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TECHNICAL EFFICIENCY OF SUPERIOR VARIETY RICE SEED FARMING IN TABALONG DISTRICT OF SOUTH KALIMANTAN PROVINCE, INDONESIA

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ABSTRACT
This study aims to analyze the factors that influence the production of superior variety rice seed farming, the level of technical efficiency of superior variety rice seed farming and analyze the factors affecting the level of technical inefficiency of rice seed breeders of superior variety in Tabalong Regency. This research was conducted in the Districts of Jaro, Muara Uya and Benua Lawas, Tabalong Regency, starting from October 2022-January 2023. The analytical tool used is the frontier stochastic approach with the Ordinary Least Square (OLS) method. The results showed that the production of superior varieties of rice seed farming in Tabalong Regency, South Kalimantan Province was significantly influenced at a 1% significant level by organic fertilizers, inorganic fertilizers, pesticides, and labor, while land area was significantly affected at 5% significant level. The average technical efficiency value at the research location is 0.8742. The factors of technical inefficiency, length of farming and level of education have a negative effect on the level of technical inefficiency.

KEY WORDS
Technical efficiency, superior varieties of rice, seeding.

One of the food crop commodities that has an important role in national security and defense is rice. Rice seed is one of the main elements in rice farming. The need for these facilities is increasing day by day in line with the government's commitment to maintaining self-sufficiency in rice through both intensification and land extensification. Therefore, the development of rice seeds is the starting point of efforts to expand rice food crop commodities produced from seeds to meet people's consumption needs.

The development of production and productivity every year there is an increase there is also a decrease. In 2015 rice production was 1,970,085 tons and productivity was 43.28 kw/ha, in 2021 rice production was 1,016,314 tons and productivity 39.97 kw/ha (BPS Kalimantan Selatan, 2022).

Rice production is influenced by two things, namely harvested area and production. The development of rice production in Tabalong Regency from 2021 has fluctuated. In 2018 rice production was 144,201 tons in 2021 rice production was 52,087 tons. This low production is suspected to be due to inefficiencies in trying to farm rice specifically in Tabalong Regency (BPSB-TPH, 2022).

The existence of seed-breeding farmers or rice seeding businesses is very important, especially to meet the demand for seeds in South Kalimantan, which are still lacking in large quantities. The availability and need for seeds needed by farmers in Tabalong Regency do not only come from the government, but also come from captive breeding in the farmer's area. This is a solution for farmers who do not get seeds from the government because the seed stocks from the government are insufficient or have run out.

The problem that occurs is the decrease in the number of rice seed growers in Tabalong Regency is due to the high production costs incurred by rice seed breeders which are not matched by the income received by seed breeders. The production of a commodity is influenced by whether it is efficient in allocating the use of inputs and whether there are technical inefficiencies related to the managerial capabilities of farmers. Farmers' managerial capacity is important in farming activities because it will influence farmers' decision making in allocating production inputs.

The purpose of this research:

- Analyzing the factors that influence the production of superior variety rice seed farming in Tabalong Regency;
- Analyzing the technical efficiency of seed farming of superior varieties of rice in Tabalong Regency;
- Analyzing the factors that become the technical inefficiency of superior variety rice seed farming in Tabalong Regency.

METHODS OF RESEARCH

This study uses a survey method. in Jaro, Muara Uya and Benua Lawas Districts, Tabalong District, South Kalimantan Province. This research was conducted from October 2022-January 2023.

The data used is cross-sectional data collected by conducting direct interviews with respondents (rice growers) using a structured questionnaire. Data sources are primary data and secondary data.

Analyzing the influence of the use of production factors that influence the production of superior variety rice seed farming using the Cobb-Douglas type production function approach, with a multiple linear regression approach with the Ordinary Least Square (OLS) method:

$$ln\ Y = \beta_0+\beta_1\ ln\ X_1+\beta_2\ ln\ X_2+\beta_3\ ln\ X_3+\beta_4\ ln\ X_4+\ \beta_5\ ln\ X_5+\beta_6\ ln\ X_6\ +v_i-u_i$$

Where: Y - production of high yielding rice varieties (kg); X_1 - farming land area (ha); X_2 - seed (kg); X_3 - fertilizer (kg); X_4 - liquid pesticide (liters); X_5 - solid pesticide (kg); X_6 - labor (HKO); B_0 - constant coefficient; β_1, β_2, β_3, β_4, β_5, β_6 - coefficient; v_i-u_i - *error term* (v_i is the noise effect, u_i is the model's technical inefficiency effect).

