Ethnobotany study of lontar tree (*Borassus flabellifer* L.) at Raijua Island

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**Abstract.** The aims of the study were to determine the utilization of Lontar Plant (*Borassus flabellifer* L.), its organ used in relation to the culture of the Savu community. Data were collected using semi-structured techniques interviews, field observations, questionnaires, preference and direct matrix ranking with an index of cultural significance. Data were analyzed to calculate the index value of cultural significance which was included 3 aspects, namely the use-value (q), the intensity value (i), and the exclusivity value (e) of the plant and were described qualitatively. The results showed that the utilization of plants in the cultural life of the Savu community was very high. The utilization of plant parts was carried out by cutting, slicing, tapping and weaving. The parts mostly used were the roots, stems, stalks, leaves, flowers, and fruit.

1. **Introduction**

Ethnobotany, in its use in the community, relates to certain cultural and plant customs that are used in the culture of the community. The utilization assessment covers ecological, cultural and economic factors that are closely related to daily life [1, 2].

The people of East Nusa Tenggara are one of the most culturally and culturally active in the community. The Savu community on the island of Savu Raijua includes a community of strong cultural traditions and practicing ethnobotany in its cultural culture. Origin customs in their community always use both plants and animals for primary needs are also used in traditional rituals, medicine, literature, traditional textiles/weaving, cosmetics, coloring, construction, tools, and social life [3, 4].

Lontar is a kind of palm tree that grows in many areas in Indonesia, including in East Nusa Tenggara. Distribution of palm plants can be found on the coast of North to South Flores islands and Timor island, East and South coast of Sumba island and on small islands. The largest dispersal of the plant in Kupang Regency (West Timor Island, Rote Island) and Kapuwe Duwe (Savu Island) is known as *Tuak*, East Sumba Regency (Rindi Umalulu District and Pahungalodu District) are called *Manggiha*, *Manggitu* (Sumba), South Central Timor Regency, South and North of Belu are called *Tua* (Timorese) and East Flores [5, 6].

Lontar (*Borassus flabellifer* L.) is one of the plants that dominate the Savu and Raijua land because of suitable geographical and climatic conditions. Generally, these trees grow wildly and spread so widely that planting is carried out in certain areas to facilitate processing, especially tapping sap [7].
Therefore, Lontar is often applied in various needs of daily life such as food - drinks from roomie, building materials from leaves and stems as well as in traditional ceremonies such as Peoke (disaster prevention ceremony), Pehere jara (ceremony of horse race event) uses palm leaves as horse bracelets in racial ceremonies, in the cultural or customs of Savu-Raijua community.

The aims of this study were: 1. to find out the relationship between the lontar plant (*Borassus flabellifer* L.) and the culture of the people of Raijua Island; 2. to know how the utilization of the plant that used in the culture of the people of Raijua Island; 3. to know the lontar plant organ used by the people of Raijua Island.

### 2. Method

This research has been conducted at Raijua Island, Raijua Subdistrict, Savu Raijua District in January 2019.

![Geographical of research site at Savu Raijua](image)

**Figure 1. Geographical of research site at Savu Raijua**

#### 2.1. Research subject

The area of Savu Raijua is 36 km², consisting of 2 villages which are Ledeunu, and Ledeke, and 3 Villages which are Bolua, and Ballu. Raijua Island has the following territorial boundaries: the Northern part bordering the Savu Sea, the Eastern part bordering the Savu Sea, the Southern part bordering the Indian Ocean, and the Western part bordering the Savu Sea [8].

The subject of research is the Savu community on Raijua Island, Raijua District, Savu Raijua Regency, which is considered to represent the research objectives. Respondents were selected based on certain considerations that were considered to be the most knowledgeable about the use of Lontar plants in the cultural customs of the Savu community which consisted of: the traditional leader or tribal chief (10 people) representing all the tribes on Raijua Island, the Village Head (5 people) representing five existing villages, community leaders (5 people) and people who use palm trees (10 people) representing five villages in Raijua Island to be interviewed. In this study also carried out documentation of plants and plant parts used, processed by Lontar plants using a Nikon D800 camera.

