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Melon Cultivation Guidance for Empowering Women in Pajagan Village, Sumedang Regency

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ABSTRACT

Background: As one of popular fruit, melon is potentially to cultivate in homeyard by housewives.

Aims: This community service is carried out in July 2025, for empowering women in Pajagan Village, Cisitu District, Sumedang Regency through melon cultivation guidance.

Method: Thirty-five participants joined, mostly local women housewives aged 25–50 from the PKK organization, along with 15 students aged 20–22 conducting fieldwork. This work documents the initial stages of home melon cultivation through a participatory approach and provides hands-on experience in melon seedling cultivation.

Results: Participants' enthusiasm and confidence in applying the seeding techniques learned reflect the effectiveness and practicality of the training methods in supporting home-based melon cultivation. This work is hoped to empowers women in managing home gardens, contributing to both economic resilience and household food security.

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1. Introduction

Melon (*Cucumis melo* L.) is a popular fruit appreciated for its dense flesh, sweet taste, and rich nutritional content, including vitamins A, B, C, and K, as well as high levels of potassium and copper, all of which play an important role in maintaining human health (Kaushik, 2023; Kumar, *et al.*, 2023; Norboyeva & Qizi, 2024). Modern melons result from human selection and hybridization within plant

breeding programs, since it is originated natively from the African continent, with Asia as a secondary center of diversity (Lin, 2010). Melons are relatively easy to cultivate, making them a promising option for mothers or small-scale farmers (Ibironke & Oyeleke, 2014). Limited experience and land resources are not major barriers to melon cultivation, as melons can be grown in small areas (Onyemekonwu, *et al.*, 2019). In a small area, hydroponic systems using drip irrigation do offer the advantage of increasing melon yield and quality (Minarni & Ulinnuha, 2023), particularly when implemented in a controlled environment such as a greenhouse, and allow for off-season production (Muspiah, *et al.*, 2024). However, this does not mean that melon farming is without its challenges. For instance, the implementation of hydroponic and drip irrigation technology by small-scale farmers or households is relatively difficult due to the relatively high cost of adopting the technology (Ali, *et al.*, 2024). Therefore, community service activities for melon cultivation are needed.

Previous community service efforts have successfully emphasized the importance of using superior seeds and local materials to reduce reliance on pesticides. This approach not only increases farmers' income but also promotes sustainable agricultural practices, which can be vital to the long-term success of melon cultivation (Daryono, *et al.*, 2014). In Lamongan, East Java, a community service program established a greenhouse for melon cultivation, addressing challenges such as climate vulnerability and supply chain inefficiencies, with the support of stakeholders, and thus successfully empowering local farmers (Pratono, *et al.*, 2024). In South Lampung, the community service activity increased farmers' knowledge and skills regarding drip irrigation technology, thereby improving the quality and quantity of crop production (Darmaputra, *et al.*, 2020). In Sigi District, a program focused on empowering women's groups through hydroponic melon cultivation using the Dutch bucket system. This initiative provided training and marketing support, resulting in a high-quality organic melon harvest and improved family income. The success of this program highlights the potential of hydroponic systems to improve melon cultivation and community well-being (Al Riski, *et al.*, 2024). Community service was also conducted in Pajagan Village, Cisitu District, Sumedang Regency, to empower women. The potential for melon empowerment here is quite strong, given that the area is predominantly agricultural, with one in four residents engaged in farming (Diskominfosanditik Sumedang Regency, 2024). This work aims to report the melon cultivation guidance for empowering women in Pajagan Village. The benefit of this work is indirectly enhancing Pajagan women's agricultural skills, income opportunities, and overall socioeconomic well-being.

2. Methods

This community service activity was held in July 2025 at the Pajagan Village Hall, Cisitu District, Sumedang Regency. Thirty-five participants participated, the majority of whom were local women who served as housewives. There are 20 housewives with an age range of 25-50 years who are members of the PKK organization, while the other 15 are students who are currently carrying out field work activities, aged 20-22 years. The participants' characteristics reflected their familiarity with agricultural activities, particularly as most came from families with experience in cultivating crops and utilizing their yards as planting areas. The activity was facilitated by a team of lecturers from the Faculty of Agriculture, Universitas Padjadjaran, who are experts in agronomy and horticulture.

The activity was implemented in two main ways: technical guidance and participatory counselling sessions. During the technical guidance sessions, participants were introduced to the practical stages of melon cultivation, from selecting quality melon seeds to sowing techniques and seedling care. Demonstrations were conducted live in front of participants, displaying examples of seeds and appropriate planting media, allowing participants to observe and practice the skills they had learned. The material was delivered in stages, using a hands-on demonstration method accompanied by verbal explanations and interactive discussions. This method was chosen to maximize participant understanding and enhance practical skills, by the principles of adult learning, which emphasize the relevance of the

material to participants' experiences. Counselling sessions were held to provide a space for participants, particularly housewives, to share experiences and discuss melon cultivation in their yards. The counselling process was participatory, with the facilitator asking provocative questions that encouraged participants to identify challenges and potential solutions tailored to local conditions.

