

## Utilization Of Coconut Waste As A Planting Media “Cocopeat Plus” In Kebonrejo Village, Candimulyo District, Magelang Regency

Dyah Arbiwati, Mofit Eko Poerwanto, Ali Hasyim Al Rosyid

Universitas Pembangunan Nasional Veteran Yogyakarta

Email address [arbiarzl@gmail.com](mailto:arbiarzl@gmail.com) , [Email address mofit.eko@upnyk.ac.id](mailto:mofit.eko@upnyk.ac.id), [Email address alihasyimalrosyid@gmail.com](mailto:alihasyimalrosyid@gmail.com)

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### Abstact

*Kebonrejo is one of the villages in Candimulyo District, Magelang Regency, which is a coconut center area since most of the land area in the village is planted with coconut. The main problem in the village is that the coconut fruit harvest leaves an abundance of coconut husk as waste which only accumulates in the yard and pollutes the environment or coconut husk are only used for cooking fuel. In addition, there is a lack of public knowledge to process coconut husk into products that have economic value and do not yet have coconut husk crushing machines. The Service Team collaborates with the youth group Taruna Jaya and KWT Srikandi Tani as partners to process coconut husk so that it provides added value and has economic value into coconut husk powder/cocopeat plus by adding organic guano phosphate fertilizer, with attractive product packaging and how to market the product. The service team provides assistance to decompose coconut husks so that activities run routinely and sustainably. The implementation method used is lecture, practice, and mentoring. Activities that have been carried out include socialization and discussion, the practice of operating coconut husk crushing machines, practice, and assistance on cocopeat plus manufacturing technology, packaging design, and product marketing through social networks or online media. The results of the community service program for partners are (1) skilled in operating the coconut husk crushing machine; (2) skilled in processing coconut husk waste into cocopeat plus; (3) increasing knowledge and creativity in packaging design; (4) be more creative in managing product marketing through the website or social media; (5) being expected to increase income.*

Keywords: coconut husk waste, cocopeat plus, packaging design, marketing

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## **I. INTRODUCTION**

Kebonrejo is a village in Candimulyo District, Magelang Regency. This village is located downhill Mount Merbabu, about 7 km from the city of Magelang and about 15 km from the center of the Magelang district (Sawitan). Most of the land area in the village is planted with coconuts so that Kebonrejo village is a coconut center area. In Magelang regency, coconut plantation is 4,788 hectares in 2015 and increased to 5,023 hectares in 2016 (BPS Kabupaten Magelang 2016).

Kebonrejo villagers are mostly farmers, construction workers, market traders, and factory employees. Most of the agricultural land is in the form of wetland planted with rice and partly planted with horticultural crops such as chilies, tomatoes, greens mustard, etc. Most of the yards and fields around the residents' houses are planted with coconut. The sweet sap from the coconut plant is made for coconut sugar or brown sugar powder and coconut is used to be sold by removing the coconut husks so that the amount of coconut husk is abundant and piling up in the yard of residents' houses.

The Taruna Jaya Youth Group, which consists of youths and women grouped in KWT Srikandi Tani, are the partners chosen by the service team and collaborate to provide added value to the abundant coconut husk which is waste that pollutes the environment. Usually, the coconut husk is only used for cooking fuel. The service team provides assistance to partners to process coconut husk into cocopeat plus so that it has economic value. The problems of partners are the lack of machines for crushing coconut, lack of the techniques for processing coconut husk into cocopeat plus, unable to make attractive product packaging designs, and lack of product marketing technique through social networks or through online media.

In agriculture and horticulture, cocopeat is used as a growing medium for cultivation including hydroponic, as a substitute for soil media. The nutrient content in cocopeat is low, so it is necessary to add other components as a planting medium to substitute soil. The addition of Guano Phosphate organic fertilizer will be an alternative mixture of planting media of cocopeat plus that is rich in phosphorus nutrients. Cocopeat has water absorption and retention properties and also has aeration pores that facilitate air exchange and the entry of sunlight. Its content of *Trichoderma* molds can reduce disease in the soil. Natural cocopeat is slightly acidic. Its pH level in the range of 5.8-6. However, in some cultivated plants, this pH range is their optimal pH range to grow well (plant pH requirements are generally 5.5-6.5). Thus, cocopeat can increase soil fertility. The cocopeat is packaged in bulk powder packaging or in compressed packages.

