



Critical Issues in the Development of Organic Farming Systems in West Sumatra

Yulinda^{1*}, Zulvera¹

¹Department of Social and Economy, Faculty of Agriculture, Universitas Andalas, Padang, Indonesia

*Email of corresponding author: Yulinda@agr.unand.ac.id

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ABSTRACT

Organic farming has developed rapidly in many regions of Indonesia. The main impetus for this expansion has been the growing societal inclination towards healthier ways of living and a greater awareness of environmental issues. Organic farming represents an agricultural system that emphasizes ecosystem equilibrium, maximizes local resource utilization, and minimizes synthetic inputs. In West Sumatra, organic rice cultivation has emerged as a significant organic agricultural commodity within local communities. This research aimed to explore various supporting factors and problems experienced by organic rice farmers, as well as opportunities to obtain organic certification. This study used a qualitative approach: data collection, data reduction, data presentation, conclusion drawing, and interpretation. Data collection employed interview techniques, key informants, observation, and documentation. Data validation used triangulation. The research results showed: 1) higher independence of organic farmers increases motivation for organic rice cultivation, and adequate experience is also a determining factor for organic farming success, 2) Government roles, such as program consistency, implementation of training and Integrated Pest Management Field Schools (SLPHT), adaptable farmer group institutions and leadership, networking, commodity-related testing/certification, use of information technology, natural and environmental potential, and 3) Problems: product quality variations, land ownership, price fluctuations, and market certainty. Opportunities and strategies towards organic rice certification include: product diversification innovation, Fresh Plant Origin Product Standardization (PSAT), pioneering and modernization of organic rice farming support machines for high-quality rice production.

Keywords: Organic Agriculture, Organic Certification, Commodity, ecosystem

INTRODUCTION

Indonesia is among the world's largest rice consumers. As reported by the Agricultural Data and Information Centre (PUSDATIN, 2021) and the United States Department of Agriculture (USDA), Indonesia held the third position globally in rice consumption during 2021/2022, with an annual average of 35.8 million metric tons. China recorded the highest consumption at 144.2 million metric tons, followed by India at 101.2 million metric tons, Bangladesh at 34.5 million metric tons, and Vietnam at 21.4 million metric tons. Further insights from PUSDATIN data reveal that rice consumption in Indonesia has consistently remained high over the years. This shows how vital rice is as a staple food for the people of Indonesia.

The high level of rice consumption has raised public awareness about the importance of consuming healthy food. Health considerations have led to an increasing awareness among individuals to choose agricultural commodities that are free from synthetic substances, and are healthier and safer for consumption. Organic products are considered safe to consume. Consuming organic products can reduce health risks and promote environmentally sustainable farming practices. According to Spangler (2012), organic commodities contain 30% lower pesticide levels compared to conventional products. This finding underscores the importance of organic agriculture in reducing the use of chemical pesticides, which have detrimental effects on health and

the environment. This increasing awareness of healthy food is one of the key factors propelling the rapid advancement of farming.

The initiation of organic agriculture development is supported by strong arguments, including a healthy lifestyle and environmental sustainability. Septiadi and Mundiya (2020) found that the development of organic farming is influenced by external factors, including lifestyle trends, associations of organic farmers, government support, and the demand for safe, health-oriented products, and eco-friendly agriculture practices (Siregar, 2023). Sinambela (2014) states that the use of pesticides, which is a component of modern farming methods, is extremely poisonous and detrimental to soil organisms, thereby disturbing the ecological balance. The global trend toward a healthy and environmentally friendly lifestyle has driven increased demand for agricultural products that are safe for consumption (food safety attributes), nutritionally rich (nutritional attributes), eco-friendly (eco-labelling attributes), and sustainable (sustainable attributes), all of which have become globally institutionalized. Consequently, Jahroh (2010) proposes that organic farming serves as an alternative agricultural method that addresses the issue of ecological harm from synthetic pesticides and chemical fertilizers, while also reducing adverse health effects on humans.

Organic farming initiatives also depend significantly on sustainable development, in addition to health and environmental issues and lifestyle trends. From a sociological perspective, the sustainable development paradigm emphasizes the integration of social, economic, and environmental aspects in agricultural practices (Mahmuddin, 2013). Organic farming represents a model of sustainable agriculture that incorporates these three dimensions.

