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Empowerment of Women Farmers Groups Through Extension of Jakaba Production as Liquid Organic Fertilizer in Plembutan Village

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Abstract

The Women Farmers Group (KWT) plays a strategic role in supporting the development of sustainable agriculture through human resource capacity building and utilization of local resources. This community service activity aims to improve the knowledge and skills of KWT Sekar Makmur members in Ngasem Utara Hamlet in producing *Jakaba* (*Jamur Keberuntungan Abadi*) as a liquid organic fertilizer from rice-washing wastewater. The activity was carried out using an educational and participatory approach through extension methods, demonstrations, direct practice, and focused discussions. The material provided included an understanding of the basic concept of liquid organic fertilizer, the benefits of Jakaba for plant growth, and the stages of the manufacturing process and its application in agricultural activities. The activity results showed an increase in KWT members' understanding and skills in producing *Jakaba* independently. The use of *Jakaba* as a liquid organic fertilizer has the potential to reduce farmers' dependence on chemical fertilizers, lower agricultural production costs, and increase KWT members' awareness of the importance of implementing sustainable agricultural innovations, especially in areas with dry, calcareous soils.

Keywords: agricultural extension; liquid organic fertilizer; sustainable agriculture; women farmer group

Pemberdayaan Kelompok Wanita Tani Melalui Penyuluhan Pembuatan Jakaba sebagai Pupuk Organik Cair di Desa Plembutan

Abstrak

Kelompok Wanita Tani (KWT) memiliki peran strategis dalam mendukung pengembangan pertanian berkelanjutan melalui peningkatan kapasitas sumber daya manusia dan pemanfaatan sumber daya lokal. Kegiatan pengabdian kepada masyarakat ini bertujuan untuk meningkatkan pengetahuan dan keterampilan anggota KWT Sekar Makmur di Dusun Ngasem Utara dalam pembuatan Jakaba (Jamur Keberuntungan Abadi) sebagai pupuk organik cair berbasis limbah air cucian beras. Kegiatan dilaksanakan dengan menerapkan pendekatan edukatif dan partisipatif melalui metode penyuluhan, demonstrasi, praktik langsung, serta diskusi terarah. Materi yang diberikan meliputi pemahaman mengenai konsep dasar pupuk organik cair, manfaat Jakaba bagi pertumbuhan tanaman, serta tahapan proses pembuatan dan aplikasinya dalam kegiatan pertanian. Hasil kegiatan menunjukkan adanya peningkatan pemahaman dan keterampilan anggota KWT dalam memproduksi Jakaba secara mandiri. Pemanfaatan Jakaba sebagai pupuk organik cair berpotensi mengurangi ketergantungan petani

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terhadap pupuk kimia, menekan biaya produksi pertanian, serta meningkatkan kesadaran anggota KWT terhadap pentingnya penerapan inovasi pertanian berkelanjutan, khususnya pada wilayah dengan karakteristik lahan kering dan berkapur.

***Kata kunci**: kelompok wanita tani; pertanian berkelanjutan; penyuluhan pertanian; poc*

INTRODUCTION

The empowerment of women in the agricultural sector a key strategy for boosting agricultural productivity and strengthening food security, particularly in rural areas. According to Sraboni et al. (2014), increased empowerment of women in agricultural activities is positively correlated with household food security indicators such as calorie availability and dietary diversity. Women Farmers' Groups (KWT) serve as a strategic platform for women to play an active role in agricultural activities, both as producers and as agents of change in implementing sustainable agricultural innovations. Through KWT, women are involved not only in cultivation activities but also in resource management, decision-making, and strengthening farm household economies.

KWTs also serve as platforms for learning, production, cooperation, and strengthening the economic self-reliance of rural communities, as well as forums for collaboration in adopting sustainable agricultural innovations. However, in practice, most KWTs still face challenges, including reliance on chemical fertilizers, which are relatively expensive and can degrade soil quality in the long term.

The Playen sub-district in Gunung Kidul Regency has significant agricultural potential, particularly for food and horticultural crops, given its geographic characteristics, which are dominated by dry, calcareous soils. These conditions require proper management to maintain land productivity. One alternative to address this issue is the use of locally produced liquid organic fertilizers, such as Jakaba (Eternal Luck Mushroom). Eternal Luck Mushroom is produced through the fermentation of organic waste, such as rice-washing water. Jakaba contains 90% carbohydrates in the form of starch, vitamins, minerals, and proteins that stimulate the production of auxin and gibberellin hormones, plus chitin to accelerate root growth and repair degraded soil. Its nutrient content of N, P, and K, along with the microorganisms Pseudomonas fluorescens and Rhizobium, makes it effective for improving soil structure (Hariyono & Muzaki, 2023). The use of Jakaba can significantly enhance plant growth, as demonstrated in a study by Ramadita et al. (2024), which showed that a dose of 25–40 ml/L is as effective as 100% inorganic fertilizer for green mustard plants, resulting in increased fresh weight and optimal photosynthesis.

