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PKM Farmer Group Matan Lalanglinggah Application of Fermented Feed Technology and Processing of Livestock Waste Into Quality Organic Fertilizer and Economic Value

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A B S T R A C T

The main potential developed and as a support for family income by the people of Lalanglinggah Village is in the livestock sector (pigs, goats, and cows), in the agricultural sector (food crops such as: rice and bananas), and in the plantation sector such as: coconut, cocoa, and porang. (Lalanglinggah Village Profile, 2019). The problems of partners are that they do not have knowledge in efforts to increase the productivity of goats and pigs, do not have knowledge and skills in making effective and efficient fermented feed with Bioster technology and processing livestock and agricultural waste into quality and economic value organic. The methods used were survey, interview, discussion, counseling/training. The resulting output is that partners understand about efforts to increase the productivity of goats and pigs, making fermented feed, quality and valuable organic fertilizer.

INTRODUCTION

Goats and pigs are one of the meat-producing livestock commodities that have great potential to be developed because they are able to provide family income even though they are cultivated on a small/household scale. Therefore, the Lalanglinggah Village government seeks to develop goat and pig livestock businesses through the use of village funds with the food security program, namely increasing the capacity of farmers and the productivity of goats and pigs given to several community members under the auspices of farmer groups. One of the farmer groups targeted by the program is the Matan Lalanglinggah farmer group. Lalanglinggah Village, Selemadeg Barat Sub-district, Tabanan Regency has an orbital distance to the provincial capital of 45 km, to the district capital of 25 km and to the sub-district capital of 6 km. The main potential developed and as a support for family income by the people of Lalanglinggah Village is in the livestock sector (pigs, goats, and cows), in the agricultural sector (food crops such as: rice and bananas), and in the plantation sector, such as: coconut, cocoa, and porang. (Lalanglinggah Village Profile, 2019). The development of livestock businesses, especially pigs and goats, and agricultural businesses of food crops and plantations to support livestock businesses has been carried out by the Matan Lalalinggah Farmer Group located in Lalanglinggah Village.

Currently, the Matan Lalanglinggah Farmer Group has 25 members who are 100% farmers. As farmers, all members develop agriculture, especially bananas and cocoa, whose crops and waste can be used as animal feed, but their productivity is low due to pest and disease attacks, especially fusarium fungus attacks on banana plants and PBK disease on cocoa plants. This is also due to the conventional cultivation system: soil is not cultivated, seedlings are directly planted, fertilization is done only once with a dose that does not meet the standard nutrient needs. As for livestock business, it is carried out on a small/household scale and developed by each member are goats and pigs. With ownership ranging from 2-5 pigs and an average of 2 goats where the partner group really feels the benefits of raising pigs and goats because this is the foundation/support of family income. Raising goats and Balinese pigs is very suitable to be raised on a small business / household scale because it is considered a piggy bank "tatakan banyu" because with improvised feeding and utilization of Balinese pig kitchen waste, it is able to provide growth (additional body weight) even though it is not optimal. The cause of the growth of piglets raised is not optimal because the feed factor and given is not in accordance with good quality standards and in giving it does not meet the needs of these livestock. So this will result in the growth rate of goats and pigs in the partner group not being optimal.

This is inseparable from the feed factor, so farmers in this partner group provide feed for pigs in the form of banana stalks (gedebong), leaves (taro, cassava, cassava) which are cut into pieces first and then boiled and after cooling, they are mixed with rice bran/corn bran/pollard/concentrate and then given to pigs 2 times a day. If this is done every day from finding feed ingredients and then boiling them, it will take a long time and cost more money and the quality of the feed also cannot meet the standard needs of the pigs being raised so that this is less effective and efficient and the level of livestock productivity is low (Yan Tonga, et al., 2022). Likewise, goat feeding is only in the form of forage whose quality is still in the medium category and giving/preparing the feed is done every day so it is less effective and efficient (Sutapa, et al., 2017). The abundance of livestock and agricultural waste has also not been utilized/processed into organic fertilizer. Livestock waste and agricultural waste are left unprocessed and immediately used as humus for plants. Whereas if the waste is processed with a touch of technology, it will be able to become a quality and economically valuable organic fertilizer (Yan Tonga, et al, 2022).

The partner group is currently suffering from PBK disease in cocoa pods, which has not yet been handled. This is because the cultivation system is still carried out conventionally in this case no fertilization, pruning and if attacked by disease is left alone. Whereas for the handling of PBK disease within 30 days can be overcome and the plant will be healthy again with Bugar Gembur Soil Technology (Sutapa, 2015). Based on the conditions and situation above, it is necessary to design community partnership programs/activities in the Matan Lalanglinggah Farmer Group to increase the productivity of industrial plants as animal feed ingredients to support livestock and agricultural businesses in partner groups, especially in terms of improving the quality of animal feed, especially for goats and pigs by providing a touch of effective and efficient feed technology so that making feed can be made once a week or a month (not every day looking for and making feed) with fermentation technology. Likewise, livestock and agricultural waste with a touch of technology can become quality organic fertilizer and economic value, as well as handling PBK disease and a development of ginger in polybags

IMPLEMENTATION AND METHODS

This PKM activity is carried out through the following stages of implementation:

1. Field survey to establish partner locations.
2. Participatory interviews and discussions in developing and planning the stages of activities that lead to solutions to the problems faced by partners and target outcomes.
3. Counseling on efforts to increase the productivity of Balinese Pig livestock.
4. Theoretical counseling and practical training on the application of fermented feed technology with Bioster technology (Yan Tonga, et al, 2022) only takes about 5-7 days fermented feed can be given to livestock.

