

Original Research Article

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## Ethnobotanical Survey of Wild Edible Plants in Different Landscapes of Kodagu

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### ABSTRACT

#### Keywords

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The present study deals with the identification, documentation and ethnobotanical exploration with respect to food value of wild edible plants from different land use types of Kodagu district. Total 41 wild edible plants were documented of which, 24 species were fruits followed by leaves, tubers and bark are eleven, four and two respectively. Utility pattern of wild edible plants, factors affecting the population status of wild edible plants, preferred wild edible fruits for domestication and farmers preference for cultivation of wild edible fruit trees in farming lands were studied in order to maintain and improve this important wild edible plant source.

### Introduction

Wild edible plants were the important forest resources, which helps in improving food security of tribal people and rural community. Over 53 million tribal people in India and about 60 per cent of the rural communities who directly rely on forest resources for their day-to-day requirements (Kandari *et al.*, 2012). Wild edible plants includes different categories such as fruits, tubers, vegetables, leaves, roots, etc. Among the different wild edible plants category, wild edible fruits play a very vital part in supplementing diet of the people. Many people in rural communities

and tribal peoples rely on wild edible fruits for food especially during crop failure and famine condition. There are many wild edible fruit species, which are having ethnobotanical importance. Therefore, it is necessary that we should have knowledge on the occurrence, distribution and phenology of these species for their proper utilization. Documentation of wild edible fruits plays a significant role in enhancing the natural food resources which had been used. Wild edible fruits have to be introduced for cultivation as they can serve as food material for ever increasing population (Bhagat *et al.*, 2016). This requires the identification and protection of local

indigenous knowledge systems that inform the collection and use of wild edible plants (Tabuti *et al.*, 2004). Documenting wild edible plants of indigenous groups can provide information for planning, conservation and further research especially in propagation, domestication, and evaluation of nutritional profiles to obtain nutritional composition.

## **Materials and Methods**

A semi structured questionnaire was used to conduct ethnobotanical survey of wild edible plants in the study area. Questionnaire survey was done among tribals and households which are adjacent to selected land use types. In each study sites, 30 respondents were interviewed. The questionnaire involved different aspects like wild edible fruit species consumed, cultivated, medicinal values, factors affecting the population status of wild edible fruit species and marketing. Perception of people on wild edible plants with respect to livelihood improvement was also collected. The important wild edible species from the point of view of domestication based on the perception of the people was done by scoring method.

## **Results and Discussion**

### **Ethnobotanical survey of wild edible plants**

Totally 90 respondents from the selected land use types were interviewed. A total of 41 wild edible plant species belonging to 26 families were recorded based on an ethnobotanical survey. Majority of the wild edible plants were trees followed by shrubs and herbs. Fruits were the largest (24) edible parts used by the local people followed by leaves (11), tubers, roots (4) and bark (2). The information on the plants species such as their botanical name, family, local name, parts used, uses or mode of consumption and traditional

knowledge were recorded for all these wild edible species.

### **Wild edible plants parts used for consumption**

Wild edible plants are used for various purposes viz, used as food, medicine, and also used for the preparation of pickle, wine and juice. Among different uses, it was found that most of the wild edible plants were used for direct consumption. Different parts of wild edible plants such as fruits, leaves, tubers, roots and bark were used for edible purposes. Of the total wild edible plants, 51 per cent were used as fruits, followed by leaves (26 per cent), tubers (13 per cent) and bark (10 per cent) respectively (Fig. 2).

### **Uses of wild edible fruits and their traditional knowledge**

Wild edible fruits were mainly used for directly edible purpose and unripe fruits of *Mangifera indica*, *Spondias pinnata* and *Phyllanthus emblica* were used in pickle making. Pulpy fruits such as *Syzygium cumini*, *Mangifera indica* were commonly used for the preparation of juice and *Phyllanthus emblica*, *Flacourtia montana* fruits were used for the preparation of wine. The farmers opined that, wild edible fruits were also used in many herbal medicines. Some of these fruits like *Syzygium cumini*, *Phyllanthus emblica* were traditionally used to cure many diseases, *Garcinia gummi-gutta* fruit helps in reducing the body fat, *Mangifera indica* fruit helps in digestion

### **Utility pattern of wild edible fruits**

The wild edible fruits documented in the present study have been grouped into six distinct categories based on their utility pattern viz., direct consumption, medicinal, preparation of pickle, wine, juice and vinegar (Fig. 3 and 4; Table 1 and 2).

