

Penyuluhan Partisipatif Sebagai Upaya Perubahan Perilaku Penerapan Pertanian Organik di Kelompok Tani Kartika Grup Desa Oenbit Kecamatan Insana Kabupaten Timor Tengah Utara

Participatory Extension as an Effort to Change Farmers' Behavior in the Implementation of Organic Farming at Kartika Group Farmers Oenbit Village Insana Subdistrict Timor Tengah Utara Regency

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Abstrak: Praktik pertanian di wilayah lahan kering Kabupaten Timor Tengah Utara (TTU) masih didominasi sistem konvensional berbasis input kimia yang berdampak pada degradasi tanah dan rendahnya kesadaran ekologis petani. Kesenjangan antara penyuluhan dan adopsi pertanian organik menunjukkan perlunya pendekatan yang lebih partisipatif. Kegiatan Pengabdian kepada Masyarakat (PKM) Kosabangsa ini bertujuan meningkatkan kapasitas petani melalui penyuluhan partisipatif. Metode yang digunakan meliputi sosialisasi, Focus Group Discussion (FGD), pelatihan, praktik lapangan, serta evaluasi pre-test dan post-test yang dianalisis secara kuantitatif komparatif. Hasil menunjukkan peningkatan signifikan pada pengetahuan (48,5%), keterampilan teknis pembuatan kompos blok (56,2%), dan kesadaran ekologis (52,3%). Temuan ini menegaskan bahwa pendekatan partisipatif efektif dalam mendorong perubahan perilaku menuju pertanian organik. Selain meningkatkan kapasitas individu, kegiatan ini juga memperkuat kelembagaan kelompok tani.

Kontribusi: Studi ini berkontribusi pada pengembangan model penyuluhan partisipatif adaptif di wilayah lahan kering perbatasan serta mendukung pencapaian SDGs dan IKU perguruan tinggi.

Kata Kunci: *penyuluhan partisipatif; pertanian organik; kompos blok; pemberdayaan petani; Timor Tengah Utara.*

Abstract: Agricultural practices in the dryland areas of Timor Tengah Utara Regency (TTU) remain dominated by conventional systems reliant on chemical inputs, contributing to soil degradation and low ecological awareness. The gap between extension services and the adoption of organic farming highlights the need for participatory approaches. This Kosabangsa Community Service (PKM) activity aims to enhance farmers' capacity through participatory extension. Methods include awareness sessions, Focus Group Discussions (FGDs), training, field practice, and pre- and post-test evaluations analyzed using comparative quantitative methods.

Results show significant improvements in knowledge (48.5%), technical skills in block compost production (56.2%), and ecological awareness (52.3%). These findings confirm that participatory approaches effectively promote behavioral change toward organic farming. In addition to improving individual capacity, this activity strengthens farmer group institutions.

Contribution: This study contributes to adaptive participatory extension models in dryland border areas and supports SDGs and university performance indicators globally.

Keywords: participatory extension; organic farming; block compost; farmer empowerment; Timor Tengah Utara.

INTRODUCTION

Timor Tengah Utara (TTU) Regency is one of the regions in East Nusa Tenggara Province characterised by a dry tropical agroecological regime, with low rainfall (<1000 mm/year) and a long dry season.¹ These conditions mean that agricultural productivity is highly dependent on water availability and soil quality. Data show that most agricultural land in arid regions has experienced a decline in fertility due to the degradation of organic matter and erosion, which has a direct impact on low productivity and efficiency in farming operations.² In this context, farmers face a range of constraints, including access to water, production capital and technology suited to arid conditions.³

Agricultural practices in TTU are still dominated by conventional systems that rely on chemical fertilisers and pesticides. The intensive use of synthetic inputs has been shown to accelerate soil structure degradation and reduce microbial biodiversity, which ultimately leads to a decline in long-term productivity. These findings are consistent with various studies showing that long-term reliance on chemicals not only damages soil ecosystems but also increases production costs and environmental risks. Consequently, conventional farming systems are no longer capable of addressing the challenges of sustainability in dryland areas.

