



Inventorying bamboo diversity of Kokrajhar District, BTAD, Assam, India with emphasis on its uses by the *Bodos* and allied tribes

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Manuscript received 5th March, 2014, revised 15th April, 2014 & accepted 17th April, 2014

Abstract

BACKGROUND & OBJECTIVE: Bamboo (Poaceae), an important non-wood forest resource has been interwoven with the life style of the *Bodos* and allied tribes of this region since ages but there is as such no documentation of bamboos found in Kokrajhar district of Assam, India. Thus, here an attempted have been made to present diversity of bamboo species along with their utilization by the resident tribes. **METHODOLGY:** Field visit were conducted for collection coupled with consultation with the published literatures, experts for proper identification and extensive interviews with the local people to record the uses and vernacular names. **RESULTS:** A total of 13 species, 2 varieties and 1 forma under 5 genera were recorded from Kokrajhar district. The genera *Bambusa* was found to be the most dominating with eight species, two varieties and one forma. The myriad uses of bamboo by the local as construction material, raw material for pulp and paper industries, *agarbati* (incense sticks) industries, designing minor craft have also been presented. Of the total 9 species produces edible shoots which forms a favourite item for the tribes.

Keywords: Bamboo, diversity, Kokrajhar, Assam, uses

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1. Introduction

Bamboos are a group of about 1575 species of perennial evergreen plants belonging to the subfamily Bambusoideae (Poaceae)^{1,2}. China has the highest number of bamboos in terms of genetic variation whereas geographically India has more land under bamboo³. In India, there are about 136 indigenous and exotic species found to grow naturally and/or under cultivation⁴. Northeastern states like Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Sikkim along with the state of West Bengal (North Bengal, Himalaya) houses over 50% of the total bamboo species recorded in India⁵. Bamboo is found in almost all the parts of the country except Jammu and Kashmir⁵. The numbers of genera and species of bamboo have been estimated by different researchers round the globe over time⁶⁻⁸, but however it is yet to be resolved perfectly. In Assam, 40 species, one variety and one forma of bamboos belonging to 10 genera have been reported⁹.

Bamboo is closely associated with indigenous culture and knowledge not only in Asia but also in Africa and Latin America. Today bamboo has over 1500 applications and thus its status has been changed from 'Poor man's timber' to 'Green Gold of forests'^{3,10,11}. Bamboo serves as a superior material for constructions, utensils, weapons, fuel, fodder, food, firewood,

furniture, mats, chop sticks, tooth picks, handicrafts, musical instruments etc¹². Apart from its extensive use in paper and pulp industries, nowadays bamboo is used in making hard boards, flooring, corrugated sheets etc¹³. The shoots are used in many exquisite culinary preparations like pickle, vegetables, soup, salads, vinegar and several other forms in different countries¹⁴.

From ancient time bamboo has been an important ingredient of traditional Asian Medicines. Recently, many biologically active components in bamboo leaves and their potential health benefits have been widely studied¹⁵⁻²⁰. Thus it can safely be asserted that each part of bamboo is not only a treasure but also a medicine. The use of bamboo is endless and because of this it is an indispensable resource for the rural people.

Thus keeping this in mind the present study aims at providing a comprehensive account on the diversity and uses of bamboos growing in Kokrajhar District of Assam through literature and extensive field surveys and maintenance of germplasm.

2. Study Area

Assam, the gateway to northeast India is surrounded by International borders of Bhutan and Bangladesh in addition to the interstate boundaries with West Bengal, Tripura, Manipur, Mizoram, Meghalaya, Arunachal Pradesh and Nagaland.