#### 2.2. Research method

Ethnobotanical data were collected using semi-structured interviews, field observations, preference and direct matrix ranking with traditional index of cultural significance [9, 10]. The determination technique of respondents in this study was using purposive sampling. The data that have been collected was then analyzed descriptively qualitatively. The description is done by describing the palm plants found at the location and their uses, namely:

1) Plant parts which are utilized.
2) What is it used for?
3) Local wisdom of the people of Raijua Island.
2.3. Analisis data

Data were analyzed to calculate cultural significance index using the formula of Turner [11] and Yuniati [12]. Cultural importance index is the result of quantitative ethnobotany analysis which shows the importance of plant species based on the needs of the community which includes 3 aspects namely use-value (q), intensity value (i), and exclusivity value (e). Index of cultural significance is calculated using the formula:

$$ICS = \sum_{n=1}^{n}(q_1 \times i_1 \times e_1)n1 + (q_1 \times i_1 \times e_1)n2 + \ldots + (q_1 \times i_1 \times e_1)n$$

Which are:
ICS: The sum of the calculation of the utilization of a plant species from 1 to n, where n indicates the umpteenth utilization (last)
I: Intensity value.
Q: The quality value is calculated by using a score or scale to the quality value of a plant species. The scoring are 5 = staple food; 4 = secondary food + primary material; 3 = other food + secondary material + medicine; 2 = ritual, mythology, recreation, etc., and 1 = mere recognition

3. Results and Discussion

The findings of the research showed that the utilization of Lontar (Borassus flabellifer L.) plants in the Savu community at the island of Raijua was very high. Society uses all parts of palm plants such as roots, stems, leaves, stems, flowers and fruit varieties.

All parts of the lontar plant have high cultural significance to the people of Raijua Island as follows: there are 21 kinds of utilization for leaves, 4 kinds of stems, 2 kinds of roots, 2 kinds for fruits and 1 flower as well as daily necessities and to the cultural traditions uses of the people of Raijua Island.

| Plant organ | Utilization                                      |
|-------------|-------------------------------------------------|
| Root        | 1. Drill (Dere)                                 |
|             | 2. Water shelter (Jiab Kerabba Jiu)             |
| Stem        | 1. Building material (Adjju ammu)               |
|             | 2. Pig flood plates (Keraba wawi)               |
| Stalk       | 1. Robe (Pipe)                                  |
|             | 2. Fence (Lau)                                  |
|             | 3. Bearer (Dpa dui)                             |
|             | 4. Fishing gear (Kenaha)                        |
| Leaves      | 1. Roof of a traditional house (Rau Ammu Ada)   |
|             | 2. Dwelling house (Rau Ammu Pe)                 |
|             | 3. Mat (Dappi)                                  |
|             | 4. Ketupat Pedo’a dance (Kedu’e Do’a)           |
|             | 5. Big water container or Haik besar (Haba Dau)|
|             | 6. Small Haik (Haba Kao),                       |
|             | 7. Traditional hat (Heguddu),                   |
|             | 8. Betel nut plate (Pai Kenana),                |
|             | 9. Borse eye protector (Ro Wiri),               |
|             | 10. Lontar flower wrapping (Kebiha)             |
|             | 11. Small ketupat (Kedu’e)                      |
12. Place of agricultural products (Hope)
13. Rice winnowing or Nyiru (Kerigi dai),
14. Plate to eat (Kerigi nga'a)
15. Kerigi wore
16. Oka
17. Bag (Beka)
18. Kehedi
19. Cigarette paper (Roko rokalli)
20. Knife sheath (Hope tudi)
21. Horse leg jewelry (Lale Kae)
22. Dry leaves for burning animals (Tunu Bada).

Flower
1. Producer of lontar sap (Ai due) which is then cooked into sugar. The process of tapping the palm sap by the community is done through the ritual which is called Tu’i Taga.
2. The last ritual related to tell the community that the results of palm juice can be consumed by the public is called Nga’a Ma Rao.

Fruit
1. Animal food (Wokalli)
2. Appetizer (Wohiru - young fruit) during the cutting palm leaves activities.

Tambunan [6] reported that the by-product of lontar parts that been used were root, stem, leaves, fonds, fuits including young fruit either in South Sulawesi and Kupang. The by-products of leaves are mostly used, consist of handicraft business products, such as baskets or baskets, hats, carpets, brushes, mat and traditional musical instruments.
Figure 2. Utilization of Lontar (*Borassus flabellifer* L.) plant organs in the cultural traditions of the Savu people. a. Big water container or *Hatik Besar* (*Haba Dau*) from leaves, b. Fishing Gear (*Kenaha*) from the stalk, c. The roof for building material (*Ajju Ammu*) from the stem, d. Drum or Tambur (*Dere*) from the root.