Alternatively, organic farming offers a more environmentally friendly approach

¹ Case Study, "Sustainability Index for Eco-Friendly Cattle Farming in Dry Climate Regions" 10 (2024): 279–302.

² D Mete, S Nikolaus, and S P N Nainiti, "Masalah Priorotas Yang Dihadapi Petani Jagung Di Desa Manikin, Kecamatan Noemuti Timur, Kabupaten Timor Tengah Utara (Ttu)," *Media Komunikasi Agribisnis* 7, no. 3 (2018): 150–158, <https://core.ac.uk/download/pdf/228881879.pdf>.

³ Venuste Nsengimana et al., "Impact of Chemical Fertilizers on Diversity and Abundance of Soil-Litter Arthropod Communities in Coffee and Banana Plantations in Southern Rwanda," *Current Research in Environmental Sustainability* 5, no. April (2023): 100215, <https://doi.org/10.1016/j.crsust.2023.100215>.

through the use of natural materials such as compost, green manure and plant-based pesticides.⁴ In theory, this approach is in line with the principles of agroecology, which emphasise a balance between soil, plants, animals and people. As well as improving soil fertility, organic farming also has the potential to reduce input costs and increase the added value of produce. However, the uptake of organic farming at the farmer level remains relatively low, particularly in border regions such as TTU.

This low adoption rate is closely linked to farmers' limited knowledge, perceptions of risk, and long-standing reliance on conventional systems. From the perspective of the Diffusion of Innovations theory, the process of innovation adoption is influenced by communication factors, the characteristics of the innovation itself, and the surrounding social system. This means that changing farmers' behaviour cannot be achieved through technology transfer alone, but requires a participatory and contextual learning approach.⁵ However, most agricultural extension activities are still top-down in nature and do not sufficiently involve farmers as active participants in the learning process.

This is where the research gap lies. Most previous studies have focused more on the technical aspects of organic farming or its environmental impacts, but have been limited in their examination of the effectiveness of participatory extension models in driving behavioural change amongst farmers in dryland border regions. Furthermore, the integration of empowerment approaches, participatory learning and the local socio-ecological context has not yet been extensively explored empirically. Therefore, an approach is needed that not only transfers knowledge but also builds farmers' awareness, skills and self-reliance in a sustainable manner.⁶ According to,⁷ the process of adopting an innovation is determined not only by how quickly information is disseminated, but also by the extent to which individuals feel a sense of ownership and

⁴ Nikolas Nik, Asep Ikhsan Gumelar, and Aloysius Rusae, "Peran Serta Masyarakat Dalam Pertanian Organik Di Lahan Kering Secara Komprehensif Dan Terpadu Menuju Keberlanjutan Ekonomi, Lingkungan Hidup Dan Kesehatan Masyarakat," *BERNAS: Jurnal Pengabdian Kepada Masyarakat* 6, no. 2 (2025): 1064–1071, <https://doi.org/10.31949/jb.v6i2.11908>.

⁵ Dian Intan Tangkeallo, Kristanto, and Frengky Januardo Pong Bubun, "Penerapan Metode Pertanian Organik Yang Berkelanjutan Di Kelurahan Mebali," *Community Development Journal* 5, no. 6 (2024): 11784–11789.

⁶ Ajang Maruapey et al., "Penyuluhan Pertanian Organik Di Kelurahan Malasom Distrik Aimas Kabupaten Sorong-Papua Barat Daya," *ABDIKAN: Jurnal Pengabdian Masyarakat Bidang Sains dan Teknologi* 3, no. 4 (2024): 315–322.

