

## **Pemberdayaan Ekonomi Masyarakat Kelompok PKK Desa Ngoro Melalui Budidaya Anggrek**

### ***Community Economic Empowerment in the Ngoro Village PKK group through Orchid Cultivation***

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#### ***Abstract***

*Orchids are a type of diverse and beautiful flower plant found throughout the world, including Indonesia. Orchids naturally thrive in forest environments or areas with abundant moisture and organic nutrients. Considering the decreasing area of forest, it is important to take immediate action to preserve and protect various orchid species that are threatened with extinction. The Ngoro Village PKK group together with Damar Farm held orchid planting training which highlighted the potential for cultivating quality orchid plants. The aim of this effort is to provide education to the local community and supervise orchid cultivation as a means of earning a living for the family. The approach taken is through practice and question and answer sessions. Participants included sub-district heads and women from the PKK group in Ngoro Village. This material provides an overview of orchids, including the characteristics, potential, and techniques for propagating and cultivating these plants. The results of these efforts resulted in a significant increase in participants' understanding of orchid plants. There are two types of orchids that are commonly used for training: pigeon orchids (*Dendrobium crumenatum*) and ground orchids (*Spathoglottis plicata*). This orchid is famous for its ease of reproduction by separating young plants. Coconut fiber is an orchid planting medium that is often found in this area.*

**Keywords:** *Dendrobium crumenatum; Spathoglottis plicata; Growing media; Orchid plant training*

## Abstrak

Anggrek merupakan salah satu jenis tanaman bunga yang beraneka ragam dan indah yang terdapat di seluruh dunia, termasuk Indonesia. Anggrek secara alami tumbuh subur di lingkungan hutan atau daerah dengan kelembapan dan unsur hara organik yang melimpah. Mengingat semakin berkurangnya luas hutan, maka penting untuk segera mengambil tindakan untuk melestarikan dan melindungi berbagai jenis anggrek yang terancam punah. Kelompok PKK Desa Ngoro bersama Damar Farm mengadakan pelatihan penanaman anggrek yang mengangkat potensi budidaya tanaman anggrek berkualitas. Tujuan dari upaya ini adalah untuk memberikan edukasi kepada masyarakat setempat dan mengawasi budidaya anggrek sebagai mata pencaharian keluarga. Pendekatan yang dilakukan adalah melalui sesi latihan dan tanya jawab. Pesertanya antara lain para camat dan ibu-ibu dari kelompok PKK di Desa Ngoro. Materi ini memberikan gambaran tentang anggrek, meliputi ciri-ciri, potensi, serta teknik perbanyakan dan budidaya tanaman tersebut. Hasil dari upaya tersebut menghasilkan peningkatan pemahaman peserta mengenai tanaman anggrek secara signifikan. Ada dua jenis anggrek yang biasa digunakan untuk latihan: anggrek merpati (*Dendrobium crumenatum*) dan anggrek tanah (*Spathoglottis plicata*). Anggrek ini terkenal dengan kemudahan perkembangbiakannya dengan memisahkan tanaman muda. Sabut kelapa merupakan media tanam anggrek yang banyak dijumpai di daerah ini.

**Kata Kunci:** *Dendrobium crumenatum*; *Spathoglottis plicata*; Media tanam; Pelatihan tanaman anggrek

## Introduction

Orchids are famous for their stunning flowers, which come in a variety of types, shapes and colors. It is truly a sight to behold for anyone who appreciates natural beauty. Khozin, et al., al. (2022). Orchid plants have extraordinary adaptability to thrive in harsh environments and tolerate direct sunlight without harm. Additionally, its ability to thrive with minimal water requirements has led to a significant increase in demand for orchid plants. However, processing capacity in Indonesia is currently not commensurate with high public demand. (Chika, et al.

