**LOCAL WISDOM IN SHIFTING CULTIVATION MANAGEMENT OF DAYAK NGAJU LOCAL COMMUNITY, CENTRAL KALIMANTAN**

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**Abstract**

*This study aims to: Identify the local wisdom in the management system of shifting cultivation in Dayak Ngaju, Central Kalimantan. The study took place at Mantangai Tengah Village and Mantangai Hilir Village, Mantangai District, Kapuas Regency, Central Kalimantan. Purposive sampling was used as the method to determine the location and sample of the research (70 people). The primary data used were farmers or cultivators and key informants while the secondary data were obtained from BPS and related agencies. The analysis of the data was performed with a descriptive qualitative technique. The results show that the management system of shifting cultivation conducted by local people is inseparable from the local wisdom contained. This is indicated by some activities which explain that phenomena such as; forest clearing, land burning, land management, technology utilization, and ceremony accompanying the activities of shifting cultivation.*

**Keywords**: Central Kalimantan, Dayak Ngaju, Local Wisdom, and Shifting Cultivation.

1. **Introduction**

The people of Dayak Ngaju inhabit almost one-half of the population in Central Kalimantan where this sub-ethnic occupies 6 districts of a total of 14 districts, namely; Palangkaraya City, Kapuas Regency, Pulang Pisau Regency, Gunung Mas Regency, Katingan Regency, and Kotawaringin Regency. This community also dominates the language (means of communication) in the entire area of ​​Central Kalimantan. Generally, agriculture is their main livelihood (Central Bureau of Statistics of Central Kalimantan, 2017)

As a local community, the main feature of agriculture is the shifting cultivation system which is generally done by the community. For them, shifting cultivation system is a local wisdom whose knowledge and skills are derived from the ancestors. This system does not use any technology including the type of seeds grown. In general, the community will use local seeds obtained from previously stored harvests that are not sold as they have the typical flavors, shapes, and ways to manage. The farmers do not use technology because it does not need intensive maintenance, pesticides, fertilizer, and modern mechanization tools. This is similar to previous research related to local community activities and its local wisdom (Utina 2012; Yunus 2012; Kaushik *et al.,* 2013; Telaah, P. *et al* ., 2015; Mokpokpo, A. K. *et al.,* 2016).

According to Provincial Regulation of Central Kalimantan Number 5 the Year 2011, local wisdom is cultural values ​​and customs that serve as guidance in the interaction between individuals or groups with other human beings and its relationship with nature in terms of natural resources management and utilization. The shifting cultivation process of the local people in Central Kalimantan starts from going to the forest to search for suitable land to be cultivated as a field which is done communally (*gotong royong* or *had*) in all togetherness and led by a respected tribal chief whose trusted to have high knowledge about nature, type of soil, wind direction, star direction, and the right time to find the suitable land as well as to grow and maintain the farm (Alamsyah, 2010).

The problems of shifting cultivation in Central Kalimantan are related to the issues of sustainability as well as forest and land fires both nationally and internationally. The local or traditional agricultural system is based on years of observation of the surrounding natural environment; the farmers have local knowledge for survival including cultivation. The problems in shifting cultivation are not on the matter of good or bad. Shifting cultivation is known to cause forest and land fires but the management of this system is closely related to the local communities who do the farming activities based on local wisdom as knowledge and skills. This is in line with several previous studies stating that forest fires are not caused by shifting cultivation done by traditional society but many contributing factors (Brooks 2015; Minnemeyer *et al.,* 2015; Nongrove e*t al.,* 2015).

Cultivation tradition, local wisdom, as well as the skills possessed by the cultivators, become the basis of this study to see the binding and important local wisdom that needs to be preserved as local knowledge and wisdom of Dayak Ngaju local community in Central Kalimantan. This is because the system of shifting cultivation is seasonal food producers and used as the main livelihood to fulfill the needs of family food. The aim of this study is to identify and describe the presence of local wisdom in the management system of shifting cultivation in Central Kalimantan that is related to government policies prohibiting land and forest burning.

1. **Research Methods**
   1. **Research Sites**

The research was conducted in the area of ​​Mantangai Tengah Village and Mantangai Hilir Village, Mantangai District, Kapuas Regency, Central Kalimantan Province. The original population in this area is 100% active cultivators with a low level of education. About 52% of them only graduated from elementary school with an average income level of IDR 9,000,000 per year. This area is tropical and humid (60% to 90% humidity) with a temperature between 210C to 230C. It has moderate sunlight intensity and rainfall between 1000-2600 mm/year. The highest rainfall occurs in October-March while the lowest usually happens in between June and August.

The topography is relatively flat with an altitude between 0-28 m above sea level with the slope of the land ranging from 0-18%. Generally, the condition of the managed soil and farmland is fine-to-medium-textured alluvial soils which is a peat-potted soil containing acid sulfate. The thickness of the peat ranging from 0-50 cm in types of B to C and D consisting of deep peat and shallow peat. The level of acidity (*pH*) of the soil ranges from 3.5 to 5.5 so that the tillage needs to be done carefully. In order to reduce the level of soil acidity, it is necessary to calcify the land to be managed. This study was conducted over 12 months from May 2017 to May 2018.