According to the International Federation of Organic Agriculture Movements (IFOAM), organic farming is a holistic and integrated agricultural system that combines health principles, the natural optimization of local resources, and the production of food rich in fibre and nutrients while remaining environmentally friendly. In relation to organic farming practices, Permatasari and Sapja Anantanyu (2018) conclude that adopting organic agriculture can improve soil quality, ensure the availability of safe food products, and sustain ecosystems. Additionally, it reduces reliance on external inputs while optimizing locally available resources. The integration of technology and local knowledge in organic farming also enhances the market value of agricultural commodities, ultimately improving the economic well-being of organic farmers.

In Indonesia, organic farming initiatives were implemented from 2001 to 2010. The publication of the Organic Farming System Guidelines in the form of SNI 6729:2002 marked the initial step in developing organic agriculture. This was followed by the “Go Organic and Back to Nature” program launched by the Indonesian Ministry of Agriculture in 2010. These initiatives were part of a broader effort to promote organic farming in Indonesia (Imani *et al.*, 2018).

The “Go Organic and Back to Nature 2010” program included several key activities: (1) Socialization and Human Resource Development—disseminating information about organic farming and market development, (2) Policy and Infrastructure Development—formulating policies, promoting the organic food system, establishing infrastructure, strengthening institutions, and training facilitators and organic inspectors, and (3) Market access for high-quality organic commodities.

Despite the rapid growth of organic farming, significant challenges and obstacles remain in its implementation. A comprehensive understanding of these constraints is essential to address the issues hindering the development of organic rice farming. To support this, an in-depth exploration of the barriers and challenges faced at the grassroots level, as well as by the government and consumers, is necessary. Given these challenges, it is crucial to conduct research on the constraints, obstacles, and supporting factors in organic farming development. Additionally, efforts should be made to improve farming practices to ensure that products meet organic certification standards, particularly among farmer groups in Batang Anai District, Padang Pariaman Regency.

Although organic farming has experienced significant growth, numerous challenges and issues persist in

its implementation. Therefore, a comprehensive understanding of the constraints and problems affecting the development of organic rice farming is essential. To enhance this understanding, an exploration of the barriers hindering organic farming at the grassroots level, as well as within government institutions and among consumers, is necessary.

Given these issues, it is imperative to carry out study on the limitations, impediments, and enabling elements impacting the development of organic farming. Additionally, efforts should be made to address these challenges to ensure that agricultural products meet organic certification standards, particularly among farmer groups in Batang Anai District, Padang Pariaman Regency.

METHODS

Research Design and Study Area

The study area was selected purposively, based on the consideration that Batang Anai District is one of the areas with the largest organic rice production in Padang Pariaman Regency. The selection of the Indah Sakato I and Hidayah farmer groups was based on the fact that both groups had already obtained organic certification from the Organic Certification Agency (SLO) of West Sumatra. However, at the time of the study, the Hidayah farmer group had not continued the process of renewing their organic certification, while the Indah Sakato I group remained committed to maintaining their organic certification for the subsequent period.

This study adopts a descriptive qualitative approach, which can be understood as a problem-solving procedure that investigates and describes the current condition of the research subjects or objects, along with the field facts, as well as the challenges and issues faced in implementing organic farming. The research was conducted in Batang Anai District, Padang Pariaman Regency.

The study utilizes both primary and secondary data. Data collection methods included observation, where the researcher directly observed the farming practices to gather data supporting the research; interviews using key informants; and documentation in the form of written records or images. During the interviews, the researcher used an MP3 recorder (RR-US300) to record conversations. Data analysis followed the Huberman model (2014), which analyses organic rice farming practices carried out by the Indah Sakato I and Hidayah farmer groups. The Huberman analysis model consists of three stages: data reduction, data presentation, and data verification. Before reducing the data, the recorded data was transcribed, then analysed using thematic analysis (Maguire & Delahunt, 2017). Conclusions and data interpretation were based on theme classification, followed by data presentation and verification

RESULT AND DISCUSSION

Existing Conditions of Organic Rice Development in West Sumatra

According to statistical data (2022), West Sumatra Province is ranked among the top 10 rice producers in Indonesia. In 2022, rice production reached 1,317,209 tons of Milled Dry Rice (GKB), with a cultivated area of 272,392 hectares. Padang Pariaman Regency is one of the regions with the largest rice paddies in West Sumatra, covering an area of 25,461 hectares and producing 115,529 tons of GKB. Based on this data, it can be assumed that Padang Pariaman has significant potential to become a central hub for organic rice cultivation.

