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Edible Bamboo Resources of North Chhotanagpur Division of Jharkhand: Sustainable Utilization by Tribes

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Abstract

Six bamboo species (*Bambusa balcooa*, *Bambusa bambos*, *Bambusa nutan*, *Bambusa tulda*, *Dendrocalamus strictus* and *Dendrocalamus sericeus*) has been recorded which are used for the edible purpose in large or small scale in the seven district surveyed of the North Chhotanagpur (NCN) region. *Dendrocalamus strictus* is the most common edible dominant bamboo species from the view point of delicacy, taste and consumption and found in most of the places. The next dominating edible species is *B. bambos* (Kanta bans) which is found in 6 districts (except Giridih). As minor species in terms of use as food is concerned, *B. balcooa* as edible bamboo was found in Giridih & Dhanbad district only. Most frequent edible bamboo species is *D. strictus* and least frequent species is *D. sericeus*. *D. sericeus* was found only at Parasnath hill of Giridih district. The edible young shoots are available only for 2 to 3 months. The production period could be increased up to 6 to 8 months in a year by proper cultivation. Bamboo of young shoots is called 'Karil', crushed and fermented wet as 'Sandhana' and fermented dry as 'haua'. The young culms (*Karil*) are used for making vegetable, curries, chutney etc. The bamboo shoots are widely used as food and it can be eaten in fresh or dry form. The main objective of this research work was to have a scientific documentation of the edible bamboo resources of North Chhotanagpur division of Jharkhand.

Keywords: Bamboo, North Chhotanagpur, Edible and *Dendrocalamus strictus*

Introduction

Bamboo is one of the most productive, fast growing, widespread, sustainable, versatile and environmentally friendly plant species. It is a long tree like woody grass that belongs to family Poaceae and subfamily Bambusoideae, distributed in various parts of humid tropical, sub tropical and temperate region of the earth where the annual rain fall ranges between 120 to 400 cm. and temperature varies between 16°C to 38°C (Subramanian, 1998). It is one of the most primitive plant species that survive today. Due to its manifold uses in day to day life, it is regarded as the "Emperor" among the grasses and as "The Green Gold" of the 21st century. As Bamboo has been in use since centuries in house construction and agricultural implements, it is commonly called as poor's man timber. With the addition of technology, now a days, bamboo has acquired a considerable place in the manufacture of fashionable furniture, home decoration items, fabrics, kitchen ware, panels, wood substitutes, screens, flooring and roofing leading to a considerable change in its position as rich man's timber. Some bamboo species like *D. strictus* (Bon bans), *B. balcooa*, *B. tulda*, *B. bambos* etc. are widely used for edible purpose. So, bamboo has also been called as king of forest vegetable.

Bamboo as food

Most bamboo species produce edible shoots. According to Fu and Banik (1995), over 500 species can produce edible shoots. Sharma (1980) reported the 26 important bamboo species traditionally used for edible purposes in Asia Pacific region. Singh (2006) listed 50 native bamboo species used for the edible purpose from North East India. In Central and Eastern India, tribal community inhabiting the forest collect bamboo shoots from natural bamboo forests having mostly pure patches of *D. strictus*.

With regard to the diversity of commercial edible bamboo species of North Eastern Himalayan region as studied by Bhatt *et al.*, (2004), a maximum of 8 species has been recorded from Manipur followed by Tripura (6 species), Arunachal Pradesh and Nagaland (5 species each). Jha (2010) reported five species, viz., *B. tulda*, *D. giganteus*, *D. hemiltonii*, *D. longispathus* and *M. baccifera* as shoot producing species in Mizoram. Singh (2006) reported more than 50

bamboo species which is used for the edible purpose in large and small scale in North East Himalayan region.

Shoots of some edible bamboo species like *Bambusa balcooa*, *B. tulda*, *Dendrocalamus brandissi*, *D. hemiltonii*, *D. longispathos*, *D. membranaceus* are being consumed in other parts of the country. The superior quality of bamboo species for shoot production and consumption are *Bambusa blumeana*, *B. oldhamii*, *Dendrocalamus asper*, *D. latiflorus*, *Gigantochloa levis*, *Phllostachys pubescens*, *P. edulis*, *P. praecox*, *P. propinqua*, *P. dulcis*, *P. bambusoides*, *P. flexuosa*, *Thyrostachys siemensii* etc.

Different types of preparations like bamboo kandy, bamboo shoot bhaji, chutney, pickle, fried shoots (pakoda), Kadi, pulav, keema, soup, bamboo juice and bamboo beer are made from bamboo shoots. Bamboo vinegar is also used as biofertilizer, bioinsecticide and as medicine for stomach disorders (Pandey and Ojha, 2011).