3. Results and Discussion

This community service activity focused primarily on increasing participants' capacity in home-based melon cultivation, from initial production aspects such as selecting quality seeds, sowing techniques, and using appropriate seeding media, through to plant maintenance and harvesting. All activities were designed using a participatory approach, tailored to the participants' backgrounds as housewives or farming families.

The initial stage of melon cultivation emphasized in the technical guidance session was the presentation of melon cultivation techniques (Figure 1A). The presentation lasted 30 minutes, followed by a participatory discussion with the training participants. Participants were introduced to the characteristics of superior seeds, such as seeds with high germination rates, freedom from pests and diseases, and varieties with proven productivity. During this session, the facilitator demonstrated various melon seed samples and explained how to read seed packaging labels, including expiration dates and purity levels. Participants were also invited to discuss their preferred varieties suited to local agro-climatic conditions. The result of this sub-activity is the addition of participants' knowledge regarding the importance of melon seeding as the first step in producing good melon seedlings.

Figure 1B documents the facilitator's demonstration of seed selection for the participants, with the participants actively observing and touching the provided seed samples. Participants are encouraged to use F1 hybrid seeds for having superior growth performance and harvested yield. Seeds are purchased in packages from reputable seed companies, ensuring the packaging is sealed and undamaged. Farmers should check the seed's expiration date. Expired seeds will have a lower germination rate. The number of seeds is adjusted according to the land area or the number of polybags. For replanting purposes, add 10% of the required seeds as a reserve. Replanting is carried out a week after transplanting, to replace any seedlings with abnormally grown, pest-attacked or have died.

Figure 1. Presentation of melon cultivation material (A); melon sowing practice (B); participants enthusiastically discussing melon seed sowing (C) at the hall of Pajagan Village, Cisitu District, Sumedang Regency.

Technically, the seeds are soaked in warm water (approximately 40°C) for 2-4 hours, then selected. Quality seeds sink, while poor seeds float. Selected seeds are sown in seed trays filled with a 1:1:1 mixture of soil, sand, and sterile manure. Afterward, the seeds are lightly covered with a 2:1 mixture of rice husk ash and soil for optimal plant growth. The seed trays are covered with sacks to maintain humidity during the germination period, 3-5 days after sowing (DSS). The covering sack should be removed on the third day after sowing to eliminate the effect of etiolation in the melon sprouts.

The facilitator conducts a live demonstration of the seeding technique, showing the steps for planting seeds in the seedling trays, the ideal planting depth (approximately 0.5–1 cm), and how to water the seeds initially to maintain humidity without causing waterlogging. Figure 1C depicts the training atmosphere as participants directly observe the seedling process and the seedling medium used, while the facilitator verbally explains the steps. This activity lasted for 45 minutes to accommodate questions, and the public received direct answers to doubts related to melon seedling production.

After sowing, participants are given an understanding of seedling care until they are ready to be transplanted, which is approximately 10–14 days after sowing or when the seedlings have 2–3 true leaves. The explanation covers watering frequency, initial pest control, and the importance of protecting the seedlings from excessive direct sunlight during the early stages of growth.

After the seeds are sown in the polybags, they will grow into seedlings, and they must be properly cared for optimal growth. Nurseries are maintained for two weeks under a screenhouse or any site with protected from direct sunlight, pests, and diseases. Seedlings are placed in a shaded plastic cover, protected from rain, with 50-70% sunlight. Seedlings are carefully watered every morning using a spray can. Watering too heavily can smother or even break the melon seedlings' stems. In hot, dry weather, watering can be repeated in the afternoon.

Discussions during the counseling session (Figure 1C) indicated that most participants were familiar with the use of seedling trays and alternative growing media such as rice husk charcoal and were enthusiastic about trying this more practical and efficient method. The demonstrative approach proved effective in enhancing participants' understanding, as reflected in verbal feedback and enthusiasm when they tried the seeding technique firsthand. Participants felt more confident in applying the techniques they had learned in their yards, with several expressing plans to soon try cultivating melons in polybags at home.

Although this technical guidance only provides hands-on experience in the nursery stage, the team of lecturers provided information on melon plant care, which is generally divided into three phases: active vegetative growth, initial fruit formation, and fruit ripening.

The active vegetative phase (Figure 2A) is characterized by dense leaf growth and the formation of the main stem and tendrils. At this stage, plants require adequate macronutrient intake, especially nitrogen, to support vegetative tissue development. Therefore, high-N fertilizer is necessary during this phase. Vegetative seedling growth is stimulated by spraying a high-nitrogen foliar fertilizer, for example, NPK, diluted at 2 g/L, once every 7 and 10 days after sowing. After the seedlings are in the growing bag, the fertilizer dosage can follow the recommended NPK 16-16-16 (watering once a week) with an average concentration of 150 ml per plant. 1,000 plants require 5 kg. Optimal planting medium humidity and lighting are crucial for healthy, green leaf growth. For housewives participating in the activity, understanding this phase provides a foundation for recognizing basic plant needs and monitoring for signs of plant stress, such as yellowing leaves or stunted growth.

