

Community Service of Farmers in Training on Making Liquid Organic Fertilizer in Wonosari Village, Gondangrejo District, Karanganyar Regency

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ABSTRACT

Wonosari Village has quite a lot of rain-fed rice fields. The use of inorganic fertilizers in rice fields can also cause damage to soil structure, decreased fertility of soil microbes, environmental contamination, crop dependency, decline in biodiversity. Liquid organic fertilizer is a solution resulting from the decomposition of organic material originating from plant residues, agro-industrial waste, animal waste and human waste which contains more than one nutrient element. The aims of this service is to train farmers in making liquid organic fertilizer so that it can replace the use of inorganic fertilizers and be applied to their rice fields. The training program was held on February 25 2024 at Embung Munggur located in Wonosari Village, Gondangrejo District, Karanganyar Regency. The method of implementing this activity is carried out in several stages including introduction, implementation and evaluation. The results of the training showed that 80% of farmers who took part in the training understood how to make POC, and 60% wanted to make POC in the future. The post test results also show that community knowledge about LOF is 20% and skills are 60%. And It is hoped that it can continue to be developed so that farmers no longer depend on inorganic fertilizers.

Keywords: farmer, fertilizer, plant residues, rain-fed rice fields

INTRODUCTION

Wonosari Village is located in Gondangrejo District, Karanganyar Regency. The condition of Wonosari Village environment is in a hilly area and has quite a lot of cistern rice fields. Rain-fed rice fields are a type of agricultural land in the form of rice fields that are used for growing rice by relying on rain as the main source of water without requiring irrigation artificial. There are advantages and challenges of having rain-fed rice fields, the main advantage rain-fed rice fields are lower cost because they do not require infrastructure irrigation, as well as a smaller environmental impact ([Agapitus et al., 2024](#)). The challenges of rain-fed rice fields are also

greater vulnerable to climate fluctuations, water shortages, and the risk of crop failure caused by unpredictable weather ([Wihardjaka & Harsanti, 2023](#)). Apart from that, the use of inorganic fertilizers can also cause damage to soil structure, decreased fertility of soil microbes, environmental contamination, crop dependency, decline in biodiversity. This can cause the water holding capacity required in rainfed land is reduced.

Many people really need fertilizer to add nutrients plant growth. Recommendations for using fertilizer or other organic materials intended to reduce the problem that currently arise due to use of materials chemicals that have been proven to damage soil and the environment

(Maryani et al., 2025). From its structure, organic fertilizer is currently circulating there are solid forms and liquid organic fertilizers. Liquid organic fertilizer is solution from the decomposition of organic materials originating from plant residues, agro-industrial waste, animal waste and human waste that contain more than one nutrient. The use of liquid organic fertilizer can increase soil fertility damaged by use of inorganic fertilizer. Organic materials are able to improve soil aeration and penetration roots, water absorption, and reducing soil surface movement. Addition of ingredients organic in the soil can improve nutrient and water retention (Listyarini et al., 2023). The aims of this service is to train farmers in making liquid organic fertilizer so that it can replace the use of inorganic fertilizers and be applied to their rice fields.

How to add organic materials is by applying liquid organic fertilizer (LOF) which is a solution of decaying organic materials originating from waste plants, animal waste, and humans contain elements (Tanti et al., 2019). LOF has advantages, namely that it can improve soil structure, besides that it can also fertilize plants and can be used as an alternative to inorganic fertilizer. Basically liquid organic fertilizer is better compared to solid organic fertilizer. This is due to the use of liquid organic fertilizer has several advantages, namely easier application, the nutrients contained in liquid fertilizer is easily absorbed by plants, contains many microorganisms, overcomes nutrient deficiencies, no problems in leaching nutrients, able to provide nutrients quickly, the manufacturing process takes less time, and it is easy to implement on farms that is, just spray it on the plants (Fitria, 2013).

The physical characteristics of good liquid fertilizer are: brownish yellow in color, neutral pH, odorless, and has a high nutrient content. Kirinyuh plants have more potential for use as organic fertilizer (Duaja, 2012). The use of kirinyu organic fertilizer has a good influence on growth and plant development (Bete, 2018; Murdaningsih & Mbu'u, 2014; Wahyudi et al., 2017). Liquid organic fertilizer is mostly applied through the leaves or is referred to as liquid fertilizer leaves which contain essential macro and micro nutrients (Wenda et al., 2017). Liquid organic fertilizer has several benefits, including encouraging and increases the formation of leaf chlorophyll and the formation of root nodules in plants leguminosae, thereby increasing the

photosynthetic ability of plants and nitrogen absorption from the air, can increase plant vigor, so that plants become sturdy and strong, increases plant resistance to drought, weather stress, and pathogen attacks causes disease, stimulates the growth of production branches, and increases formation flowers and fruit ovaries, as well as reducing the fall of leaves, flowers and fruit ovaries (Marpaung et al., 2019; Mappanganro et al., 2018).

