

# Local Wisdom Practices in Rice Paddy Farming and Its Impact on Regional Food Security in Pulau Sapi Village, Malinau, North Kalimantan

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**Abstract:** *The potential of wetland rice in Malinau District is important to manage so that the results are optimal. Increasing rice production and productivity in addition to extensification can also be done with intensification programs. The production of lowland rice is inseparable from various factors such as farming technology, the availability of superior seeds, the carrying capacity of irrigation facilities and what is equally important is the way to cultivate the community. A good combination between modern agricultural technology and the noble values of locality must be formulated appropriately so that agricultural progress and natural sustainability can be realized in a balanced and sustainable manner. This research was conducted with qualitative methods so that researchers were able to fully and comprehensively describe the phenomenon under study. So that in the end it can produce meaningful and useful findings for the development of rice paddy agriculture and food security in the Malinau District area. This research focused on the practice of local wisdom in cultivating lowland rice in Malinau District, the impact of the practice of local wisdom in cultivating wetland rice to increase rice production to support regional food security. The research has the following conclusions, namely: 1) Local wisdom practices in farming paddy fields in the village of SapiPulauMentarang Sub-district Malinau Regency is still preserved through the planting season and the use of infrastructure, starting from the process of land preparation, preparation and seed planting, to harvest. 2) The impact of the practice of local wisdom in cultivating wetland rice to increase the production and productivity of rice plants to support regional food security seen from the level of availability of rice grain, and farmers' perceptions of the level of agricultural production. If the potential of local wisdom to cultivate wetland rice can be developed well then it can be one way to sustain and increase rice production and productivity in Malinau on an ongoing basis.*

**Keywords:** Local wisdom, production

## 1. Introduction

The development of the agricultural sector in North Kalimantan, especially Malinau Regency, must prioritize the preservation of potential local agricultural commodities, rice fields which are local potential with good quality and able to maintain food availability for the community. The lowland rice farming system that promotes local social and cultural values as an integrated system in the process of lowland rice farming. Santoso (2006) explains that local wisdom is a decisive element in the success of managing community resources and natural resources. However the progress of the agricultural system still has to preserve and preserve the values of local wisdom for the sake of cultural and natural preservation. Various studies on the importance of local wisdom in preserving ecosystems, along with the strengthening of the local economy and the progress of human life. However, there have not been many studies on local wisdom in cultivating lowland rice to support the realization of regional food security.

This study focuses on the uniqueness of wetland rice in the village of PulauSapiMentarang District, Malinau District where agriculture in the village is carried out with values and farming culture that have developed from generation to generation from generation to generation. Production of paddy rice with local seeds has good quality rice and good economic value, and is able to meet the food needs of the community, so that it can contribute to the realization of regional food security. Therefore, it is very important to note to optimize the practice of local wisdom in cultivating

wetland rice, so that it continues to contribute positively to regional food security.

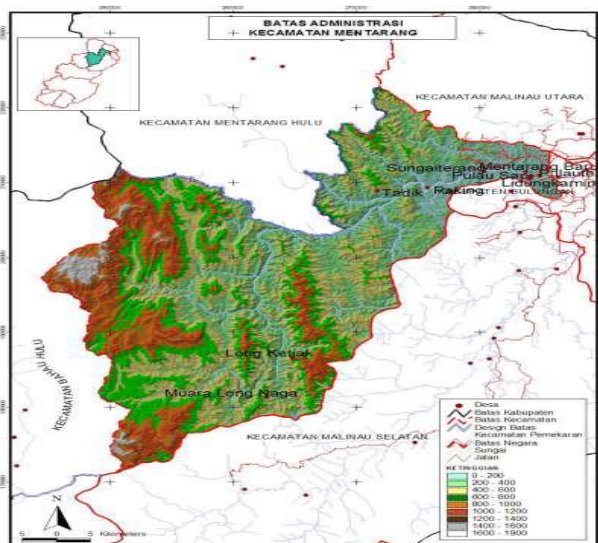
The exploitation of rice farming which is integrated with local wisdom in rice cultivation is a phenomenon that raises interest as well as assumptions that require answers through in-depth research. Food agriculture tends to prioritize economic value from its production. While local wisdom in general is perceived as a traditional way that is considered inappropriate to be part of a strategy to improve agricultural quality and productivity. However, based on several results of previous studies such as those conducted by Santoso (2006), Widodo and Hastuti (2017), and Muhammad (2017) provide the foundation that local wisdom can continue to be developed to encourage agricultural progress. Local wisdom in cultivating lowland rice that is able to maintain the preservation of local seeds that have superior quality and good economic value should be developed so as to answer the empty space in the strategy of intensifying lowland rice farming. At present the availability of paddy fields over time continues to be increasingly limited. However, the limitation of paddy fields does not hamper the production of paddy rice in the village of PulauSapiMentarang District, Malinau District, where the farming system is based on local wisdom values.

