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DIRECT ECONOMIC VALUE OF LAND USE BY THE MERATUS DAYAK COMMUNITY

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ABSTRACT

Forests are the basis of social life and support for the sustainability of life and economy for the Meratus Dayak community. Almost the entire Meratus Dayak community has a livelihood as farmers and the bahuma or farming and gardening has a close relationship with the forest. The purpose of this study is to analyze the direct value of land use commodities by the Dayak Meratus community, specifically the people of Loksado Village, Lok Lahung Village, and Ulang Village. Data collection was carried out on 20 respondents in each village which were selected purposively by interview and direct observation. Field commodities are rice and seasonal crops, while garden crops are annual crops. The direct value of the use of garden land has a greater value, which is Rp. 1,317,657,500.00 compared to the direct value of land use for fields of Rp. 878,678,000.00. The village with the highest total direct value for the field category is Lok Lahung Village, which is Rp. 325,460,000.00, followed by Loksado Village with a total of Rp. 313,763,000.00 and the village of Ulang with a total of Rp. 239,455,000.00. Meanwhile, for the use of garden land, Lok Lahung Village has a higher value of Rp. 699,264,000.00 than Loksado Village with a value of Rp. 343,3100,000.00 and Ulang village with a value of Rp. 275,083,500.00.

KEY WORDS

Meratus Dayak, direct value, land use, field, garden.

The development of economic and agricultural activities does not affect forest resources which have an important role in livelihoods and meeting the needs of people in rural areas. For example in developing countries, some farmers derive their income from livelihoods that utilize forest resources (Wunder et al., 2014). Based on studies that have been conducted, forests have an important role in poverty alleviation because income from forest resources has a large contribution to life in rural areas. All forest resources, both forest products and land use products in the forest play a role for households in rural areas to fulfill their needs even during disasters and famine seasons (Ali & Rahut, 2018).

The Meratus Mountains have a high level of diversity with dominant vegetation such as white meranti, red meranti, medang, durian, gerunggang, and kempas. The forest area, especially in the upper part of the Meratus Mountains, has an important function for South Kalimantan as a water catchment area. Geographically, the Meratus Mountains can be categorized into 26,345 ha of mountain forest, 11,345 ha of highland forest, and unproductive dry land (Herman et al., 2021). Based on the observations of Al Fatah & Minar (2004); Herman et al., (2021), most of the land use around the protected forest is cultivated land, secondary forest and shrubs, as well as community-owned plantations.

The Meratus Dayak Tribe is an indigenous people who live around the Meratus Mountains. This community has been known for a long time as a tribe that rules around the Meratus Mountains (Herman et al. 2021). The Meratus Dayak community utilizes forest resources to fulfill their daily needs using land for farming with local wisdom owned by the community (Fahrianoor et al. 2013). This local wisdom cannot be separated from the culture of the local community because it is related to the system of religion, language, economy, technology, education, social organization, and the arts (Kristian et al. 2019). Local wisdom is a strategy that can be used to maintain ecological balance in various problems such as natural disasters or human actions (Fahrianoor et al. 2013). The local wisdom of the



community in managing land for farming is known as the rotation system. The rotation system is an integrated and sustainable agricultural system. The rotational system applies land clearing for cultivation activities that are rotated with annual crops in the fallow period after the cultivation period is complete to increase soil fertility and production levels (Kristian et al. 2019). In this system, people move from one land to another after being used for cultivation for approximately 2 years to rest the land. If the first land left is fertile after the fallow period, the land will be re-opened for farming and this system will be sustainable (Kristian et al. 2019; Van et al. 2013).

In farming activities, apart from producing rice for daily consumption, the Dayak Meratus people also plant various kinds of secondary crops and long-term crops (Weihrer 2014). In addition, some communities also use non-timber forest products such as resin and rattan. There are also gardens such as rubber, cinnamon, and fruit which are commonly planted in ex-cultivated areas (Fahrianoor et al. 2014). For the community, farming is their basic livelihood, and utilizing forest and plantation products is a secondary livelihood (Herman et al., 2021). This is similar to what people in Sri Lanka do farming with a polycultural system with local wisdom. Through this system, Sri Lankan people have been practicing sustainable agriculture for more than 2500 years. The system that has been practiced in Sri Lanka has many advantages such as stable production, income from different commodities and low pests and diseases (Senanayake, 2006). People in India's northeastern Himalayas are also familiar with a rotating system known as jhum. Jhum is known as an ecologically sustainable and economically viable agricultural system. This system was found to be more economically efficient than other forms of agriculture such as terracing in hilly areas with high rainfall (Bhagawati et al. 2015). According to Kristian et al. (2019), the rotation system has a positive impact on the environment as well as in the social and economic fields.

