Manure Management for the Youth Farmer Group as A Startup Business of Fermented Organic Manure in Karangasem Village, Paliyan, Gunungkidul

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ABSTRACT

More than 70% of the people of Karangasem village raise cattle, goats, sheep, chickens, and ducks. The abundance of manure can be used as a local commodity that has the potential to be a business opportunity for local communities through youth farmer groups. At present, the abundance has not been optimally utilized. Its use is only sown directly into the land, which can have several implications, including reduced nutrient content due to volatilization and lack of practical use. Managing manure into packaged fermented organic fertilizer makes its use more practical, effective, and efficient. The increase in the use of fermented organic fertilizers also can reduce agricultural production costs, such as purchasing chemical fertilizers. The purpose of this program was to assist Ngudi Boga's youth farmer group in managing manure into packaged fermented organic manure, which is marketable and partly used by themselves. Aerobic composting was applied. Raw materials, including manure, foliage, and other local organic matter, were used. The fertilizer samples were analyzed for nutrient content. It has produced 375 packs (5 kg/pack) of ready-to-use fermented organic fertilizer, equivalent to ± 1.76 tons. It was >75% of production sold by the limited local markets. Future improvement efforts related to increasing the capacity of grinding machines and developing a profit-sharing system with the village community need to be carried out.

Keywords: business opportunity, fermentation, manure, organic fertilizer, youth farmer group

1 Introduction

The Ngudi Boga Farmer Group is a young farmer group whose members are millennials from Karangasem Village, Paliyan District, Gunungkidul Regency residents. This farmer group was formed with the assistance of senior farmer groups, namely the Forest Farmer Group of "Ngudi Makmur" and the Women Farmer Group of "Lestari Mulyo". Assistance to the young farmer group is needed to use livestock wastes abundantly available in the village area. The waste was managed into more valuable products. It can be an opportunity of economic value launched into the market and used by the farmers to increase the local community's income.

The Karangasem village area is dominated by karst rocky, hilly areas, which are part of the Sewu mountain range in the south-central part of Java Island. Agriculture is the main activity of the local people growing maize, cassava, soybeans, peanuts, and other crops [1]. The crops are grown both in monoculture and mixed planting patterns through the agroforestry approach. Woody plants planted are teak (*Tectona grandis*), mahogany (*Swietenia mahogany*), sengon (*Falcataria moluccana*), formis (*Acacia auriculliformis*) [1], calliandra (*Calliandra calothyrsus*), Tayuman (*Bauhinia purpurea*) and gamal (*Gliricidia sepium*). Foliage obtained both from post-harvest wastes of crops and from some woody plants is used for animal feed. There are >70% of residents raise livestock, including cattle (1,041), goats (1,038), sheep (57), chickens (32, 210), and ducks (1,040) [2].

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So far, the manure produced in large quantities has not been utilized optimally. People still use it in the form of raw manure. This practice will reduce the effectiveness of the fertilization of the plants. Most farmers still rely on chemical fertilizer (urea/NPK), which adds to family expenses in maintaining crops.
In addition, some community residents at productive ages have not had the opportunity to get a job, as there are limited job opportunities in the local area. For example, as seasonal workers, some residents are looking for a job outside the village area, especially in the nearest cities such as Yogyakarta, Surakarta, and Klaten. Efforts to explore and utilize the potential of local resources must be carried out through productive age groups, especially village youth, to overcome this problem. One of these efforts is utilizing manure as a product that has an economic value to increase people's income. This new business opportunity has applied appropriate technology, namely fermented organic manure.
The objective of this program was to assist Ngudi Boga's youth farmer group in managing manure into packaged fermented organic fertilizer, which is marketable and partly used by the local farmers themselves. The benefits that can be obtained from the application of this appropriate technology are the availability of a set of fermented fertilizer processing and the availability of packaging products. It can become a new business opportunity for Karangasem Village in increasing community income through the performance of the productive young age group through the Ngudi Boga farmer group. It potentially acts as a group driving the village economy in the future to improve community welfare through manure management.

2 Research Methodology

Implementing this program through the activity processes involved several parties: UGM Team (lecturer, employees, students), the Karangasem Village Government, and the Ngudi Boga farmer group. There are five activities implemented, namely: (a) Preparation, (b) Socialization and coordination of the program implementation, (c) The process of making fertilizer and packaging, (d) Training on administrative management and product marketing, and (e) Evaluation of program implementation and sustainability.

