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Exploring the potential of porang (*Amorphophallus muelleri* B.) as horticultural plants in Bocok Hamlet, Pondokagung Village, Kasembon District, Malang Regency, East Java

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Abstract

Porang (*Amorphophallus muelleri* B.) is one of the well-known root crops in Indonesia because it has a lot of benefits and potential. One of the places that have a lot of Porang plantations is Bocok Hamlet, Pondokagung Village, Kasembon Sub-District, Malang Regency. Many people in this hamlet have Porang plantations, but the utilization of this plant is still not as optimal as other communities. Utilization of the potential of porang is still classified as less than optimal. Researchers conducted this research using 4 methods, namely initial surveys, determining research locations, observing morphological characters, and interviewing respondents. Based on the interviews conducted, the researchers found that porang has various potentials in several fields, such as in food, porang is made into several types of food ingredients such as flour. Besides that, many porang were exported to various countries such as Japan, England, and other countries. In addition, this plant also has abundant vitamin content for added nutrition and smooth metabolism.

Keywords: Benefits, Porang, Amorphophallus muelleri B., Potential

Introduction

Bocok Hamlet is a hamlet located in Pondokagung Village, Kasembon Sub-District, Malang District, East Java. The majority of the hamlet's land is still surrounded by forest areas that have the potential to improve the economy of the local community. The forest area is widely used for planting various types of plants. One of the well-known plants in this hamlet is the porang, so that the East Java area is one of the centers for porang production in Indonesia. However so far, the utilization of the potential of porang there is still not optimal. The porang is a horticultural plant.

The production of porang tubers and even the plants have enormous potential. However, most people are still not optimal in its management. Porang tubers also have high economic value as well as the plants. One of the villages which is famous for its porang garden is Pondokagung Village, which is in Bocok Hamlet. However, as is the case with other communities, some people in Bocok Hamlet do not

know much about the abundant potential of porang tubers. Porang (*Amorphophallus muelleri* B.) are generally the main commodity producing food that is rich in glucomannan. This content has the potential to be used as a food ingredient, especially in supporting national food security[1]. Porang is not only have potential as food ingredients, but this species of plant has so much potential that of course it can be used to increase people's income, as well as health and beauty. This is in accordance with the word of Allah SWT in Surah Asy-Syu'ara verse 7 which means:

"And do they not pay attention to the earth, how much We grow in the earth various kinds of good plants" (QS. Asy-Syu'ara: 7).

The verse above explains that Allah SWT has created various kinds of plants that contribute a lot of potential that can be utilized by humans. So that humans are ordered to pay attention to the good and noble plants that God has grown on this earth. One plant that has many benefits and potential is the porang plant. However, the utilization of this plant is still not optimal. Therefore, as a generation of scientists, it is necessary to explore the potential of the porang plant as a horticultural plant so that people can optimize the use of this plant.

Materials and methods

Study area and species

This research was conducted on Tuesday, January 3 2023 in Mr. Misdiyono's field, Bocok Hamlet, Pondokagung Village, Kasembon Sub-District, Malang Regency. The research method was carried out through 4 stages, namely the initial survey, determining the research location, observing morphological characters, and interviewing farmer respondents (**Figure 1**). This study involved key informants who could provide information about porang plants and their existence[2]. The key informant of this research is Mr. Misdiyono. This research was conducted using survey methods and short interviews covering the potential of the porang plant and its utilization by the community. The interview results were then interpreted in order to obtain a general and comprehensive picture of the potential and utilization of porang plants.

Figure 1. Interview with porang farmer respondents (Source: Documentation of KKM Group106, 2023).

Results and Discussion

Get to Know the Porang (*A. muelleri* B.) as A Horticular Plant

The porang plant is a tuber plant from the Araceae family. Porang is found in areas with wet tropical climates (climate types B and C) with an average annual rainfall of 2500 mm such as on the island of Java[3]. Porang can live well under stands of forest trees such as mahogany or teak, mahogany with 40% sunlight intensity. Porang requires shade for good growth. Shading density ranges from 40 to 60%. Porang is most like soil that is fertile, loose and contains lots of organic matter. Soil acidity ranges from 6.0 to 7.0. The soil should have a depth deep enough where the roots can reach it so that the tubers can develop perfectly[4].

Results of Surveys and Interviews with Respondents

Porang grows a lot in several places, especially in Bocok Hamlet. There were a large number of people who planted porang, so an initial survey was carried out where this survey was carried out to determine who would be interviewed, and then the location of the porang fields would be used as a research site. The initial survey obtained results, where the research was carried out in the porang field owned by Mr. Misdiyono, who was also the respondent. This research was conducted by interviewing respondents or owner's field. The results of the interviews conducted included the potential and benefits of the porang plant. Respondents also explained about planting and harvesting time of porang plants.

