

Analysis of the Profitability and Feasibility of Patchouli Farming in a Polyculture System in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency

Silvan Kifli¹, Ilma Sarimutaqiyma Rianse², Yusna Indarsyih³

¹ Alumnus of Agribusiness, Faculty of Agriculture, Halu Oleo University, Kendari City, Indonesia

² Lecturer, Faculty of Agriculture, Halu Oleo University, Kendari City, Indonesia

Corresponding Author: silfankifli@gmail.com

Abstract

This study aims to analyze the condition of patchouli farming, the level of profit obtained, and the feasibility of patchouli farming in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency. The research was conducted from August 2025 to January 2026 using a descriptive quantitative method. Data used in this study consisted of primary data obtained through direct interviews with patchouli farmers and secondary data collected from village records and relevant institutions. The number of respondents was 34 farmers selected from a population of 50 using the Slovin formula. The results show that patchouli farming in Lembah Subur Village is still managed using traditional cultivation techniques. The average production cost incurred by farmers was Rp1,522,000 per planting season, while the average total revenue reached Rp8,849,118. The average profit obtained by farmers was Rp7,327,118 per hectare per planting season. The feasibility analysis shows an R/C Ratio of 5.81, indicating that patchouli farming is economically feasible and profitable to develop.

Keyword: *Feasibility, Profitability, R/C Ratio, Polyculture Patchouli Farming*

INTRODUCTION

Patchouli farming is considered quite profitable due to relatively low production costs and the easy availability of seedlings, whether through purchase or propagation from parent plants. Ease of management and significant profit potential make patchouli cultivation a viable agricultural business opportunity, particularly in rural areas with suitable agroclimatic



conditions. One region with potential for patchouli cultivation is East Kolaka Regency in Southeast Sulawesi Province. This region features fertile geographical conditions and a climate conducive to the growth of various agricultural commodities, including patchouli. Lembah Subur Village is one of the villages in East Kolaka Regency where the majority of residents work in the agricultural sector, and patchouli cultivation has become a fairly well-developed agricultural enterprise in recent years. According to data from the East Kolaka Regency Agriculture Office (2022), this region has a sufficiently large land area and environmental conditions that support the development of patchouli cultivation, making this commodity one of the primary sources of income for the local community.

Nevertheless, patchouli farming also faces various challenges, one of which is the fluctuation of patchouli oil prices in the market. In recent years, patchouli oil prices have experienced significant changes. From 2019 to 2020, patchouli oil prices rose, encouraging many farmers to begin cultivating the plant. However, from 2021 to 2022, patchouli oil prices declined, causing some farmers to switch to other crops. This price instability directly impacts farmers' incomes, which are heavily dependent on harvest yields and market prices. In addition to price factors, weather conditions also play a crucial role in affecting patchouli plant productivity and farmers' incomes.

Furthermore, the patchouli cultivation system practiced by farmers in Lembah Subur Village remains relatively rudimentary. Most farmers still rely on traditional cultivation methods, such as obtaining seedlings from other farmers and minimal plant maintenance—including fertilization, weeding, irrigation, and pest control. These conditions mean that patchouli productivity is highly dependent on weather and environmental conditions. Therefore, it is necessary to improve farmers' knowledge of more efficient cultivation techniques and better farm management so that the potential of patchouli can be optimally utilized.

Patchouli production data in East Kolaka Regency also indicates significant changes. In 2022, the largest patchouli production center was in Aere Village, with an annual output of 96.35 tons, followed by Mowewe Village at 29.79 tons per year and Dangia Village at 28.58 tons per year. However, in 2023, there was a significant decline in production, with Aere Village producing only 9.00 tons per year, Mowewe Village at 10.00 tons per year, and Dangia Village at 14.00 tons per year. Meanwhile, Lambandia Village became the largest production center, with production reaching 23.00 tons per year. These conditions indicate dynamics in patchouli production that require further study, particularly regarding the factors influencing the profitability and viability of patchouli farming.

