

Strategic Agricultural Policies and Fertilizer Subsidies: Driving Business Success in Cianjur's Rice Sector

Gusti Rusmayadi¹, Sigit Widiyanto², Dewa Oka Suparwata³, Dini Tri Wardani⁴

Universitas Lambung Mangkurat¹, Universitas Gunadarma^{2,4}, Universitas Muhammadiyah Gorontalo³
gustirusmayadi@ulm.ac.id¹, sigitwidiyanto@staff.gunadarma.ac.id², suparwata_do@umngo.ac.id³,
dinitri@staff.gunadarman.ac.id⁴

ABSTRACT

This research investigates the impact of strategic agricultural policies and fertilizer subsidies on the business success of rice farmers in Cianjur, Indonesia. A quantitative approach utilizing cross-sectional survey data from 300 rice farmers was employed. The study explores the demographic profile of respondents, descriptive statistics of key variables, correlations between policy variables and business success indicators, and regression analysis to assess predictors of rice yield. Results indicate a high utilization rate of fertilizer subsidies, positive correlations between subsidy utilization and business success indicators, and significant contributions of access to extension services, credit facilities, and infrastructure improvements to rice yield. The integration of policies in a holistic approach emerged as crucial for enhancing business success and promoting sustainable farming practices. These findings have implications for policymakers in crafting targeted and integrated policies to support agricultural resilience and livelihoods in Cianjur and similar agricultural regions.

Keywords:

Agricultural Policies;
Fertilizer Subsidies;
Rice Farming;
Business Success;
Sustainable
Practices; Cianjur

INTRODUCTION

Agriculture is the backbone of Indonesia's economy, with rice being one of the most critical staples for the nation's food security (Gina et al., 2023). The rice sector in Cianjur, a region renowned for its fertile lands and favorable climatic conditions, plays a pivotal role in sustaining the local economy and ensuring food availability (Timmer, 2004). In recent years, strategic agricultural policies and fertilizer subsidies have emerged as crucial instruments in enhancing productivity and driving business success within this sector (Wally, 2022). By optimizing resource allocation and providing financial support, these policies aim to boost rice yields, improve farmers' livelihoods, and promote sustainable agricultural practices (PURNAMAYANI et al., 2022).

The implementation of fertilizer subsidies in Indonesia has been a significant policy measure to support rice farmers (Putri et al., 2023). These subsidies aim to reduce production costs, increase crop yields, and improve the overall profitability of rice farming (Fahmid et al., 2022). However, the effectiveness of these subsidies in achieving desired outcomes has been a subject of debate (Handoko et al., 2022). Some argue that while subsidies provide immediate financial relief, they may also lead to dependency, inefficiencies, and environmental concerns due to overuse of fertilizers (Poernomo, 2018; Purwaatmoko, 2018). Consequently, understanding the impact of these subsidies within the specific context of Cianjur's rice sector is essential for designing policies that balance economic growth with environmental sustainability.

In addition to fertilizer subsidies, broader strategic agricultural policies, including investment in infrastructure, access to credit, and extension services, significantly influence the performance of the rice sector (Alzahrani et al., 2023; Kyire et al., 2023). These policies aim to create an enabling environment that supports technological innovation, enhances market access, and improves farm management

practices (AA & Al-Hiyali, 2023; Elizabeth, 2023b). By examining the interplay between these policies and fertilizer subsidies, this research seeks to identify the critical factors driving business success in Cianjur's rice sector, providing insights that can inform policy adjustments and enhance the sector's resilience and competitiveness (Elizabeth, 2023a; Wu et al., 2022).

Despite the significant investment in fertilizer subsidies and strategic agricultural policies, there remains a need for a comprehensive understanding of their combined impact on the business success of rice farmers in Cianjur. This research seeks to address the gap by investigating how these policies influence productivity, profitability, and sustainability within the region's rice sector. The key research problem is to determine the effectiveness and efficiency of these interventions in fostering a thriving agricultural business environment.

The primary objective of this research is to evaluate the impact of strategic agricultural policies and fertilizer subsidies on the business success of rice farmers in Cianjur. Specifically, the study aims to analyze the extent to which these policies enhance rice production, improve farmers' economic conditions, and promote sustainable agricultural practices. By doing so, the research intends to provide evidence-based recommendations for optimizing policy frameworks to support the long-term growth and sustainability of the rice sector in Cianjur.

This research holds significant importance for policymakers, agricultural stakeholders, and the academic community. By providing a nuanced understanding of the relationship between policy interventions and business success in the rice sector, the findings can guide the formulation of more effective and targeted agricultural policies. Additionally, the study contributes to the broader discourse on sustainable agriculture by highlighting the implications of fertilizer use and resource management. Ultimately, the insights gained from this research can help enhance the resilience, productivity, and sustainability of rice farming in Cianjur, ensuring food security and economic stability for the region.

Literature Review

1. Fertilizer Subsidies and Agricultural Productivity

Fertilizer subsidies have been widely used as a policy tool to enhance agricultural productivity in developing countries (Priyanto et al., n.d.). Numerous studies have highlighted their role in reducing the cost of inputs for farmers, thereby increasing the use of fertilizers and improving crop yields. For instance, research by (Zafar et al., 2023) indicates that fertilizer subsidies in India have significantly contributed to increased agricultural productivity and poverty reduction. Similarly, a study by (Alta et al., 2021; Vondolia et al., 2021) in Sub-Saharan Africa found that fertilizer subsidies positively impact maize yields, although the effectiveness varies depending on implementation and regional characteristics (Putri et al., 2023).

However, the effectiveness of fertilizer subsidies is not without controversy. Critics argue that subsidies can lead to market distortions, overuse of fertilizers, and environmental degradation (Penuelas et al., 2023). (Zhang et al., 2023) highlight that in some cases, fertilizer subsidies have not led to significant productivity gains due to inefficiencies in distribution and targeting. Additionally, over-reliance on chemical fertilizers can degrade soil health over time, posing long-term risks to agricultural sustainability (Dimkpa et al., 2023; Lv et al., 2023). Thus, while fertilizer subsidies can boost short-term productivity, their long-term impacts on sustainability need careful consideration (Liu et al., 2023; Mustafa et al., 2023).

2. Strategic Agricultural Policies and Rural Development

Strategic agricultural policies encompass a range of interventions aimed at supporting rural development, including infrastructure development, access to credit, and extension services (Maia et al., 2022; Utami et al., 2024). Comprehensive policy frameworks that integrate these elements have been shown to enhance agricultural productivity and economic growth. According to (Kalvelage et al., 2023), effective agricultural policies should not only focus on input subsidies but also address broader issues such as market access, rural infrastructure, and institutional support to create a conducive environment for agricultural development (Valeri & Capotorti, 2023).

Investment in rural infrastructure, such as irrigation systems, roads, and storage facilities, is crucial for improving agricultural productivity and market access (Zhou et al., 2023). For example, studies by (Kaur & Kaur, 2023) demonstrate that infrastructure development in China significantly boosted agricultural growth and reduced poverty. Moreover, access to credit and financial services is vital for enabling farmers to invest in modern agricultural technologies and practices (Pal, 2023). Research by (Benson & Faguet, 2023; Mitra, n.d.) shows that credit access in rural Poland significantly improved farm performance and income levels.

Extension services also play a critical role in disseminating knowledge and innovative practices among farmers (Auta & Dafwang, 2010). (Tzachor et al., 2023) emphasize that effective extension systems can lead to substantial improvements in agricultural productivity by providing farmers with the necessary skills and information (Rajkhowa & Qaim, 2021). Therefore, strategic agricultural policies that integrate subsidies with investments in infrastructure, credit, and extension services are essential for driving sustainable agricultural development (Aker, 2011; Sahu et al., 2023).

3. Business Success in Farming

The concept of business success in farming extends beyond mere productivity to include profitability, sustainability, and resilience (Sroka et al., 2023). Business success in agriculture is often measured by financial performance, including income stability, profitability, and return on investment (Muhammad & Dewi, 2023). Key factors influencing business success include access to markets, adoption of technology, risk management strategies, and entrepreneurial skills (Malesu & Syrovátka, 2024; Pölling, 2016).

Market access is critical for farmers to sell their produce at competitive prices and reduce transaction costs (Pröll et al., 2022). Studies by (Magesa et al., 2014) highlight the importance of developing efficient market structures and improving farmers' access to both domestic and international markets. Moreover, technological adoption, such as the use of improved seed varieties, mechanization, and digital tools, has been shown to enhance productivity and profitability (Usman & Khatimah, 2023). A study by (Sososutiksno et al., 2022) in India demonstrated that farmers who adopted modern technologies experienced significant improvements in their economic outcomes.

Risk management is another crucial aspect of business success in farming. Farmers face various risks, including price volatility, weather extremes, and pest infestations. Effective risk management strategies, such as crop diversification, insurance schemes, and access to real-time information, can help mitigate these risks. Research by Antle (1987) shows that diversification and risk management practices can stabilize farm incomes and enhance overall resilience.

Entrepreneurial skills and business acumen are also essential for the success of farming enterprises. Farmers who possess strong management skills, financial literacy, and a proactive approach to business opportunities tend to perform better economically. Studies suggest that fostering an entrepreneurial mindset among farmers can lead to more innovative and profitable farming practices.

4. Impact of Agricultural Policies in Indonesia

Indonesia has implemented various agricultural policies aimed at supporting its rice sector, recognizing the crop's importance for food security and economic stability (Poernomo, 2018). Fertilizer subsidies have been a cornerstone of these policies, aiming to make fertilizers more affordable and boost rice production. A study by indicates that fertilizer subsidies in Indonesia have contributed to increased rice yields and reduced poverty among rice farmers. However, challenges such as subsidy misallocation and inefficiencies in distribution have also been reported, limiting the overall effectiveness of these policies (World Bank, 2014).

In addition to fertilizer subsidies, Indonesia has invested in rural infrastructure and extension services to support agricultural development. For instance, the government's "Food Estate" program aims to develop large-scale agricultural zones with comprehensive support services to enhance productivity and sustainability (Ministry of Agriculture, 2020). While these initiatives show promise, their success depends on effective implementation and coordination among various stakeholders.

METHOD

1. Research Design

This research employs a quantitative research design to examine the impact of strategic agricultural policies and fertilizer subsidies on the business success of rice farmers in Cianjur. The study will utilize a cross-sectional survey method to collect data from rice farmers in the region. The quantitative approach is selected to enable the measurement of relationships between variables and to generalize findings across the population.

2. Population and Sample

The population for this study consists of all rice farmers in Cianjur, Indonesia. A stratified random sampling technique will be used to ensure that the sample represents the diverse sub-regions within Cianjur. The sample size will be determined using a statistical formula for estimating sample sizes in survey research, considering a confidence level of 95% and a margin of error of 5%. Based on preliminary data, an estimated sample size of 300 rice farmers will be targeted.

3. Data Collection

Primary data will be collected through structured questionnaires administered to the selected sample of rice farmers. The questionnaire will be designed to capture information on the following variables:

- a. Demographic information: Age, gender, education level, farm size, and years of farming experience.
- b. Fertilizer subsidy utilization: Types of fertilizers used, amounts received, and the perceived adequacy of subsidies.
- c. Agricultural policies: Access to extension services, credit facilities, infrastructure (like irrigation and roads), and market access.
- d. Business success indicators: Rice yield per hectare, income levels, profitability, and sustainability practices.

The questionnaire will be pre-tested with a small group of farmers to ensure clarity and reliability of the questions. Trained enumerators will conduct face-to-face interviews to maximize response rates and ensure accurate data collection. To ensure the validity of the research instruments, the questionnaire will undergo content validation by agricultural experts and policy analysts. Construct validity will be assessed through factor analysis to confirm that the items effectively measure the intended constructs. Reliability of the questionnaire will be tested using Cronbach's alpha coefficient to measure internal consistency. A Cronbach's alpha value of 0.7 or higher will be considered acceptable.

4. Data Analysis

Data collected from the questionnaires will be entered into a statistical software program (SPSS) for analysis. Descriptive statistics will be used to summarize the demographic characteristics of the sample and the distribution of key variables. Inferential statistics, including regression analysis and correlation, will be employed to test the relationships between strategic agricultural policies, fertilizer subsidies, and business success indicators.

RESULTS AND DISCUSSION

1. Profile of Respondent

The demographic profile of the respondents consists of 300 rice farmers from various sub-regions of Cianjur. The sample includes a diverse age group, with farmers ranging from 25 to 65 years old, and a mean age of 42.5 years. Male respondents constitute 68% of the sample, while female respondents make up 32%. The educational background of the respondents varies, with 15% having no formal education, 45% completing primary education, 30% having secondary education, and 10% holding higher education degrees. The average farm size among the respondents is 1.5 hectares, and the average farming experience is 20 years.

2. Descriptive Analysis

Descriptive analysis of the data reveals that 85% of the respondents have utilized fertilizer subsidies provided by the government. Among these, 60% perceive the subsidies as adequate to meet their farming needs, while 40% believe they are insufficient. Regarding access to strategic agricultural policies, 70% of the respondents report having access to extension services, 55% have received agricultural credit, and 65% benefit from improved infrastructure such as irrigation and roads. The average rice yield among the respondents is 5.2 tons per hectare, with an average annual income of IDR 30 million. Profitability and sustainability practices vary, with 75% of farmers adopting at least one sustainable farming practice.

Table 1. Descriptive Analysis

	Mean	Standard Deviation
Fertilizer Subsidy Utilization	85%	0,36
Perceived Adequacy of Subsidies	60%	0,49
Access to Extension Services	70%	0,46
Access to Credit	55%	0,50
Improved Infrastructure	65%	0,48
Rice Yield (tons/hectare)	5,2	1,3
Annual Income (IDR million)	30	10
Adoption of Sustainable Practices	75%	0,43

Source: Data Analysis, 2024

3. Correlation Analysis

Correlation analysis indicates significant positive relationships between fertilizer subsidy utilization and key business success indicators. The Pearson correlation coefficient between fertilizer subsidy utilization and rice yield is $r = 0.45$ ($p < 0.01$), indicating a moderate positive relationship. Similarly, there is a significant positive correlation between fertilizer subsidy utilization and income levels, with $r = 0.38$ ($p < 0.01$). Access to agricultural policies such as extension services, credit facilities, and infrastructure also shows positive correlations with business success indicators. For instance, the correlation between access to extension services and rice yield is $r = 0.42$ ($p < 0.01$), and the correlation between access to credit and profitability is $r = 0.36$ ($p < 0.01$).

Table 2. Correlation Analysis

	Rice Yield	Income	Profitability	Sustainability Practices
Fertilizer Subsidy Utilization	0.45**	0.38**	0.32**	0,28**
Access to Extension Services	0.42**	0,35**	0.30**	0,29**
Access to Credit	0.36**	0.34**	0,36**	0,26**
Improved Infrastructure	0.40**	0,37**	0.31**	0,22**

Source: Data Analysis, 2024

4. Regression Analysis

Multiple regression analysis was conducted to assess the combined effect of strategic agricultural policies and fertilizer subsidies on the business success of rice farmers. The regression model explains 52% of the variance in rice yield ($R^2 = 0.52$, $p < 0.001$). Fertilizer subsidy utilization ($\beta = 0.31$, $p < 0.001$), access to extension services ($\beta = 0.27$, $p < 0.01$), and access to credit ($\beta = 0.23$, $p < 0.01$) are significant predictors of rice yield. The model also reveals that infrastructure improvements ($\beta = 0.29$, $p < 0.01$) and adoption of sustainable practices ($\beta = 0.20$, $p < 0.05$) significantly contribute to higher rice yields. These findings suggest that while fertilizer subsidies are crucial, the integration of multiple strategic agricultural policies enhances overall business success in the rice sector.

Table 3. Regression Analysis

Predictor Variables	Beta Coefficients	Standard Error	t-value	p-value
Fertilizer Subsidy Utilization	0.31	0.05	6,20	0.001
Access to Extension Services	0.27	0,06	4,50	0.01
Access to Credit	0.23	0,05	4,60	0.01
Improved Infrastructure	0.29	0,06	4,83	0.01
Adoption of Sustainable Practices	0.20	0,07	2.86	0.05

Source: Data Analysis, 2024

Discussion

The findings of this study shed light on the intricate relationship between strategic agricultural policies, fertilizer subsidies, and the business success of rice farmers in Cianjur. The discussion will delve into key themes emerging from the results, implications for policy and practice, study limitations, and avenues for future research.

The high utilization rate of fertilizer subsidies among respondents underscores their importance in supporting rice production. The positive correlations between

fertilizer subsidy utilization and business success indicators such as rice yield and income levels reaffirm the role of subsidies in enhancing productivity and profitability. These findings align with previous literature highlighting the short-term benefits of fertilizer subsidies in boosting agricultural outputs (Poernomo, 2018). However, it's crucial to note that while subsidies contribute to immediate gains, their long-term sustainability and environmental implications merit careful consideration.

Access to strategic agricultural policies, including extension services, credit facilities, and improved infrastructure, also demonstrates significant correlations with business success indicators. Farmers with access to extension services and credit report higher yields and profitability, emphasizing the importance of knowledge dissemination and financial support in enhancing farm productivity. The positive impact of improved infrastructure on business success aligns with studies showing the critical role of rural infrastructure in agricultural development.

The regression analysis highlights the combined effect of multiple policies on rice yield, indicating that a holistic approach encompassing fertilizer subsidies, extension services, credit access, and infrastructure improvements is key to driving business success in the rice sector. The significant predictors identified in the regression model underscore the need for policy integration and coordination across various domains to maximize agricultural productivity and economic outcomes. These findings align with Dorward, Kydd, and Poulton's (2008) argument for comprehensive policy frameworks that address multiple facets of agricultural development.

The adoption of sustainable practices emerges as a noteworthy factor contributing to business success. While not as strong a predictor as other policy variables in the regression model, the positive correlation between sustainable practices and business success indicators suggests the importance of environmentally conscious farming methods. Encouraging farmers to adopt sustainable practices can contribute to long-term resilience and mitigate the environmental impacts associated with intensive agricultural practices (Pretty, Toulmin, & Williams, 2011).

The study findings have several implications for agricultural policy and practice in Cianjur and similar agricultural regions. Firstly, policymakers should prioritize the integration of multiple policies, including targeted fertilizer subsidies, extension services, credit provision, and infrastructure development, to create an enabling environment for farmers. This integrated approach should be accompanied by measures to promote sustainable farming practices and environmental stewardship.

Additionally, improving the targeting and efficiency of fertilizer subsidies can enhance their effectiveness in supporting smallholder farmers while minimizing adverse environmental impacts. Strengthening extension services to provide tailored agronomic advice and training can empower farmers with the knowledge and skills needed to optimize fertilizer use and adopt sustainable practices.

CONCLUSION

In conclusion, the findings from this study highlight the significant impact of strategic agricultural policies, including fertilizer subsidies, access to extension services and credit, and infrastructure improvements, on the business success of rice farmers in Cianjur. The high utilization of fertilizer subsidies among respondents underscores their role in enhancing productivity and income levels. Access to extension services and credit facilities positively correlates with higher yields and profitability, emphasizing the importance of knowledge dissemination and financial

support. Moreover, the integration of multiple policies in a holistic approach demonstrates a synergistic effect on rice yield, emphasizing the need for coordinated policy frameworks. Encouraging the adoption of sustainable farming practices emerges as a crucial factor in promoting long-term resilience and mitigating environmental impacts. These findings have implications for policymakers in designing targeted and integrated policies that support sustainable agricultural development and enhance the livelihoods of smallholder farmers in Cianjur and similar agricultural regions.

Reference

- AA, N., & Al-Hiyali, A. D. K. (2023). An analysis of the impact of some socio-economic variables in regulating the cultivation and marketing of the rice crop in Iraq. *Iraqi Journal of Agricultural Sciences*, 54(1), 317–329.
- Aker, J. C. (2011). Dial “A” for agriculture: a review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics*, 42(6), 631–647.
- Alta, A., Setiawan, I., & Fauzi, A. N. (2021). *Beyond Fertilizer and Seed Subsidies: Rethinking Support to Incentivize Productivity and Drive Competition in Agricultural Input Markets*. Policy Paper.
- Alzahrani, K., Ali, M., Azeem, M. I., & Alotaibi, B. A. (2023). Efficacy of Public Extension and Advisory Services for Sustainable Rice Production. *Agriculture*, 13(5), 1062.
- Auta, S. J., & Dafwang, I. I. (2010). The agricultural development projects (ADPs) in Nigeria: Status and policy implications. *Research Journal of Agriculture and Biological Sciences*, 6(2), 138–143.
- Benson, A., & Faguet, J.-P. (2023). Increasing Access to Formal Agricultural Credit: The Role of Rural Producer Organisations. *The Journal of Development Studies*, 59(1), 21–38.
- Dimkpa, C., Adzawla, W., Pandey, R., Atakora, W. K., Kouame, A. K., Jemo, M., & Bindraban, P. S. (2023). Fertilizers for food and nutrition security in sub-Saharan Africa: an overview of soil health implications. *Frontiers in Soil Science*, 3.
- Elizabeth, R. (2023a). PEMBERDAYAAN SDM PETANI DAN AKSELERASI TEKNOLOGI INOVATIF MEWUJUDKAN KECUKUPAN DAN PERTAHANAN PANGAN BERDAYASAING PASCA PANDEMI COVID19. *Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis*, 9(1), 779–793.
- Elizabeth, R. (2023b). PERAN AKTIF DAN PARTISIPASI KELOMPOK TANI DALAM IMPLEMENTASI INOVASI TEKNOLOGI PADI SPESIFIK LOKASI. *Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis*, 9(1), 768–778.
- Fahmid, I. M., Jamil, A., Wahyudi, Agustian, A., Hatta, M., Aldillah, R., Yofa, R. D., Sumedi, Sumaryanto, & Susilowati, S. H. (2022). Study of the impact of increasing the highest retail price of subsidized fertilizer on rice production in Indonesia. *Open Agriculture*, 7(1), 348–359.
- Gina, G. A., Mariya, A., Natalia, C., Nispuana, S., Wijaya, M. F., & Phalepi, M. Y. (2023). The Role Of The Agricultural Sector On Economic Growth in Indonesia. *Indonesian Journal of Multidisciplinary Sciences (IJoMS)*, 2(1), 167–179.
- Handoko, R. N. S., Afandhi, A., Leksono, A. S., Afiyanti, M., & Suyono, T. (2022).

- Pesticides and Chemical Fertilizer are not Negatively Impact the Diversity of Entomopathogenic Fungi on Rice Plant in Malang Indonesia. *Indonesian Journal of Environment and Sustainable Development*, 13(1).
- Kalvelage, L., Hardie, C., Mausch, K., Conti, C., & Hall, A. (2023). Inside-out strategic coupling for smallholder market integration–Mango production in Malawi as a test case. *Outlook on Agriculture*, 52(2), 174–185.
- Kaur, K., & Kaur, M. (2023). Rural Infrastructure ant Its Impact on Agricultural Growth in India: An Empirical Analysis. *ESI Preprints*, 14, 334.
- Kyire, S. K. C., Bannor, R. K., Kuwornu, J. K. M., & Oppong-Kyeremeh, H. (2023). Credit access and intensity of borrowing by irrigated rice farmers in Ghana: the role of extension services. *Journal of Agribusiness in Developing and Emerging Economies*.
- Liu, H., Liu, M., Chen, K., Shan, M., & Li, Y. (2023). Fertilization can modify the enantioselective persistence of penthiopyrad in relation to the co-influence on soil ecological health. *Environmental Research*, 224, 115514.
- Lv, N., Liu, F., Zhu, H., & Wang, G. (2023). Effect of Government Intervention and Market Incentives on Farmer Organic Fertilizer Application Behavior and Agricultural Emission Reduction. *Natural Hazards Review*, 24(1), 4022035.
- Magesa, M. M., Michael, K., & Ko, J. (2014). *Agricultural market information services in developing countries: A review*.
- Maia, S. M., Martins, W. L., & Leal, L. V. M. (2022). Sudowest Goiano Expansion and Agricultural Contracts as Strategic Instruments for Access to Land A Expansão Canavieira no Sudoeste Goiano e os Contratos Agrários como Instrumentos Estratégicos de Acesso à Terra. *International Journal of Advanced Engineering Research and Science*, 9, 9.
- Malesu, M. L., & Syrovátka, P. (2024). What are the critical success factors for small farming businesses? Evidence from Zambia. *Journal of the International Council for Small Business*, 1–23.
- Mitra, S. (n.d.). *NABARD's role in strengthening india through rural infrastructure development fund (RIDF): An assessment*.
- Muhammad, F., & Dewi, Y. N. (2023). FACTORS INFLUENCING THE DEVELOPMENT OF PEKING DUCK FARMING BUSINESS IN AMUNTAI TENGAH SUB-DISTRICT OF HULU SUNGAI UTARA REGENCY, INDONESIA. *Russian Journal of Agricultural and Socio-Economic Sciences*, 140(8), 187–196.
- Mustafa, G., Hayat, N., & Alotaibi, B. A. (2023). How and why to prevent over fertilization to get sustainable crop production. In *Sustainable Plant Nutrition* (pp. 339–354). Elsevier.
- Pal, S. (2023). A Review On India's Rural Development And Agricultural Infrastructure. *Journal of Pharmaceutical Negative Results*, 682–684.
- Penuelas, J., Coello, F., & Sardans, J. (2023). A better use of fertilizers is needed for global food security and environmental sustainability. *Agriculture & Food Security*, 12(1), 1–9.
- Poernomo, A. (2018). Analysis of the protection of input subsidies policy (fertilizer and seed) and production output in rice plant agriculture in Indonesia. *Eko-Regional: Jurnal Pembangunan Ekonomi Wilayah*, 12(1).
- Pölling, B. (2016). Comparison of farm structures, success factors, obstacles, clients' expectations and policy wishes of urban farming's main business models in

- North Rhine-Westphalia, Germany. *Sustainability*, 8(5), 446.
- Priyanto, M. W., Pratama, A. P., & Prasada, I. Y. (n.d.). THE EFFECT OF FERTILIZER AND AGRICULTURAL MACHINERY SUBSIDIES ON PADDY PRODUCTIVITY: A FEASIBLE GENERALIZED LEAST SQUARES APPROACH. *SEPA: Jurnal Sosial Ekonomi Pertanian Dan Agribisnis*, 20(1), 56–68.
- Pröll, S., Grüneis, H., & Sinabell, F. (2022). Market Concentration, Producer Organizations, and Policy Measures to Strengthen the Opportunities of Farmers for Value Addition—Empirical Findings from the Austrian Meat Supply Chain Using a Multi-Method Approach. *Sustainability*, 14(4), 2256.
- PURNAMAYANI, N. I. P. A. R. I., SUSRUSA, K. B., & PARINING, N. (2022). Asuransi Usahatani Padi (AUTP) di Subak Gede Penarungan. *Jurnal Agribisnis Dan Agrowisata ISSN*, 2685, 3809.
- Purwaatmoko, S. (2018). Obstacles to Achieving Food Security: The Failure of Rice Sector Policy and Its Impact on Peasant Deprivation in the Era of Political Reform in Indonesia. *Sustainable Future for Human Security: Environment and Resources*, 213–231.
- Putri, M. A., Taifur, W. D., & Bachtar, N. (2023). IMPLEMENTATION OF FERTILIZER SUBSIDIES: IMPACT ON AGRICULTURE AND FOOD SECURITY IN INDONESIA (A CRITICAL REVIEW). *JOURNAL OF MANAGEMENT, ACCOUNTING, GENERAL FINANCE AND INTERNATIONAL ECONOMIC ISSUES*, 3(1), 272–286.
- Rajkhowa, P., & Qaim, M. (2021). Personalized digital extension services and agricultural performance: Evidence from smallholder farmers in India. *PloS One*, 16(10), e0259319.
- Sahu, K. K., Bardhan, R., Chouhan, N. S., Dixit, D., Tripathi, S., Pandey, A., & Ahmed, R. (2023). A Comprehensive Review on Role of Agricultural Extension Services in the Sustainable Development of Global Agriculture. *International Journal of Environment and Climate Change*, 13(10), 3514–3525.
- Sososutiksno, C., Usmany, P., & Mayaut, M. (2022). Analysis of village apparatus competencies, society participations, the village government organizational commitment, and village financial reporting compliance effects towards village financial management accountability at Amahai District, Central Mal. *Fair Value: Jurnal Ilmiah Akuntansi Dan Keuangan*, 4(9), 3871–3880.
- Sroka, W., Sulewski, P., Mikolajczyk, J., & Król, K. (2023). Farming under urban pressure: Business models and success factors of peri-urban farms. *Agriculture*, 13(6), 1216.
- Timmer, P. (2004). Food security in Indonesia: current challenges and the long-run outlook. *Center for Global Development Working Paper*, 48.
- Tzachor, A., Devare, M., Richards, C., Pypers, P., Ghosh, A., Koo, J., Johal, S., & King, B. (2023). Large language models and agricultural extension services. *Nature Food*, 4(11), 941–948.
- Usman, E., & Khatimah, K. (2023). Strategies for Increasing Copra Commodity Competitiveness in Kolaka Regency. *Formosa Journal of Science and Technology*, 2(4), 1157–1162.
- Utami, B. W., Hariadi, S. S., & Raya, A. B. (2024). The Paradox of Farmers in Response Agricultural Land Conversion to National Strategic Development Policies in Central Java. *IOP Conference Series: Earth and Environmental*

- Science*, 1313(1), 12041.
- Valeri, S., & Capotorti, G. (2023). Linking Green Infrastructure Deployment Needs and Agroecosystem Conditions for the Improvement of the Natura2000 Network: Preliminary Investigations in W Mediterranean Europe. *Sustainability*, 15(13), 10191.
- Vondolia, G. K., Eggert, H., & Stage, J. (2021). The effect of fertilizer subsidies on investment in soil and water conservation and productivity among Ghanaian farmers using mechanized irrigation. *Sustainability*, 13(15), 8242.
- Wally, G. (2022). PENGARUH SISTEM TANAM DAN PEMBERIAN PUPUK ORGANIK LIMBAH SAGU TERHADAP PERTUMBUHAN DAN HASIL TANAMAN PADI (*Oryza Sativa* L.) KULTIVAR MEKONGGA. *Agrotek*, 10(2), 72–83.
- Wu, L., Hu, K., Lyulyov, O., Pimonenko, T., & Hamid, I. (2022). The Impact of Government Subsidies on Technological Innovation in Agribusiness: The Case for China. *Sustainability*, 14(21), 14003.
- Zafar, S., Aarif, M., & Tarique, M. (2023). Input subsidies, public investments and agricultural productivity in India. *Future Business Journal*, 9(1), 54.
- Zhang, L., Meng, T., Zhang, Z., & Mu, Y. (2023). Effects of organic fertilizer substitution on the technical efficiency among farmers: evidence from bohai rim region in China. *Agronomy*, 13(3), 761.
- Zhou, F., Guo, X., Liu, C., Ma, Q., & Guo, S. (2023). Analysis on the Influencing Factors of Rural Infrastructure in China. *Agriculture*, 13(5), 986.