International Journal of Community Service
ISSN: 3083-9696

Community Service Outreach on Utilizing Rice Fields for Mustard Green Cultivation Before the Paddy Harvest Period

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Abstract

This community service program addressed the underutilization of rice fields during the idle period before the main paddy harvest. This phase is often left unproductive in many rural farming systems despite its potential for short-cycle crop cultivation. The primary objective of this program was to introduce mustard green (Brassica juncea) cultivation as an intercropping solution to maximise land use and increase farmers' income without disrupting rice production. The outreach activity occurred in Banyuasin Regency and involved collaboration between university students, academic supervisors, and local farmers. The method involved a series of participatory activities, including organic fertiliser preparation, field spraying, mustard green planting, and growth inspection. Field demonstrations and informal discussions were used to transfer technical knowledge effectively. The results showed healthy mustard green growth, rapid crop cycles (within 3–4 weeks), and strong community interest in adopting the practice. Farmers responded positively due to the low cost, environmental friendliness, and potential for income diversification. The novelty of this program lies in its practical integration of short-cycle crops into existing rice-based systems using sustainable techniques and community-centred implementation. Unlike conventional monoculture outreach, this initiative empowered local communities through joint knowledge creation and field-based learning. In conclusion, this community service effort presents a scalable model for sustainable land optimisation that enhances agricultural resilience, food diversity, and farmer livelihoods, particularly in rural rice-producing regions.

Article Info
Received: 01 May 2025
Revised: 04 June 2025
Accepted: 05 June 2025
Available online: 30 June 2025

Keywords
Community Service
Mustard Green Cultivation
Rice Field Optimisation
Sustainable Agriculture
Intercropping System

1. Introduction

In many rice-based agricultural systems across Southeast Asia, including Indonesia, land is often left idle for several weeks during the transition between paddy planting and harvest periods. This underutilization reflects a missed opportunity to optimise agricultural productivity and rural income,

especially among smallholder farmers relying heavily on single-crop yields. Previous studies have identified this idle phase as a critical window for introducing fast-growing crops to improve cropping intensity and land-use efficiency [1–4]. Mustard green (Brassica juncea) is a widely accepted leafy vegetable in local diets and has agronomic advantages such as rapid growth (30–35 days), high market demand, and adaptability to various soil conditions. Cultivating short-cycle crops between rice seasons can help improve farmers' cash flow, enhance food security, and minimise weed emergence [5–7]. These crops are especially effective when introduced in a participatory, community-driven approach to ensure practical adoption and local ownership.

Moreover, integrating leafy vegetables into rice farming systems can improve soil fertility, increase biodiversity, and support ecological sustainability through reduced chemical input [8–10]. Intercropping also diversifies production risks and mitigates the impact of rice crop failure due to flooding, pests, or delayed rains. Despite these advantages, many Indonesian farmers have yet to apply this approach due to limited technical knowledge and institutional support. Community service, especially by universities, is vital in bridging the gap between research and rural practice. Through direct outreach, training, and demonstration, universities can facilitate the transfer of knowledge and foster innovation at the grassroots level. Participatory agricultural extension models involving academic facilitators and local farmers significantly increase the likelihood of technology adoption and sustainability [11–13].

This community service program was initiated in Banyuasin Regency, South Sumatra, where rice is the dominant crop and idle land periods are commonly observed [14–16]. The program was designed to demonstrate mustard green cultivation techniques and build farmers' capacity to prepare organic fertilisers, apply eco-friendly pest control methods, and effectively manage intercrop systems. Including students and faculty members ensured a dual-purpose mission: rural empowerment and experiential learning. The activities included field preparation, organic compost production, spraying with natural solutions, planting of mustard greens, and monitoring crop development. The program emphasised environmentally sustainable practices while promoting the economic benefits of vegetable cultivation during otherwise unproductive periods. Farmers were encouraged to participate actively, provide feedback, and evaluate the effectiveness of these practices on their land.

