

Application of Appropriate Technology in Processing Coconut Coir Waste into Cocopeat to Increase the Value Added of Coconut Waste in Rejosari Village

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Abstract

Purpose: Increase the added value of coconut fiber waste in Rejosari village by processing waste using appropriate technology into cocopeat products.

Method: This service activity uses the Participatory Rural Appraisal (PRA) Model method, Participatory Technology Development Model, Community Development Model and Education in the implementation of its activities.

Practical Application: The use of appropriate technology is expected to facilitate the processing of coconut coir waste into cocopeat. This technology can help process coconut fiber into fine granules in a short time.

Conclusion: The application of appropriate technology in processing coconut coir waste into cocopeat can increase the value of the waste which was initially less than optimal. The processing of coconut fiber waste into cocopeat is expected to increase the income of the Rejosari Village community.



Introduction

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Coconut is a plant that thrives in Indonesia. This plant has a lot of benefits starting from the leaves, fruit, to the trunk. One of the areas in East Java where many coconut plants grow is Rejosari Village, Malang Regency. This village is in Bantur Sub-district with an area of 231.7 hectares. This area has a dry soil type, which makes not all plants suitable for optimal growth. One of the crops that are widely planted there is coconut, it is because coconut plants can be an alternative crop suitable for planting on dry land (Jazuly et al., 2023). The abundant growth of coconut plants in Rejosari Village has not been optimally utilized by the local community, especially in the coconut fiber. Coconut fiber is still considered as waste that is only used as fuel in cooking, even though behind its coconut fiber has the potential to be processed into an innovative product that can improve the economy of the Rejosari Village community.

Figure 1. Coconut Coir Waste



Source: Research Documentation, 2024.

The lack of knowledge and training provided to the people of Rejosari Village regarding the utilization of coconut fiber has led to the accumulation of a large amount of coconut fiber waste (Studi et al., 2022). (Ariyani et al., 2021) identified coir waste as organic waste, organic waste is waste that comes from living things that contain the element carbon in it. Proper processing of coir waste is very important to prevent environmental pollution and air pollution that is often caused by the burning of coir waste by the local community. In addition, coconut fiber waste that is disposed of carelessly also has an impact that is no less dangerous. If left to accumulate and disposed of in any place, the waste has the potential to become a comfortable breeding ground for mosquitoes, rats and snakes that can endanger public health (Ayu et al., 2021). Coir waste management can help support the sustainability of the 15th SDGs to be able to maintain the soil environmental ecosystem from the damage caused by carelessly disposed oil palm waste.

Coconut coir waste can be processed into a product called cocopeat which has high economic value as a planting medium (Sugiyarto, 2022). With the existence of processed coconut coir waste products into cocopeat by utilizing appropriate technology, this innovation can become a new source of income for the Rejosari Village community. The increase in economic levels that will occur in the Rejosari Village community is expected to support the realization of SDGs 8 related to decent work and good economic growth for all Indonesian people. Processing coconut fiber into cocopeat is very important to be able to overcome pollution problems that can pollute the environment. By using cocopeat as a planting medium, the use of agricultural soil can be reduced which can help reduce pressure on agricultural land and support sustainable agricultural practices. In addition, the processing of coconut fiber waste into cocopeat can have a positive impact on the environment around the village and encourage the emergence of a spirit of creativity among the community to utilize

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existing natural potential. With this innovation, it is hoped that new MSMEs will be formed that can empower the community.

Method

This community service activity was carried out in Rejosari Village, Bantur District, Malang Regency. Partners in this community service activity are local villagers who have many coconut trees. In supporting the achievement of the community service program to assist the management of tourism villages with the concept of green economy in an effort to increase community income in Jatisari Village, Malang Regency, several approaches were taken, namely:

1. Participatory Rural Appraisal (PRA) model, this model is one of the approach models that focuses on the involvement and participation of the Youth Organization group and Rejosari Village in all service activities starting from planning, implementation, to the evaluation stage of the activity program.
2. The Participatory Technology Development model is a model where there is a use of technology based on the latest technology and science in the implementation of the community service program to be carried out.
3. The Community Development Model is an approach model that involves the community, especially those who are members of the Youth Organization in Rejosari Village as the focus of this community service activity.
4. Educational, this model is carried out with several activities such as socialization activities related to the potential of coconut coir waste, training in the management of coconut coir waste into cocopeat and providing assistance as a means of transferring knowledge and knowledge about the management of coconut coir waste into cocopeat by utilizing appropriate technology.