According to data from the Organic Certification Agency (SLO) of West Sumatra, between 2016 and 2018, there were 19 farmer groups certified by SLO, with a total organic rice area of 136.6 hectares. Padang Pariaman Regency ranks second in terms of organic rice acreage, with a total area of 32,935 hectares, after 50 Kota Regency (37.31 hectares). Within Padang Pariaman, Batang Anai District holds the largest organic

rice area.

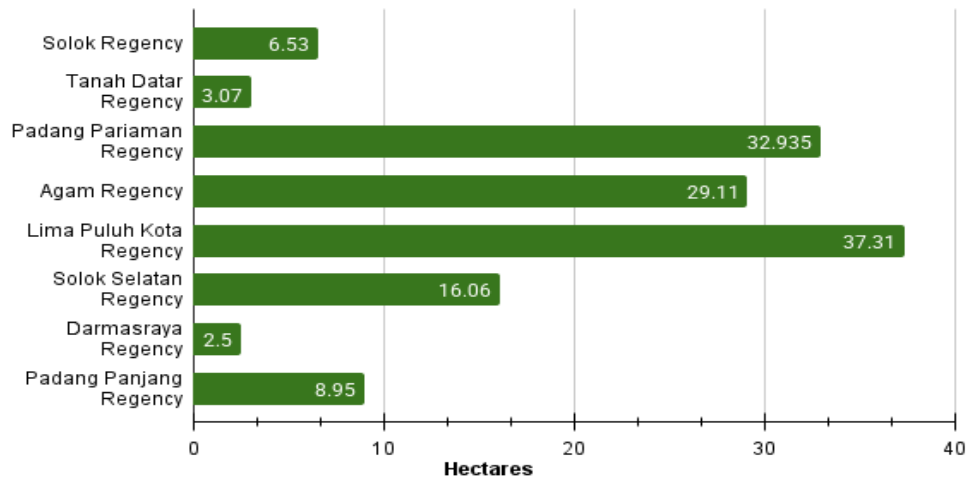


Figure 1. Data on the Area of Organic Rice Certified by the Organic Certification Agency (LSO) of West Sumatra in West Sumatra Province from 2016 to 2018.

Source: Organic Certification Agency (LSO) of West Sumatra, 2019.

Due to its status as the area with the largest organic rice cultivation in Padang Pariaman Regency, Batang Anai District has become the centre for organic rice development. Extension programs and training related to organic rice farming have been implemented, but the actual practice of organic rice farming remains limited. According to the Organic Certification Agency (LSO) of West Sumatra's report from 2016-2018, the total area of certified organic rice land reached 24.32 hectares, with varying land sizes among the farmers. Figure 2 illustrates the research location map in Batang Anai District.

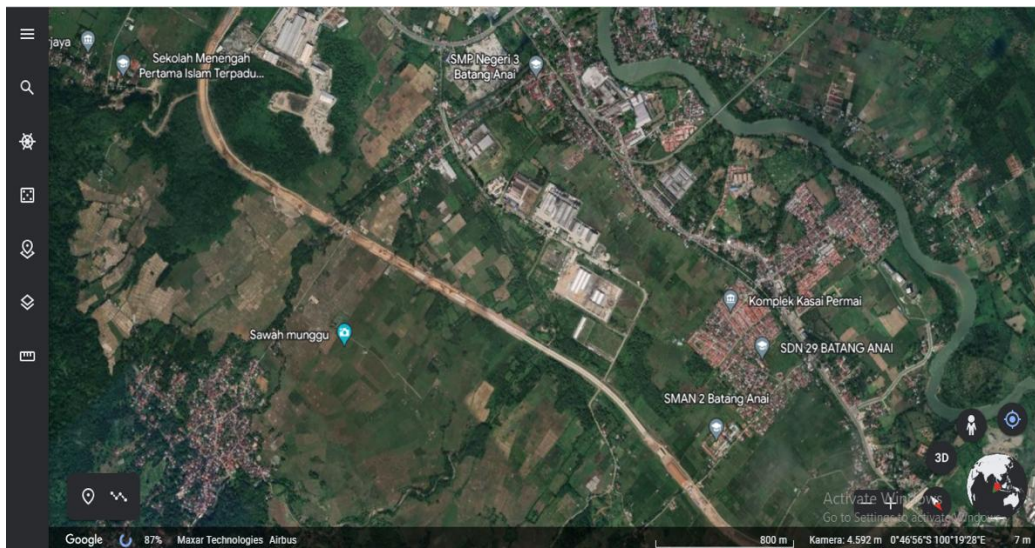


Figure 2. Map of the Research Location in Batang Anai District.

