



Accelerating Economic Growth through Block Compost Production Training: A Case Study in Sidajaya Village, Subang

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Abstrak Penelitian ini mengeksplorasi dampak program pelatihan pembuatan kompos blok terhadap pertumbuhan ekonomi dan praktik pertanian berkelanjutan di Desa Sidajaya, Kabupaten Subang. Program ini dirancang untuk memberdayakan petani lokal dan anggota masyarakat, khususnya Kelompok Wanita Tani, dengan membekali mereka pengetahuan dan keterampilan untuk mengubah limbah organik menjadi kompos blok yang bernilai ekonomis. Pelatihan dilakukan dengan pendekatan partisipatif yang mencakup modul pembelajaran, demonstrasi, dan praktik langsung. Evaluasi dilakukan melalui pre-test dan post-test untuk mengukur peningkatan pemahaman peserta pada beberapa kategori, termasuk definisi limbah organik, jenis limbah organik, fungsi kompos blok, alat yang digunakan, bahan yang digunakan, dan durasi fermentasi kompos blok. Data yang dikumpulkan dianalisis menggunakan uji-t berpasangan dengan tingkat signifikansi $p < 0,05$ dan $p < 0,01$. Hasil menunjukkan peningkatan signifikan dalam pemahaman peserta, terutama pada kategori bahan yang digunakan dalam produksi kompos blok (peningkatan 50%, $p < 0,01$), definisi limbah organik (peningkatan 21%, $p < 0,05$), dan durasi fermentasi (peningkatan 20%, $p < 0,05$). Umpan balik peserta menunjukkan tingkat kepuasan yang tinggi terhadap relevansi program, keahlian pelatih, dan keterlibatan selama pelatihan. Dengan memanfaatkan limbah organik dan peluang pendapatan tambahan dari penjualan kompos blok, program ini mendukung pemberdayaan ekonomi lokal dan keberlanjutan lingkungan. Inisiatif ini sejalan dengan tujuan pemerintah daerah dalam mempromosikan pertumbuhan ekonomi mandiri dan dapat menjadi model untuk pembangunan pedesaan yang berkelanjutan.

Kata Kunci: kompos blok, Pertumbuhan Ekonomi, program pelatihan, Sidajaya, Subang

Abstract This study explores the impact of a block compost production training program on economic growth and sustainable agricultural practices in Sidajaya Village, Subang Regency. The program was designed to empower local farmers and community members, particularly the Women Farmers Group, by equipping them with knowledge and skills to transform organic waste into valuable block compost. The training employed a participatory approach that included instructional modules, demonstrations, and hands-on practice. Evaluations were conducted through pre- and post-tests to measure participants' understanding across several categories, including the definition of organic waste, types of organic waste, the function of block compost, tools used, materials used, and fermentation duration for block compost. Data collected were analyzed using paired t-tests with significance levels set at $p < 0.05$ and $p < 0.01$. The results indicated significant improvements in participants' knowledge, particularly in the categories of materials used in block compost production (50% improvement, $p < 0.01$), the definition of organic waste (21% improvement, $p < 0.05$), and fermentation duration (20% improvement, $p < 0.05$). Subjective feedback revealed high satisfaction with the program's relevance, trainer expertise, and participant engagement. By optimizing organic waste and creating additional income opportunities through compost sales, the program supports local economic empowerment and environmental sustainability. This initiative aligns with the local government's goals to promote self-sustaining economic growth and serves as a model for similar rural development programs.

Keywords: block compost, economic growth, training program, Sidajaya, Subang

I. INTRODUCTION

Sidajaya Village, located in Cipunagara Subdistrict, Subang Regency, West Java, is an agrarian village where most residents rely on agriculture as their primary source of livelihood (Jadesta, 2024). The village is endowed with fertile land and abundant natural resources, making it highly suitable for various agricultural activities (RPJM Desa Cipunagara, 2022). Recognizing this potential, the local government of Subang Regency has focused its efforts on enhancing the economic growth of Sidajaya Village as part of its regional development agenda (Pemerintah Daerah Kabupaten Subang, 2022). The goal is to empower local communities through skill-building and the efficient use of available resources. One such initiative is the block compost production training program, designed to promote sustainable agricultural practices while improving the economic conditions of local residents, especially in Sidajaya Village.

