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The Influence of Land Area and Selling Price on Gambier Production in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province

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Abstract

This study aims to analyze the influence of land area and selling price on gambier production in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province. The study employs a quantitative approach with a sample of 93 gambier farmers selected using proportional stratified random sampling. Data were collected via questionnaires and analyzed using simple linear regression with the aid of SPSS software. The results indicate that land area has a significant effect on gambier production, and selling price has a positive and significant effect on gambier production. Simultaneously, land area and selling price significantly influence gambier production. This study is expected to provide input for the government in formulating policies for gambier development by improving access to land and addressing selling prices.

KEYWORDS: Land Area, Selling Price, Gambier Production

INTRODUCTION

Indonesia is a developing nation with abundant natural resources, particularly in the agricultural sector. Benefiting from extensive land, a tropical climate, and highly fertile

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soil, agriculture serves as a primary pillar of the national economy earning Indonesia its reputation as an agrarian nation. A large portion of the population still relies on agriculture for their livelihoods; consequently, this sector plays a vital role in ensuring food security, absorbing the workforce, and improving public welfare. As the population grows, the demand for food continues to rise, necessitating an increase in agricultural productivity to meet this demand while simultaneously driving economic growth and boosting farmers' incomes (Andikayani et al., 2023).

Gambir is an agricultural commodity in Indonesia that holds significant economic value and high potential. Traditionally, its leaves and young stems have been used as medicinal remedies for various health issues, including wounds, fever, diarrhea, dysentery, headaches, stomach aches, sore throats, and infections caused by fungi or bacteria. Beyond its use in traditional medicine, gambir is also an ingredient in the practice of betel chewing combined with areca nut and lime which is believed to help maintain oral health and strengthen teeth (Oktavia, 2021).

Indonesia is a major producer and supplier of gambier in the international market, accounting for approximately 80% of global demand. According to publications from the Ministry of Agriculture, Indonesian gambier is exported to various countries, including India, Japan, Pakistan, the Philippines, Bangladesh, and Malaysia. India is the largest export destination, with demand steadily increasing to reach approximately 13,000–14,000 tons annually. In 2018, the volume of Indonesian gambier exports reached approximately 18,000 tons, with an export value of USD 55 million (Restiatun et al., 2023).

Jambi can be considered an agrarian province, as the agricultural sector including plantations plays a vital role in its economy. Consequently, economic development priorities remain focused on the agricultural sector, with the goal of maximizing the income and living standards of farmers. A robust agricultural sector is expected to further support national economic development, particularly within the province of Jambi.

Alongside West Sumatra, Jambi is a region that produces gambier. While more than 50% of the national gambier output originates from Lima Puluh Kota Regency (in West Sumatra), the village of Petiduran Baru located in the Mandiangin District of Sarolangun Regency, Jambi is also capable of producing significant quantities of gambier, albeit on a smaller scale than Lima Puluh Kota. Petiduran Baru has the smallest population of any village in the Mandiangin District of Sarolangun Regency.

Table 1. Population of Petiduran Baru Village, 2021–2025

No.	Year	Population (Number of People)
1	2021	1.035
2	2022	1.958

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3	2023	1.983
4	2024	2.159
5	2025	2.300

(Source: Petiduran Baru Village Office, 2026)

As shown in table 1, the population of Petiduran Baru Village from 2023 to 2025 has steadily increased over the last three years, making it the most densely populated village in the Sarolangun sub-district area. Population growth in Petiduran Baru Village located in Mandiangin Timur Sub-district, Sarolangun Regency, Jambi has been dynamic. According to the data, the village's population reached 2,300 people in 2025. The growth rate in Petiduran Baru Village is influenced by high levels of migration and birth rates, which are, on average, comparable to the growth trends observed across Sarolangun Regency.