2021). This product has a high selling value because of its charming flower shape, various colors, and charming bloom patterns. This presents a profitable business opportunity that is much in demand and promising. Thus, the orchid planting business is not only limited to the large plant industry, but can also be carried out in the household sector. Dewanti et al., (2021). Dendrobium genus orchids are much sought after because of their versatility as garden decorations, potted plants or cut flowers. Burhan, (2020). Investing in Dendrobium orchid plants can increase genetic diversity and expand the variety of orchid varieties, ultimately increasing the market value of ornamental plants. With ideal orchid cultivation conditions, Ngoro District in Jombang Regency presents promising business opportunities for its residents, especially the PKK women's group. This training activity organized by the PKK group is an established program that has been temporarily suspended in recent years due to the pandemic. Organizing orchid cultivation training with experts from Damar Farm in Kesamben, Ngoro, Jombang District. This is one way to introduce orchid plants as well as an educational forum that can improve the regional economy, especially in the micro, small and medium business sectors. (Pujiastutik et al., 2022)

As per Dewanti et al., (2021), villagers are encouraged to take control of their own growth and strive for personal development. This initiative aims to uplift individuals in disadvantaged communities, enabling them to escape the cycle of poverty and regain control of their lives. Community empowerment is very important for the survival and development of society, thereby enabling progress. This is an exciting opportunity for individuals who want to dive into the world of orchid cultivation. It is important to understand the importance of time management in this business because caring for orchid plants can take quite a long time. Rest assured, this training program is designed to be efficient and not take up much of your valuable time. Various factors can influence the growth of this plant, including weather conditions, environmental factors such as exposure to sunlight, humidity,

and temperature, as well as maintenance tasks such as fertilizing, watering, and controlling plant diseases and pests. (Zuhri, et al, 2020).

If you are in a situation where a micro, small, or medium enterprise in the agricultural or agribusiness sector is experiencing seemingly inevitable stagnation, it may be helpful to approach this problem with a mindset rooted in Islamic teachings. In Islam, there is an emphasis on understanding and improving economic prosperity, and one way to do this is through trade. Trading is an activity that is often carried out in the market, as mentioned in the hadith:

و بيده الرجل عمل : قال أطيب الكسب أئ - وسلم عليه الله صلى الله رسول سنه  
مبرو بيع كل

Meaning: "The Prophet *sallallaahu 'alaihi wasallam* was asked about the most important job. He answered, "good business and one's work with one's own hands" (HR. Al Bazzar and Thabrani).

Earning an income through hard work is a more satisfying job, whether as a carpenter, bricklayer, blacksmith, or other job. In another hadith, there is an example of someone looking for firewood. Currently, the professions of doctors, architects, and others are also mentioned in this hadith. Meanwhile, a successful business means conducting trade with integrity and honesty. Engaging in dishonest practices such as manipulating scales and hiding product defects. So, in Islam, any work is considered valuable. Every job has the potential to be the best job. As long as it is ethical and does not rely on favors.