Although composting initiatives are widely implemented to address agricultural waste management, few focus on transforming compost into an economic product that can generate income for rural communities. Existing studies, such as those by Novita et al. (2018) and Susilo (2019), primarily highlight the technical benefits of composting, such as soil fertility improvement and reduced dependence on chemical fertilizers. However, the potential for block compost to contribute to local economic development through income generation has not been extensively explored. This study addresses this gap by demonstrating how block compost production can combine waste recycling with economic empowerment, particularly through targeted training for marginalized groups such as women farmers.

Block compost is a type of organic fertilizer created by compacting decomposed organic materials, such as agricultural waste, dried leaves, and food scraps, into solid blocks (Novita et al., 2018). Compared to traditional loose compost, block compost offers unique advantages, including a longer shelf life, easier storage and transportation, and lower susceptibility to contamination (Susilo, 2019). Additionally, block compost can serve as an environmentally friendly planting medium that replaces conventional plastic pots or polybags, thereby reducing plastic waste. Rich in essential nutrients, block compost improves soil fertility, supports plant growth, and minimizes the need for chemical fertilizers, which are often costly and environmentally harmful (Prasetyo, 2020).

The block compost production training program in Sidajaya Village aims to provide the community with the skills and knowledge necessary to transform organic waste into a valuable economic product. By learning to produce block compost, farmers and other residents are expected to lower their agricultural

input costs while boosting soil productivity (Rosalina et al., 2021). This self-sufficient approach to fertilizer production can have far-reaching economic benefits, enabling residents to save on expenses and, potentially, to generate additional income by selling the block compost as a commercial product. This initiative aligns with the broader objectives of sustainable development by promoting waste recycling and reducing the environmental impact of agricultural practice.

Beyond Sidajaya Village, this program has the potential to serve as a replicable model for rural development. By addressing waste management challenges and fostering economic empowerment, it aligns with Sustainable Development Goals (SDGs), particularly SDG 12 (Responsible Consumption and Production) and SDG 8 (Decent Work and Economic Growth) (Ram and Bracci, 2024). Policymakers and practitioners can leverage this model to implement scalable interventions that integrate sustainable agricultural practices with income generation in other rural contexts.

Furthermore, the program's objectives include not only skill acquisition but also raising environmental awareness among the participants. By educating the community about the benefits of organic waste recycling, the program seeks to foster a culture of environmental responsibility in Sidajaya Village. Participants are encouraged to view waste as a resource, shifting their perspective toward sustainable and profitable practices. This mindset shift is crucial for building resilience within the community, as it enables them to rely on local resources for their agricultural needs while also creating economic opportunities from waste management. The training also targets the Women Farmers Group (Kelompok Wanita Tani, KWT) as key participants, empowering women within the community and promoting gender inclusion in economic activities.

Ultimately, the block compost training program positions Sidajaya Village as a model for rural economic development through sustainable agricultural innovation. By integrating principles of sustainability with practical skills, the program empowers the community to create value from resources that would otherwise go to waste. This holistic approach addresses both economic and environmental challenges, providing insights for scaling similar initiatives across other rural regions.

II. RESEARCH METHOD

The methodology for this research consists of several stages aimed at comprehensively assessing the impact of block compost training on the local economy and community knowledge. Initially, a preparatory phase was conducted, involving observation and discussions with community representatives and village officials to identify suitable agricultural programs for economic enhancement in Sidajaya Village. The result of this initial phase led to the decision to implement a block compost training program due to its potential to reduce agricultural input costs, generate income, and promote sustainable practices. The target group

primarily included members of the Women Farmers Group (Kelompok Wanita Tani, KWT), as women play a critical role in household waste management and small-scale farming activities. Their involvement was expected to enhance program outreach and ensure equitable participation in economic opportunities.

