ETHNOBOTANY SAGO (*Metroxylon sago* Rottb) in JAILOLO LOCAL COMMUNITY, WEST HALMAHERA REGENCY, INDONESIA

Said Hasan¹, Abdulrasyid Tolangara¹, Hasna Ahmad¹, Jailan Sahil¹, Suparman Suparman¹*

¹Department of Biology Education, Faculty of Teacher Training and Education, Universitas Khairun, North Maluku, Indonesia

Email: suparman@unkhair.ac.id

DOI: [http://dx.doi.org/10.26418/jpmipa.v15i1.72044](http://dx.doi.org/10.26418/jpmipa.v15i1.72044)

**Abstract**

Sago plants have long played an important role in people's lives, particularly in eastern Indonesia—such as in Papua, Maluku, and North Maluku. The objective of this study was to investigate how the local community in Jailolo District, West Halmahera Regency, utilizes sago plants in line with their traditional wisdom. The research method employed is exploratory-descriptive, which is valuable for depicting the characteristics of a phenomenon. This research was conducted in Jailolo District, West Halmahera Regency, and lasted for 3 months, from January to February 2023. The methodology involved direct observation and collected information from Sahu ethnic by interviews with the snowball sampling method. Additionally, documentation of the various forms of sago plant utilization was undertaken, encompassing sago stems, bark, fronds, sago leaf stalks, sago leaves, and sago flour. The data collected in this study were analyzed using qualitative descriptive analysis and presented in a narrative format. The results revealed that a majority of the people in Jailolo District, West Halmahera Regency, utilized sago plants to fulfill their daily needs, using them as an alternative food source to substitute rice. Sago plants are utilized in various forms, primarily in the form of sago flour, which is used to create a range of processed foods such as bagea, sago macarons, popeda, boko-boko, sago plates, sago sugar, and sinyole. Additionally, sago leaves are utilized for roofing houses, while sago fronds are used for ceilings, walls, and crafts such as paludi (Saloi). Sago stems are used to extract starch (flour), while the bark is utilized as firewood.

**Keywords:** Ethnobotany, Halmahera, Jailolo district, Sago
INTRODUCTION

Indonesia has an area of sago plantations with an area of around 206,150 million ha, or 51.3% of the world (Dirjen Perkebunan, 2021), followed by Papua New Guinea with an area of 43.3%. However, in terms of utilization, Indonesia is still relatively low compared to countries whose sago area is not as large as Indonesia. For example, Malaysia has an area of 1.5% and Thailand 0.2% (Abner & Miftahorrahman, 2002; Kadir et al., 2022; Sasaoka et al., 2014; Syarifuddin, 2022; Wayangkau & Loupatty, 2022; Yusuf et al., 2022;).

The potential of sago in Indonesia reaches approximately 50% of the world's sago. Naturally, sago plants are spread over almost every island in Indonesia, with the largest area in Papua, while semi-cultivated sago is found in Maluku, North Maluku, Sulawesi, Kalimantan, and Sumatra (Bintoro et al., 2014). Uniquely, the sago plant has long been important for people's lives, especially in eastern Indonesia, both as a source of staple food and as a building material (Dimara & Auri, 2023; Erwinsyah, 2022; Kanro et al., 2003).

Sago plants are one of the carbohydrate-producing plants, holding a very important position as a food ingredient after rice, corn, and tubers. Sago plants contain sufficient carbohydrates (calories) for the food industry. Thus, the management of sago plants in Indonesia has promising prospects for national food security in the future. Sago can grow in swampland or marginal (abandoned) soils where it is difficult for other carbohydrate-producing plants to thrive (Al Qodri & Wawan, 2015; Azhar et al., 2022; Kailuhu et al., 2023; Monda et al., 2022; Setiawan et al., 2022; Soplanit et al., 2023; Triputranto et al., 2023).

North Maluku Province occupies the third position in the area of sago plantations in Indonesia. In the past, the people of North Maluku have used the pith of the sago plant as a staple food source, but now there has been a shift in the pattern of consumption of the staple food of the people of North Maluku, has shifted from glazed to rice, while the number of people consuming sago has decreased drastically. A decrease in sago consumption will result in a decrease in demand for sago in North Maluku Province, which will have an impact on the existence of a sago flour processing business and not optimal utilization of the potential of sago plants in North Maluku (Flach, 1983, 1997; Julianingsih et al., 2020; Wardis, 2014).

The benefits of sago starch as a staple food for the people of North Maluku under the name papeda; besides that, sago starch is used as a snacks (such as bagea, ongol-ongol, rose cakes, and so on). Another product is a mixture for a soup, which is made in the form of vermicelli. Sago starch processing is carried out by utilizing the potential of local wisdom (Haryanto & Pangloli, 1992; Putri et al., 2019; Widiarsih, 2019).