Source: Google Earth, 2024

The development of organic rice farming in Padang Pariaman Regency shows a positive trend, albeit slow, but still competitive. Therefore, it is important to conduct this research to improve the development of organic rice farming in Batang Anai District specifically and in West Sumatra in general. Data and

information on constraints and challenges were collected at the farmer group level, as the key actors in this process. The aim of this study is to explore the supporting factors and challenges in organic rice farming development.

For data collection, farmers were categorized into two groups: 1) Farmers who consistently practice organic rice farming and members who still implement organic farming practices, and 2) Farmers who have received organic certification but have returned to conventional rice farming, along with members who have also switched to conventional farming. Data collection also involved the head of the Agriculture Extension Centre (BPP), who is responsible for the program at the district level, and field extension officers who directly interact with farmers and farmer groups.

The development of organic rice farming in Batang Anai District has gone through a gradual process full of dynamics, in line with the opportunities and prospects for growth, as well as the challenges faced by organic farmers and the key players involved in organic farming. According to the head of the Indah Sakato I farmer group, he attended organic rice training in 1991, sponsored by the Food and Agriculture Organization (FAO). After attending this training, he became a pioneering organic farmer. Since acquiring knowledge about organic rice farming, he started practicing it. In 2010, the Indonesian government began launching a national organic farming program. As a farmer who is aware of the benefits of organic farming, he also encouraged and promoted organic rice farming within his farmer community.

According to the head of the Indah Sakato I farmer group, the group was established long before the national organic farming program was introduced. The Indah Sakato I farmer group consists of 20 members, but only 9 are active. In 2015, the group applied for organic certification, and by 2016, they had successfully obtained it. The total area of land certified for organic farming was 11 hectares (2016-2019), and the SLO certification was renewed until 2025. The farmers manage approximately 28 hectares of land, but only 11 members registered their land for organic farming. The Indah Sakato I farmer group continues to extend their organic certification until 2025, with the area under management increasing to 12.045 hectares. The organic rice fields are located in lowland areas at an elevation of 12-15 meters above sea level, with flat terrain.



Figure 3. Map of the Organic Rice Fields of the Indah Sakato I Farmer Group.

Source: Google Earth, 2024

The members of the group are family members and live around the farmland. According to the head of the Indah Sakato I group, much farmland is still available, and all the land managed by the group is state-owned land. The organic rice farming practices followed by the group comply with SNI-6729-2016, which was

issued by the National Standardization Agency. The organic rice farming implemented by the Indah Sakato group follows SNI 6729-2016, and certification renewals are continually carried out because each member understands organic farming practices and has their own certified organic rice plots labelled with their respective names.

Interview excerpt with the head of the group is as follows:

"The members of the Indah Sakato I farmer group initially numbered 11, but due to some members passing away, the number has reduced to 9, although the area of organic rice remains the same. The first SLO certification was obtained for the period 2016-2019, and was then extended from 2019-2023. The subsequent extension is valid from 2023-2026. Initially, the certified organic rice area was approximately 11 hectares, and after the second extension, it increased to about 12.045 hectares. While the number of organic rice farmer members has decreased, the area of organic rice cultivation has expanded, including Blocks A, B, D, and E, and even land under the toll area has now been certified, leading to the increase in organic rice farmland. The land management is carried out by the family: father, mother, and children. My children manage Blocks A and B, while Block D is managed by other members. I personally manage Block I. As for irrigation, during the soil preparation phase, the land is flooded to a depth of 5-7 cm, with water pipes adjusted accordingly. During planting, the water level in the ditches surrounding the rice fields is maintained until the first weed control (14-20 days after planting). Two to three days before the first weed control, the land is flooded again to a height of 2-3 cm, while ensuring the soil is not overly saturated until the second weed control. When the rice reaches its maximum preparing stage (45-60 days after planting), the field is flooded again to a water height of over 5 cm until two weeks before harvesting. Two weeks before harvest, when the grains start to ripen and turn yellow, the water is drained to ensure uniform ripening of the rice, which facilitates the harvesting process." (Source: Head of Indah Sakato Group, 2023)

Based on the information above, it can be concluded that the farmer group has successfully produced organic rice for three (3) consecutive periods of organic rice certification extensions. Several factors support the extension of the organic rice certification, such as: adequate land area, sufficient knowledge that positively impacts the increased commitment of group members to expand their organic rice fields, and the availability of dedicated land for organic farming that is sufficiently distanced from conventional rice fields. Regarding seed use, the farmer group has successfully purified a local rice variety known as "*Kuriak*."

