

Short communication

Bamboo resources in the homegardens of Assam: A case study from Barak Valley

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Abstract

Bamboos form an important component of the rural landscape in Assam and the homegarden bamboos fulfil diverse needs of the rural populations. Villagers' priority bamboo species were studied in the Irongmara and Dargakona villages of Barak Valley, Assam through random sampling of 100 homegardens and 40 bamboo groves. Species inventory revealed that bamboo growers maintain seven species to fulfil their social, ecological, and economical needs. Of these, *Bambusa cacharensis*, *B. vulgaris*, and *B. balcooa* exhibited the highest frequency of occurrence both in the homegardens and bamboo groves signifying the villagers' preference for these species. Relative Importance Value (RIV) also was highest for *B. cacharensis*, followed by *B. vulgaris*, and *B. balcooa*. This study also emphasized the need for sustainable management of this socioeconomically valuable and ecologically important rural resource.

Keywords: Village bamboo, bamboo groves, priority species, sustainable management

In the homegardens of Barak Valley, bamboos form an integral constituent (Nath et al., 2006) as in the homegarden systems of Kerala (Kumar, 1997). Bamboo grove is a separate zone within the homegarden or in the adjoining land parcels where bamboo is grown either in pure stands or mixed with dicot tree species like *Lagerstroemia*, *Bombax*, *Erythrina*, and the like. The villagers manage these bamboo groves for commercial purposes whereas the homegarden bamboos are essentially for meeting the felt needs of the rural households. Mostly the farmers in these locations are subsistence-oriented and they maintain multistrata homegardens including trees, shrubs, and herbaceous plants. Bamboo is one of the more important components of the homegardens, which provides the villagers with a wide range of goods and services. To describe the socioeconomic characteristics of the rural bamboo growers in relation to bamboo diversity and species preference, a survey was conducted in Irongmara and Dargakona villages in Cachar district of Barak Valley in northeast India. Species inventory and knowledge of

the villagers' priority species are expected to contribute to further understanding of the distribution and importance of bamboos at the regional level. It may also help in developing a scientific management system for sustainable utilization of this important village resource.

The study site is situated at 92°45' East longitude and 24°41' North latitude. Predominance of bamboos in the land use systems of the study areas (homegardens and bamboo groves) are depicted in Fig. 1. One hundred homegardens were selected through simple random sampling, which represents 10% of the total households in the focal area. The main selection criteria used was homegarden size (<1 ha). Forty bamboo groves were also studied as these are additional land use systems managed by the selected 100 homegarden owners. Species inventory and villagers' preference for bamboo species were assessed by surveying the selected homegardens and bamboo groves and enumerating the number of clumps per species. Information regarding socioeconomic attributes such as garden size and land

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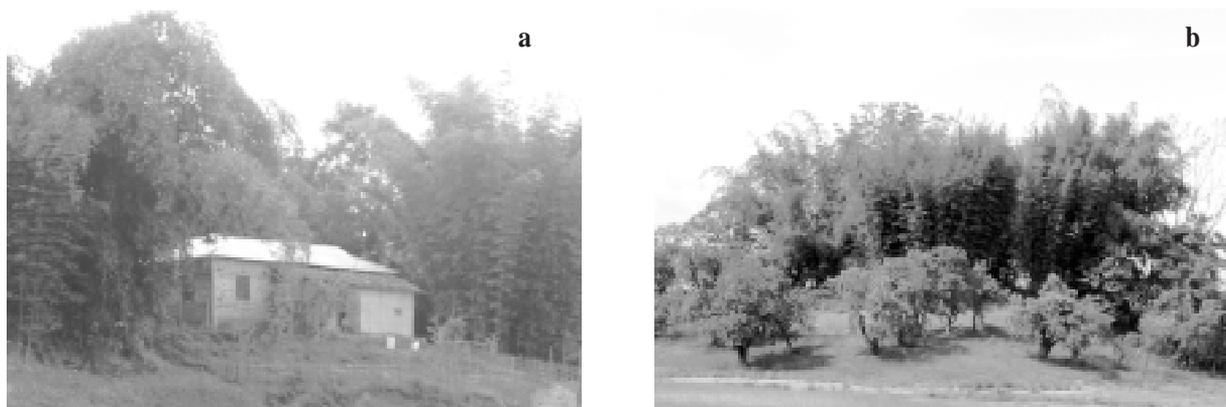


Figure 1. Bamboo clumps in the homegardens (a) and bamboo groves (b) of Dargakona village in Barak Valley, Assam.

use systems practised was gathered through field observations and interaction with the growers using a structured questionnaire. Relationships between socioeconomic attributes and priority village bamboo species were deduced through matrix analysis using the software Statistica 5 (Stat Soft Inc. 1984-1995). RIV was computed by summing up the values of relative density and relative frequency to represent the dominant village bamboo species in the homegardens and bamboo groves.

Homegarden size of the study villages ranged from 0.07 to 1.67 ha, with an average of 0.28 ha, implying that the villagers are predominantly smallholder gardeners. Size of the bamboo groves, however, ranged from 0.15 to 2.85 ha, with an average of 0.67 ha. Paddy lands constitute a major land use system and day labour is the primary vocation for the villagers. In general, the farmers owning larger extent of paddy lands have larger homegardens and bamboo groves in comparison to labourers owning little or no paddy fields. Furthermore, members of the poor families, who are engaged as daily labourers, had little or no education, and possessed small homegardens with no or very small bamboo groves. Farmers with larger families and more earning members have larger homegardens with bamboo being managed both in the homegardens and bamboo groves.

