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Community Partnership Empowerment Waste Utilization Pig Manure in P4S Sedana Sari Strait Village, Biansemal-Badung

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A B S T R A C T

Community partnership empowerment was carried out at P4S Sedana Sari with the title "PKM Utilization of Pig Manure Waste at P4S Sedana Sari Selat Village, Abiansemal Badung. The application of organic fertilizer technology in the agricultural sector is one of the efforts in sustainable agriculture. Organic fertilizer technology in this case is manure produced from pig manure. There is quite a lot of manure waste which, if not processed, can cause environmental pollution such as air and water, so further handling of the livestock manure is necessary. Making organic fertilizer is an alternative to using pig manure which can be processed as fertilizer for plants. The method is technology transfer and introducing science and technology, namely outreach, training, mentoring activities, both partners are actively and creatively invited to work together. The resulting product is organic fertilizer with analysis and can be applied to plants.

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INTRODUCTION

The application of organic fertilizer technology in the agricultural sector is one of the efforts in sustainable agriculture. Organic fertilizer technology in this case is manure produced from domestic livestock manure, which is waste that disturbs environmental comfort. Manure is fertilizer that comes from animal waste, both solid and liquid, and food remains, for example chicken, cow, pig, horse, buffalo, goat manure. The decomposition that occurs in manure will become good fertilizer and is very useful for plants [Yosia Ririn, et.al.,2022]. Awareness of the importance of sustainable agriculture and the difficulty of obtaining and the high price of inorganic fertilizer among farmers has led to the use of organic waste which is cheaply available and environmentally friendly which can be used as organic fertilizer (Iin Melani Harahap, 2019)

Selat Village Selat Village is a village/official sub-district located in Abiansemal sub-district, Badung regency with an area of 2.21 km2, flat to wavy with a height of 300 m above sea level, rainfall of 2500 mm/year. Agricultural land in the form of rice fields covering an area of 87 ha; upland/garden land 7,340 ha and yard land 5,220 Ha (Desa Selat , 2019). The territorial boundaries of Selat Village are to the north: Samuan Traditional Village, Petang District; South: Blahkiuh Traditional Village; West: Sangeh Traditional Village; East: Punggul Traditional Village. Selat Village consists of four (4) banjars, namely Banjar Dinas Selat Anyar, Banjar Selat, Banjar Tegal and Banjar Mekar Sari (Desa Selat , 2022). The Sedana Sari Self-Help Agricultural and Rural Training Center (P4S) is located in Banjar Mekarsari which is defined as an Agricultural Institution built, owned and managed by farmers both individually and in groups which is a real form of active participation in the agricultural development process through improving the soul and spirit agribusiness entrepreneurship (Suparsa, 2020).

The main objective of establishing P4S Suparsa, (2020) is to accelerate access and application of technological information as well as utilizing the ease of the learning process for farmers/breeders and their families with real conditions in the field through training and internships. Farmers/breeders are expected to be able to solve the problems they face and help themselves increase their productivity, income and welfare. The people of Selat Village, to support their lives apart from working in various fields, are also engaged in the agricultural, livestock and plantation sectors. In the agricultural sector, commodities developed by farmers include rice, chilies, shallots and vegetables which are adapted to the existence of irrigation; while on the farm there are cows, pigs and chickens and on the plantation there are durian, coconut, banana and mangosteen trees located behind people's houses . In the past, almost every resident's house that had a garden behind the house had a pigsty for rearing pigs, but the waste from pig urine and feces was not utilized optimally so it was left to flow and pile up behind the pigsty.

To increase soil and plant fertility, organic and inorganic fertilizers are still used. Until now, the organic fertilizer used is chicken manure purchased from outside the Selat Village area and cow manure from cattle farms that has been processed, while pig waste left behind in pig pens is underutilized by farmers. Seeing that there is still a lot of potential waste from animals that can be used as organic fertilizer and the need for organic fertilizer is quite large, quite a lot of pig manure is found behind pig pens that are being kept and also in empty pig pens that are still piled up in large piles that have not been processed. as a source of intensive organic fertilizer. Pig manure is waste produced from pig production activities apart from urine waste, floor mats (husk, straw and sawdust), leftover feed and cage washing water [6]. There is quite a lot of manure waste which, if not processed, can cause environmental pollution such as air and water, so further handling of livestock manure needs to be carried out. Making organic fertilizer is an alternative to using pig manure which can be processed as fertilizer for plants (Yosia Ririn, et.al.,2022; Widyasari, 2018).

Pig manure in solid form contains quite high nitrogen nutrients of 0.95%, 0.35% Phosphorus and 0.40% Potassium. Therefore, pig manure is very effective as an organic fertilizer which will be beneficial for plant growth. Plants that obtain sufficient nitrogen nutrients from manure will stimulate vegetative growth such as roots, stems and leaves well (Yosia Ririn, et.al.,2022; Widyasari, 2018]) Pig manure can decompose quickly if assisted by microbes including lactic acid bacteria Lactobacillus Sp, EM4, photosynthetic bacteria and Streptomyces sp. One of the activators that can be used is Effective Microorganisms (EM4). EM4 is a group of microorganisms that can speed up the composting process, improving soil quality. These microbes have a good influence on the quality of pig manure fertilizer, while the availability of nutrients in fertilizer is greatly influenced by the length of incubation time required for the bacteria to degrade pig manure into manure that is ready to be applied to plants [[Yosia Ririn, et.al.,2022]. Residents of Sedang Village, Abiansemal Badung District have processed pig manure into fertilizer which is very beneficial for plants. This is done to overcome the negative impacts of pollution, is very practical and easy for farmers to do and can be used to fertilize cultivated plants and increase soil fertility (Desa Sedang, 2018).

