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## Utilization of Rice Husk Waste Into Rice Husk Charcoal as an Environmentally Friendly Planting Media In Pimping Village

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### Abstract

*This community service activity aims to provide understanding and training to junior high school students in Pimping Village about the utilization of rice husk waste into rice husk charcoal as a mixture of planting media. Rice husks, which have been considered waste, actually have great potential if processed by pyrolysis to produce rice husk charcoal. Rice husk charcoal has good physical properties, such as high aeration capacity, water retention capacity, and nutrient content that can improve the quality of planting media. The method used is education and training for junior high school students at TPU 3 with a total of 49 participants. The results of the activity increased the understanding of junior high school students about the processing of rice husk waste, as well as the benefits of utilizing rice husk charcoal to support sustainable agriculture. With socialization and training, it can increase the knowledge of participants, especially junior high school students, TPU can utilize waste optimally, thereby reducing the remaining waste from milling in the form of discarded rice husks which were previously of little value by processing the husk into rice husk charcoal which has economic value and can even be used as a more effective and environmentally friendly planting medium.*

**Keywords:** Socialization, Training, Waste, Rice Husk, Environmentally Friendly, Junior High School Students, Pimping Village

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### INTRODUCTION

Rice is a staple food for the Indonesian people in particular, agricultural activities such as planting rice are often found, one of which is in the North Kalimantan region, namely Tanjung District, North Palas District, Pimping Village. The resulting rice is then milled into rice and waste from the milling residue known as husks by some people has not been utilized optimally, this is still widely found in piles of rice husks and usually to reduce it is only done by burning it. Rice husk waste is one of the by-products of the rice processing process that is often overlooked and simply thrown away.

Rice husks contain nutrients that can help plant growth, such as silica, carbon, and other microelements. Rice husks can be used as a cheap and effective alternative planting medium, if the use of rice husks is mixed with organic compost, it can increase plant growth (Arifin and Iskandar, 2022; Baderan & Hamidun, 2016), besides that it functions to improve soil structure, increase cation exchange capacity, improve aeration and drainage, and reduce agricultural waste. can pollute the environment.

Rice husk is a hard layer composed of a network of cellulose fibers containing a lot of silica in the form of fibers. Husk plays an important role in protecting seeds / rice from damage caused by fungal attacks, so that it can indirectly protect the seeds and also be a barrier against fungal infiltration (Haryadi, 2006). According to Rahmiati et al, (2019) if not managed properly, waste from rice milling in the form of husks will be easily carried away by the wind and will potentially disrupt public health through environmental pollution

One effort to overcome this is to utilize the potential of rice husk waste into rice husk charcoal, the manufacturing process is by burning. This rice husk charcoal can improve degraded

land, and can last a long time in the soil, this is because the decomposition process will be slow because the charcoal is resistant to microorganisms (BPPSDMP, 2021). Rice husk has high economic value, with increasing public awareness of the many potential uses of rice husk as a planting medium, it can open up new business opportunities, especially for rural communities who want to cultivate medicinal plants for personal or commercial consumption needs. This is certainly a smart step to improve food security and public health, while reducing the negative impacts of agricultural waste that is not managed properly. The purpose of this activity is to provide knowledge and skills for SLTP 3 students in managing agricultural waste into rice husk charcoal as a planting medium.

## METHOD

This community service activity was carried out through socialization and training held in August 2023 at SMPN 3 Tanjung Palas Utara, Pimping Village with 49 participants. The tools used in this service were iron drums, wire mesh, shovels, scales, sacks and matches, while the materials used in the training were rice husks, firewood and kerosene.

### Socialization Implementation Stage

1. The delivery of the material is accompanied by Power Point and video.
2. Provide discussion and Q&A sessions for participants to ask questions related to the material presented.
3. Furthermore, the training was carried out by directly practicing the process of making rice husk charcoal.