Technical efficiency analysis can be measured using the formula:

$$TE_i = \frac{Y_i}{Y_i^*}$$

Where: TE_i - the technical efficiency achieved by the i-th observation; Y_i - actual output of superior variety rice seed farming (kg); Y_i^* - limit output (potential) of superior variety rice farming (kg).

Analyzing the factors that cause technical inefficiency of superior variety rice seed farming using the stochastic frontier approach. The value of the distribution parameter (ui) for the effect of technical inefficiency in this study is mathematically shown below:

$$u_i = \delta_0 + \delta_1 Z_1 +\delta_2 Z_2 +\delta_3 Z_3$$

Where: u_i - technical inefficiency effect; δ_0 - constant; δ_1, δ_2, δ_3 - coefficients of inefficient estimators; Z_1 - farmer's age (years); Z_2 - farmer education (years); Z_3 - farming experience (years).

t-test:

$$t_{statistics} = \frac{\delta_i}{Se(\delta_i)}$$

Where: b_i - the regression coefficient of the independent variable i-th; Se (b_i) - standard error of the i-th estimated regression.

The hypothesis: H_0: $\delta_i = 0$; H_1: $\delta_i \neq 0$.

The test criteria are tested with a confidence level of 95% or α = 5%:

- H_0 is rejected, if $|t_{statistics}| > t_{table\ (\alpha/2,\ n-k-1)}$;
- H_0 is accepted, if $|t_{statistics}| \leq t_{table\ (\alpha/2,\ n-k-1)}$.

RESULTS AND DISCUSSION

The production function form of the Cobb-Douglas function type model is defined as the model that needs to be estimated, namely the independent variables including land area, seeds, fertilizers, liquid pesticides, solid pesticides and labor needed as X, and Y as the production of high-yielding rice varieties. Regression analysis of the Cobb-Douglas function type model, with the results of the analysis shown in Table 1.

Table 1 – Estimation of the Cobb-Douglas production function using the OLS method

Input Variables	coefficient	$t_{statistics}$
Constant	4.983	4.352
Farming land area (X_1)	0.741	3.345
Seed (X_2)	0.354	1.783
Fertilizer (X_3)	0.325	2.395
Liquid pesticide (X_4)	0.193	2.865
Solid pesticide (X_5)	0.210	2.589
Labor (X_6)	0.180	1.826
R^2 = 0.615; $F_{statistics}$ = 14.128; *sig.* = 0.000		

*Description: *real at the level α = 5% (t_{table} = 2.307).*
Source: Primary data processing, 2022.

Based on the results of the regression analysis in Table 1, the coefficient of determination (R^2) of this function is 0.615. This shows that the production of high yielding rice varieties in Tabalong Regency is 61.5% influenced by independent variables (land area, seeds, fertilizers, liquid pesticides, solid pesticides and labor) in this function, while the remaining 38.5% determined by other variables not included in the function model. Based on Table 1, the estimation of production factors that influence the farming of high yielding rice varieties in Tabalong Regency using the Cobb-Douglas function type regression analysis model is obtained by the function model:

$$ln\ Y = 4{,}983 + 0{,}741\ ln\ X_1 + 0{,}354\ ln\ X_2 + 0{,}325\ ln\ X_3 + 0{,}193\ ln\ X_4 + 0{,}210\ ln\ X_5 + 0{,}180\ ln\ X_6$$

For the F test it is known that the $F_{statistics}$ value (14.128) with a probability value of 0.000 <0.05 (α = 5%) means that the hypothesis H_0 is rejected and H_1 is accepted. This shows that land area (X_1), seeds (X_2), fertilizers (X_3), liquid pesticides (X_4), solid pesticides (X_5) and labor (X_6) together have a significant effect on the production of high-yielding rice varieties in Tabalong Regency (Y).

