predominant in different states of North eastern regions of India, and Bangladesh<sup>1-4</sup>. 'Pati', used as raw material, is a long strip obtained from the bark of mature culm of 'Pati bet'. It is also called as 'Beti' by others for euphony in the same locality. Pati is processed for making a variety of handicrafts with particular reference to

'Sital pati' – a durable, decorated and biodegradable mat. Processing of pati for making a variety of household articles is cumbersome effort performed through a series of tedious activities based on indigenous knowledge blended with three criteria: technique, skill and craftsmanship. The sital pati which is very much popular for its use in daily life is one such craft befitted with warm and humid climate prevalent in the regions. Common people involved in making such crafts are known as 'Patiwala' representing all the castes across the economic classes, and embody innate craftsmanship of indigenous aura. This raw material of which utility is inherited from generation to generation needs to be documented timely; otherwise, the right of common people of this region will lose the control over the information<sup>5</sup>. With this awareness, this article intends to document all these information of raw material along with craft making techniques which are both alive and popular in generations with provision of viable economic support for livelihood.

### Materials and Methods

#### Study area & survey

A survey was conducted among households engaged in 'Pati bet' cultivation and its use for

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preparation of handicrafts in different Blocks of Cooch Behar district. The wetlands in which 'Pati bet' grow naturally and are raised as part of cultivation practice were surveyed and photographed, with the following aspects: land preparation, ploughing, manuring, plantation of saplings, growth of Pati bet, harvest and ecology of the vegetation. Interviews and interactions were conducted with farmers involved in 'Pati bet farming. The study documented all the techniques related to processing, dying and weaving of pati used for preparation of handicrafts after critical observation of the artisans' skill performed for each activity. The study also noted the time spent for manufacturing of respective articles, number of persons engaged for each activity, gender involvement to specific activity and degree of drudgery related to respective operation, apart from the cost of each article as means of livelihood support (Table 1). These knowledge based information were further verified by other groups of artisan.

#### Preparation of 'pati'

The preparation of pati involves a series of complicated activities (Plate 1). Initially, the mature culms (Plate 2), known as 'bet', are harvested from fields. A bunch of bets is kept submerged in water for 10-15 days, followed by one hour dry at sunlight just before undertaking a series of operational activities for pati preparation. Each bet is then split lengthwise into two equal long halves known as 'chittor' by using 'bati'- a tool made for this specific purpose. The chittor is then separated lengthwise by using bati;

each part again is longitudinally split into two parts: the outer bark known as 'Saloi' and inner soft one as 'Maji'. Saloi is considered to be an important component for obtaining quality of pati pertaining to the entire mat processing activities. Preparation of pati from saloi requires skill, expertise and technique of artisans because three kinds of pati are obtained through its lengthwise splitting from outside to inside based on thickness in the range of 0.5 mm-1.0 mm, with variation of width: 1<sup>st</sup> part is with 3-4 mm, 2<sup>nd</sup> part with 5-6 mm and 3<sup>rd</sup> part with 7-8 mm. 1<sup>st</sup> part i.e., outer bark, by and large, is used for making quality mat - Sital pati, 2<sup>nd</sup> part for simple mat and 3<sup>rd</sup> part for ordinary mat, usually considered to be poor quality and the pati used as known as 'Buker Pati'. One bet may be processed to develop into 12 numbers of pati subjected to skill, technique and experience of artisan involved in performing the splitting. During preparation of pati, craftsmen make covering of their thumb and middle fingers to protect them from sharp edge of both pati and tools while processing long strips. This is one of the difficult tasks of the entire mat preparation.

#### Processing of pati

Processing of pati is an important part in manufacturing quality mat. A bundle of pati/strips are wound into round roll which is kept dip in water for overnight. The bundle is then boiled for one hour, followed by sun dry for another one hour. This process makes strips soft, supple and glossy. Pati devoid of boiling process remains hard with reddish colour. The mat prepared with such pati is not attractive to consumers, though it is more durable with lasting more than seven years. All the graded pati are segregated once more and then chopped at the end following the standard length to be used for preparation of mat in accordance with respective mat quality.