Table 2. Population by Occupation in Petiduran Village, 2025

No.	Occupation	Population (Number of People)
1	Civil Servant/State Official	230
2	Farmer/Livestock Breeder	1.380
3	Self-employed/Entrepreneur	230
4	Retired	115
5	Not Employed (underage)	345

(Source: Petiduran Baru Village Office, 2026)

Based on table 2 above, the population of Petiduran Baru Village, Mandiangin District, can be categorized by occupation. The most common or dominant occupation is farming/livestock rearing, accounting for 1,380 individuals out of the total population of 2,300 in Petiduran Baru Village in 2025. Within the agricultural sector, the primary activities involve the cultivation of oil palm, rubber, and gambier, with gambier farming being the most preferred pursuit.

Table 3. Income of Gambier Farmers in Petiduran Baru Village, 2021–2025

No.	Year	Total Annual Income
1	2021	48.000.000
2	2022	60.000.000
3	2023	50.400.000
4	2024	45.120.000
5	2025	30.000.000

(Source: Petiduran Baru Village Office, 2026)

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As shown in table 3, the income of gambier farmers in Petiduran Baru Village experienced a very significant decline between 2023 and 2025. Petiduran Baru Village possesses high potential for gambier cultivation, as the local land conditions are well suited for this agricultural activity. However, farmers' incomes in the village have become unstable due to very low productivity, among various other factors. In a single harvest, farmers yield only about 3 tons sometimes even less. Consequently, it is essential to identify these factors and develop efficient farm management methods to ensure that farmers can achieve optimal yields.

Gambir farmers in Petiduran Baru Village typically harvest their crops 3 to 4 times a year, though this can vary sometimes resulting in only two harvests annually. The first harvest can take place when the gambir plants are 1 to 1.5 years old, and the plants remain productive for a considerable period, spanning 15 years. The harvest cycle also depends on soil fertility and the level of care provided to the plants to ensure optimal gambir production.

Table 4. Area of Gambir Plantations (in Hectares) in Petiduran Baru Village from 2021 to 2025

No.	Year	Total Area (Ha)	Annual Production Output
1.	2021	1.360 Ha	40.000Kg/Th
2.	2022	1.200 Ha	50.000Kg/Th
3.	2023	1.530 Ha	42.000Kg/Th
4.	2024	1.011 Ha	37.600Kg/Th
5.	2025	1.200 Ha	25.000Kg/Th

(Source: Petiduran Baru Village Office, 2026)

Based on the author's observations in Petiduran Baru Village, Mandiangin District, the total land area used for gambier cultivation and the resulting production volume have fluctuated, as shown in table 4 above. This is largely due to the unstable and often declining selling price of gambier. Furthermore, the landholdings of individual farmers remain small, with none exceeding 6 hectares. Even when demand for gambier is high, the downward trend in prices hinders farmers from maintaining consistent, maximum production levels. High production costs particularly during the pressing (extraction) process often exceed the income generated. Consequently, gambier production in Petiduran Baru Village exhibits a fluctuating trend, influenced by various factors such as weather conditions, market dynamics, government policies, and environmental changes.

Furthermore, pricing can also influence the factors of production; the selling price of gambier is often determined by collectors, commonly referred to as gambier boss. Another reason is that once the gambier has been produced, farmers who have borrowed money from these collectors are compelled to sell their product to the very individuals

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who provided the loan often because the farmers had borrowed the funds to cover production capital or to address other urgent financial needs (Amma et al., 2022).

This issue presents a level of complexity that requires precise intervention. Price volatility for gambier (catechu) has led some farmers to pay less attention to land management, resulting in suboptimal land use and a decline in crop productivity. This situation also diminishes farmers' willingness to invest in land improvement, irrigation systems, or the adoption of modern agricultural technologies. Consequently, the land's potential cannot be fully harnessed to support the growth and increased production of gambier.

Land productivity theory posits that land area is a primary factor determining the production level of an agricultural commodity. In gambier cultivation, a larger planting area offers a greater opportunity to increase total output. A larger scale of operation also allows farmers to optimize the use of labor, capital, and production inputs, thereby enhancing farming efficiency and positively impacting gambier productivity (Setiawan & Tyasmoro, 2023). Based on the above, the author intends to examine the factors influencing gambier production in Petiduran Baru Village. Therefore, the author has chosen the following title: "The Influence of Land Area and Selling Price on Gambier Production in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province."

