Analysis of Sago Management by Domestic Farmers Based on Local Wisdom in Meranti Islands Regency, Riau, Indonesia

Yusmar Yusuf[1], Resdati[2], Agusnimar[3], Tito Handoko[4*], Zulfa Harirah MS[5], Syed Agung Afandi[6]

[1,2]*Department of Sociology, Faculty of Social and Political Science, Universitas Riau, Pekanbaru, Indonesia.*
E-mail: yusmar.yusuf@lecturer.unri.ac.id
[3]*Master of Agronomy, Postgraduate Program, Universitas Islam Riau, Pekanbaru, Indonesia.*
E-mail: agusnimar@soc.uir.ac.id
[4,5]*Department of Government Sciences, Faculty of Social and Political Science, Universitas Riau, Pekanbaru, Indonesia.*
E-mail: tito.handoko@lecturer.unri.ac.id
[6]*Department of Public Administration, Faculty of Social and Economic, Universitas Islam Negeri Sultan Sarif Kasim, Pekanbaru, Indonesia.*

Abstracts: This article aims to analyze how domestic farmers in the Meranti Islands Regency, Riau Province, manage sago based on local wisdom. This research then uses qualitative research methods, where several relevant sources obtained will be analyzed using descriptive analysis to be able to explain and answer research questions comprehensively. This study concludes that substantially the management of sago by domestic farmers based on local wisdom in the Meranti Islands Regency can be seen in three phases, namely the land clearing phase with the Balau system, the sago about planting phase, and the feasibility standard phase before the sago felling. In the process, domestic sago farmers in the Meranti Islands Regency are very enthusiastic and uphold the values of local wisdom that apply. This research then contributes in the form of recommendations regarding the importance of innovative efforts in the management of sago by domestic farmers by increasing the capacity of existing sago farmers sustainably.

Keywords: Sago management, Domestic farmers, Local wisdom.

1. INTRODUCTION

The potential of Indonesia's natural resources is rich and diverse, and each region in Indonesia has its unique natural resources (Arif et al., 2020; Murod et al., 2019). One of the provinces in Indonesia, namely Riau Province, is famous for its peat areas which are classified as fringe land types and are widely chosen by large capital owners to be processed into plantations because they have strategic functions (Rafi et al., 2021). Thus making Riau Province the largest producer of sago starch, cultivation, and processing of sago starch in Indonesia (Rusli et al., 2022). However, unwise management can result in massive forest fires (Rasyid et al., 2020). o alternative efforts are needed to overcome deforestation (Trisia et al., 2021).

The most appropriate alternative effort to restore the area due to deforestation is by cultivating sago plants. Prevention of forest fires for peatlands can also be done with the participation of local communities by deepening their knowledge of mitigation. So that the community has the skills and participates in peatland restoration in the surrounding environment. If restoration is not carried out, it will not only be affected by the environmental ecosystem but the socioeconomic function of the community will be disrupted (Saputra, 2019; Ulya et al., 2022). Apart from preventing the occurrence of land fires, this can be one of the potentials to improve the people's economy (Syahza et al., 2021). For example, the Meranti Islands Regency is the largest sago area in Riau Province and is the main and best producer of sago starch in Indonesia. Even sago starch exports include Asian countries such as Japan, Malaysia, and Singapore (Rafi et al., 2021; Rusli et al., 2022).

Processed sago starch can be developed into other foods that have high nutritional value for human nutritional needs. Sago can be processed into a variety of foods such as noodles, flour, complementary foods for breast milk (ASI), and various other traditional food preparations (Sudarmadi et al., 2017; Tjokrokusumo, 2018). Then the use of sago is also widespread, where the leaves and midrib of sago can be used for carpentry materials, even in the industrial world stem fiber is used as the basic material for making paper. Not only that, sago can be processed to

be used as a new energy source, namely bioethanol which is an alternative to reducing carbon dioxide (Makkarennu et al., 2018; Boseren & Weterings, 2021).