#### Techniques of weaving and dyeing of pati

Weaving requires strips to be plaited following twill/check patterns with their joining and interlacing. Preparation of specific mat, however, requires variation of weaving which depends upon the skill of the artisan. Colouring of the pati is made through dying by mixing of locally available materials used as ingredients based on indigenous knowledge (Table 2): Ivory colour is obtained with boiling the pati with mixing together of boiled rice juice, boiled leaves juice of amra (*Hibiscus sabdariffa* L.) and

Table 1—Different craft items along with cost, man days, gender and drudgery

Craft Item	INR*	Man days**	Gender	Drudgery
Phool sajja pati	3000	05	Female	+++
Sital pati	800	03	Female	+++
Simple pati	500	02	Male +female	+
Buker pati	250	01	Male +female	+
Seat	40	1/5	Male +female	+
Prayer seat	50	1/5	Male +female	+
School bag	350	1/2	Male +female	++
Ladies bag	250	1/2	Male +female	++
Hat	150	1/4	Female	++
Hand bag	250	1/4	Male +female	++
Make up bag	150	1/4	Male +female	++
Hand handle fan	100	1/4	Male +female	+

\*US\$ 1 = INR 63; \*\* Time spent for only weaving; Number of '+' indicates maximum drudgery

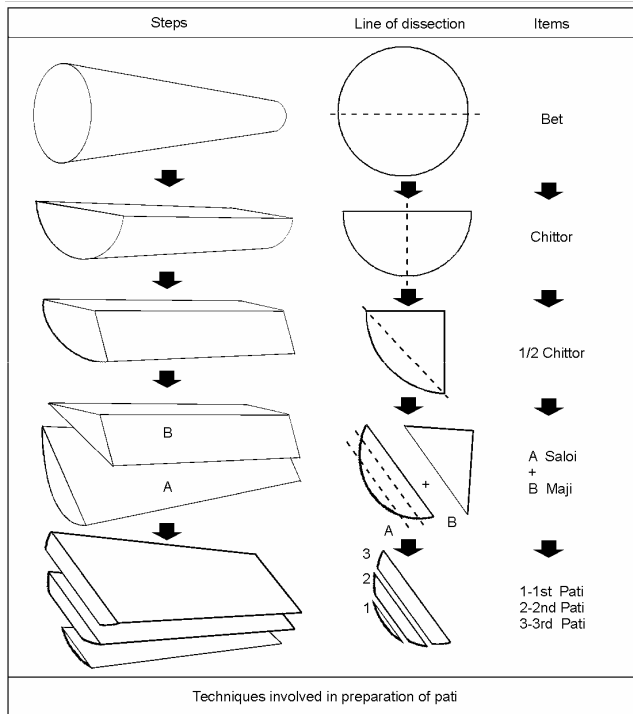


Plate 1—Techniques involved in preparation of pati

leaves juice of tamarind (*Tamarindus indica* L.).

Pati are wrapped with mango (*Mangifera indica* L.) bark and kept under mud for seven days for obtaining black colour. A bundle of pati is boiled in water mixing with magenta colour for obtaining red-pink colour<sup>6</sup>. The expertise is required when specific design is conceived to be depicted on mat by using coloured pati. In preparation of decorated mat, one has to design and select the number of pati in accordance with size of the mat before weaving starts. During weaving of pati, artisan uses one chaku simultaneously for finishing the mat.

#### Botany and ecology of pati plant

One mature pati plant usually grows up to the length of 365 cm, with the length and diameter of the internode as 165.0 cm and 10.0 cm, respectively. The culm of the plant is glossy, dark green, erect, round and smooth, the base of which is encircled with sheath. Two-three branches develop from each node, which are considered to be primary branches from which rise secondary branches. Leaves are lanceolate with petiolar sheath at base. Rhizomes are tough, strong and fibrous from which 10-24 numbers of tillers erect. These tillers are called as shoots which act as propagating units<sup>1</sup> to increase populations. New shoots appear twice a year during April-May and



Plate 2—Mature culms ready for harvest; inset: a view of vegetation

October-November. Roots are fibrous and may penetrate into 35 cm of soil. Flowering and fruiting take place during the month of April to May. Rainfall in the range of 150-200 cm is favourable for plant growth, along with humid climate and temperature ranging between 27-35°C throughout the year except, winter months.

