

# Traditional Knowledge and Consumption Pattern of Edible Bamboo Shoots in South Konkan

V. R. Narvankar<sup>1\*</sup>, S. R. Gaddam<sup>1</sup>, P. C. Arekar<sup>1</sup>, A. K. Warak<sup>3</sup>, A. D. Rane<sup>1</sup>, S. S. More<sup>2</sup>, V. D. Tripathi<sup>1</sup>, V. M. Mhaiske<sup>1</sup> and P. B. Bansode<sup>3</sup>

<sup>1</sup>College of Forestry, DBSKKV, Dapoli, Maharashtra, 415712

<sup>2</sup>College of Agriculture, DBSKKV, Dapoli, Maharashtra, 415712

<sup>3</sup>College of Agricultural Engineering and Technology, DBSKKV, Dapoli, Maharashtra, 415712

---

## Abstract

The tender bamboo shoots are consumed traditionally in the South Konkan Region of Maharashtra. Two species namely *Pseudoxynthera ritchei* and *Bambusa bambos* are consumed in Sindhudurg District. A survey was undertaken among the various consumers to understand its priority, value addition and preservation techniques. It was observed that HCN was usually removed by washing in the water followed by boiling in water for 4-5 hours. Among the various recipes, *Komachi bhaji* (a type of dish) and *Komache kapa* (bamboo shoot crisps) are widely preferred delicacies. These tender shoots are traditionally stored in brine water.

---

**Keywords:** Edible bamboo shoots, Bamboo recipes, .

## Introduction

Bamboo is a group of large woody grasses which belongs to the family Poaceae and subfamily Bamboosoideae. In India, about 136 species are found under 23 genera – of which only 18 species are of commercial value. Bamboos play an important role in daily life of rural people and specially in tribal region. Bamboo is not only used as a building material but also used in agricultural implements, musical instruments (e.g. flute), furniture, choppsticks, handicraft, pulping material in paper industries. And the edible nature of the tender shoots of some of the edible species enhances the importance of bamboo globally.

India has 63.3 Mha of the forest area, of which around 8.96 Mha is under bamboo cover. Among various species, 67 per cent of bamboo are clump forming and 33 % of non-clump forming (Tripathi 2011). In India,

out of this total bamboo cultivating area, around 28 % is located in North East. This area provided 66 % of gross share in the country (Kumar 2017, Dabas 2018). In Maharashtra, bamboos are cultivated around 9.9 per cent and contribute gross share is 5 per cent in total bamboo area in India which is very less as compare to North Eastern Region (Tripathi 2011). In India, the bamboo used as “Green Gold”.

Among the various uses of bamboo, edible tender shoots are preferred delicacy. In India, different bamboo species such as *Bambusa bambos*, *B. multiple*, *B. tulda*, *B. vulgaris*, *Dendrocalamus giganteus*, *D. hamiltonii*, *D. logispathus*, *D. strictus* and *S. elegans* are used for vegetables and pickle production. (Vatsala 2003). The bamboo shoots are low in calories, rich in various nutrient and high in dietary fiber. The main nutrient in bamboo shoots are protein, amino acids, carbohydrates, minerals, fat, sugar and fiber. The bamboo shoots have a good composition of minerals, consisting mainly of Potassium (K), manganese (Mn), calcium (Ca), zinc (Zn), chromium (Cr), copper (Cu), iron (Fe) and lower amounts of phosphorus (P) and Selenium (Se). The juvenile shoots are very good source of thiamine, niacin, vitamin A, vitamin B6 and vitamin E (Nirmala et al. 2011, Singhal et al. 2011).

The edible part of bamboo is the newly sprouted juvenile shoot. Bamboo shoots are very important constituent of many of the traditional recipes. The Sindhudurg district located in the South Konkan is known for its ethnobotanical diversity. This provides a suitable situation for the consumption of various local food resources, among which bamboo shoots are favourite. Bamboo shoots are highly perishable, therefore, the preservation of bamboo shoots in the season of lower availability is needed and this is done by the rural people, especially the local communities of the region of Sindhudurg. There is growing demand for processed and packaged bamboo shoots in national as well as international markets. The shelf-life of fresh shoots is up

---

\*Correspondence: vaishnavinarvankar12@gmail.com

Received Date: 3.8.2019 ; Accepted Date: 7.3.2020

to two weeks in a refrigerator and canned bamboo shoots can stay stable for few years. (Tripathi 2011).