On the other hand, patchouli prices have shown a significant increase in recent years.





From 2022 to 2023, patchouli prices ranged from Rp400,000 to Rp700,000 per kilogram, whereas in 2024, prices saw a substantial increase, reaching Rp1,000,000 to Rp2,500,000 per kilogram. Nevertheless, to date, few in-depth analyses have been conducted regarding the profitability and viability of patchouli farming in Lembah Subur Village, even though this commodity has become one of the primary sources of livelihood for the local community. Therefore, an analysis of the profitability of patchouli farming is crucial to determine the extent to which this agricultural activity provides economic benefits to farmers.

Previous studies have shown that patchouli farming holds significant economic potential if managed effectively. Siahaan's (2020) research indicates that increased production and profitability in patchouli farming can be achieved through the use of high-quality seeds, effective pest control, and a robust marketing system. Research by Prasetyo et al. (2020) also found that factors such as production costs, seed quality, and cultivation techniques have a significant influence on the profitability of patchouli farming. Meanwhile, Lestari and Fauzi (2020) state that the application of modern agricultural technologies, such as irrigation systems and proper fertilization, can increase patchouli oil production and quality, thereby providing greater profits for farmers.

Based on the above discussion, it is evident that patchouli farming holds significant economic potential; however, various challenges still affect the profit levels farmers achieve. Therefore, research is needed on **the profitability and feasibility of patchouli farming in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency**. This study is expected to provide a clearer picture of the economic potential of patchouli farming and serve as a basis for consideration by farmers, the government, and relevant parties in formulating more effective strategies for the development of patchouli farming to improve community welfare.

METHOD

The research method used in this study is a quantitative descriptive method aimed at analyzing the profitability and feasibility of patchouli farming in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency. This study was conducted among patchouli farmers who rely on patchouli cultivation as one of their primary sources of livelihood. Data collection was conducted using primary and secondary. Primary data was obtained directly from respondents through field observations, interviews, and the distribution of questionnaires to patchouli farmers, while secondary data was obtained from relevant agencies such as the East Kolaka Regency Agriculture Office and various literature relevant to the study.



Data analysis is the step used to address the research questions, aiming to draw conclusions from the research findings. The following data analysis methods were used in this study:

Descriptive analysis to determine the condition of patchouli farming in terms of the resources used and cultivation techniques compared in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency. The calculation of profits from patchouli farming was performed using a profit analysis, with the formula:

1. Revenue; the formula used to calculate revenue is as follows:

$$TR = Y \cdot P_y \text{ (Soekarwati 1995)}$$

Explanation:

TR = *Total Revenue*. (Rp/growing season)

Y = *Output* (Production Obtained). (Rp/growing season)

P_y = *Price* (Output Price). (IDR/kg)

2. Costs: The formula used to calculate production costs according to (Soekartawi, 2016) is as follows:

$$TC = FC + VC$$

Notes:

TC = *Total Cost*. (IDR/growing season)

FC = *Fixed Cost*. (IDR/growing season)

VC = *Variable Cost*. (IDR/growing season)

3. Profit: The formula used to calculate profit is:

$$\pi = TR - TC \text{ (Soekartawi, 2016).}$$

Explanation:

π = Profit from patchouli farming (IDR/growing season)

TR = Total revenue from patchouli farming (IDR/growing season)

TC = Total costs of patchouli farming (IDR/growing season)

4. Feasibility, the R/C ratio indicates whether a business is profitable, breaks even, or incurs a loss. The formula used to calculate the R/C ratio is as follows:

$$R/C\text{-Ratio} = \frac{TR}{TC} \text{ (Soekartawi, 2016).}$$

Explanation:

R = Revenue (Rp/Ha/MT)

C = Cost (Rp/Ha/MT)

TR = *Total Revenue* (Rp/Ha/MT)

TC = *Total Cost* (Rp/Ha/MT)

The criteria based on the R/C ratio are

R/C ratio > 1, patchouli farming is viable

R/C ratio = 1, the patchouli farming operation breaks even—neither profitable nor unprofitable.

