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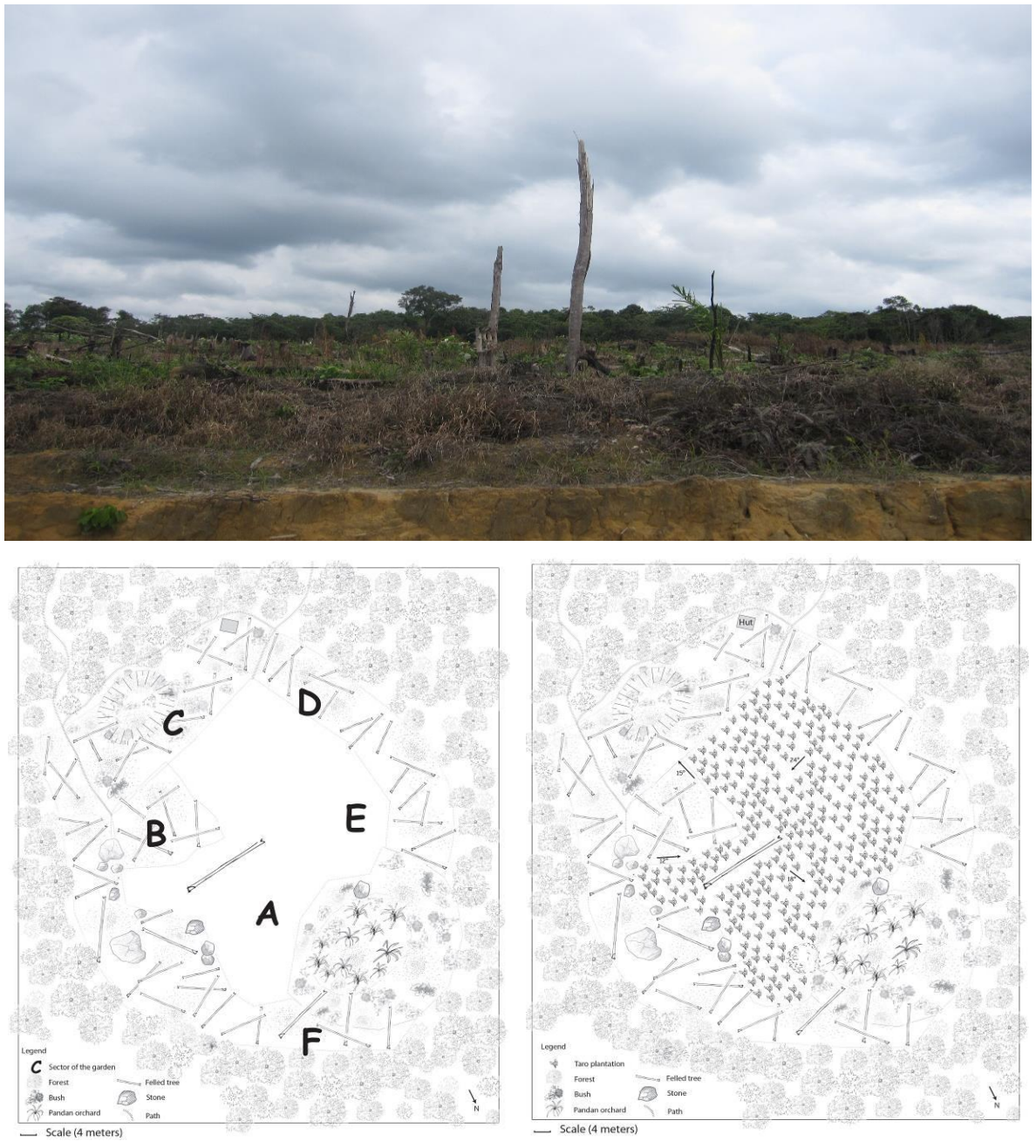

The Ethnobiological Society of Indonesia

An Ethnobotanical Study on the Farming System of the Makian Ethnic Group in Halmahera Island, North Maluku

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ABSTRACT

Farming is an activity carried out by humans to utilize biological resources, especially for producing food. Bale Village, Oba District, Tidore, Halmahera Island, North Maluku is inhabited by the Makian ethnic group, originating from Makian Island. They are local transmigrants. In this study, we conducted direct observation and interviews with key informants who had expertise and information in agriculture at the research location. The results showed that the farming is carried out in yards (*kintal*) and fields (*doba*). The agricultural pattern implemented by the Makian people is still traditional. They still use simple technology. Coconut, nutmeg, cocoa, and coffee are the Makian people's main commodities. The local wisdom that is still practiced by them is planting and harvesting their agricultural products according to the customs of their ancestors. They also do not sell their agricultural land to outsiders.