* 1. **Research Sites and Sample Determination Method**

The purposive sampling method was used to determine the sample and location of the research (Rianti, 2014). There were 70 samples consisting of 60 farmers and 10 key informants in this research. The researchers chose this location due to the existence of shifting cultivation that still many so that the information about the condition of shifting cultivation done by the local community can be obtained. The research took place for 12 months from May 2017 to May 2018. The source of the data was derived from primary data and secondary data.

* 1. **Data Collection and Analysis Method**

The data was collected by using survey, observation, and in-depth interviews. Consequently, the data analysis was done with descriptive qualitative technique (Das 2014; Irianto, H 2015) emphasizing on the social-economic condition of the community and farmers by 1) identifying the local wisdom of Dayak Ngaju local community in the management system of shifting cultivation, 2) describing the local wisdom in the management system of shifting cultivation in Central Kalimantan.

1. **Results and Discussion**
   1. **Local Wisdom in Farming Activities**

The identification results in this study indicate that the current land preparation in the shifting cultivation system of Dayak Ngaju local community in Central Kalimantan is seen from the local wisdom that has not changed from the past. It is known that the local culture through local knowledge of the community in managing the shifting cultivation remains the same in terms of understanding and practice. Rahman *et al.,* (2012) said that the main driving force of the traditional farming activity (shifting cultivation) is the culture who has been practiced from generation to generations. The traditions limit them to integrate superior varieties, species, and cultivation techniques because they are suspicious if there is a possibility of intensive agriculture.

Local wisdom in this shifting cultivation system is the local values understood and recognized as guidance in farming business by the community. Move the farming area, use customary rituals to get good land, and clean the land with slash and burn technique are the traditional way in land clearing. It is considered cheap and fast with the assumption that burning can improve the soil fertility and add more nutrients to it.

Erni (2015) wrote that it is important to support the role of the local community in environmental conservation, economic activity, and social activity through a sustainable traditional agricultural activity which has been recognized gradually. It is also important to appreciate the contributions from the local community through sustainable ecosystem management and development in the form of knowledge about the natural environment and agricultural practice that is increasingly understood and appreciated.

This shifting cultivation system is a traditional agricultural business which does not use any technology but more likely to use the system of organic farming as well as customs (traditions) and skills that are known by the community. For them, shifting cultivation is an agricultural enterprise that is laden with local wisdom in practice where this system does not exploit the forest largely or widely but adapt to the needs and abilities of the families in the farming community. This is illustrated in Table 1 as follows:

Table 1. Local Wisdom of Dayak Ngaju Local Community Reflected in the Shifting Cultivation Activity.

|  |  |  |
| --- | --- | --- |
| **Terms in Dayak Ngaju** | **Description** | **Information** |
| *Setiar-Sedenter-Eka Satiar* | **Leave the residence temporarily to manage the forest** | A local term which can be interpreted as an activity in shifting cultivation management |
| *mahimba* | Go into the forest to get suitable land for the farming activity | This activity is done by the community and led by the tribal chief as guide and leader in the ritual |
| The ritual includes prayer asking for safety and prosperity in everything they do |
| *manehar* - *maneweng,* | Forest clearing | Cutting down the big woods (tree) |
| *Mandirik-manatas* | Land clearing | Slashing the shrubs and grass |
| Making a track (route) for the entrance and exit to the location |
| *Tatas* | Ditch divider for the land | Making a ditch or burn barrier |
| *manusul tana* -*sahewan* | Burning the land with particular tools | The land burning is carried out jointly where the people (in charge) have been determined synchronously by paying attention to the instructions from the leaders or officers. |
| The special burning tool is called *sahewan* made from the dry bamboo stem (2-4meters). Besides used as an igniter, it also can be used as a torch. |
| *Hajamuk*- *wayah tugal* | Plant the rice by making holes in the soil with wood (*ditugal*) | This is the biggest ceremony for Dayak Ngaju people in starting the rice planting. This is characterized with festivity and excitement aiming to draw closer the rice spirit (*hambaruan parei*) with the rice plants (*parei*). |
| *manggetem parei.* | Harvesting | The rice plants are allowed to grow until the harvest time iscoming. |
| - | Land fallow (*bera*) | The land is left to rest for a while. In shifting cultivation, fallow means that the land cannot be planted with rice again because it already enters the 3rd or 4th times of farming. According to their understanding, the land is not productive anymore for rice, they might going to grow rubber and other annual plants in the land |
| - | Rotation | The shifting or moving of cultivators to the new location. Generally, they will look for another land if they already have 3 to 4 years of farming in the previous land. |

Source: Processed primary data, 2018

Therefore, this farming culture that has the essence of local wisdom can be understood as; (1) a harmonious relationship with nature as a comprehension that forest and land is a source of life, (2) not the cause of forest and land fires because the managed land is not too extensive (1-2 ha) supported with firebreaks and short combustion time (3-4 hours), (3) the activities are carried out communally and jointly *(gotong royong*), and (4) a local knowledge that has good values. This is in line with Kurniawan (2011) that the shifting cultivation process is always performed through regular stages. Generally, it is preceded by traditional ceremonies or customary rituals containing the values of nature conservation and local wisdom in terms of ecological conservation, food security, and socio-cultural condition of the local community.