Based on the potential in the agriculture/plantation sector, the area of plantation land in the Meranti Islands district illustrates that the majority of the surrounding population work as sago farmers (Bintoro et al., 2020; Murod et al., 2019). The following is the distribution of the area of sago land in the Meranti Islands Regency, namely:

Table 1. Distribution of Sago Land in the Meranti Islands Regency.

Number	Sub-District	Land Area (Hectares)
1	Tebing Tinggi Barat	9.02
2	Tebing Tinggi	0.38
3	Tebing Tinggi Timur	16.68
4	Rangsang	0.52
5	Rangsang Pesisir	2.33
6	Rangsang Barat	0.26
7	Merbau	5.32
8	Pulau Merbau	1.94
9	Tasik Putri Puyu	3.50
	Amount	39.95

Source: (Merantikab.bps.go.id, 2021).

Table 1 above shows that the sago commodity in the Meranti Islands Regency has promising prospects to support food security based on local wisdom. Then various studies explain that sago commodities also have multifunctional benefits that can support food security (Mustofa et al., 2021), support the community's economy (Syahza et al., 2021; Elida et al., 2021), absorb labor (Syahza et al., 2020), and can be an alternative for Indonesia's future export commodities (Murod et al,, 2019). However, although it has promising potential and prospects, of course, the management of sago in the Meranti Islands Regency requires the ability of domestic sago farmers and assistance from the central and regional governments in the form of policies such as involving all relevant stakeholders (Rafi et al., 2021). The aim is to encourage domestic sago farmers to cultivate more creative and diverse sago products (Elida et al., 2021; Rafi et al., 2021; Murod et al., 2019). Based on this, it is necessary to conduct this study to find out how domestic farmers in the Meranti Islands Regency, Riau Province manage sago using local wisdom.

2. LITERATURE REVIEW

2.1. Sago Management by Domestic Farmers

In developing sago production, cooperation between the government and farmer groups can add value to the development dimension by utilizing the area and land suitability as well as the creativity that exists in the community (Boseren & Weserings, 2021). In addition, for sago management to run properly and sustainably, support from all relevant stakeholders, ranging from the government, academics, entrepreneurs, farmers, financial institutions, and non-governmental organizations (Elida et al., 2021; Rafi et al., 2021). Currently, Indonesia can become a sago-producing area to support community food security (Arif et al., 2020). Therefore, if this potential is managed optimally, it will have an impact on the right image as a productive sago-producing country in the world (Felin, 2016). The development of sago in marketing and exports to other countries can also open new jobs for the community to increase economic growth (Syahza et al., 2021). Then in its implementation, the development of sago has challenges that need to be addressed properly by the government, namely related to the development of superior products in the sago processing industrial area (Purnomo et al., 2018), so it is necessary to increase the ability and independence of farmers in each region (Sudarmadi & Rosnita, 2017).

The sago management model that needs to be developed by the government must increase farmers' income through downstream, employment, and land adjustment (Arif et al., 2020), and supervision of sago management (Tranggono et al., 2019). Currently, various obstacles in adopting sago as a local food that supports food security are caused by the lifestyle and habits of people who are accustomed to consuming rice as a staple food (Rusli et

al., 2022). This is where the government and domestic farmers play an important role in managing sago as an alternative to local food (Sabri et al., 2018; Rasyid & Kusumawaty, 2020).

2.2. Sago Management Based on Local Wisdom

Local wisdom can be interpreted as a community commitment to maintain the principles of goodness in the preservation and development of local potential. The idea of involving all stakeholders, ethical values, and an assessment of the existing potential can be used to provide empowerment based on local wisdom. In the process of achieving these goals, the current modern management system must be sensitive to the values of local wisdom. Local communities that are responsive to government development goals can help strengthen current local wisdom (Munir et al., 2021; Prasetyo, 2015). Knowledge, skills, attitudes, and capacities, as well as the management of social capital, are the core of the empowerment of modern society. Although challenging, empowerment based on local wisdom continues to progress (Sundari et al., 2021).