Economics is a tool used as a tool in conducting economic assessments. Economic valuation is one of the methods used to assess the results of natural resources quantitatively, both based on market prices and non-market prices. Economic valuation can be said to be a process for assessing or assigning prices to goods or services resulting from natural resources (Kristiningrum et al., 2020). Economic valuation of natural resources can be defined as the study of the allocation of natural resources such as water, land, fish, and forests. Natural resources provide many benefits in meeting human needs, but limitations in knowledge and technology can hinder their use (Darusman 2012). Economic assessment provides a more comprehensive assessment of the various goods and services produced by the ecosystem so that it can provide more detailed information in sustainable forest management (Roslinda et al. 2017). Therefore, an economic assessment needs to be carried out on forest resources because the interaction between plants can affect productivity which will later be related to economic assessment.

The forest has become a home for the Meratus Dayak people who describe their lives. For the Meratus Dayak community, the forest is the basis of social life and a support for the sustainability of life and the community's economy. Almost the entire Meratus Dayak community has a livelihood as farmers and the bahuma or farming has a close relationship with the forest. The bahuma activity with a rotational system is considered to be the cause of deforestation, but actually this activity is more adaptive in maintaining the original forest structure, which means this system supports conservation activities (Kristian et al. 2019). Therefore, through this research, the potential of the results of land use around the forest which is still unknown can be assessed and the benefits for the community are known. The purpose of this study was to analyze the direct value of land use commodities by the Dayak Meratus community, specifically the people of Loksado Village, Lok Lahung Village, and Ulang Village.

METHODS OF RESEARCH

Research on direct value analysis was conducted in three villages, namely Loksado Village, Lok Lahung Village, and Ulang Village which are located in Loksado District, Hulu



Sungai Selatan Regency. Geographically, Loksado District borders Kotabaru District in the east, Banjar District in the southeast, Padang Batung District in the west, and Telaga Langsung District and Hulu Sungai Tengah District in the north. Loksado District which is located around the Meratus Mountains is located between 115°38'00" - 115°52'00" East Longitude and 2°28'00" – 2°54'00" South Latitude. The selection of these three villages as research locations was due to the fact that the people in the three villages still carried out farming activities by utilizing the surrounding forest.

Respondents as samples in this study were the people of Loksado Village, Lok Lahung Village, and Ulang Village. The selection of respondents was carried out by purposive sampling method as many as 20 respondents with the criteria of respondents being people who farmed and gardened by utilizing the land in the three villages. The data in this study are categorized into primary data and secondary data. Primary data were obtained from interviews with the help of questionnaires to respondents from Loksado Village, Lok Lahung Village, and Ulang Village as well as direct observations made in the field taking a commodity from the use of the land. Secondary data in the form of data on the general condition of the research location from related agencies and literature that supports the research.

The data analysis used in this study uses a direct value calculation with a market price approach (Hastari & Yulianti, 2018). The calculation formula used is as follows:

$$NE = f \times V \times Hk$$

Where: NE = Direct value of land use results taken by the community from the forest in one year (Rp/year); f = Frequency of taking land use results in one year; V = Total yield of land use obtained by the community in one take (bush/kg/liter/bundle/fruit/bunch); Hk = Price of land use (Rp).

RESULTS AND DISCUSSION

Communities have their own way of measuring their land. To find out the area of land cleared by measuring how many bushels of rice can be planted on the land. When converted, the area of land planted with 5 bushels of rice seeds is about 1 ha. This kind of measurement is carried out because the community clears a lot of land on sloping areas so it will be difficult to measure using a meter. Land clearing on sloping or sloping areas has several reasons. According to Soehadha (2018), sloping areas can keep plants in the fields from being attacked by wild animals because it is difficult to reach plants on sloping land. The following presents the area of land used by respondents in Figure 1 and Figure 2.