The interpretation of each factor of production in the best model of the stochastic frontier production function of the OLS method is as follows:

Farming land area (X_1). The land area factor has a significant effect on the production of high yielding rice varieties in Tabalong Regency at the level of α = 5% with an estimated parameter value or production elasticity of 0.741. This figure indicates that the addition of land area by 1% with other inputs remains constant and can increase the production of high-yielding rice varieties by 0.741%. This is in accordance with the results of Askalani's research (2021) that land area has a positive influence on paddy rice production in Sustainable Food Crops (LP2B) in Batu Mandi District, Balangan Regency. According to Nadiar (2017), stated that the results of the study showed that land area had a significant effect on organic rice production in tidal land in South Kalimantan. Husnalia (2018), stated that the results of the study showed that the variable harvested area had an effect on the production of superior varieties of lowland rice farming in Hulu Sungai Tengah Regency. Suharyanto (2011) stated that the variable land area has a positive influence on lowland rice production with integrated crop management of 0.87671.

Seed (X_2). The seed factor had no significant effect on the seed production of superior varieties of rice at the level of α=5% with an estimated parameter value or production elasticity of 0.354. This figure indicates that the addition of 1% seed with other inputs can still increase the production of high-yielding rice varieties by 0.354%. Seedlings are one of the

determining factors of production in lowland rice farming. If the seeds are used in sufficient quantities it will increase the production of rice farming, conversely if the seeds are used in inadequate quantities it will reduce the production of rice farming. Seed planting techniques are also a supporting factor for increased production from rice farming. Planting techniques must be in accordance with a predetermined spacing.

Seed is a means of production that determines the success of farming. The better the quality of the seeds, it will increase production and can facilitate maintenance. In rice farming, seeds have a very important role. Seed quality is one of the factors that will affect rice production. This is not in accordance with Askalani's research (2021) that the number of seeds has a positive influence on lowland rice production in Lowland Rice Farming Land in Sustainable Food Crops (LP2B) in Batu Mandi District, Balangan Regency. According to Nadiar (2017), stated that the results of the study showed that the number of seeds had a significant effect on organic rice production in the tidal land of South Kalimantan. However, the results of the study are in accordance with the research that has been conducted by Husnalia (2018), stating that the results of the study show that the variable use of seeds does not affect the production of superior varieties of lowland rice farming in Hulu Sungai Tengah Regency.

Fertilizer (X_3). The fertilizer factor has a significant effect on the production of high yielding rice varieties at the level of α = 5% with an estimated parameter value or production elasticity of 0.325. This figure indicates that the addition of 1% fertilizer with other inputs can still increase the production of high-yielding rice varieties by 0.325%. By using the description of the production curve, the position of the use of the factor of the amount of fertilizer is in the production area II (rational area) the use of production inputs. Farmers are still rational if they wish to increase the use of fertilizers to obtain higher production, even though the additional production to be obtained is not large. This is not in accordance with Askalani's research (2021) that N fertilizer and NPK fertilizer have no significant effect on paddy rice production in Sustainable Food Crops (LP2B) in Batu Mandi District, Balangan Regency. However, in accordance with the results of Husnalia's research (2018), stated that the results of the study showed that the use of inorganic fertilizers had an effect on the production of superior varieties of lowland rice farming in Hulu Sungai Tengah Regency.

The types of fertilizers used by farmers are Urea and NPK fertilizers. The use of Urea and NPK fertilizers is quite important because they are related to the growth and development of superior rice. Farmers use this chemical fertilizer to stimulate the growth of superior rice so that it grows bigger quickly. Based on information obtained from farmers, the use of chemical fertilizers for agriculture is still small and far less than the guidelines for superior rice cultivation. The amount of fertilizer used by farmers depends on the farming capital they have. The increasing amount of fertilizer up to the recommendation limit for the use of fertilizer AIAT, the production of superior varieties of rice seeds will increase. The use of dosage and type of fertilizer must be very concerned because in the fertilization section there are main factors to increase the quality and quantity of production. The purpose of fertilization is to meet the nutritional needs of plants to ensure optimal plant growth and produce good quality production. Appropriate fertilizer application to plants can increase the productivity of superior rice farming. Fertilizer function will be maximized with the use of the right levels. However, many farmers think that the more fertilizer they use, the better the yield will be. In fact, what happened was the opposite. Thus, the use of fertilizers must be in accordance with the recommendations of the local extension officers so as not to overuse fertilizers which will later have an impact on production that does not meet the expectations of farmers.