The present inventory was conducted in the Kokrajhar District of Assam. Kokrajhar is one of the 27 districts of Assam. Kokrajhar district lies roughly between 89°46' to 90°38' East longitudes and between 26°19' to 26°54' North latitudes. The district is demographically dominated by tribal and non-tribal

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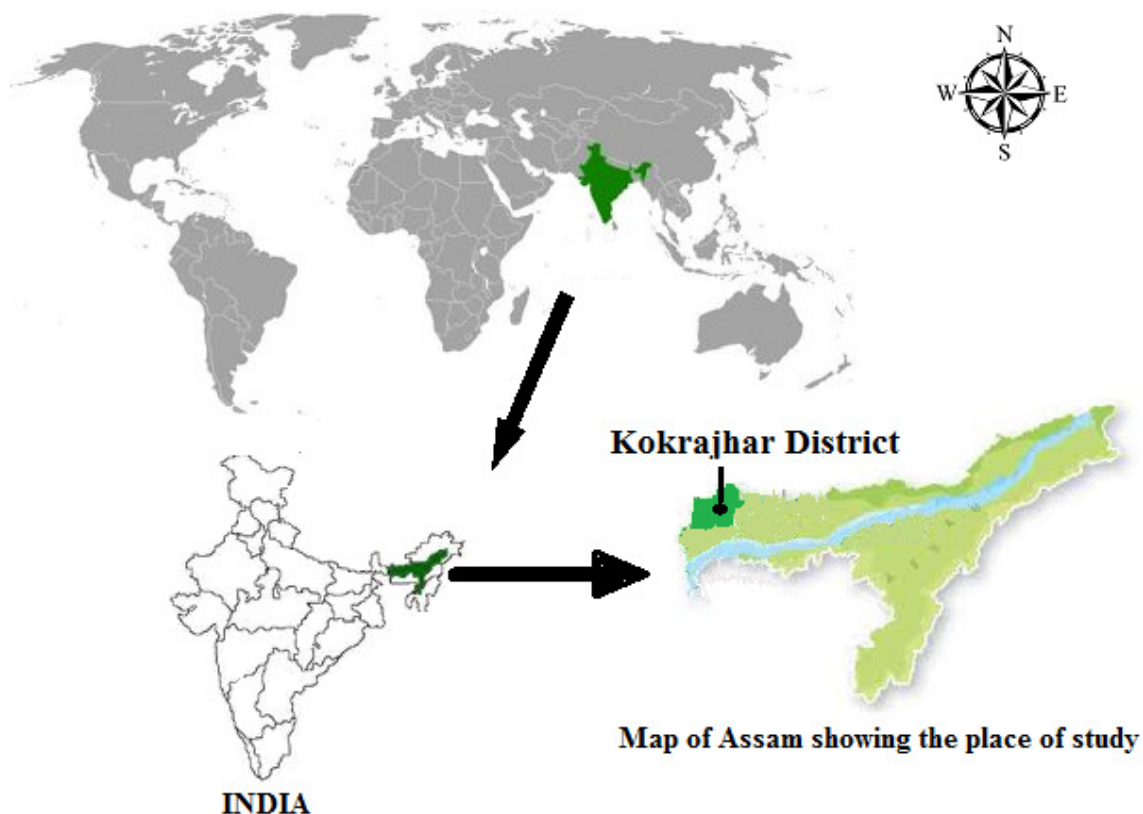


Figure I: Map of study area

communities namely *Bodos*, *Ravas*, *Koch Rajbangshis*, *Santhals*, *Orangs*, *Muslims*, *Nepalis*, *Bengalis* etc²¹. The total geographic area of the district is estimated to be 3,169 Km² of which 1,144 Km² is under forest cover²² (figure I). The district has been divided into three Agro Ecological situations viz. Plain zone, Hill and Hillock zone and Foot Hill area based on physiography, hydrology, soil, climate and cropping patterns. The climate of the district is humid sub-tropical in nature characterized by warm-humid summer and cool-dry winter.

3. Methodology

Field visits were conducted in several places almost covering the entire district for documenting the bamboo species. Initially random walk in the forest was opted for sampling and later regular interval was maintained to have fixed sampling intensity for the study². During field trips elaborate notes were made on the habit, habitat and characters of different parts at different stages of development. The provisional identification was made using some manuals and taxonomic keys available in the public domains, like Handbook of Indian bamboos²³; Diversity and Distribution of bamboos of Assam⁹; Bamboos of Sikkim (India) Bhutan and Nepal²⁴. However final authentication was done with the help of experts. The specimens thus collected are planted in "Bambusetum" at Bamboo Technology, Department of Biotechnology, Bodoland University to maintain the germplasm. To document the vernacular name and utilization of bamboos, the local people were interviewed.