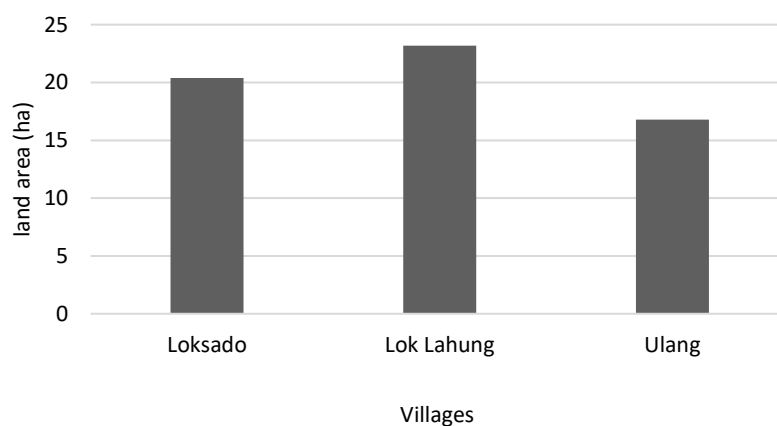


Figure 1 – Size of Land Utilized by Respondents in Loksado Village, Loklahung Village, and Ulang Village

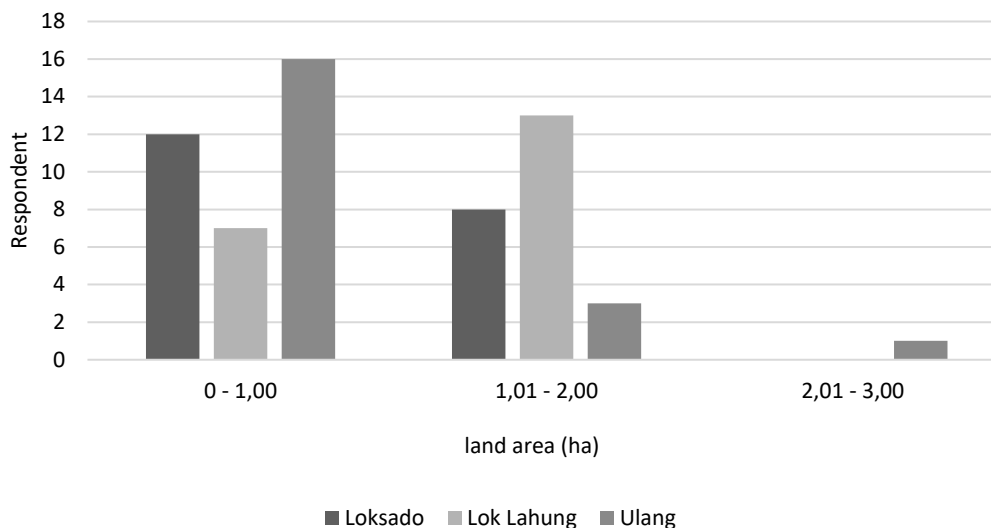


Figure 2 – Land area of each respondent

The area of land for farming and gardening in the village of Ulang has a lower value than in the village of Loksado and village of Lok Lahung. A total of 16.8 ha of land was used by 20 respondents in the Ulang village and 20.39 ha in the village of Loksado and 23.18 ha in the village of Lok Lahung. The amount of land used by the community can be influenced by the number of dependents owned by each household and the area of land that has been inherited. Figure 2 shows the area of land used by each respondent. Based on the picture, the land that is widely used is 0 – 1 ha. A total of 12 people from Loksado Village, 7 people from Lok Lahung Village, and 16 people from Ulang Village used the land with this area. For land area between 2-3 ha, only 1 respondent uses land with that area. Therefore, the community in utilizing the land is not done excessively. The land cleared for cultivation is adjusted to the needs of each family (Herman et al., 2021).

Most of the land used is the ancestral land of each family (Muhaimin et al., 2021). People use land for cultivation by clearing land that was previously cleared for cultivation by their ancestors and then passed on to each family (Hidayat, 2018). The land which is the inheritance is inherited with certain limits, so that the community must not violate these limits or there will be sanctions imposed. According to (Herman et al., 2021) if during land clearing, when burning is carried out, the fire spreads to land that does not belong to him, there will be a fine according to the loss. Therefore, the area of land used by the community will be adjusted by the inheritance they have. The Meratus Dayak community as indigenous peoples strongly adheres to existing regulations and traditions. This makes the community must know the areas that may be used, the areas to live in, and the protected areas.

