

Arboretum Durio Botanica: Botanical and Conservation Garden of Durian Gandasoli

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ABSTRACT-- *THE Arboretum Durio Botanica is an UI action program in agro-tourism field as one of solution to complete the concept of botanical diversity in Gandasoli, Sukabumi. The program is empowering the villager of Gandasoli to build the concept of agro-tourism within the value of education and conservation by providing training and collecting seedlings of local and non-local durian. The training was established for them to independently understand about the conservation, how to maintenance of crops, harvesting and developing the durian derivative products. The Arboretum Durio Botanica program is divided into three main processes, collecting, grouping and cultivating Durian. Monitoring and evaluation of program carried out by using questionnaires, interviews, and observations. The program so far can attract the interest of villagers, add their knowledge about the durian varieties, also their mind set to conserve durian varieties as an added value to explore agro-tourism field. This program has also successfully gathered the various seedlings of durian from local and non-local.*

Keyword--*arboretum, botanical garden, conservation, durian*

I. INTRODUCTION

Biodiversity is the level of life variation, starting from the level of genes, species, ecosystems, and the ecological processes that surround them, which cause interactions between living things and their environment. Biodiversity can also be said to be a variation of the form, appearance, amount and nature seen at various levels of diversity. Indonesia is a country that has a high level of biodiversity, which is ranked second in the world after Brazil, as many as 5,131,100 biodiversity in the world, 15.3% are in Indonesia so that Indonesia is known as a mega biodiversity country. This is supported by the location of Indonesia which is very strategic, geographically Indonesia is located between two continents and two oceans, consisting of many islands with vast seas, crossed by the equator and located in tropical regions with a stable climate. These conditions cause Indonesia to have various types of flora and fauna and ecosystems that vary and differ from area to region. Biodiversity in Indonesia is divided into two, namely diversity of flora and fauna diversity. One of the wealth of flora in Indonesia is the durian

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plant which has become an endemic commodity that can be found in various regions in Indonesia with a variety of varieties. There are 30 species of durian in Indonesia, but only 7 can produce fruit and be consumed by the community.

In 2019, the Ministry of Agriculture has released 104 superior varieties of national durian. The most developed species is *D. zibethinus* Murr. The large variety of species is due to durian having an open persistent nature (Kementarian Pertanian, 2018). The high diversity of variety and taste of durian, making durian a commodity that is much in demand by the world community. Based on data from the Central Bureau of Statistics (BPS), in 2018 the trade balance of the durian surplus will increase from 232 tons to 735 tons (BPS, 2018). This fact is supported by a statement from the Director General of Horticulture, Prihasto Setyanto, who said more than 1,000 tons of Indonesian durian had been exported to various countries such as China, Hong Kong, Malaysia, Vietnam, the Middle East, Saudi Arabia, Qatar to European countries such as the Netherlands and Portugal.

Conservation is the preservation or protection effort. The issue of conservation in Indonesia is still not widely known by the community, one of the factors is that the socialization of conservation is still focused on certain regions, not comprehensive to all regions in Indonesia, so it needs to be improved as a whole. The existence of germplasm is very important to all aspects of human life, but the public is not yet aware of the meaning, function, and importance of germplasm. As a result, some germplasm is in an endangered status, some have even been threatened with extinction due to illegal logging, land conversion, forest fires, and others. To avoid the extinction of germplasm conservation needs to be held to ensure the availability of germplasm, especially durian in the future. Durian conservation can be done ex-situ. Ex-situ conservation is an effort to maintain sustainability outside the original habitat by creating durian cultivation gardens. Some things that must be considered before making durian cultivation include: choosing the location of the garden in accordance with the conditions of growing durian plants, land preparation which includes plotting and land clearing, determining cropping patterns and spacing, planting predecessor plants and ground cover to provide environmental conditions for plants that shade and good for the growth of young durian plants, and design a good irrigation system to prevent dryness during the dry season.

Universitas Indonesia, together with the Pandu Cendekia Foundation, collaborated to facilitate durian conservation in terms of biodiversity of flora, proposing a UI action program for the country in the village of Gandasoli, Sukabumi, West Java, namely the Durio Botanica Arboretum Program, Botanical Gardens and Conservation. The purpose of this program is to create an area which is a conservation garden and botanical garden in durian to ensure the availability of durian germplasm in the future. This area is expected to create superior varieties because they are planted with a variety of durian species and varieties in one region. On the other hand, the existence of the Durio Botanica Arboretum can encourage Gandasoli to become a durian-producing area throughout the year because planting several varieties that have a flowering character and different ripening periods can provide different harvesting opportunities even within an area. In addition, this activity is expected to be able to preserve partnerships and fostering between the Gandasoli Village and the University of Indonesia, which in turn are expected to be able to increase and develop the potential of the Gandasoli region in the context of empowering a wider and creative community. The program is expected to be an opening stimulus for developing other potential in the village of Gandasoli to increase active community participation. This program will be a bridge for future University of Indonesia research related to conservation, genetic wealth, and others.

II. METHODOLOGY

The Arboretum Program will encourage the formation of community groups aware of arboretum tourism. This community group will play a role in the process of planting, caring, making seeds, harvesting, assisting tourists, and is also expected to develop durian derivative products to anticipate climate change and markets (Klehm, 2018).

