Traditional and Modern Knowledge of Lowland Rice Management in Duhiadaa Pohuwato Regency

Yowan Tamu[1*], Pawennary Hijjang[2],Ansar Arifin,[3]Safriadi[4]
{yowan.tamu@ung.ac.id[1], pawennarihijjang@gmail.com,
ansararifin@gmail.com[3],safkum@gmail.com[4]}

State University of Gorontalo, Gorontalo, Indonesia[1]
Hasauniddin University of Makassar, Makassar, Indonesia[2,3,4]

Abstract. This paper uses a qualitative approach with an ethnographic type aimed at analyzing how traditional and modern knowledge systems are in managing lowland rice. We are of the opinion that in society, especially farmers, there are still differences in attitudes whether farmers should maintain their traditional knowledge or modern knowledge so that this attitude has an impact on increasing rice production, especially in the Duhiadaa community. The results of this study are the form of farmer activity that is seen in the practice of traditional and modern knowledge, so it is hoped that there will be a hybridization development of the seasonal calendar of the practice of the local wisdom of the Duhiadaa pohuwato community.

Keywords: Traditional; Modern Knowledge; Low land Rice; Management; Panggoba

1 Introduction

Duhiadaa community mostly work as lowland rice farmers with traditional and modern systems. Traditional farming system uses very simple equipment and is supported by traditional knowledge as a basis for farmers in lowland rice management, for example in determining when to sowing seeds, Duhiadaa farmers still use a seasonal calendar based on local knowledge owned by panggoba (someone who knows a good day to plant).

The farmers think that this traditional knowledge should be a guide for farmers in planting although it cannot be denied that the influence of modernization has begun to enter the Duhiadaa community. Along with the times and technology, this also has an impact on modernization in agriculture. In general, in developing countries such as Indonesia, new technologies in agriculture and innovations in agricultural activities are prerequisites for efforts to increase output and productivity. There are 3 stages of agricultural modernization. The first stage is a traditional farming system with low productivity. The second stage is the diversification of agricultural products, where agricultural products have been sold to the commercial sector, but the use of capital and technology is still low. The third stage describes a modern farming system with high productivity. The modernization of agriculture from the traditional (subsistence) stage to the modern farming system requires many other efforts besides restructuring the agricultural economy or the application of new agricultural technologies [1].

Indonesia is in the third stage, namely a modern farming system with high productivity. Modern farming systems use technology in agriculture because most of the agricultural yields are for commercial purposes or to meet market needs so that the use of human labor has shifted

BIC 2021, October 11-12, Batusangkar, Indonesia
Copyright © 2022 EAI
DOI 10.4108/eai.11-10-2021.2319506

to agricultural technology which requires higher production costs. Of course, this problem will have an impact on the behavior patterns and lifestyles of the community, especially in rural communities that initially used subsistence agriculture to become modern farmer communities. However, a study by [2] is not in line with the facts in the Duhiadaa community which uses 80 percent traditional knowledge in lowland rice management.

This study aimed to analyze traditional and modern knowledge in lowland rice management. Farmers still have different attitudes whether to maintain traditional knowledge or use modern knowledge so that it has an impact on increasing rice production.

1. Traditional and Modern Knowledge

Traditional knowledge owned by Panggoba in Duhiadaa ctend to be preserved from generation to generation until now. The tendency of traditional society to behave in a "total way of thinking" prioritizes the principle of "pars pro toto" (part for the whole). Traditional society usually views that to get a good time to start doing rituals and farming, one of the 'good days' is chosen, and 'good times' on that day. As for the "good place" then a small part of the location of the activity is considered "good" to come face to face at the time of starting rituals and or farming activities [3]. The totality way of thinking is a way of thinking, feeling, seeing, and assuming that everything in this cosmos is organically related so that it cannot be separated explicitly from one another [4]

Historically, researchers have been interested in systematically analyzing traditional knowledge, such as [5] farmers are a reciprocal relationship between humans and environmental conditions as one of the factors in the formation of culture as a pattern and striking characteristics of the community. Meanwhile, modern knowledge assesses that the modern farming system exists because technology in agriculture replaces the position of human labor so that solidarity between farmers was previously maintained only because of technology. [6] saw farmers as unique entities living on a subsistence basis. Subsistence is understood as a way of life to fulfill needs to a safe extent. [7] found that farmers in Southeast Asia will not engage in resistance movements when basic needs are met. Subsistence ethics is a commercially unoriented lifestyle. While Popkins [8] found rationality in the context of political economy.