⁷ ME Rogers, *Diffusion of Innovations*, 5th ed. (New York: The Free Press, 2003), https://www.researchgate.net/publication/257624104_Diffusion_of_Innovations_5th_edition_Everett_M_Rogers_Free_Press_New_York_NY_2003_551_pages.

understand the benefits of that innovation.

In light of these issues, this Kosabangsa Community Service initiative aims to develop and test the effectiveness of participatory extension in enhancing farmers' capacity, particularly in terms of knowledge, technical skills and ecological awareness in the practice of organic farming. This initiative was carried out with the Kartika Group Farmers' Association in Oenbit Village, which serves as a representative example of a dryland border area. From a scientific perspective, this study is expected to contribute to the development of an adaptive and context-specific model for participatory extension, whilst strengthening the empirical basis for research into farmer empowerment towards a sustainable agricultural system.

METHODS

This Kosabangsa Community Service programme employs a participatory extension approach, which positions farmers as active participants throughout all stages of the programme. This approach was chosen because it is in line with the principles of community empowerment, which emphasise involvement, collaboration and experiential learning. Consequently, the programme focuses not only on the transfer of knowledge, but also on the process of behavioural change and capacity building amongst farmers.⁸ The activity took place in Oenbit Village, Insana Sub-district, TTU Regency, involving the Kartika Group Farmers' Group, comprising 20 farmers. Participants were selected using the total participation approach, as all group members were the programme's target audience. The location was selected purposively, taking into account the characteristics of dry land and the low level of utilisation of local organic materials.

The programme comprises four main phases, namely: (1) awareness-raising and problem identification, (2) focus group discussions (FGDs), (3) training and field practice, and (4) ongoing support. In the initial stage, coordination took place with the village government and farmers' groups to build a shared commitment and identify the main problems faced by farmers. The FGD stage was used to explore perceptions,

⁸ Rizal Akbar, Widya Hasian Situmeang, and Edi Wiraguna, "Penyuluhan Partisipatif Untuk Meningkatkan Adopsi Sistem Jajar Legowo," *Jurnal Ilmu Pertanian Dan Teknologi Dalam Ilmu Tanaman* 2, no. 2 (2025): 141–153, <https://doi.org/10.62951/hidroponik.v2i2.421>.

experiences and local potential as a basis for developing training materials.⁹ Furthermore, the training was conducted using demonstration and 'learning by doing' methods in the production of compost blocks made from locally sourced materials.¹⁰ The final stage consisted of two months of on-site support to ensure the sustainable adoption of the technology. The evaluation of the activities was carried out using a before-after evaluation design to measure changes in farmers' capacity.

The aspects evaluated included: (1) knowledge, (2) technical skills, and (3) ecological awareness. Quantitative data were obtained through pre-test and post-test instruments based on a Likert-scale questionnaire (1-5), whilst qualitative data were collected through participatory observation and brief interviews. Quantitative data were analysed using descriptive and comparative methods by calculating the percentage increase before and after the activities, whilst qualitative data were analysed thematically to strengthen the interpretation of the results. To ensure the validity of the results, a method of triangulation was used between quantitative and qualitative data. Furthermore, the active involvement of participants at every stage of the activities served as an indicator of the success of the participatory process. With this approach, the methodology not only described the activities but was also able to demonstrate the programme's effectiveness in a measurable and systematic manner.¹¹

RESULT

The Kosabangsa programme in Oenbit Village was carried out in collaboration with the Kartika Group Farmers' Association, focusing on building farmers' capacity in the implementation of organic farming through a participatory extension approach. Farmer participation in the programme reached a 95 per cent attendance rate, demonstrating a high level of enthusiasm for the training topics, which were considered relevant to local conditions. During the initial awareness-raising phase, farmers highlighted various challenges they faced, such as declining soil fertility and

⁹ W. Taena et al., "Peningkatan Pengetahuan Dan Keterampilan Masyarakat Dalam Upaya Mengendalikan Pertanian Tebas Bakar Di Desa Amol," *Jurnal Pengabdian kepada Masyarakat Nusantara* 5, no. 3 (2024): 3345-3352.