Implementation of the Community Partnership Program (PKM) will be in partnership with P4S Sedana Sari which is a forum for providing training and coaching for farmers in the fields of agriculture, animal husbandry, fisheries, plantations in a sustainable manner so as to increase human resources and the farmers' own income. This program will be directed at efforts to utilize pig manure waste, both for farmers who still raise pigs and livestock waste that has accumulated in former pig pens, so that it becomes organic fertilizer which will later be ready to be applied in the field for horticultural crops and ornamental plants in yards. Here there will be a program to create fermentation facilities, provide training on proper and correct fermentation methods so that the fertilizer produced is of good quality, as well as analysis of the fertilizer that has been produced. The partner livestock farmers from P4S Sedana Sari mostly run businesses by raising livestock and growing horticultural crops. It is hoped that

the business being run can help the family increase their . Utilizing pig manure which was previously overlooked is a promising job to fill your time profitably. It is hoped that with community service funded by Warmadewa University, the Selat Village community in P4S Sedana Sari will experience changes in the field of plant cultivation and processing existing waste in order to reduce environmental pollution and be useful for increasing soil fertility.

From this condition, information is obtained on the problems faced by partners, namely:

1. There is pig manure waste from pig rearing which is left untreated and pollutes the environment;
2. It is not yet understood that pig manure can be used as organic fertilizer which can be used to fertilize cultivated plants;
3. It is not yet understood that the process of fermenting pig manure for better quality.
4. There is no fermentation place to collect dry livestock manure
5. We do not yet have equipment and materials for processing

The objectives of the community partnership program activities are:

1. There is a touch of technology to increase the knowledge and skills of farmers in using pig manure as organic fertilizer.
2. Increase awareness of members/community to use livestock manure waste to make economic value fertilizer
3. Can substitute the use of organic fertilizers in partner areas
4. Helps create peace and comfort in social life

IMPLEMENTATION AND METHODS

The implementation of community service is carried out at P4S Sedana Sari Selat Village, Abiansemal District, Badung Regency-Bali Province, so that the implementation runs well, the method used is

1. Interview and discussion methods to find out the problems faced by partners
2. Direct face-to-face counseling method so that partners gain knowledge regarding the application of technology for using pig manure waste to make solid organic fertilizer.
3. Delivery of materials and tools that can be used as implementation tools to increase the application of technology for utilizing & processing pig manure waste so that products can be of high quality and sustainable.
4. Direct practice in the field by instructors appropriate to their field of expertise so that the product in the form of fertilizer is of high quality and can be used to fertilize cultivated plants.
5. Monitoring and mentoring and evaluation; The PkM team carries out regular monitoring and assistance to ensure the success of the fertilizer made. Next, an analysis is carried out of possible problems that arise from partners.

RESULTS AND DISCUSSION

The Community Partnership Development Program can motivate community groups at P4S Sedana Sari and can make maximum use of activities, where all members are active and creative together taking part in counseling, the practice of making organic fertilizer from pig waste. Extension takes the form of transferring technology for making organic fertilizer from pig waste and improving the quality of the fertilizer made as well as motivating group/community members to make it independently. This can be seen from the enthusiasm of the partner group to do it (Figure below)

Figure.1 Counseling and Discussion


PKM PEMANFAATAN LIMBAH KOTORAN

Figure.2 Symbolic Handing Over of Materials and the Practice of Making Fertilizer

Next, fermentation was carried out for three weeks, so that the quality was better in a simple fermentation place and the finished organic fertilizer was analyzed in the soil laboratory at UNUD. Assistance continues until application in the field with varying doses for chili and shallot plants (Figure below)

Figure.3 Fermentation and Application in the Field

With the transfer of technology for making organic fertilizer from pig manure waste with better quality, we have been able to adopt various technological developments that have not been previously implemented; motivated to make more and continue it at home and apply it to rice fields and dry land for horticultural and food crops, so that there are behavioral changes that have an impact on the economic and social impacts of partner farmers.

CONCLUSIONS AND RECOMMENDATIONS

P4S Partner Sedana Sari, Selat Village, Abansemal Badung, in developing community partnerships in the form of community service has been able to adopt all the material provided. This can be demonstrated, among other things:

The Partner Group has mastered the technology for making organic fertilizer from pig waste and application in the field

1. Partner groups are more motivated to carry out more active activities independently to utilize pig manure waste into organic fertilizer.
2. The organic fertilizer made has been analyzed in the laboratory.
3. Assistance with materials and tools as well as infrastructure for fermentation facilities, can support group activities to obtain quality, quantity and continuity of organic fertilizer products produced and support increased agricultural production.
4. Reducing the expenses of farmer group members by providing organic fertilizer for pig manure produced.

Some things recommended for sustainability are:

1. The livestock farmer partner group continues to motivate that processing pig manure can make a positive contribution to its members, livestock farmer groups and communities in the area.
2. There is a need for more materials and tools for processing pig manure waste into larger products so that production capacity is greater

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