3 Results and Discussion

3.1 Socialization of the Program

The socialization of the program was carried out on 9 June 2022. It was attended by the UGM Team, students, village government officials, community representatives, Ngudi Boga farmer groups, and representatives from several related farmers groups in Karangasem village (the Ngudi Makmur, the Lestari Mulyo, and the Ngudi Barokah). Eleven members of the Ngudi Boga farmer group attended this program. The UGM Team explained the objectives of the program and activity plans for implementing appropriate technology by using manure for organic fertilizer to become a new opportunity for marketable products from local resources. On 19 June 2022, the agenda was continued with a site visit to the Ngudi Makmur farmer group, Bendungan Village, Karangmojo District, Gunungkidul Regency. The purpose of this visit was to provide an example of manure management. The documentation is shown in Figure 1.

3.2 Training on the Application Technique of Compost Processing Preparation

The training was conducted on 10 July 2022 by the UGM Team with the Ngudi Boga farmer group, as shown in Figure 2. The training was carried out with several activities, including identifying local materials, implementing the composting process using aerobic composting, and maintaining product quality. Figure 3 shows how the team also surveyed local resources that can be used for fermented manure production. In addition, the identification of organic matter from the local plant species was also carried out to obtain raw materials easily, cheaply, and abundantly for composting. In addition, some plant species were identified, including *A. auriculiformis*, *B. purpurea*, *G. sepium*, *T. grandis*, *F. moluccana,* and *Eupatorium datum*.

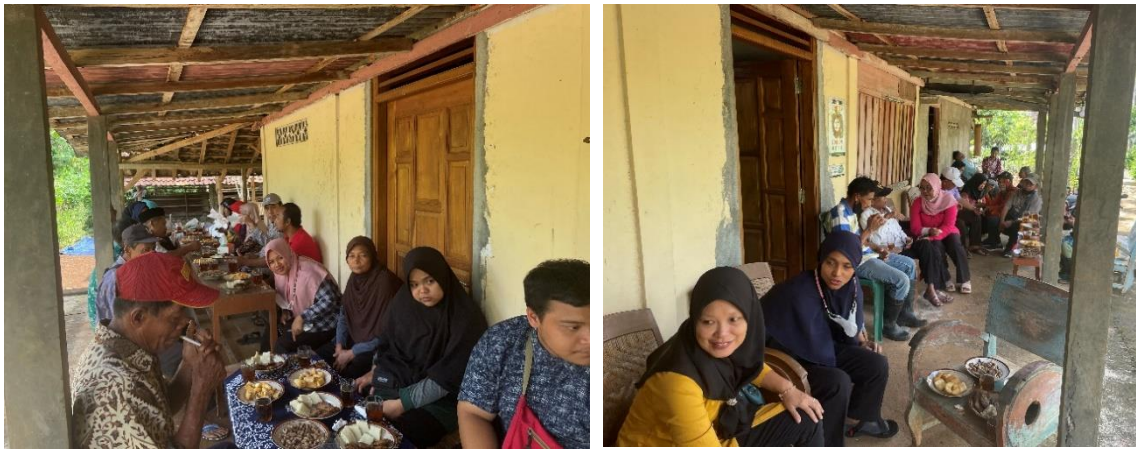

Figure 1: *Socialization and initial coordination of the UGM Team with the Village government, community representatives, and several farmer groups in Namberan Hamlet, Karangasem Village, Paliyan District, Gunungkidul Regency.*

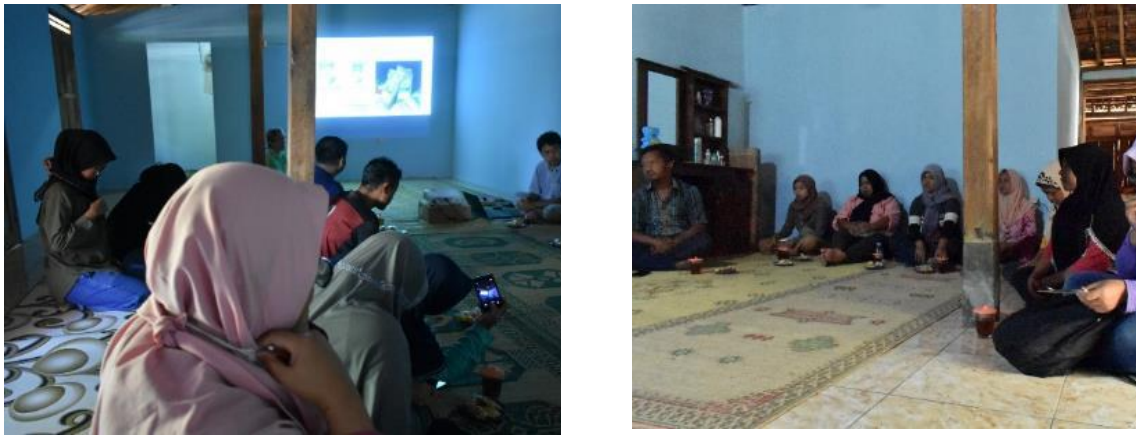

Figure 2: *Training on Compost Processing Preparation Application Technique in Namberan Hamlet, Karangasem Village, Paliyan District, Gunungkidul Regency*