Through this outreach, the mustard greens successfully grew alongside the rice crop without causing disruption. The results showed good plant health, rapid growth, and strong market potential, validating the method as agronomically and economically viable. Furthermore, farmers expressed an increased willingness to repeat the technique independently in future planting cycles, indicating a positive behavioural shift resulting from the program. Based on the background above, the specific objectives of this community service program were: (1) to utilize idle rice field areas effectively through the introduction of mustard green cultivation; (2) to train farmers in organic and sustainable farming techniques; (3) to promote knowledge transfer between universities and rural communities through participatory learning; and (4) to evaluate the feasibility and acceptance of intercropping practices in real-world settings.

2. Methodology

This community service activity was conducted in Desa Kenten Laut, Kabupaten Banyuasin, South Sumatra, where rice farming is the primary livelihood. The program was conducted for four weeks, aligning with the idle period before the main paddy harvest. The outreach involved collaboration between university faculty, students, local agricultural extension agents, and farmers. A participatory approach was adopted to ensure active engagement and co-learning between academic and community participants. The method was divided into five main stages:

Initial Survey and Socialisation

The team conducted a field survey to identify suitable locations for mustard green cultivation on rice field margins and bunds. During the rice pre-harvest phase, a socialisation session was held with local farmers to explain the objectives, techniques, and benefits of intercropping mustard greens. Community interest and consent were obtained during this stage.

Training and Demonstration
Farmers and students were trained on organic fertiliser preparation using cow dung, agricultural waste, and composting techniques. Demonstrations were also conducted on spraying natural pest repellents, land preparation, seed sowing, and watering methods suitable for short-cycle leafy vegetables.

Implementation
The mustard green seeds were planted manually along the bunds of active rice fields using the recommended spacing of 15x15 cm. Organic fertiliser was applied, and pest control was managed using bio-spray mixtures. Daily monitoring of plant growth was conducted by students and guided by supervising lecturers and experienced farmers.

Monitoring and Evaluation
Growth indicators such as leaf colour, plant height, and pest presence were monitored weekly. Farmers provided feedback during informal discussion sessions held under shaded field areas. The team also documented the crop's development through photography and field notes.

Closing and Reflection
At the end of the program, a joint evaluation session was held, followed by a group photo with all stakeholders. The success of the mustard green harvest was discussed in terms of agronomic outcomes and community acceptance. Both farmers and university representatives suggested future replication strategies.