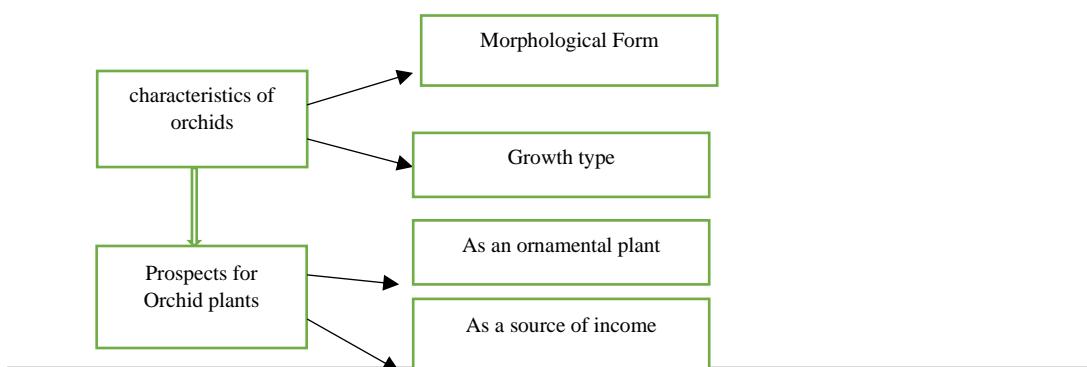
## Method

This activity took place at Damar Farm which is located in Kesamben District, Jombang Regency. This location offers various types of orchids that you can choose from. The event is scheduled for June 15, 2024 from 10.00 to 13.00 WIB. The implementation method is carried out through practical techniques and interactive discussions. The participants included the sub-district head and women from the

PKK group, as well as damar farm managers. Our aim in holding this training is to empower PKK group women with the knowledge and skills to successfully cultivate orchids and generate additional income through this business, complementing their existing agricultural activities. Before providing counseling, it is important to assess the participant's understanding of orchids by asking a series of questions. Many of the participants lacked knowledge about various types of orchid plants, their potential, and cultivation techniques.

## **Result and Discussion**

Before carrying out orchid plant empowerment activities, the committee observed methods of increasing the income of local residents. In addition, interviews were also conducted with all individuals in the hamlet who showed interest in plants or appeared to be actively involved in the community. Bearing this in mind, the decision was taken to offer outreach on orchid development to the local community. The extension activities were divided into four sessions: The initial session consisted of a series of questions aimed at assessing participants' understanding of orchid plants. The second session included presenting material according to the framework shown in Figure 1. In the third session, participants had the opportunity to ask questions during a special question and answer session. The fourth session covers practical aspects of orchid propagation and cultivation. To ensure a well-organized presentation, we have developed a framework, illustrated in Figure 1 below:



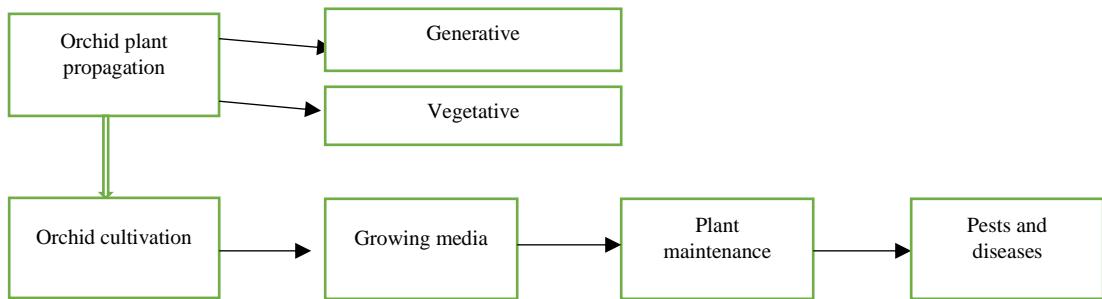


Figure 1. Structure of extension materials

- **Explore the characteristics of orchid plants**

The initial material given to participants was a general description of orchid plants highlighting their characteristics and features. Orchids are beautiful plants that have a variety of shapes, sizes and flower colors. The structure of an orchid flower is fully developed, consisting of sepals, petals, pollen and pistil. Orchid flowers usually form clusters, either at the end of the stem or in the leaf axils, depending on the type. Orchid flowers stand out from the rest with their unique features - three sepals and petals of various shapes and colors, as well as charming modified petals that form a beautiful flower lip called the labellum. (Rasmussen, 2009) Usually species from the Orchidaceae family have stems that are round, dense, and moist. Some plants have deceptive stems that grow on rhizomes and function as water reservoirs. The direction of stem growth can vary, some grow upright and some hang down. This growth can be categorized into sympodial and monopodial types. Leaves have a single structure, complete or incomplete. There are two main types of orchid growth: epiphytic and terrestrial. Epiphytic orchids thrive on tree trunks or branches, carefully attaching themselves to their hosts to obtain nutrients without causing harm. On the other hand, terrestrial orchids take

nutrients from soil or decaying organic matter, thriving in the warmth of full sunlight.(Ko, 1988)

