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Simple Composting House for Production of Cassava Skin Compost and Cow Manure at Pendawa 1 Farmers Group in Candi Rejo Village

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Abstract. There are cassava farmers in Pendawa 1 Farmer Group located in Candi Rejo Village, Sibiru-biru District, Deli Serdang Regency. The resulting cassava is usually processed by women into Opak crackers (chips from flour with cassava). In the process of making Opak, it will produce cassava peel waste. The farmers have never treated the cassava peel waste, besides that cow dung waste is also left piled up near the cow cage. The main factor that underlies the farmer's not to carry out waste treatment because they do not have a place or area to process the waste. Thus, this problem must be addressed immediately so that the farmer group can carry out circular agriculture in agriculture and animal husbandry. The purpose of this activity is to form or develop a group of farmers who are economically and socially independent, help create peace and comfort in community life and improve the skills of members of the Pendawa 1 Farmer Group in managing waste into compost. The result of this activity is to build a simple composting house with a special design measuring 6m x 4m as an area to process waste into compost.

Keyword: Cassava Peel Waste, Cow Manure, Composting House, Compost

Abstrak. *Ada petani singkong di Kelompok Tani Pendawa 1 yang terletak di Desa Candi Rejo, Kecamatan Sibiru-biru, Kabupaten Deli Serdang. Singkong yang dihasilkan biasanya diolah oleh perempuan menjadi keripik Opak (keripik dari tepung singkong). Dalam proses pembuatan Opak, akan dihasilkan limbah kulit singkong. Para petani belum pernah mengolah limbah kulit singkong tersebut, selain itu limbah kotoran sapi juga dibiarkan menumpuk di dekat kandang sapi. Faktor utama yang melatarbelakangi petani untuk tidak melakukan pengolahan limbah adalah karena mereka tidak memiliki tempat atau area untuk mengolah limbah tersebut. Oleh karena itu, masalah ini harus segera diatasi agar kelompok petani dapat melakukan pertanian dan peternakan berkelanjutan. Tujuan dari kegiatan ini adalah membentuk atau mengembangkan kelompok petani yang mandiri secara ekonomi dan sosial, membantu menciptakan kedamaian dan kenyamanan dalam kehidupan masyarakat, dan meningkatkan keterampilan anggota Kelompok Tani Pendawa 1 dalam mengelola limbah menjadi kompos. Hasil dari kegiatan ini adalah pembangunan rumah kompos sederhana dengan desain khusus berukuran 6m x 4m sebagai area untuk mengolah limbah menjadi kompos.*

Kata Kunci: *Limbah Kulit Singkong, Kotoran Sapi, Rumah Kompos, Kompos*

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1 Introduction

According to [1], the planted area of cassava in Sibiru-biru District is 140 hectares, the harvested area is 117 hectares and production figures are as much as 140 hectares 4,479 tons. One of the villages that cultivate cassava in Sibiru-biru District, Deli Serdang Regency is Candi Rejo Village which has an area of 10 Ha. In Candi Rejo Village there are several farmer groups who are members of the Association of Farmers Groups (GAPOKTAN). One of the farmer groups is the Pendawa 1 Farmer Group.

The Pendawa 1 Farmer Group is a long-established farmer group in Candi Rejo Village, located in Sibiru-biru District, Deli Serdang Regency. There are 24 family heads who work as cassava farmers and some also become cattle breeders in the Pendawa 1 Farmer Group. The women or wives usually work processing cassava into Opak. Opak are chips made from flour and cassava. The business of making opaques in Candi Rejo Village has been going on for a long time. The orientation of making opaques is still to meet the needs of daily life [2].

The results of processing cassava into Opak will produce quite a lot of waste in the form of cassava or cassava peels. So far, the cassava peel has only been thrown away and piled up, some cattle breeders use the cassava peel to become cattle feed. However, most cassava farmers do not utilize or reprocess cassava peel waste.

Figure 1. One of the farmer's houses that process cassava tobe Opak.

Cassava peels usually contain high concentrations of cyanogen glucoside, which makes it unsuitable for animal feed in its fresh and unprocessed form. Cassava peel is an important potential resource if used appropriately in biotechnology [3], with composting as the most effective method. Composting cassava peels mixed with agricultural and other animal waste is a way of handling waste that functions as a means of recycling nutrients, increasing soil organic matter content and soil physical parameters, and increasing crop yields and nutrients.