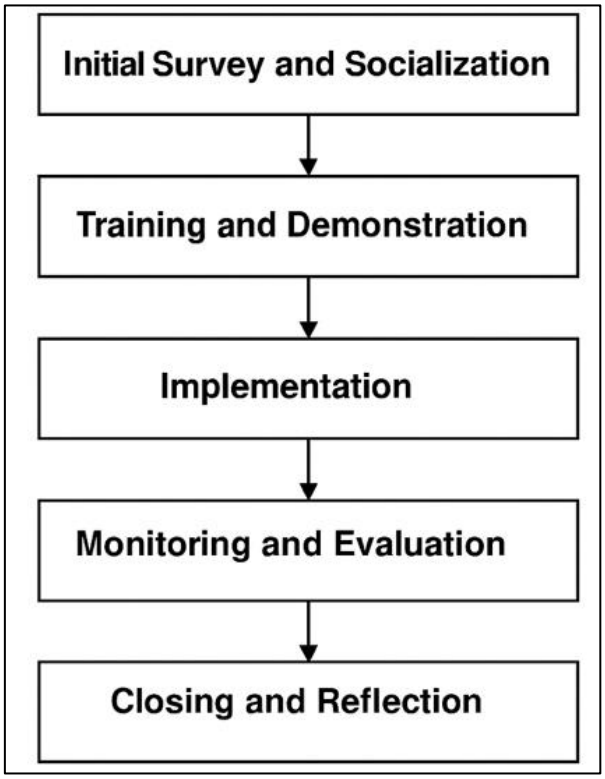

Figure 1: Community Outreach on Intercropping Mustard Greens in Paddy Fields

Figure 1 illustrates the methodological framework used in the community service program focused on optimising the idle period in rice fields by cultivating mustard greens. The process is structured into five main stages, each representing a key phase in implementing the outreach activity in Desa Kenten Laut, Kabupaten Banyuasin. The first stage, Initial Survey and Socialisation, involved field assessments to identify suitable rice field locations and conduct community meetings to explain the purpose and benefits of intercropping mustard greens. This phase emphasised community buy-in and aligning academic objectives with farmers' interests. The second stage, Training and Demonstration, was

dedicated to educating farmers and student participants on techniques such as organic fertiliser production, environmentally friendly pest control, and planting methods. This practical learning was crucial to ensure the approach was replicable and suited to local conditions.
The third stage, implementation, saw planting green mustard seeds along the bunds of active rice fields. The process was carried out manually, integrating local knowledge and labour. The focus here was to test the feasibility of intercropping without interfering with ongoing rice cultivation. The fourth stage, Monitoring and Evaluation, included weekly inspections of plant growth, pest activity, and soil condition. It also featured informal farmer discussions for feedback and adaptive management. This stage helped assess the viability and performance of the method in a real farming context. The final stage, Closing and Reflection, concluded the activity with a joint evaluation session. Stakeholders reviewed outcomes, shared experiences, and documented the program's success. The process fostered community empowerment and prepared the ground for future independent adoption by farmers. Overall, the visual structure in Figure 1 effectively communicates the program's logical sequence and participatory nature. It highlights the systematic approach to introducing sustainable, low-cost intercropping practices to increase agricultural productivity and community resilience.

3. Result & Discussion

The community service program titled “Community Service Outreach on Utilizing Rice Fields for Mustard Green Cultivation Before the Paddy Harvest Period” was designed to introduce an intercropping method that allows farmers to maximise land use efficiency during the idle phase between rice planting and harvesting. This outreach activity involved a collaboration between university academics, students, and local farmers in Banyuasin Regency, aiming to enhance farmers’ income and productivity by integrating short-cycle vegetable cultivation, specifically mustard greens, without disrupting the rice farming schedule. The program's implementation included educational sessions, field demonstrations, and participatory farming practices. The results showed a positive response from the local farming community, who expressed interest in adopting the technique due to its relatively low input cost and fast yield cycle. The mustard greens planted during the community service activity reached harvestable condition within 3–4 weeks and showed healthy growth alongside paddy crops. This indicates that such practices are feasible and potentially beneficial in optimising land usage while supporting food diversification and economic resilience for rural communities.
Figure 2 shows documentation of a community service activity conducted at the Modern Agriculture Post in Banyuasin Regency. The image captures a group of participants consisting of university students, lecturers, and local stakeholders standing together in front of the post. Their presence indicates a collaborative effort to improve local agricultural practices through direct community engagement and knowledge sharing. This community service initiative aims to empower farmers by introducing innovative and practical agrarian techniques, particularly using idle rice fields before the main paddy harvest. The presence of academic representatives in this activity reflects the role of higher education institutions in supporting sustainable agricultural development and rural advancement. The Modern Agriculture Post is a central hub for coordinating and disseminating information.
The photo also highlights the importance of building relationships between academic institutions and local farming communities. By engaging in this activity, the participants contribute technically and build trust and mutual understanding with the farmers. This foundation is critical for ensuring the continuity and acceptance of any agricultural innovation introduced. Overall, **Figure 2** is a testament to the spirit of collaboration and knowledge transfer in community-based agrarian development. It emphasises integrating education, research, and community service to address real-world challenges in rural areas. Such programs help bridge the gap between theory and practice while fostering student awareness and empathy towards rural development issues.