1.1. Factors Causing Farmers to Use Traditional and Modern Knowledge.

An analytical study by [9] showed that traditional and modern knowledge was a factor causing Duhiadaa farmers to hybridize lowland rice management, for example when sowing seeds in lowland rice, farmers first held consultations by involving the government, community leaders, as well panggoba (someone who knows traditional knowledge in lowland rice management) to determine when it is a good day for sowing seeds, once determined, farmers with their own dynamics will improve themselves to start working on their respective lands by using mechanization.

[10] reviewed the dynamics of farmers that there are various types of people living in remote villages, namely: (1) as a society with a very simple social structure, living from yam and taro gardens combined with hunting and gathering (Christian zending); (2) people living in villages connected to small towns built by the Dutch colonials, living from growing rice in (Christian zending); (3) farmers live from farming rice, related to small towns that were once the center of the Dutch colonial government (the influence of Islamic culture began to be strong); (4) farmers make a living from farming rice in the fields associated with the city, the former center of the indigenous kingdom and Dutch administration (influenced by Hindu Islam and Dutch Colonialism); (5) urban communities play a role as the center of government where

the industrial sector was still weak or called as the type of society and small-town culture; and (6) the society and culture of a metropolitan city with the developed industrial sector.

1.2. Tradisional and Modern Farming System

The agricultural system adopted by the Duhiadaa community generally uses traditional and modern knowledge. This was done to preserve the local wisdom of the Duhiadaa community. If farmers only use one of these knowledge systems, there will be no hybridization in lowland rice management. This will cause delays in producing crops, considering that Duhiadaa farmers are not directly proportional to the land area in Duhiadaa. This is the same as the statement of an informant: Usually, farmers do not use traditional and do not use modern systems. Our time will run out while our energy is not balanced with the land area, if we use rice cutting machine it will be so fast so we choose to use both traditional and modern. The same thing was conveyed by the informant;

2 Process and Data Management

2.1. Location Determinaton

Duhiadaa is one of the villages with the largest land area, which is 2404 Ha compared to other villages in the Pohuwato Regency. The report from the Pohuwato Agricultural Office showed that the rice productivity level in this village averaged 12,460 tons in all sub-districts. The Pohuwato Agricultural Office report, from 2017 to 2020, showed that lowland rice production was relatively high compared to other agricultural production with a total of 57%. This location was determined because it has high natural resources so it is interesting to study.

2.2. Informant

Informants selected as subjects were (a) male farmers aged 40-60 years (b) and female farmers aged over 40-50 years. The informants above were selected based on the need to get a clear and complete picture of traditional and modern knowledge in lowland rice management and its consequences.

2.3. Observation and Interview

The observation was carried out during the period early 2021 to late 2021 to visit lowland rice farmers to describe the environment of male or female farmers, local government, community leaders, and panggoba. The interview was intended to obtain socio-cultural explanations regarding traditional and modern knowledge processes in lowland rice management.

2.4. Data Processing and Interpelation

The analysis and interpretation of primary data (the results of interviews with informants and direct observations) and secondary data (data from the Agricultural Office and the Central Bureau of Statistics of Gorontalo) were carried out through the following stages. (a)

Identification and classification of data. Identification was performed to sort out the interview results in order to get a direct statement related to lowland rice management. Identification was also carried out to obtain data related to statistics on the number of farmers using traditional knowledge. In addition, this stage was also useful for testing the validity and reliability of data through data triangulation; (b) Data display was carried out using narrative descriptions of information from interviews, observations, and secondary data processing. Data according to variables (production, process, and causes of traditional and modern knowledge practices to draw conclusions and provide recommendations); and (3) The conclusion was drawn by interpreting each symptom obtained from the results of data analysis which was then explained briefly and clearly in order to answer questions about traditional and modern knowledge in lowland rice management.

