Empowerment of Farmer Groups in Rambahan Village in Processing Palm Oil Mill Waste into Organic Fertilizers for Porang (Amorphophallus muelleri) Plantation

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Submitted: March, 31 2022; Reviewed: April, 25 2022; Accepted: September, 04 2022

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Abstract

Porang (Amorphophallus muelleri), also known as Iles-Iles or Suweg. In its cultivation, porang has a shade tolerance of 60 percent. But without using shade, it can still be cultivated. Farmers in Jambi usually planted porang among old rubber plants without fertilizing. This causes porang tuber production to be at a minimum below its potential. Porang is only produced without treatment, reducing the size of the tubers, and the konjac glucomannan content in tubers is low. Porang tubers are usually made into chips, and chips will crumble easily if the konjac glucomannan is low. Based on this, counseling and mentoring activities will focus on making fertilizer from the waste from palm oil mills. Palm oil mill waste that is most easily transported and easily decomposed is the cake decanter (DC). In the village of Rambahan, it is known as a solid decanter. The village community had heard but did not know that this waste with specific treatments could be used as organic fertilizer. That this waste, with particular treatments, can be used as organic fertilizer. The treatment is by fermentation with local microorganisms (LOM) from cow urine mixed with MOL from snails (RINMAS). Keongmas are pests and are widely found in farmers' fields. Beef and conch urine are used as LOM. After they are made, the two LOMs are mixed with a ratio of 1: 1 and used as a decomposer to ferment the decanter cake plus for two months. After two months, it can be used as organic fertilizer for porang plants. LOM cow urine and LOM snail (RINMAS) are also used as foliar fertilizers. The technology application activities will be carried out in Rambahan Village at the Mekar Kembali KT and KWT Pokja Alamanda. The target for KT Mekar Kembali and KWT Pokja Alamanda is to increase the area of porang plants, which previously were only intercrops, now every KT, there is an increase in the area of porang plants every KT of 0.5 hectares. Once, farmers and KWT did not know how to make solid and liquid fertilizers. After counseling and DEMLOT, they could make their fertilizers. Every two months, the farmers produce 100 kg of solid fertilizer decanter cake, urine MOL, and Keongmas MOL as 100 liters of liquid fertilizer per month.

Keywords: Solid; palm oil mill; organic fertilizer; rinmas.

INTRODUCTION

Batanghari Regency is a relatively young district in Jambi Province. This district is close to Jambi City (60 km), and the development has not been distributed at a relatively young age. It can see from the rapid growth in the city center. However, in this village, far from the city center, there are still many poor households, namely 30.00 percent of the population (BPS, 2018). Muara Bulian sub-district is one of the sub-districts that the Batanghari River passes, with 417.97 square km and a population density of 132 people/km². This sub-district has 15 villages and five sub-districts. The town of Rambahan is one of the villages in this sub-district.

Rambahan village is one of the villages included in poor and underdeveloped villages, and this town has not received a touch from the local government to foster. Still, the RPJP Batanghari Regency will already include in the cities independently in 2021. The total population of Rambahan Village is 1061 people, with 560 men and 67, 34 percent are of productive age. Women are 501, and 65.21 percent are of effective age (BPS, 2018).

The community in this village is plural, consisting of various ethnic groups, Javanese, Sundanese, Jambi, and Batak. It is a dynamic in society to be more advanced. The population’s livelihoods are mostly rubber, sugar palm, and rice farmers. However, only a few people have land above 2 ha, and they must become agricultural laborers in oil palm plantations or rubber tree tappers. Most poor people are rural laborers, working as farm laborers in rubber or oil palm plantations from the morning until noon and then cultivating their yards or paddy fields. The women make palm sugar. The area of this village is 417.97 square km. Most of this area is surrounded by the Batanghari River farmers, especially rice palm rubber plantations cultivating intercropping with old rubber.

The village of Rambahan consists of 4 hamlets, namely Dusun Satu, Dusun Dua, Dusun Tiga, Dusun Empat. Each hamlet consists of 8 to 10 RTs, with several households per RT of 15 to 20 families. The community that will be the target of activities are members of a community who are members of a farmer group consisting of fathers and a group of women farmers, which is a collection of mothers per Dasa Wisma; one Dasa Wisma is a representative of women from 10 RT. There are two groups of IBM: the men from KT Mekar Kembali and the women of the Pokja Alamanda farmer group.