Liquid pesticide (X_4). The factor of liquid pesticides has a significant effect on the production of high yielding rice varieties at the level of α = 5% with an estimated parameter value or production elasticity of 0.193. This figure indicates that the addition of liquid pesticides of 1% with other inputs can still increase the production of high-yielding rice varieties by 0.193%. By using the description of the production curve, the position of the use of the liquid pesticide amount factor is in the production area II (rational area) for the use of production inputs. Farmers are still rational if they wish to increase the use of liquid

pesticides to obtain higher production, even though the additional production to be obtained is not large. This is not in accordance with Askalani's research (2021) that drugs have no significant effect on paddy rice production in Sustainable Food Crops Agricultural Land (LP2B) in Batu Mandi District, Balangan Regency. According to Nadiar (2017), stated that the results of the study showed that vegetable pesticides had no significant effect on organic rice production in tidal land in South Kalimantan.

The increasing number of liquid medicines used up to the recommended limit for the use of liquid medicines, the production of superior varieties of rice seeds will increase. The use of doses and types of liquid medicines must be paid close attention because in the OPT control section there are main factors to increase the quality and quantity of production. In lowland rice farming, the use of pesticides has been enjoyed to increase production. The existence of pesticides provides benefits and advantages, including: (1) reducing plant populations with a longer control period; (2) easy to get; (3) relatively inexpensive and practical to use; and (4) massively produced. One of the limiting factors for production is the Plant Destruction Organisms (OPT) in the form of pests, diseases and weeds. Control is practically synonymous with pesticides. Effective and efficient control is when each unit of pesticide can reach the right target. Application by spraying is the most widely used method of application by farmers. In order for OPT control by spraying pesticides to work well, apart from using pesticides at the right dosage and at the right time, an efficient application tool is also needed. An efficient application tool or sprayer can guarantee an even distribution of materials/spray mixture on the target and does not cause wastage.

Solid pesticide (X_5). The solid pesticide factor has a significant effect on the production of high yielding rice varieties at the level of α = 5% with an estimated parameter value or production elasticity of 0.210. This figure indicates that the addition of solid pesticides of 1% with other inputs can still increase the production of high-yielding rice varieties by 0.210%. This is not in accordance with Askalani's research (2021) that drugs have no significant effect on paddy rice production in Sustainable Food Crops Agricultural Land (LP2B) in Batu Mandi District, Balangan Regency. According to Nadiar (2017), stated that the results of the study showed that vegetable pesticides had no significant effect on organic rice production in tidal land in South Kalimantan. The increasing number of solid drugs used up to the BPTP recommendation limit for the use of solid drugs, the production of superior varieties of rice seeds will increase. The use of doses and types of solid drugs must be very concerned because in the OPT control section there are main factors to increase the quality and quantity of production.

Labor (X_6). The labor factor has no significant effect on the seed production of superior varieties of rice at the level of α = 5% with an estimated parameter value or production elasticity of 0.180. This figure shows that adding 1% of the workforce with other inputs can still increase rice production by 0.180%. This is not in accordance with Askalani's research (2021) that labor has a significant effect on paddy rice production in Sustainable Food Crops Agricultural Land (LP2B) in Batu Mandi District, Balangan Regency. According to Nadiar (2017), stated that the results of the study showed that labor had a significant effect on organic rice production in the tidal lands of South Kalimantan. However, the results of the study are in accordance with the research that has been conducted by Husnalia (2018), stating that the results of the study show that the variable use of labor does not affect the production of superior varieties of lowland rice farming in Hulu Sungai Tengah Regency.

Superior variety rice seed farming is said to be technically efficient if it is able to produce a number of outputs using a smaller number of inputs or is able to produce maximum output from the use of a certain number of inputs. The level of technical efficiency is generated from the Cobb-Douglas production function model using the frontier stochastic approach with the Frontier 4.1 program. The advantage of the frontier stochastic approach is that apart from generating estimated parameters that affect production, it can also determine the level of technical efficiency of each farmer, as well as identify factors that affect technical efficiency.

Based on Table 2, the results of the analysis of efficiency per individual respondent, obtained an average efficiency index value of 0.8742 and a maximum of 0.9734 while a

minimum index of 0.5034. Thus, the technical efficiency in this model is that the average respondent farmer has the opportunity to be able to maximize efficiency results.

