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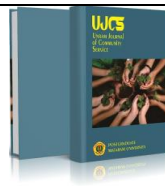

Enhancing Farmer Capacity Through Socialization and Training on Biosaka Elicitor Production in Telaga Biru District, Gorontalo Regency

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Abstrak: This community service activity aims to improve the capacity of farmers through socialization and training in the production of Biosaka elicitors in Telaga Biru District, Gorontalo Regency. Biosaka is a natural elicitor produced by the manual crushing of healthy plants in pure water, not fertilizers, hormones, or enzymes, thereby triggering the plant's natural defense response and holistically improving soil health. The activity was carried out on April 26, 2024, at the local Agricultural Extension Center (BPP), involving a group of farmers selected based on their high dependence on synthetic chemical inputs. The methodology of the activity combined interactive lectures, reflective discussions, and hands-on training guided by agricultural extension workers. The results showed that all participants were able to correctly understand the concept of Biosaka and successfully produced the elicitor independently with consistent quality—characterized by visual features (no sedimentation, no foaming, thick and shiny appearance) and an increase in the average Total Dissolved Solids (TDS) value of 250–350 ppm. Beyond the technical aspects, this activity built collective awareness of the importance of reducing dependence on chemical fertilizers and transitioning to sustainable agricultural practices based on local resources. By actively involving farmers and supported by local agricultural extension workers, this activity became the first step towards realizing more independent, environmentally friendly, and equitable agriculture in Telaga Biru District.

Keywords: Biosaka Elicitor, Sustainable Agriculture, Farmer Empowerment, Community Service, Telaga Biru District.

Introduction

Organic farming is increasingly recognized as a sustainable solution to ecological challenges caused by the use of synthetic chemical fertilizers and pesticides. In Indonesia, including in Telaga Biru District, Gorontalo Regency, many farmers continue to rely on conventional farming practices that increase dependence on external inputs, such as chemical fertilizers, which negatively affect soil fertility and the diversity of soil microorganisms. This has triggered an ecological crisis that threatens the long-term sustainability of agriculture. Therefore, alternative technologies that are more environmentally friendly are needed, such as the use of the Biosaka elicitor—an innovative natural agricultural solution that can improve soil structure, enhance plant resistance to diseases, and optimize nutrient absorption efficiency (Sudarwati & Nasution, 2024).

Biosaka is not just a fertilizer, but a formula that triggers the plant's natural defense response by utilizing abundant local materials, such as grass and healthy leaves. In the manufacturing process, healthy green

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plants are crushed with water to produce an extract that can be used to enhance both soil and plant health. With this technology, farmers can reduce their dependence on chemicals and increase plant resistance to pests and diseases. The use of locally abundant raw materials makes Biosaka an ecological and economical solution that is relevant in various regions of Indonesia with significant agricultural potential (Ernah & Wulandari, 2020).

However, in Telaga Biru District, there remains a knowledge gap regarding local-based agricultural technologies such as Biosaka. Many farmers are not familiar with the term "elicitor," let alone the techniques for producing and applying it on their farmland. Therefore, community service activities have been designed to address this challenge by providing comprehensive training to local farmers. This training will not only enhance their understanding of the benefits of Biosaka, but also equip them with the skills to independently produce and apply this technology on their agricultural land (Budiawati et al., 2025).

Community service activities using a participatory approach in farmer training have a significant impact in building collective awareness about sustainable agriculture. In this approach, farmers not only serve as recipients of knowledge but are also actively involved in the training process, which strengthens their understanding of environmentally friendly agricultural practices and the efficient use of local resources. This aligns with the findings of Barakabitze et al., (2017) and Mali et al., (2023), which emphasize that participation-based training can transform farmers' mindsets, encouraging them to be more receptive to sustainable agricultural techniques. Agricultural extension workers play a crucial role as facilitators who foster active participation among farmers in the learning process, which in turn better prepares them to face challenges and changes in sustainable agriculture, while also acting as agents of change in adopting new techniques and technologies that enhance the efficiency and sustainability of agricultural practices (Halimah & Subari, 2020; Tapi et al., 2024).