**Table.1** Factors affecting the population status of wild edible fruit species based on the perception of the farmers

Sl. No	Factors	Percent respondents		
		Natural forest	Sacred groves	Coffee based agroforestry system
1	Encroachment	16.04 (4)	14.12 (4)	20.00 (1)
2	Low rainfall	20.75 (2)	20.00 (2)	18.95 (2)
3	Deforestation	21.70 (1)	15.29 (3)	13.68 (3)
4	Elephant problem	19.81 (3)	21.18 (1)	12.63 (4)
5	Overgrazing	3.77 (7)	10.59 (6)	8.42 (5)
6	Forest fire	11.32 (5)	11.76 (5)	7.37 (6)
7	Reduction of forest area	-	-	6.32 (7)
8	Climate change	1.89 (8)	2.35 (8)	5.26 (8)
9	Water scarcity	4.72 (6)	4.71 (7)	4.21 (9)
10	Chemical spray	-	-	3.16 (10)

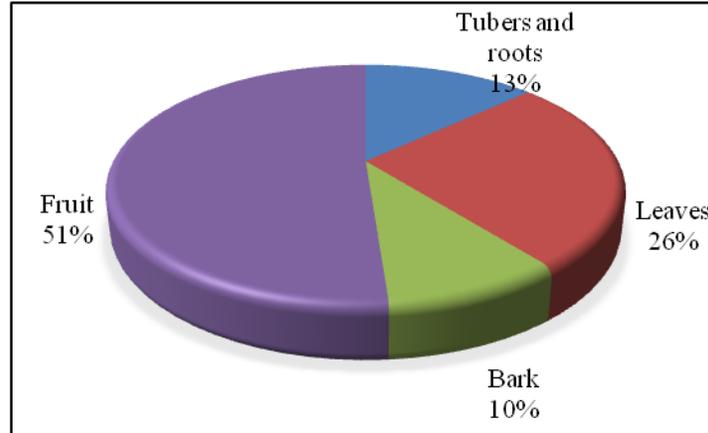
N=30 \* N is people respondents (Values in parenthesis are in ranks)

**Table.2** Preferred wild edible fruit species by farmers for domestication in selected land use types

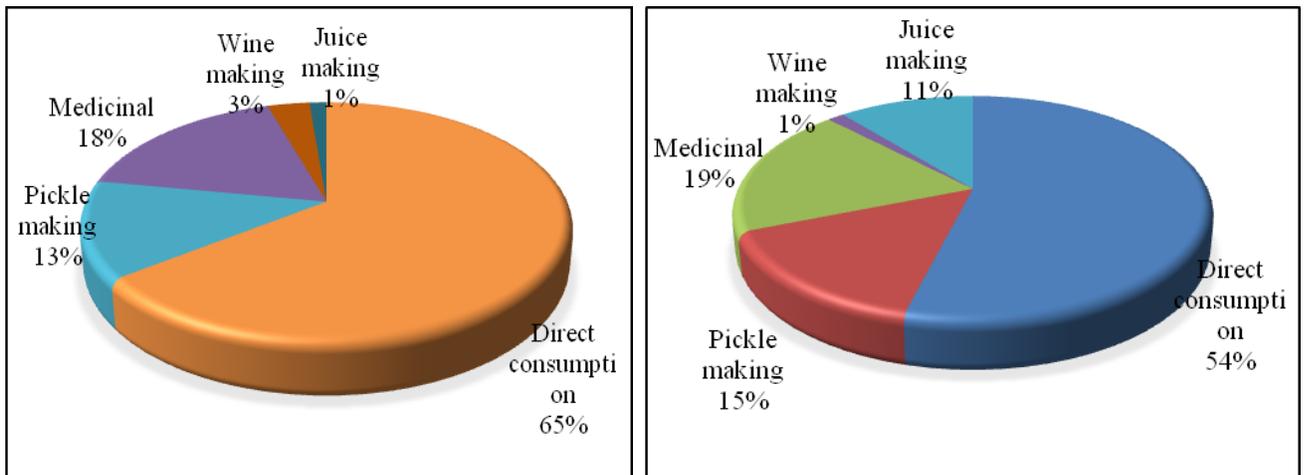
Sl. No	Species	Percent respondents		
		Natural forest	Sacred groves	Coffee based agroforestry system
1	<i>Mangifera indica</i>	28.05 (1)	21.98 (1)	11.88 (4)
2	<i>Phyllanthus emblica</i>	25.61 (2)	19.78 (2)	28.71 (1)
3	<i>Syzygiumcumini</i>	17.07 (3)	14.29 (5)	23.76 (2)
4	<i>Artocarpusheterophyllus</i>	15.85 (4)	18.68 (3)	9.90 (6)
5	<i>Spondias pinnata</i>	8.54 (5)	15.38 (4)	10.89 (5)
6	<i>Garcinia gummi-gutta</i>	4.88 (6)	9.89 (6)	14.85 (3)