In most of the countries, bamboo shoots consumption pattern is non-standardized, traditional, seasonal and region-specific with little value addition. Therefore, there is a great opportunity to take up the processing of bamboo shoot-based food products in an organized manner (Chaudhary *et. al.* 2012). Here we make an attempt to document processing of bamboo shoots in Sindhudurg district of Maharashtra in India.

### Material and Methodology

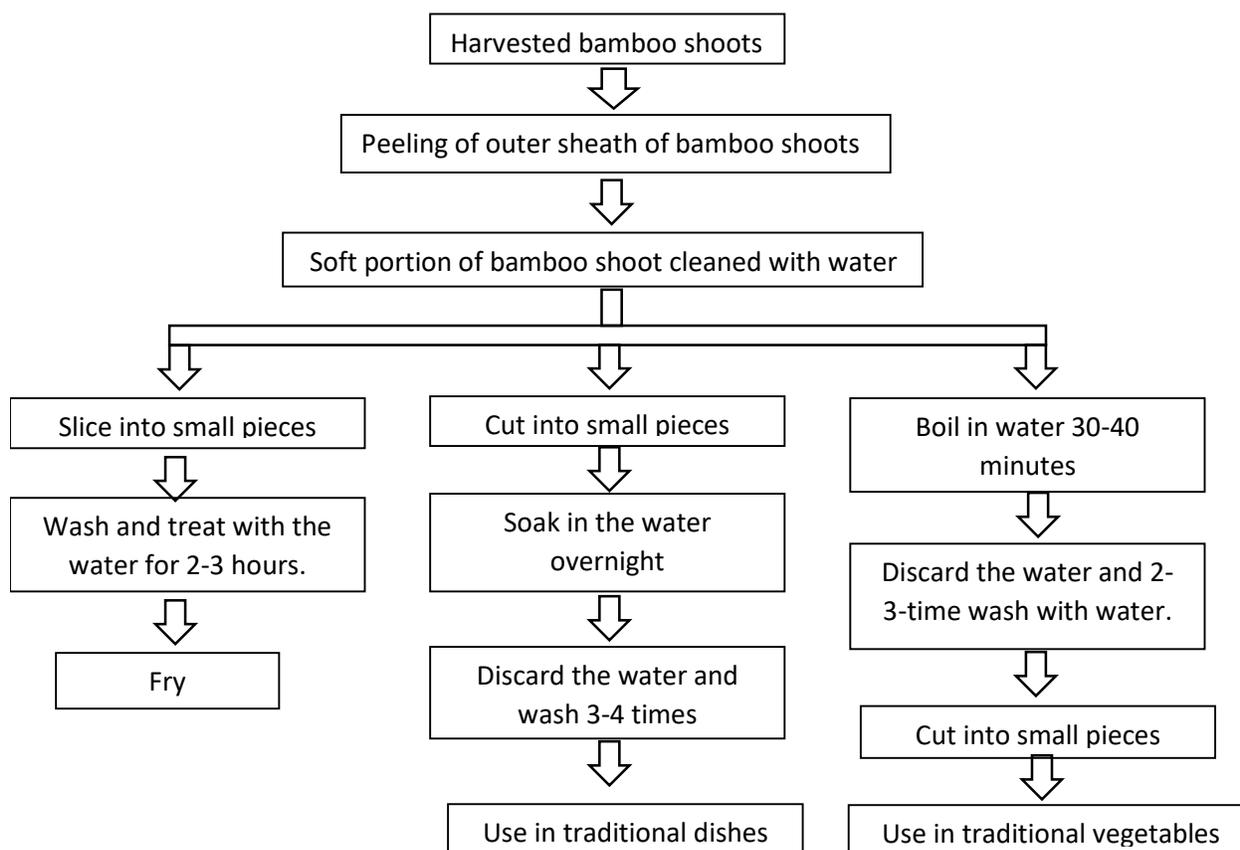
Present study was undertaken in Sindhudurg district in Maharashtra. The mentioned district is located in the Western Ghats of Maharashtra. Total geographic area of Sindhudurg district is 5,207 km<sup>2</sup>. Sindhudurg is lies between 15.370 to 16.400 N and 73.190 to 74.180 E latitude. Region experience maximum and minimum temperature of 33.80 °C and 16.30 °C, respectively. The rainfall averages 3,280 mm annually. *Bambusa bambos* and *Pseudoxynanthera ritcheyi* because these species

are highly consumed by the people. The villages selected for present study were Kesari, Danoli, Sateli Bhedshi, Sonurli, Otavane, Malgaon. These six villages were chosen because the people of these villages are extremely dependent on the bamboo for domestic consumption. Total 50 households were randomly selected and surveyed for the collection of information. The method which is employed in this study was designed with the purpose of producing baseline information about edible uses of bamboo shoot in the local system, its different traditional products developed, and processing techniques in Sindhudurg district.