4. Results and Discussion

4.1. Bamboo diversity:

Kokrajhar district of Assam is laden with different species of bamboos. The inventory conducted throughout the district

resulted in collection of thirteen species, two varieties and one forma under 5 genera (table 1). Of the five genera, *Bambusa* was found to be the most dominating with eight species, two varieties and one forma followed by *Dendrocalamus* with only two species, while others viz. *Melocanna*, *Gigantochloa* and *Schizostachyum* were represented by one species each.

A total of 40 species, one variety and one forma have been reported from Assam⁹. In the same study, they mentioned the occurrence of eight species and one variety belonging to 3 genera in the Kokrajhar district of Assam, India. In our study we have encountered all the species of bamboos mentioned by Barooah and Borthakur⁹ except *Bambusa teres*. In addition to these we were successful in collecting 6 species, one variety and one forma namely *Bambusa garuchokua*, *B. pallida*, *B. polymorpha*, *B. vulgaris* f. *waminii*, *B. vulgaris* var. *vulgaris*, *Dendrocalamus giganteus*, *Melocanna baccifera*, *Schizostachyum pergracile* adding two new genera *Melocanna* and *Schizostachyum* to the existing three genera. This variation in the number of genera and species might be attributed to the taxonomic ambiguity²⁵ since the flowering in bamboo is an unusual event which can be over 100 years in some species²⁶ and the taxonomists have to rely upon the morphological characters for the identification of the same. However today, scientists have diverted towards molecular techniques and thus in this modern era morphological features coupled with molecular studies are implemented to resolve the long-standing problem related to identification of bamboo^{1,11}.

4.2. Uses of bamboo:

Bamboo is well acknowledged as one of the most important plant by the rural people of North-east India in general and the *Bodos* and allied tribes residing in Kokrajhar district in particular because of its multifarious traditional uses. Bamboo

Table I: List of bamboo species encountered in Kokrajhar district with their vernacular name and place of collection

Sl. No.	Scientific Name	Bodo Name	Assamese Name	Place of collection
1.	<i>Bambusa assamica</i> Barooah et Borthakur	Owa there	Saur bijuli	Dotma, Karigaon
2.	<i>Bambusa balcooa</i> Roxb.	Owa burkha	Bhaluka banh	Dimalgaon, Karigaon
3.	<i>Bambusa bambos</i> Willd.	Owa suganang	Kotoha banh	Dimalgaon
4.	<i>Bambusa garuchokua</i> Barooah et Borthakur	Owa gorai athing	Nagal banh	Dotma, Titaguri, Karigaon, Dimalgaon
5.	<i>Bambusa multiplex</i> (Lour.) Raeusch. Ex Schult.	Owa barsidanda	Jupri banh	Hadanpara, Bengtol
6.	<i>Bambusa pallida</i> Munro	Owa hathai	Bijuli banh	Throughout the district
7.	<i>Bambusa polymorpha</i> Munro	Owa ridwing	Betwa banh	Dimalgaon
8.	<i>Bambusa tulda</i> Roxb.	Owa gubwai	Jati banh	Throughout the district
9.	<i>Bambusa vulgaris</i> Schrad. ex J. C. Wendl. f. Wamini (Brandis) Wen	Owa daihu	Kolochi banh	Batarmari
10.	<i>Bambusa vulgaris</i> Schrad. ex J. C. Wendl. var. <i>Vulgaris</i> A. Riviere & C. Riviere	Owa telai	Telai banh	Dimalgaon
11.	<i>Bambusa vulgaris</i> Schrad. ex J. C. Wendl. var. <i>Vittata</i> A. Riviere & C. Riviere	Owa gwmw	Halodhia banh	Karigaon, Batarmari, Chandarpara
12.	<i>Dendrocalamus hamiltonii</i> Munro	Owa khangkhua	Kekowa banh	Dotma, Karigaon, Dimalgaon
13.	<i>Dendrocalamus giganteus</i> Munro	Owa khangkhua gidir	Kako banh	Balagaon
14.	<i>Gigantochloa albociliata</i> (Munro) Kurz	Owa phakra	Kalisuneti	Titaguri
15.	<i>Melocanna baccifera</i> (Roxb.) Kurz	Owa thorai	Muli banh	Dotma, Debargaon, Charaikhola
16.	<i>Schizostachyum pergracile</i> (Munro) R. Majumdar	Owa maidang	Medang Banh	Karigaon

