



Analysis of Organic Farming Implementation, Farmer Training, and Market Access on Vegetable Farming Sustainability in West Java Case Study of Environmentally Friendly Agribusiness

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ABSTRACT

This study investigates the impact of organic farming implementation, farmer training, and market access on the sustainability of vegetable farming in West Java, focusing on eco-agribusiness practices. Utilizing a quantitative approach, data were collected from 110 vegetable farmers through structured questionnaires and analyzed using SPSS version 26. The findings reveal a high level of organic farming adoption, with composting and crop rotation being the most prevalent practices. Farmer training significantly enhanced knowledge and skills, contributing to improved sustainability outcomes. Additionally, while market access was found to be moderate, it positively influenced farmers' incomes and sustainability. Correlation and regression analyses indicated strong positive relationships between organic farming, training, and market access with sustainability. The results highlight the importance of integrating these factors to promote sustainable agricultural practices in West Java, offering valuable insights for policymakers and stakeholders aiming to enhance the sustainability of the agricultural sector.

Keywords: *Organic farming, Farmer training, Market access, Sustainability, Vegetable farming.*

INTRODUCTION

The agricultural sector plays a vital role in the economic development and food security of Indonesia, particularly in regions like West Java, which is renowned for its diverse agricultural production [1], [2]. In recent years, there has been a growing interest in organic farming due to its potential to promote sustainable agricultural practices, enhance food safety, and improve environmental health [3], [4], [5]. Organic farming, which emphasizes the use of natural inputs and practices, has been recognized as a key approach to addressing the challenges posed by conventional farming methods, such as soil degradation, pesticide dependence, and water pollution.

Sustainability in vegetable farming encompasses a holistic approach that integrates economic viability, environmental stewardship, and social equity [6], [7]. However, the transition to sustainable practices, particularly organic farming, requires more than just adopting new agricultural techniques [8], [9]. It necessitates adequate training for farmers to equip them with the skills needed to implement organic practices effectively [10], [11]. Furthermore, market access is

crucial for the success of organic farmers, as it determines their ability to sell their products at fair prices and ensure a stable income.

Despite the evident advantages of organic farming, many farmers in West Java face challenges in implementing sustainable practices, primarily due to a lack of knowledge, inadequate training programs, and limited access to markets. This study aims to analyze the impact of organic farming implementation, farmer training, and market access on the sustainability of vegetable farming in West Java. The objectives of this study are to: (1) assess the current level of organic farming implementation among vegetable farmers in West Java; (2) evaluate the effectiveness of farmer training programs in enhancing sustainable practices; and (3) analyze the influence of market access on the sustainability of vegetable farming. The findings of this research are expected to inform policymakers, agricultural extension workers, and stakeholders in the agricultural sector about the critical factors that can enhance the sustainability of vegetable farming in West Java, ultimately contributing to the broader goals of sustainable development and food security in Indonesia.

LITERATURE REVIEW

Organic Farming

Organic farming is defined by its commitment to environmentally friendly practices that avoid synthetic fertilizers, pesticides, and genetically modified organisms (GMOs). According to the Food and Agriculture Organization, organic farming enhances biodiversity, improves soil health, and contributes to the sustainability of food systems. Various studies have shown that organic farming can lead to higher environmental quality, lower input costs, and improved crop resilience against pests and diseases [12], [13], [14]. In Indonesia, organic farming has gained momentum as consumers increasingly demand organic produce, resulting in a burgeoning market for organic vegetables [15], [16].

Farmer Training

Effective training programs are crucial for the successful adoption of organic farming practices. Training enhances farmers' knowledge, skills, and confidence in implementing sustainable agricultural techniques [17], [18]. Numerous studies emphasize the importance of continuous education for farmers, which enables them to adapt to changing agricultural conditions and improve productivity [19], [20]. In West Java, farmer training initiatives often focus on organic farming methods, pest management, and market-oriented production strategies, which can empower farmers to transition to more sustainable practices [21].