### Results

It is observed that species of bamboo are largely used for the preparation of edible product in Sindhudurg district. Recipes like bamboo shoot (*Komche/Kirlu*) *bhaaji*, *bhajji*, *curry*, *chutney*, *kapa*, *pickle*, etc. The method used for the processing of bamboo shoots in Sindhudurg district.

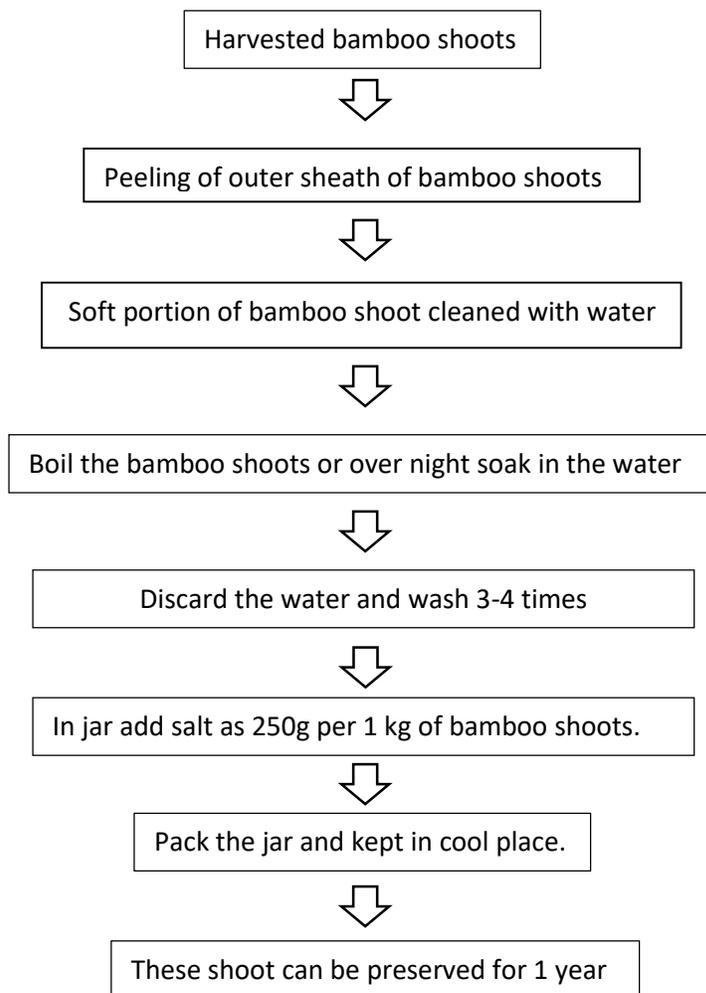
### Discussion



**Figure 1.** Processing of fresh bamboo shoots for preparation of traditional recipes in Sindhudurg district.

**Table 1.** Various recipe prepared from tender bamboo shoot

Sr. No.	Traditional Dish Bamboo used	Ingredient	Method of preparation
1	<i>Komachi Bhaji</i> (Vegetable) <i>Bambusa bambos</i> , <i>Pseudoxytenanthera</i> <i>ritcheyi</i>	Processed bamboo shoots, 300g Chili to taste, One small chopped Onion, Mustard seed ½ tsp, Turmeric ½ tsp, Oil 2 tsp, Salt to taste, Coconut	Cut the processed bamboo shoots in small pieces, heat the oil in pan, add mustard seed and turmeric, add chopped onion and masala and sauté well. Add boiled bamboo shoots and sauté. Add ground coconut, add salt and mix well. This Can be served with roti or rice.
		Processed bamboo shoots 200g Green chili 4, Coconut, Coriander leaves, Cumin seeds ½ tea spoon Turmeric, Oil, Salt to taste, Onion 2 chopped, Masala	Cut processed shoots in small pieces, in pan heat the oil, add the cumin seed and onion in oil sauté well. Add masala and boiled bamboo shoots add some salt. Grind coconut, green chili, coriander leaves and cumin seeds with pinch of turmeric and water. Add these pastes and mix well. Serve hot.
2	<i>Komachi Bhajji/</i> Pakorasa <i>Bambusa bambos</i> , <i>Pseudoxytenanthera</i> <i>ritcheyi</i>	Processed bamboo shoots 200g Salt to taste, Gram flour 3 big spoon, Masala or Garam Masala, Water, Oil for deep fry	Cut the processed bamboo shoot into thin slices. In here gram flour add some salt and masala as per taste. Mix well with water. Pick one by one slices and dip in the paste then put in hot oil. After few minutes take out and serve with sauce.
3.	<i>Komachi Kapa</i> Bamboo crisps <i>Bambusa bambos</i>	Processed bamboo shoo 300g, Ginger- garlic paste 2 tsp, Salt to taste, Semolina (Rava/suji ) for crisp Oil for shallow fry	Cut the bamboo shoot into slices. Apply Ginger- Garlic paste and salt on slices and keep 10 minutes for marinate. Apply thin coat of semolina for crispiness and shallow fry in pan with small quantity of water.
