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Training on Making Compost Fertilizer from Animal Manure in Sindang Anom Village, East Lampung

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A B S T R A K

Desa Sindang Anom yang masyarakatnya berprofesi sebagai peternak sapi, memiliki 1 Gapoktan dengan 35 Kelompok Tani. Limbah kotoran hewan yang dihasilkan dari usaha peternakan belum diolah secara maksimal oleh Masyarakat dikarenakan kurangnya pengetahuan mengenai teknik pengolahan kotoran hewan menjadi kompos. Tujuan dari kegiatan PKM ini adalah untuk meningkatkan pengetahuan dan keterampilan masyarakat dalam memproduksi kompos dari kotoran hewan. Kegiatan PKM dibagi menjadi dua tahap, tahap pertama pemberian materi melalui ceramah dan diskusi, dan tahap kedua latihan dan demonstrasi pembuatan pupuk kompos dari kotoran ternak. Berdasarkan hasil evaluasi, rata-rata nilai pre-test peserta adalah 3,9, dan rata-rata nilai post-test adalah 7,9. Kesimpulan dari kegiatan ini adalah pengetahuan dan keterampilan masyarakat di desa Sindang Anom mengalami peningkatan khususnya mengenai cara pengolahan pupuk kompos dari kotoran hewan. Selain itu, peserta juga mendapatkan pengalaman praktis dalam pembuatan kompos dari kotoran hewan.

Kata kunci: Desa Sindang Anom, Kotoran Hewan, Pupuk Kompos

A B S T R A C T

Sindang Anom Village, whose community work as cattle breeders, has 1 Gapoktan with 35 Farmer Groups. Animal manure produced from livestock businesses has not been processed optimally by the community due to a lack of information regarding techniques for processing animal manure into compost. The aim of this PKM activity is to increase community knowledge and skills in producing compost from animal manure. PKM activities are divided into two stages, the first stage is providing material through lectures and discussions, and the second stage is training and demonstrations on making compost fertilizer from livestock manure. Based on the evaluation results, the average pre-test score of participants was 3.9, and the average post-test score was 7.9. The conclusion of this activity is that the knowledge and skills of the community in Sindan Anom village have increased, especially regarding how to process compost fertilizer from animal manure. In addition, participants also gained hands-on experience making compost from animal manure.

Keywords: *Animal Manure, Compost, Sindang Anom Village*

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INTRODUCTION

Sindang Anom is a village in East Lampung Regency. The majority of people in Sindang Anom village are farmers. Sindang Anom village has the potential as a producer of agricultural products such as corn, rice, and vegetables. In addition, most farmers also raise cattle, which can produce animal manure. The amount of waste or manure produced daily by cattle is about 12% of body weight, and it is estimated that one cow can produce about 8-10 kg of solid manure per day (Huda & Wikanta, 2017). If agricultural and livestock manure is not properly processed and utilized, it will have environmental impacts such as being a source of various diseases, polluting soil, water, and air, spurring the increase of methane gas, disturbing the beauty and comfort of local residents, and even triggering global warming (Nenobesi, Mella, & Soetedjo , 2017).

Livestock manure has the potential to be processed into compost and used to support agriculture and plantations. Animal manure contains nutrients that are useful to the soil. This is because various livestock manures contain nutrients in the form of phosphorus and potassium that are quite high (Pramana, Hutabarat, & Herawati, 2017). However, animal manure cannot be used directly on plants because it can cause plant death. Therefore, it is necessary to process it first so that the manure does not cause plant death. Animal manure must be composted before it can be used as a plant fertilizer because: 1) if the soil contains enough air and water, the decomposition of organic matter will be rapid enough to interfere with plant growth, 2) the decomposition of fresh material adds very little humus and nutrients to the soil, 3) the structure of fresh organic matter is very coarse and its strength against water is low, so if it is directly buried, it will cause the soil to become very crumbly, 4) animal manure is not always available when needed, so composting is a way to store organic matter before it is used as fertilizer (Nugraha & Amini, 2013).