¹⁰ M M Endah et al., "Pelatihan Pembuatan Pupuk Organik Padat (Kompos Biochar) Di Kelompok Tani Nek Mese Desa Usapinonot Kecamatan Insana Barat Kabupaten TTU" 7 (2024): 8-9.

¹¹ Nikolas Nik et al., "Pendampingan Kelompok Tani Dalam Budidaya Tanaman Hortikultura Berbasis Organik Di Desa Sallu" 4, no. 6 (2023): 13394-13403.

dependence on chemical fertilisers.

Figure 1. Initial Briefing on the Implementation of the Activity.



The response to the idea of organic farming was very positive, as it was seen as a way to reduce production costs and improve the soil ecosystem. Furthermore, the farmers expressed a desire to utilise livestock manure, which had previously gone unprocessed. This formed the basis for expanding the activities to include training in the production of compost blocks using locally sourced materials.¹² The Focus Group Discussion (FGD) identified three priority issues faced by farmers: limited access to chemical fertilisers, high production costs, and a decline in agricultural soil quality. During the discussion, participants agreed to seek solutions based on local resources through a collaborative approach. The implementation team introduced the concept of participatory organic farming, utilising cattle manure to produce solid organic fertiliser in the form of compost blocks. Farmers played an active role in selecting the training location, providing raw materials, and setting the schedule for activities. It was also agreed, based on the FGD findings, that the activities should not be limited to technical training but should also aim to build ecological and social awareness. The involvement of farmers at every stage of the activities served as one indicator of the success of the participatory approach.

¹² Hodi Eko Prasetyo et al., "Pendampingan Pengolahan Kotoran Sapi Menjadi Pupuk Organik," *Mafaza : Jurnal Pengabdian Masyarakat* 3, no. 1 (2023): 75–88.

Figure 2. Organic Farming Training Session at the Kartika Group Farmers' Group.



A training session on compost making was held, involving all members of the farmers' group. The session began with a demonstration of how to mix the raw materials, such as cow dung, rice husks, rice bran and organic fermentation liquid (OFL). The farmers then took part in a hands-on session, from the mixing process right through to moulding the compost blocks using moulds.¹³ Within a few days, the compost produced is fully matured and ready for use on farmland. Field trials have shown that the soil texture becomes looser and easier to work after two weeks of using block compost. Farmers consider this method to be more cost-effective and easier to implement than the use of chemical fertilisers.

The results of the activity were evaluated through pre-test and post-tests administered to the 20 participating farmers. The farmers' average knowledge score rose from 52,4 before the training to 77,9 after the training, representing an increase of 48,5 per cent. Technical skills in block compost production improved by 56,2 per cent, from an initial score of 45,3 to 70,8. Environmental awareness also increased by 52,3 per cent, whilst the ability to work in a group rose by 40,7 per cent. A total of 80 per cent of participants began to apply the use of compost blocks on their own land independently following the programme. These results demonstrate that the

¹³ Ture Simamora, Oktovianus Rafael Tahu Bauk Nahak, Eduardus Yosef Neonbeni, and Jefrianus Neonnub. "Empowering the Nekto Nopala Group in Making Cow Manure-Based Compost Blocks". *SERVIRE: Journal of Research and Service* 4, no. 2 (2024): 168-190. <https://doi.org/10.46362/servire.v4i2.272>.

participatory extension method successfully improved the farmers' knowledge, skills and attitudes towards organic farming practices.

