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Increasing Farming Efficiency Through the Utilization of Cattle Livestock Waste for Composure as Community Income

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A B S T R A C T

Farm-scale input values are still a problem for the community, especially farmers, in providing fertilizers. The existence of livestock waste is one of the problems for breeders in Air Satan Village. The purpose of this service activity is to assist the Village community in increasing the value of farming efficiency by using cattle waste/manure to be processed into organic fertilizer as an additional source of income for the Village community. The method used in this service is counseling and training in making organic fertilizer for breeders in Air Satan Village. The results of this activity provide significant benefits for the people of Air Satan Village, who still need to familiarize themselves with the reuse of livestock waste into organic fertilizer, where the waste from cow manure is just thrown away without any further processing. The processing of this organic fertilizer is made faster by adding IMR as a bioactivator. The organic fertilizer produced can help improve soil fertility in Air Satan Village and its surroundings. Using organic fertilizers from livestock waste can increase the efficiency of fertilizers in farming so that they can be developed and used as a source of income for the community.

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1. INTRODUCTION

Indonesia is an agricultural country that has a variety of agricultural products, one of the leading agricultural commodities in Indonesia is plantations, livestock, and agricultural and plantation services (Asis et al., 2022), but the efficiency of user inputs in farming is still a different problem for farmers and farmers, especially in terms of providing fertilizer. The price of fertilizer is relatively high, and the need for it is continuously utilized, and this can trigger cost inefficiencies on the farming scale. Fertilizer availability in farming can be sourced from organic and inorganic fertilizers (Suryati & Wahyuni, 2022).

Public awareness of cattle waste still needs to be improved and appropriately utilized, where it is only limited to the utilization of livestock meat. In contrast, the waste has not been utilized optimally, which will later gain added value economically or financially (Rokhayati, 2023). Therefore efforts to increase the added value of livestock waste can be pursued by collecting and processing livestock waste into organic compost. Organic fertilizers are fertilizers composed of living matter, such as weathering of plant, animal, and human remains that have gone through an engineering process that can be in solid or liquid form and can be enriched with minerals and or beneficial microbes to enrich nutrients, soil organic matter and improve soil properties—physical, chemical, and biological soil (Suryati & Wahyuni, 2023). Thus, one of the raw materials in the processing of organic fertilizers can come from livestock manure which is waste for livestock businesses.

This livestock waste is one of the problems for breeders in Air Satan, where the village, which is located in Muara Beliti District, Musi Rawas Regency, the majority of the population work as farmers and ranchers. Apart from cultivating food crops, many of the people of Air Satan Village also raise livestock, especially cows. Cattle produce large amounts of manure as a waste product, whereas cattle, the amount of manure excreted daily, is around 12% of body weight. If treated incorrectly, it will cause waste and environmental pollution because livestock manure contains NH3, NH, and other compounds (Sukamta et al., 2017). Manure that still contains some nutrients can be used as organic fertilizer.

Using livestock waste as a source of organic fertilizer is very useful in supporting the agricultural and plantation sectors in Air Satan Village. This is because various livestock manures contain nutrients in the form of phosphorus and potassium which are pretty high (Pramana, 2017). Livestock waste cannot be directly used on plants because it can cause death. Therefore, prior processing is needed so that the manure does not cause plant death (Suryati & Wahyuni, 2023).

Based on the description above, community service (PkM) aims to help the residents of Air Satan Village increase farming efficiency by using cattle waste to process and produce organic fertilizer, which can increase the income of the people of Air Satan Village. In addition, this business is expected to support the development of the agricultural and plantation sectors and assist the community in efforts to overcome environmental problems in the processing of waste produced by livestock. With this

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activity, the community's environment will become cleaner and healthier and reduce the amount of waste wasted.

