

Factors Affecting The Income of Edamame Farmers (A Case Study in Sindangsari Village, Lembursitu Subdistrict, Sukabumi City)

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Keywords:	Abstract
Total Production; Edamame Price; Farmer Income	This research aims to determine the effects of production volume, edamame price, education level, farmer age, number of workers, land ownership, and land area on the income of edamame farmers, as well as identify the variables with the strongest influence on farmer income. This study employed a descriptive quantitative research approach. The results showed that, simultaneously, all independent variables (production volume, price, education level, age, number of workers, land ownership, and land area) significantly influenced farmer income, with an F-statistic value of $6.024 > F\text{-table value of } 2.64$ and a significance value of $0.000 < 0.05$. Partially, production volume ($t\text{-count} = 3.297 > t\text{-table} = 2.034$, $\text{sig.} = 0.002$) and land area ($t\text{-count} = 2.610 > t\text{-table} = 2.034$, $\text{sig.} = 0.014$) had positive and significant effects on income, while price, education level, age, number of workers, and land ownership did not show significant effects. Land area was identified as the variable with the most dominant influence on farmer income. The coefficient of determination (R^2) of 0.5210 indicated that 52.10% of income variation was explained by the independent variables, while the remaining 47.90% was influenced by other factors outside the model. These findings confirmed that increasing production volume and expanding cultivated land area were key strategies for improving edamame farmer income in the study area.

INTRODUCTION

Edamame beans are immature soybeans harvested while the pods are still green. Edamame (*Glycine max* (L.) Merr.) is a soybean cultivar that originated in Japan and differs from conventional soybeans, which generally have yellow seeds and smaller seed sizes. Unlike common soybeans, edamame has larger green seeds and is consumed as a fresh vegetable or snack. Research has shown that the vitamin, protein, folic acid, and mineral contents of edamame provide significant health benefits. The edamame plant grows well in highland areas and requires soil with good drainage conditions (Amin et al. 2025; Cahyanto et al. 2024; Rocha et al. 2017). The cultivation process is relatively straightforward, with optimal growth achieved at altitudes ranging from 200 to 500 meters above sea level. The optimal temperature range for edamame cultivation is approximately 20–30°C. Suitable soils should be fertile, loose, well-drained, and rich in organic matter (Nasreen et al. 2025; Wall et al. 2018).

Edamame (*Glycine max* (L.) Merr.) has considerable potential for development because its productivity can reach an average of 3.5 tons per hectare. This productivity is

higher than that of conventional soybean production, which generally ranges from 1.7 to 3.2 tons per hectare. In addition to its high yield potential, edamame has promising export market opportunities. Demand from Japan reaches approximately 100,000 tons per year, while the United States requires around 7,000 tons per year. However, Indonesia has only been able to fulfill approximately 3% of Japan's market demand, while the remaining 97% is supplied mainly by China and Taiwan (Nurman, 2013).

Edamame (*Glycine max* (L.) Merr.) is a young soybean harvested when the pods remain green and is commonly consumed as a vegetable. This crop has high nutritional value, particularly protein content with quality comparable to animal protein sources such as milk, eggs, and meat. In addition, edamame is rich in dietary fiber and essential micronutrients, including folate, manganese, phosphorus, and vitamin K. It also contains a balanced fatty acid composition, with 361 mg of omega-3 and 1,794 mg of omega-6 per 100 grams. The presence of bioactive compounds associated with cholesterol reduction further enhances the health benefits of edamame consumption (Ismawati et al. 2024; Nurkistin et al. 2022; Wulandari et al. 2023).

From an agronomic perspective, edamame productivity can reach approximately 3.5 tons per hectare, exceeding conventional soybean productivity, which generally ranges from 1.1 to 1.5 tons per hectare. Its market potential is also substantial for both domestic and export markets, making edamame a promising agricultural commodity. For rural communities, edamame cultivation not only contributes to food availability but also provides opportunities to increase farmer income. Therefore, the development of edamame has an important role in strengthening the agricultural sector, which remains one of the main pillars of economic development, particularly in developing countries (Zufrizal, 2008).