LITERATURE REVIEW

Production theory explains the relationship between the use of factors of production and the resulting level of output, as well as its sales value. From an economic perspective, production encompasses any activity aimed at creating or enhancing the utility of goods and services to satisfy human needs. Production activities involve a range of processes, spanning from the processing and transportation of a product to its marketing. Those who engage in production activities are known as producer individuals or firms that utilize factors of production, such as land, labor, capital, and management, to generate goods or services with economic value (Hasibuan et al., 2023).

Land refers to a portion of the Earth's surface utilized as a medium for various activities, including agricultural endeavors. In an agricultural context, land is defined as a specific area of ground used for the cultivation of crops. As a factor of production, land plays a crucial role, serving as the site for plant growth and acting as the primary resource for the generation of agricultural commodities. Beyond its function as a medium for cultivation, land also encompasses the full range of natural resource potential contained within it (Febrianti et al., 2025).

Price is a crucial element in marketing activities, as it serves as the component that generates revenue for a company. According to Kotler & Armstrong (2018), price is

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the amount of value or money that consumers are willing to pay to obtain the benefits, ownership, or use of a product or service. Thus, price does not merely reflect the exchange value of a product; it also represents the benefits received by the consumer. Consequently, setting the right price becomes a vital strategy for a company to create value for its customers while simultaneously enhancing its competitiveness and business profitability.

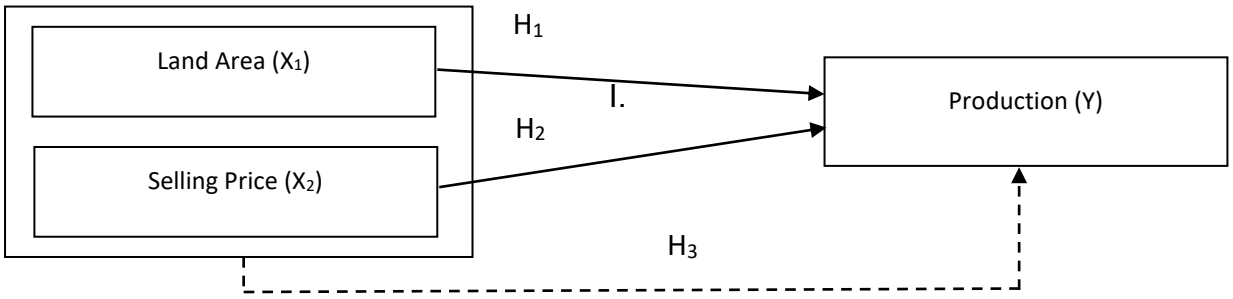


Figure 1. Conceptual Framework

Based on the framework of thought presented above, and supported by the theoretical foundation and the results of previous research, the hypothesis proposed in this study is formulated as follows:

H1: It is suspected that land area (X1) has a significant effect on gambier production (Y) in Petiduran Baru Village

H2: It is suspected that the selling price (X2) has a significant effect on the production (Y) of gambier in Petiduran Baru Village

H3: It is suspected that land area (X1) and selling price (X2) have a significant effect on the production (Y) of gambier in Petiduran Baru Village

METHOD

In this study, the subject of investigation concerns the factors influencing gambier production within gambier farming operations in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province. The research focuses on the relationship between land area as the first independent variable (X_1) and the selling price of gambier as the second independent variable (X_2) in relation to gambier production, which serves as the dependent variable. This research will be conducted in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province. This village was selected because a large portion of its population relies on the plantation sector for their livelihood, specifically the cultivation of gambier (pale catechu). The research is scheduled to begin in June 2026 and will continue until all stages of the study are completed.

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Data collection was carried out through the distribution of questionnaires, interviews, and observations involving gambier farmers in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province. In addition, data were obtained from documents, research reports, books, scientific journals, government agency publications, and statistical data from institutions such as the Central Statistics Agency (BPS), the village government, relevant government departments, and other pertinent reference sources. In this study, the population consists of all gambier farmers engaged in the cultivation and production of gambier in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province.