The training program was conducted on September 17, 2024, at the Sidajaya Village Hall and was attended by 29 participants, predominantly female (82.8%), with the remainder being male (17.2%). The age distribution of participants showed that the majority (77.8%) were between 25-50 years old, 14.8% were over 50, and 7.4% were under 25. Educational backgrounds varied, with 51.7% having completed elementary school, 27.6% high school, 10.3% junior high school, 3.4% vocational high school, 3.4% with no formal education, and 3.4% holding a bachelor's degree. In terms of occupation, most participants were housewives (75.9%), followed by farmers (13.8%), with smaller numbers of laborers (3.4%) and teachers (6.9%). This demographic profile provided valuable insights into the characteristics of the community engaged in the training, ensuring that the program's content and delivery methods were appropriately tailored to meet the participants' educational and occupational backgrounds.

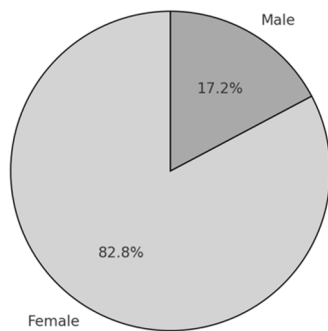


Chart 1. Gender Distribution of Respondents

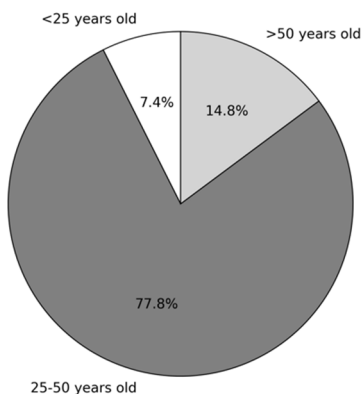


Chart 2. Age Distribution of Respondents

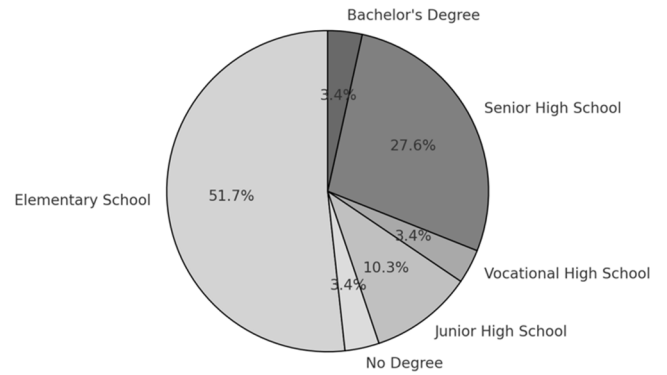


Chart 3. Education Level Distribution of Respondents

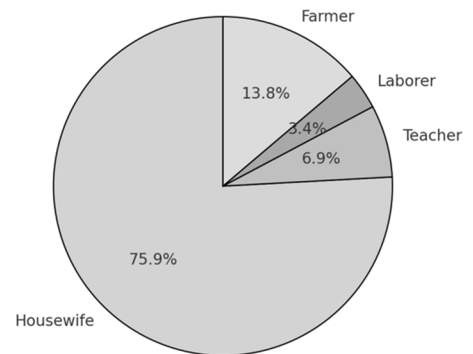


Chart 4. Occupation Distribution of Respondents

The training employed a society participatory method, where participants actively engaged in learning through a combination of instructional modules, lectures, demonstrations, and hands-on practice (Duke, 2020). During the practical sessions, participants were divided into five groups, each led by a student tutor to ensure focused guidance. The training also included a persuasive approach to raise awareness about the economic and environmental benefits of recycling organic waste into block compost, aiming to foster motivation among participants to adopt sustainable practices (Muhammad et al., 2023).

For the practical component, various tools and materials were used, including scales, measuring cups, buckets, compost shredders, mixers, wooden block molds, and organic materials such as waste, soil, dry leaves, sugar, EM4 (Effective Microorganisms 4), and tapioca flour (Novita dan Sari, 2021). The production process involved shredding organic waste, preparing an EM4 solution, mixing soil, burnt husks, and leaves with the shredded waste, and allowing the mixture to ferment in barrels for 14 days before molding into block composts.