According to Browning (2016), farmers are expected to contribute agricultural products to support government programs and economic development. However, agricultural production is often constrained by various factors, including crop damage caused by unfavorable weather conditions. Similarly, Li Genpan (2009) emphasized that agricultural production is strongly influenced by climate variability and weather conditions. Agricultural commodities that serve as food sources and industrial raw materials increase the strategic importance of this sector. Therefore, the agricultural sector, which encompasses social, economic, environmental, and institutional dimensions, is expected to stimulate the development of other economic sectors, particularly rural economic development (Jelocnik, 2011). Furthermore, Saragih et al. (2016) explained that smallholder welfare is influenced by various factors, including regional characteristics, community social values, and household and individual characteristics.

Low farmer income in rural areas is generally influenced by limited employment opportunities and decreasing agricultural land availability due to population growth and inheritance systems. These conditions reduce the ability of agricultural activities, particularly food crop production, to provide sufficient income (Ginting, 2013). Therefore, the development of high-value agricultural commodities with broad market

opportunities, such as edamame, is necessary. As a crop with high productivity and promising domestic and export market potential, edamame can serve as a strategic alternative for increasing farmer income while strengthening the national agricultural sector.

The development of the agricultural sector requires serious attention despite the increasing emphasis on industrialization-oriented development policies. This is because agriculture continues to have substantial potential for improving community income (Sudarman, 2001). Agriculture plays an important role in fulfilling food demand; therefore, population growth and increasing consumption needs create opportunities for farmers to improve their economic conditions. In addition, the agricultural sector remains an attractive field for investment (Winters, 1998). Consequently, improving agricultural productivity should become a priority through the adoption of appropriate technologies, enhanced management systems, improved irrigation and soil quality, and effective post-harvest management to achieve sustainable production outcomes (Al-Haboby et al., 2016).

Farmer income is also influenced by age-related factors. Farmers in productive age groups generally achieve higher productivity because their physical capacity and work efficiency remain optimal (Wulandari et al., 2024; Szabo et al., 2021). At younger ages, production costs may be lower because many agricultural activities can be performed independently without relying heavily on additional labor (Nunti & Somboon, 2025). Conversely, as farmers become older, production costs may increase because agricultural activities increasingly require assistance from hired labor (Hasyiyati, 2025; Tong et al., 2024; Gu et al., 2023). Therefore, further research is needed to examine the factors affecting edamame farmer income in Sindangsari Village, particularly to identify aspects that can be improved to enhance farmer income and welfare in the future (Kirana, 2023; Aini, 2019).

Sindangsari Village, Lembursitu Subdistrict, is one of the areas cultivating edamame in Sukabumi City. The cultivation activities are part of community empowerment efforts aimed at increasing local economic income (Andayani et al., 2024). Farmers in Sindangsari Village cultivate edamame to improve household income through agricultural activities oriented toward commercial production, with products marketed to various regions (Li et al., 2024).

Sindangsari Village, Lembursitu Subdistrict, is also the location of activities conducted by PT Astra Asuna Agriculture, which focuses on edamame production. The company operates through a partnership farming system in which farmers utilize rented land for cultivation activities. Edamame cultivation areas are distributed across several villages in Sukabumi Regency. Most participating farmers are local residents who have developed skills in edamame cultivation through training, mentoring, and supervision provided by PT Astra Asuna Agriculture.

Edamame is a high-potential agricultural commodity because its cultivation can generate substantial economic returns and become an important source of farmer income. In addition, edamame is widely consumed by various consumer groups, either directly as

a fresh snack or as a processed food product. Its consumers include different socioeconomic groups, ranging from low- to high-income households. Given its high economic value, the development of edamame cultivation requires continuous attention and support.

