

Study of Banana Plantation Technology Based on the Local Wisdom Method of Tribe Marind

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ABSTRACT

Agriculture is as an important sector in the economic development. It is remembering that the function in supplying food for population, feed and energy, and as the depended area of population income in the villages. Merauke Regency is planned as the national food barn. The native inhabitants of Merauke is Tribe Marind who has the customs of crop plantation by gardening, so when they are forced to crop paddy, the Marind society will be difficult to carry out consistently. Based on the reason, one of the Tribe Marind custom society figures take a step to develop the banana garden by using the local wisdom method. It is carried out since the beginning of cropping as well as the cropping maintenance until the harvest. The local wisdom method is a Wambat plantation system or a cropping technique of native Tribe Marind. This research intends to investigate the banana plantation system which is developed based on the local wisdom method of Tribe Marind (Wambat plantation system), so it can become as the information for many sides. Result shows that the development of banana plantation by applying the local wisdom of Tribe Marind is very good to be applied on the swamp area because it can give many benefits such as vegetation area, the benefit of drainage which is developed can be functioned as the fish plantation area or as the technique of water conservation.

KEYWORDS: Merauke, Marind, Wambat, Banana

INTRODUCTION

Agriculture is as the important factor in the economic development. It is remembering that the function in supplying food for population, feed and energy, and the depended area of population income in villages. This sector has the significant contributions in forming the Brute Domestic Product (PDB), the increasing of devise, and the increasing of farmer prosperity, so the agricultural development can be said as the movers motor and the supporting of national economy [1]. In order to implement the sovereignty and endurance of the national food, one of the government priority programs is to manifest the self-sufficient of paddy, corn, and soy.

The Merauke Regency is planned as the national food barn. However, it has the high enough of natural and economic potency to be developed as one of the national rice production centers. The developed area of soy commodity is applied based on the agro-climate zone. The developed area of paddy is divided into three areas of the production center area which includes the district or village of Semangga, Tanah Miting, and Kurik. The population in the three districts consists of the native inhabitants (Tribe Marind, Muyu, Mandobo, Mappi) and Tribe Java who are as the dominant transmigrate. The native inhabitants of Merauke is the Tribe Marind who have the customs to cultivate crop by gardening, so when they are forced to crop the paddy, the Marind society will be difficult to carry out consistently. Based on the reason, one of the Tribe Marind society figures are taking a step to develop the banana garden by using the local wisdom method. The method is beginning from cropping as well as the maintenance until the harvest. The banana plantation which is carried out by using the local wisdom method is mentioned as Wambat or the farming technique of the Marind native inhabitants. According to Ndiken [2], Wambat in Marind language is as “bedengan”, so the Wambat system is a vegetation plantation system by making the “bedengan” or mound.

The development of local commodity together with paddy will strengthen the food diversification and agricultural competitiveness of Merauke. Thus, the various local commodity and the other potential commodity are necessary to be developed too in a balanced way. The development of local commodity for Papua since 2015 due to the instruction of Papua Governor is SKPD has to be stimulated for the increasing of society nutrition based on the local food because the local food will not be exposed by the inflation rate or it is not susceptible to the inflation. Therefore, every family is suggested to crop the local vegetation [1]. According to Cahyono [3], the banana crop which is intensively cultivated by applying the right technology can give the high profit. And it is competitive with the other vegetation. Moreover, nowadays banana has been as the export commodities which can give the contribution to the country devise so high enough. Therefore, the development of banan crop should be obtaining the special attention. This research intends to investigate the banan plantation system which is developed based on the local wisdom method of Tribe Marind (the plantation system of Wambat) so it can become as the information source for the various sides.

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MATERIALS AND METHODS

This research is conducted during one month (June to July 2017) in the Semangga III Kupang, Kampung Waninggap Kav, Semangga District, Merauke Regency, Papua Province of Indonesia. The research uses the tools of toll=meter, machetes, GPS, and camera. The methodology consists of survey and interview.

The banana garden is located on the south longitude of $08^{\circ}20'32.9''$ and east longitude of $140^{\circ}24'31.2''$ with the height is 3 m dpl, the slope is less than 2 % or the morphological condition is plain. According to Tahiya *et.al.* [4], the soil type in Semangga area is as the order of *inceptisols* and *entisols*. However, the soil texture is clay or rude which means soil with minimal 37.5% of clay such as dusty clay as well as sandy clay. Map of location is presented as in Figure 1.