The dependence of the Indonesian people on rice is very high; sometimes Indonesia has to import rice from other countries to meet domestic basic needs. Therefore, efforts to reduce dependence on rice can be made by finding alternative food sources or exploring local food ingredients, in which sago has a myriad of potentials that can be developed (Noer et al., 2022; Kanro et al., 2003; Trees, 2022).
According to Bujang (2011), based on the results of the International Sago Symposium, sago flour can be widely used as a substitute in the manufacture of various food ingredients such as noodles, bread, biscuits, cakes, flavoring foods, and various types of high-fructose syrup drinks. Therefore, sago is an alternative non-rice commodity that is taken into account in supporting the government's food diversification program.

Sago in North Maluku is very popular, but only a few people know that it is a native plant of Maluku. Unlike the clove tree, which has long been known as a native plant of Maluku, precisely from the Spice Islands in North Maluku (Suparman et al., 2020). Regarding the area of sago plantations in North Maluku Province, it is 4,315 ha (Dirjen Perkebunan, 2021; Fachrizal et al., 2022; Kristanto et al., 2022). Meanwhile, based on the results of observations made in Jailolo District, West Halmahera Regency, show that sago plants in this area are very abundant and grow to form large colonies, but not many local people manage them as an alternative source of food, and people still depend on rice. By looking at the potential of this abundant sago plant, the researcher deems it necessary to conduct research to reveal the forms of utilization of sago plants with local wisdom by the community.

METHOD

This research uses an exploratory descriptive method. Explorative descriptive research is useful for describing the state of a phenomenon; in this study, it is not intended to test certain hypotheses but to describe the existence of a variable, symptom, or condition (Arikunto, 2002). The research was carried out in Jailolo District, West Halmahera Regency, and lasted for 3 months, from January to February 2023. The work steps in this research were to conduct direct observations and interviews with local communities using open interview guidelines that had been prepared previously, as well as documentation of the forms of utilization of sago plants, which include sago stalks, sago bark, sago fronds, sago leaf stalks, sago leaves, and sago flour.

Based on the observations, the parts of the sago plant used by the local community will be compiled in the form of a list of questions presented in the interview guide. Respondents in this study are people who actively use sago plants to meet their daily needs and the sampling group is focused on the Sahu ethnic group in Jailolo. Purposive referral sampling and snowball sampling were conducted to collect information. Then the results of the interviews were used to describe the forms of utilization of sago plants. After that, documentation was carried out to reveal the forms of utilization of sago plants by local communities.

RESULT AND DISCUSSION

Forms of Utilization of Sago Plants

After conducting interviews with local people who actively use sago plants as a form of local wisdom, the results are presented in Table 1.
Table 1. Respondents' names and forms of utilization of sago plants

<table>
<thead>
<tr>
<th>Name of respondent</th>
<th>Part of the Sago Plant</th>
<th>Utilization form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mateus Baura</td>
<td>Stem and Bark</td>
<td>Sago Flour and Firewood</td>
</tr>
<tr>
<td>Delon Palehema</td>
<td>Leaf</td>
<td>House Roof Made</td>
</tr>
<tr>
<td>Mariati Masia</td>
<td>Leaf</td>
<td>House Roof Made</td>
</tr>
<tr>
<td>Samuel Pareta</td>
<td>Midrib</td>
<td>Made in Paludi/Saloi</td>
</tr>
<tr>
<td>Sandi Hatebula</td>
<td>Petiole</td>
<td>Made the wall of the house</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Make Bagea Cake, Sago</td>
</tr>
<tr>
<td>Fadila Sagap</td>
<td>Sago flour</td>
<td>Makron</td>
</tr>
<tr>
<td>Ribka Udji</td>
<td>Sago flour</td>
<td>Make Boko-boko and Popeda</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Made into sago sugar and sinyole</td>
</tr>
<tr>
<td>Karolina Tutu</td>
<td>Sago flour</td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 1 above, the forms of utilization of parts of the sago plant, among others, are:

1. The sago stems that have been cut into pieces are then peeled off; the part containing the fiber will be grated to extract the flour, while the bark is used as firewood. Figure 1 shows the utilization of sago stems and skin.

2. Sago leaves (rumbia), which have been woven for use as roofs. The following is presented in Figure 1. (C-D) about the use of sago leaves (rumbia) to make roofs for houses.

3. Old sago fronds are cleaned and cut into thin pieces, then woven to form a funnel-like tube called a paludi (saloi), then tied with a rope so that it is easy to carry and is usually used instead of a basket when going to the garden. The following figure (Figure 2 (A-B)), uses sago fronds to be used as paludi (saloi).

4. The dried sago flour is then used as a substitute in making various kinds of cakes such as walnut bagea and sago macron cakes and various other cakes. Figure 3 shows the use of sago flour as a substitute for various cakes, such as bagea walnuts and sago macrons.