Keywords: Ethnobotany, farming system, Makian Ethnic Group, North Maluku

INTRODUCTION

Farming is one of the methods carried out by humans to meet their food needs. Agriculture is an inseparable thing and is the driving force of the economy for the Indonesian people, especially in rural areas. The development of the agricultural system continues to increase, starting from the traditional system which has been passed down from generation to generation by adapting to the culture of the local community. The beginning of traditional agriculture is marked since humans began to settle and cultivate fields in one location (Kurniasari *et al*., 2018). The traditional agricultural system is an agricultural model that is very simple, extensive, and does not maximize the use of technology, chemical fertilizers, and pesticides. The obtained agricultural yields are highly dependent on soil fertility, water availability, climate, and topography. Due to its high dependence on nature, traditional agriculture is erratic so that its production is unable to keep up with the food

needs of the population which continues to increase. This condition encourages the shift from a conventional or traditional agriculture system into a modern agricultural system.

The Makian ethnic group is one of the 500 ethnic groups in Indonesia (Melalatoa, 1995). This ethnic group inhabits Makian Island (one of the small islands) and part of the mainland of Kayoa Island located in the south of Halmahera Island, North Maluku. Makian people mostly work as field farmers. Some of them have carried out the permanent field system. However, some of them also still carry out the moving field system (Zulyani, 2015). Makian Island is actually a very dangerous volcanic island that has risen to the surface and is included in the Disaster-Prone Area Level 1 (Indonesian: *Kawasan Rawan Bencana (KRB) 1*). As a result of several devastating disasters because of Mount Kie Besi or Mount Makian, the Makian people widely spread throughout the islands in North Maluku (Safi, 2017).

The relationship between local communities, natural resources, knowledge about the environment, and the use of plants is very valuable local knowledge. Each ethnic group has its unique culture, customs, and local wisdom, including the agricultural system practiced by the Makian ethnic group. Some of the local knowledge systems related to agricultural culture in Indonesia are still being implemented, including those carried out by Subak farmers in Bali, the local community of Gampong Paloh Kasyee Kunyet in Aceh, and farmers from Sanglap and Melenai Villages in Riau, Saleman Village in North Maluku, Pasir Eurih Village in West Java, and Parbaju Julu Village in North Tapanuli (Afandi *et al*., 2017; Maulida, 2017; Nurung and Pratiwi, 2011; Rahayu and Wiriadinata, 1995; Siagian and Rahayu, 2000; Sartini, 2017). However, it turns out that the modernization current can cause the loss of traditional wisdom and knowledge possessed by local communities, including the local agricultural system with all its cultural rules and customs. Efforts to document traditional agricultural activities need to be carried out immediately so that it can be evidence for the future because, in this modern era, local traditional agriculture will inevitably fade and disappear as a result of the influence of mechanization. For the reason that the efforts to collect data on traditional agriculture of various ethnic groups in Indonesia are still lacking, this study is expected to be able to increase the collection of data. The purpose of this study was to identify and document the local knowledge of the farming system of the Makian ethnic group in Bale Village, Halmahera, North Maluku. The Makian people depend heavily on cultivating the land to meet their daily needs. The results of this study are expected to be taken into consideration in managing agricultural land traditionally and maintaining it as a part of ancestral heritage.

METHODS

This study was conducted in Bale Village, Oba District, Tidore, Halmahera Island, North Maluku (see Figure 1). This village is one of the villages located directly adjacent to the area of Aketajawa Lolobata National Forest. Geographically, Tidore is located at coordinates 0 – 20° N 127 – 127.45° E. The majority of the population of this village is the Makian people, originating from Makian Island. They become local transmigrants based on the suggestion of the government in 1975. The main livelihoods of the population of this village are farming food crops, including vegetables and spices. Furthermore, they also manage coconut, nutmeg, cocoa, and coffee plantations.