Figure 2: Community Service Documentation at the Modern Agriculture Post, Banyuasin Regency

Figure 3 presents a mass gathering photo taken during the community service event held at the Modern Agriculture Post in Banyuasin Regency. The image shows a large and diverse group of participants actively involved in the outreach program, including university students, lecturers, local farmers, and agricultural officers. The vibrant setting and coordinated attire indicate strong team spirit and collective enthusiasm. This gathering served as a formal opening or concluding session of the community service program, aimed at fostering collaboration and mutual understanding between academic institutions and local communities. The participants' expressions and gestures convey a sense of accomplishment, suggesting that the event successfully fulfilled its educational and social objectives. The visible banner in the background underscores the official and structured nature of the activity.

The event highlighted agricultural knowledge dissemination and emphasised youth capacity building and empowerment through hands-on field experience. The program nurtured leadership, communication, and problem-solving skills essential for future professionals by involving many student volunteers. At the same time, local farmers gained access to modern insights and improved cultivation strategies. Overall, this image reflects the success of a well-organised community engagement initiative. It demonstrates the positive impact of joint efforts in addressing agricultural challenges and promoting rural development. Such inclusive programs can significantly reduce the gap between academic knowledge and real-world application, creating a long-term benefit for the community and the university.

Figure 4 captures an essential hands-on moment of the community service activity, where participants prepare organic fertiliser directly on the rice field site. This step is part of the broader strategy to promote sustainable farming practices using locally available materials, such as manure, compost, and agricultural waste. The process was conducted collaboratively by students, faculty members, and local farmers, enhancing knowledge exchange and practical learning in a real farming environment. The use of organic fertiliser supports the goal of eco-friendly mustard green cultivation during the idle period before paddy harvesting. It also helps improve soil health and crop resilience while reducing dependency on chemical inputs. The community well received this practice, as it aligned with low-cost and environmentally responsible farming methods. The active involvement of local farmers in this activity demonstrates a growing interest in adopting sustainable solutions introduced through academic outreach.

The preparation activity also served as a platform for skill development among students and youth volunteers. Through this direct involvement, participants not only learned about the technical aspects of organic fertiliser production but also gained a deeper understanding of rural agricultural challenges.

This experiential learning approach is essential for bridging academic knowledge with practical fieldwork, especially in community-based agrarian innovation. Moreover, the interaction during the fertiliser preparation phase fostered stronger social bonds between the educational team and residents. Farmers could share their traditional knowledge and constraints while students introduced scientifically supported techniques to enhance soil fertility. This reciprocal learning model embodies the core principle of community service: building mutual capacity through collaboration. The success of this stage laid a strong foundation for the subsequent planting of mustard greens in the rice field interspaces.

Figure 3: Mass Gathering Photo of Community Service Event at the Modern Agriculture Post, Banyuasin Regency

Figure 5 illustrates the spraying activity of the community service program, specifically during the land preparation phase before planting mustard greens. The individual in the photo is equipped with a motorised backpack sprayer, applying a bio-based solution over the dry rice field area. This step is essential to control early-stage pests and prepare the soil surface for healthy crop growth without relying heavily on chemical agents. Using such spraying techniques is part of the training provided to students and local farmers during the outreach. Participants were introduced to safe and effective pest and weed management methods using environmentally friendly inputs. Adopting these methods supports the broader goal of sustainable agriculture and aligns with best practices for short-cycle crop integration on rice fields.

From an educational standpoint, this activity stage provided students with first-hand experience operating agricultural equipment under real conditions. It emphasised safety protocols, precision techniques, and the importance of timing in pre-planting field preparation. For many student participants, this marked their first exposure to mechanised farm tools, reinforcing the value of community service as a learning platform. Furthermore, the spraying session demonstrated how appropriate technology can enhance productivity and efficiency in smallholder farming systems. It also built confidence among local farmers unfamiliar with such tools, encouraging them to adopt modern practices introduced through the program. Overall, this activity helped ensure that the field was in optimal condition for the subsequent planting of mustard greens, contributing to the success of the cultivation cycle.