The lack of knowledge and education of farmers in Candi Rejo Village, especially in the Pendawa I Farmer Group, makes them not know how to process or use cassava peels properly and correctly. In addition, several cattle breeders who also work as farmers in the Pendawa 1 Farmer Group do the same with their livestock waste, namely cow dung. Usually, they just pile up and pile the dung on the sides of the cow's cage [4].

Seeing the situation and conditions that occurred in Candi Rejo Village, the USU service team took the initiative to offer several solutions to the problems that occurred, namely by processing and reusing cassava peels mixed and matched with cow dung waste. However, the head of the Pendawa 1 Farmers Group along with several other farmers told the service team during a site survey visit that in their location, especially in Candi Rejo Village, there was no special place or special area for composting.

Figure 2. Cassava peel waste belonging to farmers (left); Cow manure (right).

This is also an attraction for the USU team to carry out community service activities at this location and make the Pendawa 1 Farmer Group a service partner. For the next problem, the service team will also build a simple composting house so that the composting carried out ithem can run sustainably. It is hoped that they can process waste and produce compost continuously to get many benefits [5].

Some of the benefits that will be obtained by the Pendawa 1 Farmer Group if carrying out this activity are that the environment becomes cleaner and more sustainable because there is no waste that accumulates and pollutes the environment and air, besides that they can produce its own organic fertilizer, to be reused for cultivation. cassava or cassava plants, partners can also produce their own compost to sell and earn new income.

By utilizing existing waste from cassava, farmers can produce a new product, namely compost, which can be reused and can be sold. In addition, the service team also wants to contribute to sustainable consumption as shown in Figure 3.

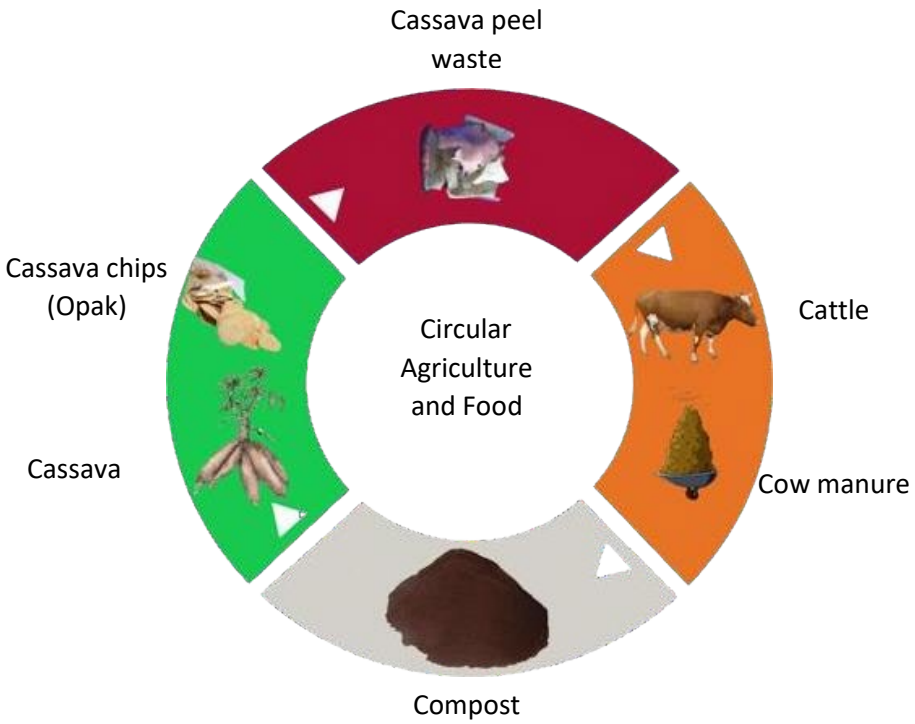

Figure 3. Circular Agriculture applied to community service activities in Candi Rejo Village.

2 Method

The 2022 Regular Year Mono Service activity was carried out at the Pendawa 1 Farmer Group in Candi Rejo Village, Sibiru-biru District, Deli Serdang Regency at October 2022. The steps are taken in the problems that occurred in the Pendawa 1 Farmer Group were to build a waste treatment site first. After that, counseling was carried out on how to process cassava peel waste and cattle dung waste to be used as organic fertilizer. This activity is also a top priority in several aspects such as economic aspects and social aspects.

a. Preparation of Tools and Materials

In this stage, the lecturer as the proponent of the activity prepares all documents and complete files as well as the preparation of raw materials assisted by partner farmers to collect cassava peel waste and cow manure needed during the service activity. Files and raw materials that are already available are stored in advance by the proposer until the handover of the equipment is carried out.

b. Composting House Construction

The construction of the composting house is carried out together with partners by surveying the location area, then the service team and partners have also discussed to determine a suitable design for constructing a composting house. The design of the composting house to be built can be seen in Figure 4.

