Farmers' Response to the LEISA Approach

Arief Rahma Hakim[1*], Asro Laelani Indrayanti[1], Yulia Yustha[2], Aulia Rahma Balina[2]

[1]Faculty of Agriculture, Agribusiness Study Program, PGRI University of Palangka Raya
[2]Faculty of Agriculture, Forestry Study Program, University of Palangka Raya
Email : gagukmartono@gmail.com, asroiin20@gmail.com, yuliayustha85@gmail.com, auliabalina@gmail.com

Abstract: *In response to changes in government policy regarding fertilizer subsidies, the introduction and training of the LEISA approach were carried out in Sidodadi Village, Maliku District, Pulang Pisau Regency. Sidodadi Village, formerly known as Pangkuh 6B, is an ex-transmigration area where most of the community members are horticultural crop farmers. The activity stages included Socialization, Training, Assistance in technology implementation, Monitoring and Evaluation, and Program Sustainability. After the activities were completed, a questionnaire was distributed to assess farmers' responses and the prospects of the LEISA approach in Sidodadi Village. Measurement results showed that most farmers (56.67%) were aware of the government's policy changes regarding subsidized fertilizers. Observations revealed that after the LEISA training, there was an increase in the application of various techniques, including producing fertilizer from rice washing water (56.63%), organic fertilizer from household waste (63.33%), fertilizer from husk charcoal (46.67%), fertilizer from livestock urine (13.33%), and the use of self-made fertilizers (13.37%). Although there was a shift in farmers' perceptions towards the LEISA approach, their dependence on factory-made fertilizers remained quite high. However, despite this dependency, the future of LEISA implementation in Sidodadi Village has good prospects due to increased awareness and application of self-made fertilizers.*
Keywords : Pangkoh 6B, LEISA, self-made fertilizers, chemical fertilizers, horticulture

INTRODUCTION

The Government of Indonesia has made policy changes regarding the provision of subsidized fertilizers for farmers. Subsidized fertilizers are no longer provided for horticultural crops (vegetables and fruits) except for commodities like chili, shallots, and garlic. This policy demands that farmers fulfill their fertilizer needs independently. This burden feels heavy for farmers due to their high dependence on factory-made fertilizers, which have become increasingly expensive. The high prices are caused by the limited national production capacity and the rising demand for fertilizers for various commodities.

This activity aimed to introduce the LEISA approach to help farmers reduce their dependency on factory-made fertilizers in their farming practices. LEISA (Low External Input Sustainable Agriculture) is a system that optimizes the use of natural resources and minimizes external inputs to increase productivity and income while considering ecosystem balance. LEISA serves as an agricultural reference to maximize the use of local resources by combining synergistic farming components and using external inputs as complements to enhance resource efficiency and minimize environmental damage (Asandhi *et al*., 2005).

The LEISA concept essentially involves utilizing agricultural waste, household

waste, or organic waste to be processed into fertilizers. This concept minimizes, but does not eliminate, external inputs, including synthetic fertilizers, in agricultural cultivation.

The activity was conducted in Sidodadi Village, Maliku District, Pulang Pisau Regency. Sidodadi Village is an ex-transmigration area, formerly called Pangkuh 6B, with a population of 1,200 people in 405 households. The primary livelihood of the community is in agriculture, cultivating crops such as chili peppers, tomatoes, eggplants, hybrid corn, durian, guava, oranges, mangoes, pineapples, papayas, bananas, rambutan, rubber, coffee, and oil palm. Livestock commonly reared include free-range chickens, goats, and cows.

As an ex-transmigration village, the majority of Sidodadi's residents are originally from Java Island and have a strong traditional farming culture, accustomed to using fertilizers, herbicides, and pesticides in crop cultivation. This practice is a legacy of the "Panca Usaha Tani" campaign during the New Order era.

The soil in Sidodadi Village consists of peatlands and acidic sulfate soils, characterized by low pH and nutrient availability for plants. However, these soils are highly water-retentive and quickly overgrown with weeds (Dahlan, 2011). To support plant growth in these soils, water management, liming to increase pH, fertilization, and amelioration are required. Adding organic matter such as manure and compost can improve the physical and chemical fertility of peat and acidic sulfate soils (Fiantis, 2017).

In addition to introducing and training the LEISA approach, the farmers' changing perceptions of the approach were measured. This was intended to assess the outcomes of the LEISA campaign and measure changes in farmer behavior, as well as to understand the future prospects of the LEISA approach in the activity area.