According to research by Muhaimin et al. (2021), the area for cultivation by the Meratus Dayak community in Loksado District has increased from 2017 to 2019. In 2019, there was an increase of 219.5 hectares or 8.17% of the total area of Loksado District. The increase in the area for cultivation is due to the need for food and the community's economy. In this rotational rotation system, each community is estimated to have 7 to 10 cultivated areas. This increase in the area of cultivation for the community is not in accordance with the statement of Heinimann et al. (2017) which states that the area of cultivation with a rotation system is predicted to decrease. If there is a decrease in cultivated area, it will cause a decrease in local products such as rice production which has a negative impact in terms of income for the local community (Wibowo et al. 2016).

The Meratus Dayak community has local wisdom in managing land for farming. There are stages that must be done before the community can clear land for farming activities. Land for farming is cleared by burning land which has certain rules. In farming activities, the community does not use additional fertilizer so that the selection of the right land for farming is something that the community must pay attention to. The use of additional fertilizers is



replaced by the use of ash from land burning (Merang et al. 2020). The use of huma land by the people of Loksado Village, Lok Lahung Village, and Ulang Village produces commodities ranging from rice, secondary crops and vegetables. This is similar to that stated by Muhaimin et al. (2021) and Siahaya et al. (2016) that the cultivated area is dominated by rice, bananas, sweet potatoes, cassava, and peanuts. The types of commodities and the direct value of the results of land use by the community can be seen in Figure 3 and Table 1.

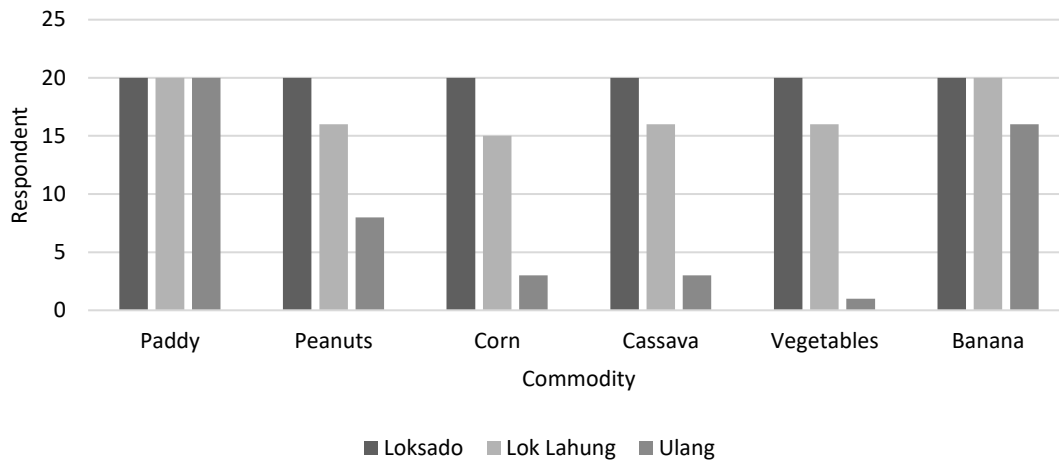


Figure 3 – Types of Commodities Resulting from Land Use in the form of Fields

Figure 3 provides an overview of the types of commodities used by respondents. Based on the picture, it can be seen that there are commodities that are not utilized by respondents in several villages. Loksado Village is a village where all respondents use all types of commodities. In Lok Lahung Village and especially in the village of Ulang, there are variations in the commodities used by the community. Not all the people of Lok Lahung Village and Revillage use the same commodity. There are some communities who only have certain commodities that are planted at the same time as rice.

Rice is the only commodity used by all respondents. Rice has a high value in the life of the Meratus Dayak community. Rice is the main commodity resulting from community cultivation which has been carried out for a long time. The use of rice in the Meratus Dayak community is only for food sources, seed sources, and traditional ceremonies. According to Herman et al., (2021), rice is a plant that needs to be respected and sanctified for the community through traditional ceremonies. Rice is a plant that has a high value in the life of the Meratus Dayak community. Therefore, rice cannot be traded. This also applies to the Baduy community who believe that rice from fields should not be sold and is usually used in community traditional ceremonies (Iskandar et al. 2019).