Inventory of village bamboo species showed that the farmers grew seven species in both homegardens and in the bamboo groves: *Bambusa assamica* Barooah et

Borthakur (*Mirtinga*), *B. balcooa* Roxb. (*Sil borua*), *B. cacharensis* R. Majumder (*Betua*), *B. nutans* Wall. ex Munro (*Bakal*), *B. vulgaris* Schrad. ex Wendl. (*Jai borua*), *Gigantochloa albociliata* (Munro) Kurz (*Kalasundi*), and *Schizostachyum dullooa* (Gamble) R. Majumder (*Dolu*). Species inventory also revealed the richness of bamboos in the homegardens, which is similar to the homegardens elsewhere (India, Bangladesh, and Indonesia; Widjaja, 1991; Banik, 2000). Among the bamboo growers, 74 and 90% respectively of the homegardeners and bamboo groves owners grew *B. cacharensis*. The corresponding figures for *B. vulgaris* were 68 and 78% and for *B. balcooa* 53 and 70% (Fig. 2). Based on the higher frequency of occurrence of these three species, these were designated as priority village bamboo species for these locations.

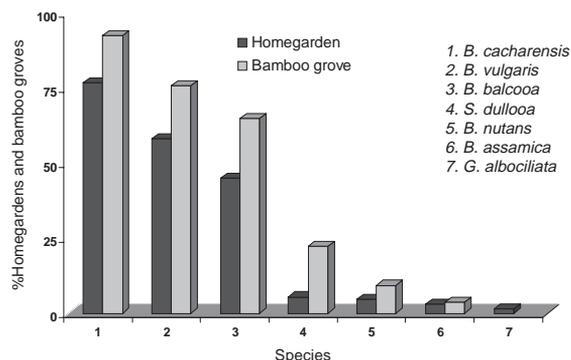


Figure 2. Occurrence of village bamboos in homegarden and bamboo grove in Irongmara and Dargakona villages of Barak Valley, Assam.

Correlation matrix (Table 1) highlights that total number of clumps and clumps of *B. cacharensis* per homegarden depended on the garden size. However, number of clumps of *B. vulgaris* and *B. balcooa* per homegarden were not correlated with garden size. Table 2 depicts the number of bamboo clumps per homegarden and bamboo grove. RIV represents the dominant bamboo species per homegarden and bamboo grove (Table 3). Average number of bamboo clumps per homegarden in the present study is much higher than 1.61 clumps reported for homegardens in Thrissur district of Kerala (Kumar et al., 2005). Greater demands of bamboo due to diminished forest resources may account for the higher occurrence and abundance of bamboo in the homegardens of Barak valley.

Table 1. Correlation matrix between villagers' priority species and their important socioeconomic attributes in the Irongmara and Dargakona villages of Barak Valley, Assam.

Variable	A	B	C	D	E	F	G
A	-						
B	0.85*	-					
C	0.07	0.03	-				
D	0.04	0.05	0.02	-			
E	0.39*	0.35*	0.08	0.12	-		
F	0.01	0.01	0.12	0.08	0.05	-	
G	-0.03	-0.08	0.03	0.06	0.06	0.32*	-

A: Total number of clump per homegarden; B: Number of clumps of *B. cacharensis* per homegarden; C: Number of clumps of *B. vulgaris* per homegarden; D: Number of clumps of *B. balcooa* per homegarden; E: Homegarden size per farmer; F: Agricultural land available per farmer; G: Family size per farmer. Asterisks indicate significance at $p < 0.05$.

Table 3. Dominant village bamboo species in homegarden and bamboo grove in Irongmara and Dargakona villages of Barak Valley, Assam.

Species	Village bamboo clumps					
	Homegarden			Bamboo grove		
	RD	RF	RIV	RD	RF	RIV
<i>B. cacharensis</i>	50.58	34.10	84.68	54.43	34.25	8.68
<i>B. vulgaris</i>	25.88	31.34	57.22	21.93	28.76	50.6
<i>B. balcooa</i>	18.57	25.35	43.92	16.11	24.65	40.76
<i>S. dullooa</i>	1.46	3.69	5.15	0.95	3.42	4.37
<i>B. nutans</i>	2.49	2.76	5.25	6.38	8.22	14.60
<i>B. assamica</i>	0.58	1.84	2.42	0.20	0.70	0.90
<i>G. albociliata</i>	0.44	0.92	1.36	—	—	—

The rural lives in Barak Valley are also intricately linked with the village bamboos. For quick economic gains, however, the growers clearfell the bamboo clumps (Nath et al., 2006), which significantly affects the height and size of new culms in the subsequent years. Scientific clump management and harvesting techniques for bamboo resource development in homegarden (Krishnankutty, 2005), are therefore necessary. Sustainable management protocols with emphasis to utilize the village bamboo resource locally may promote the livelihood security of the rural people in Barak valley and may result in overall regional development.

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Table 2. Occurrence of village bamboo species in the homegardens and bamboo groves in Irongmara and Dargakona villages of Barak Valley, Assam.

Species	Number of bamboo clumps per			
	Homegarden		Bamboo grove	
	Average	Range	Average	Range
<i>B. cacharensis</i>	3.84±0.47	0-24	10.56±1.9	0-53
<i>B. vulgaris</i>	1.50±0.29	0-14	4.26±0.91	0-29
<i>B. balcooa</i>	1.07±0.16	0-7	3.13±0.62	0-20
<i>S. dullooa</i>	0.15±0.07	0-5	1.24±0.40	0-15
<i>B. nutans</i>	0.08±0.01	0-2	0.19±0.08	0-4
<i>B. assamica</i>	0.04±0.0	0-1	0.06±0.03	0-2
<i>G. albociliata</i>	0.03±0.0	0-2	—	—

Values are average ± S.E.

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