Table 1. Improvement in Farmers' Knowledge and Skills Following the Kosabangsa Community Service Programme in Oenbit Village.¹⁴

Nu	Areas Assessed	Previous Average Score (0–100)	Post-test Average Score (0–100)	Increase (%)
1	Knowledge of organic farming	52,4	77,9	48,5
2	Skills in making concrete blocks	45,3	70,8	56,2
3	Environmental awareness and resource efficiency	50,2	76,5	52,3
4	Teamwork skills	58,6	82,4	40,7
5	Initiatives to implement local technology	47,1	73,2	55,4

DISCUSSION

The improvement in farmers' knowledge and skills following the activities demonstrates that participatory extension is effective as an adaptive means of social learning. This approach treats farmers not as passive recipients of information, but as active participants throughout the entire process. This is in line with the theory of the diffusion of innovations from¹⁵ which states that the adoption of technology will occur more rapidly if innovations are introduced through social participation and interaction. Through joint discussions and practical activities, farmers gained first-hand experience that strengthened their understanding of the new technology. Consequently, the significant improvement in post-test results reflects a behavioural transformation driven by active engagement. These findings reinforce the position of participatory extension as a relevant approach for arid tropical rural areas such as TTU.

From an ecological perspective, the use of block composting technology offers dual benefits: it improves soil fertility and reduces dependence on chemical fertilisers. The use of organic material from cattle manure helps to improve soil structure and boost microbial activity. Furthermore, farmers are beginning to recognise the economic value of livestock waste as a resource that can be processed and resold. This is in line

¹⁴ Source: Primary data from observations and evaluations of Kosabangsa activities, 2025.

¹⁵ Rogers, *Diffusion of Innovations*.

with the view that ¹⁶ that organic farming contributes to cost efficiency and environmental sustainability. Changes in farmers' behaviour regarding the use of local materials indicate that ecological values have been internalised within agricultural practices. Thus, a participatory approach is capable of fostering ecological awareness whilst delivering tangible economic benefits.

From a socio-institutional perspective, this activity strengthens cooperation and solidarity amongst members of the farmers' group. Through the division of roles in the production of compost blocks, group members learn the importance of collective responsibility in achieving shared goals. This process fosters a supportive working environment and strengthens the group's institutional capacity. According to Simamora et al.,¹⁷ the success of the extension programme is greatly influenced by group dynamics and the ability of members to collaborate. The Kartika Group's autonomy in rganizati work schedules, managing materials and monitoring fermentation demonstrates an improvement in internal rganizational capacity. This serves as evidence that participatory extension not only enhances individual capacity but also strengthens local institutions.

Figure 3. Compost Blocks as a Growing Medium on the Demonstration Plot.



¹⁶ Nengah Wirasta et al., "Penerapan Prinsip-Prinsip Pertanian Berkelanjutan Pada Usaha Padi" 3, no. 2 (2024): 169–180.

¹⁷ Ture Simamora et al., "Dinamika Kelompok Peternak Sapi Potong Di Kabupaten Timor Tengah Utara," *Jurnal Penyuluhan* 20, no. September 2023 (2024): 284–297, <https://doi.org/10.25015/20202451330>.

Overall, the Kosabangsa programme in Oenbit Village has had a positive impact on farmers' knowledge, social, economic and ecological well-being. The participatory extension approach has proven effective in changing farmers' behaviour towards a more environmentally friendly and sustainable agricultural system. Furthermore, the success of the programme supports the achievement of Sustainable Development Goals (SDGs) 2, 12 and 15, as well as supporting Higher Education Key Performance Indicator 3 through the involvement of lecturers and students in community empowerment activities. Given these results, the participatory extension model based on compost blocks is worthy of replication in other dry tropical regions of East Nusa Tenggara. By strengthening the capacity of farmers and local institutions, such initiatives represent a concrete step towards food self-sufficiency and environmental conservation in the Indonesia–Timor-Leste border region.