To measure the program's effectiveness, participants' knowledge levels were evaluated using pre-tests and post-tests (Dodd et al., 2013). The pre-test questionnaire, containing six questions about definition of organic wastes, types of organic waste, function of compost block, tools used for compost block, materials used for compost block, and

fermentation duration for compost block, was distributed to participants upon registration before the training session began, while the post-test was conducted immediately after the training session concluded. The data collected from these tests were analyzed using Microsoft Excel, and a statistical t-test was performed to determine the significance of any knowledge improvement among participants (Hendrix et al., 1978). Data collected were analyzed using paired t-test with significance levels set at $p < 0.05$ and $p < 0.01$. Additionally, active participation during the training was observed through engagement in discussions, question-and-answer sessions, and hands-on activities. Feedback forms were distributed to gather subjective insights regarding program relevance, trainer expertise, and training methods.

This methodological approach ensures a comprehensive evaluation of the training program's effectiveness in equipping participants with the skills and motivation to produce block compost, which is anticipated to contribute to economic growth and environmental sustainability in Sidajaya Village. The combination of participatory and persuasive methods, along with the structured evaluation through pre- and post-tests, provides a robust framework for assessing the program's impact on participants and, by extension, the local economy.

While the participatory approach ensured active engagement, it introduced potential biases, as group discussions may have influenced individual responses during the tests. Moreover, logistical challenges, such as ensuring consistent attendance, posed limitations in data consistency. Future programs should include follow-up evaluations to measure the long-term retention and practical application of skills gained during the training.

III. RESULTS AND DISCUSSION

The results from the block compost training program in Sidajaya Village highlight significant improvements in participants' knowledge and skills related to compost production, as well as positive feedback regarding the program's effectiveness and relevance. This section will discuss the outcomes of both the pre- and post-test evaluations and the subjective feedback gathered from participants, providing insights into the impact of the training program on local agricultural practices and its potential contribution to the economic growth of Sidajaya Village.

Based on the pre- and post-test data, participants demonstrated substantial increases in understanding across several knowledge categories associated with block compost production. The knowledge categories assessed included the fermentation duration for block compost, materials and tools used, the function of block compost, and types and definitions of organic waste. As illustrated in **Graph 1**,

understanding of materials used in block compost production showed the most significant improvement, increasing from approximately 40% in the pre-test to 90% in the post-test, representing a 50% gain ($p < 0.01$). This highlights participants' enhanced ability to identify and utilize specific types of organic waste for composting. Knowledge of the definition of organic waste rose from around 15% to 36%, a 21% improvement ($p < 0.05$), demonstrating participant's improved foundational understanding of organic waste concepts. Knowledge of fermentation duration improved from about 80% to 100%, a 20% increase ($p < 0.05$), reflecting participants' enhanced skills in managing the composting process effectively. This suggests that the training was effective in addressing gaps in participant's knowledge, equipping them with the technical details necessary to produce high-quality compost blocks.

Participants' understanding of the function of block compost also showed notable improvement. Initially, there was some confusion regarding the specific benefits of using block compost versus other forms of compost or chemical fertilizers. However, the post-test results indicated a higher level of understanding, with participants recognizing that block compost serves not only as a nutrient-rich fertilizer but also as a cost-effective, environmentally friendly alternative to chemical fertilizers. This shift in perception is crucial for encouraging sustainable agricultural practices within the village. By understanding the long-term benefits of block compost, such as soil enrichment and reduced environmental impact, participants are more likely to adopt these practices consistently, contributing to both economic and ecological sustainability.

While most knowledge categories demonstrated substantial improvements in understanding, as shown in Graph 1, there were some unexpected declines in scores in certain categories. Knowledge of tools used for compost production decreased from 50% in the pre-test to less than 20% in the post-test. Similarly, understanding of types of organic waste declined from 100% to 85%. These decreases could be attributed to various factors, such as differences in participants' interpretation of the pre- and post-test questions, potential confusion over technical details introduced during the training, or cognitive overload due to the volume of new information presented in a short period.