In the tourist area where the outreach is carried out, you will find a variety of epiphytic and terrestrial orchids. Participants were presented with descriptions of various types of orchids, such as pigeon orchids (*Dendrobium crumenatum*) and ground orchids (*Spathoglottis plicata*). These special orchids, called sympodial orchids, can be propagated easily by separating the seeds. (Rosanti, D., & Widianjaya, 2020). *Dendrobium* sp. orchid. It grows faster than other orchids, which is why it is widely planted and in demand in Indonesia. The hybrid orchid cultivar known as Zahra 27 was produced from crossing *Dendrobium* (Kiyosi Izumi x Royal Color) with *Dendrobium* Burana Gold Splash. The results of this cross began to flower three years and four months after the original cross. Compared to other flower designs such as butterflies, this orchid has the advantage of having thicker flower strands, more flower buds, longer flower stalks, and longer lasting freshness. The dimensions are 5.0–5.5 cm long and 6.0–6.1 cm wide. This orchid can survive temperatures between 150 and 1,100 meters above sea level, and the *Dendrobium* cultivar Dian orchid is a descendant of Den. Endhoven x *Dendrobium* antennae crossed.(Balai Penelitian Tanaman Hias, 2021) Benefits of Rchb.f. including large flower size (4.5–5.0 cm long and 5.0–7.5 cm wide), large number of flower stalks per pseudobulb (1–5 stalks), and suitability for highland environments. Members of the Orchidaceae family, orchids are epiphytic plants (attached to other plants) that obtain food and moisture from the atmosphere and rainfall without harming the plants they support. This amazing flowering plant is found all over the world, but is most commonly found in Indonesia. Indonesian orchids have made a significant contribution to the world's orchid treasury. 6,000 of the 20,000 orchid species

found worldwide are found in Indonesian forests. In addition to the orchid types, there are several crosses that are known to exist; an estimated 1000 new hybrids are created each year. The most important component of an orchid plant is its flower which has a conventional structure with three petals (sepals) and three petals (petals). It is not wrong to associate all the characteristics and beauty of orchid flowers with the labellum, or lip of the flower. This attribute is what differentiates orchids from other families of flowering plants.(In, 2014)

Dendrobium sp. Orchids are characterized by long pseudostems, also known as pseudobulbs, cylindrical, bulging stems, and single leaves that cross along the stem. The growth habit of this orchid is classified as sympodial, meaning it produces many clumps and roots on each pseudostem. However, on mature plants, the flowers appear in the leaf axils. Usually the flowers appear at the tip or apical shoot. After one to one and a half years of sowing, the Dendrobium sp orchid begins to flower. Dendrobium sp is eight months old. can develop with a strong culture. Unlike Cattleya and Phalaenopsis, this orchid flowers more easily. Dendrobium prefers a humid environment with a light exposure level of around 60%. When compared with Phalaenopsis and Cattleya, the price is relatively lower due to higher productivity and large-scale cultivation which of course results in a higher selling value. The beauty of orchids cannot be denied, so it is unexpected that this plant is often used as a favorite flower to decorate landscapes and spaces. The business world is also growing rapidly, with many roadside vendors selling various types of orchids and extensive orchid gardens.(Teoh ES, 2019)