Food availability and sustainability of food (rice) in cow island villages have still been distributed to households of farmers and surrounding communities, but along with the demand for food that continues to increase in the future, there is the potential for conversion of paddy fields to the needs of non-agricultural development, damage to paddy fields and the production of risk from the use of chemical

fertilizers, the existence of extreme climate phenomena El-Nino and La-Nina which can lead to droughts and floods and other shortcomings from the practice of local wisdom planting rice to keep pace with the growing demand for rice production this is the problem that needs to be anticipated.

This study was made to look more deeply at the polarization of local wisdom planting rice fields in PulauSapi Village and its impact on regional food security which is always available sufficiently, safely, equitably, and affordable and is closely related to local-specific technology not contradicting community and religious culture and sustainable.

Therefore, this research is important so that there is a study that reveals the practice of local wisdom in cultivating lowland rice in PulauSapi Village as an effort to find the advantages of lowland rice farming integrated with local wisdom values. Then this research is also important to reveal deeply the practice of local wisdom in farming lowland rice that is able to maintain the quality and availability of food for local communities along with the sustainability of ecosystems and their natural environment. The disclosure of local wisdom in cultivating lowland rice in PulauSapi Village can be used as a cropping pattern of rice paddies carried out with local wisdom in order to realize food security towards food independence. The purpose of this study is to describe and analyze the practice of local wisdom and its impact on growing rice in Malinau District.



**Figure 1: Map of Mentarang Subdistrict Location**  
Source: BPS, Mentarang Subdistrict in figures, 2017.

## 2. Methodology

All of these aspects were studied in this study, through a qualitative research approach. Data collection in this study is carried out through observation or observation, interviews and document tracking. In the process of data collection, the human approach between researchers and data sources became the main instrument in this study. By using informants as research subjects, data collection refers to the assumption that data sources can respond in the form of signs, adjustments, and responses to the environment.

The collected data were analyzed using interactive analysis model data analysis techniques from Miles, Huberman, and Saldana (2014: 31-33), namely the analytical method used for the process of analysis of data obtained in the field and moving backwards continuously during research takes place. Researchers combine interactively and circularly between data collection, data condensation, data display, and then draw conclusions and verification.

## 3. Results

### Local Wisdom Practices in Rice Paddy Farming in Malinau District

The farming habits of lowland rice farmers in Sapi Island use traditional methods obtained from generation to generation so that with the help of extension services in the form of demonstrations and training provided to farmers, sometimes it is not carried out according to the recommendations and rules given because it is already in the habit. entrenched and most farmers this traditional method is easier to do and a small number prefer to use agricultural technology packages.

### Use of Traditional Facilities and Facilities

One of the practices of local wisdom in farming is the use of traditional facilities and infrastructure. In commencing work on rice farming both starting from land preparation, nursery, planting and harvesting, there are already some farmers who use grass machines to open or clean paddy fields, where previously they used machetes and hoes. To do the nursery there have also been advances where there are farmers who use the method of stocking rather than using the Portuguese method where both of these methods according to the experience of farmers still assume that both have their own advantages and disadvantages.