R/C ratio < 1: Clove farming is not viable

RESULTS AND DISCUSSION

Fixed Costs and Variable Costs

The cost structure of patchouli farming consists of fixed costs and variable costs. Fixed costs are costs that remain relatively unchanged over a single growing season, while variable costs are costs whose amounts are influenced by the intensity of production activities.

Table 1 Average Fixed Costs of Clove Farming in a Polyculture System in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency, 2025

Variable Equipment Components	Total Cost (IDR/growing season)	Average per Respondent (Rp/growing season)	%
Patchouli Harvesting Tools	3,200,000	94,118	27.26
Tarpaulin	8,088,000	237,882	68.90
Nilam Scissors	450,000	13,235	3.83
Total	11,738,000	345,235	100.00

Based on Table 1, the total fixed costs of patchouli farming using the polyculture system in Lembah Subur Village for one harvest season reached Rp11,738,000, with an average of Rp345,235 per respondent. The largest cost stems from the use of tarps, accounting for 68.90%. This indicates that harvesting and post-harvest activities, particularly the collection and drying of patchouli, require significant supporting resources. This aligns with the concept of fixed costs as defined by Marewa (2012), who states that fixed costs are not influenced by changes in production volume and are consistently incurred throughout the production process. This finding is also consistent with the research by Hartono and Malik (2023), which noted that fixed costs in patchouli farming are generally dominated by equipment and post-harvest facilities.

Table 2 Average Variable Costs of Patchouli Farming in a Polyculture System in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency, 2025

Variable Cost Components	Total Costs (IDR/growing season)	Average of Respondents (Rp/growing season)	Percentage (%)
Labor	5,520,000	162,353	13.80
Refining	22,100,000	650,000	55.24
Firewood	4,000,000	117,647	9.99
Raffia Rope	2,810,000	82,647	7.02
Rice Sacks	5,580,000	164,118	13.95
Total	40,010,000	1,176,765	100.00

Table 2 shows that the total variable costs of patchouli farming in a polyculture system amount to Rp40,010,000 per growing season, with an average of Rp1,176,765 per respondent. The largest cost component comes from distillation at 55.24%, followed by labor wages at 13.80%, rice sacks at 13.95%, firewood at 9.99%, and raffia rope at 7.02%. The significant costs of distillation and labor indicate that patchouli farming remains labor-intensive, particularly during the maintenance, harvesting, and distillation stages. This aligns with Shinta's (2011) assertion that labor is a critical input in agricultural production. This finding is further supported by Putri et al. (2022), who noted that labor and distillation costs constitute the primary variable cost components in patchouli farming.

Table 3 Average Total Costs of Clove Farming in a Polyculture System in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency, 2025

Cost Description	Total Costs (IDR/growing season)	Respondent Average (Rp/growing season)	Percentage (%)
Fixed Costs	11,738,000	345,235	58.41
Variable costs	40,010,000	1,176,765	41.59
	51,748,000	1,522,000	100.00

Overall, Table 3 shows that the total production costs for patchouli farming using the polyculture system in Lembah Subur Village reached Rp51,748,000 per growing season, with an average of Rp1,522,000 per respondent. Fixed costs account for a larger proportion, namely 58.41%, compared to variable costs of 41.59%, indicating that patchouli farming requires significant investment in production tools and facilities to support the sustainability of the

business. This aligns with Soekartawi's (2016) assertion that in perennial or semi-perennial crop farming, fixed costs are generally higher due to the repeated use of production tools and facilities. However, variable costs such as labor and distillation remain crucial in the operational activities of patchouli farming. These findings also align with the research by Hartono and Malik (2023), who state that labor and distillation costs are the main components in the cost structure of patchouli farming. Additionally, the relatively low average production costs indicate that the polyculture system can enhance cost efficiency through more optimal utilization of land and labor.