4.	<i>Komachi curry</i> <i>Bambusa bambos</i> , <i>Pseudoxytenanthera</i> <i>ritcheyi</i>	Processed Bamboo shoot 200g Coconut puree, Masala 2 tea spoon Onion 1 copped, Garlic as per taste Salt to taste, Oil 2 table spoon, Turmeric ½ teas spoon, Mustard seed ½ tea spoon, Curry leaves 4, Water	In pan, add some oil. Splutter the muster seed and curry leaves in oil add pinch of turmeric powder onion, garlic and sauté. Add cooked shoot and sauté. Add grinded coconut green chili paste in shoots. Add salt for taste and mix well. Add water and rest for 5 minutes. Serve hot with rice or roti.
5.	<i>Komachi Cutlet</i> <i>Bambusa bambos</i> , <i>Pseudoxytenanthera</i> <i>ritcheyi</i>	Chopped processed bamboo 200g shoots, Boiled Potato 100g, Green chili 4, Masala ½ tea spoon, Corn flour 1 tea spoon, Salt to taste, Oil for shallow fry	In pan heat oil add green chili, onion and sauté well. Add boiled bamboo shoots and mix well. Add salt to taste and masala or garam masala mix well. Add mashed boiled potatoes and mix well. Allow the mixture to cool. Make flat small patties. Dip patties in corn flour or rice flour and shallow fry the patties on pan until the golden-brown color. Serve hot.
6.	<i>Komachi chutney</i> <i>Bambusa bambos</i> , <i>Pseudoxytenanthera</i> <i>ritcheyi</i>	Processed bamboo shoots 200g, Salt to taste, Cumin seeds ½ tea spoon, 2-3 curry leaves, Onion 1 small chopped, Tomato ½ small chopped, Masala 1 table spoon	Cut the processed bamboo shoot in fibers. In pan heat the oil insert cumin seed curry leaves and turmeric sauté well. Add small chopped tomato and sauté. Add masala in it, add shoots and allow to cook. Serve hot.
7.	<i>Komache Lonche</i> (Pickle) <i>Bambusa bambos</i> , <i>Pseudoxytenanthera</i> <i>ritcheyi</i>	Bamboo shoots chopped , Salt to taste Red chili powder, Oil, Mustard seed	Chopped bamboo shoots are mixed with salts and kept in an airtight container for a week. After a week the salt is drained out and chili powder added and mixed. Oil as per requirement is heated. Mustard spluttered and added to the shoots. The shoots are mixed well and stored in airtight container.



**Fig. 2.** Traditional preservation techniques of bamboo shoot in Brine solution.

Bamboo shoots forms traditional delicacy in Sindhudurg district of Maharashtra. Among the various species of bamboo in Maharashtra interestingly in Sindhudurg district, *Bambusa bambos* (Kalak) and *Pseudoxytenanthera ritcheyi*(Chivari) are two species which are most used for preparation of edible products. The commercial species *D. stocksii* found in Sindhudurg district reported by bamboo shoots are consumed in canned, boiled and fermented forms. Though the fresh bamboo shoots are considered nutritionally rich, but their availability is not throughout the year. Young shoots can be preserved in brine solution around one year.