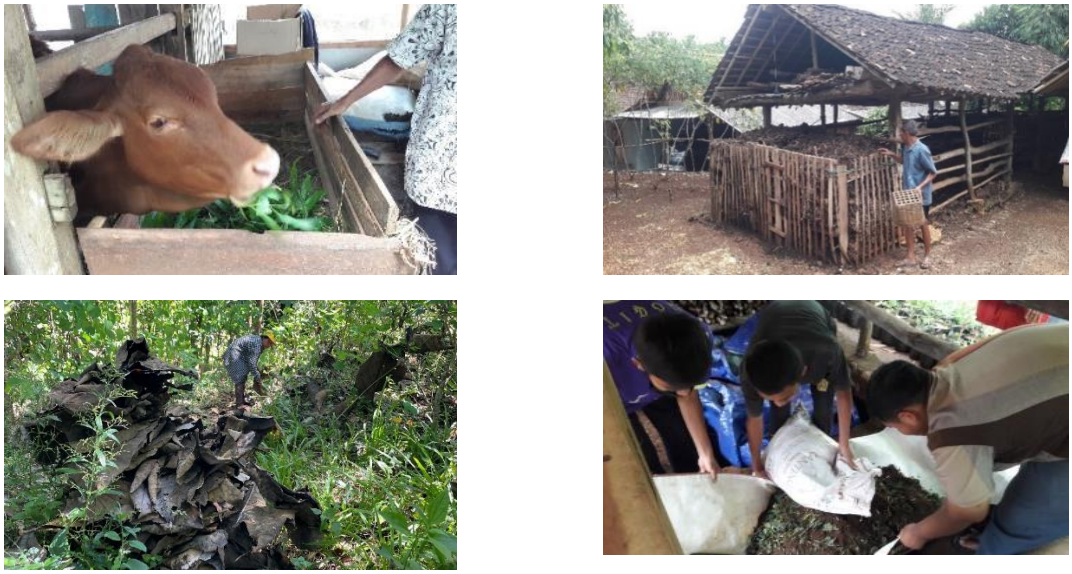

Figure 3: *Surveying and identifying the potential local resources as raw materials for composting.*

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3.3 The Process of Making Compost Fertilizer

The UGM Team carried out the production of compost fertilizer every 21 days. They also guided the community in comparing some essential macronutrients by comparing the different sampling periods. The process is compiled in Figure 4.