Not all respondents use other commodities besides rice. This is because the planting of this commodity as a companion plant for rice. Planting crops such as secondary crops and vegetables around rice is used so that rice is not attacked by pests that can interfere with rice. The variety of commodities used by the community makes pests controllable so that people do not use pesticides to eradicate pests (Kristian et al. 2019). In addition, by planting this commodity, the community can increase their income because the rice planted is not for sale. Things like this are similar to what the people in Mukoto, Zimbabwe are doing to plant several commodities to minimize losses and increase productivity (Mugambiwa, 2021).

The results of land use by the community can be grouped into 2 categories, namely: a. production, salable commodities (commercial products), and b. consumption, commodities consumed by the beneficiary and not for sale (Affandi et al., 2017). In this case, rice becomes a commodity that is only consumed by the beneficiaries and not for sale. However, there are several commodities other than rice which are only for consumption. For example, in the village of Ulang, there is one person who grows vegetables. Vegetable planting is not done on a large scale because it is only for consumption.



Table 1 – Direct Value of Land Use in the form of Fields

Commodity		Village			Amount (Rp)
		Loksado	Lok Lahung	Ulang	
Rice	(Bushel)	12965	13940	8400	35305
	(Rp)	246,335,000.00	264,860,000.00	159,600,000.00	670,795,000.00
Peanuts	(kg)	1684	1460	1214	4358
	(Rp)	44,626,000.00	38,690,000.00	32,171,000.00	115,487,000.00
Corn	(kg)	890	901	243	2034
	(Rp)	7,120,000.00	5,406,000.00	1,944,000.00	14,470,000.00
Cassava	(kg)	772	868	260	1900
	(Rp)	1,544,000.00	1,736,000.00	520,000.00	3,800,000.00
Vegetables	(kg)	457	472	26	955
	(Rp)	4,570,000.00	4,720,000.00	260,000.00	9,550,000.00
Banana	(Bunch)	598	628	2810	4036
	(Rp)	9,568,000.00	10,048,000.00	44,960,000.00	64,576,000.00
Amount (Rp)		313,763,000.00	325,460,000.00	239,455,000.00	878,678,000.00

Note: 1 bushel = 2.5 kg.

The direct value analysis of land use commodities in the form of fields resulted in the total value of the three villages being Rp. 878,678,000.00. The village with the highest total direct value is in Lok Lahung Village, which is IDR 325,460,000.00. Next, it was followed by Loksado Village with a total of Rp. 313,763,000.00 and the Village of Ulang with a total of Rp. 239,455,000.00. The area of land use can affect the direct value because it is related to the yields obtained. Lok Lahung Village has the largest land use area compared to all villages although there are some commodities that are not utilized by respondents in the village. Meanwhile, the village of Ulang has the smallest value because of the smallest land use area and many respondents do not use certain commodities. The total production of a commodity can also affect the direct value of the commodity. However, this level of production is influenced by the fallow period of a land. As stated by Merang et al. (2020) the level of rice production increases on land with a longer fallow period. High production is influenced by the high level of soil fertility due to the process of reconditioning nutrients from vegetation that grows during the fallow period. In addition, productivity in a rotating cultivation area can be affected by weather, rainfall, pests, and diseases (Imang et al. 2018).

Of the three villages, rice is the commodity with the highest value, namely Rp. 246,335,000.00 in Loksado Village, Rp. 264,800,000.00 in Lok Lahung Village, and Rp. 159,600,000.00 in Ulang Village with a total direct value of Rp. 670,795,000.00. The high value of the rice commodity is due to the fact that all respondents in the three villages grow rice in their fields. This relates to rice which is the staple food and mandatory crop in their fields. Rice yields on community land can meet the food needs of the family for a full year. If there is a crop failure, the community still has rice stocks for the next 3 to 5 years. Based on applicable customary law, storing rice in barns can ensure that their food needs are met in the event of crop failure (Hamdani et al., 2016).

Peanuts became the commodity with the second highest value in Loksado Village of Rp. 44,626,000.00 and Lok Lahung Village of Rp. 38,690,000.00. However, in the village of Ulang, the commodity with the highest value after rice is bananas with a value of Rp.44,960,000.00. Based on the number of beneficiaries, respondents in the village of Ulang who grow bananas on their land are indeed more than respondents who cultivate peanuts. The number of bananas harvested in the village of Ulang is much higher than the other two villages, so that the people of the village of Ulang prefer bananas to be planted on their land. Cassava is the commodity with the lowest value in the three villages. This is because not all respondents cultivate cassava on their land and cassava has a low market price compared to other commodities. Based on this, the direct value of a commodity is based on the number of people who use it, the number of harvests, and the high and low market price of a commodity.