METHODS

The community service program was carried out in several stages:

1. **Socialization**:

   This stage aimed to obtain initial responses from stakeholders regarding the planned problem-solving efforts. The socialization was conducted on September 9, 2024, at the Sidodadi Village Hall, Maliku District, Pulang Pisau Regency, involving the head of the Maliku Agricultural Extension Center (BPP), extension officers (PPL), the village head and officials, leaders of the Farmer Group Association (Gapoktan) Destha Tani, **and** representatives from member farmer groups. A total of 60 participants attended. The outcome was a willingness among farmer group members to voluntarily adopt the LEISA approach.



2. **Training**:

This stage involved enhancing farmers' capacities to independently produce fertilizers. The training, comprising 30% theory and 70% practice, was held on October 2–3, 2024, with 30 farmers participating. The materials included producing liquid organic fertilizer from rice washing water and fruit peels using stacked buckets, and producing solid organic fertilizers, such as husk charcoal and compost from household waste and oil palm fronds.




3. **Assistance and Evaluation**:

During the process of implementing the technology acquired in the training, guidance and assistance were provided both online and offline. Online guidance is conducted through a WhatsApp group managed by the activity administration section and attended by all farmers who have WhatsApp, totaling 17 farmers. For farmers who do not have WhatsApp, assistance is provided in a chain manner through the group leader or via telephone.

This mentoring is intended to determine whether the problem-solving procedures are followed by farmers in a disciplined and consistent manner. The evaluation is conducted to compare the actual implementation of activities with the targets agreed upon during the socialization. The evaluation is also intended to identify various issues while simultaneously seeking solutions to those problems.

4. **Program Sustainability**:

During the activity, from the socialization stage, mentoring training, and activity evaluation, the head of the Maliku District BPP and PPL were involved. This is intended so that after the activities are completed, the results obtained can be sustainable. After the activities are completed, the PPL under the supervision of the head of the BPP will continue to provide assistance and replicate the activities for other farmers. The activity implementation team will continue to provide post-activity assistance to monitor the problem-solving processes carried out by the farmers.

RESULTS AND DISCUSSION

After conducting training and providing assistance in implementing the results of the training, the next step was to measure the farmers' responses to the LEISA approach. The measurement results can be described as follows:

1. Farmers' Knowledge of Government Policies. Based on the questionnaire results, 56.67% of farmers stated that they were aware of the government's policy on limiting subsidized fertilizers and the exclusion of horticultural fruit crops from subsidy eligibility. Meanwhile, the remaining 44.33% stated that they were unaware of this policy (Figure 1).

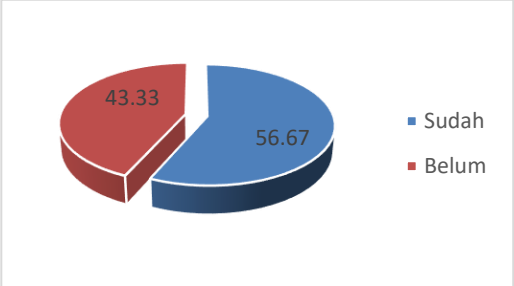

Figure 1. Farmers' knowledge of government policies on subsidized fertilizer restrictions

This fact shows that farmers pay attention to government policies, particularly those related to their business operations. This aligns with the findings of research by Hamid (2018), which indicate that farmers are attentive to government policies and consider their impact on their farming activities. Changes in government policy regarding fertilizer subsidies also reflect the belief that horticultural farmers (vegetables and fruits) are considered independent farmers, and it is estimated that there will be no changes in production even without further fertilizer assistance (Susila, 2010).

Making fertilizer from rice washing water. Based on the survey results, there was an increase in farmers' responses to making fertilizer from rice washing water before and after the training was conducted (Table 1)

Table 1. Farmers' Response to Training on Making Fertilizer from Rice Washing Water

No	Description	Farmers' Response	
		Yes	**No**
1	Practice of making fertilizer from rice washing water before training	6,67 %	93,3 %
2	Practice of making fertilizer from rice washing water after training	63,3 %	36,7 %

Source: Primary data analysis, 2024

The table above shows a significant increase in farmers' response to making fertilizer from rice washing water, rising by 56.63% from 6.67% to 63.3%. This increase is attributed to the ease and simplicity of the production process, as well as its benefits in improving soil fertility (Citra Wulandari G.M et al., 2019). Making Fertilizer from Household Waste. Based on the survey results, there was an increase in farmers' response to making fertilizer from household waste before and after the training (Table 2).

Table 2. Farmers' Response to Training on Making Fertilizer from Household Waste

No	Description	Farmers' Response	
		Yes	**No**
1	Practice of making fertilizer from household waste before training	6,67 %	93,3
2	Practice of making fertilizer from household waste after training	70	30

Source: Primary data analysis, 2024

The table above shows that there was an increase in farmers' response to making fertilizer from household waste by 63.33%, from 6.67% to 70%. This happened because farmers already had knowledge of composting, but this program introduced a simpler and easier technology to apply using composting bags.