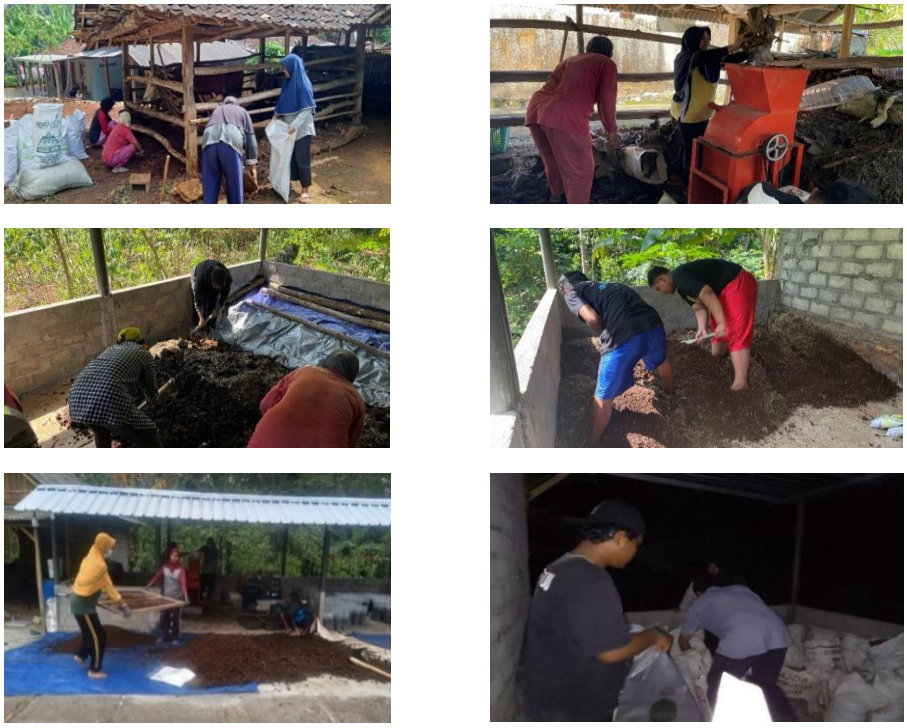

Figure 4: *Making compost fertilizer in Namberan Hamlet, Karangasem Village, Paliyan District, Gunungkidul Regency.*

3.4 Training on Printing of Product Packaging

Training in making product packaging was held on 2022 September 25th, with assistance from the UGM Team, as shown in Figure 5. The Ngudi Boga farmer group attended the training and invited several youth farmers groups from Playen and Karangmojo Districts.

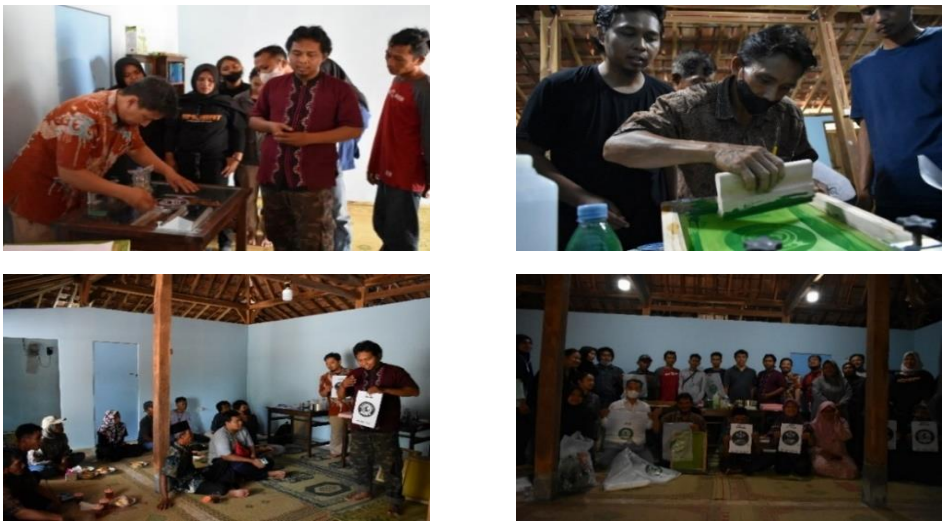

Figure 5: *Training on product packaging.*

3.5 Product Packaging

The product is packaged in a 5 kg/pack. As displayed in Figure 6, during the program's implementation, the group produced 375 packs (5 kg/pack = ± 1.76 tons) of compost fertilizer.