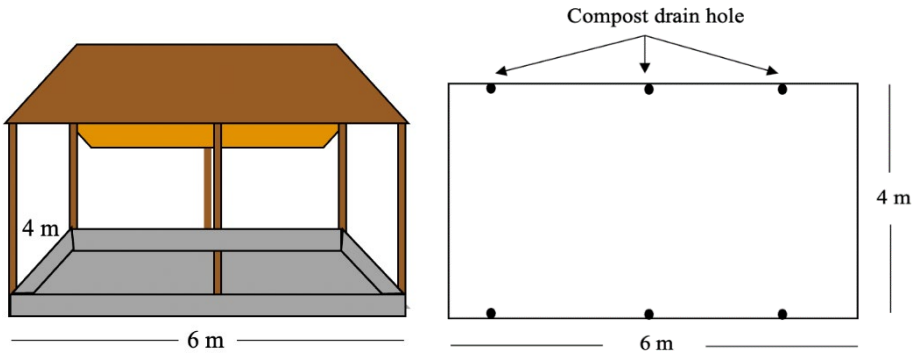

Figure 4. Composting House Design (Designed by USU team and partner farmer groups).

To build a good composting house, it is also necessary to make a floor design that has a slope of about 5%. This is so that too much water from the composting process can be removed and the compost will mature quickly. The size of this composting house is about 24m2. The construction of this composting house is an early stage that must be done and prepared in advance. The time needed in the construction of a composting house is about 2-3 weeks.

3 Result and Discussion

The regular year 2022 mono community service activity has been completed at the Pendawa 1 Farmer Group, Candi Rejo Village, Sibiru-biru District, Deli Serdang Regency. This activity was carried out by conducting four visits. This composting activity was attended by 10 members of the farmer group consisting of the group leader, group secretary, and members of the farmer group. This service activity was carried out in two stages, namely the preparation of a composting house and material counseling on composting techniques explained by the leader of the service team (Nur Ulina Warnishah Sebayang, SP., M.Agr) and the practice of making compost assisted by three members of the service team, namely Wida Akasah. , S.Agr, M.Sc, Vindy Rilani Manurung, S.Pi., MP, and Karina Nola Sinamo, S.TP., M.Si and assisted by 5 students from the Faculty of Agriculture. The process of building a simple composting house is carried out voluntarily and with mutual cooperation between members of the farmer group, the construction time takes about 2 to 3 weeks. Development monitoring activities were carried out several times by the service team students.

Figure 5. Monitoring the process of making composting houses

The first service activity carried out was the inauguration of a composting house with a ribbon cutting which was carried out by the Chair of the Pendawa 1 Farmer Group (Mr. Yuswiadi), accompanied by the Head of the Hamlet 1 Environment, Field Agricultural Extension Officer in Candi Rejo Village and the USU service team.

Figure 6. Inauguration of a simple composting house at the Pendawa 1 Farmers Group.

The next activity is counseling related to composting material which is delivered directly by the head of the service by providing teaching materials in the form of PowerPoint printouts that can be read by farmers.

Figure 7. Providing material on the technique of composting cassava skin and cow manure by the leader of team.

Furthermore, farmers are invited to training in making good and correct compost. In this activity, the farmers collaborated with USU students who helped the farmers carry out the composting process guided by the chairman and members of the service team. The materials used in this composting process include tarpaulin as a compost cover, EM4 as a starter, molasses as a source of energy for microbial decomposers, sufficient water, 100 kg of cassava peel, 100 kg of cow manure, and tools needed such as machetes for chopping, hoe, and shovel to turn the compost material, pH meter to measure the acidity level of compost and thermometer to measure the composting temperature.

Figure 8. Participants in the service activity who practiced composting consisted of members of Pendawa 1 along with the service team of USU lecturers and students.

4 Conclusion

Based on all Community Service activities that have been carried out, it can be concluded that these activities provide many benefits for farmers such as processing agricultural waste (cassava peel) and livestock waste (cow manure) for the manufacture of organic fertilizer. In addition, farmers are currently very happy and grateful to LPPM USU for having been allowed to have a simple composting house that can be used sustainably. In this activity, it was seen that all farmers in the Pendawa 1 Farmer group had a high sense of enthusiasm in participating in this activity to open their horizons and increase farmers' knowledge about processing organic waste into organic compost. Candi Rejo Village officials and Field Agricultural Extension also supported this activity.

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