N=30 \* N is people respondents (Values in parenthesis are in ranks)

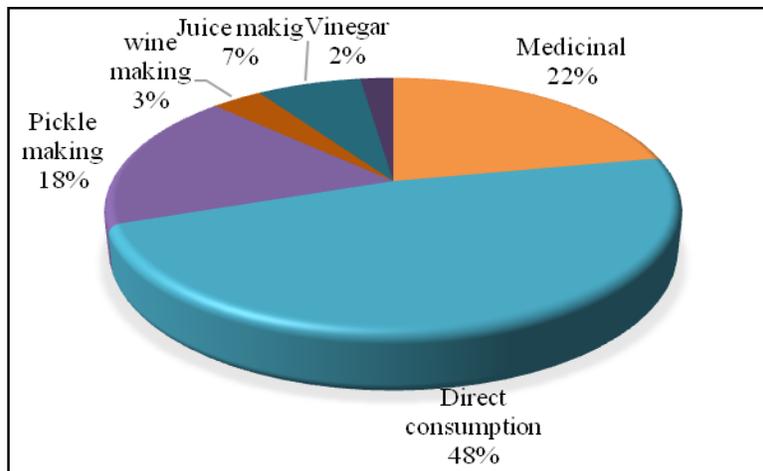
**Fig.1** Wild edible fruits parts used for consumption



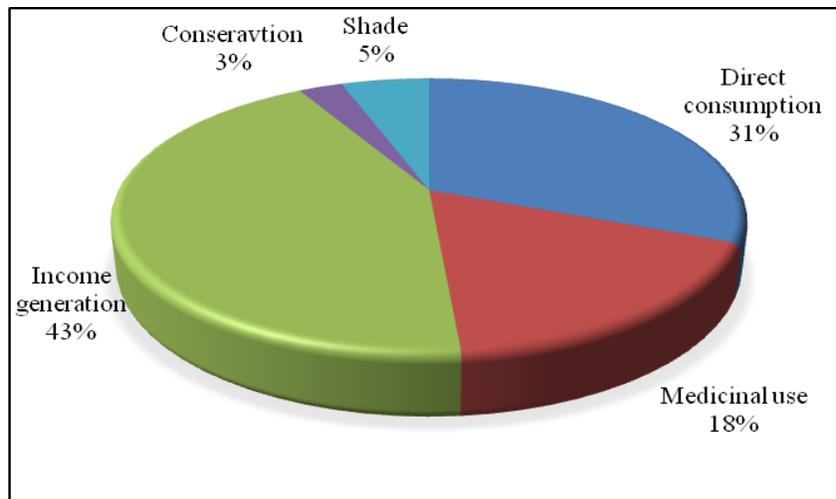
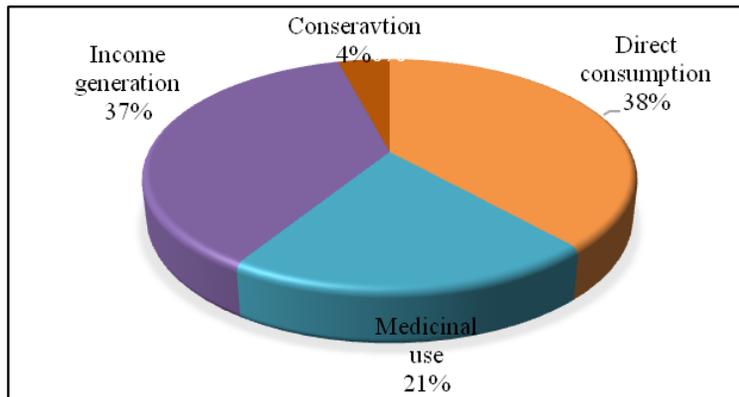
**Fig.2** Utility pattern of wild edible fruit species in natural forest **Fig.3** Utility pattern of wild edible fruit species in sacred groves