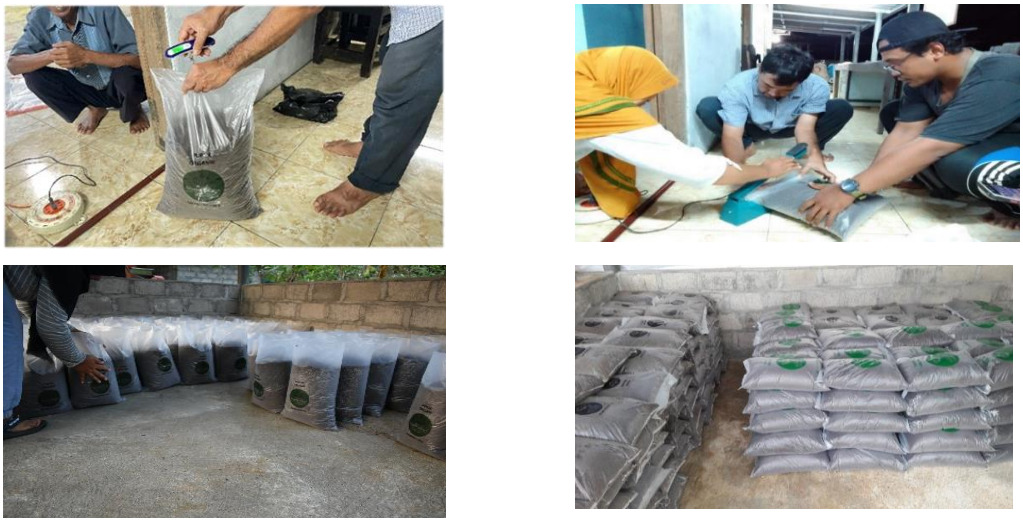

Figure 6: *Packaging of the products for a 5 kg/pack.*

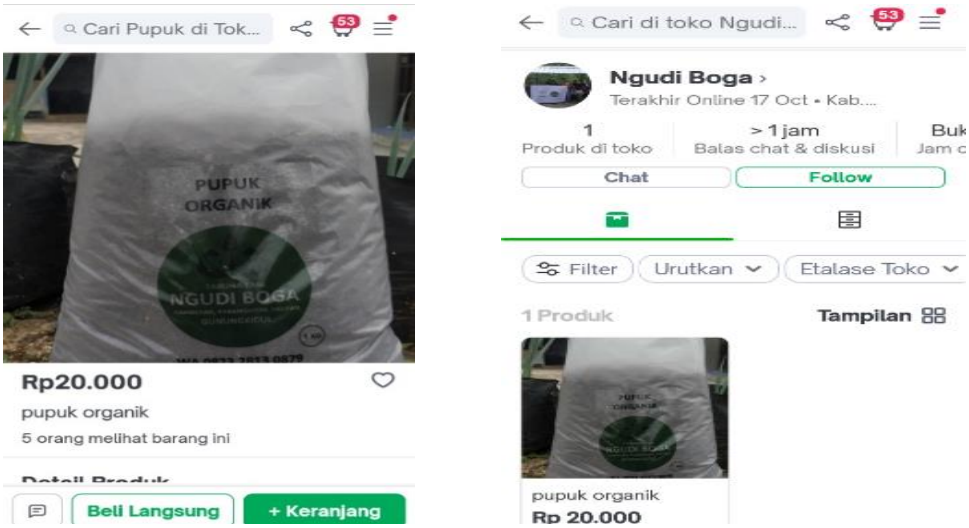

Figure 7: *Introducing an online market platform.*

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3.6 Practicing an Online Marketing

In addition to the marketing strategy carried out offline, the farmer group also practiced using online market platforms. This activity was carried out on 4 October 2022, with assistance from the UGM Team. Some activities included creating accounts, registering, uploading products, and transaction simulation, as documented in Figure 7.

3.7 Establishment of Demonstration Plot for Planting Crops

The demonstration plot was established in Mojo, Namberan Hamlet, Karangasem Village, on 15 October 2022. The plot was planted with maize and cassava, covering an area of ±2400 m2. The purpose of its establishment is to evaluate the effect of organic fertilizer produced by applying several doses. The results will be used to consider determining an optimal dose of organic fertilizer and compare it with the application of chemical fertilizers that farmers usually apply. Farmers will use it to determine the proportion of organic fertilizer that might be partly a substitute for chemical fertilizers, as shown in Figure 8. The UGM Team carried out the activity with the Ngudi Boga farmer group and representatives of the farmer groups of Lestari Mulyo and Ngudi Makmur.

Figure 8: *Establishment of a demonstration plot in Karangasem Village for applying organic fertilizer by the Ngudi Boga farmer group. The purpose is for the cultivation of maize and cassava.*

4 Conclusions

The Ngudi Boga farmer group has been able to independently produce organic fertilizer by using fermented manure. It was about 1.76 tons of compost fertilizer had been produced. The limited local market has sold more than 75% of production.

Future improvement efforts need to be developed, including (a) Arrangement of permits for product marketing to a broader range of markets, (b) Increasing the capacity of grinding machines and arranging a profit-sharing system with the village community, (c) Conducting periodic testing of produced organic

fertilizer every six months to maintain nutrient content following the required provisions, (d) Establishing demonstration plots of crop plantings to test the produced organic fertilizer periodically.

5 Declarations

5.1 Acknowledgments

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5.2 Publisher's Note

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References

[1] Balai Konservasi Sumber Daya Alam Yogyakarta, *Profil Desa Penyangga Suaka Margasatwa Paliyan,* pp. 79. 2018. https://simdpkk.menlhk.go.id/assets/filepublikasi/Profile_desa_SM_Paliyan.pdf (accessed online on February 24th, 2023).

[2] Badan Pusat Statistik Kabupaten Gunungkidul, *Kecamatan Paliyan Dalam Angka 2022*, pp. 136. https://gunungkidulkab.bps.go.id/publication (accessed online on February 24th, 2023)