The Youth Taruna Jaya group and KWT Srikandi Tani, regarding the technology of making cocopeat plus and packaging products with attractive designs, as well as effective and efficient marketing, the products from coconut husk can be utilized by the community. Kebonrejo Village becomes healthier and the products have more economic value as new entrepreneurial opportunities, thereby increasing income.

## **II. LITERATURE REVIEW**

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Coconut has economic value because it produces vegetable oil. Copra/endosperm only covers 28% of the coconut fruit, while the by-products are 35% husk, 12% shell, and 25% water (Novarianto *et.al.* 1988 in Towaha *et.al.* 2008). Coconut husk is a waste with the highest percentage. Currently, the coconut husk is processed into cocoa fiber and cocopeat. Coco fiber is a long and strong husk fiber which is used for the production of car seats, mats, etc., while cocopeat is the remaining short fibers and dust used as a planting medium. In addition, from several research results, it was found that coconut husk has the potential to be used as organic fertilizer. Wuryaningsih *et al.* (2004) examined coconut husk containing nutrients in the form of N (0.44%); P (119mgKg<sup>-1</sup>); K (67.20 me / 100g); Ca 7,73 (me / 100g); Mg 11.03 (me / 100g). Hanudinet *et. al* (2004) identified coconut husk containing the beneficial bacteria *Klebsiella sp.*, *Pseudomonas sp.*, *Citrobacter sp.*, *B. circular*, *B. megaterium*, and *B. Firmus*.

One of the organic materials that can be used as a growing medium is cocopeat. Cocopeat is a growing medium that is produced from the crushing process of coconut husk. The process of crushing husk produce fiber, and fine powder or cocopeat (Irawan and Hidayah, 2014). The advantages of cocopeat as a planting medium are due to its characteristics that are able to bind and store water strongly and contain essential nutrients, such as calcium (Ca), magnesium (Mg), potassium (K), sodium (N), and phosphorus (P) (Muliawan, 2009).

Packaging can be defined as a package or something that is used as a wrapping media or container. Meanwhile, the packaging is the act of wrapping or closing an item or group of goods. The function of packaging is as a container and to protect products from damage, making it easier to store, transport, and market. In addition, packaging also functions as product identity, an attraction for buyers, a means of promotion for consumers, and information and communication mean for consumers. Packaging also functions as a means of selling value promotion so that it can increase product competitiveness (Purwanto E, 2019).

Drury Very Zilfania, (2014) states that the use of social media has started to be frequently used in marketing, public communication, offices, or departments that are directly related to consumers or stakeholders. Social media marketing is a strategy for marketing activities using social media sites such as Facebook, Twitter, Youtube, etc (Dan Zarella 2010). Social media is a powerful means to promote our products and services through internet marketing. The method is simple but has an extraordinary effect. In addition, social media marketing is a marketing technique or tactic that uses social media as a means to promote a product (link to an online business website page) or a service, or other product more specifically. Social media marketing is more about the development and utilization of the social media area as a means or place to build a target market for online businesses (Untari D and Fajariana, D.E., 2018)

### **III. RESEARCH METHODOLOGY**

The identification of problems faced by partners was carried out by direct interviews with all members of the partner group by team members consisting of Ir. Dyah Arbiwati, MP, Dr. Ir. Mofit Eko Poerwanto, MP and Ali Hasyim Al Rosyid, SP. MSc. The implementation method used to solve partner problems is socialization and discussion, practice, and assistance in making cocopeat plus techniques in bulk and compressed form, making product packaging designs and marketing methods. This method is felt to be the most appropriate to overcome the problems faced by partners. Practice and assistance in making cocopeat plus techniques, making product packaging

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designs and marketing methods, as strategic and technical aspects have been carried out. Assistance is also expected to be able to ensure that programs are implemented consistently and sustainably.