2. METHOD

The implementation method that guides the implementation of community service activities (PkM) in the community in Air Satan Village is divided into three main activities, namely:

1. Surveying by analyzing conditions and problems.
2. Providing assistance and training in the manufacture of organic fertilizers.
3. Assisting participants in online marketing of the product that is produced, namely organic fertilizer.

In achieving this goal, the implementation of community service activities (PkM) is carried out in several stages, as follows:

1. Counseling stage, the material presented regarding the potential for organic waste in Air Satan Village was socialized through discussions and carried out for 20 minutes.
2. The stages of making organic fertilizer with the method carried out in this activity are as follows:
   a) Implementation is carried out using tools and materials available on-site to make applying easier. To make organic fertilizer, prepare 400 kg of dry cow dung, 2 kg of dolomite, and 5 kg of remaining animal feed litter and stack it in stages. Then pour as much as 20 liters of EM4 bio activator evenly over the pile of fertilizer ingredients, stir the mixture, cover using tarpaulin/plastic, and incubate for 5 -7 days. After seven days, organic fertilizer is ready to use.
   b) Marketing and branding strategies and the benefits of using marketing strategies, both conventional and online, for the management and success of producing organic fertilizers that have been made, and then the participants receive material in the form of an overview of competition among current business people.
3. Discussion and question and answer methods, training participants have the opportunity to discuss issues related to organic fertilizer manufacturing and marketing techniques.

4. RESULTS AND DISCUSSION

Geographically, Musi Rawas Regency is located at 1020 07'00" -1030 40' 10" East Longitude and 020 20' 00" - 030 38' 00" South Latitude. The area of Musi Rawas Regency is 635,717.15 Ha, with the following area boundaries: North: Kab. Musi Rawas Utara, East: Kab. Musi Banyuasin and Kab. Muara Enim, South: Kab. Four Lawang and West: Bengkulu Province and Lubuklinggau City. Muara Beliti District has an outer area of 17 562.87 Ha (BPS Kabupaten Musi Rawas, 2022).

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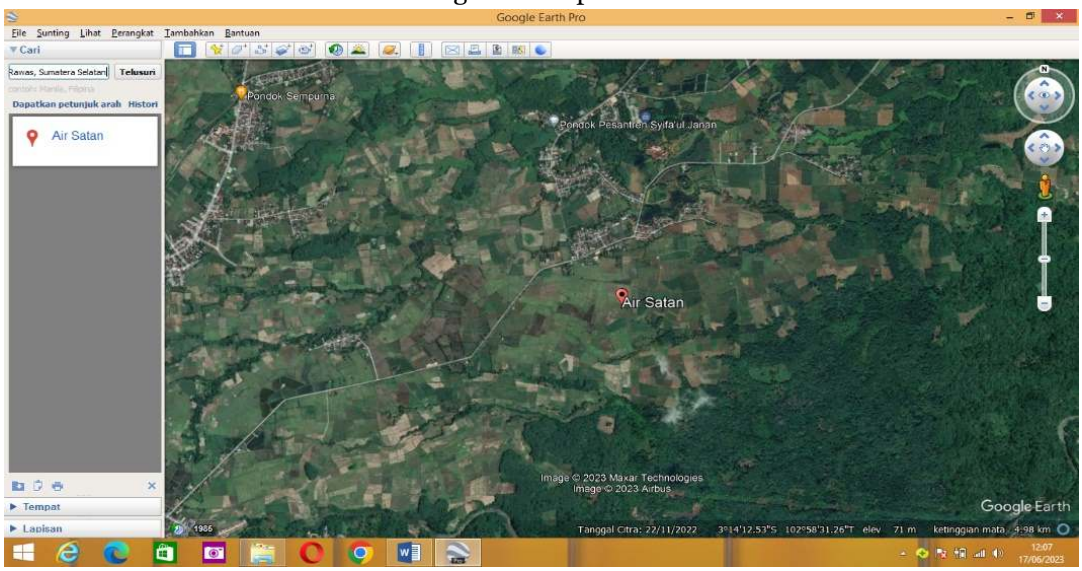
Figure 1. Map Location