Lumangkun *et* *al.,* (2017) asserted that the local wisdom in shifting cultivation activity is portrayed in several rituals, including year closing *(Nyabang / Basawak),* spells reading *(Neriu),* dancing *(manarik),* chicken cutting *(Mentaman),* eggs breaking *(Tareng Temiyang* ), cleaning up the carcass of *Bontongk*, rice planting (*Nurungk*), land clearing (*Ngudungk*), and rice harvesting (*Ngatok*).

* 1. **Local Wisdom in Cropping System**

Cultivation becomes a culture of managing forest and land. This is considered important by local people as a way of life which means that there is no way to manage the forest and land other than farming. Such livelihood, relationships with nature, and maintenance of living and environment will be obtained because of this cultivation culture. Singh *et* *al.,* (2016) found that a shifting cultivation system conducted by local people is the unification between socio-cultural, local knowledge of the traditional agricultural system, and biophysical characteristics from the locality.

The local values contained ​​in the shifting cultivation system that is important for the community are: the land is planted with various types of food crops by a means of heteroculture (rice, tubers, vegetables and horticulture, herbs, spices, fruits, rubber) to meet the food needs of the family. This is called by Patel *et* *al.,* (2013) as "the system of cultivation canteen" where almost all types of cereals, vegetables, and trees are planted in one field together.

The cropping pattern in the shifting cultivation system is usually illustrated in the planting calendar for a year of production. This is also known as the cultural wisdom of the community in determining the type, timing, and pattern of land management as shown in Table 2 below:

Table 2. Local Wisdom of Dayak Ngaju People Reflected in One-year Heteroculture Agricultural Pattern System.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Rice, Corn, Specific Vegetables | | | | | | |  | | | | |
|  | | | | | Vegetables and Horticulture | | | | | |  |
|  | | | | | | | | | | Land Processing:  - Clearing  - Burning  - Preparation | |

Source: Processed Primary Data, 2018.

The changes in cropping patterns are shifting. Intensive cropping patterns are permanently done throughout the year. Back then, a cultivation management was done with a shifting system, but now it started to change towards a sedentary agriculture. Temudo *et al.,* (2015) argued that the shifting cultivation system transitioning to sedentary agriculture in Guinea-Bassau Africa did not affect the shortage of land, short-fallow, and soil fertility. While on the other hand, Van Vliet *et al.,* (2013) believed that the increased population, the access to markets, and the desire to control land have caused the shifting cultivation system turning into a classical intensification system in the Brazilian Amazon region.

The changes from shifting cultivation system to sedentary agriculture are portrayed in Table 2 (planting calendar). Rice crops are governed from October to April and then in between March and August, the land is managed for vegetables and horticulture. Starts from August to September, the land is cleared again for the rice fields. Generally, the farmland is managed by various crops in a single field. This is a tradition from the local community in utilizing their fields including some specific types of vegetables (eggplant, *katuk*, taro, aubergine). Those are some types of plants that are allowed to grow along with the growth of rice and corn as food crops by the community.

The results of this study are in accordance with the previous research that shifting cultivation system in multiple regions around the world experiencing a transition to become unsustainable and either settling or semi-settling. Khadka (2010) proposed that the shifting cultivation system in Nepal (Khoriya) has transitioned to a more lucrative agroforestry farm. Evans *et al.,* (2011) added that shifting cultivation system has been transitioning to a rubber forest in Laos. Furthermore, Adams *et al.,* (2013) revealed that the shifting cultivation system has undergone a transition that led to a reduction in young secondary forest area as well as decrease the heterogeneity of landscapes in Quilombola, Brazil. In line with that, Mangora (2012) said that the period of 4 years of fallow leads to an unsustainable shifting cultivation activity in Tanzania, Africa. Ribeiro Filho *et al.,* (2013) also asserted that in Brazil, the unsustainability of shifting cultivation activity is caused by the changes in social, economic, political, and cultural conditions of the communities.

1. **Conclusion**

The identification of local wisdom in the management system of shifting cultivation of Dayak Ngaju community in Central Kalimantan portrayed in a cultivated culture that has the essence of local wisdom can be understood as; (1) a harmonious relationship with nature as a comprehension that forest and land is a source of life, (2) not the cause of forest and land fires because the managed land is not too extensive (1-2 ha) supported with firebreaks and short combustion time (3-4 hours), (3) the activities are carried out communally and jointly *(gotong royong*), and (4) a local knowledge that has good values. However, this system has transitioned from shifting cultivation to intensively settled cultivation system with changing cropping patterns throughout the year.

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**Abbreviation**

Dayak Ngaju: One of the Dayak sub-ethnic groups in Central Kalimantan.

Rice; *gogo* rice: Dry-land rice cultivated by local communities.

Nampui, Garagai: Name of local rice cultivated by the community in which it is known to almost extinct.

Local community: Native or indigenous people who live in the research site and are the sample of the research.

Heteroculture: diverse types of plants cultivated in one land.

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