5. Theoretical counseling and practical training on processing livestock and agricultural waste into quality and economically valuable solid and liquid organic fertilizers.
6. Theoretical counseling and practical training on efforts to increase the productivity of cocoa plants and the development of jaha cultivation in polybags in the use of solid and liquid organic fertilizers processed from livestock and agricultural waste.
7. Provide assistance with tools and materials related to the application of fermented feed technology, processing livestock and agricultural waste into organic fertilizer and the application of Bugar Gembur Tanah technology to cocoa plants.
8. Produce quality fermented feed and organic fertilizer products with economic value.
9. Periodic monitoring, evaluation, mentoring and reporting.

Partner participation is needed in this activity so that the expected goals can be achieved, so it is expected that partners/trainees are disciplined and serious and obey all series of activities in accordance with the agreed stages of activity. At the end of the activity, it is expected that partners will be able to raise goats and pigs properly, make fermented feed and organic fertilizer from livestock waste, increase the productivity of cocoa plants, develop ginger cultivation in polybags and produce fermented feed products and solid and liquid organic fertilizers with quality and economic value.

RESULTS AND DISCUSSION

This activity began with the socialization of PKM activities, counseling on efforts to increase the productivity of goats and pigs as well as efforts to increase cocoa productivity and the development of ginger cultivation in polybags. Furthermore, there was technology transfer training in theory and practice on making fermented feed and processing livestock and agricultural waste into quality and economically valuable solid and liquid organic fertilizers.

1. Socialization and Counseling Activities and Delivery of Tools and Materials

The socialization of the activities of the Community Partnership Program (PKM) and counseling on efforts to increase the productivity of goats and pigs and increase the productivity of cocoa and the development of ginger cultivation in polybags as well as the delivery of tools and materials went according to plan and all partner members were present and very enthusiastic about participating in the activity. This activity was also attended by the village head and heads of farmer groups in the Lalanglinggah Village area, West Selemadeg District, Tabanan Regency as shown in Figure 1.

Figure 1. Socialization and Counseling Activities as well as Delivery of Tools and Materials

2. Training on Fermented Feed Making with Bioster Technology

Training in the form of practice of making fermented feed with Bioster technology using 100 kg of ingredients (80% in the form of banana stems, forage, in the form of leaves and tubers), 10% complete feed (25% concentrate, 50% rice bran, 25% corn bran) with additional supplements Bioster 200 ml plus Bio Molasses 400 ml plus Trypi 100 gr, plus salt 100 gr. Feed ingredients are chopped and then processed mixed evenly. Next, it is placed in a container and fermented for 5-7 days. After that, fermented feed products last up to 6-12 months. Furthermore, according to partners after being given to goats and pigs, the fermented feed is eaten with gusto and farmers feel that the fermented feed made is more effective and efficient. This training activity is shown in Figure 2.

Figure 2. Training on Fermented Feed Making with Bioster Technology

3. Training on Making Solid and Liquid Organic Fertilizers with Biomi Technology

Training in the form of practice in making solid and liquid organic fertilizers with Biomi technology with 50 liters of livestock waste (livestock urine and kitchen waste in the form of rice washing water), 50 kg of agricultural waste (leguminous leaves, banana stems, and coconut fibers as a source of NPK elements). The prepared materials were put in one container/bag with a volume of 100 liters and then added with BioMi activator 200 ml + Bio Molasses 400 ml and Agrodyke 100 g. After that, all materials were stirred every 7 days and fermented for 21 days. After that, the liquid organic fertilizer is filtered and ready to be packaged.

The practice of making solid organic fertilizer from goat/cow/chicken manure and agricultural waste in the form of leftover animal feed and organic waste in a ratio of 1:1. After that, the materials are mixed evenly and sprayed with a solution (a mixture of BioMi 200 ml + Bio Molasses 400 ml + Agrodyke 100 gr + 15 liters of water) then stirred and covered with a tarpaulin. Every 7 days it is turned over and after 21-28 days it is chopped with a chopping machine so that it becomes smooth. The training activity is involved in figure 3.

Figure 3. Training on Making Solid and Liquid Organic Fertilizers with Biomi Technology

4. PKM Activity Outputs

1. Partners understand how to increase pig productivity as well as cocoa cultivation and the development of ginger cultivation in *polybags*.
2. Partners understand and are able to make fermented feed with the results as shown in Figure 4.

Figure 4. Fermented feed results

3. Partners understand and are able to make and produce quality and economically valuable solid and liquid organic fertilizer products from processed livestock and agricultural waste as shown in Figure 5.

Figure 5. Product Results of Solid and Liquid Fertilizers

CONCLUSIONS AND RECOMMENDATIONS

1. Partners already have an understanding and skills in terms of making fermented feed for goats and pigs with Bioster technology and making solid and liquid organic fertilizers with Biomi technology and their utilization.
2. Partners already have an understanding of efforts to increase cocoa productivity and partners are able to develop ginger cultivation in *polybags*.

The results of fermented feed and organic fertilizer need to be tested for quality in the laboratory and tested for effectiveness through demonstration plots on livestock and plants so that the results of the demonstration plots can convince farmer groups in the Lalanglinggah Village

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