

MAKING LIQUID ORGANIC FERTILIZER FROM SLURRY BIOGAS WITH THE MAIN MATERIAL IS FESES AND URINE OF BEEF CATTLE.

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ABSTRACT

Pengabdian Pada Masyarakat (PPM) aims to enhance the knowledge and skills of the group members livestock and people in processing and exploiting of biogas slurry with the main ingredient of animal manure and urine beef cattle into liquid organic fertilizer. The benefits to be achieved include improved livestock production through improved environmental health from sewage pollution in the vicinity of the farm, livestock healthy and free of diseases, the cost of agricultural production is more efficient because it uses organic fertilizer which is cheaper and the quality does not vary much with inorganic fertilizer. PPM activities have been carried out on the livestock group of Sumber Rejeki located in the village of Sidomulyo Selatan, Subdistrict Boliyohuto, Gorontalo district for 45 days from July to August 2016. The method used in the empowerment of the target group is learning in the form extension of the theory and simulation to members of the target group and continued with the practice of making organic fertilizer from waste biogas liquid manure and urine (slurry). This event was attended by students participating in the Kuliah Kerja Nyata-Pengabdian Pada Masyarakat (KKN-PPM), members of the livestock group, as well as some members of the public. Based on the results and the discussion concluded slurry from biogas liquid form can be used as material for organic fertilizer. Processing of slurry from the biogas into liquid organic fertilizer in the village of Sidomulyo Selatan can reduce the adverse impact of pollution manure piled up and scattered around the enclosure, improving business efficiency in beef cattle farms, and reduce the dependence of farmers on chemical fertilizers inorganic.

Keywords: Beef Cattle, Feces and Urine, Biogas, Slurry, Liquid Organic Fertilizer

INTRODUCTION

Livestock is the agricultural sub-sector which is one of the priorities of economic development in the province of Gorontalo, because its role is large enough to stabilization of animal food security and economic empowerment of rural people and spur the development of the region. One commodity that is the priority in Gorontalo province in support of community development is the development of beef cattle. Beef cattle business potential in the Gorontalo province is quite large because the acceleration demand and high prices of products at the farmer level and it will have implications on the family economic changes. Based on the results of the agricultural census, until 2013 the population of cattle and buffalo in Gorontalo Province is 173.911 and the tail is dominated by beef cattle (BPS, 2013). The total population has been cultivated by farmers either individually or incorporated kelompok breeders. Cows including one type of ruminants that many rural communities are maintained by both traditional and modern agribusiness interests. Cattle population large enough can cause problems of accumulation of manure and if not handled properly, it can interfere with the comfort and health of the public at large.

Manure management of cattle in Kelompok Rejeki in the village of South Sidomulyo do not maximized leading to the buildup in the tub biogas outlet for temporary septic tank. At times, the majority of animal manure is used for plantation crops during the growing season,

but because it used only a fraction then partly from livestock manure is not utilized and left alone by the members of the group, causing the buildup. Dirt piled up and in the long term is a very good medium for the fly larvae and harmful microorganisms to reproduce and if this trend continues will allow cattle infected with various diseases.

Handling cattle dung bio-slurry waste is not optimal in the herd Rejeki one reason is the lack of technological knowledge in the processing of manure waste so reluctant to take advantage of. The reluctance of farmers is caused also by the lack of facilities and infrastructure of the target group in support of the use of farm waste as products that are beneficial to crops, livestock and energy requirements for humans and the lack of agricultural extension in terms of quantity and in terms of intensity of illumination in every village in manage livestock waste into useful products and high value.

In order to overcome the problem of accumulation of manure waste, the method offered is to make organic fertilizer (compost) from residual waste biogas production (slurry). Compost is an organic fertilizer derived from crop residues and animal wastes that have undergone a process of decomposition or weathering. In KKN-PPM, the form of compost created by the team are composted in the form of liquid organic fertilizer (LOF) with the material used comes from the slurry of cow manure from biogas production. Liquid fertilizer is made in a way to accommodate the fluid that has been separated from the slurry solids later fermented for approximately 1 week. The ultimate goal to be achieved in the activities of KKN-PPM include improved livestock production through the improvement of the health of the environment around the farm, the cost of agricultural production more efficient by using fertilizer from manure waste that are cheaper and the quality is not much different from the inorganic fertilizers, the emergence of consciousness and the public's willingness to utilize the manure waste into more useful products

METHODOLOGY

PPM activity was conducted in the village of South Sidomulyo Boliyohuto Subdistrict, Regency Gorontalo, Gorontalo Province precisely in Sumber Rejeki herd. The method used is the technique of learning in the form of theory and simulations to members of the target group and the subsequent practice of directly making organic fertilizer from slurry assisted by KKN-PPM students participating in 2016. Organic fertilizers are made is a Liquid Organic Fertilizer (LOF).