The group members are also capable of producing liquid organic fertilizer (POC). The use of POC on rice fields has proven effective in improving soil quality and functioning as a botanical pesticide to control pests. Natural materials such as coconut husks and sawdust are fermented, and the liquid is extracted, while beneficial bacteria are naturally available. In fertile land, animals such as earthworms and eels thrive in the rice fields, which act as catalysts that help enhance soil fertility. For example, earthworms can create gaps or pores in the soil, aiding the development of natural bio composers. The group also makes Microorganism Liquid (MOL) using bamboo leaves and adding brown sugar as a composer. However, some members still make compost using animal manure. The use of natural compost not only provides nutrients for the plants but also helps preserve the soil and the surrounding environment. Halberg (2012) concluded that organic farming has demonstrated advantages in resource use efficiency and agricultural environmental performance, which are critical from the perspective of optimizing local inputs and ensuring the sustainability of resources.

The Hidayah Farmers Group consists of 30 members with a total of 42 hectares of land. Between 2016 and 2019, the group obtained organic rice certification but did not renew it. Several challenges faced by this group include: the group's management being unable to handle certification without the assistance of extension workers, members not being motivated to continue organic rice farming because their land is not specifically dedicated to organic farming and is mixed with conventional rice fields, dependency on government aid, weak institutional capacity, and insufficient experience, which has led to low independence and commitment among members.

The role of extension services as program assistants was limited to the duration of the program, meaning information exchange regarding farming practices did not take place. In contrast, at the Indah Sakato I Farmer Group, even without an extension worker, they continued practicing organic rice farming. The experience of the group's leader and the constant desire to learn from nature, guided by the principle "nature is the best teacher," helped enhance the leader's and members' skills in organic farming practices that align with the surrounding natural environment. Information exchange also took place when young farmers were sent to attend training, and knowledge was disseminated among members, leaders, and extension workers. This sharing of information also extended to family members involved in rice farming.

However, the situation was different at the Hidayah Farmers Group, where there was no information exchange, and collaboration among members was lacking. As a result, each member worked on their land based on the knowledge passed down from their parents. In general, the area of organic rice fields in Batang Anai District is diverse. The average area of land used for organic farming ranges from 500 m² to a maximum of 2 hectares, with varying land status. The members of the Indah Sakato I group use state-owned land, which can be used temporarily, meaning that it may be returned voluntarily if the government needs it for state purposes. In contrast, the Hidayah Farmers Group uses *Nagari* land, either of low or high ancestral status. Therefore, the land use rights also influence the management of agricultural land.

Supporting Natural Resources and Strategic Environment

Several strategic issues were captured during discussions, interviews with participants, and in-depth interviews with farmers and group leaders. These key issues support the existence of a growing market for organic commodities.

1. Initiation of Organic Rice Cultivation System through the Integrated Pest Management Field School Program (SLHPT)

The extension program and field schools are initiatives from the agricultural service conducted by BPP in the process of assisting and supervising farmer groups in applying organic farming practices. The Integrated Pest Management (IPM) system is very suitable for farmers because it can reduce the cost of using chemical pesticides. The IPM system optimizes the use of natural predators to control pests. The principles of IPM strongly support the realization of organic farming. By gradually reducing the use of synthetic fertilizers and pesticides, it can reduce or even eliminate chemical residues in the soil.

2. Transformative Leadership Model and Adaptive Farmer Groups

To produce high-quality organic rice, a responsive leader with a forward-thinking vision is needed, supported by members who can adapt to the demands of the times. Producing quality products requires standardization with very detailed processes and traceability, discipline, and good cooperation among business actors. Standardization is difficult to achieve if it involves many people and is done independently. To build good cooperation, the influence of the group leader ensures the success of the group in implementing farming according to SNI 6729-2016. Furthermore, leaders with organizational experience and a forward-thinking vision will create new ideas. Consistency in achieving their mission and vision will drive innovation until the group becomes independent. Transformative leaders must be role models for the group they lead. In Indah Sakato I Farmers Group, Mr. Marsilan has played a transformative role by leading the group and the organic rice area as an organic centre for several decades. The group, led by Mr. Marsilan, continues to have a high commitment to organic farming, even though the national organic farming program has not continued. According to research (Yulinda, 2024), the factors of role modelling and respect for the leader will increase loyalty, which will function to maintain harmony and the independence of the group. This leadership attitude is reflected in Mr. Marsilan, who was able to create independence and was a visionary leader responsive to changes in the times.