CONCLUSION

The Kosabangsa initiative, themed '*Participatory Extension as a Means of Behavioural Change in the Adoption of Organic Farming within the Kartika Group Farmers' Association, Oenbit Village*', successfully achieved its set objectives. The participatory extension approach proved effective in enhancing farmers' knowledge, skills and ecological awareness regarding the importance of organic farming practices. Farmers' active participation at every stage of the programme, from planning to evaluation, encouraged more sustainable behavioural change. The adoption of block composting technology using local livestock manure proved to be a practical innovation in addressing the limitations of chemical fertilisers and maintaining soil fertility. In addition to boosting agricultural productivity, this initiative also strengthened solidarity and the institutional capacity of the farmers' group. Overall, this initiative made a tangible contribution to the development of sustainable agriculture in the dry tropical border region between Indonesia and Timor-Leste.

To ensure the sustainability of the programme's outcomes, continued support from the village government and the agricultural department is required, in the form of mentoring programmes and the provision of local production facilities. The Kartika Group Farmers' Association needs to expand its network of cooperation with other institutions to strengthen market access for the organic produce it generates.

Furthermore, further training on organic farm management, product certification and marketing needs to be provided so that this initiative yields greater economic value. Higher education institutions are expected to continue to act as facilitators of innovation and drivers of community empowerment based on scientific knowledge. Replicating the participatory extension model in other villages will help to broaden the programme's impact on enhancing farmers' capacity in East Nusa Tenggara. Through sustained synergy amongst local stakeholders, it is hoped that the organic farming system can become a key pillar of adaptive, efficient and environmentally friendly agricultural development in border regions.

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REFERENCES

- Ajang Maruapey, Nurlela Nurlela, Rahma Lakamudi, Rajab Lestaluhu, and Ferdinan Nuru. "Penyuluhan Pertanian Organik Di Kelurahan Malasom Distrik Aimas Kabupaten Sorong-Papua Barat Daya." *ABDIKAN: Jurnal Pengabdian Masyarakat Bidang Sains dan Teknologi* 3, no. 4 (2024): 315–322.
<https://doi.org/10.55123/abdikan.v3i4.4648>.
- Akbar, Rizal, Widya Hasian Situmeang, and Edi Wiraguna. "Penyuluhan Partisipatif Untuk Meningkatkan Adopsi Sistem Jajar Legowo." *Jurnal Ilmu Pertanian Dan*

- Teknologi Dalam Ilmu Tanaman* 2, no. 2 (2025): 141–153.
<https://doi.org/10.62951/hidroponik.v2i2.421>.
- Satmalawati, M.E.M., Ludgardis Ledheng, Kanisius Kono, and Yusuf Rumbino. “Pelatihan Pembuatan Pupuk Organik Padat (Kompos Biochar) Di Kelompok Tani Nek Mese Desa Usapinonot Kecamatan Insana Barat Kabupaten TTU.” *Jurnal Pengabdian* 7, no. 2 (2024): 131-138. <https://doi.org/10.26418/jplp2km.v7i2.85146>.
- Mete, Debora, Serman Nikolaus, and Selfius P. N. Nainiti. “Masalah Prioritas Yang Dihadapi Petani Jagung Di Desa Manikin, Kecamatan Noemuti Timur, Kabupaten Timor Tengah Utara (TTU).” *Jurnal Excellentia* 7, no. 2 (2018): 150–158.
<https://ejurnal.undana.ac.id/index.php/JEXCEL/article/view/1450>.
- Nik, Nikolas, Asep Ikhsan Gumelar, and Aloysius Rusae. “Peran Serta Masyarakat Dalam Pertanian Organik Di Lahan Kering Secara Komprehensif Dan Terpadu Menuju Keberlanjutan Ekonomi, Lingkungan Hidup Dan Kesehatan Masyarakat.” *BERNAS: Jurnal Pengabdian Kepada Masyarakat* 6, no. 2 (2025): 1064–1071.
<https://doi.org/10.31949/jb.v6i2.11908>.
- Nik, Nikolas, Maria Afrita Lelang, Aloysius Rusae, and Pertanian Organik. “Pendampingan Kelompok Tani Dalam Budidaya Tanaman Hortikultura Berbasis Organik Di Desa Sallu” *Community Development Journal : Jurnal Pengabdian Masyarakat* 4, no. 6 (2023): 13394–13403.
<https://doi.org/10.31004/cdj.v4i6.21111>.
- Nsengimana, Venuste, Jean de Dieu Nsenganeza, Thacien Hagenimana, and Wouter Dekoninck. “Impact of Chemical Fertilizers on Diversity and Abundance of Soil-Litter Arthropod Communities in Coffee and Banana Plantations in Southern Rwanda.” *Current Research in Environmental Sustainability* 5 (2023): 100215.
<https://doi.org/10.1016/j.crsust.2023.100215>.
- Prasetio, Hodi Eko, Muhammad Dhurofallathoif, Tis’atun Nujum, Siti Inggil Puspa Jelita, Miskhatun Rofi’ah, and Rofiatun Nisa’. “Pendampingan Pengolahan Kotoran Sapi Menjadi Pupuk Organik.” *Mafaza: Jurnal Pengabdian Masyarakat* 3, no. 1 (2023): 75–88. <https://doi.org/10.32665/mafaza.v3i1.1713>.
- Rogers, ME. *Diffusion of Innovations*. 5th ed. New York: The Free Press, 2003.
https://www.researchgate.net/publication/257624104_Diffusion_of_Innovations_5th_edition_Everett_M_Rogers_Free_Press_New_York_NY_2003_551_pages.