Production, Selling Price, and Revenue of Patchouli Farming in a Polyculture System

The amount of patchouli oil produced by farmers in the polyculture system in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency is influenced by cultivation intensity and the area of land cultivated. The more intensive the cultivation activities—from planting, maintenance, to harvesting—and the larger the land area owned, the higher the potential for patchouli oil production tends to be. Production is the primary factor determining the level of income and profit earned by farmers, making it crucial to analyze when evaluating the performance of patchouli farming. In this study, production is defined as the amount of patchouli oil produced in a single harvest season. According to Purwadinata (2020), production is the process of transforming production factors into output, which is heavily influenced by farm management and the use of production inputs. The average production, selling price, and income from patchouli farming in the polyculture system in Lembah Subur Village are presented in Table 4.

Table 4 Production, Selling Price, and Farm Income of Patchouli in a Polyculture System in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency, 2025

Description	Unit	Minimum Value	Maximum Value	Average
Patchouli oil production	kg/season	5	32	13.85
Patchouli oil price	Rp/kg	400,000	800,000	623,824
Revenue	Rp/season	2,000,000	25,600,000	8,849,118

Based on Table 4, the patchouli oil production of the respondent farmers during one harvest season ranged from 5–32 kg, with an average of 13.85 kg per respondent. This variation in production is influenced by differences in land area, plant age, cultivation techniques, and

distillation process efficiency. This aligns with the research by Hartono and Malik (2023), which states that variations in patchouli oil production at the farmer level are influenced by raw material quality and distillation technology. The selling price of patchouli oil received by farmers ranged from Rp400,000 to Rp800,000 per kg, with an average of Rp623,824 per kg, influenced by oil quality and market conditions (Sulastri et al., 2022). Based on the analysis results, the total income of all respondents during one harvest season reached Rp300,870,000, with an average of Rp8,849,118 per respondent. In general, these income figures indicate that patchouli farming using a polyculture system has significant economic potential because it optimally utilizes land and helps stabilize farmers' income.

Analysis of Patchouli Farming Profits

According to Taha and Alam (2016), the magnitude of farm profits is significantly influenced by the level of production achieved and the efficiency of production cost management. Thus, profit analysis serves as a key indicator for assessing the viability and performance of a farming operation. The average profit of clove farming using a polyculture system in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency is presented in Table 5.

Table 5 Average Profit of Clove Farming in a Polyculture System in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency, 2025

Description	Total (IDR/Growing Season)	Average per Respondent (Rp/Growing Season)
Total Revenue	300,870,000	8,849,118
Total Production Costs	51,748,000	1,522,000
Profit	249,122,000	7,327,118

According to Table 5, the total revenue earned by all respondent farmers during one growing season amounted to Rp300,870,000, with an average of Rp8,849,118 per respondent. Meanwhile, total production costs amounted to Rp51,748,000, or an average of Rp1,522,000 per respondent. The difference between income and production costs resulted in a total profit of Rp249,122,000, with an average of Rp7,327,118 per respondent. This relatively high profit indicates that patchouli farming using a polyculture system provides a significant economic contribution to farmers, primarily due to relatively low production costs and the high selling price of patchouli oil. This aligns with Soekartawi's (2016) assertion that high farming profits reflect efficiency in cost management and resource utilization. Additionally, the implementation

of the polyculture system also helps improve land-use efficiency and mitigate business risks. This finding aligns with the research by Putri et al. (2022), which states that the polyculture system can enhance farmers' income stability and profits through production diversification.

Feasibility Analysis of Patchouli Farming (R/C Ratio)

The feasibility analysis of patchouli farming using a polyculture system in this study was conducted using the revenue-to-cost ratio (R/C Ratio), which is the comparison between total revenue and total production costs incurred during one growing season. The average R/C Ratio for patchouli farming in a polyculture system in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency is presented in Table 6.