3. Support from Stakeholders Involved in the Development of Organic Farming

Multi-stakeholder involvement is crucial in the development of organic farming, such as the provincial and district agricultural offices, farmer group leaders, extension workers, and farmer groups. Table 1 outlines the roles of stakeholders, the forms of their contributions, and the nature of those contributions.

Table 1. Types of Stakeholders, Forms of Contribution, and Nature of Contribution

Stakeholder	Form of Contribution	Form of Contribution
Department of Agriculture, Padang Pariaman Regency	Assistance, Facilities Product Promotion/Exhibition	Regular
Farmer Group Leader & Field Agricultural Extension Officer	Extension and Assistance, Product Promotion	Regular
Farmer Group	Meetings and Training Marketing and Product Coordination	Regular

Source: Primary Data Analysis, 2023

4. Economic Benefits for Members

Organic rice products will have economic value if the products can penetrate the market on a larger scale. As public awareness of healthy and quality food increases, it directly affects the price and opens up broader markets. To guarantee the quality of organic rice, Mr. Marsilan, as the group leader, has innovated in maintaining rice seed availability by purifying local varieties for group use. Additionally, Mr. Marsilan continues to develop local knowledge in the use of organic fertilizers such as POC and compost using local resources. The consistency of the organic rice products from the Sakato I farmer group ensures that the rice is always in demand by consumers in large quantities.

5. Market Network Expansion

For market networks, the Sakato I farmer group has not been very intensive. The rice produced by the group is directly ordered by consumers such as the government, market traders, and the public. Although the internet has reached the village, there is a lack of resources within the group for the digitalization of their products. Despite not having an online marketing system, telecommunications media like WhatsApp are commonly used by all group members.

6. Commodity Certification Testing

To increase consumer trust, it is important to carry out commodity testing. The Sakato I farmer group has passed the certification test by SLO Sumatera Barat, so it can be assumed that the organic rice has passed the required tests. By conducting commodity testing and certification, the quality of the organic rice can be maintained, which in turn will gain consumer trust. The nutrition in the organic rice produced by the Sakato I farmer group is of high quality, resulting in rice that does not spoil easily and can last up to three (3) days without special treatment.

7. Support from Natural Resource and Environmental Potential

The location of the farming area, which is far from residential areas, and the adequate water supply are very supportive for organic farming. The lack of industrial development in the area can reduce the potential for water pollution, making the empowerment of organic rice production more effective and efficient.

Problematics and Obstacles at the Implementation Level Among Farmer Communities

There are still challenges in the development of organic rice farming in both farmer groups that require

strategies and solutions for future development. Some of the issues in organic rice farming development include:

1. Product Quality Standards Among Members

There is no standardization of organic rice product quality within the farmer groups. Several factors contribute to differences in the quality of the rice produced, such as land conditions, irrigation channels, human resource quality, and varying leadership within the group, all of which impact the quality of organic rice. If product standardization is not achieved, it will be a barrier to meeting the demand for organic rice that adheres to the agreed-upon SNI standards, thus limiting opportunities to meet local and national market demands.

2. Price Fluctuations Among Organic Farmers

The price of organic rice sold by producers also varies, as this is influenced by the different costs incurred by each farmer and the diversity of consumers. The growing potential of the organic market presents a great opportunity for price uniformity at the producer level, and it could lead to an agreement on a collective price with strategic partners.

3. Limited Availability of Organic Seeds

The availability of seeds in the market is another obstacle to the development of organic farming, making it difficult to ensure product quality. Currently, there are no corporations or seed producers offering certified, high-quality seeds. This issue of seed availability in the market that farmers can access remains a strategic concern.

For the development of organic rice cultivation in the Indah Sakato I farmer group, Mr. Marsilan has addressed the seed availability issue by developing seedbeds on his own organic rice plot and improving local varieties. The seeds produced from Mr. Marsilan's land are distributed to group members. Mr. Marsilan also teaches members how to produce their own seeds individually, so they can use them on their own plots. With decades of experience, Mr. Marsilan has been able to persevere and maintain a strong commitment to producing healthy and affordable food to meet local community needs. According to him, the organic rice he produces is sold to local residents at a price lower than conventional rice, with the aim of helping the surrounding community consume organic rice. Mr. Marsilan believes that his organic rice helps reduce production costs, particularly in terms of fertilizers and chemical pesticides, which allows him to sell organic rice at a lower price than conventional rice.