To contribute to the existence of local wisdom in the field of food development activities, various studies have explained that making maximum use of land availability, expanding network and market absorption, forming capital cooperation, adopting technology, optimizing income and public awareness, and improving the quality of human resources. talents in agriculture will be very helpful (Syahza et al., 2021; Bintoro et al., 2020). The success of local wisdom-based assessment of the potential for sago development of a location is highly dependent on site-specific factors (Trisia, et al., 2016; Rasyid & Kusumawaty, 2020). Previous research has also shown that there are several difficulties that the government must overcome to implement effective sago management measures to improve local food security (Mandulangi, 2021; Meo & Panda, 2020). In addition, many open questions remain unanswered about how best to implement locally informed sago management. Therefore, an in-depth investigation is needed into how sago is handled by domestic farmers using conventional knowledge.

3. RESEARCH METHOD

The qualitative research methodology was used to collect and analyze the data of this study to answer the topics discussed (Busetto et al., 2020; Wagner et al., 2019). The data in this study comes from primary data obtained directly at the research site and from secondary data in scientific publications and official government documents. Then, the data collection technique in this study uses observation and documentation techniques that focus on collecting data related to the management of sago by household farmers based on local wisdom.

Furthermore, the data analysis technique in this study uses descriptive analysis to explain systematically to explain and answer research questions comprehensively (Monique et al., 2020). There are three stages of analysis carried out, namely: First, the data analysis process begins with a description of events and findings at the research location. The second stage, reduction, and selection involve narrowing the data set and providing a more in-depth explanation of the focus areas that have been decided. Third, draw meaning from carefully compiled data. Therefore, the purpose of this study is to examine how domestic farmers in the Meranti Islands Regency apply local wisdom in sago management.

4. RESULTS AND DISCUSSION

4.1. Sago Management by Domestic Farmers in Meranti Islands Regency

According to Munir et al., (2021), etymologically local wisdom is a person's view of life in responding to an event, object, and situation that accommodates policies based on traditions and norms that apply to an area. Local wisdom is also seen as a guide for local communities in treating the surrounding environment (Meo & Panda, 2020). In the process, domestic sago farmers in the Meranti Islands Regency are very enthusiastic and uphold the values of local wisdom that apply. These values have been passed down from generation to generation from the process of clearing land for sago plants until the sago is ready to be distributed. Sago is not only limited to consumption by the community, there is an ecological value that plays an important function in the sustainability of human life. The

ecological value of sago as a source of clean water for residents. Local wisdom also directs the community to regulate its relationship with the local environment. Even before the emergence of environmental stewards, local wisdom played an important role in preserving the environment. So the application of cultivating the values of local wisdom is very important. The following is the process carried out by domestic sago farmers in cultivating sago plants in the Meranti Islands Regency:

a. Sago Land Clearing

In the process of clearing sago land, domestic sago farmers usually do slashing (land clearing) before planting crops. Land clearing is usually done by sago farmers through a payment system with others, although a small number of farmers also clear land privately. Furthermore, the local wisdom of the sago garden is represented by the BALAU system which is installed on a wooden tree in the middle of a verdant forest. Balau has traditionally been used for its ability to fertilize the soil and retain moisture within the structure (geomorphology) of peatlands, making them non-flammable and resulting in loss of surface water (especially in peat domes) and fighting forest and land fires.