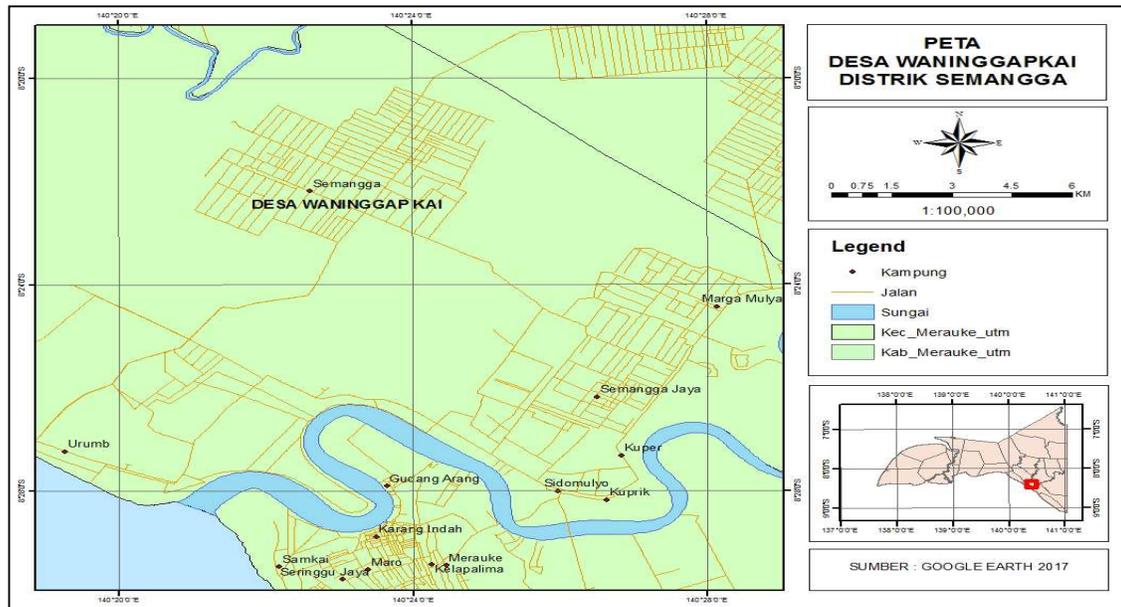


Figure 1. Map of Waninggap Kai Village

RESULTS AND DISCUSSION

Based on the soil type and the area elevation, it can be seen that the banana garden is located in the swamp area, so the utilization of the swamp area as the banana garden is necessary to be carried out accurately. According to Trubus ;6', banana crop needs enough irrigation throughout its life. The need of water is more increasing since the initial growth period and to reach the highest level after the heart is appear. Although it needs much water, however, the banana crop does not like the stagnant water in a long time until damaging the root. The banana root is as the soft one and it is easy to rot if it is submerged in water. In order to be health and well functioned; the banana root needs the good air circulation in the soil. Thus, the banana area has to be given the good drainage. Based on the banana characteristic, the Wambat method is very right to be applied on this area by building the "bedengan" or mound so the vegetation which is cropped over the mound is free from flooding during the rainy season. Figure 2 and 3 present the system of Wambat plantation and banana plantation.

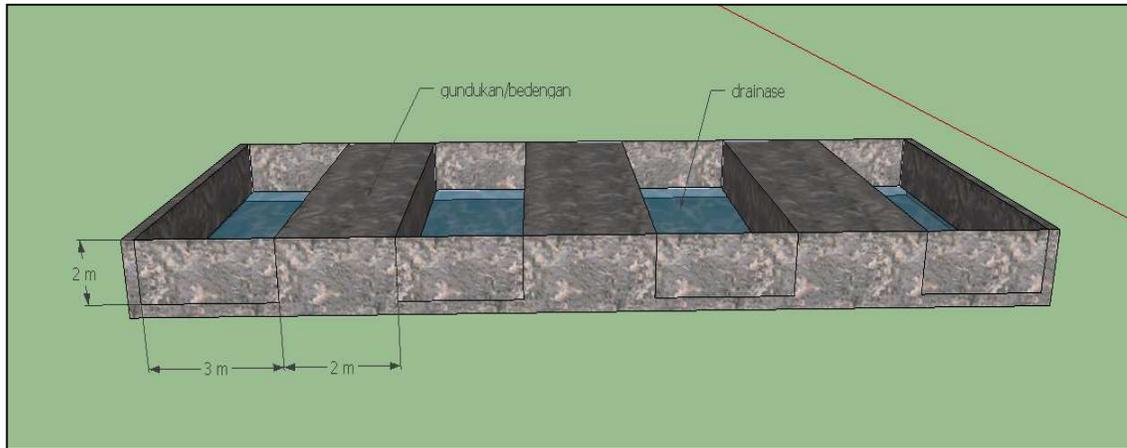


Figure 2 The system of Wambat plantation

Figure 2 shows the “bedengan” or mound which is used for “kumbili” (*Dioscorea esculenta Linn*) or “wati” crop (*Piper methysticum*). The drainage on Wambat system is functioned for storing the run-off or the water surplus of the “bedengan” or mound and it is functioned for ensnaring the nutrient which is washed by the “bedengan” or mound.