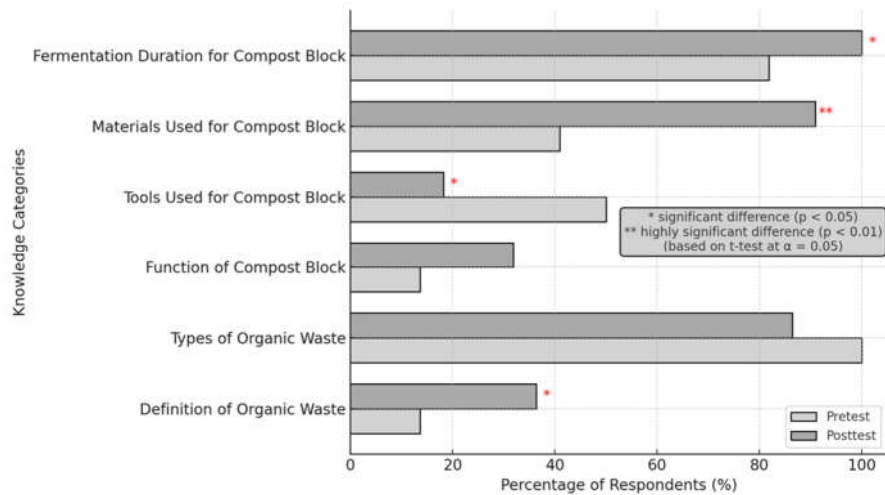
One potential explanation for these declines is that as participants learned more about block compost production, they developed a more nuanced understanding of the processes involved. This deeper comprehension might have led some participants to reevaluate their initial responses, resulting in more cautious or conservative answers during the post-test. This phenomenon, often referred to as the "beginner's paradox" or "cognitive adjustment," occurs when new learners become aware of complexities they hadn't previously considered, which can initially make them feel less confident despite having gained knowledge. This phenomenon is discussed in the context of learning and memory paradoxes by Roediger and Butler (2011), who explore how subjective experiences may not always align with objective knowledge gains.

Additionally, the decline could indicate specific

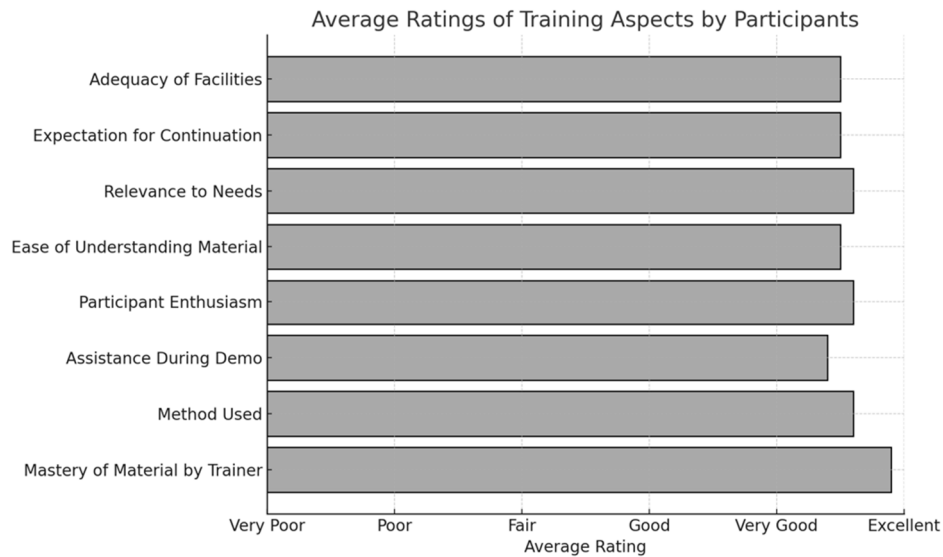
areas where further reinforcement or clarification is needed. For instance, if participants showed a reduced post-test understanding in areas such as the types of tools or specific functions of compost, it may suggest that these topics were not as thoroughly understood or that the training session could be improved in those areas. Future training sessions could incorporate follow-up sessions or provide additional resources to reinforce complex concepts.

Finally, these declines underscore the

importance of continuous assessment and iterative training design. By identifying areas where participants may struggle, program facilitators can refine the content and delivery of future sessions to ensure that all critical knowledge areas are retained and understood. Addressing these gaps can help ensure that the training program is not only effective but also adaptable to participants' learning needs, fostering sustained improvement in knowledge and practical application.