Table 6 Feasibility of Patchouli Farming (R/C Ratio) in a Polyculture System in Lembah Subur Village, Dangia Subdistrict, East Kolaka Regency, 2025

Indicator	Value	Description
R/C Ratio	5.81	Feasible (>1)

Based on Table 6, the calculation results show that the average R/C Ratio is 5.81. This value means that for every Rp1.00 spent on patchouli farming in a polyculture system, revenue of Rp5.81 is generated. All respondents had an R/C Ratio greater than one ($R/C > 1$), so economically, patchouli farming is deemed viable to undertake and develop. A high R/C Ratio indicates that patchouli farming has a good level of operational efficiency, influenced by relatively low production costs and a sufficiently high selling price for patchouli oil. This aligns with Gittinger's (1986) assertion that a business is considered viable if the R/C Ratio is greater than one. These findings are also supported by research by Hartono and Malik (2023) and Putri et al. (2022), who state that cost efficiency and the implementation of a polyculture system can enhance the economic viability of farming operations.

Thus, based on the obtained R/C Ratio, it can be concluded that patchouli farming using a polyculture system in Lembah Subur Village is not only economically viable but also holds good prospects for development as a primary or supplementary income source for farming households. The high profit margins achieved by farmers, reflected in the difference between total revenue and total production costs, indicate that patchouli farming using a polyculture system contributes significantly to farmers' household income. This is reinforced by an R/C Ratio far greater than one, indicating that every unit of cost incurred generates multiple times the



revenue. In other words, patchouli farming using a polyculture system is not only profitable but also highly economically efficient.

Overall, the results of this study indicate that clove farming using a polyculture system in Lembah Subur Village has excellent economic prospects and is worthy of sustainable development. The high level of profitability and business viability reflect that the polyculture system not only plays a role in increasing farmers' income but also provides protection against production risks and price fluctuations. Therefore, the development of patchouli farming using a polyculture system has the potential to become one of the main strategies in improving farmers' welfare and strengthening the economic resilience of agricultural households in the study area.

CONCLUSION

The profit from patchouli farming earned by farmers in a single harvest season amounts to Rp294,122,000, which is the difference between total revenue of Rp300,870,000 and total production costs of Rp51,748,000. The magnitude of this profit indicates that patchouli farming contributes a significant portion of income to farming households in the study area. Based on a feasibility analysis using the R/C Ratio criterion, the clove farming system under polyculture has an R/C Ratio of 5.81, which is greater than one. This indicates that clove farming is economically viable to be undertaken and developed in Lembah Subur Village.

Based on this, it is recommended that patchouli farmers maintain the polyculture system that has been implemented by improving cultivation techniques, particularly regarding plant maintenance and post-harvest management, to enhance both productivity and the quality of patchouli oil. Additionally, local governments and relevant agencies are encouraged to provide support through mentoring programs, technical training, and facilitating access to capital and technology to promote the sustainable development of patchouli farming. For future researchers, it is recommended to conduct a more in-depth study regarding business feasibility analysis, such as the B/C ratio, sensitivity analysis, as well as aspects of supply, price fluctuations, and the marketing efficiency of patchouli oil, so as to provide a more comprehensive picture of the prospects and sustainability of patchouli farming.

REFERENCE

Badan Penelitian dan Pengembangan Pertanian. (2020). Pedoman teknis pengendalian organisme pengganggu tumbuhan. Jakarta: Kementerian Pertanian Republik Indonesia.