One relevant and practical form of empowerment is training on the production of organic fertilizer, specifically Jakaba. The process of making Jakaba involves utilizing household waste and local resources as raw materials. This empowerment initiative aligns with efforts to promote environmentally friendly and sustainable agricultural practices (Misnen et al., 2021; Uliyandari et al., 2021).

The use of organic fertilizers, including Jakaba, helps improve soil structure, increase organic matter content, and stimulate beneficial soil microorganisms that support plant growth. Various studies

have shown that using organic fertilizers can increase crop yields sustainably without harming the environment (Dewi, 2024). Furthermore, using household organic waste as raw material for organic fertilizer provides added value from both environmental and economic perspectives. Processing waste into fertilizer not only reduces household waste volume but also creates new business opportunities and enhances the economic self-reliance of KWT members (Diamu et al., 2025).

Jakaba, a liquid organic fertilizer based on local microorganisms, has great potential to support sustainable agriculture; however, its use among Women Farmers' Groups remains limited. This is due to the lack of knowledge and skills among Women Farmers' Group members regarding the production process, application, and benefits of Jakaba in crop cultivation. Therefore, educational and practical mentoring efforts are needed to ensure this innovation in liquid organic fertilizer, which utilizes organic waste, is optimally adopted by the community.

Based on the above, this community service activity was carried out to empower Women Farmers' Groups through training on the production of Jakaba, a liquid organic fertilizer, in Playen Subdistrict, Gunung Kidul Regency. This community service initiative is expected to provide an understanding of the basic concepts of liquid organic fertilizer and the production of Jakaba, as well as to facilitate their application in crop cultivation activities. Additionally, this initiative is expected to reduce dependence on chemical fertilizers, lower production costs, and support the sustainable management of dry and calcareous soils.

METHOD

This community service activity was held at the Ngasem Utara Village Hall, Plembutan Village, Playen Subdistrict, Gunung Kidul Regency, on Sunday, May 25, 2025, with members of the Sekar Makmur Women Farmers Group (KWT) as the primary target audience. The activity was implemented using an educational, participatory approach to enhance participants' knowledge and skills in producing liquid organic fertilizer from Jakaba. A participatory approach in extension activities has been proven to enhance community capacity and self-reliance in adopting agricultural innovations (Chambers, 1994). Lectures were used as an initial stage to systematically convey the definition of liquid organic fertilizer, the concept of Jakaba, and its benefits and role in supporting plant growth. The material was delivered orally and reinforced with printed leaflets distributed to help participants better understand the information provided.

Next, a demonstration method was used to show the steps involved in making Jakaba, starting with an introduction to the tools and materials and continuing through the application process. The demonstration method in agricultural extension is effective in improving farmers' practical understanding and technical skills because it provides hands-on learning experiences (Ban & Hawkins, 2002). The tools used in this activity consisted of simple equipment easily found in rural settings, such as used plastic jugs, raffia rope, scrap fabric, scissors, and a wooden stirrer. The main materials used include rice washing water, rice bran, and bamboo roots, where the rice washing water serves as a

source of local microorganisms and nutrients, the rice bran serves as an additional source of carbohydrates to support microbial growth, and the bamboo roots serve as a natural catalyst that accelerates the fermentation process and enhances the nutrient content of the resulting fertilizer. The process of making Jakaba begins by pouring 3 liters of rice washing water into a plastic jug, then adding a handful of rice bran and stirring until evenly mixed, followed by adding a palm-sized piece of bamboo root. The fermentation container is then covered with a used cloth, tied with raffia string, and stored in a dark, shaded place for approximately one month, with changes monitored weekly.

Hands-on activities were also conducted to actively engage participants in the Jakaba-making process, during which representatives from the KWT were given the opportunity to practice the steps demonstrated. This activity aims to ensure that participants not only understand the theory but also possess practical skills that they can apply independently. Additionally, a discussion method was used as the final stage of the activity to give participants an opportunity to ask questions, share opinions, and discuss their experiences with Jakaba in agricultural activities. This discussion also served as a means to evaluate participants' understanding of the material presented, reinforced by the use of evaluative questions. Participants who answered correctly received prizes as a motivational incentive, ensuring that this community service activity was not only informative but also interactive and participatory.

RESULT AND DISCUSSION

The Jakaba production training session was successfully held on May 25, 2025, at the Ngasem Utara Village Hall, attended by 54 members of the Women's Working Group (KWT). All participants actively engaged throughout the session, demonstrating high levels of participation, particularly during the hands-on practice and discussion sessions. The introduction to and production of Jakaba began with a lecture covering the definition of liquid organic fertilizer, as well as the definition and role of Jakaba in plant growth (Figure 1).

Figure 1. Presentation session
Source: The team's personal documentation (2025)

Jakaba (Jamur Keberuntungan Abadi) is a natural fungus that grows from the fermentation of organic waste such as rice washing water (leachate). This fungus is known as an environmentally friendly, organic liquid fertilizer that benefits sustainable agriculture. During this session, leaflets about Jakaba were also distributed to help participants better understand it (Figure 2). Wulandari et al. (2024) demonstrated the effectiveness of printed leaflets in rice farming extension programs, showing a significant increase in farmers' knowledge through pre- and post-tests; leaflets were chosen because they are concise, portable, and can be reviewed in the field. Meanwhile, Maskur et al. (2019) found that leaflets accounted for 32% of farmers' information retention (though posters had the highest rate at 48%).