The production potential and nutritional value of edamame support soybean diversification efforts that may reduce dependence on imported soybean products. Edamame cultivation also provides several advantages, including: (a) greater adaptability to environmental conditions, (b) higher nutritional value compared with conventional soybeans, and (c) relatively higher productivity. As a leguminous crop, edamame develops root nodules containing nitrogen-fixing bacteria, allowing the plant to utilize atmospheric nitrogen and reducing dependence on inorganic nitrogen fertilizers while contributing to soil fertility improvement (Kamtchoum et al., 2018). Therefore, supporting government food security programs through the development of edamame cultivation on volcanic soils using environmentally friendly and sustainable fertilizer practices is highly important.

This study aims to determine the effects of production volume, edamame price, education level, farmer age, number of workers, land ownership status, and land area on edamame farmer income, as well as identify the variable with the strongest influence on farmer income. The research was conducted in Sindangsari Village, Lembursitu Subdistrict, Sukabumi City, focusing on edamame farmers participating in the PT Astra Asuna Agriculture partnership system. This research contributes to the agricultural economics literature by providing empirical evidence regarding the determinants of edamame farmer income, enhancing understanding of human capital theory in agricultural contexts where practical experience may play a greater role than formal education, and expanding knowledge regarding the effectiveness of partnership systems in improving farmer welfare. Practically, the findings provide insights for policymakers in designing targeted interventions to increase production capacity and optimize land utilization, support PT Astra Asuna Agriculture in improving farmer training and capacity-building programs, and assist local governments in developing agricultural policies that position edamame as a strategic commodity for rural development. Furthermore, this study provides a foundation for future research on technology adoption, market access, and climate adaptation strategies affecting farmer welfare.

METHOD

This study employed a descriptive quantitative research method using a survey approach to examine the factors affecting the income of edamame farmers in Sindangsari Village. The research focused on identifying the relationship between production-related and socioeconomic factors and farmer income, with edamame cultivation activities in Sindangsari Village, Lembursitu Subdistrict, Sukabumi City, serving as the unit of analysis.

Sources and Methods of Data Collection

The data used in this study is primary data with data sources from edamame nut farmers in Sindangsari Village, Lembursitu District, as for the method of data collection used by distributing questionnaires. Meanwhile, secondary data were obtained from literature related to this study in the form of literature, journals and previous research.

Technology Sampling

The technique used in this study is a *non-probability* sampling technique with an *accidental sampling technique*, the definition of *non-probability* is a sampling technique that does not provide the same opportunity or opportunity for each element or member of the population to be selected as a sample. *Accidental sampling* is a technique for determining samples based on chance, that is, anyone who accidentally or *accidentally* meets a researcher can be used as a sample, if it is seen that the person who happens to be met is suitable as a data source (Sugiyono, 2013). In addition to *the accidental sampling technique*, it is also carried out with the snowball sampling technique, which is a technique of determining samples that are initially small in number, then recommending other respondents to be used as samples, and so on so that the sample becomes large (Sugiyono, 2010).

RESULTS AND DISCUSSION

Analysis Results

In multiple linear regression analysis, a double-sided probability test is used to determine the value of the T-table. The distribution of t-values is calculated at the significance level of $\alpha = 5\%$ divided by two (double-sided test), so that each side has a significance of 0.025. The degree of freedom (df) is determined by the formula $n - k = 40 - 7 = 33$, where n is the number of respondents and k is the number of variables in the study. Based on these provisions, a T-table value of 2.034 was obtained.

