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# Ethnobotany of Food Trees By The Dayak Meratus Tribe, South Kalimantan

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## ABSTRACT

Ethnobotany of trees by the Dayak Meratus tribe is important to know because it is closely related to culture for subsistence and food development. This research aimed to determine the utilization of plant trees by Dayak Meratus tribe fulfill the requirements of society and to know local wisdom in the use of food trees. Observation and field research was made using a continuous transect method with a combination of paths and terraced lines taken from the forest edge up into inside the forest with the distance  $\pm 1$  km. Identification of food trees was done by LIPI Bogor. Semi-structural interviews by filling the questionnaire and respondents determination were used purposive sampling methods. The results identified 23 species, of food trees dominated by fruit (75%). Based on questionnaire, 85.41% of fruit parts utilized by community from the total of 48 species, followed by stem parts (10.41%). Moreover, local wisdom of the Dayak Meratus tribe is planting and maintaining food trees which in the backyard and or inside forest.

**Keywords:** Ethnobotany, food trees, the Dayak Meratus tribe

## Introduction

Indonesia is the second largest megabiodiversity country in the world after Brazil. The diversity of flowering plant species are mostly growing wildly in the forests of Indonesia around 30,000 species of plants. However, solely 4,000 species are identified for bringing benefits to communities, and just around a quarter of them have been cultivated (Sastrapradja & Rifai (1972) in LIPI 2007).

Form of the utilization of plants by people is very diverse. Indonesian People utilizing the diversity of plants as a source of food, medicine, cosmetics, building materials, dyestuffs, vegetable pesticides, and energy materials. Moreover, traditional societies also use plants for traditional ceremonies or other cultural activities. The primary source of food for the majority of Indonesian people is rice. other plants can replace rice became primary source of food. For example, cassava (*Manihot utilissima*), sweet potato (*Ipomoea batatas*), sago palm (*Metroxylon sago*), corn (*Zea mays*) and potato (*Solanum tuberosum*).

Indonesia is also rich in diversity of tribes / ethnic groups with the social life and the different cultures where they are generally live inside forest or surrounding it. The differences in customs between ethnic closely related with the differences their way of life and knowledge and societies understanding in sustaining life. Acquirement people's life necessities can be fulfilled because they utilize the existing natural resources, such as plants as a source of food.

Meratus mountain outstretched on Borneo island have high forest biodiversity. The dominant vegetation are: White Meranti (*Shorea* spp.), Red Meranti (*Shorea* spp.), Agathis (*Agathis* spp.), Kanari (*Canarium* and *Diculatum* BI), Nyatoh (*Palaquium* spp.), Medang (*Litsea* sp.), durian (*Durio* sp.), Gerunggang (*Crotoxylon arborescen* BI), Kempas (*Koompassia* sp.), Maggots (*Quercus* sp.) (Fatah and Betty, 2004).



One of the forest in Meratus mountain is Loksado forest. Loksado forest is the source of life of people who live around or in the forest, they are Dayak Meratus Loksado. Dayak Meratus Loksado rely on agriculture and farming activities as a primary livelihood source (Yuliono et.al, 2011). Community's dependency on forest resources is inseparable from traditional knowledge from generation to generation have been passed down by their ancestors.

Identification of local knowledge and utilization of food plants have been conducted in various areas. Desuciani (2012) conducted a study of ethnobotany food and medicine communities around Forest Park Wan Abdul Rachman. Also, Kartikawati (2010) examined the use of plant resources by the Dayak community Meratus in Hulu Sungai Tengah. Gunawan et al. (2013) conducted a study to determine the diversity and ethnobotany family Piperaceae plants and other types of medicinal plants in the Dayak Meratus Loksado South Kalimantan.

Data and information about the identification, the use of plants and local wisdom of people in certain areas had widely researched; however, the data and information about identification, the use of plants and local wisdom of the Dayak people Meratus Loksado Hulu Sungai Selatan not been well documented. Therefore, it is necessary to study about the identification, the use of plants and indigenous Dayak people Meratus Loksado who live around Loksado forests. Meratus region Loksado mostly forest in which grew a variety of trees.

Ethnobotany studies utilization of food plants by the Dayak community Meratus Loksado needs to be done. This is closely related to the culture of people in using plants for subsistence. So that the development of authentic Indonesian food can be done.

