

Utilization of Coconut Shell Waste Into Coconut Shell Charcoal to Improve The Welfare of The People of Togawa Village, South Galela District, North Halmahera Regency

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Coconut shell is a solid waste from processed coconut that has been taken coconut meat to get coconut milk. Coconut shells are generally used for fuel, household purposes or souvenirs. Togawa village, South Galela district, North Halmahera Regency is one of the villages producing coconut shells. To increase the economic value of the community, coconut shell can be processed into products that have a higher selling value. The abundance of coconut shells can be raised as the potential of the village in improving the economy of the community. The obstacle encountered to maximize coconut shell waste is the lack of skills of citizens in utilizing existing potentials. This community empowerment program aims to improve the welfare of the community. This implementation is designed using training methods with a system of delivery of material in theory or socialization and practice of the learning that has been done. Coconut shell charcoal can be used as a material for coconut shell charcoal and activated carbon. Activated carbon is a perpori material that has the ability to absorb the polluter contained in water that is as a water filter. The implementation of the program is carried out by socializing and applying it to the community. The results of community service in Togawa village can have a positive impact in developing independent businesses to improve the welfare of the surrounding community.

Keywords: Coconut shell, coconut charcoal, activated carbon, Togawa Village

INTRODUCTION

Coconut or *Cocos nucifera* is a plant that has a high straight stem with a large fruit. Indonesia is one of the world's largest coconut producing countries growing evenly in Java, Sumatra, Kalimantan, Sulawesi and Irian Jaya (Santoso, 2009). The main result of coconut is coconut where in addition to coconut meat there is a coconut shell. Coconut shells are generally used as fuel daily. Some methods have been done to increase the economic value of coconut shells such as souvenirs, bags and so on. (M. Anem, 2014). Development of innovations in the utilization of coconut shells are made for activated carbon that can be used as adsorbent or trapper of dirty materials contained in water. The manufacture of activated carbon can be done by 2 methods, namely the process of physics activation and chemical activation (Hartanto, 2010). Water contaminated by pollutants must be processed so that it meets standards to be used in households. Polluted water can endanger the lives of humans and other creatures.

The development of innovations in the utilization of coconut shells are made for activated carbon that can be used as adsorbent or trapper of dirty materials contained in water or liquid waste processors. One of the methods to reduce environmental pollution is by adsorption process which is the process of absorption of contaminants in water using activated carbon porous material (Allwar, 2009). Togawa Village South Galela District North Halmahera Regency North Maluku Province has an area of 33 square km has good potential in the utilization of coconut shells, he majority of Togawa villagers have a livelihood as coconut farmers and farmers. The largest agricultural products are coconut meat taken to get coconut milk

(coconut milk) .coconut oil and copra and solid waste that is coconut shell. Coconut shell waste is found in Togawa Village and its surroundings In general, coconut shells are only used for fuel purposes for households that still use firewood and also for water retaining so that the effectiveness of the soil increases (Salim, 2018).

Whereas this coconut shell can be a potential village as a way to improve the economy. Improving the welfare of the community from coconut shells to Togawa village requires cooperation with local governments, social institutions (NGOs) or local universities This cooperation can be in the form of tutorials or assistance ranging from the process of collecting data, the process of making and selling value of coconut shells and activated carbon. The purpose of this community service is to improve the economy of the people of Togawa Village by utilizing coconut shells to become coconut charcoal and activated carbon as a filter of clean water (Khuluk, 2016).

LITERATURE REVIEW

Coconut Shell

Coconut Shell is a type of plant from the family *Arecaceae*. It is the only species in the genus *Cocos*, and the tree reaches a height of 30 m. Coconut is also a term for the fruit of this tree that is hard skinned and fleshy in white color. Coconut trees usually grow on the beach. Coconut is one type of multipurpose plant and has high economic value. All parts of the coconut tree can provide benefits for humans ranging from the roots to the leaves and of course the fruit. I'm not going <http://id.wikipedia.org/wiki/Kelapa>. Here are some benefits of coconut trees by humans: manusia :

1. **The root part:** Can be used as raw materials for brewing and dyes
2. **Trunk Parts:** Used as raw materials for home furnishings, furniture, as wood, or firewood.
3. **Leaf part:** Coconut leaves can be used as wrapping material or weaned to be used as the roof of the house, while the stick is commonly used to make brooms.
4. **Flower part:** produce a liquid known by the name of nira water that has a sweet taste, can be used as a raw material for making sugar nira or as a drink.
5. **Fruit part:** This part consists of skin (coir), shell, coconut meat and coconut water. Fruit skin (coconut fiber) is often used as a raw material for making doormats, coconut shells can be used as charcoal, coconut fruit for consumption or processed to be used as coconut oil, lastly coconut water as a thirst reliever and also useful as a medicinal plant to improve the health of the body.