The early fruit formation phase (Figure 2B) is characterized by the emergence of flowers and the formation of young fruit. At this stage, balanced fertilization with phosphorus and potassium is increased to encourage flowering and fruit enlargement. For housewives managing plants in their yards, this phase is crucial, especially in terms of fruit selection, fruit tying, and natural pest control to prevent fruit drop. Selection of flowers and potential fruit is necessary at the eighth to 12th leaf axils. The result of this

selection is the retention of only one potential fruit per vine. This activity fosters the technical skills of housewives in maintaining fruit quality from the outset.

The fruit ripening phase (Figure 2C) is characterized by the melon fruit showing its characteristic prominent netted skin and the skin beginning to pale. To increase the sweetness of the melon, KCl fertilizer should be applied weekly for two weeks before harvest, by watering it along with the NPK fertilizer. When KCl is applied together with NPK, 1 kg of KCl and 4 kg of NPK are applied per 1,000 plants. Harvest time is 70-75 days after planting. The correct harvesting method involves cutting the melon stem with a knife/scissors, leaving at least 2.0 cm to extend the fruit's shelf life. The stem is cut in a "T" shape, ensuring the fruit stem is intact and the two upper sides are leaf stalks that have been stripped of their leaves. This knowledge provides the foundation for proper harvesting, ensuring the fruit's quality and flavor. This phase is also a crucial step in supporting the economic potential of home gardens.

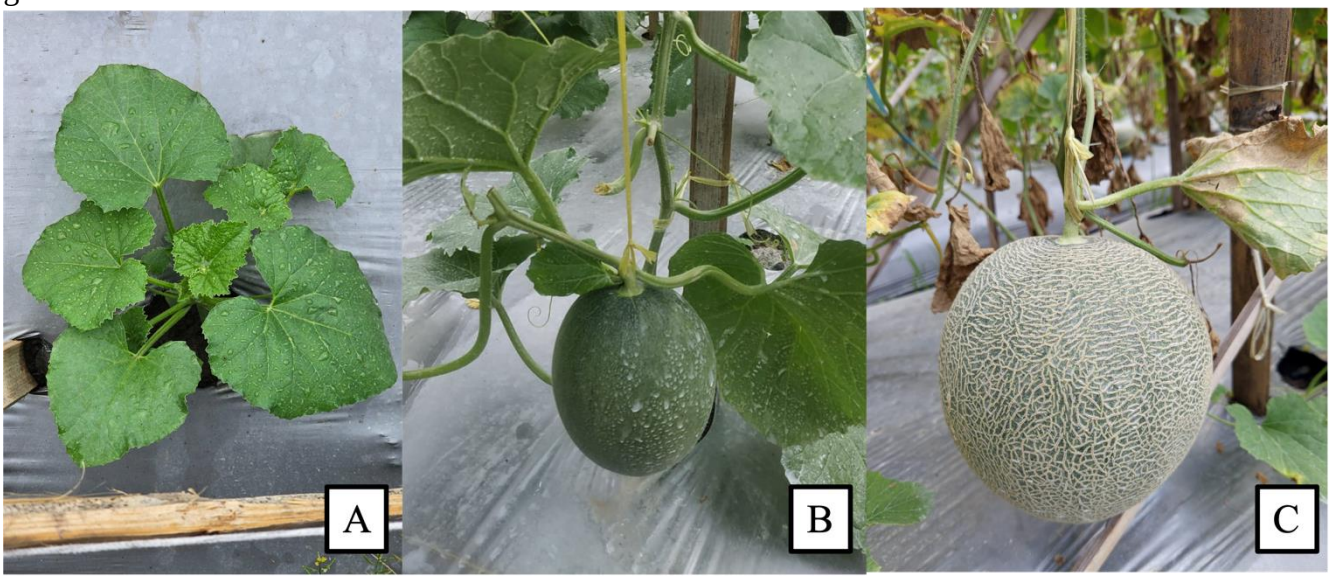

Figure 2. Growth stages of sky melon plants: (A) Active vegetative phase; (B) Early fruiting stage; (C) Late fruiting stage for harvest

With this knowledge, it is hoped that women will be able to manage their crops independently and sustainably, from seeding to harvest. While this knowledge doesn't guarantee success in melon cultivation, if failure occurs, it will enhance participants' knowledge in managing challenges using the knowledge gained. Failure in farming often inspires a desire to try again, especially since the capital required for melon cultivation is relatively affordable. In the long term, these activities contribute to the economic empowerment of village women, strengthen family food security, and expand knowledge networks among women's communities at the local level.

4. Conclusions

This community service activity focused on improving women's understanding and skills, particularly in the initial stages of home melon cultivation, through a participatory and demonstrative approach tailored to their backgrounds. Participants' enthusiasm and confidence in applying the seeding techniques they learned demonstrated that the training methods used were effective and applicable to support household-scale melon cultivation. Although hands-on practice only occurred at the nursery stage, the comprehensive information provided on the melon growth phases through harvest provided participants, particularly housewives, with essential knowledge to understand the plant's needs holistically and in a timely manner. The knowledge gained in each phase of melon cultivation not only improved participants'

technical skills but also strengthened women's roles in home garden management, ultimately supporting economic empowerment and family food security at the local level.

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6. Author's Note

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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