#### Cultivation and harvest

Swampy wetlands with shade ambience are ideal for plant growth<sup>7,8</sup>. Saplings are planted after ploughing. The distance of one sampling to another is 60-75 cm in linear line and the distance between two lines remains 60-75 cm. Pre-monsoon season is ideal for plantation and monsoon months are favourable for normal growth of plant. One plant is raised for three years to reach harvestable size and then new saplings replace it. One mature plant may produce about 24 numbers of tillers, covering 30-45 cm radius. Its cultivation does not require much care or any typical agronomy practice. During harvest, one mature culm is cut from base with the help of sickle. Size of one harvested culm may be in the range of 90-150 cm long, and 300-400 such culms are used for making one bundle. About 550 numbers of bundles are produced from one bigha of land i.e., 1333 m<sup>2</sup> area, costing in the range of INR 65,000-75,000.00 (US\$1030-1090).

#### Results and Discussion

The raw material is obtained from bark and used for making various handicrafts as reported by several workers<sup>1-4,6,9</sup>. However, no information is available from these literatures documenting the indigenous techniques involved in making such beautiful as well

Table 2—List of indigenous knowledge in relation to preparation of crafts using raw material along with farming practice

Steps	Activity	Tools used	Indigenous Knowledge	Outcome
Plantation	Plantation of saplings by digging	Bamboo stick		Raising of mature plant
Manuring	Application of fertilizer			Suitable growth and desirable culm size
Harvest	Cutting of culm from base	Sickle		Obtaining Bet- source material of crafts preparation
Processing of Bet	Submergence in water and drying		Kept submergence for 10-15 days based on maturity as well as quality of bark, followed by one hour dry in sunlight	Making of quality bet
Split of Bet	Splitting	Chakku	Individual bet is splitted lengthwise into two equal halves	Making of Chittor
Split of Chittor	Separation	Bati	Chittor is separated from inner pith through lengthwise split	Production of Pati and Maji
Split of pati	Segmentation		Pati is processed into three segments from outside to inside depending on thickness	Production of 1 <sup>st</sup> Pati (3-4 mm), 2 <sup>nd</sup> Pati (5-6 mm) and 3 <sup>rd</sup> Pati (7-8 mm)
Boiling of pati	Heated with water	Container	One hour boiled	Pati becomes soft and supple
Drying of Pati	Removal of colour	Container	a) Boiled with water	Removal of reddish colour
	Boiling with different ingredients		b) Boiling of pati with mixing of boiled rice juice, along with amra leaves and tamarind leaves	Ivory coloured developed
			c) Boiling of pati with magenta	Red-pink coloured developed colour
			d) Wrapped with mango bark and kept for seven days in mud	Black coloured developed
Weaving	Gradation of pati	Chakku	Pati are graded and chopped at the end as per sizes required for specific mat development	
	Plaited		Sizable pati are plaited following the method of twill/check pattern as the process of joining and interplacing	Different mat products
			i) Use of coloured pati	i) Decorated mat
			ii) Use of 1 <sup>st</sup> Pati	ii) Sital pati- cool mat
			iii) Use of 2 <sup>nd</sup> Pati	iii) Plan Pati –simple mat
			iv) Use of 3 <sup>rd</sup> Pati	iv) Buker Pati- rough mat

as valuable crafts. The techniques are endemic in the regions. There are various crafts of which important one is 'Sital pati' - the most popular, durable and notable handicraft. The word 'Sital pati' literally means cool mat. The particular quality of mat is befitted with the warm and humid climate prevalent in the region. Referred to a feeling of coolness i.e., 'sheetal' to the person sitting or laying or sleeping on it<sup>6,9</sup>, the mat is intimately linked with daily life of common people of rural areas. Besides, with aesthetic appeal and comfort of its utility, it has been increasingly visible in several towns, urban areas

and attractive to a large section of consumers for its glossiness, smoothness and fineness of texture<sup>6,9</sup>. Pati is also used to fulfil domestic needs for making a number of household crafts of different size and shape (Plate 3 a & b): hand bag, hat, prayer seat, seat, hand held fans, school bags, etc. are some products of cottage industry (Table 1). No parts of pati bet are wasted; even leaves and leftover branches are used for domestic fire, maji for wrapping or using thread or fire materials. Chowdhury and Konwar<sup>1</sup> mentioned in perspective of Assam region that appropriate agro-technique is required to conserve the flora