- **Potential market opportunities for orchid plants**

This material provides insight into the potential of orchid plants if cultivated effectively. Participants were told that they could easily find materials for growing orchids near them. Orchids are a valuable asset for the nation that should be protected. Apart from being a decoration, orchids also have the potential to be fragrant or herbal plants. This genetic wealth has significant economic potential if managed well. This potential is a valuable asset that requires careful maintenance, effective management and long-term preservation. Unfortunately, the economic potential of orchids and their future prospects are still not considered by many local residents, including the people in Ngoro Jombang Village (Ivakdalam, L.M., & Pugesahan, 2019). Throughout the world, orchids are also used in traditional medicinal systems, from subsistence level to commercial exploitation. Traditional Ayurvedic medicine from China and South Asia is one of the most popular commercial uses of orchids in medicine. Additionally, some traditional African medicines—such as *Vanilla Madagascariensis*—are known to contain it. **Hong FF, “History of Medicine in China – When Medicine Took an Alternative Path.,” McGill Journal of Medicine, 2004, 8: 79–84.** Rolfe in Madagascar: Various traditional medicines and food supplements from North America, such as *Cypripedium acaule* Aiton and *C. parviflorum* Salisb. and the Unani system of medicine, brought to Europe.

The 17th century saw the arrival of official Chinese apothecaries, but Shennong, the founding emperor and patron deity of Chinese agriculture, is said to have discovered the medical benefits of orchids as early as the 28th century BC. China's consumer economy has recently developed, which increases the demand for Traditional Chinese Medicine (TCM) and strengthens the traditional value of the species used. When making shi-hu

medicine, many *Dendrobium* spp. most frequently mentioned in Traditional Chinese Medicine (TCM). These include *D. catenatum* Lindl. (which includes *D. officinale* Kimura & Migo), *D. loddigesii* Rolfe, *D. moniliforme* (L.) Sw., and *D. noble* Lindl. In addition, the tubers of *Cremastra appendiculata* (D. Don) Makino, *Pleione bulbocodioides* (French) Rolfe, and *P. yunnanensis* (Rolfe) Rolfe (from which *shan ci gu* is made) are also used, as well as their rhizomes and stems. *Bletilla striata* (Thunb.) Rchb.f. (place of origin of *bai-ji*), and tubers of *Anoectochilus* spp. (*jin-xian-lian*). Scientific research has been directed at the effects of some of these drugs, which have only recently come to light. Research has revealed the presence of bioactive chemicals in these drugs that may have therapeutic importance in certain species.

In various cultural and religious rituals, orchids were historically traded for their ornamental value and are still maintained today. For example, the blooms and pseudobulbs of the *Laelia* Lindl species are used in Day of the Dead celebrations, and the flowers of *Dendrobium maccarthiae* Thwaites are used as special temple offerings in Sri Lanka. (Goh K., 2013) *Bulbophyllum auricomum* Lindl., the national flower of Myanmar, and related species, including *B. sukhakulii* Seidenf., which is often used to decorate women's hair, are also used as national symbols.

### **Planting orchid plants**

The third material provides detailed information regarding how to propagate orchid plants both generatively and vegetatively. On the other hand, the vegetative method is preferred because orchid seeds are difficult to grow or germinate without special treatment, such as tissue culture. The vegetative method commonly used is to separate the seeds. Participants are

taught orchid propagation techniques using this method, so they can carry out the process independently.

Acclimatization is the process of adapting to a new environmental climate; During this phase, small plants grown from tissue culture often experience stress, which causes many plants to still die. This is because plants grown through tissue culture may have an undeveloped cuticle layer, undeveloped root vascular tissue, imperfect stems, non-functional stomata, fewer leaf palisade cells, and stem lignification, which makes the seedlings vulnerable. against pests, diseases and outside air, making acclimatization difficult. . Orchid in a bottle ready to be planted. It is important to pay attention to the acclimatization stage, which is the next stage in the in vitro plant propagation method. Choosing the right medium to encourage orchid growth is an important step in the acclimatization procedure. A medium is needed that provides sufficient nutrition to plants and encourages root growth. The type, environment and availability of orchids should be taken into consideration when choosing a planting medium. Orchid planting media can be made from ferns, coconut fiber, charcoal, moss, etc.(Wahyuni, 2015)