### Training Implementation Stage

1. Prepare the tools and materials used to make rice husk charcoal.
2. Explain the function of tools and materials and how to use them.
3. The pyrolysis process produces rice husk charcoal.
  - a. Install the ram wire that has been tied in a circle in the middle of the drum.
  - b. Add the ingredients to make rice husk charcoal
  - c. Insert the firewood into the middle of the ram wire tied in a circle.
  - d. Apply kerosene to the firewood, then burn the husks.
4. Application of previously processed rice husk charcoal on the SMPN 3 TPU land.

## RESULTS AND DISCUSSION

This community service activity aims to utilize the abundant rice husk waste that is processed with an imperfect combustion process to produce rice husk charcoal. In addition, this community service activity is an activity that helps the community to know the benefits of rice husk waste if processed into rice husk charcoal.



Figure 1. Socialization at TPU Middle School

This activity was carried out by delivering material that introduced what rice husk charcoal is, what it is made of and how to make it, as well as the benefits of rice husk charcoal for plants. Based

on the presentation of the material, students were very enthusiastic about participating in the activity, and we gave students the opportunity to ask questions that they did not understand and what obstacles they had faced so far. There is one student asked about rice husk waste, which is quite a lot but its utilization is still lacking, it can be seen that knowledge plays an important role in ourselves, the lack of knowledge can make us less creative in seeing the potential around us, where this potential is a golden opportunity to make money.



Figure 2. Making rice husk charcoal



Figure 3. Making a Toga for Planting

Rice husk charcoal is one of the growing media that is increasingly used in modern agriculture, especially in the cultivation of ornamental plants and vegetables. One of the main advantages of rice husk charcoal is its ability to maintain soil moisture. According to research by Sari et al. (2019), rice husk charcoal has a porous structure that allows for optimal water storage, so it can maintain soil moisture longer than conventional growing media. This is very important for plant root growth, because roots require sufficient moisture to absorb nutrients effectively.

In addition, rice husk charcoal is also known to have good aeration properties. Research by Prasetyo and Supriyadi (2020) shows that the use of rice husk charcoal as a planting medium can increase air circulation around plant roots. With good aeration, plant roots can breathe more effectively, which in turn can prevent root rot and improve overall plant health. This good aeration quality is very important, especially in cultivating plants that are sensitive to dense soil conditions.

Another advantage of rice husk charcoal is its ability to provide nutrients needed by plants. Although rice husk charcoal does not contain as many nutrients as other planting media, research by Hidayat et al. (2021) shows that rice husk charcoal can increase the availability of nutrients in the soil. Rice husk charcoal also contains silica, which can improve the physical properties of plants and increase plant resistance to disease. Thus, rice husk charcoal can function as a planting medium that supports optimal plant growth.

The use of rice husk charcoal also has a positive impact on the environment. According to research by Rahman et al. (2020), rice husk charcoal is a by-product of the rice milling process that can be used as a planting medium. By utilizing rice husk charcoal, farmers can reduce agricultural waste and reduce dependence on chemical fertilizers. This is in line with the principles of sustainable agriculture that are increasingly being applied in various parts of the world, where the use of natural and environmentally friendly materials is a priority.

Overall, rice husk charcoal offers several advantages as a growing medium that can improve plant growth and health. With its ability to retain moisture, increase aeration, provide nutrients, and be environmentally friendly, rice husk charcoal is an attractive option for farmers and plant enthusiasts. Therefore, it is important to consider the use of rice husk charcoal in modern agricultural practices to achieve optimal results.

The training activities given to students at the school went according to expectations, this can be seen from the enthusiasm of students who participated in the rice husk charcoal making activity where in the manufacturing process they were not only given materials or videos but students could directly practice how to make rice husk charcoal, rice husk charcoal made by students will be more useful if it can be applied directly by the community in the future to be used as a planting medium for ornamental plants, horticultural plants, or other plants such as medicinal plants.

## CONCLUSION

From the results of community service activities in the form of socialization and training on the use of rice husk charcoal for students that have been carried out in Pimping Village, information was obtained that rice husk waste is one of the raw materials that has the potential to be used as a mixture of planting media and has high economic value, as well as increasing students' knowledge and skills in processing rice husk waste that has no use value into rice husk charcoal as an environmentally friendly planting medium, thereby contributing to preventing environmental pollution due to rice husk waste.

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