The use of livestock manure as a source of compost is certainly very useful in supporting the agricultural and plantation sectors in Sindang Anom Village. However, livestock manure waste in Sindang Anom Village has not been optimally utilized, so some manure will accumulate and be wasted. Due to the lack of theoretical and practical knowledge about the benefits, functions, and how to make compost, most villagers use chemical fertilizers as the main ingredient to increase their agricultural yields. The community does not get it that using chemical fertilizers in the long term will dissolve the nutrient and minerals in the soil. This activity aims to train and practice the community of composting animal manure in Sindang Anom village, East Lampung Regency. Compost is an organic fertilizer that can be produced from a variety of feedstocks. Farisi, Irawan, Suratman, Busman, & Kiswandono (2022), introduced composting from garden crop residues induced by saprotrophic fungal isolates, while Buhani, et al., (2024), activated community participation in composting from plantation biomass waste. All the basic ingredients for the production of this compost are abundantly available in the Lampung region.

PROBLEM IDENTIFICATION

Based on the results of interviews with the community in Sindang Anom village, East Lampung, there is still a lack of socialization¸ training, or community service held by both regional agencies, UKM, universities, and others about animal manure processing. Of course, with such conditions, it is necessary to hold community service activities (PKM). With this PKM activity, the community is motivated to add innovation in managing animal manure into compost that can be made and processed by the community in Sindang Anom Village, East Lampung.

In addition, with the implementation of this PKM, the community received guidance on the processing, harvesting, and packaging of the produced compost. So that the community knows that animal manure can be processed into compost that can be used to fertilize plantation crops or sold in the market. So that the sale value of this utilization can improve the economy of the community in Sindang Anom village, East Lampung.

IMPLEMENTATION METHOD

Community service activities are conducted with community groups in Sindang Anom village, most of whom live as farmers and breeders. The methods used in this community service activity are lectures, discussions, and practice/demonstration. The tools needed to start the activity include plastic buckets, stirrers, dippers, plastic sheeting, and gloves. The materials used are animal dung, dried rice husk, EM4, and molasses. This activity was conducted in 2 stages. Stage 1 measured the initial knowledge of the community through a pre-test and continued with the delivery of material in the form of lectures on different types of animal manure and their specifications, factors that affect composting, composting steps, and discussion sessions. The second stage is practice/demonstration to give a real picture of making compost from livestock manure. A post-test is then used to evaluate success.

The processing of animal manure compost can be done in several stages. In this activity, it is carried out from the preparation stage to the packaging stage. The outline of these stages is shown in Figure 1.