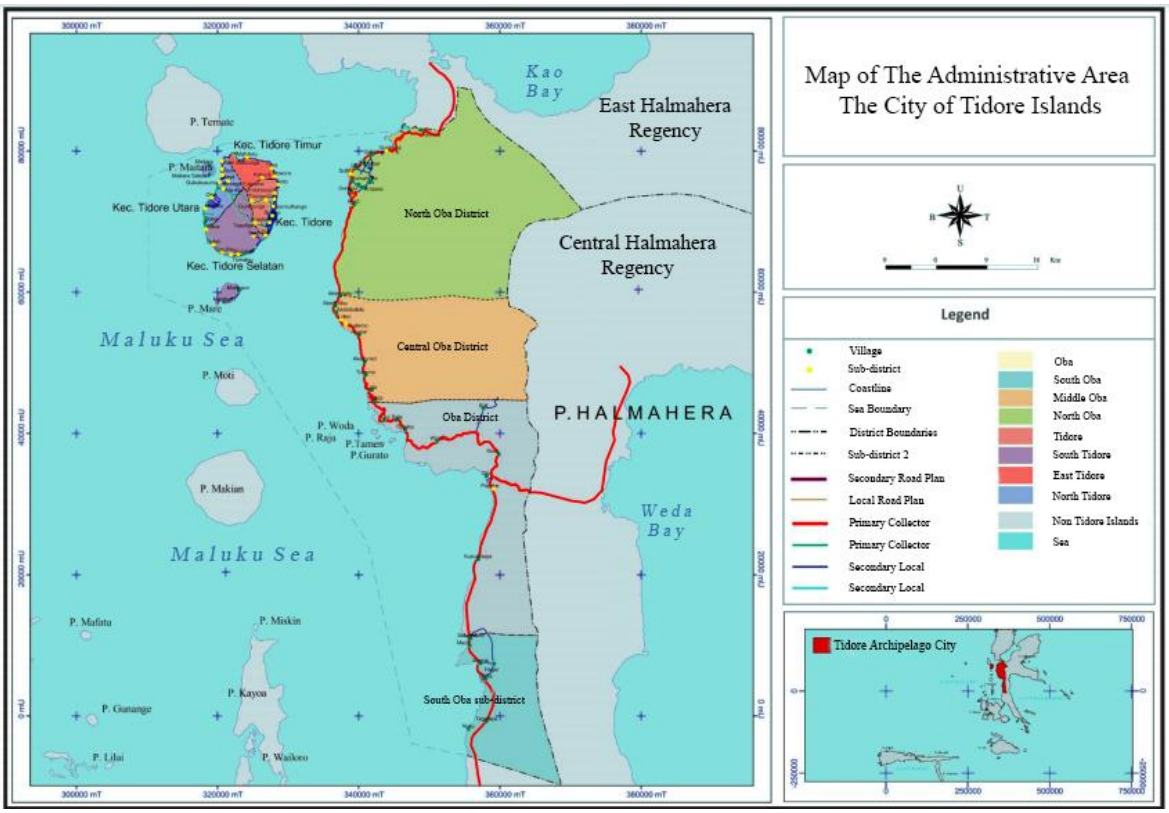

Figure 1. The Map of Tidore

The methods applied in this study refer to Vogl *et al*. (2004), Suminguit (2005), and Nolan and Turner (2011), namely non-structured and open-ended interviews and direct observers in the research location (Volgt *et al*., 2004; Suminguit, 2005; Nolan and Turner, 2011). The selected respondents consisted of 10 people who have roles as customary leaders and local people who are willing to provide accurate information and have sufficient knowledge of local customs, culture, and environment. The criteria for selecting respondents were the Makian natives and having lived in Bale Village for at least 20 years (see Table 1).

Table 1. Characteristics of Key Informants of Makian People

No.	Characteristics of the Informants	Total
1	Sex	
	Male	8
	Female	2
2	Age	
	30 – 40	5
	41 – 50	2
	51 – 60	3
3	Profession	
	Customary Leader	2
	Farmer	8
4	Level of Education	
	Elementary School	6
	Junior High School	3
	Senior High School	1

RESULTS AND DISCUSSION

Makian Farmers in Bale Village, Halmahera, North Maluku

Makian farmers still run the agricultural system in accordance with the provisions of Makian customs. The Makian people who reside in Bale Village are refugees from Makian Island in 1975 due to a decree from the Maluku Regional Government which determined that the island was uninhabitable. Makian Island was declared closed in that year because it was predicted that a massive eruption would occur from Mount Kie Besi or Mount Makian and the entire island would be hit by a lava flood. Therefore, there was a concern that it would be hit by a burst of hot material. Although Mount Makian did not erupt in that year, most of the population had fled to various islands in North Maluku. It turned out that the big eruption of Mount Makian occurred in 1988. After the turmoil of the eruption subsided, the Makian people were still prohibited from returning to their homes.