5. Dried sago flour can be used as a food ingredient with the names boko-boko and popeda. Boko-boko is a food made from sago flour mixed with coconut milk and salt, then put into a bamboo joint and baked, while popeda is a food made from sago flour mixed with hot water so that it forms a gel (a bit dense), then eaten with fish sauce. This is a staple food for most of the people of eastern Indonesia, especially in Maluku and North Maluku. Apart from that, there are also several types of food made from sago flour, namely making sago flour, which is dried and baked in a mold called forno, and when it is baked, this sago is mixed with palm sugar, so it is called sago gula. Meanwhile, if the sago flour, which is still wet, is mixed with grated coconut, then roasted, it is called sinyole, one of the special foods that is much loved by the people of North Maluku. Figure 4 shows the results of processed sago flour for various types of North Maluku specialties.
Based on the results of research conducted in Jailolo District, West Halmahera Regency, as described above, it can be said that sago plants have been used traditionally by local communities with various forms of utilization. The sago stalk is the most important part of the sago plant because it is the storehouse for food storage which contains the largest carbohydrates (Haryanto & Pangloli, 1992; Putri et al., 2019; Widiarsih, 2019). Therefore, the people in Jailolo District use this sago flour (carbohydrate).

People used sago flour as food ingredients such as bagea, sago macron, boko boko (kokomane), popeda, dried sago, sago sugar, and sinyole. This is reinforced by the opinion of Botanri et al. (2011) that starch from sago plants is a carbohydrate-containing food ingredient and can be processed as a substitute for various traditional and modern food ingredients.

In ancient times, sago flour was used in the traditional way by hoeing and then pressing it to extract the flour. However, in this modern era, the use of sago stems is grated using a machine. The utilization of sago flour consists of several processes, namely: the process of grating the sago stalks so that the fiber from the sago stalks will be removed, and what is taken is the starch (flour) that has been mixed with water during grating, followed by the use of a starch (flour) sieve sized 100 mesh. Then leave it for ± 1 day, and then the starch (flour) will settle. After that, it is put into a container made of woven sago leaves called tumang.

According to Vita (2017), all parts of the sago plant also have benefits, namely: the leaves of the sago plant are used to make roofs and walls for houses; the bark from sago stalks is used as fuel; and the flour is used as a substitute for various food stalks in the form of snacks.

In line with the opinion of Limbongan (2007), since long ago the leaves of the sago plant have been used by the local community because sago leaves are soft and thick, easily folded, and not easily damaged, so they can be used as roofs for houses. Sago plants have leaves that are elongated and wide, with a leaf bone in the middle. On the leaves, there are joints that break easily.

Risfaheri (2016) also explained that traditionally, sago leaves have been used as roofs and woven into containers for placing sago flour and mats. The stems are used as building materials (poles, house walls, ducts, and very strong house ceilings), fuel, and can also be made into charcoal.

Utilization of bark from sago plants as firewood, which was previously considered waste. As for how to use it in the sun to dry. According to Risfaheri (2016), the waste that comes from peeling the bark of sago trees is reused into something of value, for example, firewood with a high calorific value. Based on previous research, sago fronds can be used as house walls, ceilings, and acoustic materials. However, the people in Jailolo sub-district also use sago fronds as walls for their houses and paludi (saloi) as baskets for placing agricultural and plantation products.
Figure 1. Utilization of sago stems, bark, and sago leaves. Fig 1A. Sago stalks that will be taken flour, 1B. Sago bark is used as firewood, 1C. The roof of the house is made of sago leaves, 1D. The process of making roof from sago leave.

Figure 2. Utilization of sago frond and sago leaf stalks. A. Old sago frond; B. The product from sago frond is called paludi or saloi; C. Sago leaf stalks that are being dried in the sun; D. Sago leaf stalks are used as the wall of the house.
Figure 3. Utilization of sago flour as a substitute for various kinds of cakes. A. Sago flour; B. Sago macron; C. Walnut bagea.

Figure 4. Utilization of sago flour for various special foods in North Maluku. A. Sago sugar; B. Process of making sago using sago mould or forno sago; D. Sinyole, a product from sago.

Said Hasan, Abdulrasyid Tolangara, Hasna Ahmad, Jailan Sahil, Suparman
Ethnobotany Sago (Metroxylon Sago Rottb) in Jailolo Local Community, West Halmahera Regency, Indonesia
CONCLUSION

Based on the results and discussion, it can be concluded that the most common uses of sago by the Sahu ethnic group in the Jailolo sub-district, West Halmahera Regency, are to fulfill their daily needs as an alternative food source to replace rice. The utilization of sago plants primarily involves processing sago flour, which is further used to create a variety of processed foods like bagea, sago macarons, papeda, boko-boko, dried sago, sago sugar, and sinyole. People also use sago leaves to make roofs for houses, sago fronds to craft sails, walls, and saloi, while the remaining sago stems are used for firewood.

REFERENCES


Sasaoka, M., Laumonier, Y., & Sugimura, K. (2014). Influence of Indigenous Sago-Based...


Said Hasan, Abdulrasyid Tolangara, Hasna Ahmad, Jailan Sahil, Suparman

Ethnobotany Sago (Metroxylon Sago Rottb) in Jailolo Local Community, West Halmahera Regency, Indonesia