From measuring the indices of the culture importance value of lontar in the life of the people of Raijua Island, data shown in the following table.

**Table 2.** Measurement of Cultural Importance Index of community lontar plants on Raijua Island.

| NO | UTILITY                              | Q | I | E | ICS |
|----|--------------------------------------|---|---|---|-----|
| 1  | Staple food                          | 5 | 5 | 2 | 50  |
| 2  | Ingredient food from flower          | 4 | 5 | 2 | 40  |
| 3  | Wood building material, wood for container | 4 | 4 | 2 | 32  |
| 4  | Beverage ingredients                 | 4 | 4 | 2 | 32  |
| 5  | Cigarette material                   | 3 | 5 | 2 | 30  |
| 6  | Mat material                         | 3 | 5 | 2 | 30  |
| 7  | Traditional handicraft or traditional technology | 4 | 3 | 2 | 24  |
| 8  | Environment Indicators               | 2 | 5 | 2 | 20  |
| 9  | Valuable plant for medicinal         | 2 | 5 | 2 | 20  |
| 10 | Medicinal for internal pain          | 3 | 3 | 2 | 18  |
| 11 | Birth Ritual                         | 2 | 4 | 2 | 16  |
| 12 | Rope material, waterproof material   | 3 | 4 | 1 | 12  |
| 13 | Edible fruits                        | 4 | 3 | 1 | 12  |
| 14 | Agriculture activity                 | 2 | 3 | 2 | 12  |
| 15 | Food flavor enhancer                 | 3 | 3 | 1 | 9   |
| 16 | Plant types play a role in myth      | 2 | 4 | 1 | 8   |
| 17 | Suplemen food ingredient a mixture in food menu, food packaging | 3 | 2 | 1 | 6   |
| 18 | Livestock feed or animal food        | 3 | 2 | 1 | 6   |
| 19 | Ritual of burial, heroism            | 2 | 2 | 1 | 4   |
20 Fuel wood 
21 Plant species play a role in myths that are magical and religious 
22 Medicine for animal diseases 
23 Plant species have natural role in myths or history 
24 Burns medicinal ingredient 

|       | ICS Value | Category | Code |
|-------|-----------|----------|------|
| 20    | 4         | 2        | 0.5  |
| 21    | 2         | 2        | 1    |
| 22    | 3         | 1        | 1    |
| 23    | 2         | 1        | 1    |
| 24    | 3         | 1        | 0.5  |

Total Indeks of cultural significance (ICS) = 395.5

The way of using lontar trees (*Borassus flabellifer* L.) in the culture of the people on Raijua Island, namely cutting, cutting and tapping as well as weaving in daily life and during traditional ceremonies. Based on the results of research on Raijua Island, the results of the index of cultural importance of the trees showed that there were 9 uses with a high category (T) that has ICS values above 20, there are 5 uses with a medium category (SD) with a range of ICS values of 10-19.9 and 10 uses with a low (R) category or have an ICS category of 1 - 9.9 [13]. The use of lontar in the life of Savu Raijua community is as a staple food with ICS value was 50, and the lowest is used as an ingredient in burns with ICS value was 1.5.

Table 3. Range of Index Cultural Significance categories

| ICS Value | Category | Code |
|-----------|----------|------|
| ≥ 20      | High     | T    |
| 10 - 19.9 | Moderate  | SD   |
| 1 - 9.9   | Low      | R    |

Adapted from [13]

4. Conclusion

Based on the results of research on the ethnobotany of lontar plants (*Borassus flabellifer* L.) on the island of Raijua can be concluded as follows: The relationship between lontar plants (*Borassus flabellifer* L.) with the culture of the people on Raijua Island was very high in utilization value (T). The way of using the trees in their culture, namely cutting, slicing and tapping as well as weaving in daily life and during traditional ceremonies. Lontar plant organs that are used by people on Raijua Island are leaves, stems, roots, stems, fruit, and flowers.

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6. Conflict Of Interest

The author states there is no Conflict of Interest in this study.

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