Figure 4: Community Service in Action: Organic Fertiliser Preparation on Rice Field Site

Figure 6 captures a candid moment during a break in the community service activities, where team members are gathered under the shade of coconut trees adjacent to the rice fields. This informal setting allowed participants to rest, rehydrate, and reflect on the completed tasks. Such breaks were necessary for physical recovery and offered an opportunity to exchange ideas, plan the following steps, and strengthen team cohesion. The casual discussion during these breaks often included feedback from local farmers, updates on field conditions, and strategy adjustments for upcoming activities. It was an open forum for collaborative decision-making, where students and farmers could share knowledge in a non-hierarchical setting. These interactions helped bridge the gap between academic theory and traditional farming practices, creating a two-way learning process.

Moments like this highlight community service's human side, emphasising empathy, communication, and the importance of building trust with local stakeholders. The photo reflects a relaxed yet productive atmosphere, where friendships were formed and ideas flowed freely. This dynamic contributed significantly to the project's success, fostering a sense of ownership and shared purpose among all participants. Overall, this scene underlines that community engagement is not limited to formal tasks alone. Informal spaces like this can be just as valuable for cultivating relationships and enhancing the overall impact of outreach programs. The combination of practical work and personal interaction transforms community service from a task into a meaningful and lasting contribution.

Figure 5: Spraying Activity During Community Service on Pre-Planting Rice Field

In addition to its practical function, the break fostered a sense of camaraderie and emotional support among the participants. The casual environment helped dissolve formal boundaries, making it easier for younger team members to voice their thoughts and for farmers to feel more connected to the visiting facilitators. This relaxed interaction strengthened the group dynamic and increased commitment to the program's success. This image captures more than just a resting phase—it reflects the social and emotional fabric that underpins successful community engagement. It reminds us that sustainable development in agriculture is not solely built on tools and techniques but also relationships, respect, and mutual learning cultivated even during the quiet moments in the field.

Figure 6: Community Service Team Break and Discussion in the Rice Field Area under Coconut Trees

Figure 7 captures the inspection phase of the mustard green cultivation process carried out as part of the community service initiative. The image shows a group of team members carefully examining the growth and condition of mustard green plants cultivated along the bunds of active rice paddies. This approach reflects an integrated farming method to maximise land use without disrupting the primary rice crop cycle. The positioning of mustard greens adjacent to the rice paddies demonstrates the practical application of intercropping or relay planting, where the short growth period of leafy vegetables is synchronised with the rice harvest timeline. This technique is both space- and time-efficient, offering farmers an additional income stream while ensuring continuous agricultural land use. During the inspection, factors such as leaf health, pest resistance, and soil moisture were observed and documented for further evaluation.

The team involved in this inspection consisted of students, field supervisors, and farmers, each contributing different perspectives. Students applied theoretical knowledge in identifying healthy growth indicators and possible issues, while local farmers provided context on traditional practices and environmental conditions. This combination of insight ensured that the evaluation process was accurate and adaptable to real field scenarios. Overall, the activity reflected in **Figure 6** emphasises the importance of monitoring and adaptive management in sustainable agriculture. Regular inspection helps ensure optimal crop performance and builds local communities' capacity to apply science-based practices. The success of the mustard green crops during this trial demonstrates the viability of integrating such crops into rice-dominated landscapes, encouraging broader adoption among smallholder farmers.

Figure 7: Community Service Activity: Inspection of Mustard Green Cultivation Adjacent to Rice Paddies

Figure 8 captures the closing session of the community service activity through a group photo with local farmers in the rice field area. This moment marks the culmination of several days of collaborative effort in implementing sustainable agricultural practices, particularly the intercropping of mustard greens on idle rice field margins. The smiles and gestures of the participants reflect a sense of

accomplishment and mutual appreciation for the shared learning experience. This final gathering served as a symbolic end to the program and an opportunity to reinforce the connections between the academic team and the farming community. It celebrated the successful knowledge transfer throughout the outreach, from fertiliser preparation and spraying to planting and crop inspection. Farmers were acknowledged for their openness and active participation, while students were recognised for their commitment and contributions to rural innovation.