Organic Certification Strategy

To obtain organic certification, farmers must adhere to established standards outlined in a guidebook that must be understood and implemented during organic farming practices. Farmers in the Batang Anai District are already aware that organic farming prohibits the use of chemicals and, technically, follow the SNI 6729-2016 guidelines. Farmers must obtain certification from SLO for products processed through organic production. Organic certification is granted when farming practices align with the guidelines. However, some farmers are still in the transition process from conventional to organic, where they set up barriers between conventional and organic lands, use filtration systems for water entering the rice fields, and improve soil fertility by applying natural materials.

Despite most farmers understanding organic farming, some still use chemical fertilizers, believing that bio-fertilizer function similarly to add nitrogen (N), phosphorus (P), and potassium (K) to the soil. For certified seeds, many farmers still do not use certified seeds because they are either not available in the market or are too expensive. Consequently, farmers often use uncertified organic seeds as long as they are not

genetically modified.

In organic farming, it is essential to keep records of farm activities to track the inputs used on the organic rice fields. When applying for certification, farm records are assessed to determine if the inputs used on the field align with organic standards. Without proper farm records, it is assumed that the farmer lacks adequate knowledge in farm management and financial practices for organic rice cultivation.

Water management is crucial for organic rice cultivation, as the water used must be free from chemicals. Water can become contaminated due to frequent inflow from agricultural areas, potentially leading to contamination. To avoid this, farmers must implement water filtration systems before it enters the fields.

Strategies for Accelerating Organic Rice Development in Batang Anai:

1. Innovation in Local Variety Development and Diversification

The use and development of local varieties can prevent new crop diseases caused by introducing new varieties to a new location. This also helps meet the demand for organic rice seeds. Innovation in local varieties will create new markets for local and national organic farmers. The scarcity of seeds often disrupts organic rice farming, but this can be resolved by establishing local seed centres with high-quality or certified varieties.

Mr. Marsilan's group has worked on purifying organic rice seeds. For the quality of organic rice that meets SNI 6729-2016 standards, Mr. Marsilan continuously innovates and develops new varieties. In 2016, the group used the "*Anak Daro*" variety but now uses the "*Kuriak*" variety. In 2013, Mr. Marsilan initiated the seed purification process with government funding and assistance from the Department of Agriculture. This seed purification resulted in the "*Kuriak*" variety, which is still used today. According to Mr. Marsilan, it is essential to use local varieties to avoid crop failures and the introduction of new pests.

2. Product Standardization with Fresh Plant Origin Product Certification (PSAT)

The organic rice produced by the Indah Sakato I farmer group is already marketed by the West Sumatra Food Service, but PSAT testing from the Ministry of Agriculture is necessary to increase market opportunities and guarantee product quality. The improvement in product quality and PSAT testing will enhance the economic value of the organic rice produced. This strategy aims to help increase the selling price of the products.

3. Modernization of Organic Rice Production Equipment

The organic rice milling process has been automated with the use of machines. The rice milling is carried out at Mr. Marsilan's Rice Milling Unit (RMU), which is specifically for organic rice. However, the drying and packaging processes are still manual. This affects the rice's quality, as the storage space is humid, and the sack packaging does not ensure cleanliness, posing challenges to improving the quality of organic rice produced.

The modernization of rice production machinery is designed to improve production quality and reduce risks. For example, using a rice dryer will allow production to continue during the rainy season. Additionally, using sorting machines to separate impurities from the rice will enhance the cleanliness of the organic rice produced.

CONCLUSION

The concept of organic development is an agricultural cultivation concept that is environmentally friendly and produces food that is safe for human consumption. Organic rice is a food product that has received significant attention from the Indonesian government. Organic agricultural development receives full

support from the government because it includes training activities, production methods, and strict cultivation procedures that must be followed. In addition, it must focus on improving health, safety, and the sustainability of agricultural land, which will contribute to the country's sustainable development.

The development of organic rice cultivation in Batang Anai District has been declining. Although there has been a decrease in production at the district level, many farmer groups still practice independent cultivation. Supporting factors for farmers to continue producing organic rice include: a) Experience of group leaders to remain committed to continuing organic rice cultivation, b) Farmers' willingness to share knowledge and good regeneration between older and younger farmers, c) Transformative, innovative, and visionary leadership that can bring about changes in farmer groups; developing innovative ideas and motivating members to work towards better results, and being open to change.

Challenges found in the development of organic rice include: unsustainable program implementation and inconsistent assistance. This has led to a decline in organic rice production because farmers have returned to conventional farming. Standardization of product quality is difficult to achieve among farmer groups, there is fluctuation in prices among farmers, and certified organic seeds are not available. The cost of organic certification is very high, which burdens farmer groups with small average land holdings.