This initiative supports the principle of food sovereignty, which emphasizes that farmers are not only producers but also managers and owners of knowledge about their agriculture. In this context, the application of appropriate technologies such as Biosaka is expected to enhance the independence and competitiveness of farmers in Telaga Biru District in managing their agriculture. Through partnerships between universities and communities, as well as collaboration between science and local wisdom, the agricultural model developed is expected to serve as a model for other regions in creating a sustainable, equitable, and competitive agricultural system in the future (Sadarestuwati et al., 2023).

Method

The community service activity was held on April 26, 2024, from 2:00 p.m. to 4:30 p.m. WITA, at the Agricultural Extension Center (BPP) in Telaga Biru District, Gorontalo Regency. The participants consisted of farmer groups under the guidance of BPP Telaga Biru, selected based on their representativeness, openness to agricultural innovations, and high dependence on synthetic chemical inputs in their farming practices.

Figure 1. Activity Participants

The activity approach incorporated three main methods: socialization (interactive lectures), reflective discussions, and hands-on training. The first stage began with the introduction of the basic concept of Biosaka elicitors, including an explanation that Biosaka is not a fertilizer, hormone, or enzyme, but rather a natural elicitor produced through the manual extraction of healthy plants in pure water. The material was delivered in a dialogical manner by the service team and local agricultural extension workers to ensure the understanding was reciprocal and not one-sided.

Figure 2. Socialization Activity

The second stage involved open discussions, where participants were encouraged to reflect on the challenges they face in conventional farming practices, such as high production costs, declining soil fertility,

and negative impacts on soil microorganism biodiversity. These discussions aimed to foster collective awareness of the need for sustainable alternatives that make efficient use of local resources.

Figure 3. Material Collection Activity

The third stage involved hands-on training in the production of Biosaka elicitors, directly guided by Mr. Ahmad Thamrin, the Agricultural Extension Officer of Telaga Biru District. Participants were invited to practice the entire process according to the official Biosaka procedure. The selection of materials began with the collection of healthy grass or leaves that were free of holes, mold, or dullness, and had a consistent color. These were harvested while still green, with the recommendation to take two to four complete leaves along with their stems. The materials should come from at least five different plant species gathered from the surrounding area, without requiring uniformity in type or color. The mixture composition consists of a full handful of materials (approximately 2.5 ounces) mixed with 1–5 liters of pure water, resulting in a ratio of 5% organic material and 95% water.

Next, the pressing process is performed by placing the materials into a container filled with water, then applying pressure with the right hand while stirring counterclockwise, while the left hand supports the bottom of the leaves to maintain stability. This process is carried out continuously for 10–20 minutes, with the hands remaining submerged in the water until the stems are fully crushed and the mixture reaches perfect homogeneity. The characteristics of a homogeneous Biosaka include no sediment, no gas or granules, a ring pattern on the surface, a thick and shiny appearance, and a range of colors—green, blue, or red—depending on the type of material used. To ensure quality, a Total Dissolved Solids (TDS) meter is used; an increase of at least 200 ppm (from pre- and post-stirring measurements) is considered adequate, with a preference for 300 ppm and ideally reaching 500 ppm. Once homogeneous, the mixture is filtered using a sieve and poured into bottles or jerry cans through a funnel. Biosaka is ready for use immediately after preparation, and unused portions can be stored for up to five years in a safe place, out of the reach of children.

Results and Discussion

The socialization and training activities for the production of Biosaka Elicitors at the Agricultural Extension Center (BPP) in Telaga Biru District, Gorontalo Regency, took place on April 26, 2024, from 2:00 p.m. to 4:30 p.m. WITA. The event proceeded smoothly and was enthusiastically attended by the farmer groups under the guidance of BPP Telaga Biru. The activity was opened by Moh Muchlis Djibran, Head of the Agribusiness Study Program and field supervisor, followed by a presentation by Mr. Ahmad Thamrin, a local agricultural extension worker, who served as the main instructor during the practical training session.

This training activity yielded very positive results, aligning with research that highlights the importance of agricultural sustainability through environmentally friendly practices. Prior to the training, most farmers were unfamiliar with this technology; however, after receiving both theoretical and hands-on training, they were able to independently produce Biosaka Elicitors. Research by Djibran et al., (2023) also emphasizes that sustainable agricultural models can lead to significant improvements in the social and economic well-being of farmers, which was clearly reflected in this training activity

Figure 4. Biosaka Elisitor Production Training Activity

The training process proceeded smoothly, with participants following each step taught. They were not only provided with theoretical knowledge about how Biosaka works but were also actively involved in the hands-on practice of making organic fertilizer. The results of this activity indicate that with proper training, farmers can acquire practical skills that are easily applicable to their land. This technology offers them a more affordable alternative to chemical fertilizers, considering that the raw materials used are readily available in their surroundings.

