

Training on Briquette Making from Coconut Shells

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Abstract — Sanggrahan Village, which was determined as the location for the Community Service Program for group 7 (seven), has a lot of natural potential. One of the vast potentials are coconut trees. Briquettes are materials that can be used as fuel to ignite and maintain flame. Coconut shell waste is one of the materials we used as the raw material of our project, which then will be made into briquettes. The making of briquettes from coconut shell waste was carried out on December 28, 2022, at the Sanggrahan Village Hall. Based on the practices in the training work program for making briquettes from coconut shells, the result of the burned briquettes can burn entirely over a long period. The texture of the dough should be smooth and dry because if the dough is too wet, it will be difficult for the briquettes to dry and harden, while a dough that is too dry will make the briquettes hard to intertwine and break easily when hit by a hard object. The effort to develop and manage briquettes that Sanggrahan Village can carry out is marketing the briquettes they have produced with a broader market.

Keywords —briquettes, coconut shell, charcoal.

I. INTRODUCTION

Indonesia is an agricultural country where most of the people's income comes from farming. In addition to that, crops can also release agricultural waste in large enough quantities [1]. KPRI stated that the width of coconut gardens in Indonesia in 2009 reaches up to 3.8 million hectares with the production amount of 3.2 tons [2]. Sanggrahan Village, which was determined as the location of Community Service Program of group 7 (seven) has many potentials. The biggest potentials are their coconut trees. Lots of coconut trees grow around the people's houses, and they only sell proper-shaped coconuts, and they throw away improper coconut shells. Coconut plants are plants with a strategic position, primarily widely used as a raw material for making oil [3]. Coconut is a tropical plant that the people of Indonesia know well. Apart from being sold in its original shape, the majority of inhabitants use water to fill the coconut for direct consumption. However, the whole coconut parts need to be utilized better. Inhabitants could use and utilize coconut waste. Coconut *Cocos nucifera* is a plant from a plantation that has strategic meaning for the Indonesian people [4]. The community believes that the place to live, especially in coastal areas, is considered a high-value and versatile plant because coconut plants have benefits and can be used for daily needs [5]. Throwing away coconut parts that are supposed to be utilized is such a waste. Briquettes can be made from coconut waste. Coconut trees grow better in prairies, under 500 m above the sea level in grounds that have pores and rich of hummus. Climate is not a problem. Coconut trees can grow in the height

up to 3000 feet, but it will produce less coconuts. Coconut trees can't grow above the height of 3000 feet [6]. Some products require extra extras, e.g., a candle for add combustion and substances other for a pleasant smell and uniform color. Briquettes can be burnt and used as ingredients burn for kindling and sustaining a flame. Many types of component basis can be processed to become briquettes. Briquettes are charcoal which is further processed into briquettes appearance and packaging that is more attractive and can be used for everyday alternative energy needs. Charcoal briquettes have many advantages, namely charcoal briquettes have economic value with attractive packaging and compared to charcoal. Ordinary, briquettes have a higher heat, odorless, have a natural aroma and fresh, clean and durable [7]. The process of making briquettes from coconut shells includes carbonization, grinding charcoal, sifting charcoal, mixing with adhesive, printing, and drying briquettes [8]. Briquettes are made of a mixture of coal, earth clay, and tapioca. The mixing of materials in making briquettes is the stage that determines the quality of the resulting briquettes, where the amount and materials used will affect the quality of the briquettes [9]. Aside from the coconut shell, another part of coconut that can be beneficial is its' shell waste. Shell waste could be transformed as briquettes, it can be used as a fuel for cooking and et cetera. Shell waste of coconut is one of the raw materials that is carried out as ingredients in the project in making briquettes. Briquettes can be used as a tool to make charcoals more durable. Briquettes can be easily made because they are made from the natural potential of Sanggrahan Village. Toast, flours and tapioca can be bought in affordable price. Manufacturing capital-low briquettes could be profitable for the Public if the Public is capable produce briquettes and able to market them well then day. Shell waste of coconuts can also be used or changed and become briquettes. Briquettes are also very useful for daily life in the society. The use of briquettes as fuel can reduce the use of oil and gas fuel sources which are very limited [10]. Aside from the fact that it can be sold, briquettes can also be used for cooking. The community will significantly benefit from them if they could utilize the potential of the village well. Sanggrahan Village is a famous resort with potency; the coconut shell waste can be used for making briquettes. Disclaimer on, improve the spirit of competitiveness, creativity, and innovative citizens by giving them opportunities and venues to actualize themselves by optimizing the potential and capabilities of Sanggrahan Village.