METHODS

The training program was held on 25 February 2024 at Embung Munggur located in Wonosari Village, Gondangrejo District, Karanganyar Regency. Target of this program is a member Makmur Satu Farmers Group. Method of implementing this activity carried out in several stages including introduction, implementation and evaluation. Following this is explained in more detail about the implementation that will be carried out by the UNS 15 community service team. The preliminary stages in implementing this program are carried out by conducting observations or initial survey regarding identification of related circumstances, problems and applicable potential materials that can be used.

After completing the observation, the next stage is that we convey ideas and thoughts regarding the work program we are planning. After the ideas submitted have been accepted, we started preparing tools and materials to carry out our activities. The materials needed to make LOF are kirinyuh leaves, leaves kale, johar leaves, banana stems, leri water, EM4, and molasses. Then, to know the level of success of the activities carried out, a program evaluation is carried out. The evaluation carried out is through pre-test and post-test. The pre-test and post-test results were analyzed simply through questions and answers, then the pre-test and post-test results are presented in graphic form to see the changes that occur after the activity program takes place.

RESULT AND DISCUSSION

Identification Result

The results of survey activities obtained information about farmer groups and their problems experienced. The Makmur Satu Farmers Group has 48 members, whose members consist of residents Village Munggur and

Gemblung Wetan. The ownership of the garden varies, with the condition that diverse. A common problem is lack of soil fertility. Excessive application of inorganic fertilizer without balance with organic fertilizer can be detrimental soil quality (Padmanabha et al., 2014; Purba et al., 2019). So that needs to be balanced with use organic fertilizer that can be made yourself from surrounding materials so that you can minimize additional expenses.

Implementation

Training activities are carried out using outpouring and worthless materials in village (Figure 1). This makes farmers very interested in this activity. Farmers participated in training activities enthusiastically.



Figure 1. Creating LOF



Figure 2. Discussion process during training

It can be seen in Figure 2 that farmers record training activities to document the steps enthusiastically asked about the manufacturing steps. During the training there were several farmers who ask for alternative materials, this proves farmers' enthusiasm for manufacture and use of LOF from surrounding natural materials. Apart from training in making LOF, too explained the benefits and role of each ingredient used. Farmers also get it knowledge of why organic fertilizer is important to apply as a companion as well as a substitute for inorganic fertilizer. The results of this activity are increasing knowledge and farmers' skills in utilizing surrounding materials into products such as organic fertilizer liquid.

Evaluation

The results of the implementation of all activities were evaluated using a questionnaire via post test. The results of the post test analysis show an increase in farmers' knowledge and skills. This result can be seen in Figure 3.

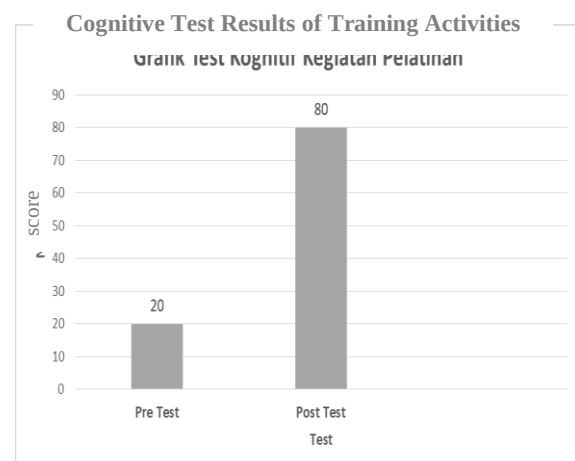


Figure 3. Pre and post cognitive test results of training activities

The post test results showed that 80% of farmers who took part in the training understood it regarding how to make a LOF, and 60% want to make a LOF in the future. Based on the pretest results show that many farmers do not know the benefits of existing materials around. The results in Figure 3 and 4 show that there has been an increase knowledge and skills of farmers in Wonosari Village regarding the material provided through training activities.

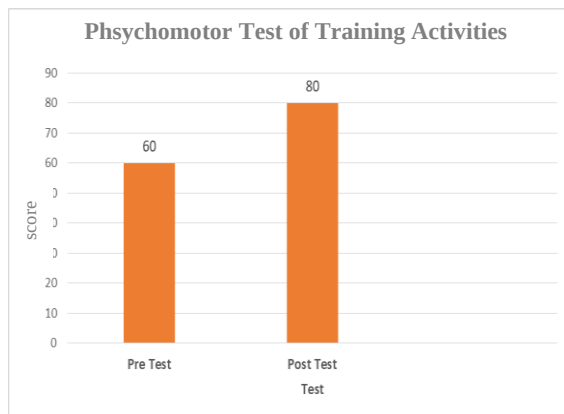


Figure 4. Results of pre and post psychomotor test of training activities

[Figure 3](#) shows that this training activity is able to improve farmers' skills in making LOF, namely from 20% to 80% (by 60%). The training activities in [Figure 4](#) also showS that public knowledge has increased from 60% to 80% (by 20%). Based on the activities has been carried out, it is known that, with training, residents are interested in making LOF by themself.

CONCLUSION

The conclusion that can be drawn is that farmers understand how to make LOF and interested in creating your own LOF. This is reflected in the increase community knowledge about LOF is 20% and skills are 60%. And it is hoped that it can continue to be developed so that farmers no longer depend on inorganic fertilizers.

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