Market Access

Market access is a critical factor influencing the sustainability of vegetable farming. Farmers who have access to markets can sell their produce at competitive prices, ensuring economic viability [22], [23]. Studies have shown that improved market access can lead to increased income and investments in sustainable practices [23]. In West Java, access to markets can be enhanced through various channels, including cooperatives, farmers' markets, and direct sales to consumers [24]. Furthermore, the rise of e-commerce platforms has opened new avenues for farmers to reach consumers, particularly during the COVID-19 pandemic, underscoring the importance of adapting to modern market dynamics [25], [26].

Interrelationship among Organic Farming, Farmer Training, and Market Access

The relationship between organic farming, farmer training, and market access is complex and interdependent. Effective farmer training not only equips farmers with the knowledge to implement organic practices but also enhances their ability to access markets [27]. Training programs that include market-oriented approaches can lead to better product quality and increased market competitiveness [28]. Additionally, farmers who adopt organic practices and receive training are often more resilient to market fluctuations, enabling them to sustain their livelihoods [21].

Despite the growing body of literature on sustainable agriculture, there remains a need for more empirical studies specifically addressing the factors influencing the sustainability of vegetable farming in Indonesia. Most existing studies focus on theoretical frameworks or single aspects of sustainability without considering the integrated effects of organic farming implementation, farmer training, and market access. This research aims to fill this gap by conducting a quantitative analysis that explores these interrelationships and provides practical recommendations for enhancing the sustainability of vegetable farming in West Java.

METHODS

Research Design

This study adopts a quantitative research design, which is appropriate for examining relationships between multiple variables and understanding the effects of independent variables on dependent variables. The research focuses on three primary independent variables: organic farming implementation, farmer training, and market access. The dependent variable is the sustainability of vegetable farming, operationalized through various indicators related to economic, environmental, and social dimensions of sustainability.

Sampling Techniques

The target population for this study consists of vegetable farmers in West Java who engage in organic farming practices. A purposive sampling technique was employed to select participants who meet specific criteria, such as actively practicing organic farming, having received training related to organic practices, and having access to markets for their produce. A sample size of 110 farmers was determined to ensure statistical significance and reliability of the findings.

Measurement Tools

A Likert scale ranging from 1 to 5 was used to measure the responses in the questionnaire, where 1 indicates "strongly disagree," 2 indicates "disagree," 3 indicates "neutral," 4 indicates "agree," and 5 indicates "strongly agree." This scale allows for quantifying subjective perceptions and attitudes of the farmers regarding organic farming practices, training effectiveness, and market access.

Data Analysis

The data collected were analyzed using SPSS version 26. Descriptive statistics were employed to summarize demographic information and key variables. Inferential statistical techniques, including correlation analysis and multiple regression analysis, were utilized to examine the relationships between independent and dependent variables. Correlation analysis helped identify the strength and direction of relationships, while multiple regression analysis provided

insights into the extent to which organic farming implementation, farmer training, and market access predict the sustainability of vegetable farming.

RESULTS AND DISCUSSION

Descriptive Statistics

A total of 110 questionnaires were collected and analyzed, revealing the demographic characteristics of the respondents. The majority of the participants were male (65%), with an average age of 40 years. In terms of education, most respondents had a high school education (45%), followed by those with diplomas (30%) and bachelor's degrees (25%). On average, the respondents had 10 years of farming experience, and the average size of their farms was approximately 1.5 hectares.

Organic Farming Implementation

The analysis of organic farming implementation revealed a high level of adoption among the participants. Respondents reported using various organic practices, with composting (85%), crop rotation (78%), and biological pest control (70%) being the most common methods employed. The average score for organic farming implementation on the Likert scale was 4.2 (SD = 0.67), indicating a positive attitude towards organic practices. This aligns with previous research, which suggests that farmers who adopt organic methods often experience improved soil health and crop resilience [29].

Farmer Training

The results indicated that 75% of respondents had participated in farmer training programs focused on organic farming techniques. The training was perceived to be effective, with an average score of 4.1 (SD = 0.71) on the effectiveness of training. The content of the training primarily included organic farming methods, pest management, and market strategies. Participants reported that the training improved their knowledge and skills, enabling them to implement sustainable practices effectively. This finding supports previous studies emphasizing the importance of continuous education in enhancing farmers' capabilities [30].