In the Durio Botanica Arboretum, in addition to existing conserved plants, will also be collected, planted, local durian archipelago which is expected to become a valuable source of germplasm in the future. The planned seedlings are collected, not only from the Java region, but also from several regions in the archipelago so that the Durio Botanica Arboretum will be able to represent the diversity of durian in Indonesia in the future.

Taxonomic processes such as nomenclature or naming, collection data management, planting records, origin of seedlings, relevant photographs, and documentation systems for types of durian families that exist and will be planted become an integral part in the Arboretum library office to be built. In addition, durian zonation will be made based on Indonesian islands, such as Kalimantan zoning, Sulawesi zoning, Java zone, Papua zone, and others. For this reason, the village together with the Pandu Cendekia Foundation will prepare an integrated durian area of 5 hectares for the arboretum area and an additional collection of land with an area of up to 80 hectares integrated with people's homes, which will be encouraged as an integrated tourism area, with the concept of home stay. Facilities will also be built for tourists, including hygienic stalls, bamboo mountain huts, toilets, and jogging and bike tracks.

III. RESULT AND DISCUSSION

Research and community service activities carried out in the village of Gandasoli, Sukabumi apply the concept of durian diversity. The activity was carried out in collaboration with partners and the community through a number of selections, selective breeding, planting, caring, and harvesting.

Villagers of Gandasoli were then engaged in a learning by doing provided by our team as shown in Fig 1. The activities carried out to in still mindset of the importance of durian cultivation and conservation. Concept learning by doing delivered in a conservation area with an area of 80 hectares integrated with houses of villagers.



Figure 1: Socializing importance of durian cultivation and conservation to the scout of junior high school Gandasoli

Based on the results of the interview, Gandasoli villagers have quite high knowledge with durian knowledge and cultivation. Around 80% said that they understood durian, local durian varieties, and their cultivation as shown in Fig 2. This showed that Gandasoli villagers have a strong basic knowledge about durian cultivation. Therefore, it will be easier to direct towards conservation activities. Through the Arboretum Durio Botanica program will lead to new knowledge related to conservation, agro-tourism, and sustainable economic development.

The introduction of conservation activities was carried out by a community service team which was carried out on an 80-hectare land. After the activity the interview was conducted again regarding the interest to carry out conservation as shown in Fig 3. The results obtained state that 100% of all participants interviewed were interested in conservation. This is positive feedback to ensure sustainability in the future

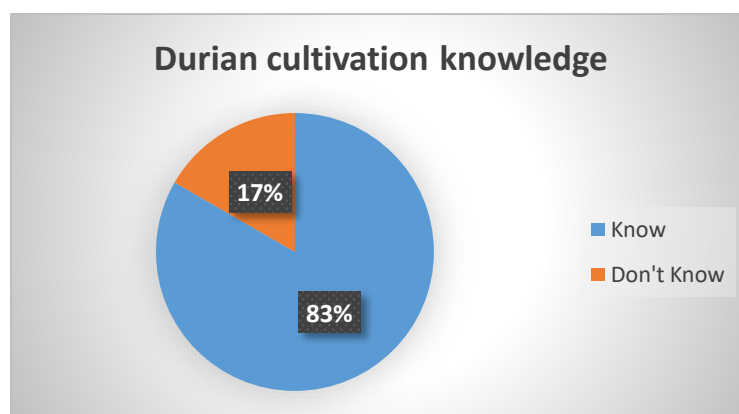


Figure 2: Durian cultivation knowledge

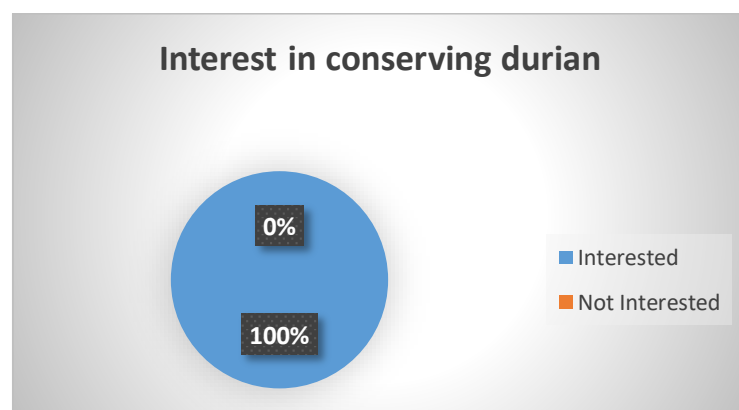


Figure 3: Interest in conserving durian

Even though the knowledge of community is low about durian conservation and cultivation, the enthusiasm and interest of the community towards durian cultivation is very high. This was supported by the formation of a community focused on durian cultivation in the village of Gandasoli. The community was also very enthusiastic about participating in the training organized by the UI Aksi Peduli, they followed each stage very well. In addition,

children in the village of Gandasoli also actively participate in conducting durian cultivation, they are enthusiastic about learning what conservation is and practicing it directly planting durian trees in the wild.

IV. CONCLUSION

The Arboretum Durio Botanica is a proven program that give impacts to community income. Besides that, this program was successfully implemented agro-tourism within the value of education and conservation by providing training and collecting seedlings of local and non-local durian.

In the future, this program can make the village of Gandasoli as a village that has sustainable development by combining the economy with the environment accompanied by community capacity building.

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