2. Making fertilizer from rice husk charcoal. Based on the survey results, it was found that there was an increase in farmers' response to making fertilizer from rice husk charcoal before and after the training was conducted (Table 3).

Table 3. Farmers' response to the training on making fertilizer from rice husk charcoal.

No	Description	Farmers' Response	
		Yes	**No**
1	Practice of making fertilizer from rice husk charcoal before training	10 %	90 %
2	Practice of making fertilizer from rice husk charcoal after training	56,67 %	43,3 %

Source: Primary data analysis, 2024

The table above shows that there was an increase in farmers' responses in making fertilizer from rice husk charcoal by 45.67%, from 10% to 56.67%. The farmers in Sidodadi Village are well aware that the land they manage is acidic sulfate soil, which requires a significant amount of dolomite lime. Rice husk charcoal is considered a good substitute at a lower cost compared to using dolomite lime (Nurida et al., 2013).

3. Fertilizer production from other waste (cow and goat urine). Based on the survey results, it was found that there was an increase in farmers' responses in making fertilizer from cow and goat urine before and after the training (Table 4).

Table 4. Farmers' Responses to the Fertilizer Production Training from Cow and Goat Urine

No	Description	Farmers' Response	
		Yes	**No**
1	Fertilizer production from cow and goat urine before the training	46,67 %	53,33 %
2	Fertilizer production from cow and goat urine after the training	60 %	40 %

Source: Primary data analysis, 2024

The table above shows that there was an increase in farmers' responses in making fertilizer from cow and goat urine by 13.33%, from 46.67% to 60%. Farmers had already been using cow and goat urine as fertilizer, but in practice, the urine was only diluted. This training provided additional knowledge to farmers on processing cow and goat urine using decomposing microorganisms. Several studies have shown that animal urine has a high pH and NPK content, which supports plant growth (Lussy et al., 2017).

4. The use of homemade organic fertilizers in farming. Based on the survey results, it was found that there was an increase in farmers' responses to the use of homemade organic fertilizers before and after the training (Table 5)

Table 5. Farmers' response to the training on the use of homemade organic fertilizers.

No	Description	Farmers' Response	
		Yes	**No**
1	Practice of using homemade organic fertilizer before the training	63,33 %	36,67 %
2	Practice of using homemade organic fertilizer after the training	76,67 %	23,3 %

Source: Primary data analysis, 2024

The table above shows that there was an increase in farmers' responses in using homemade organic fertilizer by 13.37%, from 63.3% to 76.67%. This fact indicates that farmers' awareness of using homemade fertilizers is growing. This is related to the high

cost of fertilizers and the availability of sufficient raw materials in their own environment.

5. Farmers' dependence on factory-made fertilizers. Based on the survey results, 100% of farmers still require chemical fertilizers and have not been able to abandon factory-made fertilizers in their farming activities. This fact indicates that farmers are fully aware of the benefits of chemical fertilizers. In-depth interviews with farmers revealed that chemical fertilizers have the advantage of quicker plant responses and are more practical. However, farmers also realize that the price of non-subsidized chemical fertilizers is increasingly expensive, and their benefits are only short-term.

The findings of this study indicate that farmers' dependence on factory-made fertilizers is still quite high and not easy to change. From the long process of internalization since the New Order era, knowledge about chemical fertilizers has become deeply ingrained, so efforts to change this paradigm also require a lengthy process. According to Geertz (2016), the process of changing farmers' knowledge in Indonesia takes a long time and is not fixed; it can fluctuate. Although farmers' dependence on factory-made fertilizers is still high, this study also shows that there has been a shift in fertilizer use, particularly for horticultural crops.

The facts above show that more and more farmers are using homemade fertilizers, such as rice wash water, household waste, rice husk charcoal, livestock urine, and other waste. This suggests that there is still considerable hope for changing farmers' views on the use of homemade fertilizers. In other words, the LEISA approach has good prospects in Sidodadi Village.

The technology for making fertilizers that is easily accepted by farmers is simple, practical, and easy to apply. Technologies that require long and complex processes tend to be rejected by farmers.