- Badan Penelitian dan Pengembangan Pertanian. (2021). Strategi pembangunan pertanian berkelanjutan untuk meningkatkan kesejahteraan petani. Jakarta: Kementerian Pertanian Republik Indonesia.
- Badan Pusat Statistik (BPS). (2021). Statistik Perdagangan Luar Negeri Indonesia: Ekspor-Impor Komoditas Minyak Atsiri. Jakarta: Badan Pusat Statistik.
- Badan Pusat Statistik (BPS). (2023). Kecamatan Dangia dalam angka 2023. Kolaka Timur: Badan Pusat Statistik Kabupaten Kolaka Timur.
- Badan Pusat Statistik Kecamatan Dangia. (2023). Kecamatan Dangia dalam angka 2023. Kolaka Timur: Badan Pusat Statistik Kabupaten Kolaka Timur.
- Badan Pusat Statistik. (2021). Statistik pertanian Indonesia 2021. Jakarta: BPS.
- BPS Provinsi Sulawesi Tenggara. (2021). Produksi perkebunan rakyat menurut jenis tanaman. Kendari: BPS Sultra.
- Daud, M. (2021). Pengaruh sistem tanam campuran terhadap pertumbuhan dan hasil tanaman pada lahan dengan tingkat kesuburan rendah. *Jurnal Agroteknologi*, 15(2), 85–93.
- Dinas Ketahanan Pangan dan Perikanan. (2020). Pengenalan Sistem Polikultur pada Usahatani. Dinas Pertanian Kabupaten Kolaka Timur. (2025). Laporan perkembangan pertanian dan potensi sumber daya alam. Kolaka Timur: Dinas Pertanian.
- Hartono, H., & Malik, A. (2023). Analisis biaya tenaga kerja dan penyulingan pada usahatani nilam rakyat. *Jurnal Agribisnis Indonesia*, 11(2), 89–99.
- Hartono, H., & Malik, A. (2023). Faktor-faktor yang memengaruhi variasi produksi minyak nilam pada tingkat petani rakyat. *Jurnal Agribisnis Indonesia*, 11(2), 89–99.
- Hartono, H., & Malik, A. (2023). Struktur biaya dan pendapatan usahatani nilam rakyat. *Jurnal Agribisnis Indonesia*, 11(2), 89–99.
- Lestari, S., & Fauzi, A. (2020). Pengaruh teknologi terhadap peningkatan produksi dan keuntungan usaha tani nilam di Sumatera Barat. *Jurnal Teknologi Pertanian*, 21(3), 101–109.
- Marewa, R. (2012). Manajemen biaya dan akuntansi pertanian. Jakarta: Penerbit Mitra Agro.
- Prasetyo, A., Lestari, S., & Wijayanti, H. (2020). Pengaruh faktor-faktor produksi terhadap keuntungan usahatani nilam di Sulawesi Selatan. *Jurnal Ekonomi Pertanian*, 24(3), 205–214.
- Purwadinata, S. (2020). Pengantar ilmu ekonomi produksi. Bandung: Alfabeta.
- Putri, N., Rahman, A., & Suryani, D. (2022). Perbandingan biaya produksi dan risiko usaha pada sistem polikultur dan monokultur dalam usahatani. *Jurnal Sosial Ekonomi Pertanian*, 19(2), 112–121.





- Shinta, A. (2011). Ilmu usahatani. Malang: Universitas Brawijaya Press.
- Siahaan, D. (2020). Analisis akses pasar dan keberlanjutan usahatani nilam di Sumatera Utara. *Jurnal Agribisnis Terpadu*, 13(2), 101–110.
- Soekartawi. (2003). Teori ekonomi produksi: Dengan pokok bahasan analisis fungsi cobb-douglas. Jakarta: RajaGrafindo Persada.
- Soekartawi. (2011). Agribisnis: Teori dan praktik. Jakarta: RajaGrafindo Persada. Soekarwati. (1995). Prinsip dasar ekonomi pertanian. Jakarta: RajaGrafindo Persada
- Taha, A., & Alam, S. (2016). Analisis keuntungan usahatani berdasarkan tingkat produksi dan efisiensi biaya. *Jurnal Sosial Ekonomi Pertanian*, 13(1), 45–54.