Liquid organic fertilizer with students and members of the group carried out through several stages, among others:

- Setting up a tool: Bak liquid slurry reservoir, water pump, 4 meter guttering, pipes and connections connections for water pumps and gutters, pipe glue
- Preparing materials: 1.4 liter Rumino bacterium Bacillus (RB): 1.4 liter bacteria Azotobacter (AZ): 1100 liters of cow urine and molasses. In KKN-PPM Bacteria RB and AZ can be replaced with EM-4. The content of EM-4 is a photosynthetic bacteria, lactic acid bacteria, actinomycetes, yeast, and fungal fermentation
- Dissolve bacteria in EM4 together molasses in the water and put into a liquid slurry that has been accommodated and stirred
- Covering for 1 week for fermentation occurs. After 1 week pumped by the water pump and passes through guttering tilted and added bulkheads therein for 6 hours to evaporate ammonia gas
- Conducting packaging in jeirigen size of 1 liter and 5 liters, and is ready for use.

RESULT AND DISCUSION

Livestock Manure As Organic Fertilizer

Beef cattle are cattle that some countries play a major role in the supply of red meat as a source of animal protein. Besides its role is quite large, beef also has problems that are often taken for granted, namely the handling of manure. The results of several studies of a single cow produces an average of droppings (feces, urine, etc.) an average of 10-25 kg / day depending on the species of animal, big business, type of business, and the floor of the cage. If in one cage group includes 100 cows were cultivated then the dirt can be collected ranged between 1000-2500 kg / day. Some of the problems will be caused when manure waste is not handled properly among piles of dirt will produce methane gas (CH₄) is quite high which is responsible for global warming and the destruction of ozone (Suryahadi, et al, 2002), media growth and development of fly larvae, cause bad odor, the source of pollution for the river water and ground water during the rainy season, and air pollution through dust generated in a state of dry waste.

Animal manure contained in the herd Rejeki have been used to produce biogas, but the rest of the results in the form of biogas slurry has not been utilized so as to accumulate in ponds (outlet) main. As a result of manure to be a source of pollution is not just from the odor generated but the irrigation canal near the cage also tainted because it was used as a flow of liquid waste. In order to overcome these so that accumulation of dirt is not growing then it has been done processing into liquid organic fertilizer either for themselves or as an alternative to increase the family income.

Manure and urine from beef cattle can be made into several types of compost including bulk form, block form, the form of granules, Bokashi form, and liquid form. PPM activities conducted in the village of South Sidomulyo is training and mentoring the manufacture of organic fertilizer from animal manure slurry in a liquid form. After the completion of activities, group members livestock Rejeki been able to produce their own organic fertilizer and liquid has been used for its own needs and marketed to the public.

Before the direct practice of processing cattle manure / organic fertilizer bioslurry be the first given theoretical and initial training of the students participating in the KKN-PPM and group members and community participants about leveraging PPM slurry into liquid organic fertilizer. After the extension of the theory and practice of training continued with directly in the field how to make liquid organic fertilizer from manure. During the provision of materials for both theory and practice in the field of the participants were quite enthusiastic to follow the stages of activity. This is also illustrated by the many questions raised by participants about the process of making and application of organic fertilizer dilahan plantations and rice fields.

Liquid Organic Fertilizer (LOF)

Liquid organic fertilizer is a solution that comes from the decay of organic materials derived from crop residues, animal manure, and human haranya element content of more than one element (Hadisuwito, 2007). Excess liquid organic fertilizer is the nutrients contained therein more easily absorbed by plants (Murbandono, 1990).

LOF made in PPM activity is the main material from the liquid bioslurry biogas cattle dung. Bioslurry is a mixture of raw materials that have been fermented or lost metannya gas flowing out of the reactor through the outlet and overflow and form of mud. Bioslurry liquid organic fertilizer contains macro elements include C-Organic (0.11 to 0.46%), pH (7.5 to 8.4%), N (0.13 to 1.47%), P (from 0.02 to 0.035%), K (0.07 to 0.58%), Ca (1,402,26 ppm), mg (1544.41 ppm), S (0.50%). Bioslurry has advantages including neutralizing acidic soil,

add humus, supporting the development of worms and beneficial microbes to plants, plant disease-carrying bacteria-free, can mecegah termites plant destroyer (Biru & YRE, 2013).

Bioslurry liquid from the outlet biogas obtained by the main outlet design modifications biogas so that separate liquid and solid bioslurry automatically. Bioslurry liquid container made of 3 pieces each water tank has a capacity of up to 650 liters. Two reservoir invested in land whose surface is parallel to the main outlet biogas, while the other tank that serves as a fermentation and storage of ready to use liquid bioslurry made higher.

CONCLUSION

Based on observations concluded the manufacture of liquid organic fertilizer in the village of Sidomulyo South through KKN-PPM may be an alternative to reduce the adverse impact of pollution manure liquid due to the stagnant near the cage, improving business efficiency in beef cattle farms, and reduce the dependence of farmers on chemical fertilizers inorganic which is more expensive.

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