Another goal of acclimatization is to prepare plantlets for planting naturally. Participants must first understand the characteristics of the orchid or plant in the bottle before transferring it, because it is different from orchids or plants found in the wild. Bottled orchids are: 1. Lose water more quickly due to the thin cuticle layer; 2. The blood vessel network is still developing so the process of transporting substances is not yet ideal; 3. Due to less than optimal lignification (wood production) in the stem, the stem becomes very fresh and contains a lot of water. 4. Photosynthetic activity is very poor and the shape and structure of leaf tissue is abnormal. 5. Because stomata often malfunction (not closing when evaporation is high), leaves are very

susceptible to transpiration, bacterial and fungal invasion, bright light, and high temperatures. Several things that need to be considered in the acclimatization process are as follows: 1. Acclimatization planting media, provided that: a. Able to bind nutrients and water effectively; B. Able to maintain humidity c. Have sufficient ventilation d. Sturdy or resistant to weathering e. Not poisonous or causes disease f. Compact with great effort so that water does not collect g. Has a pH between five and six. Cuttings are one type of appropriate planting material.(Bande et al., 2023)

The success of orchid propagation is determined by the critical stage of acclimatization. One of the challenges in orchid cultivation is acclimatization. In order for orchid propagation to be successful, the obstacles faced during the acclimatization period can be overcome by providing planting media and foliar fertilizer in the right concentration. The fertilizer used must be adjusted to the plant's needs; for example, it must contain N elements for vegetative plant growth. In the vegetative stage of plant life, nitrogen helps plants grow. Because nitrogen has the ability to increase the number and area of leaves, vegetative development (plant height, stem diameter, number of leaves, leaf area, number of shoots, number of roots, and root length) will increase when nitrogen levels are high. The resulting increase in photosynthate promotes the growth of vegetative organs.

- **Orchid cultivation**

The fourth material provides information regarding orchid cultivation. Participants are taught the art of cultivating orchids, including planting them in pots with appropriate growing media and attaching them to plates or tree ferns. Sufficient cavities in the orchid planting medium are very important for optimal root development. Various types of media that are often used include ferns, coconut fiber, zeolite, charcoal, and broken bricks and tiles.

Ferns have excellent porosity, allowing for optimal drainage and the ability to hold water and fertilizer solutions effectively.(Beukema & Coenen, 2004) Coconut fiber has the ability to retain water, although it tends to decompose quickly and has the potential to contribute to the spread of disease. Fern growing media is very suitable for every stage of orchid growth. At the activity location there is still a lot of coconut fiber that has not been used. Participants are invited to use it as an alternative planting medium, considering the scarcity of other planting materials in the area. This activity broadens participants' horizons because the material presented is easy to understand, materials, tools and methods for propagating orchids are available and feasible to carry out. However, the crucial challenge lies in obtaining the necessary funding to ensure the long-term sustainability of the initiative(Hinsley et al., 2018) (Lalla & Sudiarta, 2022). One type of interesting plant that has many distinctive characteristics is the orchid. There are lowlands, steamy forests, dry deserts and hills where orchids can thrive. Some orchids can even be found growing on snow-covered mountain peaks. Most often found in tropical areas. The evolution of orchid cultivation has never been immune to pest and disease problems. Because the attractiveness of orchid plants is what buyers want when buying or displaying them, disease attacks and even the smallest pest attacks on orchid plants should not be ignored. Its beauty will vary and its selling price will naturally decrease as disease infections and pest attacks decrease.(Utami et al., 2022)