Opportunities and strategies for the development of organic agriculture in Batang Anai District that need to be implemented include activities such as: innovation in the development of local varieties and variety diversification, standardization of Fresh Products from Plants (PSAT), initiating development efforts, and modernizing high-quality organic rice production equipment.

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REFERENCES

- Badan Pusat Statistik (BPS) Sumatera Barat. 2023. Luas Panen dan Produksi Padi di Provinsi Sumatera Barat 2022. Badan Pusat Statistik Provinsi Sumatera Barat. <https://sumbar.bps.go.id/id/publication/2023/09/05/fcf9062201dbb8bd3850e316/luas-panen-dan-produksi-padi-di-provinsi-sumatera-barat-2022.html>
- Halberg, N. (2012). Assessment of the environmental sustainability of organic farming: Definitions, indicators and the major challenges. *Canadian Journal of Plant Science*, 92(6), 981-996.
- Huberman, A. (2014). Qualitative data analysis a methods sourcebook.
- Imani, F., Charina, A., Karyani, T., & Mukti, G. W. (2018). Penerapan sistem pertanian organik di kelompok tani mekar tani jaya Desa Cibodas Kabupaten Bandung Barat. *Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis*, 4(2), 139-152.
- Jahroh, S. 2010. Organic Farming Development in Indonesia: Lessons Learned from Organic Farming in West Java and North Sumatra. *Innovation and Sustainable Development in Agriculture and Food (ISDA) Montpellier*. June 28-30: 1-11.
- Laporan Kelompok tani Indah Sakato I. 2022. Petakan Sawah Kelompok Tani Padi Organik Indah sakato i. <https://www.google.com/maps/d/u/0/edit?mid=1s0gi7zurt18-ktjallaps7wgndccilc&ll=0.7692636897335574%2c100.31020111914061&z=13>
- Lembaga Sertifikasi Organik Sumatera Barat. 2019. Data Luas Padi Organik yang Telah di Sertifikasi Oleh

LSO Sumatera Barat di Provinsi Sumatera Barat Tahun 2016-2018.

- Maguire, M., & Delahunt, B. (2017). Doing a Thematic Analysis: a practical, Step-by-Step guide for learning and teaching scholars. In *Dundalk Institute of Technology, AISHE-J: Vol. Volume 8 (Issue Number 3, pp. 3351–3354)*. <http://ojs.aishe.org/index.php/aishe-j/article/view/335>
- Mahmuddin, M. (2013). Paradigma Pembangunan Pertanian: Pertanian Berkelanjutan Berbasis Petani Dalam Perspektif Sosiologis. *Jurnal Sosiologi USK (Media Pemikiran & Aplikasi)*, 3(1), 59-76.
- Permatasari, P., & SapjaAnantanyu, W. S. D. (2018). Pengaruh karakteristik inovasi terhadap perubahan perilaku petani padi organik di Kabupaten Boyolali. *Paper presented at the Seminar Nasional Dalam Rangka Dies Natalis UNS*.
- Pusat Data dan Sistem Informasi Pertanian. 2021. Buletin Konsumsi Pangan Volume 12 Nomor 1 Tahun 2021. Kementrian Pertanian. Jakarta.
- Septiadi, D., & Mundiya, A. I. (2020). Strategi pengembangan usaha tani sayuran berbasis pertanian organik. *Agrifo: Jurnal Agribisnis Universitas Malikussaleh*, 5(1), 35-43.
- Sinambela, B. R. (2024). Dampak penggunaan pestisida dalam kegiatan pertanian terhadap lingkungan hidup dan kesehatan. *Agrotek: Jurnal Ilmiah Ilmu Pertanian*, 8(2), 178-187.
- Siregar, M. A. R. (2023). Peran Pertanian Organik Dalam Mewujudkan Keberlanjutan Lingkungan Dan Kesehatan Masyarakat.
- Spangler et.al.2012.Are organic foods safer or healthier than conventional alternatives?.*Annals of Internal Medicine*.doi: 157:348-366
- Yulinda. 2024. Tanah Ulayat dan Percepatan Pembangunan nagari: Skema Perhutanan Sosial berdasarkan adat di Sumatera Barat. Yonariza & Melinda (Ed.). *Pembangunan Pertanian Berkelanjutan dalam perspektif Sosial, Ekonomi dan Politik* (Eds 1st pp. 175-203). Andalas University.