Planting is carried out using purchased tubers from their own porang. The tubers from the porang are called *khatak*, where these tubers are on the leaf stalks, as explained by Yasin, et al (2021)[3]. Tubers that are widely used as seeds are tubers, bulbil, or *kathak*. The tubers that are planted must be large so that they grow optimally and quickly, Utami (2021)[5] explains that the porang tubers that are planted should be large enough to shorten their growth time, because if the seeds are too small it will take longer to grow. It takes 2-3 growing seasons to grow and produce large tubers. Planting porang tubers must also be accompanied by fertilizer, the respondents themselves used organic fertilizers. Porang is harvested when the plants have started to collapse, as a result of the growing *khatak*[3]. Porang can be harvested for the first time after they reach 2 years of age. The tubers harvested are large tubers weighing more than 1 kg/tuber, while the small tubers are left to be harvested the following year.

The potential of the porang varies, based on the results of an interview with Mr. Misdiyono, which has started to grow and tubers appear at the base of the leaves. Misdiyono's porang are harvested and exported. The potential of porang covers various fields. The food sector for porang can be used as chips and porang flour. Porang flour can be used to make cakes and snacks, as explained by Faridah et al (2022)[6]. Porang flour itself has benefits as a food additive; porang flour also plays a very good role for health because it has low sugar content. Various types of food ingredients can also come from the porang plant, as stated by Nurcahaya et al (2022)[7]. Porang can be processed into a variety of foods, such as dry noodles to porang rice. Porang can also be used for cosmetic materials. In addition, porang also contains carbohydrates, rich in calcium which is also good for baby food. Porang can also be made into a substitute for breast milk. Porang in the industrial sector can be used as high quality paper adhesives (glue) because porang flour contains high glucomannan making it more profitable than ordinary adhesives because it will not lose its adhesive power in the case of freezing.

Aside from being an adhesive for porang, they can also be used as raincoats; most recently, porang is used for the paint and textile industry. Porang has abundant glucomannan content, the glucomannan content in the tubers of porang can be used for various purposes, from food, gelling agent, thickener, water absorbent, and maintain stability. In addition, glucomannan is also widely used in the pharmaceutical industry, as a glue ingredient, edible film material, substitute for preservatives, and substitute for fat, and so on[8]. In the health sector, especially in the pharmaceutical sector, the porang plant is used as filler for tablets (dissolving tablets and functions as a binder). Apart from that, this plant can also be used as a medicine for several diseases such as cancer. Researchers noted that the benefits of porang can prevent conditions such as lung cancer. The benefits of porang are not only useful for inhibiting the growth of cancer and precancerous substances, but also preventing cancer. In addition, porang tubers are also able to control blood sugar levels so it is safe for people with high blood sugar. In the economic field, this plant is exported, so porang plants that have been harvested will be exported so that it is very helpful in the economic field of the community. Porang is a type of plant originating from tubers, where this plant has considerable potential to be cultivated commercially optimal because it is one of the exports commodities[9]. Usually, the export of porang tubers is carried out to various countries such as Japan, Australia, Korea, Sri Lanka, Pakistan, Malaysia, New Zealand, Italy, and England. The porang is very useful for the community, this plant is widely exported because apart from its many potentials this plant also contains lots of vitamins, as stated by Shaleh et al (2015)[10].

Porang contains 7.65% starch, 2.5% dietary fiber, 0.92 % protein, 0.02% fat, minerals, and some vitamins that can meet the nutritional needs of children. The content of vitamins A and B in porang is higher when compared to other types of tubers such as potatoes. In addition, porang tubers also contain high concentrations of minerals such as potassium, magnesium, phosphorus, elements of kalium, selenium, zinc and copper which are beneficial for metabolism. This is also the reason why many people choose to export their porang. Like the research conducted by Utami (2021)[5] regarding the level of people's exports from 2019 to 2020, this plant is very good for development. The tuber of this plant has a big enough opportunity to be exported. In 2020, it was recorded that porang tubers were exported to Japan, China, Vietnam, Australia, and other countries as much as 32,000 tons or equivalent to IDR 1.42 trillion. This figure increased very sharply by around 160% from the 2019[5].

The results of the interviews show that the community knows the various potentials of the porang plant, as well as its benefits. However, many people still export crops from the porang plant, so that the utilization of the potential of the porang plant is still not optimal. The various potentials presented can certainly be additional in the economic field. The abundance of potential from people will certainly help improve the community's economy.

Conclusions

Porang is a tuber-type plant that has a lot of potential and benefits in various fields, especially in the economic field. It can help improve the community's economy, not only that this plant has lots of vitamins in it. However, this potential is still not optimally developed by the community. Plants of this species have great opportunities for export so that people export more porang plants to various countries such as Japan, Australia, Korea, Sri Lanka, Pakistan, Malaysia, New Zealand, Italy, and England.

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Conflicts of Interest

There are not potential conflicts of interest.

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