The sample size was determined using the Slovin formula with an error tolerance of 10%. Based on the calculation, the sample size used is 93 respondents. The sampling technique applied is proportional stratified random sampling.The data analysis employed in this study is multiple linear regression, conducted using the SPSS software. It encompasses data quality tests (validity and reliability tests), classical assumption tests (normality, multicollinearity, and heteroscedasticity tests), multiple linear regression analysis, and hypothesis testing (t-test and F-test).

Table 5. Operationalization of Variables

Variable	Indicator
Land Area (X1)	1. Agricultural land area 2. Type of land use 3. Land productivity 4. Land quality 5. Farmer welfare
Selling Price (X2)	1. Affordability 2. Price matches quality 3. Matching price with benefits 4. Price competitiveness
Procuction (Y)	1. Land area 2. Selling price 3. Farmers' terms of trade 4. Condition 5. Environment

(Source: data processed by the researcher, 2026)

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RESULTS AND DISCUSSION

Descriptive Statistics

The following table presents the distribution of respondents' responses to each question/statement item for the land area variable:

Table 6. Frequency of Respondent Responses for the Gambier Land Area Variable

Item	Frekuensi Jawaban									
	STS		TS		KS		S		SS	
	F	%	F	%	F	%	F	%	F	%
1	0	0	1	1,1	4	4,3	52	55,9	36	38,7
2	0	0	2	2,2	4	4,3	51	54,8	36	38,7
3	0	0	10	10,8	70	75,3	8	8,6	5	5,4
4	0	0	26	28	53	57	11	11,8	3	3,2
5	0	0	0	0	0	0	56	60,2	37	39,8

(Source: data processed by the researcher, 2026)

Based on the research findings, the majority of gambier farmers own no more than 6 hectares of land, which they hold as their own property. However, most respondents consider the land area they manage to be less than ideal for maximizing production or meeting the operational requirements of gambier farming. This is evidenced by the fact that 75.3% of respondents disagree that their current land area is ideal for achieving maximum production, while 57% disagree that it is sufficient to cover operational needs. Furthermore, all respondents (100%) agree that a larger area of land dedicated to gambier cultivation results in a higher yield.

Table 7. Frequency of Respondent Responses for the Selling Price of Gambier Variable

Item	Frekuensi Jawaban									
	STS		TS		KS		S		SS	
	F	%	F	%	F	%	F	%	F	%
1	0	0	18	19,4	62	66,7	11	11,8	2	2,2
2	0	0	1	1,1	7	7,5	46	49,5	39	41,9
3	0	0	0	0	3	3,2	39	41,9	51	54,8
4	0	0	1	1,1	3	3,2	39	41,9	50	53,8
5	0	0	2	2,2	11	11,8	39	41,9	41	44,1

(Source: data processed by the researcher, 2026)

Based on the research findings, the majority of respondents believe that the size of the land they own is not yet sufficient to improve production cost efficiency, with 66.7% expressing disagreement. Meanwhile, the pricing aspect received a positive assessment. A total of 91.4% of respondents agree that the price of gambier (catechu) is affordable, 96.7% consider the price to be commensurate with quality, and 95.7% state that the benefits of gambier are proportional to its selling price. Furthermore, 86% of respondents

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believe that their selling price for gambier is lower than that of other producers for comparable quality. This indicates that the pricing of gambier is viewed quite favorably by the majority of respondents, even though production cost efficiency remains a challenge.

Table 8. Frequency of Respondent Answers for the Production Variable

Item	Frekuensi Jawaban									
	STS		TS		KS		S		SS	
	F	%	F	%	F	%	F	%	F	%
1	0	0	1	1,1	1	1,1	83	89,2	8	8,6
2	0	0	19	20,4	67	72	5	5,4	2	2,2
3	0	0	0	0	26	28	36	38,7	31	33,3
4	1	1,1	23	24,7	60	64,5	7	7,5	2	2,2
5	0	0	0	0	0	0	27	29	66	71

(Source: data processed by the researcher, 2026)

Based on the research findings, the majority of respondents (97.8%) stated that the size of the land area is a key determinant of the volume of gambier harvests. However, 92.4% of respondents indicated that current gambier production is insufficient to meet high market demand. Furthermore, 72% of respondents noted that the costs of purchasing fertilizers and agricultural chemicals are relatively high in relation to the profits from the harvest. Regarding production targets, 89.2% of respondents admitted that they have not yet been able to meet the established goals. Nevertheless, all respondents (100%) stated that they use raw materials that are safe and environmentally friendly. These results indicate that limited production capacity, high operational costs, and the failure to reach production targets remain the primary challenges in gambier farming.