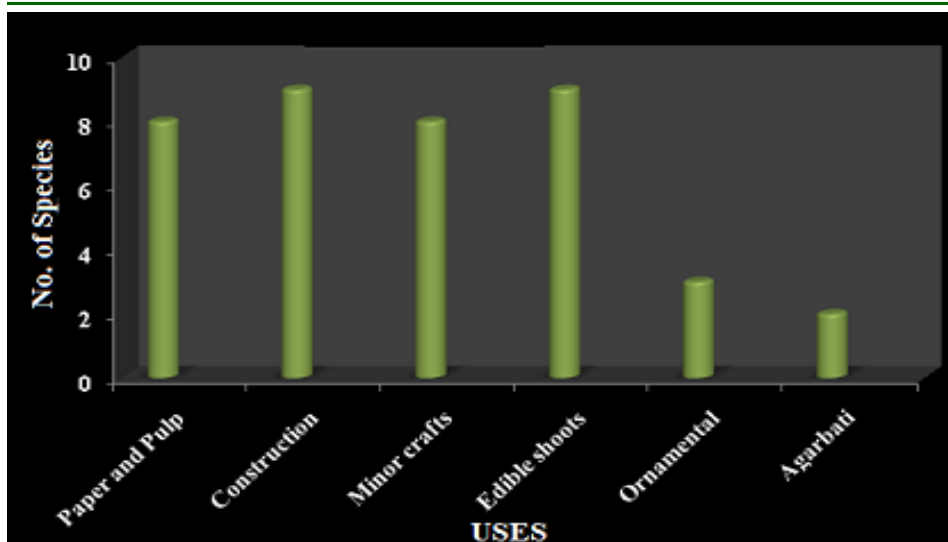


Figure II: Utility pattern of different bamboo species by the Bodos and allied tribes of Kokrajhar district.

can rightly be called the backbone of the rural culture in this part of the India. Of the thirteen species, two varieties and one forma, nine suits construction purposes like scaffolding, housing, rafters, posts etc., nine species produces edible shoots which can be pickled or used in various culinary preparations by the tribal's (Fig 2). Eight species are used for pulp and paper production while eight species find their application in designing minor crafts such as fishing gears (like *Kokha*, *Sen*,

Zekhai, *Kobai*), Sieves (*Songrai*, *Sandanga*, *Sandri*), hats, hand fans (*Gisib*), head gear (*Kopri*), baskets, wall hangers, Spinner (*Danganata*) etc which is an important part of their daily life (Fig 3). Only two species, *Bambusa balcooa* and *B. polymorpha* are used for making 'agarbati' sticks. One species *Gigantochloa albociliata*, one forma *Bambusa vulgaris* f. *Wamini* and one variety *Bambusa vulgaris* var. *vittata* are planted as ornamental plants because of their beautiful culms.