Result

Community service activities carried out in Rejosari Village, Malang Regency in direct collaboration with the local village government. This activity was carried out at the Rejosari village hall and was actively participated in by the local community. Community service held on August 8, 2024, is divided into several stages.

This activity begins with socialization material related to the great potential possessed by coconut coir when processed into cocopeat products. Cocopeat has a quality equivalent to soil where cocopeat has the ability to absorb and retain moisture optimally. Cocopeat is also able to retain important elements that can neutralize the acidity of the soil. In addition, cocopeat has pores that can allow good air exchange and support the entry of sunlight optimally so that it can support healthy plant growth (Dirhana 2024). Cocopeat has many benefits and is used as an environmentally friendly organic growing medium. As a planting medium, cocopeat is able to absorb large amounts of water, increase soil fertility, and is more resistant to damage and fungal attacks. The advantages of cocopeat are what make this planting media have a higher value and are very suitable for use in plantation activities (Zamhari et al., 2022). With this socialization, it is hoped that the people of Rejosari Village have understood the great potential of processing coconut fiber in Rejosari Village into cocopeat products.

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Figure 2. Provision of Socialization Materials



Source: Research Documentation, 2024.

In this material, the State University of Malang service team explained in detail how to operate and maintain the cocopeat processing machine to the community. The speaker explained in detail how to maintain each component of the cocopeat machine such as cleaning the air filter, applying engine oil, and checking the deasel engine drive belt. In addition, the speaker also provided an understanding to the community regarding OHS in operating the machine. In the operation, the community is encouraged to use ADP in the form of gloves, ear protectors, and masks. The community is also educated to use clothes that are not too loose and not to wear excessive jewelry when operating the machine to avoid work accidents.

Figure 3. Socialization of the Use of Appropriate Technology (TTG)



Source: Research Documentation, 2024.

In this community service activity, the community service team of State University of Malang together with the people of Rejosari Village directly tried to use the machine for processing palm fiber into cocopeat.

Figure 4. Use of appropriate technology (TTG)



Source: Research Documentation, 2024.

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The results of processing coconut coir waste using appropriate technology (Teknologi Tepat Guna) produce cocopeat products in soft granules. This product can later be used as a planting medium for various hydroponic plants and plant nurseries.

Figure 5. Cocopeat results



Source: Research Documentation, 2024.

Discussion

In this activity, the State University of Malang service team provided socialization regarding the potential of coconut coir waste which has been underutilized by the Rejosari Village community. We (the service team) also provide assistance in the form of Appropriate Technology (TTG) which can process coconut coir waste into cocopeat products that have high selling power. With this innovation, the abundant coconut coir waste in Rejosari Village can be optimally utilized and can help improve the economy of the local community. The management of coconut fiber waste into cocopeat products is expected to help support the sustainability of the 15th SDGs to be able to protect the soil environmental ecosystem from damage caused by carelessly disposed palm oil waste and the 8th SDGs related to decent work and good economic growth for all Indonesian people.

Conclusion

Optimal management of coconut fiber waste using appropriate technology can increase the value of the waste. Coconut fiber, which is usually wasted, can now help improve the economy of the Rejosari Village community by being processed into cocopeat. Cocopeat products are not only innovative, cocopeat products have a quality equivalent to soil where cocopeat can absorb and retain moisture optimally. Cocopeat is also able to retain important elements that can neutralize the acidity of the soil. In addition, cocopeat has pores that can allow good air exchange and support the entry of sunlight optimally so that it can support healthy plant growth. Cocopeat has many benefits and is used as an environmentally friendly organic growing medium. As a planting medium, cocopeat can absorb large amounts of water, increase soil fertility, and is more resistant to damage and fungal attacks. The advantages of cocopeat are what make this planting medium have a higher value so that it can become a product with a high selling value.

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