Respondent Profile

Table 9. Respondent Identity Based on Age

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	31-40 Year	37	39.8	39.8	39.8
	>50 Year	56	60.2	60.2	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

From the table above, it can be seen that 39.8% of the respondents or 37 gambier farmers in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province are between 31 and 40 years old, while 60.2% of the respondents or 56 gambier farmers are over 50 years old.

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Table 10. Respondent Identity by Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	69	74.2	74.2	74.2
	Female	24	25.8	25.8	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

Based on the table above, it can be seen that 74.2% of the respondents or 69 gambir farmers are male, as the gambir enterprise is quite physically demanding. Consequently, this business is primarily carried out by men, who are generally accustomed to performing strenuous labor. Nevertheless, there are also women engaged in the gambir business, accounting for 25.8% of the total, or 24 individuals.

Table 11. Respondent Profile Based on Highest Level of Education

Highest Level of Education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SD	40	43.0	43.0	43.0
	SMP	15	16.1	16.1	59.1
	SMA	37	39.8	39.8	98.9
	S1	1	1.1	1.1	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

Based on the table above, the majority of gambier farmers in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province, have an elementary school education as their highest level of schooling. This situation is influenced by limited access to education in the past, as well as the necessity to begin working at an early age. Nevertheless, there are also respondents who have pursued education up to the high school (SMA) or even the bachelor's degree (S1) level.

Table 12. Respondent Profile Based on Duration of Business Operation

Duration of Business Operation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<1 Year	2	2.2	2.2	2.2
	1-3 Year	4	4.3	4.3	6.5
	4-6 Year	11	11.8	11.8	18.3
	7-10 Year	16	17.2	17.2	35.5

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Duration of Business Operation					
		Frequency	Percent	Valid Percent	Cumulative Percent
	>10 Year	60	64.5	64.5	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

As times evolve and the demand for gambier grows, farmers are expected to maintain product quality and service standards to meet consumer needs whether for medicinal, health, or beauty purposes. This situation has the potential to increase farmers' income and profits, thereby ensuring the long-term sustainability of gambier farming.

Table 13. Respondent Profile Based on Source of Business Capital

Source of Business Capital					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Personal Capital	81	87.1	87.1	87.1
	Bank Loan	4	4.3	4.3	91.4
	Cooperative	2	2.2	2.2	93.5
	Investor	3	3.2	3.2	96.8
	Family	3	3.2	3.2	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

Business capital is a crucial factor in supporting smooth operations and increasing production. Gambier farmers in Petiduran Baru Village obtain capital from various sources, including personal funds as well as loans from banks, cooperatives, investors, family, and relatives.

Table 14. Respondent Profile Based on Income

Income					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<10.000.000	8	8.6	8.6	8.6
	>10.000.000	75	80.6	80.6	89.2
	>15.000.000	10	10.8	10.8	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

The income of gambier farmers is heavily influenced by production levels and market conditions. A decline in production can reduce earnings due to

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diminished demand, difficulties in meeting market targets, price fluctuations, and intensified competition among farmers to secure customers.

Table 15. Respondent Profile Based on Gambier Literacy Training

Gambier Literacy Training					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	20	21.5	21.5	21.5
	No	73	78.5	78.5	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

Based on the table above, it can be seen that 20 respondents (21.5%) stated that they had received literacy training regarding gambier, while 73 respondents (78.5%) stated that they had never received such training.