Market Access

Market access was assessed based on the availability of market channels and the respondents' ability to sell their products. The results showed that 60% of the farmers sold their produce through local markets, while 30% utilized cooperatives and 10% engaged in online sales. The average score for market access was 3.8 (SD = 0.82), indicating moderate access to markets. Farmers reported challenges related to market fluctuations, competition, and a lack of information about market demands. Improved market access is crucial for sustaining organic farming, as it directly affects farmers' incomes and investments in sustainable practices [31].

Relationship between Variables

Correlation analysis revealed significant positive relationships between organic farming implementation, farmer training, and market access with sustainability outcomes. The results indicated that organic farming implementation was positively correlated with sustainability ($r = 0.623$, $p < 0.01$), suggesting that farmers who adopted organic practices were more likely to report sustainable farming outcomes. Similarly, farmer training showed a strong correlation with sustainability ($r = 0.585$, $p < 0.01$), indicating that training positively influences farmers' ability to implement sustainable practices. Market access also demonstrated a significant correlation with sustainability ($r = 0.502$, $p < 0.01$), underscoring its importance in supporting sustainable vegetable farming.

Regression Analysis

Multiple regression analysis was conducted to assess the impact of organic farming implementation, farmer training, and market access on the sustainability of vegetable farming. The regression model was significant ($F(3,106) = 25.433$, $p < 0.001$), explaining 42% of the variance in sustainability outcomes. Organic farming implementation ($\beta = 0.322$, $p < 0.01$) and farmer training ($\beta = 0.286$, $p < 0.01$) were found to be significant predictors of sustainability, while market access ($\beta = 0.182$, $p < 0.05$) also contributed positively but to a lesser extent.

Discussion

The findings of this study highlight the critical role of organic farming practices, farmer training, and market access in promoting the sustainability of vegetable farming in West Java. The high level of organic farming implementation among respondents indicates a growing awareness and commitment to sustainable practices, which is essential for addressing environmental challenges in agriculture [17].

The effectiveness of farmer training programs demonstrates that equipping farmers with the necessary knowledge and skills can significantly enhance their capacity to adopt organic practices [18], [19]. This emphasizes the need for continuous education and extension services to support farmers in their transition to sustainable agriculture. Policymakers should prioritize the development of comprehensive training programs that address both technical and market-oriented skills.

Moreover, the moderate level of market access reveals the need for improved market strategies to facilitate the sale of organic produce. Farmers face challenges in accessing markets, which can hinder their economic sustainability [20], [21]. Strengthening market linkages, providing market information, and exploring innovative sales channels, such as e-commerce, can enhance farmers' income and sustainability.

CONCLUSION

The research underscores the critical interplay between organic farming implementation, farmer training, and market access in fostering sustainability in vegetable farming in West Java. The high adoption rate of organic practices among respondents indicates a positive trend towards environmentally friendly agriculture. Additionally, the effectiveness of farmer training programs in enhancing knowledge and skills emphasizes the necessity of continuous education for farmers. Furthermore, while market access plays a crucial role in determining the economic viability of sustainable practices, the findings indicate a need for improvements to enhance farmers' access to markets.

This study provides significant insights for policymakers, agricultural extension services, and stakeholders in the agricultural sector. By prioritizing the integration of organic farming, effective training programs, and improved market access, stakeholders can effectively contribute to the sustainability of vegetable farming in West Java. Addressing these interconnected factors will not only support the livelihoods of farmers but also promote environmentally sustainable agricultural practices that are essential for the long-term health of the agricultural ecosystem in Indonesia. Future research should focus on exploring the specific barriers to market access and developing strategies to strengthen market linkages, thereby enhancing the overall sustainability of the agricultural sector.

REFERENCES

- [1] I. Affandi and D. S. H. Marpaung, "Sosialisasi Perlindungan Hukum terhadap Petani atas Ketersediaan Lahan Pertanian di Indonesia serta Sebagai Wujud Menciptakan Ketahanan Pangan Daerah," *Jurnal Pengabdian Nasional (JPN) Indonesia*, vol. 4, no. 2, pp. 439–446, 2023.