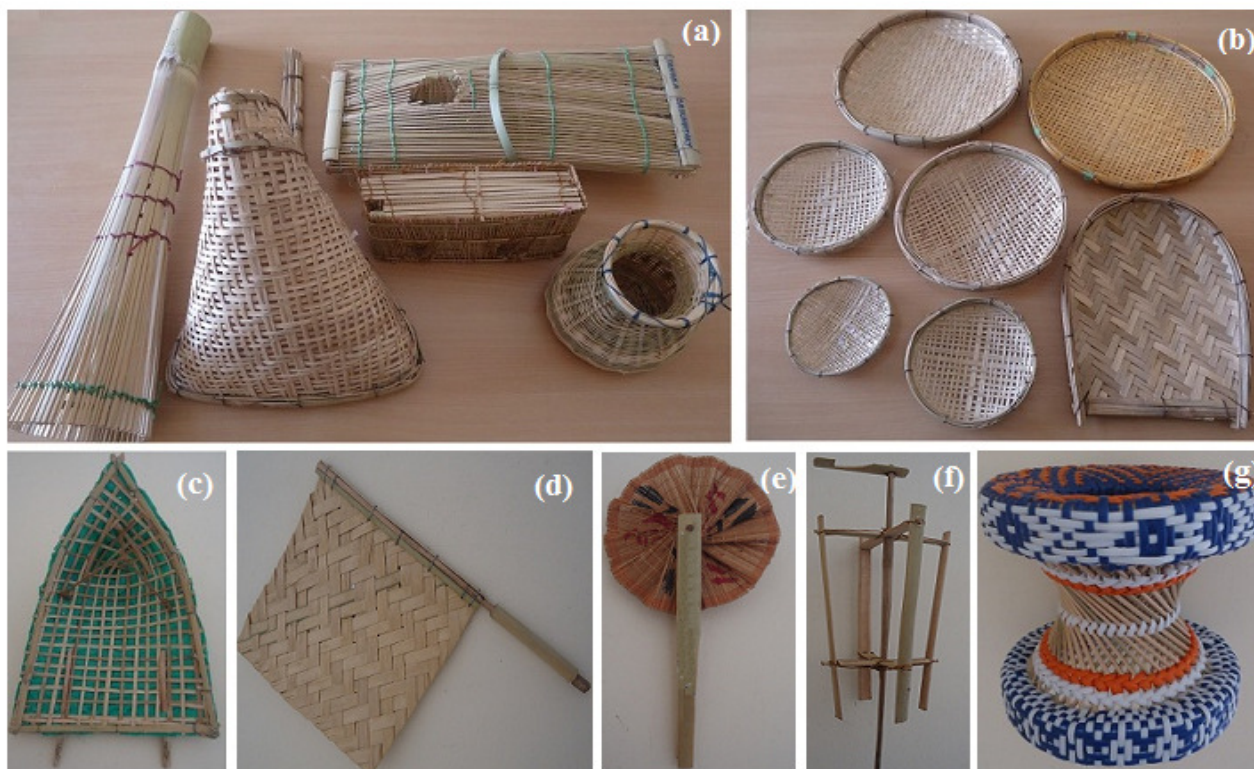


Figure III: Some minor crafts made of bamboos used by the Bodos and allied tribes. (a) Fishing gears (*Kokha, Sen, Zekhai, Kobai*); (b) Sieves (*Songrai, Sandanga, Sandri*); (c) Head gear (*Kopri*); (d & e) Hand fans (*Gisib*); (f); Spinner (*Danganata*) (g) Stool (*Mora*) (Photo courtesy: Authors)

Bambusa tulda, *B. balcooa*, *Dendrocalamus giganteus*, *Melocanna baccifera* are most commonly used due to their versatility.

Conclusion

Inventorying bamboo resources of Kokrajhar district shows moderate species diversity. However extensive investigation is required to know emphatically about the bamboo diversity of the district, their distribution pattern, population in wild and homestead plantations, growth behaviour and management for their commercial exploitation and conservation.

Uses of bamboo traditionally in a variety of purposes have become an important part of the cultural diversity of the Bodos and the allied groups of Kokrajhar. Now it's the perfect time to take value addition efforts for bamboo to make the bamboo sector an important contributor to the economy of Assam in general and the Kokrajhar District in particular. Thus, the bamboo forests should be protected by implementing management strategy on priority basis.

Acknowledgement

The authors are thankful to the Agriculture Department, Bodoland Territorial Council Secretariat, Bodofa Nwgr, Kokrajhar for providing the fund vide letter No. BTC/Agric-91/2013/15 dated 19th June, 2013. We are also obliged to Dr. Mohan Bhattacharya, ex-Rector, Bodoland University for providing necessary help and support. Thanks are also due to Mr. Jagajit Brahma and Ms. Bijanta Bala Brahma, laboratory attendant for helping in maintaining the germplasm.

Conflict of interest

The author's declares none.

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