



## Designing a Model for the Development of Millennial Farmer Human Resources in the Context of Sustainable Agriculture

Volume 16 Issue 1  
(April, 2025)

e-ISSN 2716-5191  
doi: 10.30997/jsh.v16i1.15858

Vilia Putri Sukmayahya<sup>1a</sup>, Solehudin<sup>1</sup>, Banuara Nadeak<sup>1</sup>, Dede Jajang S<sup>1</sup>

<sup>1</sup>Prodi Magister Manajemen, Universitas Singaperbangsa Karawang, Indonesia

### ARTICLE INFO

**Article history:**

Received: 16-10-2024

Revised version received: 13-12-2024

Accepted: 17-12-2024

Available online: 14 -01-2025

**Keywords:**

Millennial farmers, human resource development, agricultural innovation, farmer regeneration

**How to Cite:**

APA Style 7th

**Corresponding Author:**

Vilia Putri Sukmayahya  
viliaputri.sy@gmail.com

### ABSTRACT

This study aims to design a model for the development of millennial farmer human resources in the context of sustainable agriculture in Subang Regency, West Java. The phenomenon of aging farmers and the declining interest of the younger generation in the agricultural sector are the background of this research. Using the Research and Development (R&D) method with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model approach, this study identifies the characteristics and needs of millennial farmers, designs a human resource development model, and evaluates its effectiveness. The results of the study show that millennial farmers have a high openness to innovation and modern agricultural technology, but the number is still limited. The developed model includes components of recruitment, training, mentoring, career development, resource access, and collaboration networks. The implementation of the model showed a significant increase in the interest of the younger generation in agriculture (200%), the adoption of modern agricultural technology (275%), and the application of sustainable agricultural practices (167%). The productivity and income of millennial farmers also increased by 50%. This research makes an important contribution to the development of millennial farmer human resources and supports sustainable agriculture, and highlights the importance of cross-sector collaboration and policies that support farmer regeneration.



Available online at [ojs.unida.ac.id/JSH/](https://ojs.unida.ac.id/JSH/)  
Copyright (c) 2025 by Jurnal Sosial Humaniora

## 1. Introduction

Agriculture plays an important role in the Indonesian economy. It serves as a source of food security, reduces poverty, provides jobs, and generates community income (Aini et al., 2022; Arifah & Kim, 2022; Bingawati et al., 2023; Gina et al., 2023; Imawan et al., 2022) (Aini et al., 2022; Arifah & Kim, 2022; Bingawati et al., 2023; Gina et al., 2023; Imawan et al., 2022). However, this sector faces serious challenges in the regeneration of farmers with the declining interest of the younger generation to enter the agricultural sector. Factors contributing to this decline include negative perceptions of the sector, lack of supportive policies, limited access to technology and capital, and low income levels (Aziza et al., 2022; Consentino et al., 2023; Fanelli, 2023; Fariza et al., 2022; Maulida et al., 2022; Munandar et al., 2023; Murtagh et al., 2023; Wahid et al., 2022). Younger farmers are also more interested in other sectors that offer more stability and promise social mobility. This phenomenon of aging *farmers* can threaten the sustainability of the agricultural sector in the future (Carlisle et al., 2019; Susilowati, 2016). Subang Regency is one of the areas in West Java that has great agricultural potential (Azhar Solihin et al., 2023; Sulistyowati & Yuliyadi, 2019). According to data from (*Badan Pusat Statistik Kabupaten Subang*, n.d.) the agricultural sector contributes 29.44% to the Gross Regional Domestic Product (GDP) of Subang Regency. Data from (*Badan Pusat Statistik Kabupaten Subang*, n.d.) shows that the number of farmers under 35 years old is only about 10% of the total farmers in Subang Regency. The majority of farmers are dominated by the older generation with an average age of over 50 years.

Millennial farmers are the generation of young farmers who have great potential in realizing sustainable agriculture (Karahana et al., 2023; Novisma & Iskandar, 2023; Nuryaman et al., 2023; Widiyanti et al., 2021; Wimas Candranegara et al., 2022). They are more open to innovation, technology, and modern agricultural methods that are environmentally friendly. However, the number of millennial farmers is still limited. Human resource development efforts are needed to attract, prepare, and empower the millennial generation to enter the agricultural sector (Budiman et al., 2022; Haryati et al., 2023; Hasibuan & Nasution, 2022). The development of millennial farmer human resources needs to consider the characteristics and special needs of this generation. An appropriate development model can help maximize the potential of millennial farmers in realizing sustainable agriculture that integrates economic, social, and environmental aspects (Aziza et al., 2022; Budiman et al., 2022; Haryati et al., 2023; Refiswal et al., 2021; Susilowati, 2016; Wimas Candranegara et al., 2022).

Research on the human resource development model of millennial farmers in the context of sustainable agriculture is still limited. In fact, this kind of research is important to provide a conceptual framework and practical guidance for stakeholders in preparing future generations of farmers. Based on this background, this study aims to design a model for the development of millennial farmer human resources that is in accordance with the context of sustainable agriculture in Indonesia. The designed model is expected to be a reference for the government, agricultural institutions, academics, and other related parties in developing programs and policies that support farmer regeneration and sustainable agriculture. This research will make an important contribution in the form of a comprehensive and applicable conceptual model for the development of millennial farmer human resources. The results of the research can also enrich the literature on farmer regeneration and sustainable agriculture, as well as open up opportunities for further research in this field.

## 2. Methods

This study uses the Research and Development (R&D) method with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model approach to design a model for the development of millennial farmer human resources in the context of sustainable agriculture in Subang Regency. The following is an explanation of each stage of the research:

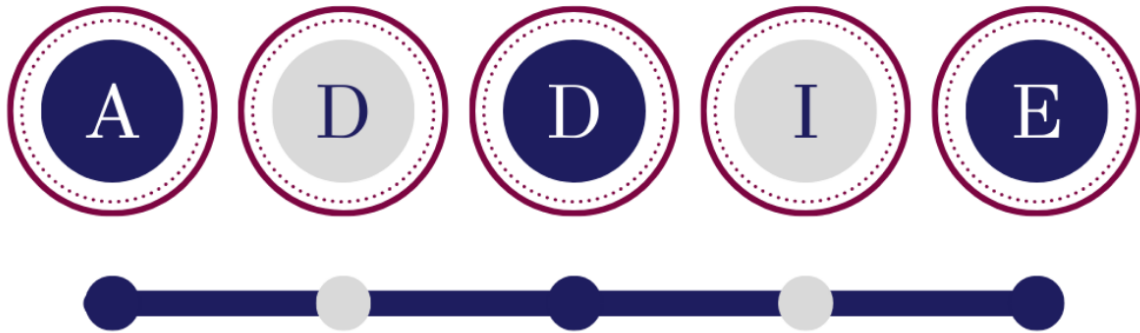


Figure 1. ADDIE Models

### 2.1 Analysis

- Reviewing theories, concepts, and previous research on the development of millennial farmer human resources and sustainable agriculture.
- Identify the characteristics, motivations, challenges, and needs for the development of human resources of millennial farmers in Subang Regency through surveys and interviews.
- Analyze data to design a model for the development of millennial farmers.

### 2.2 Design

- Designing a conceptual framework for the human resource development model of millennial farmers based on the results of needs analysis and literature studies.
- Determine the key components of the model, such as recruitment, training, mentoring, and career development.
- Design the flows, methods, and instruments used in each component of the model.

### 2.3 Development

- Developing a model for developing human resources for millennial farmers in accordance with the design that has been made.
- Prepare training materials, mentoring modules, and evaluation instruments required in the model.
- Conduct expert validation through Focus Group Discussions (FGD) with agricultural experts, academics, and human resource development practitioners to obtain input and validation of the developed model.
- Improve and refine models based on expert validation results.

### 2.4 Implementation

- Applying the millennial farmer human resource development model that has been developed in millennial farmer groups in Subang Regency.
- Conducting training, mentoring, and human resource development activities in accordance with the model that has been designed.

- Collect data and feedback from millennial farmers and stakeholders during the implementation process.

## 2.5 Evaluation

- Evaluate the effectiveness of the millennial farmer human resource development model that has been implemented.
- Analyze the data and feedback obtained during the implementation process to assess the success of the model in achieving the research objectives.
- Make improvements and refinements to the model based on the results of the evaluation.

Developing strategic recommendations and practical guidelines for the implementation of the millennial farmer human resource development model in Subang Regency

## 3. Results and Discussion

### 3.1. Results

#### 3.1.1 Analysis of Millennial Farmer Human Resource Development Needs

The results of the analysis show several characteristics and needs for the development of millennial farmer human resources in Subang Regency:

Table 1. Characteristics of Millennial Farmers in Subang Regency

Aspects	Characteristic	Information
Openness to Innovation	Tall	Be more open to innovation, technology, and modern agricultural methods that are environmentally friendly
Age	Under 35 years old	Only about 10% of the total farmers in Subang Regency
Technology Adoption	Tall	Tends to adopt new agricultural technologies faster
Environmental Awareness	Tall	More concern for environmentally friendly agricultural practices
Entrepreneurship	Medium-High	Have an interest in agricultural business development

Table 2. Human Resource Development Needs of Millennial Farmers in Subang Regency

Needs Aspect	Description	Priority
Access to Technology	Requires access to modern agricultural technology to increase productivity	Tall
Access to Capital	Need financial support to start or develop an agricultural business	Tall
Training	Requires training on agricultural technology, business management, and sustainable agricultural practices	Tall
Changes in Perception	Efforts are needed to change the negative perception of the agricultural sector among the younger generation	Intermediate
Assistance	Requires assistance from experienced farmers or agricultural experts	Intermediate
Access market	Need support in accessing a wider market for agricultural products	Intermediate
Network	Need a platform to build networks with fellow millennial farmers and other stakeholders	Low

### 3.1.2 Conceptual Framework of the Millennial Farmer Human Resource Development Model

Based on the results of the analysis, the human resource development model of millennial farmers is designed with the following main components:

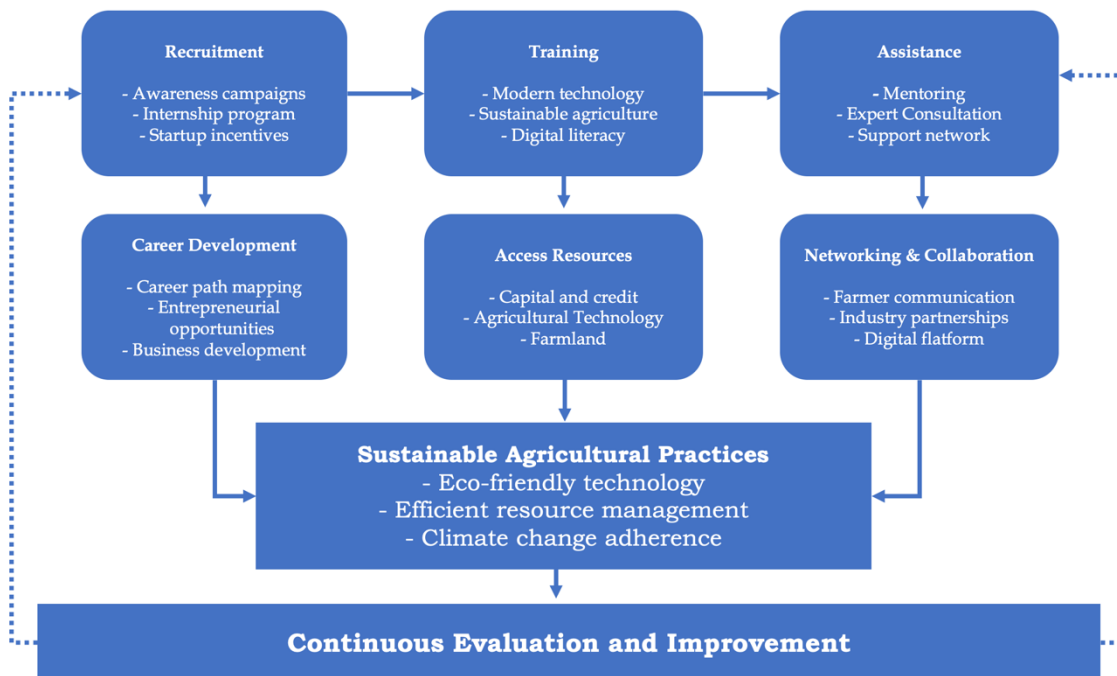


Figure 2 Conceptual Model of Millennial Farmer Human Resources Development

### 3.1.3 Model Implementation

The model of human resource development for millennial farmers is implemented in millennial farmer groups in Subang Regency. Some of the activities carried out include:

Table 3. Implementation of the Millennial Farmer Human Resource Development Model in Subang Regency

Activities	Purpose	Implementation Method	Success Indicators
Training in modern and environmentally friendly agricultural technology	Increasing the knowledge and skills of millennial farmers in using the latest agricultural technology that is environmentally friendly	<ol style="list-style-type: none"> <li>1. Interactive workshop</li> <li>2. Field demonstrations</li> <li>3. Case studies</li> <li>4. Hands-on practice</li> </ol>	<ol style="list-style-type: none"> <li>1. Number of participants who participated in the training</li> <li>2. Level of understanding of participants (pre-test and post-test)</li> <li>3. Percentage of participants who adopt new technology</li> </ol>
Mentoring programs by senior farmers and agronomists	Providing continuous guidance and support to millennial farmers	<ol style="list-style-type: none"> <li>1. Mentoring one-on-one</li> <li>2. Periodic consultation</li> <li>3. Field visits</li> </ol>	<ol style="list-style-type: none"> <li>1. Number of mentoring sessions conducted</li> </ol>

		4. Group discussions	2. The level of satisfaction of millennial farmers with the mentoring program
			3. Increased productivity of farmers who are accompanied by
Facilitation of access to capital and agricultural technology	Assisting millennial farmers in obtaining the capital and technology needed to develop their agricultural businesses	1. Partnerships with financial institutions	1. Number of millennial farmers who get access to capital
		2. Specialized credit programs	2. Number of agricultural technologies distributed
		3. Provision of agricultural technology	3. Credit repayment rate
		4. Financial management training	4. Increased technology investment by farmers
Development of agricultural product marketing network	Expanding market access for agricultural products produced by millennial farmers	1. Establishment of farmer cooperatives	1. Number of marketing partnerships formed
		2. Partnerships with the processing industry	2. Increase in sales volume of agricultural products
		3. Digital marketing training	3. Diversify marketing channels
		4. Participation in agricultural exhibitions	4. Increase in millennial farmers' income

### 3.1.4 Model Effectiveness Evaluation

The results of the evaluation showed:

Table 4 Results of the Evaluation of the Millennial Farmer Human Resources Development Program in Subang Regency

Evaluation Aspects	Performance Indicators	Before the Program	After the Program	Percentage Increase
Millennial Generation's Interest	Number of applicants for the agriculture program	50 person/year	150 person/year	200%
Technology Adoption	Percentage of millennial farmers who use modern agricultural technology	20%	75%	275%
Sustainable Agricultural Practices	Percentage of millennial farmers who implement environmentally friendly farming practices	30%	80%	167%
Productivity	Yields	5 ton/ha	7.5 ton/ha	50%

Farmer Income	Average monthly income of millennial farmers	Rp 3.000.000	Rp 4.500.000	50%
Millennial Farmer Community	Number of active members in the millennial farmer community	0	100 person	newly formed
Program Sustainability	Program participant retention rate	0	85%	85%

Model Enhancements based on feedback and evaluation, several improvements were made to the model, including; strengthening the digital literacy and entrepreneurship component in the training program; development of an online platform to facilitate networking and information exchange between millennial farmers; integration of internship programs and exchange of experiences with successful farmers in other regions. Strategic Recommendations some strategic recommendations for the implementation of the millennial farmer human resource development model in Subang Regency cross-sector collaboration between the government, academia, and the private sector in supporting the program, development of policies that support access to land and capital for millennial farmers, promotion of agriculture as an attractive and lucrative career for the younger generation, integration of digital technology in all aspects of millennial farmer human resource development. The human resource development model of millennial farmers that is designed and implemented shows good potential in attracting the interest of the younger generation to the agricultural sector and supporting sustainable agriculture in Subang Regency. Long-term commitment and collaboration of various stakeholders are needed to ensure the success and sustainability of this program.

### 3.2. Discussion

#### 3.2.1 Characteristics and Needs of Millennial Farmers

The results of the study show that millennial farmers in Subang Regency have characteristics that are in line with the findings (Silva et al., 2023), namely openness to innovation and modern agricultural technology. This supports the argument (Modjo et al., 2024) that the young generation has great potential in realizing sustainable agriculture through the adoption of environmentally friendly agricultural technologies and methods. The limited number of millennial farmers (only 10% of the total farmers) confirms the phenomenon of aging farmers identified by (Rustandi & Farid, 2024). This situation emphasizes the urgency of developing millennial farmer human resources to ensure the sustainability of the agricultural sector.

#### 3.2.2. Effectiveness of HR Development Model

The human resource development model that is designed and implemented shows positive results in increasing the interest of the younger generation in agriculture. The increase in the number of registrants for the agricultural program by 200% is in line with the recommendations (Kamakaula, 2024) about the importance of effective strategies to attract the interest of the millennial generation to the agricultural sector. Increase in the adoption of modern agricultural technology from 20% to 75% confirms findings (Kamakaula, 2024) about the need for information and behavior of millennial farmers in sustainable agriculture. It also supports the argument (Budiman et al., 2022) that the development of millennial farmer human

resources must consider the characteristics and special needs of this generation, especially in terms of technology adoption.

### *3.2.3 Sustainable Agricultural Practices*

The increase in the implementation of environmentally friendly agricultural practices from 30% to 80% shows the success of the model in encouraging sustainable agriculture. This is in line with the findings (Tan et al., 2022) about the perception and motivation of the millennial young generation towards organic agriculture. This improvement also supports the (Kamakaula, 2024) about the potential of millennial farmers in integrating economic, social, and environmental aspects in agricultural practices.

### *3.2.4 Peningkatan Produktivitas dan Pendapatan*

The increase in productivity (50% increase in crop yield per hectare) and farmers' income (50% increase in monthly income) shows the positive impact of the human resource development program. This is in line with the findings (Refiswal et al., 2021) about the development strategy of young agricultural entrepreneurs. This improvement also supports the (Wahyudin et al., 2024) about the importance of agricultural sector performance in Indonesia's economic growth.

### *3.2.5. Community Formation and Program Sustainability*

The formation of a millennial farmer community with 100 active members and a program retention rate of 85% shows success in building a support network and program sustainability. This is in line with the recommendations (Prastiyanto et al., 2024) about the importance of sustainable millennial farmer programs.

### *3.2.6 Challenges and Model Refinements*

Although the model shows positive results, there are still challenges that need to be addressed, as identified by (Khan & Magd, 2022) about the obstacles and drivers for newcomers in the agricultural sector. Model improvements, such as strengthening digital literacy and entrepreneurship, as well as the development of online platforms, are in line with the recommendations (Sivini & Vitale, 2023) about the potential for rural regeneration and generational renewal in the agricultural sector.

### *3.2.7 Policy Implications*

The resulting strategic recommendations, such as cross-sectoral collaboration and policy development that supports access to land and capital, are in line with the recommendations (Arintyas, 2024) about the importance of prediction and planning for agricultural regeneration. It also supports the argument (Tong et al., 2024) about the implications of the phenomenon of farmer aging on agricultural development policies.

## **4. Conclusion**

This research has successfully designed and implemented a model for the development of millennial farmer human resources in the context of sustainable agriculture in Subang Regency, making a significant contribution in facing the challenges of farmer regeneration.

The model developed, which includes components of recruitment, training, mentoring, career development, access to resources, and collaboration networks, has proven effective in increasing the interest and participation of young people in the agricultural sector. The results of the study show that millennial farmers in Subang Regency have a high openness to modern agricultural innovation and technology, as well as a good awareness of environmentally friendly agricultural practices, confirming their great potential in realizing sustainable agriculture. The implementation of the model has succeeded in increasing the productivity and income of millennial farmers by 50%, showing a positive impact on the economic welfare of farmers. Significant improvements have also been seen in the adoption of modern agricultural technologies and sustainable farming practices, integrating economic, social, and environmental aspects. The formation of millennial farmer communities and the high retention rate of the program (85%) demonstrating the potential sustainability of this initiative in the long term. However, the identification of the need for strengthening digital literacy, entrepreneurship, and the development of online platforms shows the importance of continuous adaptation to technological developments and market needs. The study also highlights the importance of cross-sector collaboration and policy development that supports access to land and capital for millennial farmers to ensure the success of farmer regeneration. In conclusion, the resulting millennial farmer human resource development model can be a reference for stakeholders in designing programs and policies that support the regeneration of farmers in other regions. However, long-term commitment, multi-stakeholder collaboration, and continuous adaptation are needed to ensure the success and sustainability of these efforts in facing the challenges of future agriculture.

## References

- Aini, D. N., Oktavianti, B., Husain, M. J., Sabillah, D. A., Rizaldi, S. T., & Mustakim, M. (2022). Seleksi Fitur untuk Prediksi Hasil Produksi Agrikultur pada Algoritma K-Nearest Neighbor (KNN). *Jurnal Sistem Komputer Dan Informatika (JSON)*, 4(1), 140. <https://doi.org/10.30865/json.v4i1.4813>
- Arifah, K. F., & Kim, J. (2022). The Importance of Agricultural Export Performance on the Economic Growth of Indonesia: The Impact of the COVID-19 Pandemic. *Sustainability*, 14(24), 16534. <https://doi.org/10.3390/su142416534>
- Arintyas, A. P. R. D. A. (2024). Women, agriculture, and villages: A community of empowerment study to achieve wellbeing and sustainable development. *Journal of Agrosociology and Sustainability*, 2(1). <https://doi.org/10.61511/jassu.v2i1.2024.887>
- Azhar Solihin, S., Sugih Mukti, A., & Nurwati, U. (2023). Analisis Citra Koperasi Dalam Upaya Meningkatkan Minat Masyarakat Untuk Berkoperasi. *Coopetition: Jurnal Ilmiah Manajemen*, 13(3), 491–498. <https://doi.org/10.32670/coopetition.v13i3.2858>
- Aziza, T. N., Surito, N., & Darmi, N. (2022). Petani milenial: regenerasi petani di sektor pertanian. *Forum Penelitian Agro Ekonomi*, 40(1), 1. <https://doi.org/10.21082/fae.v40n1.2022.1-11>
- Badan Pusat Statistik Kabupaten Subang. (n.d.). Retrieved March 24, 2024, from <https://subangkab.bps.go.id/publication/2021/02/26/f1d7a04668f039f0216202e3/kabupaten-subang-dalam-angka-2021.html>
- Bingawati, B., Wiguna, G., & Evelyn, E. (2023). Analisa literasi keuangan pada perilaku pengelolaan keuangan petani kopi dan cengkeh di jawa tengah. *Jurnal Pariwisata Bisnis Digital Dan Manajemen*, 2(1), 30–38. <https://doi.org/10.33480/jasdim.v2i1.3909>

- Budiman, D., Iskandar, Y., & Jasuni, A. Y. (2022). Millennials' Development Strategy Agri-Socio-Preneur in West Java: (Case Study in Ciletuh-Palabuhan Ratu Geopark Area). *International Conference on Economics, Management and Accounting (ICEMAC 2021)*, Sukabumi, Indonesia. <https://doi.org/10.2991/aebmr.k.220204.034>
- Carlisle, L., De Wit, M. M., DeLonge, M. S., Calo, A., Getz, C., Ory, J., Munden-Dixon, K., Galt, R., Melone, B., Knox, R., Iles, A., & Press, D. (2019). Securing the future of US agriculture: The case for investing in new entry sustainable farmers. *Elementa: Science of the Anthropocene*, 7, 17. <https://doi.org/10.1525/elementa.356>
- Consentino, F., Vindigni, G., Spina, D., Monaco, C., & Peri, I. (2023). An Agricultural Career through the Lens of Young People. *Sustainability*, 15(14), 11148. <https://doi.org/10.3390/su151411148>
- Fanelli, R. M. (2023). Barriers and Drivers Underpinning Newcomers in Agriculture: Evidence from Italian Census Data. *Sustainability*, 15(14), 10755. <https://doi.org/10.3390/su151410755>
- Fariza, N. P., Meiji, N. H. P., & Pratiwi, S. S. (2022). Degenerasi pemuda dalam pertanian di Desa Purworejo Kecamatan Donomulyo Kabupaten Malang. *Jurnal Integrasi Dan Harmoni Inovatif Ilmu-Ilmu Sosial (JIHIS)*, 2(11), 1103–1112. <https://doi.org/10.17977/um063v2i11p1103-1112>
- Gina, G. A., Ana Mariya, Charita Natalia, Sirat Nispuana, M. Farhan Wijaya, & M. Yoga Phalepi. (2023). The Role Of The Agricultural Sector On Economic Growth In Indonesia. *Indonesian Journal of Multidisciplinary Sciences (IJoMS)*, 2(1), 167–179. <https://doi.org/10.59066/ijoms.v2i1.325>
- Haryati, N., Fibriantingtyas, A., Yuswita, E., Lasitya, D. S., Irwandi, P., Aulia, B. M., Nurirrozak, M. Z., & Herdianti, D. F. (2023). Identifying Key Factors in Determining a Successful Agropreneurship Education in Merdeka Belajar Program. *IOP Conference Series: Earth and Environmental Science*, 1153(1), 012012. <https://doi.org/10.1088/1755-1315/1153/1/012012>
- Hasibuan, E. A., & Nasution, A. I. L. (2022). Millennial Farmer Program Analysis at the North Sumatra Plantation Office. *Jurnal Ekonomi, Manajemen, Akuntansi Dan Keuangan*, 3(3). <https://doi.org/10.53697/emak.v3i3.618>
- Imawan, R., Sidhi, E. Y., Sutiknjo, T. D., & Aji, S. B. (2022). Perbandingan Pendapatan Usahatani Kelapa Sawit Pola Swadaya Pada Blok A Dan Blok B Desa Bumi Jaya Kecamatan Seruyan Tengah Kabupaten Seruyan Kalimantan Tengah. *JINTAN : Jurnal Ilmiah Pertanian Nasional*, 2(2), 137. <https://doi.org/10.30737/jintan.v2i2.2776>
- Kamakaula, Y. (2024). Sustainable Agriculture Practices: Economic, Ecological, and Social Approaches to Enhance Farmer Welfare and Environmental Sustainability. *West Science Nature and Technology*, 2(02), 47–54. <https://doi.org/10.58812/wsnt.v2i02.964>
- Karahan, M., Abay, C., & Ito, R. (2023). Determining Factors of Retaining Young Farmers in Agriculture: A Case study in Turkey and Japan. *Agris On-Line Papers in Economics and Informatics*, 15(2), 41–54. <https://doi.org/10.7160/aol.2023.150204>
- Khan, S., & Magd, H. (2022). Identifying the Barriers and Drivers to Agriculture Entrepreneurship in India: In M. Y. Arafat, I. Saleem, J. Ali, A. Khan, & H. H. Balhareth (Eds.), *Advances in Business Strategy and Competitive Advantage* (pp. 261–272). IGI Global. <https://doi.org/10.4018/978-1-6684-2349-3.ch015>
- Maulida, Y. F., Wati, R. I., Study Program of Agriculture Extension and Communication, Universitas Gadjah Mada, Indonesia, . S., & Study Program of Agriculture Extension and Communication, Universitas Gadjah Mada, Indonesia. (2022). The Succession Patterns of Agricultural Lands in the Special Region of Yogyakarta Province, Indonesia. *Journal of Population and Social Studies*, 30, 625–639. <https://doi.org/10.25133/JPSSv302022.035>

- Modjo, A. S., Tapi, T., Safruddin, S., Ansar, Muh., & Fitriani, D. (2024). Harnessing Technology for Agricultural Sustainability: Case Studies and Future Directions. *Join: Journal of Social Science*, 1(3), 270–280. <https://doi.org/10.59613/n2nrg748>
- Munandar, F. A., Krisnamurthi, B., & Burhanuddin, B. (2023). Persepsi Generasi Muda Tentang Pertanian Organik dan Pengaruhnya Terhadap Minat Berwirausaha. *Forum Agribisnis*, 13(1), 110–120. <https://doi.org/10.29244/fagb.13.1.110-120>
- Murtagh, A., Farrell, M., Kuhmonen, T., Weir, L., & Mahon, M. (2023). The Future Dreams of Ireland's Youth: Possibilities for Rural Regeneration and Generational Renewal. *Sustainability*, 15(12), 9528. <https://doi.org/10.3390/su15129528>
- Novisma, A., & Iskandar, E. (2023). The study of millennial farmers behavior in agricultural production. *IOP Conference Series: Earth and Environmental Science*, 1183(1), 012112. <https://doi.org/10.1088/1755-1315/1183/1/012112>
- Nuryaman, H., Suyudi, S., & Cahrial, E. (2023). Persepsi dan motivasi generasi muda milenial terhadap pekerjaan di sektor pertanian (Studi Kasus Peserta Program Penumbuhan Wirausaha Muda Pertanian (PWMP) Universitas Siliwangi). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, 10(2), 1313. <https://doi.org/10.25157/jimag.v10i2.10041>
- Prastiyanto, A., Sulistyowati, L., Setiawan, I., & Noor, D. T. I. (2024). Analysis of the Level of Sustainability of Agricultural Extension Models for Millennial Farmers in West Java, Indonesia. *International Journal of Religion*, 5(11), 3660–3673. <https://doi.org/10.61707/4wzdvy93>
- Refiswal, E., Julianti, T., Supriana, & Iskandarini. (2021). Development strategy of young agricultural entrepreneurs. *IOP Conference Series: Earth and Environmental Science*, 782(2), 022059. <https://doi.org/10.1088/1755-1315/782/2/022059>
- Rustandi, Y., & Farid, A. (2024). Involvement of Millennial Farmers in the Implementation of Integrated Agriculture in Trenggalek District, East Java, Indonesia. *Anuário Do Instituto de Geociências*, 47. [https://doi.org/10.11137/1982-3908\\_2024\\_47\\_60967](https://doi.org/10.11137/1982-3908_2024_47_60967)
- Silva, F. T. D., Baierle, I. C., Correa, R. G. D. F., Sellitto, M. A., Peres, F. A. P., & Kipper, L. M. (2023). Open Innovation in Agribusiness: Barriers and Challenges in the Transition to Agriculture 4.0. *Sustainability*, 15(11), 8562. <https://doi.org/10.3390/su15118562>
- Sivini, S., & Vitale, A. (2023). Multifunctional and Agroecological Agriculture as Pathways of Generational Renewal in Italian Rural Areas. *Sustainability*, 15(7), 5990. <https://doi.org/10.3390/su15075990>
- Sulistyowati, L., & Yuliyadi, S. (2019). Factors that influence the level of food security of rice farmers households in patokbeusi district subang regency west java. *Jurnal Agribest*, 3(2), 116. <https://doi.org/10.32528/agribest.v3i2.2541>
- Susilowati, S. H. (2016). Fenomena Penuaan Petani dan Berkurangnya Tenaga Kerja Muda serta Implikasinya bagi Kebijakan Pembangunan Pertanian. *Forum Penelitian Agro Ekonomi*, 34(1), 35. <https://doi.org/10.21082/fae.v34n1.2016.35-55>
- Tan, B. C., Pang, S. M., & Lau, T. C. (2022). Marketing Organic Food from Millennials' Perspective: A Multi-Theoretical Approach. *Foods*, 11(18), 2721. <https://doi.org/10.3390/foods11182721>
- Tong, T., Ye, F., Zhang, Q., Liao, W., Ding, Y., Liu, Y., & Li, G. (2024). The impact of labor force aging on agricultural total factor productivity of farmers in China: Implications for food sustainability. *Frontiers in Sustainable Food Systems*, 8, 1434604. <https://doi.org/10.3389/fsufs.2024.1434604>
- Wahid, A., Pusakaningwati, A., & Masud, M. I. (2022). Implementation of markov chain in predicting regeneration agricultural in Pasuruan district. *International Journal of Trends in Mathematics Education Research*, 5(4), 417–421. <https://doi.org/10.33122/ijtmer.v5i4.203>
- Wahyudin, W., Tan, S., Junaidi, J., Zulgani, Z., & Zevaya, F. (2024). Dynamic model in analyzing Indonesia's agricultural sector's macroeconomic performance. *Journal of*

*Infrastructure, Policy and Development*, 8(8), 5661.  
<https://doi.org/10.24294/jipd.v8i8.5661>

Widiyanti, E., Karsidi, R., Wijaya, M., & Utari, P. (2021). Information Needs and Behaviour for Sustainable Farming Among Millennial and Progressive farmers. *IOP Conference Series: Earth and Environmental Science*, 828(1), 012052.  
<https://doi.org/10.1088/1755-1315/828/1/012052>

Wimas Candranegara, I. M., Supranoto, S., & Mirta, I. W. (2022). Millenial Smart Farming: Integrated Agricultural Technology Innovation in Increasing Export Value of Agricultural Products to Young Farmers in Gobleg Village, Buleleng Regency. *Iapa Proceedings Conference*, 174. <https://doi.org/10.30589/proceedings.2022.690>