The procedure for planting orchids is as follows: (1) Choose quality orchid seeds; (2) Transfer the seeds to a suitable planting medium; (3) Providing good care for orchids; and (4) Use sufficient fertilizer. The following pests prey on orchid plants in rice fields: Ants Symptoms include fungal damage to young shoots and roots. Control: fill the pan with water,

wipe down the rack, and hang the pan if possible. Grasshopper Symptoms: Broken leaves with uneven, jagged cuts. With so few grasshopper species, careful observation is required. Control: Immediately spray contact/systemic toxic pesticides; if the population is small, it can be removed immediately. Triple symptoms include sticking to young leaves and stem segments, causing gray spots on the surface of the leaves, and causing damage to the flowers so that they change shape to become unsightly. Control: Spray the orchid pot with insecticide regularly and often. Fusarium oxyporum wilt disease is the cause. Symptoms: resembles a root rot attack, but there are purple rings or lines on the rhizome. If the plant is badly infested, the entire rhizome turns purple, and the stem tuber begins to rot. Control: Benlate is sprayed on remaining material after the affected area has been cleaned. New, fresh and clean planting material is used for instant plant transplantation. Make sure the air flow around the plant is smooth. The fungus that causes the rot disease Sclerotium rolfsi. Symptoms of this disease include small brown nodules on the affected plant parts. Control: Diseased plant parts are cut and thrown away. For one hour, a 4% formalin solution or 0.5% Natrippene fungicide/antibiotic is used to sterilize the plant medium and each pot. Brown spot disease Symptoms are brown spots on the surface of the leaves which eventually cover the entire plant. Control: cut off the affected part, then apply Physan 20 or a fungicide/antibiotic mixture called streptomycin.(Bande et al., 2023)

- **Implementation of Orchid Plant Training Practices**

In an effort to expand their knowledge and skills in orchid cultivation, residents—especially cadres—are given the opportunity to work in groups as demonstration plots for orchid plants that are managed cooperatively. This allows communication and exchange of information, as well as consultation

with community service teams on various issues. problems faced when maintaining orchids in the field. When orchids are planted, they go through several stages of growth. The first is called “seeding” in bottles, and its purpose is to duplicate planting material from a cross or from a particular parent plant. After that, the orchid is planted in a bottle to prepare for the acclimatization period. Mortality rates are usually still high during acclimatization. If it survives the critical period, it moves from vegetative growth to the juvenile phase to the flowering phase. The various stages that need to be carried out require expertise in maintaining orchid plants, such as fertilizing and controlling plant pests that can harm orchid plants. This orchid cultivation project involves assistance and training in an effort to prepare human resources, especially PKK cadres. You can observe this behavior in Figure 2.





Figure 2 PKK teams and darma farm teams

### Managerial Implications

The results of this service are intended to provide a broad overview to the PKK women's group and help various community groups—such as village officials, academics, researchers, PKK groups, and the Darma Farm team—to better understand the orchid plant empowerment project. . These findings increase housewives' knowledge about the correct way to plant orchids, types of orchids, and how to adapt to the surrounding environment. These results also helped researchers in developing closer contact with the women of the PKK group and the Darma Farm team, thereby enabling them to establish new relationships with people involved in new activities in the future. This service improves the understanding and interpretation of orchid plants for academics.

## Conclusion

There are two types of orchids that are commonly used for planting training: pigeon orchids (*Dendrobium crumenatum*) and ground orchids (*Spathoglottis plicata*). This orchid is famous for its ease of reproduction through separation of seedlings. Coconut fiber is an orchid growing medium that is often found in this area, known to be effective in supporting orchid growth. Participants who took part in this activity demonstrated a strong understanding of the material presented and actively applied their knowledge by carrying out tasks such as separating seeds and planting orchids. Participant involvement in the activity was very high, as seen from the lively discussions after the presentation of the material.

## Recommendations

Darma Farm orchid producers must be able to negotiate better prices with flower traders if they can improve the quality of their orchid plants so that their selling value increases. Retailers in Ngoro Jombang District must be able to estimate the costs associated with selling orchid plants while maintaining high customer service standards and setting prices commensurate with the quality of their goods. Apart from that, flower farmer organizations and village youth groups can be invited to take part in activities carried out by the PKK women's group.

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