The group photo also documents the diverse composition of the program's stakeholders, including university students, lecturers, agricultural extension agents, and farmers of different age groups. This inclusiveness is essential to the success of community-based agrarian development, as it reflects a unified effort to address local challenges using modern science and traditional knowledge. The rice field backdrop further underscores the real-world context in which this collaboration occurred. Ultimately, **Figure 8** is a testament to the impact of service-learning initiatives in agricultural settings. It encapsulates the essence of community engagement, partnership, empowerment, and sustainability. The relationships built during this program are expected to foster continued communication and adoption of the introduced practices, laying the foundation for future collaborations and long-term improvements in rural livelihoods.

Figure 8: Closing Session of Community Service: Group Photo with Local Farmers in the Rice Field Area

The novelty of this community service article lies in its innovative approach to land-use optimisation through the strategic integration of mustard green cultivation during the idle period of paddy fields. While traditional rice farming in rural areas often leaves land underutilised between planting and harvesting cycles, this program introduces a practical, low-cost, and sustainable method that empowers farmers to increase productivity without requiring additional land or significant capital investment. The concept of intercropping short-cycle vegetables like mustard greens within existing rice farming systems remains underexplored in many local contexts, making this outreach both relevant and pioneering. Furthermore, the program's strength lies in its community-based implementation model. It combines participatory field activities, knowledge transfer from universities, and direct farmer engagement, ensuring technical intervention and social adoption. Unlike previous studies or outreach programs focusing only on rice or monoculture systems, this initiative promotes agroecological diversification tailored to rural socio-economic conditions. The project also integrates environmental considerations, such as organic fertiliser and bio-spraying techniques, reflecting a commitment to climate-resilient agriculture.

Through this hands-on, replicable model, the program introduces a scalable agricultural innovation that has the potential to be expanded to other rural regions with similar cropping patterns. The evidence presented in crop health, farmer participation, and field adaptability supports the idea that this method benefits food security and economic resilience in smallholder farming communities. The article

contributes new value by demonstrating how idle agricultural phases can be transformed into productive, eco-friendly opportunities with lasting community benefits.

4. Conclusion

The community service program successfully demonstrated that utilising idle rice field areas for mustard green cultivation before the paddy harvest period is both feasible and beneficial for smallholder farmers. Integrating short-cycle vegetable crops during the fallow phase provided a practical solution to maximise land productivity without interfering with the primary rice crop. The initiative promoted sustainable and climate-conscious agriculture by applying organic fertilisers, environmentally friendly spraying techniques, and participatory inspection practices. The active involvement of university students, faculty, and local farmers created a dynamic environment for mutual learning and skill development. This collaboration enhanced the adoption of innovative practices and strengthened community-academic partnerships. The results showed promising crop performance, strong community engagement, and a positive response to knowledge transfer efforts. The program offers a replicable model for agroecological intensification and community empowerment, contributing to increased food security, rural income, and sustainable land management.

Acknowledgement

The authors gratefully acknowledge that the funding for this research was fully supported by contributions from all authors involved in this work.

References

[1] K. Waha, J.P. Dietrich, F.T. Portmann, S. Siebert, P.K. Thornton, A. Bondeau, M. Herrero, Multiple cropping systems of the world and the potential for increasing cropping intensity, Glob. Environ. Chang. 64 (2020) 102131. https://doi.org/https://doi.org/10.1016/j.gloenvcha.2020.102131.

[2] M. Nizar, M. Muhibbuddin, W. Maawa, Community Empowerment through the Utilization of Agricultural Waste as Environmentally Friendly Biocoke Fuel, Int. J. Community Serv. 1 (2025) 10–18.