The results of the interview revealed that the Makian people in Bale Village came from the eastern part of Makian Island. They are often also referred to as Makian-Dalam people. Generally, they live from the yields of planting, such as banana, corn, sweet potato, and cassava for those who applied the permanent field system, and rice for those who applied the moving field system. Since old times, Makian Island has been known as one of the islands producing cloves and nutmeg. However, from the observations on the farmland of Bale Village, no clove plants were found. Regarding the problem of the absence of clove plants, it is necessary to conduct more in-depth research to find out why Makian farmers in Bale Village do not cultivate clove plants.

The Farming Pattern of the Makian People in Bale Village, Halmahera Island, North Maluku

The land is an important asset for farmers in rural areas, especially in agrarian societies whose economies are based on agricultural products. Makian people in Bale Village carry out farming activities in the yard (called *kintal*) or in the fields (called *doba*). The species of plants that are cultivated are mainly secondary crops or seasonal crops, such as those containing carbohydrates, fruits, vegetables, cooking spices, and plantation crops. The results of the observations indicated that not many species of ornamental plants were found in the yard of the house. Species of ornamental plants found were *Callistephus chinensis* (L.) Nees (Indonesian: *aster*), *Mussaenda frondose* (L.) (Indonesian: *nusa indah*), *Hibiscus rosa-sinensis* L. (Indonesian: *kembang sepatu*), and *Codiaeum variegatum* (L.) Rumph. ex A. Juss. (Indonesian: *puring*). The results of the interview revealed that planting those ornamental plants has recently been conducted for the last few years (around the past five years).

The Makian farmers can clear secondary forests or shrubs (called *ngodo*) for gardening after obtaining the approval of the customary leader (called *soa*) who holds the rights to the area where the secondary forests or shrubs are located. The land will become the property of the individual who clears that land and can inherit it to their descendants. The Makian people do not recognize permanent rice fields. They argue that the productivity of rice fields is highly influenced by various factors, such as the level of land fertility, irrigation, climate, and the application of technology. Those various factors cause rice cultivation (called *hamasik*) to be carried out on dry land or fields. The cultivation of rice on newly opened fields is carried out twice a year. Apart from rice, black sticky rice (called *pulo horse*) and white sticky rice (called *pulo bulang*) are also planted. Generally, the duration of the cultivation of rice in Bale Village ranges from 2 – 3 years. The results of the interview

revealed that the last rice field cultivation in Bale Village was carried out in 1986. It seems that the use of the field for upland rice cultivation by several ethnic groups in Indonesia is not continuous on the same land, but only ranges from 1 - 3 years (Rahayu *et al*., 2009; Soedjito, 1995). It is presumed because the fertility of the fields has started to decrease so that the rice produced is not optimal. The land used for rice cultivation is then planted with various species of vegetables, seasonal plants, annual plants, woody plants, and others, such as coconut (called *niwi*), nutmeg, cocoa, and coffee. These crops are the main economic commodities of the Makian people in Bale Village.

In determining soil fertility to open fields, Makian farmers will pay attention to the soil moisture. Land that is considered fertile and suitable for cultivation is the land where the soil is dry and not rocky. Several ethnicities in Indonesia, including the Dayak and Semau ethnic groups, also determine soil fertility before starting their farming business by planting field rice according to the land condition (Soedjito, 1995; Harahap and Siagian, 2000). Makian farmers start their farming business by clearing forests or shrubs (called *ngodo*) by cutting (called *hasalap*) trees with large trunks for 1 – 2 months, then burning them (called *song*) for 2 – 3 months. The wood from burning is collected and burned again (called *paling*) for 1 month. The results of this combustion are used as fertilizer to fertilize the soil. They do not use non-organic fertilizers. The land that has been ready to be cultivated is initially planted with rice and sticky rice seeds employing a method called *menugal* by general Indonesian farmers or *sagu-sagu* by the Makian people by making planting holes using rattan stalks. Although being planted on the same land, the rice and sticky rice planting areas are separated. They are generally bordered by coconut saplings. The fence around the fields is built after the rice planting is completed. In general, fences are made of braided bamboo sticks. Back to the field, each planting hole holds 5 – 7 rice or sticky rice seeds. Harvesting can be carried out after 4.5 – 5 months from planting. After the fields are planted with rice for 2 – 3 years, those plants will be replaced with secondary crops, annuals crops, fruit plants, and plantation crops.