KT Mekar Kembali, the target of this activity, is a collection of men from all Rambahan villages, founded in 2003 with 25 members. The education level of the group members
varies, namely secondary school and below. The Mekar Kembali group generally works as teachers, traders, and farmers; some are farm laborers in oil palm plantations around the village.

The KWT Alamanda group, the target of this activity, were women members of 5 RTs. This group, founded in 2007, combines PKK members per Dasa Wisma. Initially, it was only a PKK association with 40 members. The average education is high school and below. In general, KWT members do not work (80 percent), and the rest are PAUD teachers and work as a whole.

Each house has a large yard with rubber and oil palm land. Generally, it is to plant porang (*Amorphophallus muelleri*), in the yard and between rubber and oil palm. Because the planting was interrupted by rubber, the farmer group thought they received fertilizer from rubber; even though rubber was old and unproductive, they did not fertilize it. Porang is also planted in the house's yard, especially by KWT Alamanda women. Some KWT also grew around their rice fields across the Batanghari river because the rice fields are located around the river. This causes the low yield of porang tubers because they are planted improperly. Extension from the local office has been conducted on fertilization, but due to limited chemical fertilizers, there is no continuation due to the high price of fertilizers. Even if there is assistance, it fertilizes rubber and oil palm. This situation is due to the low education of members of KT Mekar Kembali and KWT, so the ability to develop themselves to support family income is also deficient, and this situation is closely related to economic conditions.

**SITUATIONAL ANALYSIS**

Table 1. The relationship between activities and target outcomes.

<table>
<thead>
<tr>
<th>No</th>
<th>Activity</th>
<th>Output</th>
<th>Description: LOM, Lokal microorganism</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Porang.</td>
<td>Produced 1 ha of porang plants (each farmer group 0.5 ha)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Make a Decanter Cake as fertilizer</td>
<td>Produce at least 100 kg of decanter cake plus fertilizer every three months</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Demonstration of LOM Cow Urine</td>
<td>5 liters of LOM cow urine per month/person</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Demonstration LOM Snail Urine</td>
<td>5 liters of LOM cow urine per month/person</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Making RINMAS Liquid Fertilizer or decomposers from a mixture of Urine LOM and Snail LOM</td>
<td>25 liters of liquid organic fertilizer per person per month.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Making a decanter cake solid fertilizer from a mixture of urine LOM and snail LOM</td>
<td>Produce 20 kg of solid fertilizer decanter cake per month per person.</td>
<td></td>
</tr>
</tbody>
</table>
IMPLEMENTATION METHOD

Farmer Problems

1. Low yield of porang, and small tubers, so the selling value is still lacking.
2. Partners are farmer groups and KWT whose main livelihood is farmers and incentive farm laborers (half the time) in oil palm plantations with a meager income;
3. It is challenging to buy inorganic fertilizers, which are expensive and scarce on the market, so fertilization becomes irregular, depending on the financial situation and more often than not in fertilizers.
4. KT Mekar Kembali and KWT have never known, used, or known how to process decanter cake factory waste with the help of Urine LOM bio decomposer and snail LOM available around the house.
5. The District Government’s Medium-Term Plan to increase the capacity and income of Poor Households by activating and empowering women to increase knowledge and revenue by utilizing waste into something useful in their daily activities.
6. To improve the ability to self-development for KWT men and women, they experience many obstacles due to low education and economy, so there is a need for assistance and counseling on appropriate technology in agriculture based on research results.
7. Reducing dependence on assistance

ACTIVITY RESULTS

Solutions Offered

The method used is education and empowerment to the community through:

1. Conducting a lecture: on the appropriate technology for decanter cake based on LOM urine and snail LOM for the conch in processing factory, agricultural waste into LOM, liquid and solid organic fertilizers using brochures/leaflets and information at the Village Office (Karyanto, 2010) and (Widiyanto et al., 2013)- Discussions, questions, and answers about the decanter cake, what tools and ingredients were needed (from lecture and demonstration materials) that have a gift (following the how to prepare and the content of decanter cake) (Duaja et al., 2019)
2. Demonstration of how to grow machetes from porang tubers (Alya, 2021) and (Iqbal, 2021). Demonstrate how to make and use tools and apply them in the decanter cake process into solid fertilizer and liquid fertilizer with cow urine LOM and snail LOM
(Andriani, 2019), (Asroh & Novriani, 2019), (Kurniawan et al., 2020) and (Madusari et al., 2021). Apply solid and liquid fertilizers to demonstration plots and on porang plants that are one year old in farmers' yards and gardens (Duaja et al., 2019) and (Duaja, Kartika, & Fransisca, 2020). For the Implementing Team, regular monitoring is carried out by site visits to the DEMPLOT location every two weeks. KT Mekar Kembali and for KWT Partners can be done every day.