Figure 2. Jakaba-Making Instructional Materials Leaflet
Source: The team's personal documentation (2025)

Following the lecture, the activity continued with a live demonstration of the Jakaba production by the extension team (Figure 3). During this stage, participants were introduced to the simple tools and materials used, such as plastic jugs, cloth covers, raffia rope, and wooden stirrers, as well as the main ingredients: rice washing water, rice bran, and bamboo roots. This demonstration aimed to provide participants with a practical understanding of the Jakaba fermentation process, from ingredient mixing to proper storage techniques during the incubation period. Through this method, participants not only received theoretical information but also witnessed the Jakaba production process firsthand, thereby enhancing their skills and enabling them to practice it independently.

Next, representatives from the KWT were invited to participate in a hands-on demonstration of Jakaba production. This practical session demonstrated that KWT members followed each step properly and accurately, from preparing the ingredients and stirring the solution to sealing the fermentation container according to the procedure (Figure 4). Afterward, the fermentation containers were stored in a dark, shaded area away from direct sunlight for one month, with changes observed weekly. The resulting Jakaba resembled coral, with a brown upper layer and a greenish lower layer. Once the Jakaba has formed, this liquid organic fertilizer can be applied to plants via spraying at a dose of 10–15 ml

Jakaba POC per liter of water, or via drenching at a dose of 20–25 ml Jakaba POC per liter of water. Pratama et al. (2024) recommend a dosage of 10 ml of Jakaba per liter of water for spraying and 20 ml per liter for drenching, in accordance with practical KWT applications, which are effective for leafy vegetables.

Figure 3. Live Demonstration
Source: The team's personal documentation (2025)

The activity results showed that participants understood the basic concepts of liquid organic fertilizer and the role of Jakaba in improving soil fertility and plant growth. Through hands-on practice, participants successfully made Jakaba on their own, following the procedures demonstrated during the session. During the discussion session, participants showed great enthusiasm, asking questions about Jakaba's function, application methods, and plant dosage. To assess participants' understanding, several evaluation questions were administered. Participants who answered correctly were given prizes as a form of appreciation and motivation.

Figure 4. Practical Session
Source: The team's personal documentation (2025)

The impact of the Jakaba production training program is evident not only in technical agricultural aspects but also in the group's social and economic dimensions. The improvement in the skills and

knowledge of KWT members contributes to strengthening group solidarity, enhancing women's social status, and fostering broader collaborative networks. Successful empowerment activities can serve as models for replication in other regions with similar characteristics (Lesmana et al., 2022; Khoiroh et al., 2023). Additionally, the use of Jakaba as organic fertilizer opens opportunities for the KWT to develop cooperation in marketing agricultural products, whether in the form of crop yields or the organic fertilizer itself. Figure 5 shows the presentation of gifts to members of the Women Farmers' Group (KWT) as a token of appreciation for their active participation during the community service activities.

Figure 5. Presentation of gifts to KWT members
Source: The team's personal documentation (2025)

CONCLUSION

The training session on making Jakaba as a liquid organic fertilizer at the Sekar Makmur Women's Group (KWT) in Ngasem Utara Hamlet, Playen Subdistrict, Gunung Kidul Regency, went smoothly and effectively. Through lectures, demonstrations, hands-on practice, and discussions, KWT members understood the concept of liquid organic fertilizer and the benefits of Jakaba in improving soil fertility and plant growth. All participants demonstrated high engagement, and KWT members successfully produced Jakaba independently. This success was supported by the availability of local raw materials, such as rice washing water, rice bran, and bamboo roots, which are readily available in the surrounding area. This activity not only enhances the knowledge and skills of KWT members but also promotes the group's self-reliance in producing liquid organic fertilizer based on household organic waste, thereby potentially reducing dependence on chemical fertilizers and lowering agricultural production costs. To ensure the program's sustainability, continued guidance is recommended for the successful production of Jakaba and its application as a liquid organic fertilizer on agricultural land.

SUGGESTION

Based on the conclusions of the community service activity, it is recommended that planned and sustained follow-up guidance be provided to strengthen the understanding and skills of the members of the Sekar Makmur Women Farmers' Group (KWT) in the production and use of Jakaba as a liquid

organic fertilizer. Follow-up guidance should focus on the practical application of Jakaba in KWT members' farming areas to optimize its benefits for improving soil fertility and plant growth.

Capacity building for the group can be achieved through training in production management and simple business management. These steps are necessary to develop liquid organic fertilizer production based on household organic waste independently and sustainably. Support from agricultural extension workers, local governments, and universities is expected to encourage the wider adoption of the Jakaba innovation and the replication of outreach activities among other farmer groups, particularly in areas with dry, calcareous soils.

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