Agricultural rituals as one of the traditions of Makian farmers in Bale village are inherited from their ancestors for specific purposes and contain local wisdom. Those rituals have high cultural and philosophical values for the Makian people. Those rituals are a form of prayer to God, Lord of Nature, so that their farming does not fail. Regarding rituals and the use of local wisdom in field rice cultivation, the Makian people use mutual cooperation (called *makoloyo*), which has values of harmony, cooperation, and a sense of family. After that, they eat together with all the farmers who helped in planting rice. Unlike the case of rice cultivation, the cultivation of secondary crops, annual crops, fruit plants, and plantation crops do not need rituals. They only apply customs as exemplified by their ancestors during planting and harvesting plantation crops. For plantation crops or other annual crops (such as fruits), the planting process is carried out together with seasonal secondary crops. The results of our observation showed that the planting arrangements for various species of secondary, seasonal, fruit, and plantation crops were not well-ordered, even though they were grouped according to their species.

In the ritual of coconut planting, each planting hole is given tomatoes or areca nuts. It is to make the coconut plants have many fruits and not easily fall. It is like when planting tomatoes or areca nuts. In planting, they must have direct sunlight. Apart from that, planting coffee and cocoa seeds must be carried out at night, around 07.00 - 08.00 pm. It is to prevent pests from attacking coffee and cocoa pods. Furthermore, around the planting hole of the nutmeg seeds is planted *Crescentia cujete* L. (called *no*). It is hoped that the produced nutmeg will be like *Crescentia cujete* L. These species of plants are planted in a scattered manner so that the planted tree produces many fruits scattered to every branch or twig of the tree. The

results of the interview revealed that the rituals of planting various cultivated plants were only carried out in the fields. Meanwhile, the rituals for planting in the yard (*kintal*) were not carried out.

Several species of secondary crops and seasonal crops planted in the fields have customary procedures when being harvested, such as the harvested yields in a form of tubers like sweet potato (called as *up*), cassava (called *asbi*), and taro (called *bia*) must be harvested on Tuesday, and those picked in the middle of plants like corns, coffee, nutmeg, and chocolate must be harvested on Wednesday to Friday. In addition, coconut harvesting can be conducted on the 13 - 16th day of each Hijri month (a month in the lunar calendar of Islam). It needs further studies in the fields of sociology and cultural anthropology to find out the reasons behind the harvesting time so that its scientific validity can be discovered. The fields planted with various species of plants are only used for 5 – 7 years for secondary crops and seasonal crops. This is due to the fact that plantation crops, especially coconuts, are already tall so that their canopy prevents secondary crops and annual crops from getting the sunlight needed for their growth.

The Species of Plants Cultivated by the Makian People in Bale Village, Halmahera Island

One thing that is very interesting about the farming life of the Makian people is that they still use traditional methods to date. This can be seen in the system that they adhere to, both regarding technical implementation, such as the use of farming tools and methods, and regarding those related to belief, for example during planting or harvesting, especially for main commodities. From the results of observations in *kintal* and *doba*, there are 37 species of plants cultivated by the Makian people (see Table 2). The results of the interview revealed that the diversity of plant species cultivated in the farming business in Bale Village was not as much as those cultivated in their home village (Makian Island). They argued that apart from poor soil fertility, there are also quite a lot of animal pests that damage their agricultural products.

Table 2. Species of plants cultivated by the Makian people in Bale Village, Halmahera

No	Scientific Name	Local Name	Family	Planting Location
1	*Colocasia esculenta* (L.) Schott	Bi'a	Araceae	Doba
2	*Ipomoea batatas* (L.) Lam.	Up	Convolvulaceae	Doba
3	*Manihot esculenta* Crantz	Asbi	Euphorbiaceae	Doba
4	*Arachis hypogaea* L.	Bonces	Leguminosae	Doba
5	*Solanum lycopersicum* L.	Tamate	Solanaceae	Kintal & Doba
6	*Zea mays* L.	Gucila	Poaceae	Doba
7	*Capsicum frutescens* L.	Miasih	Solanaceae	Kintal & Doba
8	*Momordica charantia* L.	Popare	Cucurbitaceae	Kintal & Doba
9	*Vigna radiata* (L.) R.Wilczek	Pua	Leguminosae	Doba
10	*Solanum melongena* L.	Palola	Solanaceae	Kintal & Doba
11	*Carica papaya* L.	Kapaya	Caricaceae	Kintal
12	*Kaempferia galanga* L.	Cokur	Zingiberaceae	Kintal & Doba
13	*Ocimum basilicum* L.	Balakama	Lamiaceae	Kintal & Doba
14	*Cymbopogon citratus* (DC.) Stapf	Bonde	Poaceae	Kintal
15	*Alpinia galanga* (L.) Willd.	Lakuas	Zingiberaceae	Doba