Table 16. Respondent Identity Based on Business Financial Record-Keeping

Business Financial Record-Keeping					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	27	29.0	29.0	29.0
	No	66	71.0	71.0	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

Based on the table above, 27 respondents (29%) stated that they maintain financial records for their businesses, while 66 respondents (71%) stated that they do not keep financial records on a regular basis.

Table 17. Respondent Identity Based on Type of Business

(1) Type of Business					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture/Plantation	93	100.0	100.0	100.0

(Source: SPSS version 27, 2026)

Based on the table above, it can be seen that the majority of farmers in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province specifically 93 respondents, or 100% are engaged in agriculture/plantation activities.

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Table 18. Respondent Profile Based on Land Area

Land Area					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Ha	36	38.7	38.7	38.7
	2 Ha	37	39.8	39.8	78.5
	3 Ha	20	21.5	21.5	100.0
	Total	93	100.0	100.0	

(Source: SPSS version 27, 2026)

Based on the table above, it can be seen that the majority of gambier (pale catechu) farmers in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province, have a land area of approximately 2 hectares (37 farmers, or 39.8%); 36 respondents (38.7%) have a land area of approximately 1 hectare; and 20 respondents (21.5%) have a land area of 3 hectares.

Data Quality Test

In this study, several data quality tests namely validity and reliability tests are employed to determine the influence of land area and selling price on gambier production in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province.

Table 19. Validity Test

Variable	Question	R-count	R-table	Information
Land Area (X1)	X1.1	0,211	0,203	Valid
	X1.2	0,477	0,203	Valid
	X1.3	0,771	0,203	Valid
	X1.4	0,717	0,203	Valid
	X1.5	0,421	0,203	Valid
Selling Price (X2)	X2.1	0,290	0,203	Valid
	X2.2	0,707	0,203	Valid
	X2.3	0,602	0,203	Valid
	X2.4	0,611	0,203	Valid
	X2.5	0,674	0,203	Valid
Production (Y)	Y.1	0,467	0,203	Valid
	Y.2	0,713	0,203	Valid
	Y.3	0,386	0,203	Valid
	Y.4	0,729	0,203	Valid

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	Y.5	0,316	0,203	Valid

(Source: SPSS version 27, 2026)

From the table above, it can be seen that each question item has a positive calculated R-value that is greater than the R-table value (0.203); therefore, it can be concluded that all indicators for the two variables are valid. Consequently, the data can be used for the subsequent stages.

Table 20. Reliability Test

No.	Variable	Cronbach's Value	Information
1	Land Area (X1)	0,676	Reliable
2	Selling Price (X2)	0,629	Reliable
3	Production (Y)	0,682	Reliable

(Source: SPSS version 27, 2026)

Based on the table above, it can be seen that each variable has a Cronbach's alpha value > 0.60. Thus, variables X1, X2, and Y can be considered reliable, meaning the data can be used for the subsequent stages.

Classical Assumption Test

This study outlines the impact of violating classical assumptions, focusing on multicollinearity, heteroscedasticity, and normality. Its objective is to provide an in-depth understanding of the consequences of such violations.

Table 21. Kolmogorov-Smirnov Normality Test

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			93
Normal Parameters[a,b]	Mean		-.0625694
	Std. Deviation		1.30362019
Most Extreme Differences	Absolute		.089
	Positive		.089
	Negative		-.041
Test Statistic			.089
Asymp. Sig. (2-tailed)[c]			.074
Monte Carlo Sig. (2-tailed)[d]	Sig.		.078
	99% Confidence Interval	Lower Bound	.071
		Upper Bound	.085

(Source: SPSS version 27, 2026)

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Based on the normality test results above, obtained using the Kolmogorov-Smirnov method, the significance value is 0.074. Since this value is greater than the significance level α (0.05), it can be concluded that the data in this study follow a normal distribution.