Coconuts are the most economically valuable part. Coir, a mesokarp part in the form of coarse fibers, is traded as fuel, seat filler, woven rope, doormat, and planting media for orchids. Shell or shell, which is actually part of endokarp, used as fuel, substitutes for shells, beverage containers, and raw materials of various forms of handicrafts. Shells can also be used both as household appliances and handicrafts

Coconut shell charcoal is charcoal made from coconut shell. The utilization of coconut shell charcoal is quite strategic as a business sector. This is because it is rare for people to use coconut shells.

First Research

Conducted by Yuni Nustini et al, published in the journal AJIE - Asian Journal of Innovation and Entrepreneurship Vol. 04, Issue. 03, September 2019 with the title " Utilization of Coconut Shell Waste Into Coconut Shell Charcoal and Granular Activated Carbon To Improve The Welfare of Watuduwur Village, Bruno, Purworejo Regency" This research concludes the Superior Community Service Program has succeeded in improving public knowledge. Coconut shells can be used to improve the economy of the community by continued coconut charcoal and activated carbon.

Research conducted by Fardhan Arkan with the title " Utilization of Coconut Shells For The Manufacture of Charcoal Briquettes as a New Energy Potential Gas Substitute In The Village Zed Bangka Regency " the result of this study is utilizing coconut shells for the manufacture of charcoal briquettes as a potential for new renewable energy

Research conducted by Mastura Labombang et al with the title "Utilization of Coconut Shell as Acoustic Panel" The results of the implementation of science and technology program for the community, namely the utilization of coconut shells as acoustic panels can run well.

METHODOLOGY

Activities carried out are: Counseling activities, education, and training aimed to improve the knowledge, attitude and behavior of partner groups, especially in terms of the utilization of shells in the manufacture of coconut shell charcoal, how the marketing management of coconut

shell charcoal products in the community. . Practice and Mentoring is intended to improve the skills / facilitate the transfer of technology to the local community so that eventually the community can stand alone for the sake of business sustainability. Steps taken: Field Survey To see more about the potential and condition of the community. Counseling / Training: The training place was held in Togawa village hall with participants as many as 25 people consisting of local copra farmers

Coconut shell charcoal material is made from coconut shell waste collected from coconut traders around the village togawa coconut shell in select that has a large size and then in the dump of coir attached to the coconut shell. Making coconut shell charcoal as follows Coconut shell that has been cleaned in place or container until full and closed tightly then put into the heating furnace for pyrolysis process for 6 hours then cooled with water to get a good and quality charcoal shell

RESULT AND DISCUSSION

A. The Stages of Preparation

of Activities carried out at this stage are conducting coordination meetings with all team members, making schedules for the implementation of activities as well as visiting the togawa e village community groups to discuss activities and schedules for the implementation of activities in accordance with the objectives of the community service program. The participating community groups are people who work as copra farmers daily in Togawa village, where the shell as a side of copra production has not been utilized to the maximum.

Activities at this stage prepare materials and equipment in the framework of training / counseling and practice of making good-value shell charcoal from coconut shells that will be carried out at the location of Togawa village

B. Extension stage

Counseling was carried out in Togawa village with the number of participants as many as 25 people in the whole of the participants are copra farmers in the village. The implementation of counseling is carried out for one (1) day. And the training materials provided. Methods / ways of making charcoal from coconut shell material. The next material is the marketing management of the resulting charcoal shell, as well as its target market.

C. Accompaniment

After completing the practice of making charcoal from coconut shells, the team provided assistance to the community groups of participants for the sustainability of their business, so that when the community service program is completed, the community can be independent in doing its business and can be a pioneer for other communities in other villages around the south Galela district to conduct efforts to make charcoal from coconut shells, both communities can market this coconut shell charcoal in the north Halmahera regency or even sampia out of North Maluku area

CONCLUSIONS

The Community Service Program has been successful in improving community knowledge. Coconut shell can be used to improve the economy of the community by continued coconut charcoal pruduk where the coconut shell can be used as activated carbon and used as adsorbent for water purification.

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