## IV. RESULTS AND DISCUSSION

### IV.1. Results

At the interview stage conducted by the service team produces information about the problems faced by partners, then continued with field observations to confirm the results of the interview. The main problem faced by partners is the abundance of coconut husk waste (Figure 1), lack of the techniques for processing coconut husk waste into cocopeat plus planting media, unable to make attractive product packaging designs, and unable to market the product.



Figure 1. Coconut husk waste

The activities are as follows:

#### 1. Socialization and discussion

Socialization and discussion activities are carried out jointly between partners and the service team. Socialization about the activities to be carried out by partners and continued with discussions related to these activities.



Figure 2. Socialization and discussion with partners

#### 2. Handing over the coconut husk crushing machine

The Service Team from the Faculty of Agriculture, UPN "Veteran" Yogyakarta, consisting of Ir. Dyah Arbiwati, MP; Dr. Ir. Mofit Eko Poerwanto, MP; and Ali Hasyim Al Rosyid, SP. M.Sc.

handing over the coconut husk crushing machine to the partner to solve the problems faced by partners (Figure 3).



Figure 3. Handing over the coconut husk crushing machine

### 3. Cocopeat production

The partner crushing the coconut husk by inserting the coconut husk into the coconut husk crushing machine, resulting in cocopeat and coco fiber, shown in Figure 4. Partners are able to operate the coconut husk crushing machine to produce cocopeat and coco fiber.



Figure 4. Producing cocopeat

The process of obtaining cocopeat is carried out by partners by soaking coconut husk for 6 days to remove the tannin material, then drying it and putting it in a coconut husk crushing machine. Tannins are known as substances that inhibit plant growth (Fahmi, 2015). Furthermore, cocopeat is mixed with Guano Phosphate, charcoal husk, and fine manure to produce cocopeat plus growing media. Partners are skilled at making Cocopeat Plus compositions.

### 4. Training in designing products packaging

The packaging is very important for the appearance of a product, the product will have an appeal if it is packaged attractively. Packaging serves as a means of selling value promotion so as to increase product competitiveness and increase the product selling value. In addition, packaging also serves as product identity, an attraction for buyers, and an information and communication tool for consumers. Partners consist of young people so that with the training it becomes more creative in designing attractive packaging. Packaging design and product packaging training are presented in Figure 5.



Figure 5. Designing products packaging of cocopeat plus

### 5. Training of product marketing

Product marketing is more effective and efficient through information technology, especially during the Covid-19 pandemic. Marketing strategies can be made by utilizing information technology, either through social media, Facebook, Instagram, or other social media or by creating websites. Partners who are relatively young are quicker to understand the transfer of information technology and are more creative in managing the web to promote the products. So that they hope more consumers want to buy these products.



Figure 6. Training of product marketing

## V. CONCLUSION AND RECOMMENDATION

## V.1. Conclusion

Based on the activities that have been carried out, it can be concluded as follows:

1. Partners have been skilled in operating the coconut husk crushing machine
2. Partners have been skilled in processing coconut husk waste into cocopeat plus
3. Partners have increased their knowledge and be more creative in designing attractive packaging.
4. Partners have become faster understanding and more creative in managing product marketing through the social web or social media and is expected to increase revenue.
5. Partners must innovate to make other products from coconut husk that have high selling and economic value, for example, various handicrafts (coconut husk pots of various shapes and sizes, hats, bags, wallets, tissue holders, folders, etc.), cocomeas, mattress, car seat, etc.

## VI.2. Recommendation

The Taruna Jaya Youth Group needs to form a business unit with good management, as well as a wider network of product marketing is needed by creating attractive and relevant web content, utilizing personal message and comment features to communicate with consumers. In addition, collaborating with local governments, especially the tourism office, participating in exhibitions, participating in exhibitions, making banners and leaflets as well as sponsoring events and innovating to increase the quantity and quality of products that are more marketable, so that they can produce the products regularly and sustainably and can develop a productive economy of Kebonrejo Village.

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