This research aimed to determine the utilization of food trees to fulfill the requirements of society and to know local wisdom of in the use of food trees by the Dayak people Meratus Loksado.

## **MATERIALS AND METHODS**

### **Study area**

The study area is located in the Tumingki village located inside the Loksado Protected forest, South Kalimantan. Tumingki village consists of four neighborhoods that Majulung (1), Termangkung (2), Tanginau (3), and Haruyan (4). Tumingki village has three customs hall. They are Ayitih custom hall, Tanginau custom hall, and Haruyan custom hall.

### **Procedures**

#### **Observation/field research**

Observation and field research was made using a continuous transect method with a combination of paths and terraced lines. Path length is 1 km and a width of 20 m made a total of five plots. Food trees in the plots are taken to be made herbarium. Identification of food plant was done by LIPI Bogor.

#### **Interviews**

The interviews were conducted to the community by filling a semi-structured questionnaire given to 105 peoples. Application of this interview technique to provide possible answers to some questions but there are questions which are not provided the answer choices. It can be seen that various opinions among all respondents has been resulted in answering each question or appropriate answers had been done by respondents based truly on their knowledge (Mardalis, 2004).

#### **Data analysis**

Data food plants compiled and are grouped according to family and classification based on that utilized portion. Formula calculation of the percentage of families and parts used, as follows:

1. The percentage of families that used

Food plants grouped by family, then calculated the percentage using the formula:

$$\text{The percentage of a particular family} = \frac{\sum \text{species of family plant used}}{\sum \text{total species of the whole family}} \times 100\%$$

## 2. The percentage of parts utilized

The percentage of part of the plant used include parts of the plant be used starting from the top that is the leaf to the bottom that is the root. The formula used to calculate the percentage of parts used is as follows:

$$\text{percentage parts used} = \frac{\sum \text{parts used}}{\sum \text{total parts used}} \times 100\%$$

## RESULTS

### Utilization of food plant based on family

Family found in the results of the observation as much as 16 families, the result identified 23 species with the following details.

**Table 1.** Grouping of food trees results of observation and field research Loksado Forest in the Tumingki Village Based on Family.

No	Family	Total	Percentase (%)
1.	Arecaceae, Phyllantaceae	3*	13.04*
2.	Clusiaceae, Leguminosaceae, Sapindaceae	2*	8.70*
3.	Anacardiaceae, Elaeocarpaceae, Euphorbiaceae, Lauraceae, Meliaceae, Moraceae, Myrtaceae, Pentaphylacaceae, Polygalaceae, Salicaceae, Sapotaceae	1*	4.35*
Total		23	100.00

Caption\*: value for every family

### Utilization of food trees -based on parts

Parts of plant utilized by the villagers of Tumingki can be grouped into four sections which include leaves, fruits, flowers and stems. Including sub parts, fruit (fruit and seed), flowers (flower and water), stems (sap, bark, and bamboo shoots). Plant utilization rate based on the parts of plants that utilized according to the results of the analysis of vegetation and community interviews are presented in the following table.

**Table 2.** Classification of food plant results of observation /field research and interviews Loksado Forest Tumingki Village based on parts utilized

No	Parts used	Observation and field research		Interviews	
		Total	Percentase (%)	Total	Percentase (%)
1.	Leaves	1	3.70	2	3.85
2.	Fruits	21	77.78	42	80.77
3.	Flowers	1	3.70	2	3.85
4.	Stems	4	14.81	6	11.54
		27	100.00	52	100.00

### Utilization of food plant based on family

Diversity of plant foods and cosmetics on the results of field observation based on family are grouped into 16 families. Family Arecaceae and Phyllantaceae are families with the highest species that each of the three species. The species of the family Arecaceae is manau (*Calamus manan*), hanau/sugar palm (*Arenga sp.*), And pinang/nut (*Pinanga sp.*). The species of the family Phyllantaceae is gintungan (*Bischofia javanica* Blume), kapul (*Baccaurea dulcis*), and Rambai



(*Baccaurea motleyana* (Mull.Arg.) Mull.Arg.). The species of the family Arecaceae and Phyllantaceae generally grows wild in the jungle Loksado tumbingki village. Durian (*Durio zibethinus* Murr.) and mangosteen (*Garcinia mangostana* Linn.) are species of other families as Clusiaceae. The species of the family Leguminosae is jaring/jengkol (*Archidendron pauciflorum* (Benth) ICNielsen) and jaring tupai (*Archidendron clypearia* (Jack) ICNielsen). The species of the family Sapindaceae is maritam (*Xerospermum xanthophyllum* Radlk) and rambutan (*Nephelium lappaceum*).