Graph 1. Respondent's Understanding Before and After Training



Graph 2. Average Ratings of Training Aspects by Participant

Feedback on the training's implementation and content, as shown in **Graph 2**, further supports the program's effectiveness. Participants provided high ratings across various training aspects, including the adequacy of facilities, relevance of content to their needs, ease of understanding, and assistance provided during demonstrations. The high rating for "Relevance to Needs" reflects the alignment of the training material with the participants' daily agricultural practices, indicating that the program addressed practical challenges faced by the community. Additionally, the "Mastery of Material by Trainer" category received excellent ratings, suggesting that the trainers were knowledgeable and effectively communicated the technical aspects of block compost production. This level of mastery likely contributed to the significant improvements observed in participants' knowledge, as a well-prepared trainer can enhance understanding and retention of complex topics.

The positive feedback on the training methodology—particularly the participatory approach—underscores the importance of active engagement in learning. By involving participants in hands-on demonstrations and group activities, the program allowed them to practice the skills in real time, facilitating a deeper understanding and retention of the material. The participatory approach also fostered collaboration among participants, as they were able to learn from each other's experiences and insights during group discussions. This collective learning experience not only strengthened the participants' individual skills but also encouraged a sense of community ownership over the block compost production initiative. This sense of ownership is essential for ensuring the sustainability of the program, as community members are more likely to continue practicing and sharing the knowledge gained if they feel a strong personal and communal connection to the initiative.

During program implementation, several challenges arose. Conducting the training outdoors posed difficulties in maintaining participants' focus due to environmental distractions. To address this, the facilitator actively guided the sessions, ensuring participants remained engaged and refocused whenever conditions became less conducive. Another issue was the insufficient quantity of organic waste brought by participants, which could have disrupted the practical activities. This was anticipated since supplemental organic waste was prepared in advance to ensure the activities could proceed smoothly. Furthermore, participants exhibited varying levels of comprehension, making it challenging to ensure uniform progress. This was addressed by fostering peer-to-peer learning, where participants who grasped the material more quickly were encouraged to guide and support those who needed extra assistance. This approach not only enhanced learning outcomes but also promoted collaboration and

a sense of community ownership.

In terms of economic impact, the block compost production training is anticipated to contribute to the local economy by reducing agricultural input costs and creating new income-generating opportunities. The program equips participants with the ability to produce their own organic fertilizer, which can replace expensive chemical fertilizers. This reduction in input costs allows more funds to circulate within the local economy, supporting other economic activities. Furthermore, the production of block compost opens up possibilities for small-scale entrepreneurship, as participants can sell surplus compost to neighboring communities or in local markets. If participants produce and sell 100 pieces of block compost monthly at Rp 5000 per piece, they can earn an additional Rp 500,000. This potential for income diversification is particularly beneficial in rural settings like Sidajaya Village, particularly for housewives who were the primary participants. By introducing a new product that meets the needs of both local farmers and external markets, the program adds a valuable source of income and economic resilience.

IV. CONCLUSION

In conclusion, the results from the block compost training program in Sidajaya Village demonstrate its effectiveness in enhancing participants' knowledge, meeting their needs, and providing them with practical skills for sustainable agriculture. By addressing critical knowledge gaps through a participatory and inclusive approach, the program successfully empowered the community to implement block composting independently. Improvements across various compost production categories underscore the program's role in fostering sustainable agricultural practices and offering a pathway for economic empowerment by reducing reliance on chemical fertilizers and enabling income generation through compost sales.

Beyond its immediate impacts, this initiative presents broader implications for rural development policy and environmental sustainability. As a scalable and replicable model, the program aligns with global Sustainable Development Goals (SDGs), particularly SDG 12 (Responsible Consumption and Production) by promoting waste recycling, and SDG 8 (Decent Work and Economic Growth) by creating new economic opportunities for rural communities. Policymakers can leverage this model to design targeted interventions that integrate environmental stewardship with economic empowerment, addressing similar challenges in other rural regions.

Future research should focus on evaluating the long-term retention of knowledge and the sustainability of block compost production practices over time. Investigating the program's broader economic impact, including potential revenue growth and community-

level benefits, will provide further insights into its scalability. Additionally, exploring how similar training programs can be adapted to regions with differing resource availability or cultural contexts will enhance the versatility of this model.

By continuing to refine and expand such initiatives, Sidajaya Village can not only solidify its position as a pioneer of sustainable rural development but also inspire other communities to adopt innovative practices that drive economic resilience, environmental stewardship, and community empowerment.

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