Plate 3a—A view of Sital pati



Plate 3b—Different handicrafts prepared from pati bet

from further exploitation. However, this study has observed the dense vegetation of both wild and cultivated ones covering a large scale area, particularly near homestead in many places. Rahman *et al*<sup>3</sup> mentioned that female workers performed 80 % of manufacturing work in Bangladesh. The present study surveyed the different picture. Male members obtain pati from bark whereas female usually do weaving, though there is no hard and first rule for allotment of works. In respect of drudgery, preparation of pati from bark is the most cumbersome task, followed by its weaving. In perspective of economy and livelihood, one decorated mat with size

of 150 cm × 210 cm requires 10 man days for weaving, costing around INR 3000.00 (US\$ 48). The amount of money earned in relation to man days may be considered moderate income for one household for standard livelihood. People of the study area are engaged in this activity considering it as their supplementary employment opportunity. In Bangladesh, total amount of sold material earns US\$ 1167114 against the expenditure of US\$ 98999 spent for both material and manufacturing costs<sup>10</sup>, showing profit only 17 %. Comparatively, Cooch Behar region shows better economy pertaining to pati bet industry, though the socio-economic condition is different in two countries.

### Conclusion

Livelihood is one of the important criteria in socio-economic aspect which needs further study in details. However, the intension of the present study emphasizes to document the uniqueness of this raw material and the indigenous techniques involved in craft preparation which are associated with livelihood prevalent in the region.

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### References

- 1 Chowdhury D and Konwar B K, Morphology and karyotype study of Patidoi [*Schumannianthus dichotomus* (Roxb.) Gagnep, syn. *Clinogyne dichotoma* Salish], a traditional plant of Assam, *Curr Sci*, 2006, **91**(5), 648-651.
- 2 Ahmed R, Islam Fakhrul A N M, Rahaman M and Halim M A, Management and economic value of *Schumannianthus dichotoma* in rural homesteads in the Sylhet region of Bangladesh, *Int J Biodiversity Sci Manag*, 2007, **3**, 252-258.
- 3 Rahaman M, Das N C, Saha N and Islam M, Nature, Profitability and Sustainability of Murta [*Schumannianthus dichotomus* (Sal.) Willd. based Small-Scale Enterprises in North-Eastern Bangladesh, *Small-Scale industry*, 2010, **9**, 369-378.
- 4 Ara R, Merry S R, Paul S P and Siddiqui N A, Effect of fertilizer on the yield of Patipata, *Schumannianthus dichotomus*, *Bangladesh J For Sci*, 2000, **29** (1), 67-8.
- 5 Dasgupta D, Farmers' knowledge systems and common people's rights, *In: Indigenous knowledge systems and common people's rights*, edited by D Dasgupta, Agrobios (India), 2009, 1-9.
- 6 <http://ignca.nic.in/craft202.htm>
- 7 [http://en.wikipedia.org/wiki/Schumannianthus dichotomus](http://en.wikipedia.org/wiki/Schumannianthus_dichotomus)
- 8 Chowdhury M S H, Uddin M S, Haque F, Muhammed N and Koike M, Indigenous management of Patipata (*Schumannianthus dichotomus* (Roxb.) plantation in the rural homesteads of Bangladesh *J Sub-tropical Agric Res Development*, 2007, **5**(1) 202-207.
- 9 <http://coochbehar.nic.in/htmlfiles/Handicrafts.html>
- 10 Banik R I, Economic importance and future of rattan and Patipata in Bangladesh, *In: Propagation and Cultivation of Rattan and Patipata in Bangladesh*, edited by Roshetko M and Bose S K, Proceeding of Training Courses held at the Bangladesh Forest Research Institute (BFRI), Chittagong, Bangladesh, 2001, 25-28.