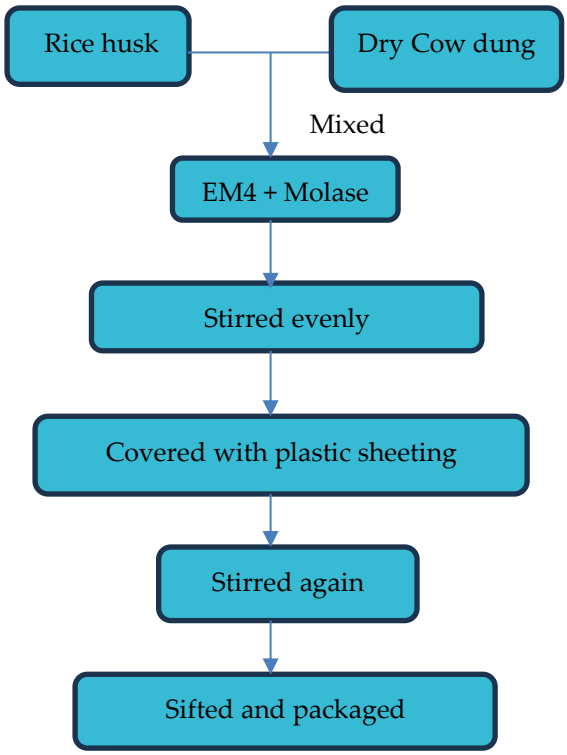

Figure 1. The Stages Of Processing Animal Manure Into Compost Fertilizer

Making compost fertilizer in a simple way is very important. In addition, the steps are easily understood by the local community so that it can be easily adopted by the local community. Animal manure is used as the basic raw material for fertilizer production, and the bioactive ingredients EM4 and molasses are used as additional raw materials. These bioactive ingredients greatly help to accelerate the decomposition process. The rapid decomposition process helps to quickly produce organic fertilizer at the appropriate maturity level, thereby reducing the chances of crop phytotoxicity (Gunawan, et al., 2022).

RESULTS AND DISCUSSIONS

A training on processing animal manure into organic compost fertilizer for the community of Sindang Anom Village, East Lampung was held on 4 July 2024. The training was held at the cattle farm owned by the headman of Sindang Anom village and was attended by about 20 men who work as farmers. Training on processing animal manure into organic compost has never been conducted in Sindang Anom village, East Lampung. This training aims to improve the skills of local farmer groups in using and processing animal manure into compost fertilizer.

The training began with a pre-test attended by 20 people (Figure 2) and continued with the delivery of material using the lecture method on the steps of composting livestock manure (Figure 4). The material included information and paradigm shifts regarding environmental health, the importance of managing and processing animal manure into compost, and opportunities for processing animal manure into a product that has economic value. This was followed by a hands-on demonstration of manure processing (Figure 6). During the demonstration, the implementation team invited several participants to directly demonstrate the process under the guidance of the service team. Questions and answers and discussions on the function of each material between the participants and the service team or among the participants themselves were conducted simultaneously during the practice/demonstration of processing livestock manure into compost.

The pre-test conducted by the participants to measure their initial knowledge about the use of animal manure in compost fertilizer is shown in Figure 2.

Figure 2. Participants Taking the Pre-Test

Based on the results of the pre-test and post-test evaluations, the average initial knowledge of the participants before the training was 3.9 out of 10, while the average post-test score was 7.9 out of 10. The results are shown in Table 1.

Table 1. Resume of Test Results of Training on Making Compost Fertilizer from Animal Manure in Sindang Anom Village, East Lampung

No	Name	Score		
		Pre-test	Post-test	Improvement
1	Badarudin	4	8	4
2	Hermawan	2	8	6
3	Sanusi	6	8	2

4	Nasrudin	6	10	4
5	Aris	4	8	4
6	Muhadi	8	10	2
7	Eki	6	8	2
8	Bayu	6	10	4
9	Sutrisno	6	8	2
10	Sariyo	4	6	2
11	Widi	2	6	4
12	Deni	2	8	6
13	Mujianto	4	8	4
14	Taklim	4	8	4
15	Miswadi	2	6	4
16	Rusmanto	2	6	4
17	Paino	2	8	6
18	Dasar	4	10	6
19	Munajir	2	8	6
20	Ridwan	2	6	4
Average		**3,9**	**7,9**	**4**

Table 1 shows the details of the evaluation results of the 20 participants of the activity along with the pre-test and post-test scores. According to this table, the implementation of this training was able to increase the knowledge of the participants on animal manure composting by an average of 4 points or 40%. This is demonstrated by the bar graph in Figure 3, which shows the increase in community knowledge about manure composting.