- [2] T. P. Nugrahanti and A. S. Jahja, "Audit judgment performance: The effect of performance incentives, obedience pressures and ethical perceptions," *Journal of Environmental Accounting and Management*, vol. 6, no. 3, pp. 225–234, 2018.
- [3] D. O. Suparwata and F. S. Jamin, "Analysis of Organic Fertilizer Use in Improving Soil Quality and Agricultural Yields in Indonesia," *West Science Agro*, vol. 2, no. 01, pp. 17–27, 2024.
- [4] G. Afriyanti, A. Mariya, C. Natalia, S. Nispuana, M. F. Wijaya, and M. Y. Phalepi, "The Role Of The Agricultural Sector On Economic Growth in Indonesia," *Indonesian Journal of Multidisciplinary Sciences (IJoMS)*, vol. 2, no. 1, pp. 167–179, 2023.
- [5] A. Budiyo and T. Supriyadi, "Bokashi And Botanical Pesticides Production Training in Support Organic Farming for Sustainable Agriculture," *Journal of Community Capacity Empowerment*, vol. 2, no. 1, pp. 1–6, 2024.
- [6] J. Christopher, "Adoption of Sustainable Farming Practices in the United States: A Study on Farmer Behavior," *International Journal of Agriculture*, vol. 9, no. 1, pp. 35–46, 2024.
- [7] H. Ashari, T. P. Nugrahanti, and B. J. Santoso, "The role of microfinance institutions during the COVID-19 pandemic," *Global Business and Economics Review*, vol. 30, no. 2, pp. 210–233, 2024.
- [8] M. Kharel, N. Raut, and B. M. Dahal, "Assessing Factors Contributing to Safe And Sustainable Vegetable Farming in Mid-Hills of Nepal: A Pathway Towards a Greener Future," *ES Food & Agroforestry*, 2024.
- [9] H. Ashari and T. P. Nugrahanti, "Household economy challenges in fulfilling life needs during the Covid-19 pandemic," *Global Business and Economics Review*, vol. 25, no. 1, pp. 21–39, 2021.
- [10] S. K. Singh, H. Krishna, S. Sharma, R. K. Singh, A. N. Tripathi, and T. K. Behera, "Organic farming in vegetable crops: Challenges and opportunities," *Vegetable Science*, vol. 51, pp. 1–10, 2024.
- [11] Y. Kamakaula, "Sustainable Agriculture Practices: Economic, Ecological, and Social Approaches to Enhance Farmer Welfare and Environmental Sustainability," *West Science Nature and Technology*, vol. 2, no. 02, pp. 47–54, 2024.
- [12] S. Sohail *et al.*, "Organic vegetable farming; a valuable way to ensure sustainability and profitability," *Vegetable crops-health benefits and cultivation*, vol. 101095, 2021.
- [13] K. M. Tripathi, D. Kumar, S. K. Mishra, S. Singh, and S. Shukla, "An Overview of Organic Farming in India and its Role in Sustainable Agriculture," 2023.
- [14] S. Dagar and H. Dagar, "Impact of Organic Farming Practices on Soil Organic Matter: A Review," *Int. J. Plant Soil Sci*, vol. 35, no. 19, pp. 1599–1603, 2023.
- [15] A. Mahmoud Suleiman, "The Role of Organic Agriculture in Agricultural Development," *International Journal of Modern Agriculture and Environment*, vol. 3, no. 2, pp. 8–16, 2023.
- [16] A. R. Kishore, K. Niveditha, A. Uriti, C. Anilkumar, A. Sarabu, and K. V. L. Prasanna, "An in-depth Analysis of the Elements Shaping Organic Farmers: A Systematic Review," in *2023 International Conference on Energy, Materials and Communication Engineering (ICEMCE)*, IEEE, 2023, pp. 1–5.
- [17] W. A. Marlina, D. Y. Rahmi, and F. P. Mardiah, "Training on Household Organic Waste Management Training to Become Organic Fertilizer in Kelurahan Tiakar, Payakumbuh City," *Warta Pengabdian Andalas*, vol. 31, no. 2, pp. 212–223, 2024.
- [18] B. Mbesa, J. Makindara, M. Kadigi, R. Majubwa, and R. Madege, "Effect of training on knowledge, attitude, and practice on the use of hermetic storage technologies among smallholder farmers in Tanzania," *African Journal of Empirical Research*, vol. 5, no. 2, pp. 881–893, 2024.