Air Satan Village location is in Muara Beliti District, Musi Rawas Regency, which has an area of 481.74 Ha. Administratively, Air Satan Village consists of 4 hamlets, so the span of control in managing the agricultural and livestock sector business, which is the source of income for the village community, is difficult to control or increase (Wiguna et al., 2022). This mentoring activity aims to make the community able to understand and practice activities in managing natural resources and the environment, where the community is training on how to process organic fertilizer from cattle waste to increase the scale of efficiency and income for the people of Air Satan village.

The implementation of community service activities has been running according to the plan in the implementation method. The Service Team carried out this activity for the Animal Husbandry Program, Faculty of Agriculture, Musi Rawas University, and involved students. Student involvement in this activity includes: assisting in the problem identification process, preparing activity planning, preparing facilities and infrastructure, activity attendance lists, accompanying lecturers and participants during counseling/training, documenting activities, and helping to collect data in carrying out activities.

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Figure 2. Counseling Activity

(a) (b)

Counseling and training on making organic fertilizer by utilizing cattle waste was carried out by looking at the potential of the village owned by the people in Air Satan Village. The counseling aims to provide learning, education, and an understanding of more straightforward and effective stages of making organic fertilizer. Making organic fertilizers that are simple and easy for the community to follow is very important to increase people's income. Using cattle waste as an essential ingredient for making fertilizer coupled with remaining cattle feed litter and EM4 bioactivator as an additional ingredient. This bioactivator is very useful to speed up the decomposition process in livestock waste.

The fast decomposition process helps produce organic fertilizer quickly and adequately by looking at the right level of maturity to reduce the possibility of phytotoxicity in plants later. The benefits of fertilizers are divided into two types: organic fertilizers and inorganic fertilizers. Both types of fertilizer have advantages and disadvantages. Organic fertilizers can improve the chemical and physical properties of the soil, even though they require a more significant amount than inorganic fertilizers for the same area of land. Natural inorganic fertilizers can be more easily absorbed by plants and easily decomposed. However, there is also a weakness, namely, the price of inorganic fertilizers is relatively high and can cause the soil to become stiff and reduce the sustainability of agriculture in general (Purnomo, 2013).

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Figure 3. Documentation of Organic Fertilizer Making Training

(a) (b)

(c) (d)

The people of Air Satan Village are not yet aware of the potential of their area, such as the utilization and processing of cow manure. This is due to the need for more public knowledge of cow dung waste's potential utilization and processing. Processing cow dung into organic fertilizer/compost is a business that can be done on the side (Fuad & Winarsih, 2021). Even though it is only a side business of cow dung, it has excellent prospects because fertilizer from cow dung has relatively high selling and economic values in the market.

After knowing the benefits of using organic fertilizers and how to process them, the people of Air Satan Village who work as breeders and farmers are expected to be able to avoid using pesticides or inorganic chemical fertilizers to reduce the risk of poisoning with these substances and reduce the impact of long-term soil damage. Self-made organic fertilizers are also recommended to save operational costs, and farmers get more net profit from their agricultural products. Based on this, managing livestock waste into organic fertilizer has excellent prospects to be developed in the future. It can improve the family economy by selling organic fertilizer. (Asis et al., 2022). Processing cow manure into fertilizer can also develop family productive economic activities to increase family welfare and reduce the impact of rising food prices due to inflation on the family economy.

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5. CONCLUSION

Based on the results of the service activities, it can be concluded that organic fertilizer can be made using cattle waste around the community. The village community has been successfully trained to make organic fertilizer with raw materials such as cattle waste and animal feed residue. The organic fertilizer that has been made can be applied to plants in the community environment, and the results obtained from this program are increasing product and commodity labels and branding by using social media so that it can be known by many people and used as a source of income for the village community.

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