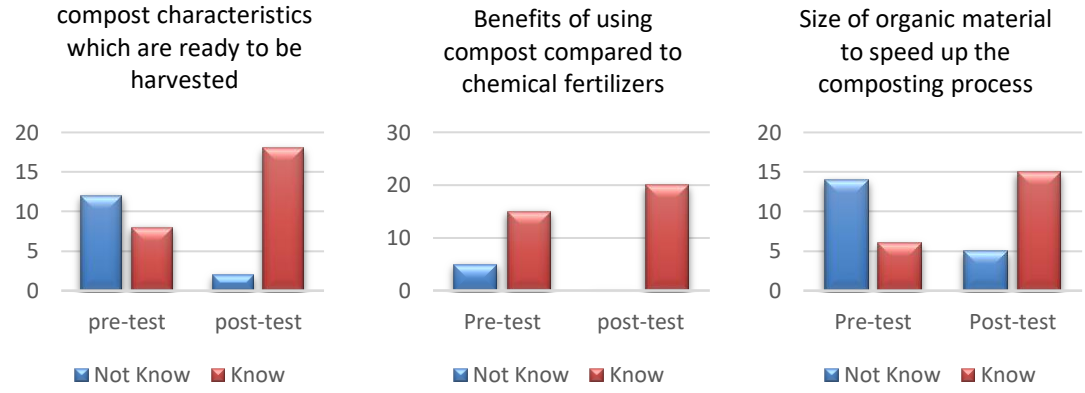

Figure 3. Result of The Test

The results of activity implementation from the pre-test and post-test presented in Table 1 and Figure 3 show that before the implementation of this activity, the community did not know the characteristics of mature and harvestable compost and did not understand the benefits of using compost compared to chemical fertilizers. Most people still think that using compost fertilizer can only increase crop yields compared to using chemical fertilizers. In this case, the use of compost fertilizer has a more environmentally friendly use value, so it can reduce the environmental pollution caused by the use of chemical fertilizers. In addition, the community still does not know the most ideal size of organic material pieces used to accelerate the composting process. The smaller the size of the organic material pieces, the faster the composting process will be.

Based on the results of the pre-test, the Pengabdi conducted knowledge improvement. Community by providing material in the form of lectures on different types of livestock manure and their specifications, factors that affect composting, composting steps, and discussion sessions The activity is shown in Figure 4.

Figure 4. The Presentation of Compost Making, Followed by a Q&A Session

When the resource person delivered the material, the participants paid serious attention to the explanation given. This shows that the participants are willing to make the best use of animal manure as compost according to the knowledge of the resource person. The seriousness of the participants can be seen in Figure 5.

***Figure 5. Participants Follow The Presentation of The** Team*

After listening to the resource person's explanation, participants were allowed to directly practice processing livestock manure into compost. The activity is shown in Figure 6.

Figure 6. Demonstration and Practising of Making Compost Fertilizer from Animal Manure

Composting is simply a matter of mixing animal manure with additional ingredients such as the bioactivator Effective Microorganism 4 (EM4) and molasses. EM4 solution contains fermented microorganisms that can accelerate the fermentation process of organic matter. Molasses is used as a source of nutrients needed by microorganisms for their survival (Herawati & Wibawa, 2019).

This training activity can provide additional knowledge to local farmers. Cow dung, which is considered manure, can be used as compost which can increase the profit of farmers and breeders, so compost is an alternative for the community to reduce waste (Eliana, Hartanti, & Canti, 2018). In addition, the use of compost is considered more environmentally friendly and can maintain soil fertility compared to chemical fertilizers (Ratriyanto, Widyawati, Suprayogi, Prastowo, & Widyas, 2019).

CONCLUSION

Based on the results of this activity, the Sindang Anom village community was very enthusiastic to participate in the training on animal manure composting. The evaluation results showed that the average pre-test score of the participants was 3.9 whereas 7.9 for average post-test score. From this activity, the knowledge and understanding of the community in Sindang Anom village increased by 40%, especially about the method of processing compost fertilizer from animal manure. The implementation of animal manure compost processing activities can become a business opportunity and has economic value in improving the community's economy. In addition, through community service activities, it is able to provide positive value to the understanding and self-capacity and skills in processing animal manure, packaging, and applying financial management to develop businesses.