Based on the results of the individual significance test (t-test), it is known that there are 2 independent variables that have a real effect on the income of edamame bean farmers in Sindangsari, including the amount of edamame bean production and the land area of edamame bean farmers. A detailed explanation of the factors that have a real effect on the income of edamame peanut farmers in Sindangsari Village is as follows:

1. The variable of the number of edamame bean production (X1) has a tcal value of $> t_{table}$ ($3.297 > 2.034$) and a significance level of 0.002. Therefore, it can be concluded that the amount of edamame nut production has a positive and significant effect on the income of rice edamame nut farmers in Lembursitu District, Sukabumi City or H_0 is accepted and H_1 is rejected
2. The variable price of edamame nuts (X2) has a T-calculated value that is smaller than the T-table value ($0.355 < 2.034$) with a significance value of 0.725. Therefore, it can be concluded that the variable price of edamame beans has no significant effect on income or H_0 is rejected and H_1 is accepted
3. The variable level of education (X3) has a T-calculation value that is smaller than the T-table value ($0.355 < 2.034$) with a significance value of 0.783.

Therefore, it can be concluded that the variable price of edamame beans does not have a significant effect on income or H0 is rejected and H1 is accepted.

4. The farmer's age variable (X4) has a T-calculated value that is smaller than the T-table value ($0.278 < 2.034$) with a significance value of 0.783. Therefore, it can be concluded that the variable price of edamame beans has no significant effect on income or H0 is rejected and H1 is accepted
5. The variable number of workers (X5) has a T-value that is smaller than the T-table value ($0.163 < 2.034$) with a significance value of 0.872. Therefore, it can be concluded that the variable price of edamame beans does not have a significant effect on income or H0 is rejected and H1 is accepted.
6. The land ownership variable (X6) has a T-calculated value that is smaller than the T-table value ($0.072 < 2.034$) with a significance value of 0.943. Therefore, it can be concluded that the variable price of edamame beans has no significant effect on income or H0 is rejected and H1 is accepted

Table 1. Analysis of Variance (ANOVA) for Multiple Linear Regression

NEW ERA					
Models	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	9814659939684.734	6	1635776656614.123	6.024	.000b
Residual	8960340060315.266	33	271525456373.190		
Total	18775000000000.000	39			

a. Dependent Variable: Income

Source: Primary data processed using SPSS multiple linear regression analysis

7. The variable of edamame peanut land area (X7) has a tcal value of $> t_{table}$ ($2,610 > 2,034$) and a significance level of 0.014. Therefore, the area of land has a positive and significant effect on the income of rice farmers in Lembursitu District, Sukabumi City or H0 is accepted H1 is rejected.

Based on the results of the analysis, the Fcal value was 6.024, while the Ftabel was 2.64. Because $F_{cal} > F_{table}$ at a confidence level of 95% and a significance value of $0.000 < 0.05$, it can be concluded that the independent variables in the model have a simultaneous effect on the income of edamame farmers in Lembursitu District. Thus, the hypothesis that the income of edamame farmers is influenced by the amount of production, price, education level, age, labor, land ownership status, and land area is acceptable.

Discussion

Sindangsari Village, Lembursitu District is one of the producers of agricultural products with types of horticultural vegetable commodities. In this study, there are 7 variables that were tested to determine the influence of what factors affect the consumption of edamame nut farmers in Sindangsari Village, Keca, and Lembursitu, the variables include: the amount of production, price, education level, age of the farmer, the

number of workers, land ownership and land area. Based on the results of data processing using multiple linear regression analysis, it can be found that the following factors affect the income of edamame peanut farmers:

The Effect of Production Amount on the Income of Edamame Bean Farmers

The amount of production in a farming business is one of the things that needs to be considered by producers, where the more products produced, the higher the level of income that farmers get. Based on the results of the research conducted by the researcher stated that the variable of the amount of production had a real effect on the income of edamame nut farmers in Sindangsari Village, Lembursitu District, the variable of the number of edamame nut production (X1) had a tcal value of $> t_{table}$ ($3,297 > 2,034$) and a significance level of 0.002.

Therefore, it can be concluded that the amount of edamame nut production has a positive and significant effect on the income of edamame nut farmers in Sindangsari Village, Lembursitu District, Sukabumi City or H_0 is accepted and H_1 is rejected.