The use of garden land for the community is broadly divided into gardens for rubber, cinnamon, candlenut, and fruit (Fahrianoor et al. 2014). The types of commodities of the



Meratus Dayak community in ex-cultivated areas have differences with the Outer Baduy community who mostly use coffee, sugar palm, and cocoa (Iskandar et al. 2019) The types of commodities and the direct value of land use for plantations can be seen in Figure 4 and Table 2.

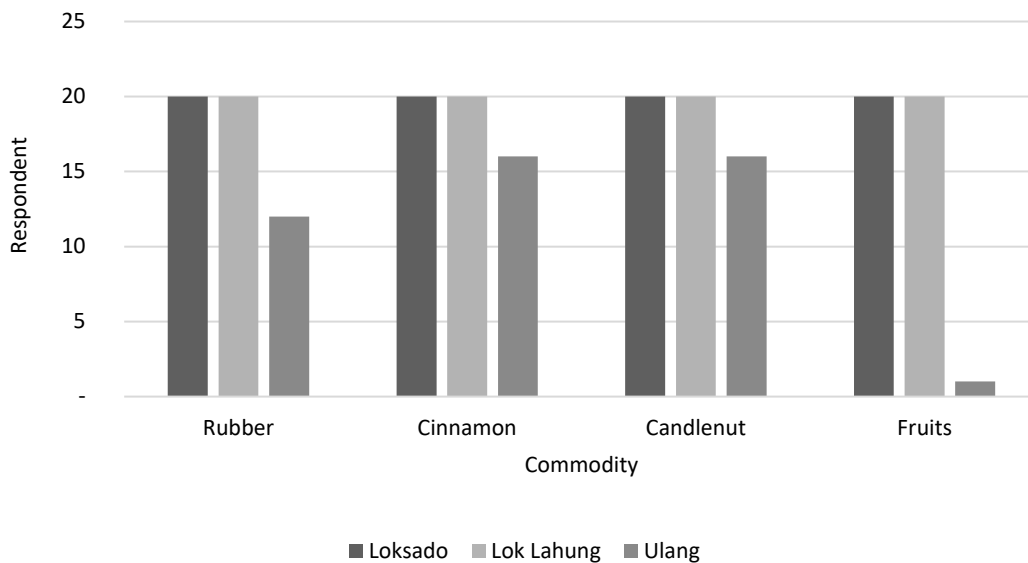


Figure 4 – Types of Commodities Resulting from Land Use in the form of Gardens

Figure 4 illustrates the types of commodities used by the community in their gardens. Based on the picture, it can be seen that Loksado Village and Lok Lahung Village use their garden land to plant the four commodities. In contrast to the village of Ulang, which has a variety of plants found in their gardens. The people of many villages use more cinnamon, candlenut, and rubber which have more than 10 respondents compared to fruits where there is only one respondent. Cinnamon and rubber harvesting that can be done at any time regardless of the season and harvesting of candlenuts with high yields every year have caused the people of the village to use these commodities more than fruit.

Candlenut and cinnamon are commodities that many people plant in their gardens. In garden areas or ex-cultivated land, many annual plants such as candlenut and rubber are also found. This is similar to the research of Karmini et al. (2021) which states that in secondary forest of ex-cultivated areas, the Moraceae family has a high important index value so that the family can be said to dominate. Cinnamon is a commodity that is widely used because it can be harvested from the age of 3-5 years, although the results are not too good and can be harvested at the age of 15 years with better results. The high selling price of cinnamon also affects the number of people who use cinnamon to be planted on their land.