Bamboo shoot- the treasure house of nutrition

Bamboo shoots are low in calories, high in dietary fiber and rich in various nutrients. The main nutrients in bamboo shoots are proteins, carbohydrates, amino acids, minerals, fats, sugars, fibers and inorganic salts. The shoots have a good profile of minerals, consisting mainly of potassium (K), Manganese, Zinc, chromium, copper, iron (Fe), plus the lower amount of phosphorus (P) and selenium. Fresh shoots are a good source of thiamine, niacin, vitamin A, vitamin B₆ and vitamin E. Bamboo shoots not only have nutritional but also have medicinal value. Modern research has revealed that bamboo shoots have a number of health benefits, from cancer prevention and weight loss to lowering cholesterol level, improving appetite and digestion. It is also low in sugar and therefore can be used by persons on sugar-restricted diets.

Bamboo shoot as food in North Chhotanagpur

Bamboo has contributed significantly to human life for centuries. The same is apparently reflected in the life of poor villagers and tribal community residing in the forest areas of North Chhotanagpur. The tribal people of North Chhotanagpur harvest young shoots of bamboo for their own consumption as well as to sell it in the market. There are a number of bamboo species in North Chhotanagpur that are used for the edible purpose. The most common species of North Chhotanagpur are *D. strictus*, *B.tulda*, *B.bambos*. The young shoots are tightly clasped with overlapping sheaths that have to be removed to extract the edible part. Shoots usually develop every year with the beginning of the monsoon and are harvested during July to the end of September. In North Chhotanagpur, fresh bamboo shoots are called 'Karil', crushed and fermented wet as 'Sandhana' and fermented dry as 'haua'.

Present investigation reveals the edible bamboo species which are sustainably utilized mainly for edible purposes by the poor and tribal people of North Chhotanagpur division of Jharkhand. It has also been found that these bamboo resources are there due to their sustainable utilization as people since centuries are dependent on them for their food security and other essential uses and therefore they are conserving this valuable germplasm with keen interest.

Materials and Methods

Area surveyed

The present investigation was carried out in seven districts (Hazaribag, Chatra, Ramgarh, Bokaro, Giridih, Dhanbad & Koderma) of North Chhotanagpur division of Jharkhand

during the year 2012 to 2015. The North Chhotanagpur division of Jharkhand lies between 23⁰³7' N to 24⁰⁴' N latitude and 86⁰⁶' E to 86⁰¹' E longitude.

Data collection

The simple random sampling procedure was adopted for selection of the villages where information collections about utilization of different bamboo species have been carried out. Ten villages were randomly selected from each district in such a way that the selected sites represent the entire district. In this way, the total 70 villages represent the entire study sites.

During the survey, data on the role of bamboo in rural livelihood were investigated and documented. The open-ended interview was conducted for taking the data on the use of bamboo for livelihood purposes. Photographs of different parts of bamboo related to livelihood practices were also recorded. Bamboo utilization information related to traditional knowledge was documented through the interview from farmers, farm women, craftsmen, village artisans, village community leaders and local body's members.

Results and Discussion

Edible Bamboo distribution in Forest and Non-forest areas of North Chhotanagpur

A total of 10 species have been found in seven districts (Hazaribagh, Ramgarh, Chatra, Bokaro, Dhanbad, Giridih and Koderma) of NCN division of Jharkhand. During field survey, total 70 villages were randomly selected for study purpose from seven districts. Within the selected villages, a total of 10 bamboo species are recorded of which 7 species belonged to genus *Bambusa*, 2 species to genus *Dendrocalamus*, and one species to genus *Sasa*. These species are *B. balcooa*, *B. bambos*, *B. nutan*, *B. striata*, *B. tulda*, *B. wamin*, *B. multiplex*, *D. strictus*, *D. sericeus* and *Sasa palmata*. Among these bamboo species, *B. balcooa*, *B. bambos*, *B. nutan*, *B. tulda*, *D. strictus* and *D. sericeus* are widely used for the edible purpose.

Maximum 6 bamboo species have been recorded which is used for the edible purpose in large or small scale in the North Chhotanagpur region. However, *Dendrocalamus strictus* is most common edible dominant bamboo species from the view point of delicacy, taste and consumption. The next dominating edible species is the *B. bambos* (Kanta bans) which is found in 6 districts (except Giridih). *B. balcooa* may be called as minor species in terms of its use by people as it was found in Giridih & Dhanbad district only as edible species. In rest of the five district, people did not prefer it for eating. The least frequent species is *D. sericeus*. *D. sericeus* was found only at Parasnath Hill of Giridih district.

Forest- the major source of Bamboo shoot in North Chhotanagpur

The edible bamboo shoots are playing an important role in generating the source of income. The edible bamboo shoot is collected mainly from the forest areas by poor, tribal people of the villages situated in the vicinity of the bamboo forests. They usually collect locally, remove the culm sheaths to bring out the edible part and sell to fellow villagers otherwise engaged to the retail or wholesale in the nearby market. A Part of the collected shoots are consumed by themselves. Nath (2014) reported that majority of villagers (55.0%) travel 2 to 5 km from their respective villages for the collection of shoots daily, tri-weekly, bi-weekly or even weekly from forests. About 13% villagers used to travel 5 to 10 km from

their villages and 5% travel more than 10 km and sometimes even upto 15-20 km. These facts were confirmed through this study also.