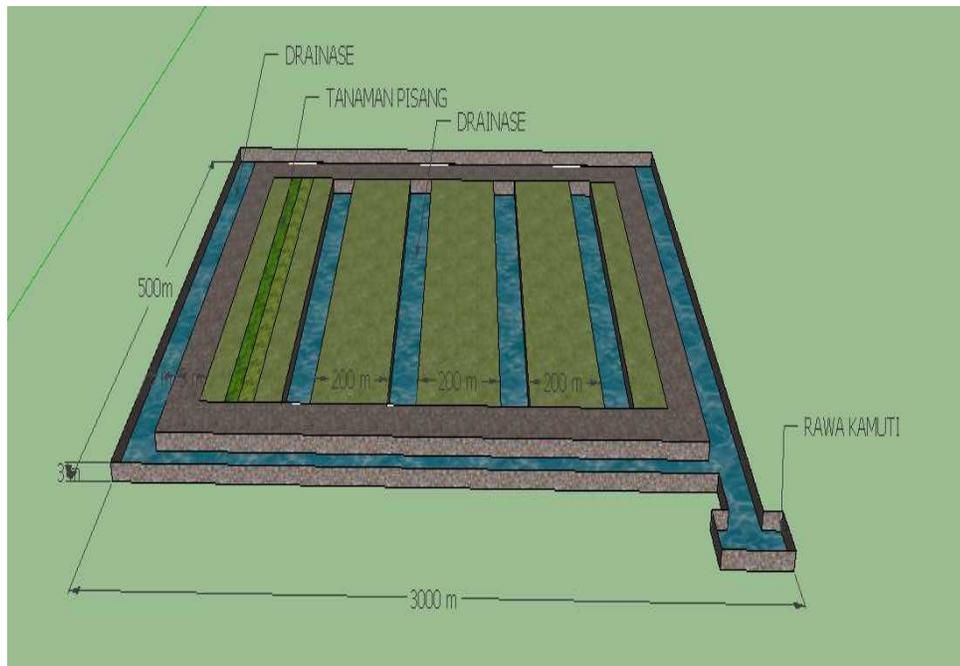


Figure 3. The system of banana plantation

Figure 3 presents the drainage which is built to be functioned as the field reservoir such as for storing the direct rainfall as well as the surface run-off over the “mound of banana garden. However, the Wambat method is very right to be applied because it can maintain the surface water conservation. The available water volume is estimated surplus during the dry season because it has not been applied the right cropping pattern. According to Sukirno [7], the field reservoir is as one of the water conservation techniques and soil moistures by capturing the rainfall and as an effort to decrease the evaporation and surface run-off so the water can be saved in soil form as the soil moisture or groundwater. Therefore, the water is remained around the vegetation or production area. According to Arsyad [8], principally, the water conservation is as the usage of water which is dropped into soil as efficient as possible and the regulation of time is right so there is not happened the flood in the rainy season and there is enough water on the dry season.

The banana tree which is cropped by the farmer is located under or on the side of the mound, so the banana crop is directly cropped on the direct top soil. However, over the mound or in the distance among the mound is used as the road (as presented in Figure 4).



Figure 4 The road of banana garden

The micro water system is as a water management on the farming level in the farmer's block. The water management on the farmer level is very decisive the environment of agricultural plantation which is desired [9]. Therefore, the water system which is built by the banana farmer is as the micro water system (as presented in Figure 5)



Figure 5 The water system of banana garden

The drainage development in the form of field reservoir which is carried out by the farmer is already qualified. It is due to the growth condition which is needed by the banana crop. Cahyono [3] said that the ditch of the banana area is intended for irrigation so it can run smoothly. The ditch is built with the dimension as follow: the width is ± 40 cm and the depth is ± 50 cm from the "bedengan" or mound level, and the length is adjusted with the area condition. In addition, it is also built the water drainage channel in around of "bedengan" or mound block with the dimension as follow: the width is ± 60 cm and the depth is between 60 – 70 cm. The development of drainage system is aimed to drain the surplus water fast and smoothly mainly in the rainy season so the water is not pooled on the banana crop.

Based on the survey result, it is obtained the information that the development of banana garden is carried out based on the owner basic knowledge and by using the personal cost. To develop the banana garden, it is carried out in many steps as follow:

- The opening of area on 2015 by digging 7 units drainages which consist of:
 - a. 3 units of around drainage, the drainage length is ± 3 km, the depth is 3 m, and the width is 5 m. The distance between the around drainage and the area is 5 m.

- b. 4 units drainage in the area, the drainage length is \pm 500 m, the depth is 3 m, and the width is 5 m. The distance between the drainages is 200 m.
The other benefit is as the fish pool. The type of fish in the drainage is “mujair nila” (*Oreochromis niloticus*), “bulanak” (*Mugil sp*), “gabus toraja” (*Canna striata*), and “betik” (*Anahas testudineus*).
- The cropping is carried out on February 2016. The type banana is “dewaka” banana (*Musa SP*), “kapok” banana (*Musa acuminata*), “ambon” banana (*Musa acuminata Cavendish Subgroup*), “raja” banana (*Musa sapientum*), “mbuti” or “adat” banana (*Musa SP*), and “susu” banana (*Musa SP*). Total of banana trees which are cropped is 4,000 trees. The selection of these banana types are due to the fast production such as in average of 6 months after the crop has produced the fruit braches.

CONCLUSION

Based on the analysis as above, it can be concluded that the development of banana plantation by applying the local wisdom method of Tribe Marind is very good if it is applied on the swamp area because it can give many benefits such as the cropping area, the drainage benefit which is developed can be functioned as the place of fish plantation and or the water conservation technique.

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