Table 2 – The distribution of the technical efficiency index of the respondent farmers in the superior variety rice seed farming

Distribution of technical efficiency index	Number of farmers (people)	Percentage (%)
0.5000 ≤ TE < 0.6000	4	7
0.6000 ≤ TE < 0.7000	2	3
0.7000 ≤ TE < 0.8000	1	2
0.8000 ≤ TE ≤ 1.0000	53	88
Amount	60	100
Average	0.8742	
Maximum	0.9734	
Minimum	0.5034	

Source: Primary data processing, 2022.

From the distribution of the technical efficiency index of the respondent farmers in superior variety rice seed farming, it shows that 54 farmers (90%) have efficiency index values classified as efficient in superior variety rice seed farming, while the remaining 10% (6 farmers) are in the low efficient category (efficiency value < 0.70) in superior variety rice seed farming. The technical efficiency index value is categorized as efficient at 0.70 (Kumbhakar and Lovell, 2000). This shows that the selection of paddy fields cultivated by farmers for superior variety rice seed farming in Tabalong Regency is appropriate.

Factors thought to influence the level of technical efficiency of superior variety rice seed farming in the study were: farmer's age, farmer's educational level and length of farming experience. The result of the estimation of this inefficiency function is a simultaneous result which is processed together with the production function using the Cobb-Douglas model with the OLS method. The effect of inefficiency is the error term of the modeled production function.

Table 3 – Estimation of the effect of technical inefficiency on the stochastic frontier production function of superior variety rice seed farming

Input Variables	Coefficient	$t_{statistics}$
Intercept	1.113	12.227
Farmer's age (Z_1)	0.004	2.629
Farmer's education (Z_2)	-0.011	-2.383
Farming experience (Z_3)	-0.002	-0.347
R^2 = 0.822; $F_{statistics}$ = 3.238; *sig.* = 0.029		

*Description: *real at the level α = 5% (t_{table} = 2.307).*
Source: Primary data processing, 2022.

Farmer's age (Z_1). Based on Table 3, the results of the estimation of the effect of technical inefficiency model show that the age factor with a $t_{statistic}$ of 2.629 is greater than the t_{table} of 2.307 at the level of α = 5%, which means that the age of the farmer has a significant effect on the technical inefficiency of superior variety rice seed farming. The coefficient value is positive at 0.004. The positive sign indicates that the increasing age of the farmer will increase the technical inefficiency of 0.004% in superior rice farming. This means that the older the farmers are, the more inefficient they are in running superior rice farming. This is in line with the notion that the older the farmer is, the lower his working capacity and technical ability will have a negative impact on technical efficiency. This is in line with the notion that the older the farmer is, the lower his working capacity and technical ability will have a negative impact on technical efficiency. This result is in line with the results of Askalani's research (2021) which found that the age factor of the farmer has a significant effect on the level of technical inefficiency with an estimated coefficient with a positive sign using the MLE method of 0.0151. This means that if the farmer's age is increased, the inefficiency will increase so that farming efficiency decreases. Husnalia (2018), stated that

the results of the study showed that the age variable of the farmer had a significant effect on the level of technical inefficiency in high-yielding lowland rice farming in Hulu Sungai Tengah Regency. However, the results of this study are in accordance with the results of Nadiar's research (2017), saying that farmer age has no significant effect on the level of technical inefficiency in organic rice farming in South Kalimantan.

Farmer's education (Z_2). The education factor is the amount of time (years) spent by farmers undergoing their formal education. This variable is considered as a proxy for the farmer's managerial ability. The longer farmers receive formal education, it is thought to encourage farmers to be more efficient in the production process and the allocation of the use of production inputs according to their level of knowledge. Higher education should be able to encourage farmers to adopt better cultivation technologies and use a combination of production inputs proportionally. Education factor is one of the important factors in causing the technical inefficiency of farming. Higher education can encourage farmers to apply more proportional farming technology using production inputs. The level of education is very influential on the mindset of farmers in making decisions, the higher the level of education, the faster and more precise in making decisions. The education level of farmers will influence the way of implementation or decision-making in managing their farming to increase production, especially the production of superior varieties of rice seeds. The higher the level of education achieved, the farmer will be more careful about the possible risks that will be faced. Limitations of education will close their horizons in thinking, so they think more short and straight forward. The level of education will also affect the process of accepting new technology that is introduced, where they do not immediately accept or reject without practice and concrete evidence of the changes they feel from the new technology. Based on Table 3, the $t_{statistic}$ value of (|2,383|) is greater than the t_{table} of 2,307 at the level of α = 5%, which means that farmer education has a significant effect on the technical inefficiency of superior variety rice seed farming. The coefficient value is positive, which is -0.011 indicating that the longer the farmer's education will reduce technical inefficiency by 0.011% in seed farming of superior varieties of rice.