CONCLUSION

The research on farmers' responses to the LEISA approach in Sidodadi Village, Maliku District, Pulang Pisau Regency shows that:

1. Many farmers are aware of the government's policy changes regarding fertilizer subsidies.
2. Farmers have provided a good and positive response to the LEISA approach that was introduced. This can be proven by the changes in perception and practices in producing fertilizers from rice wash water, household waste, animal urine, rice husk charcoal, and other waste.
3. Farmers still have a relatively high dependence on chemical fertilizers, but there has been a shift towards using homemade fertilizers. There has been an increase in both the quality and quantity of homemade fertilizer use in their farming

efforts. The fertilizer technology that is most accepted by farmers is simple, practical, and easy to implement.

Acknowledgments

DRTPM for their financial support in this activity

Sidodadi Village Government

Students Mahmudah, Dwi Andi, Rusmiyanti, Rasito

REFERENCES

Asandhi, A. A., Nurtika, N., & Sumarni, N. (2005). Optimasi Pupuk dalam Usahatani LEISA Bawang Merah di Dataran Rendah. *Jurnal Hortikultura*, *15*(3), 199–207.

Citra Wulandari G.M, Muhartini, S., & Trisnowati, S. (2019). PENGARUH AIR CUCIAN BERAS MERAH DAN BERAS PUTIH TERHADAP PERTUMBUHAN DAN HASIL SELADA (Lactuca sativa L.). *Vegetalika*, *1*(1), 390–392.

Dahlan, S.S dan Najmah, S., (2011). Pengendalian Hama dan Penyakit Pada Tanaman Padi di Sulawasi, Balai Pengkajian Teknologi Pertanian Sulawesi Selatan: Makasar.

Fiantis, D. (2017). Morfologi dan Klasifikasi Tanah. LPTIK Universitas Andalas. Sumatera Barat.

Hamid, H. (2018). Peran Pemerintah Daerah dalam Pemberdayaan Petani Padi di Kecamatan Pallangga, Kabupaten Gowa, Provinsi Sulawesi Selatan. *Khazanah Ilmu Berazam*, *1*(3), 32–48. http://eprints2.ipdn.ac.id/id/eprint/646/

Huda, Khoirul, M. (2013) Pembuatan Pupuk Organik Cair Dari Urin Sapi Dengan Aditif Tetes Tebu (*Molases*) Metode Fermentasi, Journal of Chemical Information and Modeling.

Kusuma, G. A. I., Rosmawaty, R., & Yusria, W. O. (2023). Analisis Persepsi Petani terhadap Perubahan Penggunaan Lahan Perkebunan ke Lahan Padi Sawah di Kelurahan Atula Kecamatan Ladongi Kabupaten Kolaka Timur. *JIA (Jurnal Ilmiah Agribisnis): Jurnal Agribisnis dan Ilmu Sosial Ekonomi Pertanian*, *8*(3), 186-198.

Lussy, N. D., Walunguru, L., & Hambamarak, K. H. (2017). Karakteristik Kimia Pupuk Organik Cair Dari Tiga Jenis Kotoran Hewan Dan Kombinasinya. *Partner*, *22*(1), 452. https://doi.org/10.35726/jp.v22i1.239

Qisthi, R.T.,Novita K, Husnul K,.Ainun C., Nadilatul H.,Sisilia.,Yusra Z.A.,Isti A.,Linasti P.,Panji S. (2021). Pengendalian Hama dan Penyakit Tanaman Pangan dan Hortikultura. Jurusan Biologi FMIPA UNM. Makasar.

Salam, A.K. (2020) Ilmu Tanah, Akademika Pressindo.

Sholikhati, A. (2023). Dukungan Pemerintah Dalam Penumbuhan Sikap Petani Terhadap Implementasi Subsidi Bunga Pertanian Di Jawa Tengah. *Jurnal Litbang Provinsi Jawa Tengah*, *21*(1), 97-106.

Supriyanto, F. Fiona. (2010). Pemanfaatan Arang Sekam Untuk Memperbaiki Pertumbuhan Semai Jabon (*Anthocephalus cadawba Roxb*) Pada Media Subsiol. Jurnal Silvikultura Tropika 01 (01):24-28.

Susila, W. R. (2010). Kebijakan subsidi pupuk: ditinjau kembali. *Jurnal Litbang Pertanian*, *29*(2), 43–49.

Wardoah, Linda, H. Rahmatan, 2014. Potensi Limbah Cair Cucian Beras Sebagai Pupuk

Organik Cair Pada Pertumbuhan Pokchoi (*Brassica capa L*). Jurnal Edukasi 6(1): 34-38.

Yuwono, N, W.,(2016). Pemanfaatan Reaktor Biokompas Hi untuk Menghasilkan Pupuk Organik Cair Dengan Bahan Limbah Sayur dan Buah. Proseding Seminar Nasional "Kontribusi Akademisi dalam Pencapaian Pembangunan Berkelanjutan". Universitas Brawijaya. Malang