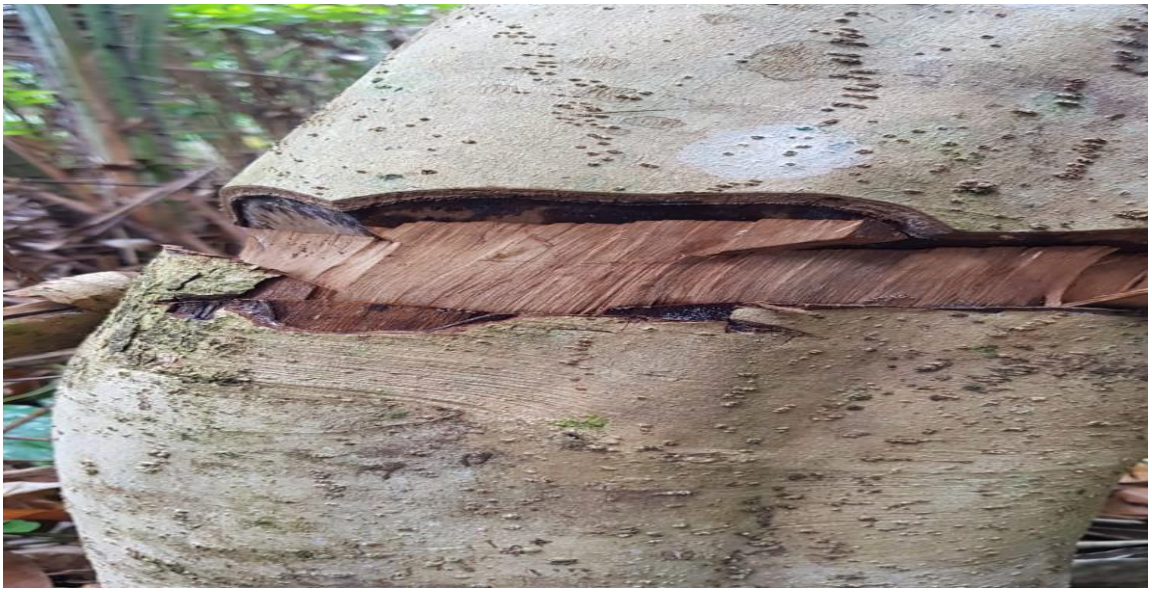

Figure 1. The Balau System in Sago Management in the Meranti Islands.
(Author's Documentation, 2022).

b. Early Stage of Sago Cultivation

The cleared sago land is then ready to be planted with abut (sago saplings are taken from the sago shoots that grow around mature sago palms). This means that domestic sago growers usually use shoots rather than seeds. After that, the abut are planted at a distance of several meters, carefully clearing any areas of the plant that could hinder sago development. Mato disease caused by sago caterpillars, causes sago shoots to chirp and rot in the early stages of planting and can be avoided by inspecting the garden regularly and removing infected shoots until new growth. Periodic inspections must be carried out from the time of planting until the sago reaches the age of 5 (five) years to ensure the absence of disease and the continuation of healthy growth of the sago before harvest.

There are three types of sago abut (saplings) namely sago (memban) which is not thorny and sago which is still young with few new shoots. The second is a thorny sago tree with characteristics of dense thorns and more saplings (abut) which according to local farmers is a type of sago that is usually planted by residents. Finally, the Sangke sago tree has the characteristics of less dense thorns.

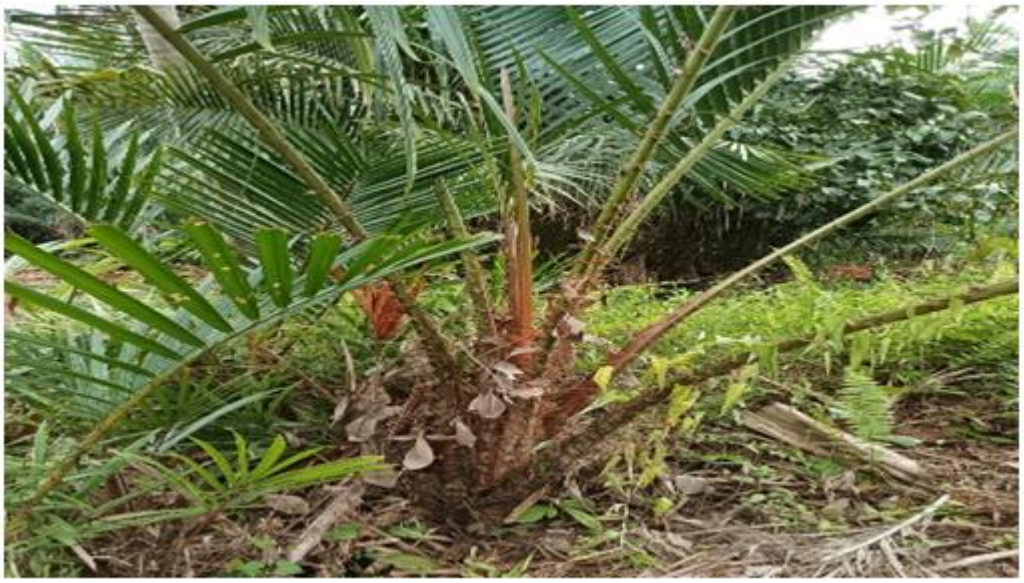

Figure 2. Planting (abut) of sago palms in the Meranti Islands.
(Author's Documentation, 2022).