The negative value on the coefficient of the education level variable is as expected. This phenomenon indicates that the higher the education level, the lower their ability to adopt technology and be able to use inputs proportionally so that it will reduce performance in cultivating high-yielding rice varieties. The length of education variable has no significant effect on technical inefficiency, indicating that the cultivation of superior variety rice seed farming in the study area does not have to have the ability to master land conditions, systems and cultivation that are suitable for paddy fields because it uses superior rice seeds, so it does not require a long education period. time to implement the technology. These results are consistent with the results of Askalani's research (2021) which found that the education factor of farmers has a significant effect on the level of technical inefficiency with an estimated negative sign coefficient using the MLE method of -0.0790. This means that if the education level of farmers is increased then the inefficiency will be reduced so that farming efficiency increases. Husnalia (2018), stated that the results of the study showed that the farmer education variable had a significant effect on the level of technical inefficiency in rice farming of superior varieties in Hulu Sungai Tengah Regency. However, the results of this study are in accordance with the results of Nadiar's research (2017), saying that the education level of farmers has no significant effect on the level of technical inefficiency in organic rice farming in South Kalimantan.

Farming experience (Z_3). In several previous studies, experience was considered as a proxy for farmer age, especially in traditional farming systems. The more experience farmers have in cultivation activities, the more efficient they are in carrying out farming activities because they already know cultivation activities well compared to other farmers who are just trying these cultivation activities. Therefore, the estimated value of the farmer's experience factor is expected to be negative, meaning that more and more farmer experience encourages these farmers to be more technically efficient or minimize the effects of technical inefficiency. Long experience in farming can encourage farmers to apply farming technology more proportionally using production inputs. Farming experience influences the behavior of

farmers in managing their farming. Usually farmers have longer farming experience and a lot of knowledge in farming so they tend to be careful in making decisions.

Based on Table 3, the length of farming experience has a $t_{statistic}$ value of (|0.347|) smaller than the t_{table} of 2.307 at the level of α = 5%, meaning that the length of farming experience has no significant effect on the technical inefficiency of varietal rice seed farming superior. This is in accordance with Nadiar's research (2017), which states that the length of farmer's farming experience has no significant effect on the level of technical inefficiency in organic rice farming in South Kalimantan. However, on the contrary, the results of Askalani's research (2021) found that the factor of length of experience in farming had a significant effect on the level of technical inefficiency with an estimated coefficient with a negative sign using the MLE method of -0.0260. This means that if the farmer's farming experience is increased, the inefficiency will be reduced so that farming efficiency will increase.

CONCLUSION

Based on the results and discussion that has been described, several conclusions are obtained, namely:

- The production of superior variety rice seed farming in Tabalong Regency, South Kalimantan Province is significantly influenced at a 1% significant level by organic fertilizers, inorganic fertilizers, pesticides, and labor, while land area and seeds are significantly affected at a 5% significant level;
- The average technical efficiency value at the research location is 0.8742. This shows that seed farming of superior varieties of rice in Tabalong Regency, South Kalimantan Province is already high, but not yet efficient because the expected average level of technical efficiency is 1;
- Factors of technical inefficiency, length of farming and level of education have a negative effect on the level of technical inefficiency. This means that the longer the farmer has been farming and the higher the farmer's formal education will reduce the level of technical inefficiency of superior variety rice seed farming in Tabalong Regency.

As for the suggestions that can be given to the results of this study, namely based on the results of the study, the inefficiency factor, namely the length of farming has an influence on increasing technical efficiency. Therefore it is necessary to implement an assistance program that is held for counseling as well as for the provision of facilities and infrastructure. Increasing formal education for farmers is also very necessary because higher education will have greater opportunities to receive and process information and new technologies more easily. In addition, the factors affecting the production of this farming, especially the workforce that still uses traditional human labor, should be changed by starting to use modern machines in farming, starting from land management to harvesting in order to achieve a better level of efficiency.

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