![Fig 1. Solid waste from oil palm fabric (before fermentation)](image1)

![Fig 2. Solid waste fermented with LOM cow urin + LOM snail](image2)

![Fig 3. Decanter cake that has been fermented is ready to be sacked](image3)

![Fig 4. Bulbil Porang](image4)

![Fig 5. Selection of porang planting locations under trees with a percentage of 60 percent](image5)

![Fig 6. Counseling at the Rambahan village office](image6)
Fig 7. Technical assistance in planting porang with farmers at the village/farm yard and implementing activities

Fig 8. Porang plantation demonstration plot directly on farmer land

Fig 9. Planting porang bulbil in polybags
**Evaluation Design**

The Evaluation was taken at the beginning of the activity. The criteria are the number of attendances, percentage of an active farmer during lectures, discussions, demonstrations of the technology and applied on the Porang plantation (Duaja & Kartika, 2019)

**DISCUSSION**

Indicators of the activity objectives achieved are:

- Farmer groups were included according to the target, namely 30 people from 50 people. They were present when lectures and demonstrations were held.
- Be active with each partner member when discussing and asking questions.
- Be present and active during demonstrations in the field, materials, tools, and microbes' organic fertilizers.
- Monitor the continuation of activities until they are ready for use.
- Willing to use decanter cake, Urine LOM, and Snail LOM and apply them to porang plants in their yards and gardens. The measure of the successful application of technology is fifty percent of the participants who attend and are willing to be active from the start of the activity, from lectures to demonstrations, and continue monitoring activities until they are finished.

Counseling and assistance on what palm oil mill waste is used for fertilizers planted by farmers have been carried out at the village office and directly on the farmers’ land.
How to process and ferment has been done, and farmers are very responsive. This is evaluated from the presence and response when demonstrating how to ferment decanter cake. The waste from the cow drum factory is cow urine. The people of this village do not understand how to use cow urine in farming, during counseling, and fermentation in processing decanter cake.

The following day, counseling and demonstrations were also conducted on processing cow urine into liquid fertilizer (Said & Yuliati 2021) and LOM urine to process fresh (fermented) decanter cake. Decanter cake, before use, must be fermented, and farmers must be assisted in preparing decanter cakes for organic fertilizers (Siregar et al., 2021) and (Said & Yuliati, 2021). Farmers are very concerned and participate, actively jointly, carrying out all activities. Liquid fertilizer from cow urine is new information for farmers here because, so far, urine is wasted around the cow cage. Some farmers have made cemented drums to make it easier to clean the cow cages, not to collect cow liquid waste. Cow urine was wasted with this counseling and assistance, but some farmers immediately tried to cement the drum floor.

The Evaluation for the decanter cake-making activity reached the target because the participants who attended reached 25 people. Likewise, in manufacturing urine as liquid fertilizer or as a local microorganism/LOM, which functions as a decomposer for decanter cake fermentation. This activity also provides counseling about golden snails. However, because the snails no longer exist in their land, they are only given counseling about the golden snail as the primary material for making LOM. LOM is used as a decomposer.

CONCLUSION

Porang planting activities, as an initiation, have been carried out in farmers’ home yards, on land between rubber plants, and in DEMPLOT in front of the village office, as a village window, to attract guests who come to the village.

Counseling on the manufacture of fertilizer from palm oil mill waste and decanter cake has been carried out, and demonstrations of how to ferment waste have been followed and continued by the village community. Utilization of cow drum liquid waste has also assisted, and farmers have participated in making and using it for porang plants in the home yard and farmer’s land.
ACKNOWLEDGEMENT

This Community Service is funded by PNBP funds from the Faculty of Agriculture.

Thank you for the trust given to this service TEAM

REFERENCES