Figure 3. Mato type as sago shoot disease caused by caterpillars.
(Author's Documentation, 2022).

c. Final Stage of Sago Management

After 10 (ten) to 15 (fifteen) years, ideally, sago can be harvested and sold. When sago reaches the Nyorong phase (sago shoots can no longer grow tall, and usually only reach +5 meters), sago is ready to be harvested and sold. Sago felling is done on the sago tongkeng (the bottom of the sago tree). After cutting, the sago is sliced per stem (sago segment) where each sago stem is approximately one meter long or as needed and a hole is installed (to make it easier to tie the rope) where the sago is pushed from the garden and the last step is to lift the sago onto a cart to be delivered to the buyer.

Figure 4. Sago Nyorong ready to be harvested.
(Author's Documentation, 2022).

Figure 5. The Process of Making Sago Idung.
(Author's Documentation, 2022).

Figure 6. Encouraging Sago from within the garden.
(Author's Documentation, 2022).

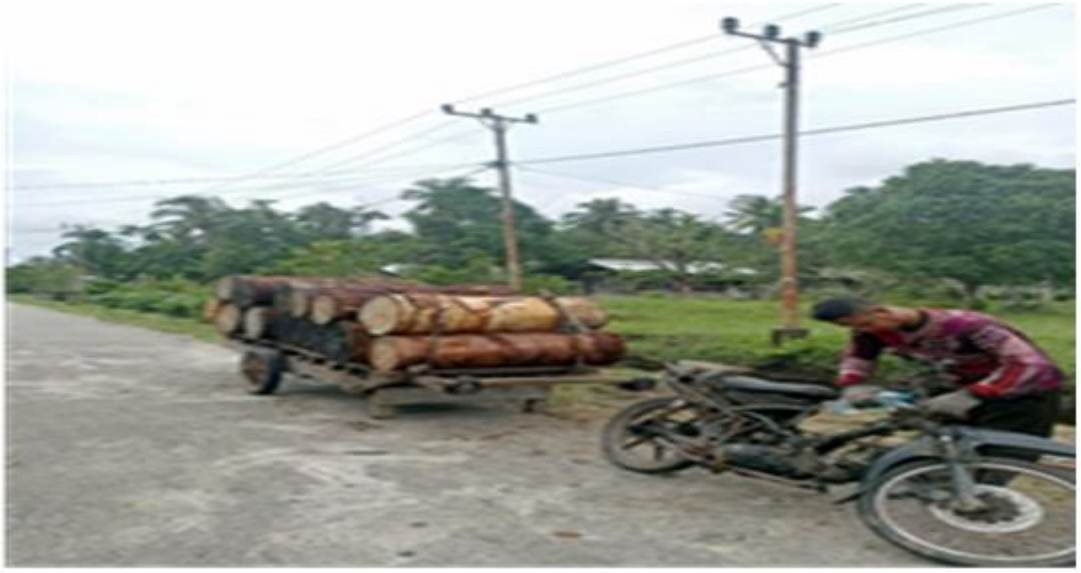

Figure 7. Pulling a Cart for Sago Delivery.

