

UTILIZATION OF COW DUNG AS MANUFACTURING MATERIAL FOR COMPOST FERTILIZER

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Abstract - *This article aims to understand how to use cow dung as a composting material. As well as exploring the way to make compost fertilizer specifically made naturally with its main ingredients from cow dung and explore factors that need to be improved in the manufacture of compost from cow dung. The manufacture of this compost fertilizer, directly practiced by the KKN 104 group to the community in the kara village of Bima regency, NTB. And assisted by members of livestock groups to equip the stages that must be done in the manufacture of compost made from cow dung. From the results of the practice illustrates that the extension and manufacture of organic fertilizer from cow dung has been implemented and succeeded well and runs smoothly. Furthermore, farmers can independently do the process of making organic fertilizers and utilize livestock manure around to reduce the use of un-organic fertilizers.*

Keywords: *cow dung, compost*

1. INTRODUCTION

Kara is one of the villages located in the District of Bolo, Bima Regency, NTB Province, and is located in the south of the center of the District. Kara village was formed in 2012 and is the result of the division of the main village, namely Leu village. The people of Kara Village are mostly cattle breeders. And each family head has an average of 2 cows. Therefore, the KKN UIN SUKA group has the initiative to process and utilize cow dung into compost to make it more beneficial for farmers and farmers in Kara Village.

Compost is an organic fertilizer derived from plant residues and animal waste that has undergone a decomposition or weathering process. So far, plant residues and animal waste have not been fully utilized as a substitute for artificial fertilizers. Good compost is one that has undergone sufficient weathering and is characterized by a color that is different from the color of its constituent material, odorless, low water content and at room temperature.

The process of making and utilizing compost still needs to be improved so that it can be used more effectively, increase farmers' income and overcome environmental pollution. Composting is the process of reducing the C/N of organic matter to the same as the C/N of the soil (<20). During the composting process, chemical elements change, namely: (1) carbohydrates, cellulose, hemicellulose, fat and wax to $C O_2$ and H_2O ; (2) decomposition of organic compounds into compounds that can be absorbed by plants.

Compost is one of the components to increase soil fertility by repairing physical damage to the soil due to excessive use of inorganic fertilizers (chemicals) on the soil which results in damage to soil structure in the long term. Given the importance of compost in improving soil structure and the soaring price of artificial fertilizers, it is necessary to prepare a technical manual for making organic compost made from cow dung to make it easier for farmers to utilize cow dung, as well as produce organic fertilizer which will eventually increase their income.

2. METHOD

The initial stage of the implementation of the KKN work program begins with equalizing perceptions between the KKN team and members of livestock groups and stakeholders such as local village officials. The equalization of perceptions is done by socializing the programs that have been prepared so that all parties, especially livestock groups, can play an active role optimally. This is important to ensure the sustainability of technology implementation after the planned service program is completed. This activity began with the identification process of the target area, namely Kara village, then continued with direct observation and interviews with residents. The schedule for the implementation of the training program for making compost from livestock manure is carried out with livestock group partners, arranged according to the proposed solution plan with the implementation of the program as follows:

- A. Participants were provided with theories with lectures and discussions ranging from understanding livestock manure, types of manure and their specifications, composting, factors that affect composting, composting steps, activities that must be carried out during composting, compost harvesting, compost quality analysis, filtering. compost, compost packaging and how to use compost and how to market compost.
- B. The practice of making organic compost from cow dung: Composting begins with collecting cow dung by harvesting from the cage, followed by processing it into compost (Prihandini and Purwanto, 2007). The materials and process for making compost are as follows:
- 1) Prepare a wooden compost box measuring (2 × 1.5 × 1.5) m
 - 2) Prepare tools: Keseran (boar), hoe, bendo, sickle, senggrong, and shovel
 - 3) Prepare raw materials: livestock manure limbah
 - 4) Prepare additional materials: straw (cut into short pieces), twigs, and chopped wood
 - 5) The composition of the ingredients for making compost in order from bottom to top is as follows:
 - a) 10 cm twigs,
 - b) straw 10cm,
 - c) manure 30 cm,
 - d) straw 10cm,
 - e) manure 30 cm,
 - f) and so on until a height of up to 1.5 m,
 - g) after the height reaches 1.5 m, it is covered with 10 cm thick wood chips. After arranged 1-4 it is called one layer, then the arrangement is repeated again starting from 2-4 again and so on until it is arranged in three layers and the top is given chopped wood 10 cm thick and then doused with water. Chopped wood serves to reduce odors that come out and at the same time to hold water that enters the compost pile and maintain moisture.
 - 6) Wait 3 weeks and leave it alone, if it looks dry, pour a little water and after 3 weeks turn it over, turning the compost pile from the bottom to the top, so that it is completely mixed.
 - 7) The results of the first turning (after 3 weeks) the compost has been destroyed and is black, lumpy in small pieces.
 - 8) Waiting for the second turning 3 weeks later, then the compost looks like soil, the dirt has been destroyed and has no smell.
 - 9) Then wait for the third turning 3 weeks later, here the compost is ready.
 - 10) Then filtered, and allowed to stand for 2 weeks.
 - 11) Packaged in a plastic bag and the compost is ready to use.
- C. Evaluation and mentoring: The manufacture of organic fertilizer from livestock manure was conveyed by Mr. Syahrir. while the practice of making organic

fertilizer from animal manure is guided by members of the Community Service Center and given material on processing livestock manure to become organic fertilizer that is ready to be used on agricultural land.

3. RESULT AND DISCUSSION

This activity is divided into 3 main stages. Stage 1 is the socialization stage, stage 2 is the implementation of activities and stage 3 is the evaluation and dissemination of results. Phase 1 activity begins with the socialization of the program with the head of the farmer group. The service plan is presented to provide a comprehensive picture of the program by the service team. Farmer groups are very happy with this program. The result of this socialization is that the farmer groups first discuss the program to be carried out so that there is a synergy between the farmer groups and the service team.

Phase 2 activities or the implementation phase (Figure 1), have been carried out with the Kara Village Farmers Group, Bolo Subdistrict, Bima Regency, which is chaired by Mr. Syahrir. On the specified date, outreach activities are carried out. Residents are very enthusiastic about counseling. They hope that this kind of activity can increase their knowledge and they can apply it in the manufacture of organic fertilizers to support their agricultural business.



Figure 1. Socialization and Counseling Activities

The outreach activity began with remarks by the Head of KKN and the head of the farmer group. The head of KKN explained that this kind of activity should be beneficial for farmer groups and the surrounding community. In addition, efforts are made to not only stop at one activity but to be sustainable. After the speech, the event continued with the material presented by the speakers. The material for

making organic fertilizer from livestock manure was delivered by Mr. Syahrir. After the presentation of the material by the speakers, a question and answer session was held.



Figure 2. Explanation on the practice of making organic fertilizers

Farmer groups are very active in discussing and asking questions with resource persons. In this session, it can be seen that the farmer groups have actually practiced making organic fertilizer from beef cow dung, but it has not been successful. After the extension activities, training activities were carried out to make organic fertilizer from livestock manure (Figure 3-4). Making organic fertilizer is done simply. This activity is also an additional knowledge for farmers because even though so far farmers have not yet understood how to make organic fertilizer properly.



Figure 3-4. Practice of making organic fertilizer (compost) from livestock manure

From this activity Farmers can process the cow dung produced into organic fertilizer. This will increase the profit margins of farmers and ranchers. With this activity, farmer groups can save costs on the purchase of fertilizers and can maintain soil fertility.

4. CONCLUSION

The conclusion of this activity is that the farmer groups are enthusiastic about the KKN work program in this case counseling and making organic fertilizer from livestock manure to be applied on agricultural land. The practice of making organic fertilizers has been implemented and has worked well. Furthermore, farmers can independently carry out the process of making organic fertilizers. The presence of organic fertilizers can reduce the use of inorganic fertilizers. In addition, with this activity, farmer groups can save costs incurred for purchasing fertilizers and can maintain soil fertility.

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