Some farmers have used technology for the cultivation process, but most of the people of Malinau District still adhere to the tradition of using traditional tools. In practicing farming, the community uses traditional tools such as anet, agag, beluing, mute, machete, rubber, od, and tayen which have their respective functions. Although the process is carried out slowly, traditional tools are still used by the surrounding community because it has become a habit and lack of public knowledge about how to use technology.

Land is the main thing in farming, especially in cultivating lowland rice. What needs to be considered in paddy fields is how to prepare farmers' land, most of them are still TOT (Without Olah Tanah) systems by slashing and spraying with herbicides after they are planted, and there are already some farmers who do land processing using a hand tractor.

### Local Customs

The practice of local wisdom in the second cultivation is a custom that applies to the people of Malinau Regency. Customs are things that people do that contain hereditary elements from their ancestors which concern norms, rules, and habits that are carried out on a daily basis.

The customs of the farmers in Malinau District are to start farming with slashing, sowing and mofos. The local wisdom of cultivating lowland rice in PulauSapi village is based on

local knowledge gained from hereditary experiences obtained from observing, practice and becoming a culture that is cultured in the community both in terms of its growing season, reading pest specific pest signs birds and the experience of the influence of routine use of paddy fields every year will affect the availability of nutrients in the soil, so it needs to be re-fertilized. Rice farming activities in paddy fields are generally carried out by female communities, while menebas are used for slashing.

### Mutual Cooperation in Planting

The majority of the people of Malinau Regency in practicing farming use a mutual cooperation system. Based on some of the opinions above, it can be seen that there are actually special rituals that are still applied and are still believed by the community to this day. Trust in the land is known to be carried out at the time of starting the planting and at the time of the harvest season the main ritual will be carried out in the form of a joint thanksgiving carried out in the church. The Lundayeh community in the village of Cow Island, Mentarang Sub-district, Malinau District still adheres to this belief.

The Malinau District community does not perform certain rituals but only prays to God that the planted rice can produce satisfying results. Some people are also convinced of the prohibitions that should not be made so that rice yields are good, for example, planting according to the season and giving tithes or as a thanksgiving so that the next crop gets better.

### Impact of Local Wisdom Practices in Rice Field Cultivation on Increasing Rice Crop Production to Support Regional Food Security

#### Impact on the level of rice production

Based on the facts in the field, the amount of paddy rice production is more influenced by the presence of superior local rice planting. Along with the prohibition of forest burning and plantation development, the extent of field rice cultivation has diminished in several sub-districts in Malinau District and has shifted to lowland rice, so the extent of planting and harvesting of paddy rice has increased and overall paddy production has increased.

#### Perception of Farmers on Agricultural Production

Community perceptions of their agricultural products, namely farmers still running traditional farming systems, namely planting local seed rice using simple equipment, fertilizing, caring for plants, simple water management by making and repairing embankments and waterways so that rice yields are better and more pleasant farmers who are only results oriented to eat and sell little by little as needed. So that it can be said that farmers' perceptions of rice production are quite pleasant because the harvest is enough to fulfill their daily needs.

Data on rice production as described in the interview results above can be compared with rice production data obtained from the Malinau District Agriculture Service. Data on rice production at the district level shows that the production of lowland rice is lower than the production of non-paddy rice. It can be seen that the area of wetland rice is indeed smaller

than non-paddy fields (fields). The development of wetland area since 2014 has continued to decline until 2017, but in 2018 it began to experience an increase again. Likewise with the results of their production, following the amount of land available. Production results in 2018 showed a good increase because the amount of the increase was quite high from the previous year's production.