## DISCUSSION

### Plant utilization as food based on parts used

Part of the fruit is the most widely used as food on the results of observation and field research (77.78%) and the utilization of fruit based interview was 78.33%. Part of fruit widely used because in general the fruit can be directly consumed or do not require processing. Therefore, the fruit is considered more practical.

One species of wild forest fruit which utilized as food is maritam (*Xerospermum xanthophyllum* Radlk). Maritam is fruit similar to rambutan but has not hair like rambutan. Colour of young fruit is green, gradually become dark red. The fruit is usually eaten fresh. Fruits were consumed by local people such as Bangkinang rawai (*Elaeocarpus Glaber* Blume, durian (*Durio zibethinus* Murr.), Gintungan (*Bischofia javanica* Blume), tiwadak/similar jackfruit (*Artocarpus champeden*), and kayu bukit (*Eurya nitida* Korth. ). These plants are generally only bear fruit in certain seasons that are only found in the fruit season.

The stem is the second part that is widely used, in the results of observation and field research of 14.81% and 11.54% interviews. Part of this stems including sub parts, namely sap, bark, and bamboo shoots. Bark as food (food fragrance) in plants kayu manis/cinnamon (*Cinnamomum burmanni* (Nees & T. Nees) Blume). And bamboo shoots/young stems processed into vegetable plants manau (*Calamus manan*), hanau (*Arenga* sp.), and pinang (*Pinanga* sp.). Stem parts generally can not be replanted or keep growing. This is because of the stem is a major part of a plant that functions to support other parts.

Whereas the fewest parts of plant utilized as food on the results of observation and field research and interview are leaves and flower. Leaves percentage and flowers percentage were same. Percentage on the results of observation was 3.70% and on the results of observation was 3.85%. The leaves are part which easy to be taken and processed, if it compared with other parts. Species of plants in general have leaves that do not depend on the season. The Plants which flower parts are utilized is hanau (*Arenga* sp.) and cangkih/clove (*Syzygium aromaticum* Linn).

### Local wisdom

#### Food usage patterns

The majority of the people's livelihood are farmers, so in the morning people have started work to go to the garden. The morning breakfast at home, sometimes bring lunch from home which have previously been prepared. On afternoon community coming home, eat meals together.

Source materials derived from plant food crops themselves and also bought. People planted vegetables in a field of plants for the garden or yard. Sometimes people are also buying for food purposes. Costs incurred per day ranges from IDR.15.000 - Rp. 20,000.

How to use herbs as foods divided in the form of direct utilization consumed and through processed by cooked. The food is cooked in various ways between boiled, and added coconut milk. Parts of plants directly consumed mostly in the form of fruit that has been cooked.

### Planting and Harvesting Plant

Communities of Dayak Meratus tribe also planting food trees in the backyard and or inside such as rambutan, breadfruit, sawo/ fruit-bearing tree, etc. Communities grow plants on the pretext of

meeting the needs of life and preserve nature. Food plants used directly and indirectly. Plants used direct means to be used directly for food, while used indirectly that if the plant was traded to buy other necessities of life.

Food plants that used the bark is cinnamon. The majority of people selling cinnamon bark to make ends meet. Cinnamon bark harvesting community typically uses the felling at once so that no individual candidate from the tree. Even so, small percentage of people do not cut down trees to ground level as it aims to grow new shoots. According Rismunandar and Paimin (2001) there are four cinnamon tree crop systems are recognized: cutting system at the same time, the system situmbuk, beaten before the felled trunk system and the system Vietnam.

## CONCLUSION

It can be concluded that widely the parts of the plants used in the fruit. Local wisdom of the Dayak Meratus tribe is planting and maintaining food trees which in the backyard and or inside forest.

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