The amount of production has been proven to have a positive and significant effect on income. This finding is in line with the research of Rico Phahlevi (2013) in his study entitled Factors Affecting the Income of Rice Field Farmers in Padang Panjang City, which shows that an increase in the amount of production will be followed by an increase in farmers' income. Thus, the higher the production produced, the greater the income obtained.

The Effect of Price on the Income of Edamame Peanut Farmers

Based on the results of data analysis in table 12, the product price variables do not have a significant effect on the income of edamame bean farmers, this is evidenced by a significance value of more than 0.05, which is 0.725 and the value of T-calculation is smaller than the T-table with a value of ($0.355 < 2.034$) so that it is stated that H_0 is rejected and H_1 is accepted. Based on the table above, prices do not show a significant influence on the income of edamame farmers. However, the direction of the relationship between price and income is unidirectional, meaning that every increase or decrease in price will be followed by an increase or decrease in the income of edamame farmers in Sindangsari Village, Lembursitu District. According to Suratiyah, factors that affect income include production factors (inputs) and the amount of production (output). The production factor itself is divided into two aspects, namely availability and price. If the availability of inputs in the market is limited, it can reduce productivity and ultimately affect the income of edamame farmers.

The prevailing price level greatly affects the amount of costs and income of farming. The amount of production is influenced by demand and price, where when demand is high, prices at the farmer level also increase. This condition allows farmers to earn more income at relatively the same cost. On the other hand, if production increases but prices decrease, farmers' income will actually decrease. Thus, the amount of production is closely related to farming income. The results of this study are in line with the findings of Susianti and Rustam Abd. Rauf stated that the amount of farmers' income

is mainly determined by price, where the price factor has a positive effect on increasing income.

The Influence of Education Level on the Income of Edamame Bean Farmers

Based on the results of data analysis in table 12, the variables at the level of education do not have a significant effect on the income of edamame nut farmers, this is evidenced by a significance value of more than 0.05, which is 0.783 and the T-calculated value is smaller than the T-table with a value of ($0.355 < 2.034$) so that it is stated that H_0 is rejected and H_1 is accepted.

Based on the survey results, the formal education level of edamame farmers did not have a significant influence on their productivity or success in managing their farming business. This can be seen from the fact that most respondents only completed their education up to the elementary school level. However, the limitations of formal education do not reduce their ability to master farming practices. The knowledge they have is more obtained through direct experience in the field and through the inheritance process from parents and the social environment who also work as farmers. Thus, the non-formal learning system and hereditary knowledge play an important role in shaping farming skills.

In the perspective of human capital theory put forward by Becker (1964), formal education is indeed considered one of the investments to increase labor productivity. However, in the context of traditional agriculture, factors of work experience, practical skills, and non-formal learning are often more dominant than formal education. This is in line with the opinion of Schultz (1961) who affirms that farmers, especially in rural areas, learn through the process of adaptation and experience in facing environmental challenges as well as in utilizing local resources. Therefore, creativity, innovation, and openness to continuous learning are the main keys to farmers' success.

The distribution of respondents also shows that the majority of edamame farmers are only educated in elementary school, but are still able to run farming business well. This fact supports the findings of Harahap (2003) who stated that the last education does not have a significant influence on the income of traditional farmers. In fact, Todaro and Smith's (2011) research in Economic Development adds that in agrarian societies, practical skills acquired through hands-on practice are often more important than formal educational backgrounds.

Thus, the low level of formal education is not necessarily an obstacle for edamame farmers in increasing productivity. A more decisive factor is their ability to innovate, develop creativity, and take advantage of the experience and knowledge inherited from previous generations. In addition, the ability to adapt to new agricultural technologies and the willingness to continue to learn from experiences and social interactions are also important capital in supporting the sustainability of farming businesses.