The edible bamboo shoot was found available throughout the North Chhotanagpur from July to September every year. The typical shooting season of a species rarely exceeds 2 months

(Chongtham *et al.*, 2011). The total duration recorded is upto 70 to 80 days. On average, in most part of the North Chhotanagpur division, shoots are available for 50 to 60 days. Nath (2014) reported shorter shoot collection duration from Koderma i.e., 30 to 45 days whereas shoots are available for 60 or more days from East Singhbhum, Latehar, Khunti etc.



Photos: (1) Young edible culm of *Bambusa balcooa* (2) Young edible culm of *Bambusa bambos* (3) Young edible culm of *Bambusa tulda* (4) Young edible culm of *Dendrocalamus strictus* (5) Young edible culm of *Bambusa nutan*

Converting Bamboo shoot as food- the technique

The young shoots of bamboo locally called 'Karil' are removed when emerged from the ground during the rainy season, July to mid-October in North Chhotanagpur. The shoots are cut with axe or spade (hasua, kudali etc.) or a sharp knife beyond the rhizome neck after emergence from the ground. Sheath removed *Karils* are made into small pieces with the help of a knife, chulohi, etc. These small pieces 'Karil' are immersed in water for 3 to 8 days for fermentation (best 3-4 days) resulting in sour taste with vinegar like smell. As fermentation is completed, the shredded shoots are removed.

The fermented product is mostly known as *Sandhna* used for making vegetable and pickle. *Sandhna* is used as a vegetable in the rural areas of all the districts surveyed of NCN division. In order to consume during the off-season, chopped *Karils* are fermented for 4 days and then dried either in shade or in the sun. After drying, the *sandhna* becomes light flaky powder like substance locally called as "Haua" and are stored in earthen pots. The product is suitable for making pickle and can be consumed even for one year. Pickles are the main traditional fermented bamboo shoot product of most of the areas of North Chhotanagpur.



Photos: (1) Karil (2) Fermented wet Karil '*Sandhna*' (3) Fermented dry Karil '*haua*' (4) Delicious vegetable (5) Fermented Karil (6) Karil used for vegetable

Cultivation of Bamboo for livelihood support

In the North Chhotanagpur, young shoots of *D. strictus* are consumed in large quantities. The young shoots of other bamboo species like *B. balcooa*, *B. bambos*, *B. tulda* and *B. nutans* are also consumed in less proportion than *D. strictus* in all districts of North Chhotanagpur. It has been noted that production period is limited to all edible bamboo species. The edible young shoots are available only for 2 to 3 months. Nath (2014) reported that with the proper irrigation, mulching, nutritional supplements the production period could be enhanced up to 6 to 8 months in a year.

During this study, it has been found that the supply of edible bamboo shoots is limited than its demand. So the cultivation of bamboo shoots will provide the farmer an alternate crop than the traditional crops and an extra source of income. It will also ensure its availability span adding more to the food supply to the dish of the people residing in villages and forest

areas. So the cultivation of bamboo will provide food security and income generation for tribal and poor rural people of North Chhotanagpur. The cultivation will have its positive environmental consequences as well as it will ensure the integrity of the available bamboo resources and also bring degraded land back into productivity. There is enough potential of cultivation of bamboo resources in North Chhotanagpur. The bamboo has all the capability to become a promising agro forestry crop. Plantation of edible bamboo shoots will help people to collect edible shoots in large quantity. This large quantity of bamboo shoots may fulfill the demand of the market and increase the income of poor and tribal people of North Chhotanagpur division.

Conclusion

From the above findings, it can be concluded that many cultural traditions and customs in North Chhotanagpur are

connected with bamboo. The use of bamboo shoot as food is one of them. The different species of young bamboo shoots are used as edible purpose as per their availability in those areas. A total of 6 six edible bamboo species have been recorded which are found in most of the places of the North Chhotanagpur. *Dendrocalamus strictus* is most common edible dominant bamboo species from the view point of delicacy, taste and consumption. The next dominating edible species is the *B. bambos* (Kanta bans) which is found in 6 districts (except Giridih). *B. balcooa* as edible bamboo was found in Giridih & Dhanbad district only. The least frequent species is *D. sericeus* which is found only at Parasnath Hill in Giridih district. The young culms (*Karil*) are used for making vegetable, Pickles, Curries, Chutney etc. The edible bamboo shoots are playing an important role in generating the source of income. The bamboo has all the potentiality to become a promising agro forestry crop of this area.

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