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Community Capacity Building in Organic Waste Management through The Takakura Method

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Abstract: The problem of household organic waste is still a major challenge in environmental management in urban areas, including in Jayaraksa Village, Sukabumi City. The low level of knowledge and skills of the community in managing waste has led to an increase in the volume of waste disposed of in temporary shelters. This Community Service Activity (PKM) aims to increase community capacity in organic waste management through the application of the Takakura method. The method used is Participatory Action Research (PAR) with the stages of problem identification, planning, implementation, and monitoring and evaluation involving active community participation. The results of the activity show an increase in community knowledge and skills in managing organic waste, as well as changes in behavior in sorting and processing waste at the household level. The implementation of the Takakura method has proven to be effective in reducing the volume of organic waste and producing compost that can be used as organic fertilizer. In addition to having a positive impact on the environment, this program also has the potential to support a community-based circular economy.

Keyword: Organic Waste Management, Takakura Method, Community Empowerment, Circular Economy.

INTRODUCTION

The problem of waste, especially household organic waste, is still a crucial issue in various urban areas in Indonesia, including in Jayaraksa Village, Sukabumi City. The increase in population and domestic activities has a direct impact on the increasing volume of waste

produced every day. Organic waste such as food waste and kitchen waste dominates the composition of household waste, which if not managed properly will cause environmental pollution and public health risks. This condition is in line with research findings that the accumulation of household organic waste can be a source of pollution and the potential for the spread of disease if not managed properly (Murniati et al., 2021, pp. 372–388).

In particular, the conditions in Jayaraksa Village show that waste management still faces various basic obstacles. Based on the results of initial observations of PKM activities, most of the community still mixes organic and inorganic waste without a sorting process from the source. Household waste is generally directly disposed of in temporary shelters (TPS) without going through the processing process, thus causing waste accumulation and causing an unpleasant odor, especially in the rainy season. In addition, the limited waste management facilities at the household level and the non-optimal role of local institutions, such as waste banks or non-governmental groups, also aggravate this condition.

Another problem is the low level of knowledge and skills of the community in processing organic waste into useful products. Some people still view waste as waste that has no economic value, so there has been no initiative to process it independently. This is in line with previous research which states that low environmental literacy and lack of technical assistance are the main inhibiting factors in community-based waste management (Dewi & Kusnoputranto, 2022). On the other hand, the opportunity to use organic waste as compost has not been optimally utilized, even though the potential for raw materials is abundant every day.

In the context of sustainable development, waste management requires active community involvement through an empowerment approach. One of the solutions that can be applied is the Takakura composting method, which is a simple, practical, and environmentally friendly household-scale organic waste processing technique. This method utilizes the aerobic decomposition process with the help of natural microorganisms so that it can speed up the composting process and produce compost that meets quality standards. Research shows that the use of the Takakura method with the addition of bioactivators is able to improve the quality of compost and accelerate the decomposition process until it reaches a mature condition according to standards (Wellang et al., 2021, pp. 254–260).

In addition, the Takakura method has advantages in terms of ease of application at the household level because it does not require a large area of land and relatively does not cause odors. The training and mentoring approach in the application of this method has been proven to be able to increase community knowledge and skills in managing organic waste independently. Therefore, this method is considered relevant to be applied in Jayaraksa Village as a solution to the problems faced.

Based on these conditions, this Community Service (PKM) activity is focused on efforts to increase the capacity of the people of Jayaraksa Village in managing organic waste through the Takakura method. This program is expected to not only be able to reduce the volume of waste disposed of at the polling station, but also increase environmental awareness, community skills, and create economic added value from organic waste processing. Thus, this activity has the potential to produce an effective, participatory, and sustainable community empowerment model based on waste management.

METHOD

This Community Service Activity (PKM) was carried out in Jayaraksa Village, Sukabumi City using the Participatory Action Research (PAR) approach. This approach was chosen because it emphasizes the active involvement of the community in all stages of activities, starting from problem identification, planning, implementation, to evaluation. The PAR approach is considered effective in empowerment activities because it is able to integrate the learning process with real actions in the community (Rahman et al., 2021, pp. 45–52).

The stage of implementing the activity begins with the identification of problems through field observation and interviews with the community and village officials. This stage aims to obtain an overview of the existing conditions related to waste management, the level of community knowledge, and local potential that can be developed. Previous research has shown that participatory-based problem identification is able to increase the relevance of the program to the needs of the community (Sari et al., 2022, pp. 112–118).

Selanjutnya dilakukan perencanaan program secara partisipatif dengan melibatkan masyarakat sebagai mitra utama. Perencanaan partisipatif terbukti mampu meningkatkan rasa memiliki (sense of ownership) terhadap program sehingga berdampak pada keberlanjutan kegiatan (Widodo & Nugroho, 2021, hlm. 89–96).

The implementation stage of the activity includes socialization, training, and mentoring. Socialization is carried out to increase public awareness of the importance of organic waste management and its impact on the environment. The training is focused on the practice of composting using the Takakura method, starting from the preparation of tools and materials, the manufacture of microorganism starters, to the composting process. The Takakura method is a simple and effective aerobic composting technique for the household scale, and is able to accelerate the decomposition process with quality composting results (Wellang et al., 2021, pp. 254–260). Mentoring is carried out periodically to ensure that the community is able to implement the method independently and sustainably, as recommended in the study of environment-based community empowerment (Dewi & Kusnoputranto, 2022).