The Influence of Farmers' Age on the Income of Edamame Peanut Farmers

The age factor of farmers has not been proven to have a significant effect on the income of edamame farmers in Sindangsari Village, Lembursitu District. The results of the analysis showed that the significance value of 0.783 was higher than the significance

level of 0.05. In addition, the direction of the negative coefficient and the t-calculated value (0.278) which is smaller than the t-table (2.034) reinforce the conclusion that the age variable does not play an important role in determining income. Thus, it can be concluded that H_0 is accepted and H_1 is rejected.

Theoretically, age is often associated with the level of labor productivity. According to Todaro and Smith (2011), labor productivity generally follows a curved pattern, where at a young age to productive age a person tends to be more energetic and has good physical abilities, then will decrease with age. However, in the context of traditional agriculture, especially in edamame commodities, the factors of skills, experience, and farming business management strategies are more dominant than just the age factor. This means that even if farmers are at an older age, the long experience they have can close their physical limitations.

This is also supported by human capital theory which states that in addition to biological factors such as age, knowledge, skills, and innovations that continue to be developed have a more important role in influencing income. Thus, farmers' income is more influenced by work efficiency, access to technology, and the ability to manage resources, rather than age alone.

The results of this study are consistent with the findings of Syam (2014) which also states that the variable of farmers' age does not have a significant effect on income. This means that both young and old farmers have the same opportunity to increase their income as long as they are able to manage their farming business effectively, utilize experience, and adapt to innovations in agriculture.

The Effect of the Number of Labor on the Income of Edamame Peanut Farmers

The factor of the number of workers on income does not affect some farmers, but in edamame nut farmers, it is not a very influential factor in the income of edamame nut farmers in overtime villages. Therefore, the variable number of workers has no real effect on the income of edamame nut farmers in Sindangsari Village, Lembursitu District. This is evidenced by the results of the analysis which states that the variable of the number of workers has a significance value of more than 0.05, namely 0.872 with a T-calculation value that is smaller than the T-table, namely ($0.163 < 2.034$), so it is widely that H_0 is rejected and H_1 is accepted.

The labor factor is one of the most important aspects of edamame farming activities. Labor plays a role as a support for other production factors because it determines the smooth production process. In this case, it is not only the quantity of labor that needs to be considered, but also the quality and type of labor involved. In practice, edamame farmers in Sindangsari Village, Lembursitu District, utilize labor in the management of farming businesses. The results of the analysis show that labor has a positive influence on farmers' incomes, although not significant. This condition is caused by the limitation of human resources, both in terms of quantity and quality, which are still not optimal to support increased productivity.

Mubyanto (in his book) emphasized that labor is a very important factor of production, because it functions as a driver for other input factors. Without adequate

skills, knowledge, and quality of human resources, the workforce cannot produce maximum output. In addition, age factors and low human resource competencies often limit the ability of the workforce to contribute optimally to the agricultural production process.

Theoretically, this can be explained through the theory of labor productivity, which states that productivity is not only determined by the number of workers, but also by the quality of skills, experience, and work efficiency (Simanjuntak, 2001). In the context of agriculture, a workforce that has good technical skills and understanding will be better able to manage land, optimize production inputs, and generate higher incomes. On the other hand, a low-skilled workforce can lead to inefficiencies, even creating obstacles in the production process.

Christofel D. Nababan, in his research entitled *Analysis of Factors Affecting Farmers' Income*, also emphasized the importance of matching the number of workers with the available land area. According to him, if the number of workers is disproportionate to the land managed, or if the quality of labor is inadequate, there will be congestion in the production process which has implications for low farmers' income. Therefore, a workforce with good skills, adequate experience, and adaptability to modern agricultural technology is a determining factor for the success of farming businesses.

Thus, although labor has a positive influence on the income of edamame farmers, this influence is not significant because the quality of human resources is still low. This condition shows the need to increase the capacity of the workforce through training, counseling, and technical skill development so that productivity can increase. These efforts will help farmers in managing farming more efficiently, so that the income obtained can also be more optimal.