3 Findings and Discussion

Traditional and modern knowledge in lowland rice management was carried out by male and female farmers in Duhiadaa. This study found that the use of traditional knowledge in lowland rice management was healthier and more profitable for farmers than lowland rice management using modern knowledge can cause the land to be unproductive. Field observations and interviews with informants found that traditional and modern knowledge were activities carried out when planting lowland rice.

3.1 Duhiadaa Farmers in Pohuwato Gorontalo

Of the 13 sub-districts in Pohuwato Regency, lowland rice management using traditional and modern knowledge was found in all sub-districts, only one sub-district declared the use of traditional knowledge practices in lowland rice management around 80% compared to the use of modern knowledge.

Table 1. Farmers using traditional knowledge

NO	Sub-District	Village	Numberof farmers/land
1	Duhiadaa	Bulili	20
		West Buntulia	15
		Buntulia Jaya	10
		South Bunntulia	16
		Duhiadaa	22
		Mekar jaya	10
		Mootilango	8
		padengo	9
Total			110

Based on Pohuwato Regency Agricultural Office data, 110 lowland rice farmers used traditional and modern knowledge in lowland rice management until July 2021 (Table 1).

Observations and interviews revealed that farmers using modern knowledge in government agencies was very low compared to traditional practices. One of the female farmers explained that in the fields they continue to practice traditional knowledge even though they are assisted by modern knowledge. This statement is in line with a statement by the head of Buntulia village

In the village, we still have a lot of land using traditional knowledge because it is good.

The results of interviews with farmers about the high quality of rice in line with data obtained from the Agricultural Office show the high quality and production in Duhiadaa Sub-District.

2. Traditional and Modern Knowledge

In this era of modernization, technological advances have begun to spread to all lines, including the lowland rice management of Duhiadaa Pohuwato Regency community.

(a) Traditional Knowledge in managing lowland rice

1. Seed preparation; Conditional; 1 time; The seeds are selected from the good ones then taken and dried on the stove so they are not eaten by fleas; Pakele, 2. Nursery preparation; Conditional; 1 time; Provide beds for sowing; Hoe, 3. Seed sowing; Conditional; 1 time; The seeds are soaked overnight then the water is drained and the rice is sown on the bed; Molapo, 4. Land preparation; Conditional; 2 times; The land is plowed twice and leveled once; Pajeko/pacul, 5. Planting; Conditional; 1 time; The seeds in the beds are removed and planted in the fields; Molapo, 6. Cultivation; Conditional; Molapo, 7. Fertilization; Conditional; 3 times, 8. Pest control; Conditional; Conditional; Molapo, 9. Weeding; Conditional; 2 times; Weed removed; Koroo, 10. Harvest; Conditional; 1.Sickle; (Piles of rice or straw are collected and then courted and then threshed); 2.Porontok; 3.(Wayahu/ wind blower); 4.Aya-aya; first cleaning); 5.Sisiru (place for winnowing grain; 6.Tapata (place to put grain); 7.Terpal (material for protection from the sun; 8. Enough pole.

(b) Modern knowledge in managing lowland rice

1. Seed preparation; Conditional; 1 time; The seeds are selected from the good ones then taken and dried on the stove so they are not eaten by fleas, 2. Nursery preparation; Conditional; 1 time; Provide beds for sowing; Hoe, 3. Seed sowing; Conditional; 1 time; The seeds are soaked overnight then the water is drained and the rice is sown on the bed; Molapo, 4. Land preparation; Conditional; 2 times; The land is plowed twice and leveled once; Traktor, 5. Planting; Conditional; 1 time; The seeds in the beds are removed and planted in the fields; Planting machines (many do not like), 6. Cultivation; Conditional; Fertilizer, 7. Fertilization; Conditional; 3 times, 8. Pest control; Conditional; conditional; Fertilizer, 9. Weeding; Conditional; 2 times; Weed removed; Fertilizer, 10. Harvest; Conditional; Lawnmowerinformants said below; Farmers, whatever the conditions, still use these two types of knowledge, namely traditional and modern knowledge.