In its implementation, the Takakura method uses a medium in the form of a composter basket equipped with supporting materials such as husks, cardboard, and covering fabrics. Household organic waste is gradually put into the basket and stirred regularly to maintain optimal aerobic conditions. Humidity and temperature control is carried out simply by the community to ensure that the composting process runs effectively. Studies show that the management of environmental parameters such as humidity and aeration greatly affects the quality of the compost produced (Ayilara et al., 2020, p. 4456).

The final stage is monitoring and evaluation (monev) which is carried out to measure the success rate of the program. The evaluation is carried out by looking at changes in community knowledge, attitudes, and skills in organic waste management, as well as the success of compost production. In addition, the evaluation also includes aspects of program sustainability and the potential for replication in other regions. The participatory-based evaluation approach has proven to be effective in measuring the impact of community empowerment programs comprehensively (Fauzi et al., 2023).

With a participatory and empowerment-based approach, this method is expected to significantly increase community capacity in managing organic waste, while encouraging the creation of a cleaner, healthier, and more sustainable environment.

RESULTS AND DISCUSSION

The implementation of Community Service (PKM) activities in Jayaraksa Village, Sukabumi City showed significant results in increasing community capacity in organic waste management through the Takakura method. The results of this activity were analyzed based on aspects of increasing knowledge, skills, behavior changes, and the resulting environmental and economic impacts.

The results of socialization and education activities showed that there was an increase in public understanding regarding the importance of organic waste management. Before the activity, most people did not understand waste sorting and the benefits of organic waste processing. After socialization, the community began to realize that organic waste has the potential to be processed into compost with useful value.

This finding is in line with the research of Murniati et al. (2021) which states that environmental education plays an important role in increasing public awareness of household waste management. This increase in knowledge is the main foundation in encouraging changes in people's behavior towards a more environmentally conscious direction.

Figure 1 : Education and Socialization Activities

Composting training with the Takakura method has a real impact on improving people's skills. Training participants are able to understand the stages of composting, starting from preparing materials, making microorganism starters, to the composting process.

During the mentoring process, the community demonstrated the ability to manage organic waste independently at the household level. This indicates that Takukura's method has a high adoption rate because it is simple, practical, and does not require complex technology.

These results support the findings of Wellang et al. (2021) who stated that the Takakura method is effective in accelerating the decomposition process and is easy to apply by the community.

Figure 2 : Training to Make Compost Fertilizer Takakura Method

One of the indicators of the success of PKM activities is the change in community behavior. After the activity took place, new habits began to be seen such as sorting organic and inorganic waste at the household level and the use of organic waste for the composting process.

This change shows that the Participatory Action Research (PAR) approach used is able to encourage active community involvement in the change process. Widodo & Nugroho (2021)

emphasized that the participatory approach can increase a sense of belonging to the program so that it has an impact on the sustainability of community behavior.

The implementation of the Takakura method has a positive impact on the environment, especially in reducing the volume of organic waste disposed of in temporary shelters (TPS). People who have implemented this method are able to significantly reduce the generation of household waste.

In addition, the surrounding environment becomes cleaner and less odorous because organic waste no longer accumulates. This is in line with research by Ayilara et al. (2020) who stated that composting is one of the effective solutions in reducing environmental pollution due to organic waste.

The results of the activity also show that the compost produced has potential economic value. Although it is still in its early stages, the community has begun to use compost for household agricultural needs such as ornamental plants and vegetables.

In the long term, this compost has the potential to be developed into a product with selling value, so that it can support the community's economy based on the environment. This is in line with the concept of a circular economy that emphasizes the reuse of waste into valuable resources.

The success of this program is supported by several factors, including community enthusiasm, support from village officials, and methods that are easy to implement. However, there are several obstacles such as limited community time, consistency in composting, and the need for follow-up assistance to maintain the sustainability of the program.

Dewi & Kusnoputranto (2022) stated that the success of community-based waste management is highly dependent on the sustainability of the assistance and commitment of the community in running the program.

Figure 3 : Takakura Method Compost Production Results

CONCLUSION

Community Service Activities (PKM) in Jayaraksa Village, Sukabumi City showed that the application of the Takakura method was effective in increasing community capacity in organic waste management. This program succeeded in increasing public knowledge, skills, and awareness of the importance of waste sorting and processing from the source. In addition, there was a change in the behavior of people who began to implement organic waste management independently at the household level.

The implementation of the Takakura method also has a positive impact on the environment, characterized by a reduction in the volume of organic waste disposed of in

temporary shelters and the creation of a cleaner and healthier environment. On the other hand, the compost produced has the potential to be used as an organic fertilizer with economic value, thus supporting the concept of a community-based circular economy.

However, the sustainability of the program still needs strengthening, especially in terms of community consistency and sustainable mentoring. Therefore, synergy is needed between the community, the government, and other stakeholders to ensure the sustainability of the program and encourage the replication of the Takakura method-based waste management model in other regions.

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