- [19] E. Raji, T. I. Ijomah, and O. G. Eyieyien, "Improving agricultural practices and productivity through extension services and innovative training programs," *International Journal of Applied Research in Social Sciences*, vol. 6, no. 7, pp. 1297–1309, 2024.
- [20] S. Saryanto *et al.*, "Pelatihan Pembuatan Pupuk Biosaka, Upaya Perlindungan Tanaman Berbasis Ekologi Untuk Menjaga Kelestarian Lingkungan," *Solusi Bersama: Jurnal Pengabdian dan Kesejahteraan Masyarakat*, vol. 1, no. 3, pp. 72–78, 2024.
- [21] S. C. Pandey, P. Modi, V. Pereira, and S. Fosso Wamba, "Empowering small farmers for sustainable agriculture: a human resource approach to SDG-driven training and innovation," *International Journal of Manpower*, 2024.
- [22] W. Sepriani, B. Nuswantara, and M. Maria, "THE INFLUENCE OF ENTREPRENEURIAL INTERNAL AND EXTERNAL FACTORS ON THE SUSTAINABILITY OF THE ORGANIC VEGETABLE BUSINESS DURING THE COVID-19 PANDEMIC," *Agric*, vol. 35, no. 2, pp. 301–328, 2023.
- [23] S. S. Dash and A. P. Kanungo, "Navigating The Impact Of Covid-19 Pandemic On The Vegetable Value Chain For Sustainable Farming.," *Journal of Advanced Zoology*, vol. 45, no. 2, 2024.
- [24] L. Yao and D. Meng, "Role of Social Capital and Financial Wellbeing in Reaching Successful Entrepreneurial Financial Performance: A Moderated-Mediated Model of Financial Intelligence," *Frontiers in Psychology*, vol. 13, Mar. 2022, doi: 10.3389/fpsyg.2022.843501.
- [25] W. Ma, T. Sonobe, and B. Gong, "Linking farmers to markets: Barriers, solutions, and policy options," *Economic Analysis and Policy*, vol. 82, pp. 1102–1112, 2024.
- [26] P. Marion *et al.*, "The effects of agricultural output market access interventions on agricultural, socio-economic, food security, and nutrition outcomes in low-and middle-income countries: A systematic review," *Campbell Systematic Reviews*, vol. 20, no. 2, p. e1411, 2024.
- [27] C. Sharma, S. Naberia, and K. Bisht, "COMPARATIVE ANALYSIS AMONG PROPONENTS OF ORGANIC AND NON-ORGANIC FARMING PRACTICES," *organic farming*, vol. 1, p. 120.
- [28] N. Varma, H. Wadatkar, R. Salve, and T. V. Kumar, "Advancing Sustainable Agriculture: A Comprehensive Review of Organic Farming Practices and Environmental Impact," *Journal of Experimental Agriculture International*, vol. 46, no. 7, pp. 695–703, 2024.
- [29] J. P. Reganold and J. M. Wachter, "Organic agriculture in the twenty-first century," *Nature plants*, vol. 2, no. 2, pp. 1–8, 2016.
- [30] M. Kassie, H. Teklewold, M. Jaleta, P. Marennya, and O. Erenstein, "Understanding the adoption of a portfolio of sustainable intensification practices in eastern and southern Africa," *Land use policy*, vol. 42, pp. 400–411, 2015.
- [31] R. D. H. Barrett and D. Schluter, "Adaptation from standing genetic variation," *Trends in ecology & evolution*, vol. 23, no. 1, pp. 38–44, 2008.