Rubber and fruits becomes the next commodity that is widely used by the community. Rubber plants and fruits also have a long period of time in use. According to Fahrianoor et al. (2013), rubber can be tapped from the age of 7 to 25 years and can be tapped at any time regardless of the harvest season. Many people use rubber because rubber can be an important resource in the future (Weihreter 2014). This is because many people choose vegetation that can resemble forest species such as rubber and tengkawang (Siahaya et al. 2016). Therefore, rubber is more widely used compared to fruits, which depend on the season at harvest. Depending on the harvesting of fruits with the harvest season, fruits have a lower frequency of harvesting the amount of harvest compared to other commodities. This causes not many people to grow fruit. The different types of plants planted are usually planted to meet family needs such as planting fruit trees (Herianto et al. 2018). The fruits that are widely used by the community are durian, papakin, cempedak, rambutan, jackfruit, langsung and several types of mango.



Commodities resulting from the use of garden land by the community are mostly categorized in the production category. Because most of the commodities produced from garden land are used as additional income by the community. Some commodities that become superior commodities make these commodities known to the general public so that some people produce these commodities on a larger scale. However, there are also commodities that are commonly used for consumption and production when harvested in large enough quantities such as fruits.

Table 2 – Direct Value of Plantation Land Use

Village	Commodity Value (Rp)				Amount (Rp)
	Rubber	Cinnamon	Candlenut	Fruits	
Loksado	257,262,000	34,595,000	19,253,000	32,200,000	343,310,000
Lok Lahung	583,848,000	53,625,000	2,041,000	59,750,000	699,264,000
Ulang	67,070,000	173,105,000	31,708,500	3,200,000	275,083,500
Amount (Rp)	908,180,000	261,325,000	53,002,500	95,150,000	1,317,657,500

Table 2 shows the direct value of the commodity used on plantation land. Based on the table, it can be seen from the three villages, Lok Lahung Village has a higher direct value of garden utilization by Rp. 699,264,000.00 than Loksado Village and Ulang Village. This can be attributed to the larger land area used by the Lok Lahung Village community than the other two villages. The main commodity of all land use products is rubber. This is because rubber in Lok Lahung Village has the highest value, which is Rp. 583,848,000.00 than other commodities, both in Lok Lahung Village and in the other two villages. Rubber itself accounts for 83% of the total land use in Lok Lahung Village.

Loksado Village became the village with the second highest value after Lok Lahung Village with a total value of garden land use of Rp. 343.310.000,00. Just like Lok Lahung Village, rubber became the commodity with the highest value, which was Rp. 257,262,000.00. Candlenut is also the commodity with the lowest value in Loksado Village, which is the same as Lok Lahung Village. Based on this, rubber became the main commodity in Loksado Village because of the high value of the commodity so that 75% of the total value of the plantation land use came from rubber plantations. utilized by the community. In contrast to the other two villages, fruit commodities are the commodity with the lowest value in the three villages and the lowest in the village of Ulang itself. This is because many respondents from the village of Ulang do not use many fruits to plant on their land.

The direct value of the use of garden land has a greater value, which is Rp. 1,317,657,500.00 compared to the direct value of land use for fields. According to Hamdani et al., (2016), based on the calculation of the RCR Value, the cultivation of the community is not financially feasible so that the community relies on the results of the use of the garden to maintain their livelihood as farmers. Even so, the produce of the fields, especially rice, is the most important thing for the community. This is because with these results the community can meet their food needs for a year, it can even become food stocks within the next 3-5 years. Therefore, the community can meet other needs besides food needs through the use of land for gardens. In addition, the system of planting annual crops in gardens carried out on former cultivated areas can restore land conditions to their original state. Based on this, it can be said that the system carried out by this community is concerned with economic aspects as well as ecological aspects.

CONCLUSION

Commodities resulting from land use for fields are rice, corn, peanuts, cassava, vegetables, and bananas. The direct value analysis of land use commodities in the form of fields resulted in the total value of the three villages being Rp. 878,678,000.00. The village with the highest total direct value for fields is in Lok Lahung Village, which is IDR 325,460,000.00. Next, it was followed by Loksado Village with a total of Rp. 313,763,000.00 and the Village of Ulang with a total of Rp. 239,455,000.00. Commodities resulting from the



use of garden land are rubber, cinnamon, candlenut, and fruits. Lok Lahung Village has a higher direct value of garden utilization of Rp. 699,264,000.00 than Loksado Village with a value of Rp. This high direct value can be influenced by the number of respondents who use these commodities in one village. In addition, the area of land utilization can also affect because it is related to the yields obtained. The direct value of the use of garden land has a greater value, which is Rp. 1,317,657,500.00 compared to the direct value of land use for fields of Rp. 878,678,000.00.

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