4.2. Sago Management Based on Local Wisdom in Meranti Islands Regency

The management of sago that is still applied by domestic farmers based on local wisdom in the Meranti Islands Regency can be seen in Figure 8 below:

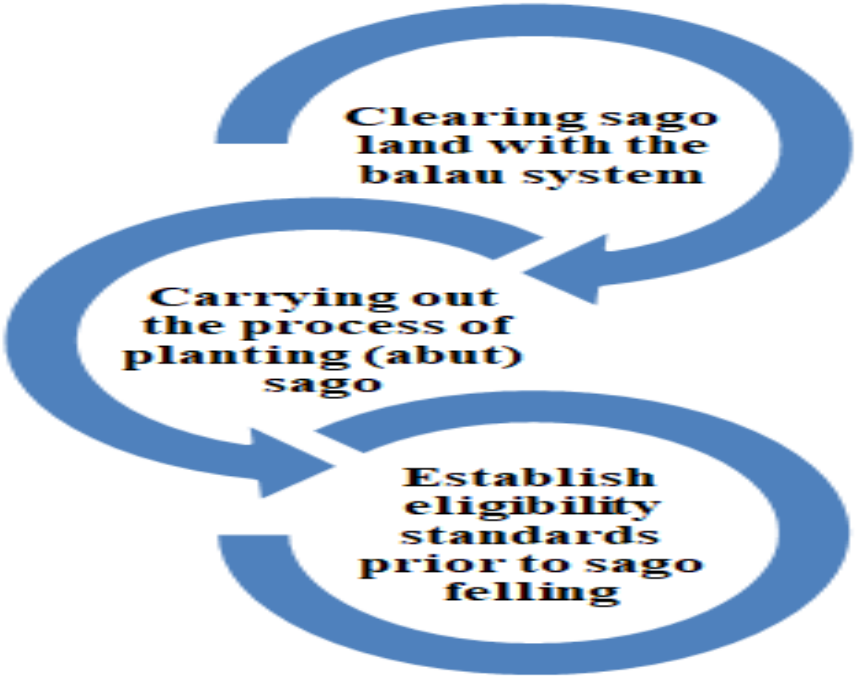

Figure 8. Sago Management by Domestic Farmers Based on Local Wisdom.
(Author Processed Data, 2022).

In Figure 8 above, it can be seen that the management of sago by domestic farmers based on local wisdom in the Meranti Islands Regency can be seen in three phases, namely: *First,* clearing land with the Balau system, which in this phase means clearing the land which means that before the land is used for planting sago must be cleaned first so that no other plants are disturbed so that the growth of sago can be done based on the local wisdom of the

community with the Balau system. *Second,* planting sago ash which is sago saplings taken from sago shoots around mature sago. There are three types of ash, namely sago Bemban, sago thorn, and sago Sangke. According to local farmers, the type of ash that is often planted in the Meranti Islands Regency is thatch with thorns with dense thorns and has more tillers (ash). This was done by local farmers to keep them oriented towards the future by not being too hasty in planting seeds, so farmers must have the patience to wait for more sago seedlings to be planted for the sustainability of sago plant life. *Third,* establish a standard of eligibility before harvesting sago for sale, meaning that at the final stage of sago, farmers may only sell sago if it has reached the Nyorong period (when the shoots have reached maximum growth and cannot grow taller) and is cut down at the bottom of the sago base which the farmers believe can produce sago with the best quality. So, it is forbidden to cut sago before the age of 10-15 years which is the maximum limit for sago growth.

5. CONCLUSION

The main finding of this study concludes that substantially the management of sago by domestic farmers based on local wisdom in the Meranti Islands Regency can be seen in three phases, namely the land clearing phase with the Balau system, the sago about planting phase and the feasibility standard phase before sago felling. This study complements previous findings which substantially emphasize the importance of local wisdom-based sago management.

In the process, domestic sago farmers in the Meranti Islands Regency are very enthusiastic and uphold the values of local wisdom that apply. This research contributes in the form of recommendations regarding the importance of innovative efforts in the management of sago by domestic farmers by increasing the capacity of existing sago farmers sustainably. Then, this study has limitations related to the fact that not all information and data can be extracted from domestic farmers in the Meranti Islands Regency. Therefore, further research is needed to comprehensively explore the data and arguments of the key actors.

Authors' Contributions

Yusmar Yusuf provided the research design, theoretical framework, and data analysis. Resdati and Agusnimar processed the data and prepared the script. Tito Handoko, Zulfa Harirah and Syed Agung Affandi helped write and prepare the paper for publication. This study was funded by LPPM Riau University and we would like to thank LPPM Riau University's willingness to sponsor this research activity.

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