Table 22. Heteroskedasticity Test

Correlations					
			X1	X2	Unstandardized Residual
Spearman's rho	X1	Correlation Coefficient	1.000	.081	-.167
		Sig. (2-tailed)	.	.442	.110
		N	93	93	93
	X2	Correlation Coefficient	.081	1.000	.049
		Sig. (2-tailed)	.442	.	.644
		N	93	93	93
	Unstandardized Residual	Correlation Coefficient	-.167	.049	1.000
		Sig. (2-tailed)	.110	.644	.
		N	93	93	93

(Source: SPSS version 27, 2026)

Based on the table above, the heteroscedasticity test results using Spearman's Rho show a significance value of 0.110 for variable X1 which is greater than the significance threshold α (0.05) and a value of 0.644 for variable X2 also greater than the significance threshold α (0.05). Therefore, it can be concluded that there is no heteroscedasticity issue.

Table 23. Multicolinierity Test

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	X1	.978	1.022
	X2	.978	1.022
a. Dependent Variable: Y			

(Source: SPSS version 27, 2026)

Based on the multicollinearity test results table above, the Tolerance value for variable X1 is 0.978 (> 0.05) and the VIF value is 1.022 (< 5); similarly, the Tolerance

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value for variable X2 is 0.978 (> 0.05) and the VIF value is 1.022 (< 5). Therefore, it can be concluded that the regression model is free from multicollinearity.

Hypothesis Test

Hypothesis testing is conducted to determine and prove the influence of independent variables on dependent variables, both partially and simultaneously. Hypothesis testing in this study is conducted through multiple linear regression analysis, t-test (partial), F-test (simultaneous) and coefficient of determination test.

Table 24. Multiple Linear Regression Analysis

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.282	2.184		5.166	.000
	X1	.343	.090	.376	3.825	.000
	X2	.036	.079	.045	.458	.648
a. Dependent Variable: Y						

(Source: SPSS version 27, 2026)

Based on the results of the multiple linear regression analysis calculations, the following equation is obtained:

$$Y = 11.282 + 0.343\ (X1) + 0.036\ (X2) + e$$

A. The independent variable Land Area has a regression coefficient of 0.343, indicating a positive effect; specifically, a one-unit increase in Land Area (X1) leads to an increase in production of 0.343 kg, assuming the Selling Price (X2) remains constant. Consequently, if gambier farmers in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province, wish to increase their production, they must also expand their land area.

B. The independent variable Selling Price has a regression coefficient of 0.036, indicating a positive influence specifically, that a one-unit increase in the selling price (X2) corresponds to an increase in gambier production. In other words, every increment in the selling price leads to a 0.036 kg increase in gambier production, assuming the land area (X1) remains constant. This aligns with field conditions, where selling prices are currently too low and competition among gambier farmers is high; the price offered to consumers is determined by the quality of the gambier produced. Consequently, if the selling price is raised in accordance with superior

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quality, gambier production could also increase.

Table 25. t-test

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.282	.240		46.963	.000
	X1	.343	.010	.944	34.774	.000
	X2	.036	.009	.113	4.164	.000
a. Dependent Variable: Y						

(Source: SPSS version 27, 2026)

Based on the table above, the calculated t-value (t-count) for variable X1 is 34.774, which is greater than the critical t-value (t-table) of 1.662, with a significance probability value of 0.000 < α (0.05); therefore, the hypothesis stating that Land Area has a significant effect on Gambier Production is accepted. For variable X2, the calculated t-value is 4.164, which is greater than the critical t-value of 1.662, with a significance probability value of 0.000 < α (0.05); thus, the hypothesis stating that Selling Price has a significant effect on Gambier Production is also accepted.

Table 26. F-test

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	31.336	2	15.668	7.852	.001[b]
	Residual	179.589	90	1.995		
	Total	210.925	92			
a. Dependent Variable: Y						
b. Predictors: (Constant), X2, X1						

(Source: SPSS version 27, 2026)

Based on the table above, the calculated F-value is 7.852, while the F-table value determined using degrees of freedom df (N1) = 3–1 = 2 and df (N2) = 93–3 = 90 is 3.098. It can therefore be concluded that the calculated F-value is greater than the F-table value, with a significance level of 0.0 01 (< 0.05). This indicates that the variables Land Area (X1) and Selling Price (X2) have a significant simultaneous effect on Gambier Production (Y) in Petiduran Baru Village, Mandiangin Timur District, Sarolangun Regency, Jambi Province.