Traditionally there are seven products those are made from bamboo shoots in Sindhudurg district

of Maharashtra. The products which are produce in Sindhudurg district traditionally are bamboo shoot vegetable (*Komachi bhaji*), Bamboo shoot pakora/bhaji, Bamboo crisps (*kapa*), Bamboo shoots curry, Bamboo shoot cutlet, Bamboo shoot chutney, Bamboo shoot pickle. Mostly the Bamboo shoot vegetable (*bhaji*) and Bamboo shoot crisps (*Komachi kapa*) these are the two recipes consume in Sindhudurg district.

Nongdam and Tikendra (2014) reported that bamboo shoots are one of the useful healthy food because of their nutritional facts. The use of bamboo shoots as a food in Northeast India is well known where they are form several traditional specialty dishes. The bamboo shoots provide nutrition for millions of people

worldwide (Tripathi 2011). Biswas et al. (2014) reported as the edible purpose in processing of bamboo shoots for preservation becomes important to make the shoots available for the product throughout the year. Popular traditional products such as Rhuchak, Voen, Pickle, Bamboo shoots with King Chili, Bamboo shoot Chutney with dry fruits, Ruchu, Ruchon, Rhuyen in Nagaland.

The average storage life of these 2 species in brine water was 1 year (Dabas and Kumar, 2018) reported different bamboo shoots preservation methods such as canning, fermentation, drying, vacuum processing the bamboo shoots in nylon-based packages. Bamboo shoots contain several nutritional compounds such as protein, carbohydrate, fat, vitamins, minerals, enzymes, coenzymes, reducing and non-reducing sugar, lactic acid and citric acid (fermented products) etc. Also bamboo shoots are rich in fiber and low in fat. (Singhal et al. 2013, Vishwanath and Chandramouli, 2016). Tribal communities use bamboo shoots in various forms to eradicate a disease is well known in Ayurveda since ancient times.

Bamboo is being a promising natural resource, the contemporary usage of bamboo shoots shall help in the socio-economic and food security of the region and accordingly people are trying to use the bamboo in various new and innovative ways for the good health, prosperity and wellbeing. (Bisht et al 2015).

---

## References

Bisht M. S., Nirmala C. and Meetei O. S. 2015. Bamboo Shoots for Food in North-East India: Conventional and Contemporary. 10<sup>th</sup> World Bamboo Congress, Korea 2015.

- Biswas, S. 2014. Development of NE and South Indian Hill Bamboo-based ethnic villages for livelihood, conservation and tourism. Proceeding of National Seminar "Hill Bamboos- an important resource for improving rural livelihoods", 17-18 October, 2014 organized by Himalayan Forest Research Institute, Shimla [ICFRE], Manali, Himachal Pradesh, 2014, pp 25-26
- Choudhury D., Sahu J. K. and Sharma G. D. 2012. Value addition to bamboo shoots: a review. *J. Food Sci. and Tech.*, 49: 407-414.
- Dabas D. 2018. A novel processing method for bamboo shoots in India- 'Cluster level Bamboo Shoots Processing'. *Int. J. Food Sci. and Nutrition Engg.* 8: 53-59.
- Dabas D. and Kumar K. 2018. Bamboo shoot processing in India. *Advances in Food Tech. and Nutritional Sci.* 4: 1-3.
- Kumar K. 2017. Assessment of Bamboo Resources. N.E.C.f.T.A.a. Research, NECTAR: Delhi. p. 13.
- Nirmala C., Sheena H. and David E. 2011. Bamboo shoots: a rich source of dietary fibres. *Dietary fibers, fruit and vegetable consumption and health*, Nova science publishers, USA. 2009 . 15-30.
- Nongdam P. and Tikendra L. 2014. The nutritional facts of bamboo shoots and their usage as important traditional foods of northeast India hindawi publishing corporation international scholarly research notices 17 pages.
- Singhal P., Bal L. M., Satya S., Sudhakar P. and Naik S. N. 2013. Bamboo shoots: a novel source of nutrition and medicine, *Critical Rev. Food Sci. Nutrition.* 53: 517-534.
- Singhal P., Satya S., Bal L. M., Sudhakar P. 2011. Bamboo shoot: a potential source of food security. *Mediterranean J. Nutrition and Metabolism.* 5: 1-10.
- Tripathi Y. S. 2011. Edible bamboo shoots- a nutritional appraisal, productivity enhancement and value addition of bamboo. *Institute of Forest Productivity.* 272-281 pp.
- Vatsala V. V. A. 2003. Bamboos in India. NISCAIR, New Delhi.
- Viswanath S. and Chandramouli S. 2016. Cultivation prospects of edible bamboo shoots in South India, *IWST Bulletin no.* 14. 1-26 pp.