[3] M. Yasar, S. Anis, R. Rusiyanto, F.R. Yamali, Improving Farmers' Welfare through Empty Fruit Bunch-Based Product Diversification in Oil Palm Plantation Areas, Int. J. Community Serv. 1 (2025) 29–38.

[4] U.S. Sravan, K.V.R. Murthy, Enhancing productivity in rice-based cropping systems, in: Plant Compet. Crop. Syst., IntechOpen, 2018.

[5] J.E. Hill, J.F. Williams, R.G. Mutters, C.A. Greer, The California rice cropping system: agronomic and natural resource issues for long-term sustainability, Paddy Water Environ. 4 (2006) 13–19. https://doi.org/10.1007/s10333-005-0026-2.

[6] M.I. Maulana, R. Febrina, F.R. Yamali, Strategy for Strengthening the Local Economy through Renewable Energy-Based Micro Enterprises in Rural Communities, Int. J. Community Serv. 1 (2025) 48–56.

[7] Y. Muchlis, I. Iqbal, T. Rahardjo, Education and Implementation of Community-Based Waste Management to Reduce Heavy Metal Pollution, Int. J. Community Serv. 1 (2025) 39–47.

[8] J. Layek, A. Das, T. Mitran, C. Nath, R.S. Meena, G.S. Yadav, B.G. Shivakumar, S. Kumar, R. Lal, Cereal+Legume Intercropping: An Option for Improving Productivity and Sustaining Soil Health BT - Legumes for Soil Health and Sustainable Management, in: R.S. Meena, A. Das, G.S. Yadav, R. Lal (Eds.), Springer Singapore, Singapore, 2018: pp. 347–386. https://doi.org/10.1007/978-981-13-0253-4_11.

[9] N. Nelly, S. Yana, R. Radhiana, J. Juwita, E. Surya, Implementation of SWOT Analysis in the Development of Green Energy-Based Social Businesses in Local Communities, Int. J. Community Serv. 1 (2025) 57–67.
[10] M.I. Maulana, S. Syarif, Y. Muchlis, N. Khayum, Empowering Rural Communities through Renewable Energy Initiatives: A Pathway to Sustainable Development, Int. J. Community Serv. 1 (2025) 68–78.
[11] N. Khongdee, K. Tongkoom, K. Iamsaard, N. Mawan, N. Yimyam, W. Sanjunthong, P. Khongdee, S. Wicharuck, Closing yield gap of maize in Southeast Asia by intercropping systems: A review, Aust. J. Crop Sci. 16 (2022) 1224–1233.
[12] R. Radhiana, S. Yana, N. Nelly, C.W.M. Noor, R. Rusiyanto, Community-Based Waste Management Innovations for Sustainable Environmental and Economic Development, Int. J. Community Serv. 1 (2025) 79–87.
[13] R. Febrina, R.E. Sardjono, F. Khoerunnisa, R.R. Dirgarini, P. Selvakumar, Strengthening Local Livelihoods through the Circular Economy: Agricultural Waste Utilization for Green Energy, Int. J. Community Serv. 1 (2025) 88–95.
[14] Y. Hutapea, T. Thamrin, B. Raharjo, Efforts to improve rice milling capacity in tidal swamp agroecosystem in Banyuasin Regency, South Sumatra, in: E3S Web Conf., EDP Sciences, 2021: p. 3001.
[15] R. Riswani, Y. Yunita, H. Malini, T. Thirtawati, Development model of food crop in suboptimal area based on farmers corporation in Ogan Ilir regency, South Sumatra, J. Lahan Suboptimal J. Suboptimal Lands. 10 (2021) 202–213.
[16] S.K. Mishra, K.B. Yadav, Empowering Rural Communities: Feasibility and Optimization of Hybrid Renewable Energy Systems for Sustainable Electricity Using HOMER Software, in: 2024 Int. BIT Conf., IEEE, 2024: pp. 1–6.