The Effect of Land Ownership on the Income of Edamame Peanut Farmers

Based on the results of the research in this study, it is stated that the land ownership variable does not show a significant value to the income of edamame nut farmers, as evidenced by the results of the analysis that obtained a T-calculation value that is smaller than the T-table with a significance value of more than 0.05, namely 0.943, so it is stated that H_0 is rejected and H_1 is accepted.

The above statement is evidenced by the results of the farmers' answers who stated that the ownership of edamame beans land in Sindangsari Village, Lemburs District does not have much effect on income because sometimes even though the land ownership, in the name of the land ownership itself, the farmer's income is not too much and enough to meet the needs of his family.

The Influence of Land Area on the Income of Edamame Bean Petanni

Based on the results of data analysis in table 12 states that the land area variable affects the income of edamame nut farmers in Sindangsari Village, Lembursitu District, the land area variable obtained a significance value of 0.014 where the value is stated to be positively significant because it is smaller than the specified significance value of 0.05 with a T-calculated value greater than the T-table, namely $(2,610 > 2,034)$ then hereby the variable Area land is declared to affect the income of edamame peanut farmers in

Sindangsari Village, Lembursitu District. This is in line with the results of Febrianti (2018) research which states that the land area factor is the income factor that farmers prioritize in determining income.

Based on the table above, land area has been proven to have a significant effect on the income of edamame farmers. This shows that land area is the main factor that determines the amount of production and income obtained. The larger the land managed, the greater the production produced, so that farmers' income increases. Thus, the level of production obtained is one of the important factors in determining income. According to Adisarwanto, land can be used both permanently and cyclically, including the use of natural resources and artificial resources, which are all called land, with the aim of meeting human needs, both material and spiritual. Through land use patterns, it can also be known about the dominant economic activities in a region and the culture of its people. This means that every 1 hectare increase in land area in edamame farming has the potential to increase income, assuming other factors remain constant. Therefore, land expansion can still be carried out because it is able to provide additional income for edamame farmers. The results of this study are in line with the findings of Susianti and Rustam Abd. Rauf (2013) who stated that land area has a positive effect on increasing farmers' income.

CONCLUSION

Based on the results of the statistical tests, several conclusions can be drawn. First, all independent variables simultaneously had a significant effect on the income of edamame farmers in Lembursitu Subdistrict, with the model explaining 52.10% of the variation in farmer income. Partially, the production volume variable had a positive and significant effect on the income of edamame farmers. The variables of price, education level, farmer age, labor, and land ownership status had positive but statistically insignificant effects on income. Meanwhile, land area had a positive and significant effect on edamame farmer income. Therefore, production volume, price, education level, age, labor, land ownership status, and land area collectively influenced the income of edamame farmers in Lembursitu Subdistrict. The coefficient of determination (R^2) value of 0.5210 indicated that 52.10% of the variation in farmer income was explained by the independent variables included in the model, while the remaining 47.90% was influenced by other factors outside the research model.

Based on these findings, this study recommends that edamame farmers focus on increasing production volume through improved cultivation practices, appropriate fertilization management, and effective pest control strategies to maximize yields and income. Farmers should also optimize land utilization by expanding cultivated areas where possible and implementing intensive farming practices to improve productivity per unit of land. PT Astra Asuna Agriculture is encouraged to strengthen its partnership programs by providing enhanced training on production optimization, facilitating access to quality agricultural inputs, and offering technical assistance to improve farming efficiency. Local governments and agricultural extension services should develop

targeted policies to support edamame cultivation as a strategic commodity, including improved access to production inputs, irrigation infrastructure development, and market facilitation. Future research should examine additional factors influencing farmer income, including technology adoption, market access, climate adaptation strategies, post-harvest management, access to credit and financial services, and the effectiveness of partnership models in improving farmer welfare. Furthermore, comparative studies across different regions and agricultural commodities are recommended to expand understanding of the determinants of smallholder farmer income in diverse agricultural contexts.

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