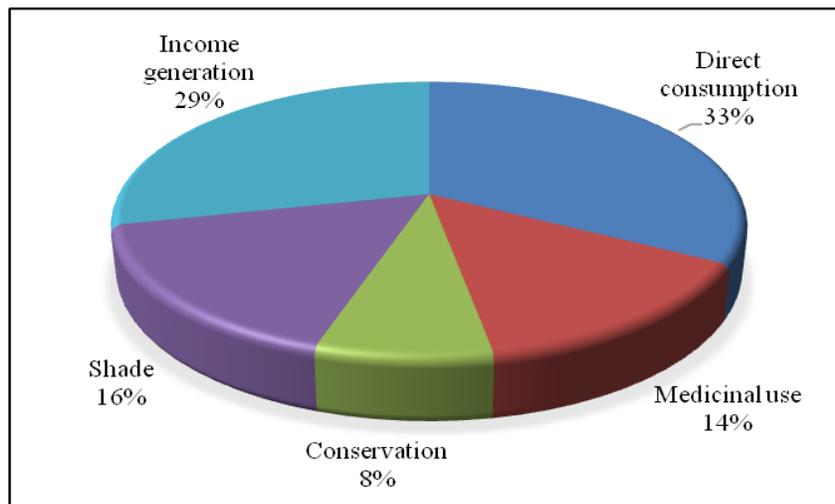
**Fig.4** Utility pattern of wild edible fruit species in coffee based agroforestry system



**Fig.5** Farmers preference for cultivation of wild edible fruit trees adjacent to natural forest



**Fig.6:** Farmers preference for cultivation of wild edible fruit trees adjacent to sacred groves



**Fig. 7:** Farmers preference for cultivation of wild edible fruit trees in coffee based agroforestry system

It was found that, direct consumption is the main use in all the land use types.

### **Factors which affects the population status of wild edible fruits**

The factors affecting the population status of wild edible fruits were categorised into different groups like, deforestation, low rainfall, elephant damage, encroachment, deforestation based on perception of farmers.

### **Preferred wild edible fruits for domestication based on farmers perception**

Farmers in the vicinity of the selected land use type were interviewed and their perception on domestication of species was documented. The farmers preferred *Phyllanthus emblica*, *Mangifera indica*, *Syzygium cumini*, *Artocarpus heterophyllus*, *Garcinia gummi-gutta* species for domestication.

### **Farmers preference for cultivation of wild edible fruit trees in farming**

Preferences given by the farmers in the different land use types for the cultivation of wild edible fruit species in their farm lands are grouped into six categories viz., direct consumption, medicinal, income generation, shade and conservation.

Wild edible fruits were mainly used for direct consumption purpose where, majority of the wild edible plants used were fruits these differences might be due to the variation in the available species, culture of the communities with respect to food preference and preparation Kebede *et al.*, (2017). Wild edible fruits were traditionally used as food, medicine, also used in wine & pickle preparations. Similar uses were reported by earlier studies conducted by Reddy (2007). Based on the opinions of the respondent's

encroachment, deforestation, low rainfall was affecting the population status of wild edible fruit species. Similar factors were also reported by Kebede *et al.*, (2017). According to the people's perception in the study area, the preferred species for domestication are *Phyllanthus emblica*, *Syzygium cumini*, *Garciniagummi-gutta*, *Artocarpus heterophyllus*, *Mangifera indica*. The main reason of preferring these species was multiple use. The local people prefer the species which is economically important. These species were having high demand in local markets and it can be also used in value addition, medicinal purposes. Wild edible fruits were cultivated by the local people, the main reasons for cultivation of wild edible fruits was own consumption or direct edible purpose, income generation, livelihood improvement. The coffee growing farmers cultivate these species mainly to provide shade to the coffee for better growth and to increase the quality of coffee.

In conclusion, socio economic survey of wild edible fruits indicates that, rural and tribal people depends on wild edible fruits for various purposes like food, medicinal and value addition etc., mainly use it for direct consumption. Local people prefer multiple use species for domestication. *Mangifera indica*, *Syzygium cumini*, *Phyllanthus emblica* and *Garcinia gummi-gutta* species were the most preferred species for domestication.

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