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Table 27. Coefficient of Determination Test

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.385[a]	.149	.130	1.41260
a. Predictors: (Constant), X2, X1				

(Source: SPSS version 27, 2026)

The table above shows a correlation coefficient (R) of 0.385. The extent to which the independent variables influence the dependent variable is represented by the coefficient of determination, which is calculated by squaring R. The output yields an R^2 value of 0.130, indicating that the independent variables (land area and selling price) account for 13% of the influence on the dependent variable (production), while the remaining 87% is influenced by other variables outside the scope of this study or by other independent variables not included here.

The influence of land area on gambier production

Land area is a primary factor of production in farming, as it serves as the site for crop cultivation. A larger area of land owned or managed by a farmer provides a greater opportunity to cultivate a larger number of gambier (pale catechu) plants. This, in turn, has the potential to increase the number of productive plants and the resulting harvest yield. Consequently, land area is expected to have a positive influence on gambier production, as an increase in land area expands the production capacity of a farming operation. However, an increase in land area does not automatically lead to higher production if it is not accompanied by effective management. Crop productivity is also influenced by factors such as plant age, soil fertility, maintenance, fertilizer use, labor, and the techniques employed for harvesting and processing. In other words, an expansion in the land area used must be matched by the farmer's ability to manage that land, ensuring that its production potential is utilized optimally. Research by Almizan et al. (2023) also demonstrates that land area has a positive and significant impact on gambier production. These findings reinforce the view that land area is a crucial factor in enhancing gambier production capacity.

The influence of selling price on gambier production

The selling price is an economic factor that can encourage farmers to enhance their agricultural activities. When the price of gambier (catechu) rises, farmers have the opportunity to earn higher profits, which motivates them to optimize crop maintenance and production efforts. Consequently, the selling price is expected to have a positive impact on gambier production, although this effect may depend on the condition of the

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crops and the time required to reach harvest. Meanwhile, a study by Rahima et al (2022) examines prices and land area in gambier farming; however, their dependent variable is income rather than production. Therefore, while this study supports the discussion of the economic aspects of pricing, it does not provide direct evidence of the impact of price on production volume.

The simultaneous effect of land area and selling price on gambier production

Land area and selling price are hypothesized to simultaneously influence gambier production, as both factors relate to the capacity and economic incentives of farming operations. A larger land area provides farmers with the opportunity to produce a greater quantity of gambier, while the selling price offers an economic impetus to optimize farm management. If the land is managed productively and the selling price yields an adequate profit, farmers are more likely to increase their production activities. These findings are consistent with research conducted by Jatmika et al. (2026), which also found that land area and selling price have an impact on production.

CONCLUSION

Based on the research findings and discussion regarding the influence of land area and selling price on gambier production, it can be concluded that land area is a key factor determining a farmer's capacity for gambier production. A larger area of land managed productively translates to a greater potential for total output. Meanwhile, the selling price plays an economic role by encouraging farmers to optimize their farming activities; a favorable selling price can boost a farmer's motivation to maintain their crops and expand their farming operations. Together, land area and selling price are factors that should be considered in efforts to increase gambier production. Land area relates to production capacity, while the selling price relates to the economic incentives received by the farmer. Consequently, increasing gambier production requires not only the availability of productive land but also market conditions that provide a profitable selling price for farmers.

RECOMMENDATIONS

Based on the research findings, gambier farmers are encouraged to optimize the use of their land through sustainable crop management and maintenance, with the aim of increasing gambier productivity. Furthermore, attention must be paid to the stability of the selling price of gambier by improving product quality, ensuring transparency regarding market prices, and strengthening the farmers' bargaining position in marketing activities. Local governments are expected to provide support such as guidance, mentoring, and

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facilities for developing gambier farming to enable farmers to enhance their production capacity while securing more profitable selling prices. Finally, future research should consider other variables that may influence gambier production such as labor, capital, fertilizer use, plant age, farmer experience, and processing technology while also expanding the study area and sample size. This would ensure more comprehensive results, ultimately contributing more broadly to the development of the gambier commodity.

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