An evaluation of participants' knowledge after the training revealed a significant improvement in understanding. Before the training, many farmers were unaware of the differences between chemical and organic fertilizers, nor did they understand how natural fertilizers help improve soil fertility. However, after the training, they began to recognize the long-term benefits

of using Biosaka to improve soil structure and enhance plant resistance to pests and diseases. This new knowledge provided them with a broader perspective on how they can adopt more sustainable farming practices.

In addition to the increased knowledge, the social impact of this training activity was also evident in the shift in the farmers' mindset. They began to recognize the importance of maintaining the balance of the agricultural ecosystem and reducing their dependence on chemicals. Discussions during the training broadened their understanding of the long-term negative impacts of chemical fertilizers on both soil and the environment. By introducing the concept of more environmentally friendly agriculture, the training successfully built collective awareness among farmers about the importance of transitioning to more sustainable solutions.

The application of Biosaka technology on agricultural land has shown promising results. Several farmers who have adopted this technology reported an increase in plant resistance to pests and diseases, as well as a noticeable improvement in soil quality. These results indicate that the use of Biosaka can provide significant benefits to plants, both in terms of enhanced resistance to environmental stress and in terms of improved efficiency in water and nutrient use.

This training also had a significant economic impact on farmers. After learning how to make Biosaka, they successfully reduced their expenditure on expensive chemical fertilizers and switched to more affordable organic alternatives. By utilizing abundant local materials found around them, farmers are now able to produce natural fertilizers that are not only more environmentally friendly but also more economical. This approach directly impacts the reduction of their agricultural production costs, as demonstrated by Gobel et al., (2023), who found that the use of organic fertilizers can enhance cost efficiency in the long term.

Furthermore, the improvement in farmers' technical capacity in producing and applying Biosaka is one of the main achievements of this training. With the skills they have gained, farmers now feel more independent and confident in using organic fertilizers in their farming practices. This shows that the training has successfully enhanced their ability to manage the natural resources around them for more sustainable agricultural practices.

The success of this training also underscores the importance of awareness regarding sustainable agriculture. Through this training, farmers not only gained practical skills but also developed a deeper understanding of sustainability in agriculture. They are now better equipped to manage their land in a more environmentally friendly way, ultimately contributing to long-term food security and the conservation of natural resources.

The participatory approach used in this activity demonstrates how collaboration between farmers and universities can produce significant impact. Universities, as agents of change, provide scientific and technical support, while farmers, as the direct participants, apply the knowledge they have acquired. The synergy between science, local wisdom, and mutual cooperation serves as a powerful force in creating a more independent and sustainable agricultural model.

Overall, the Biosaka Elicitor training activity has successfully achieved its primary objective—enhancing farmers' knowledge and skills in managing agriculture in a more environmentally friendly way. This training equips farmers with the tools to improve their agricultural yields, reduce costs, and contribute to the sustainability of the agricultural ecosystem. With these positive outcomes, similar activities can be expanded to other regions in need of sustainable agricultural solutions.

Conclusion

The socialization and training activities on the production of Biosaka Elicitors in Telaga Biru Subdistrict, Gorontalo Regency, have successfully enhanced the participants' understanding and skills in independently producing Biosaka. All participants were not only able to comprehend that Biosaka is distinct from fertilizers, hormones, or enzymes, but they were also able to explain these differences and follow the production procedures in accordance with technical standards. The process involved selecting the appropriate materials, manual kneading in a counterclockwise direction, and testing for homogeneity using visual indicators and TDS meters.

In addition to the technical achievements, this activity successfully raised collective awareness about the importance of reducing reliance on synthetic chemical inputs and transitioning to agricultural practices that are more in harmony with nature. By utilizing abundant local natural resources, Biosaka provides an environmentally friendly, economical solution that can be easily implemented by small farmers.

Collaboration with local agricultural extension workers is a key element in ensuring the sustainability of the impacts of this activity, as it provides continuous post-training support. Thus, this activity not only transfers knowledge but also represents the first step toward a more sovereign, sustainable, and equitable agricultural system in the Telaga Biru region.

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