- Simamora, Ture, Oktovianus Rafael Tahu Bauk Nahak, Eduardus Yosef Neonbeni, and Jefrianus Neonnub. "Empowering the Nekto Nopala Group in Making Cow Manure-Based Compost Blocks". *SERVIRE: Journal of Research and Service* 4, no. 2 (November 26, 2024): 168-190. <https://doi.org/10.46362/servire.v4i2.272>.
- Simamora, Ture, Veronika Yunerati Beyleto, Josua Sahala, and Jefrianus Neonnub. "Dinamika Kelompok Peternak Sapi Potong Di Kabupaten Timor Tengah Utara." *Jurnal Penyuluhan* 20, no. September 2023 (2024): 284-297. <https://doi.org/10.25015/20202451330>.
- Simamora, Ture, M.N. Rofiq, L. Hutahaeen, S. Sio, R. Hutapea, D. Irawan, Suryani, R. Diastuti, U.N. Thiyas, B.A. Correia, and L.T. Correia. "Sustainability Index for Eco-Friendly Cattle Farming in Dry Climate Regions." *Global Journal of Environmental Science and Management* 10 (2024): 279-302. https://www.gjesm.net/article_715766_46e48fb9f7900e3fe1d8f6c000eb6fc3.pdf.
- Taena, W., Y. Binsasi, A. K. D. Lestari, and N. D. D Ndua. "Peningkatan Pengetahuan Dan Keterampilan Masyarakat Dalam Upaya Mengendalikan Pertanian Tebas Bakar Di Desa Amol." *Jurnal Pengabdian kepada Masyarakat Nusantara* 5, no. 3 (2024): 3345-3352. <http://doi.org/10.55338/jpkmn.v5i3.3619>.
- Tangkeallo, Dian Intan, Kristanto, and Frengky Januardo Pong Bubun. "Penerapan Metode Pertanian Organik Yang Berkelanjutan Di Kelurahan Mebali." *Community Development Journal* 5, no. 6 (2024): 11784-11789. <https://doi.org/10.31004/cdj.v5i6.38598>.
- Wirasta, Nengah, La Nalefo, and La Ode Kasno Arif. "Penerapan Prinsip-Prinsip Pertanian Berkelanjutan Pada Usaha Padi." *Jurnal Ilmiah Inovasi dan Komunikasi Pembangunan Pertanian* 3, no. 3 (2024): 169-180. <https://doi.org/10.56189/jiikpp.v3i3.48996>.



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