II. METHODOLOGY

Making briquettes is easy because the materials used are few and the tools used are relatively simple. The time needed to make these briquettes is quite long even though there are not many steps in making briquettes, but in each manufacturing process, the time required is quite long. One of the most extended processes is waiting for the burnt coconut shells to cool down. It takes a long time to wait for the coconut shells to cool down. In addition, the process of pulverizing coconut shells also takes a long time because it uses the traditional method of pounding until smooth. If the pulverization process uses a crushing machine, the time required will be shorter, and at the same time, the resulting powder has a much larger quantity. The following tools and materials are used to make briquettes from coconut shells.

Tools used:

1. Pestle and mortar
2. Sifter with small holes
3. Fire match
4. Mold (paralon pipe cut to about 3cm)
5. Base (can be made of zinc or iron plate)
6. Stove
7. Pot
8. Spoon

Materials used:

1. Coconut shell
2. Tapioca flour
3. Water

The stages of making briquettes from coconut shells are as follows:

1. Arrange the coconut shells on a metal base.
2. Burn the coconut shells that have been arranged. Keep burning the coconut shells so that they do not become ash.
3. Cool the coconut shells that have turned black.
4. Pound the coconut shells that have become charcoal until smooth.
5. Sift the pulverized powder to separate it from the coarse part.
6. Mix tapioca flour with cold water until smooth, then cook tapioca flour using water until thickened.
7. Pour the tapioca flour mixture into the shell charcoal powder little by little.
8. Then, mix the flour mixture with coconut shell charcoal powder evenly.
9. Mold the dough using the cut pipes.
10. Remove the dough from the mold, then dry the dough until it hardens

III. RESULTS AND DISCUSSION

Many coconuts are produced, causing a lot of coconut shell waste. The waste coconut shells that are produced are usually just thrown away, so this gave the group the idea to make briquettes from coconut shells that are typically discarded or burned by residents after getting coconut meat and water. When taking coconut meat, the coconut shells are only sometimes whole, and half a ball, but the coconut shells are

often split. This is why the broken coconut shells cannot be used to make cutlery or other handicrafts. We can utilize this form to be processed into briquettes, while coconut shells that still have a pretty good shape can be made into cutlery and other crafts. Briquettes from coconut shell waste have advantages over charcoal made from wood. The embers produced by briquettes have more extended durability than charcoal in general. These briquettes also have a relatively high economic value compared to charcoal. Here is a picture of the ready-to-use briquettes.

Training on making briquettes from coconut shell waste was held on December 28, 2022, at the Sanggrahan Village Hall. This training program is intended for mothers in Sanggrahan Village to add skills. If it can run, it can improve the economy of Sanggrahan Village. Based on the practices carried out in the training work program for making briquettes from coconut shells, the briquettes produced have been tried to be burned and can burn perfectly for a long enough period. The obstacles experienced during training in making briquettes from coconut shell waste are the need for painstakingness and sensitivity in mixing briquettes from the beginning of mixing until they can be printed.



Figure 1: Briquette results

The texture of the dough that can be molded should be smooth and dry. If the dough is too wet, the briquettes will be easy to dry and harden, while dough that is too dry will prevent the briquettes from being locked and easily destroyed when hit by complex objects.

The advantages of charcoal briquettes are as follows :

- a. Increase the yield in the charcoal making because the charcoal obtained can be used in charcoal briquettes.
- b. The shape is uniform and denser or minimizes storage and transportation.
- c. Better combustion quality when appropriate additives are used.
- d. More profitable because, in general, 40% consists of charcoal raw materials whose value is lower than charcoal.
- e. The raw material is not tied to one type of wood. Almost all types of wood can be used to make charcoal briquettes.

IV. CONCLUSIONS

The training program on making briquettes from coconut shell waste will benefit the residents of Sanggrahan Village if they can develop the program. This program is beneficial because the materials used use existing resources in Sanggrahan Village. The problem is the residents' need for

more ability to utilize the potential in the Sanggrahan Village. In addition, this program also adds skills and improves the economy for residents if they can manage these briquettes. They can be optimizing the marketing of the briquettes they have produced with a broader market share to develop and manage briquettes.

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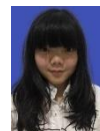
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