**Table 1:** Results of Rice Field and Rice Paddy Production in Malinau District

Information	Year				
	2014	2015	2016	2017	2018
Area of Lowland Rich Field (Ha)	3.038	2.333	2.067,2	1.178	1.421,9
Rice Production Results (Tons)	8.719	6.696	5.933	2.739	4.081
Area of Non Paddy Rice Field (Ha)	5.260	4.821	4.743	5.184	4.139
Non Rice Paddy Production Results (Tons)	12.992	11.908	11.715	12.804	10.223

Source: Malinau District Agriculture Service in 2019

While for non-paddy rice production (fields) the area of land is also decreasing. Its production also decreased. But in 2017 the area of land experienced an increase of almost one thousand hectares so that its production output also increased almost to the same as the level of rice production in 2014. The area of paddy fields can be reduced and increased because in farming farmers do it by opening new fields and closing old fields. In contrast to rice farming in paddy fields which are more likely to be done on the same land, so the total land area is relatively more stable. Even though in 2018 it also increased because there was an additional effort to open new rice fields.

Then it can be seen also the comparison of the area and yield of paddy rice with paddy fields at the level of MentarangSubdistrict. Data shows that wetland rice area has also decreased which is in line with its production. Increased land area occurred in 2018 as a result of the addition of rice fields from the Malinau District Government. In addition, the decline in paddy rice production was also caused by pests and diseases in the past two years.

**Table 2:** Results of Paddy Rice Production and Field Rice in MentarangSubdistrict

Information	Year				
	2014	2015	2016	2017	2018
Land Area of Rice Farming (Ha)	835	840	283,6	283,55	340,97
Production Results (Tons)	2.396	2.411	1.760	475	924
Area of Non Rice Paddy Land	596	269	245	190	394
Non Rice Paddy Production Results (Tons)	1.309	664	605	469	973

Source: Malinau District Agriculture Service 2019

If you pay attention to data on land area and yields from field rice, it also shows a decline. The trend that occurs is almost the same between the condition of paddy rice and non-paddy rice (fields). This means that the dynamics of rice farming in the District of Mentarang are more influenced by

climate conditions and the development of pests or diseases in rice plants.

#### 4. Conclusion

Based on the discussion of the results of this study, it can be formulated into the following conclusions: 1) The practice of local wisdom in cultivating lowland rice in the village of SapiPulauMentarang District of Malinau Regency is still conserved through the planting season and the use of infrastructure, starting with the land preparation process, preparation and planting of seeds, until harvest. 2) The impact of the practice of local wisdom in cultivating wetland rice to increase the production and productivity of rice plants to support regional food security seen from the level of availability of rice grain, and farmers' perceptions of the level of agricultural production. Production and productivity of paddy rice in MentarangSubdistrict have not shown a significant increase in the realization of regional food security, but the use of superior local seeds based on farmer experience has resilience to pests and diseases, can adapt to weather changes so that the harvest is maintained and tastes are continue to be in demand. However, the disadvantage is that the local rice harvest period is superior at the age of 6 months while the superior rice planting age is only 4 months. If the potential of local wisdom to cultivate wetland rice can be developed well then it can be one way to sustain and increase rice production and productivity in Malinau on an ongoing basis.

#### 5. Suggestion

The development of local wisdom practices in cultivating lowland rice to support regional food security must be carried out in an integrated and sustainable manner. The preservation of local wisdom in cultivating lowland rice should be the top priority in agricultural issues by the local government by involving all elements of society, starting from the main actors (farmers), agricultural business actors and stakeholders (Dinas / Kantor / Instansi related, the Church, Customary Institutions, Universities, environmental observers and the private sector), so that collaboration of local wisdom with knowledge of agricultural technology can work together and become a solution in increasing rice production and productivity in order to maintain sustainable regional food security. Local governments must strive to develop local superior seeds that have a short planting period and have strong resistance to climate change and rice pests and diseases. Local superior seeds are already available, where Malinau has good rice paddy seeds, making it easier for efforts to develop superior rice seeds that have good production and still support the sustainability of local wisdom.

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