Duhiadaa Pohuwato Regency community has not all used hybridization between traditional and modern knowledge. Therefore, farmers face major obstacles, namely; first, farmers experience low production due to insufficient time because some farmers still insist on traditional knowledge, for example using traditional tools in lowland rice management such as hoes. Some farmers who use modern knowledge also have the same situation because when processing mechanization they do not consider auspicious days to become a guide for traditional knowledge, so a lot of their rice is damaged. Second, farmers will feel big consequences when hybridization cannot be carried out because it only results in losses for both (traditional farmers and modern farmers).

4 Conclusion

Traditional and modern knowledge in lowland rice management at Duhiadaa Pohuwato Regency community can be seen in the practice from planting to harvesting, the practice was

the same but differs in management at harvest. Modern knowledge, some farmers have used rice cutting machines, while in traditional knowledge they still use traditional tools because they believe that with traditional tools, the grain is clean compared to using mechanization.The activities can often be seen in traditional and modern knowledge, so it is hoped that there will be a hybridization development of local wisdom practice in the Duhiadaa Pohuwato Regency community so that this paper can be side by side with modern science.In order to find solutions to problems occurred in traditional farmers and modern farmers, it is hoped that the government together with other stakeholders will provide hybridization in the form of seasonal calendars owned by villages or farmers group leaders.

References

[1]. Adisel, A: "Buku: Transformasi Masyarakat Petani dari Tradisional ke Modern." (2019).

[2]. Alfian, M: "Potensi Kearifan Lokal dalam Pembentukan Jati Diri dan Karakter Bangsa." *Prosiding the* 5 (2013).

[3]. Burhan, B: "Adaptasi Terhadap Perubahan Iklim dan Kearifan Lokal: Studi Penentuan Awal Waktu Musim Tanam pada Masyarakat Pedalaman Pulau Buton." pp: 2708-2724, (2012):

[4]. Dako, A. Y., and Yowan, T: "Rancang Bangun Prototipe Sistem Informasi Kalender Musim Berbasis Kearifan Lokal Masyarakat Gorontalo." *Prosiding Seminar Nasional SNAST*. (2016).

[5]. Fadhilah, A: "Kearifan lokal dalam Membentuk Budaya Pangan Lokal Komunitas Molamahu Pulubala Gorontalo." (2013).

[6]. Fajarini, U: "Peranan Kearifan Lokal dalam Pendidikan Karakter." *Sosio-Didaktika: Social Science Education Journal* 1.2 , pp: 123-130 (2014).

[7]. Hamid, S. A: Empat Buah Bintang yang Menjadi Pedoman Masyarakat Gorontalo dalam Setiap Memulai Pekerjaan Bertani, (2021)

[8]. Hakim, L: "Etnobotani dan Manajemen Kebun-Pekarangan Rumah: Ketahanan Pangan, Kesehatan dan Agrowisata." *Selaras. Malang* (2014).

[9]. Hijjang, P: *Sistem Desain Pengetahuan Lokal Komunitas Dayak Benuaq dalam Aktivitas Perladangan di Desa Melapen Baru Kabupaten Kutai Barat Kalimantan Timur*. An1mage (2019).

[10]. Wibowo, A., & Gunawan: *Pendidikan Karakter Berbasis Kearifan Lokal di Sekolah: Konsep, Strategi, dan Implementasi*. Pustaka Pelajar (2015).

[11]. Tamu, Y., Hijjang, P., Arifin, A., & Safriadi: Panggoba; Traditional Knowledge in The Planting Season Calender of The Duhiadaa Pohuwato Gorontalo Indonesian Community, Reviuw Of international Geographical Education, Volume 11 Issue-5, pp: 3064-3074 (2021)