16	*Saccharum edule* Hassk.	Dowalo	Poaceae	Kintal & Doba
17	*Musa* spp.	Loka	Musaceae	Kintal & Doba
18	*Myristica fragrans* Houtt.	Pala	Myristicaceae	Doba & Kintal
19	*Zingiber officinale* Roscoe	Owai	Zingiberaceae	Kintal & Doba
20	*Cocos nucifera* L.	Niwi	Arecaceae	Doba
21	*Amaranthus hybridus* L.	Bubu	Amaranthaceae	Kintal
22	*Theobroma cacao* L.	Coklat	Malvaceae	Doba
23	*Coffea canephora* Pierre ex A.Froehner	Kopi	Rubiaceae	Doba
24	*Oryza sativa* L.	Hamasik	Poaceae	Doba
25	*Mangifera indica* L.	Wei	Anacardiaceae	Kintal & Doba
26	*Citrus microcarpa* Bunge	Lemonsang	Rutaceae	Kintal
27	*Syzygium aqueum* (Burm.f.) Alston	Gora	Myrtaceae	Kintal
28	*Saccharum officinarum* L.	Top	Poaceae	Kintal & Doba
29	*Pandanus amaryllifolius* Roxb.	Burowangi	Pandanaceae	Kintal
30	*Areca catechu* L.	Wua	Arecaceae	Kintal
31	*Capsicum annuum* L.	Miasilolo	Solanaceae	Kintal & Doba
32	*Citrus hystrix* DC.	Hopapua	Rutaceae	Kintal & Doba
33	*Citrus aurantiifolia* (Christm.) Swingle	Jeruk nipis	Rutaceae	Kintal & Doba
34	*Artocarpus heterophyllus* Lam.	Nangka	Moraceae	Kintal & Doba
35	*Oryza glutinosa* Lour.	Pulo	Poaceae	Doba
36	*Citrus maxima* (Burm.) Merr.	Hololo	Rutaceae	Doba
37	*Cymbopogon citratus* (DC.) Stapf	Bundi	Poaceae	Kintal

As a source of income, coconut plantations play a very big role because coconut plants have the ability to produce fruits throughout the year continuously and can be sold to meet the needs of farmers. Tarigans (2005) reported that the number of people whose lives depend directly or indirectly on coconut trees is estimated to be not less than 12.8 million people/year or 14.5% of the labor force in the plantation sub-sector. Meanwhile, cocoa and coffee have only recently been recognized by Makian farmers (Tarigans, 2005). Those are also a relatively new form of farming. These species were introduced by the government because they have high economic value at this time and can produce yields almost in all seasons.

The development of civilization today affects the existence of local wisdom. The erosion of local wisdom is influenced by changing norms in society, the economic conditions of the community, the reluctance of the younger generation to study the wisdom, religious interpretations of local wisdom practices, government intervention that changes the system or mechanism that supports local wisdom, and the globalization factors. According to Nindatu *et al*. (2018), cultural globalization affects local culture (Nindatu *et al*., 2018).

CONCLUSIONS

The Makian ethnic group in Bale Village is a farming community that relies on their livelihood by cultivating their land to meet their daily needs. They are traditional farmers who still carry out agricultural activities based on the customs of their ancestors. The agricultural ritual tradition that they carry out is a form of prayer to God for gaining bountiful

crop yields, not failing, and getting good seeds for the next planting. A good harvest is also highly dependent on the obedience of farmers to the rules that have been obeyed from generation to generation. The species of plants they cultivate are mainly food crops. Plantation crops that they develop and become their main commodities are coconut, nutmeg, cocoa, and coffee. The way for Makian farmers to maintain their local wisdom is by not selling their field or land to other people.

SUGGESTION

This study needs further research, especially concerning the valuation of agricultural crops of the Makian people in Bale Village, Halmahera Island, North Maluku.

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