REFERENCES

Buhani, Kiswandono, A. A., Rinawati, Suharso, Nurhasanah, & Juliasih, N. L. G. R. (2024). Pemanfaatan Limbah Biomassa Pertanian Menjadi Kompos Melalui Keterlibatan Masyarakat di Desa Pakuan Ratu,Way Kanan. *Jurnal Pengabdian Kepada Masyarakat (JPKM) TABIKPUN, 5*(1), 19-26. doi:https://doi.org/10.23960/jpkmt.v5i1.122

Eliana, R., Hartanti, A. T., & Canti, M. (2018). Metode Komposting Takakura Untuk Pengolahan Sampah Organik Rumah Tangga Di Cisauk, Tangerang. *Jurnal Perkotaan, 10*(2), 76–90. doi:https://doi.org/10.25170/perkotaan.v10i2.306

Farisi, S., Irawan, B., Suratman, Busman, H., & Kiswandono, A. A. (2022). Pembuatan Kompos Seresah Menggunakan Inokulum Fungi Saprotrof Di Pesantren Darul Fattah Gedung Meneng Bandar Lampung. *Jurnal Pengabdian Kepada Masyarakat (JPKM) TABIKPUN, 3*(1), 53-60. doi:https://doi.org/10.23960/jpkmt.v3i1.70

Gunawan, A., Cornelia, A., Nugroho, B. M. B., Hastiawan, I. F., Tolanda, I., Leunupun, M. S., . . . Andika, I. P. (2022). Pemanfaatan Limbah Ternak Sebagai Pupuk Organik untuk Mendukung Pengembangan Sektor Pertanian dan Perkebunan Desa Segoroyoso. *Jurnal Atma Inovasia, 2*(4), 382-386. doi:https://doi.org/10.24002/jai.v2i4.5216

Herawati, D. A., & Wibawa, D. A. A. (2019). Pengaruh Penambahan Molase pada produksi Bioethanol dari Limbah Padat Industri Pati Aren. *Jurnal Biomedika, 12*(2), 197-204. doi:https://doi.org/10.31001/biomedika.v12i2.619

Huda, S., & Wikanta, W. (2017). Pemanfaatan Limbah Kotoran Sapi Menjadi Pupuk Organik Sebagai Upaya Mendukung Usaha Peternakan Sapi Potong di Kelompok Tani Ternak Mandiri Jaya Desa Moropelang Kecamatan Babat Kabupaten Lamongan. *Aksiologiya: Jurnal Pengabdian Kepada Masyarakat, 1*(1), 26-35. doi:https://doi.org/10.30651/aks.v1i1.303

Nenobesi, D., Mella, W., & Soetedjo , P. (2017). Pemanfaatan Limbah Padat Kompos Kotoran Ternak dalam Meningkatkan Daya Dukung Lingkungan dan Biomassa Tanaman Kacang Hijau (Vigna radiata L.). *Pangan, 26*(1), 43–55. doi:https://doi.org/10.33964/jp.v26i1.344

Nugraha, S. P., & Amini, F. N. (2013). Pemanfaatan Kotoran Sapi Menjadi Pupuk Organik. *Jurnal Inovasi dan Kewirausahaan, 2*(3), 193–197.

Pramana, I. N. G., Hutabarat, J., & Herawati, V. E. (2017). Perbandingan Pemberian Fermentasi Kotoran Kambing, Ampas Tahu Dan Roti Afkir Terhadap Performa Pertumbuhan, Kandungan Protein, Dan Asam Amino Lisin Daphnia sp. *e-Jurnal Rekayasa dan Teknologi Budidaya Perairan: Aquaculture Engineering and Technology Journal, 6*(1), 631–642.

Ratriyanto, A., Widyawati, S. D., Suprayogi, W. P. S., Prastowo, S., & Widyas, N. (2019). Pembuatan Pupuk Organik dari Kotoran Ternak untuk Meningkatkan Produksi Pertanian. *SEMAR (Jurnal Ilmu Pengetahuan, Teknologi, dan Seni bagi Masyarakat, 8*(1), 9-13. doi:https://doi.org/10.20961/semar.v8i1.40204