



INCOME AND FEASIBILITY ANALYSIS OF PATCHOULI FARMING IN PASIE RAJA DISTRICT, SOUTH ACEH REGENCY

ANALISIS PENDAPATAN USAHATANI NILAM DI KECAMATAN PASIE RAJA KABUPATEN ACEH SELATAN

Khairun Nisa^{1*}, Agustiar¹, Liston Siringo Ringo¹, Erlisa¹

¹ Agribusiness Study Program, Faculty of Agriculture, Universitas Teuku Umar

* Correspondent Email: khairunnisa@utu.ac.id

Abstract

Patchouli farming is an important smallholder activity in South Aceh, but its profitability is vulnerable to price volatility, traditional cultivation practices, and high labor requirements. This study aimed to analyze the income, economic feasibility, and break-even point of patchouli farming in Pasie Raja District, South Aceh Regency. The research site was selected purposively because Pasie Raja is one of the patchouli-producing areas in South Aceh. A descriptive quantitative approach was applied using census data from 37 active patchouli farmers in five villages: Pucok Krueng, Ladang Teungoh, Panton Bili, Ladang Tuha, and Rambong. Primary data were collected through field observation, structured interviews, questionnaires, and documentation, while secondary data were obtained from relevant institutions and literature. The data were analyzed using total cost, total revenue, farm income, revenue-cost ratio, break-even production, and break-even price. The results showed that the average total production cost was IDR 8,412,694 per planting season, while average revenue reached IDR 15,315,237. The average farm income was IDR 7,578,294 per planting season. The revenue-cost ratio was 1.82, indicating that patchouli farming was financially feasible. The break-even production was 14.752 kg, below the actual average production of 26 kg, and the break-even price was IDR 317,535/kg, below the observed average selling price of IDR 570,270/kg. These findings suggest that patchouli farming in Pasie Raja remains profitable under current production and price conditions. However, its sustainability requires improved production efficiency, better distillation performance, stronger market access, and risk management against price volatility.

Keywords: *break-even point, farm income, patchouli, revenue-cost ratio, smallholder farming*

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh ekstrak daun gambir terhadap pertumbuhan jamur *Curvularia* sp. serta menentukan konsentrasi ekstrak yang mampu menghambat pertumbuhan koloni jamur sebesar 50%. Metode penelitian yang digunakan adalah Rancangan Acak Lengkap (RAL) dengan 4 variasi konsentrasi ekstrak (0%, 5%, 10%, dan 15%) yang masing-masing diulang 6 kali. Hasil penelitian menunjukkan bahwa konsentrasi ekstrak daun gambir tertinggi dalam menghambat pertumbuhan jamur terdapat pada konsentrasi 15%. Analisis LC50% diketahui bahwa konsentrasi yang dibutuhkan untuk mencapai daya hambat 50% adalah 118,16%, hal ini menunjukkan bahwa efektivitas ekstrak terhadap jamur *Curvularia* sp. tergolong rendah atau kurang toksik

Kata Kunci: Daun gambir, *Curvularia* sp., antijamur



INTRODUCTION

Agriculture remains a major economic base for rural households because it provides employment, income, and raw materials for the agro-industry. One agricultural commodity of strong commercial relevance is patchouli (*Pogostemon cablin* Benth.), an essential oil crop widely used as a fixative in perfume, cosmetics, aromatherapy, and other fragrance-based industries. Patchouli oil holds a strategic position because its aroma-fixing function is difficult to fully replace with synthetic materials, and its market performance is closely linked to the development of the global fragrance and cosmetics industries (Adharini, 2009; Hermanton *et al.*, 2023).

South Aceh Regency has considerable potential for patchouli development. One of its production areas is Pasie Raja District, where farmers cultivate patchouli and process it into patchouli oil through small-scale distillation units. Patchouli farming in this area is mostly managed by smallholders with limited land area and relatively traditional production practices. These conditions create a direct relationship between production costs, output volume, selling price, and household income. In practice, farmers also face unstable patchouli oil prices, which can reduce income and encourage land conversion to other commodities when patchouli is perceived as less reliable.

The economic question is therefore not merely whether patchouli can generate revenue, but whether the revenue is sufficient to cover production costs and provide an acceptable income for farmers. