A STRATEGY FOR THE DEVELOPMENT OF SUPERIOR RICE SEEDS IN OGAN KOMERING ILIR REGENCY

Winnie Andhini[1*], Muhammad Yazid[2], Riswani[3]
[1]Master of Agribusiness Study Program, Faculty of Agriculture, Sriwijaya University
[23]Agribusiness Study Program, Department of Agricultural Social Economics, Faculty of Agriculture, Sriwijaya University
Email: [2]yazid_ppmal@yahoo.com

10.15408/saj.v5i2.48682

ABSTRACT

S*uperior seed breeding is one of the food products that has the opportunity to be developed in an agribusiness system. This study aims to formulate a development strategy for superior rice seed breeding in Ogan Komering Ilir Regency. The selection of the research location uses purposive sampling method while the sample withdrawal uses non- probability sampling by taking a sample of breeder farmers in Bumi Agung Village, Lempuing District, OKI Regency. Rice seed breeder farmers in this village amounted to 60 people who were purposively selected as samples of this study. Primary data in this study were collected by means of a survey using a questionnaire and analyzed using SWOT. The results showed that superior rice seed breeding is in quadrant I, which has a position (S-O) seed breeding businesses can take advantage of internal strengths to seize external opportunities. alternative strategies that can be applied are optimizing internal strengths, namely farmer experience, effective management, and distribution networks that have been formed, in order to take advantage of external opportunities, such as increased market demand and potential cooperation with third parties.*

Keywords : *development; rice seed; regulation.*

INTRODUCTION

Seeds are one of the main elements in agricultural cultivation. Seed selection will determine the production and quality of agricultural commodities. With such a strategic role of seeds, the government includes

seeds as one of the main elements in realizing food sovereignty. There are three main components needed in an effort to build seed independence in Indonesia, namely the development of new superior varieties, the development of seed quality, and aspects of their use, both in terms of distribution and supervision and control. The increase in rice production is influenced by the use of seeds. The largest contribution to rice production is the use of superior seeds compared to the application of other technologies. This is because the marketing costs of certified seeds are relatively cheaper than the production costs of fertilizers and others. Seed supply can be done through seed source breeding on farmers' land.

The situation in the field shows that the use of superior seeds is relatively limited. The use of rice seeds among the community more than 60 percent comes from the informal sector, namely in the form of grain set aside from a portion of the harvest of the previous season which is done repeatedly (Waluyo et al., 2022). One of the food commodities that is sacred in solving food problems in Indonesia is rice. The population in Indonesia tends to increase from year to year. Therefore, the demand for rice is increasing along with the increase in population in Indonesia. For this reason, serious efforts are needed to maintain national and household food security. Efforts to increase rice production to maintain rice self-sufficiency face various problems. These problems are in the form of physical, biological and socio- economic constraints. To overcome these problems, the government needs to take policies in rice development in order to achieve better results (Krisnawati et al., 2018).

South Sumatra has started to foster and develop seed breeding in each district that has the potential to develop seed breeders either from farmers / breeders or seed producers in the form of individuals or legal entities and government agencies. To ensure the purity of the quality produced, certification is necessary. Seed certification is the process of making quality and certified seeds, from application to labeling. The purpose of seed certification is to ensure physiological, physical and genetic quality and to provide quality seeds on an ongoing basis supervised by the Food Crop and Horticulture Seed Monitoring and Certification Center (Kementerian Pertanian, 2016).

Ogan Komering Ilir Regency is one of the rice seed producers in South Sumatra after East Ogan Komering Ulu. The role of rice seed producer farmers is important in providing certified seeds in the Ogan Komering Ilir District. The certification process in maintaining seed quality is not easy, so production is still constrained in meeting the seed production target in

Ogan Komering Ilir (OKI) District. The use of superior seeds at the farmer level is still low, this is due to several factors including education, experience, land area, capital, as well as perceptions of relative profits, cultural suitability, and observation of other farmers (Andayani & Watiah, 2015).

Research by (Waluyo et al., 2022) identified various problems in the production and distribution of rice seeds in South Sumatra, including OKI district. The study noted that the main constraints include limited access to superior seeds, lack of coordination between government agencies and farmer breeders, and challenges in timely distribution. In addition, erratic weather factors also affect seed production. In addition, the lack of proper coordination between the government, producers, markets and consumers makes it difficult to obtain seeds of superior varieties (Akhmad et al., 2022).

Superior seed breeding is one of the food products that has the opportunity to be developed in an agribusiness system. The agribusiness system concerns all activities in agriculture ranging from procurement to marketing of products produced by farming businesses that are interrelated with each other, in other words, starting from upstream industries, farming businesses, downstream industries to their distribution to consumers. In other words, the agribusiness system is a complex network involving various interrelated subsystems to produce, process and distribute agricultural products. Thus, from the production subsystem to the consumer subsystem, each part has an important role in ensuring the smoothness and efficiency of the entire agribusiness process.

Referring to the explanation above, the problem that can be seen is the scarcity of superior seed products that trigger superior seed breeding to be developed, the application of the correct agribusiness system is a stimulus to develop this seed breeding agribusiness system. How is the application of the agribusiness system of rice plant breeders in Ogan Komering Ilir Regency, so that this rice seed breeder can continue to run and can even develop and make Ogan Komering Ilir Regency a superior seed provider capable of providing superior seeds for the Ogan Komering Ilir Regency area and even supplying other districts.

METHOD

This research was conducted in Bumi Agung Village, Lempuing District, Ogan Komering Ilir Regency, South Sumatra Province from December 2024 to February 2025. The research location was chosen *purposively* with the consideration that Bumi Agung Village has breeder farmers who collaborate with the seed producer company CV. UPB Berkah

Tani. This company is the largest producer of certified rice seeds in Ogan Komering Ilir Regency. To trace the marketing process of the seeds produced, this research will also be conducted at the location where the seeds are traded and used. This research will be conducted using the survey method. The survey method is a research method that uses samples taken from a population that has the same characteristics as the population characteristics. This survey method is carried out by making direct observations to the research location. The withdrawal of samples in this study uses a *non-probability sampling method* by taking breeder farmers in Bumi Agung Village, Lempuing Subdistrict, OKI Regency as sample farmers. There were 60 rice seed breeder farmers in this village who were *purposively* selected as samples for this study.

The analysis method used SWOT analysis to assess strengths, weaknesses, opportunities, and threats in an effort to overcome existing problems in superior seeds breeding (Sutisna et al., 2022). The SWOT matrix can produce four sets of possible strategic alternatives. The steps in compiling a SWOT matrix diagram to get 4 alternative strategies are as follows:

1. Identify relevant factors for *Strengths*, *Weaknesses*, *Opportunities*, and *Threats*.
2. Create questions on the questionnaire that ask respondents to select the factors they consider most relevant.
3. Calculate the percentage of each option for each question.
4. Selecting the factors with the highest percentage in each category (*Strengths, Weaknesses, Opportunities, Threats*) to be included in the SWOT Matrix.
5. Inserting the factor with the highest percentage into the corresponding column in the SWOT matrix. Each factor will be accompanied by its percentage to show its relative significance according to the respondents. Using the SWOT Matrix to develop strategies for SO (*Strengths-Opportunities*), WO (*Weaknesses-Opportunities*), ST (*Strengths-Threats*), and WT (*Weaknesses-Threats*)..

RESULT AND DISCUSSION

SWOT analysis is used to develop the most relevant solutions to the problems faced in seed distribution and production in OKI district. This analysis will identify internal and external factors that can affect the distribution and production of seed breeding. The internal and external factors are as follows:

Strength

The strength of seed breeding is that effective management allows the entire production and distribution process to run in a structured and efficient manner.

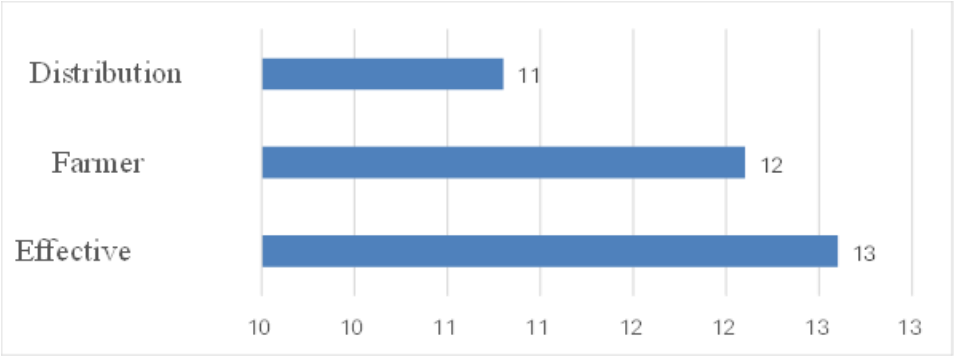

Figure 1. Graph of Strenght categories according to respondents

In addition, the involvement of experienced farmers is an added value because they have a good understanding of seed cultivation techniques and are able to overcome various technical obstacles in the field. Another strength lies in the distribution network that has been established, so that the distribution of seeds can reach a wider area and on time, which in turn helps strengthen the business position in the seed market.

Weaknesses

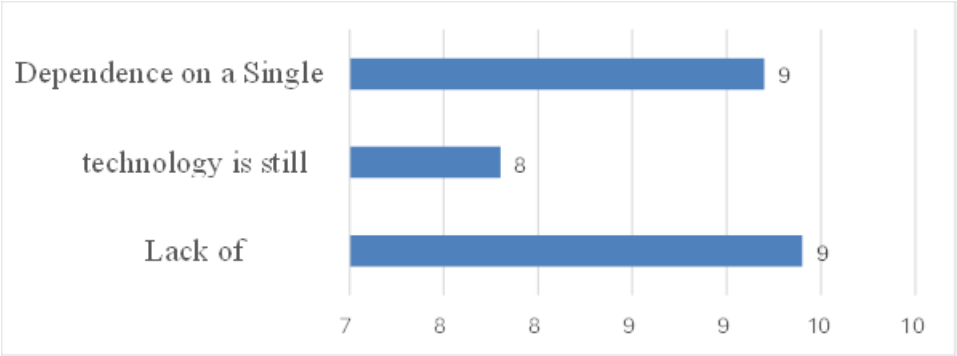

Figure 2. Graph of Weakness categories according to respondents

The weaknesses of seed breeding are limited resources including labor, capital, and inadequate production technology facilities.

These limitations can slow down the production process and reduce operational efficiency. In addition, the high dependence on one source, be it in terms of parent seeds, business partners, or marketing, makes the breeding system prone to disruption if there is a problem with the source, so it is necessary to diversify resources and strategic partners.

Opportunities

Opportunities in seed breeding are potential collaborations with other companies that can support aspects of funding, distribution, or production technology.

Figure 3. Graph of Opportunity categories according to respondents

Market demand for superior seeds also continues to increase, both for local and regional needs, providing promising market prospects. In addition, the special demand for disease-resistant rice seeds is a potential

niche market that can be worked on, especially if breeders have the ability to provide these varieties on an ongoing basis.

Threats

The threat to seed breeding is pest and disease attack, which is one of the main risks that can damage the quality and quantity of seeds produced.

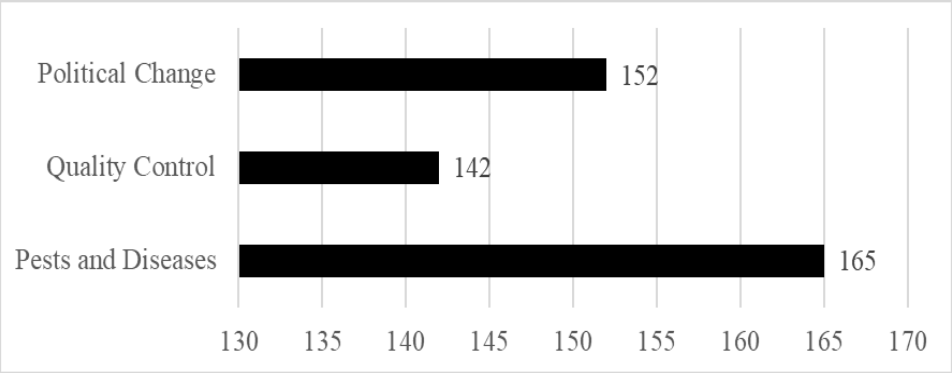

Figure 4. Graph of Threatened (Challenge) category according to respondents

In addition, strict quality control from regulatory agencies requires breeders to always maintain high quality standards, which if not met can hinder the circulation of seeds in the market. Equally important, changes in policy or political conditions, such as shifts in government regulations or programs, can also affect the sustainability and stability of seed breeding activities.

Internal Factor Evaluation (IFE) Analysis

The matrix is used to summarize and evaluate what are the main strengths and weaknesses in seed breeding, and provides a basis for identifying and evaluating the relationships between these functions (Dewi et al., 2022) . The results of the IFE matrix analysis are presented in table 1.

Table 1. IFE Matrix Analysis

Internal Strategy Factors	Weight	Rating	Score
Strength			
1 Effective Management	0,20	3	0,61
2 Farmer Experience	0,19	4	0,78
3 Distribution Network	0,17	4	0,70
Strength Score			2,08
Weaknesses			
1 Lack of Resources	0,15	1	0,15
2 Technology is still simple	0,13	2	0,13
3 Dependence on a Single Source	0,15	2	0,15
Weaknesses Score			0.43
Difference			1,65

Based on the IFE Matrix Analysis, the results of the IFE matrix analysis show that the main strength factor for seed breeding is the experience of farmers in seeding superior seeds with a weighted score of 0.78. The main weakness factor for seed breeding is the lack of resources which includes the amount of labor and capital which results in a weighted score of 0.15.

External Factor Evaluation (EFE) Analysis

The EFE matrix is a process of evaluating external factors by identifying various opportunities and threats that can affect the business in the future Ramdani & Supriyat, (2018) . The results of the EFE matrix analysis will be presented in Table 2.

Table 2. EFE Matrix Analysis

External Strategy Factors	Weight	Rating	Score
Opportunities			
1 Cooperation with Other Companies	0,16	3	0,48
2 Market Demand	0,16	4	0,64
3 Disease Resistant Rice Seeds	0,10	3	0,31
Opportunities			1,43
Threath			
1 Pests and diseases	0,21	1	0,21
2 Quality Control	0,18	2	0,36
3 Political Change	0,19	2	0,38
Threath			0,95
Difference			0,48

Based on the EFE Matrix Analysis, the results of the EFE matrix analysis show that the main opportunity factor for seed breeding is market demand with a weighted score of 1.43. Meanwhile, the main threat factor for seed breeding is political change which results in a weighted score of 0.30.

Matching Stages of IFE Environment and EFE Environment Analysis Results IE (Internal-External) Matrix

The results of data processing giving weight values to the IFE matrix and EFE matrix, obtained a total IFE score of 1.65 which is the value on the x-axis and a total EFE score of 0.48 which is the value on the y-axis. From the two axis points, the midpoint of the meeting is found in quadrant II.

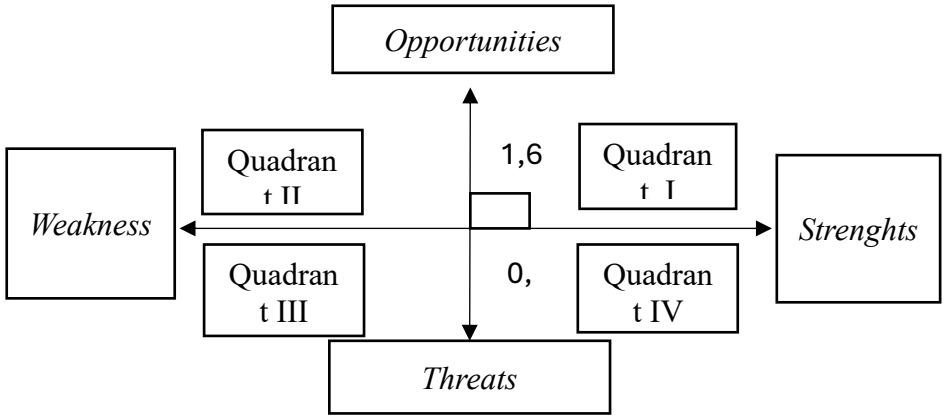

Figure 5. Diagram SWOT

Matrix of Alternative Strategies to Alleviate Problems in Seed Breeding

In determining alternative strategies to alleviate problems in seed breeding, it is necessary to pay attention to internal and external factors in the form of strengths, weaknesses, opportunities and threats which are outlined in the form of a SWOT matrix. The SWOT matrix resulted in 8 alternative strategies. The preparation of strategies is adjusted to the results of the external internal matrix which shows that seed breeding is in quadrant I, which has a position (S-O) seed breeding businesses can utilize internal strengths to seize external opportunities. The alternative strategy matrix is formulated as follows:

Table 3. Alternative Strategy Matrix

IFAS / EFAS	Strength	Weakness
	1. Effective Management 2. The Farmer's Experience 3. Distribution Network	1. Lack of Resources 2. Technology is still simple 3. Dependence on a single source
Peluang /*Opportunity*	S - O Strategy	W-O Strategy
1. Cooperation with Other Companies 2. Market Demand 3. Rice Seeds Resistant to Disease	1. Optimize distribution networks by strengthening cooperation with other companies and expanding markets through partnerships. 2. Developing disease-resistant rice seeds by utilizing the experience of farmers.	1. Reduce dependence on one source by establishing cooperation to diversify business partners 2. Increase resources through training and funding from government coaching to meet increasing market demand.
Threat	S – T Strategy	W-T Strategy
1. Pests and diseases 2. Quality Supervision 3. Political Change	1. Strengthening distribution and production operational management to face political changes and reduce the impact of strict quality control. 2. Superior seed innovation by utilizing farmers' experience for the implementation of integrated agricultural practices to prevent pest and disease attacks.	1. Develop internal resources so that they do not depend on one party to deal with new political or regulatory changes. 2. Diversify sources and strengthen production quality so that it is not too exposed to the risk of quality control and pest/disease attacks.

Based on the calculation of the Internal-External (IE) matrix, the strategy to overcome the problem of seed breeding is in quadrant I, which utilizes internal strengths to seize external opportunities (S-O). So the alternative strategy that can be applied is to optimize internal strengths, namely farmer experience, effective management, and established distribution networks, to take advantage of external opportunities, such as increased market demand and potential cooperation with third parties.

Effective management is crucial in improving production and distribution efficiency, as supported by research from (Lehmann et al., 2020) which shows that good management can significantly increase agricultural productivity. In addition, farmers' experience is also an important asset in managing the production of disease- resistant rice seeds, in accordance with the findings from a study by (Rayhan et al., 2023) which emphasizes the importance of farmers' practical experience in the application of new agricultural technologies. A strong distribution network is also a competitive advantage, as it facilitates market access and accelerates product dissemination, as described in a study by (Cortes et al., 2024) on the role of distribution networks in the successful marketing of agricultural products.

This strategy is realized through strengthening cooperation with other companies and business partners in order to expand market access and accelerate seed distribution. In addition, farmers' experience and proven management systems are utilized to increase the capacity and quality of seed production, especially disease-resistant rice seed varieties, to meet evolving market specifications and needs.

Weaknesses identified include limited technological resources that are still simple and dependence on one seed source in the partnership. This is in line with research by (Junaedi et al., 2016) which shows that technological limitations can hinder innovation and production efficiency.

Opportunities include cooperation with other companies, increased market demand, and the growing need for disease-resistant rice seeds. Cooperation with other companies can expand the distribution network and strengthen market position, in accordance with the results of research by (Mishra et al., 2024) which emphasizes the importance of collaboration in the agribusiness sector. In addition, disease-resistant rice seeds are a much-needed innovation to improve food security, as shown in the study by (Cheng et al., 2020) which examined the effectiveness of disease-resistant seeds in increasing crop yields.

The main threats faced are pests and diseases, strict quality control, and political changes that can affect regulations, especially from the government. Pests and diseases are classic threats in agriculture that can drastically reduce crop yields, as explained by research conducted by (Khokhar et al., 2024) in the impact of pests and diseases on agricultural yields. Strict quality control can also be a challenge if not followed by improved production standards, as found by (Feye et al., 2024) who prioritizes the importance of compliance with quality regulations. And unstable political changes can affect agricultural policies and funding, as revealed by (Mulyo et al., 2023) in his study on the impact of politics on the agricultural sector.

CONCLUSION

The seed breeding business is in quadrant I, which is having a position (S-O), the seed breeding business can take advantage of internal strength to seize external opportunities. An alternative strategy that can be applied is to optimize internal strengths, namely farmer experience, effective management, and distribution networks that have been established, in order to take advantage of external opportunities, such as increasing market demand and potential cooperation with third parties. In order to support the development of superior rice seed breeding owned by farmers, it is hoped that the local government and related institutions can increase institutional support through technical training, access to capital, and ease of seed certification so that breeder farmers are more professional and independent.

REFERENCES

Akhmad, H. M., Wijayanto, B., & Wartapa, A. (2022). Pengaruh Penundaan Waktu Pengeringan Terhadap Mutu Benih Dan Pertumbuhan Fase Vegetatif Padi (Oryza Sativa Linn.) Varietas Inpari 42. *Agrosains : Jurnal Penelitian Agronomi*, *24*(2), 84–90. https://jurnal.uns.ac.id/agrosains/article/view/63659doi:http://dx.doi.org/10.20961/agsjpa.v24i2.63659

Andayani, S. A., & Watiah. (2015). Tingkat Adopsi Petani Terhadap Penggunaan Benih Bersertifikat Pada Agribisnis Padi Adoption Of Farmers To Use The Seed Certified In Rice Agribusiness. *UNES Journal Of Scientech Research*, 43–50. https://ojs.ekasakti.org/index.php/ujsr/article/view/141%0ahttps://ojs.ekasakti.org/index.php/ujsr/article/download/141/133

Cheng, A. P., Chen, S. Y., Lai, M. H., Wu, D. H., Lin, S. S., Chen, C. Y., & Chung, C. L. (2020). Transcriptome Analysis Of Early Defenses In Rice Against Fusarium Fujikuroi. *Rice*, *13*(1). https://doi.org/10.1186/s12284-020-00426-z

Cortes, J. D., Jackson, J. E., & Cortes, A. F. (2024). Farmers' Markets Or The Supermarket? Channel Selection In Small Farming Businesses. *New England Journal Of Entrepreneurship*, *27*(1), 40–62. https://doi.org/10.1108/neje-07-2022-0045

Feye, D. A., Beyene, A. B., & Kumar, S. K. (2024). Climate And Political Effects On Agriculture: Empirical Evidence From SSA. *International Studies Of Economics*, *September*. https://doi.org/10.1002/ise3.98

Junaedi, M., Daryanto, H. K. S., Sinaga, B. M., & Hartoyo, S. (2016). Sawah Di Pulau Jawa Efficiency And Technology Gap In Wetland Rice Farming. *Jurnal Aplikasi Statistika & Komputasi Statistik*, *8.2*, 1–19. https://jurnal.stis.ac.id/index.php/jurnalasks/article/view/54/28

Khokhar, M. K., Kumar, R., Kumar, A., Sehgal, M., Singh, S. P., Meena, P. N., Singh, N., Acharya, L. K., Birah, A., Singh, K., Bana, R. S., Gurjar, M. S., Chander, S., & Choudhary, M. (2024). Impact Of IPM Practices On Microbial Population And Disease Development In Transplanted And Direct-Seeded Rice. *Frontiers In Microbiology*, *15*(July). https://doi.org/10.3389/fmicb.2024.1388754

Krisnawati, E., Suman, A., & Saputra, P. M. A. (2018). Kajian Pengaruh Program Nasional Upaya Khusus Peningkatan Produksi Padi Terhadap Kemiskinan Perdesaan Di Wilayah Barat Dan Timur Indonesia. *Jiep*, *18*(1), 14–33. https://jurnal.uns.ac.id/jiep/article/view/17550/15344

Lehmann, L. M., Smith, J., Westaway, S., Pisanelli, A., Russo, G., Borek, R., Sandor, M., Gliga, A., Smith, L., & Ghaley, B. B. (2020). Productivity And Economic Evaluation Of Agroforestry Systems For Sustainable Production Of Food And Non-Food Products. *Sustainability (Switzerland)*, *12*(13), 1–9. https://doi.org/10.3390/su12135429

Mishra, V., Ishdorj, A., Tabares Villarreal, E., & Norton, R. (2024). Collaboration In Agricultural Value Chains: A Scoping Review Of The Evidence From Developing Countries. *Journal Of Agribusiness In Developing And Emerging Economies*. https://doi.org/10.1108/jadee-

12-2023-0311

Mulyo, J. H., Prasada, I. Y., & Nugroho, A. D. (2023). Impact Of Political And Security Stability On Food Security In Developing Countries: Case Of Africa, Asia, Latin America And The Caribbean. *Agricultural Economics (Czech Republic)*, *69*(9), 375–384. https://doi.org/10.17221/142/2023-agricecon

Pertanian, K. (2016). Teknis Sertifikasi Benih Hortikultura. In *Direktorat Perbenihan Hortikultura* (201/Kpts/S).

Rayhan, S. J., Rahman, M. S., & Lyu, K. (2023). The Role Of Rural Credit In Agricultural Technology Adoption: The Case Of Boro Rice Farming In Bangladesh. *Agriculture (Switzerland)*, *13*(12). https://doi.org/10.3390/agriculture13122179

Sutisna, D., Aliudin, & Anggraeni, D. (2022). STRATEGI BISNIS PERBENIHAN PADI DI PROVINSI BANTEN. *Syntax Literate: Jurnal Ilmiah Indonesia*, *7*(10), 1–23. https://doi.org/10.36418/syntax-literate.v7i10.12909

Waluyo, Suparwoto, A., J., & S, N. W. (2022). Development Of Production Of Sources Of New Upper Variety Of Seeds Of Rice Results In South Sumatera Province. *Jurnal Kaliagri*, *3*(2), 51. https://journal.ugm.ac.id/jae/article/download/84364/39530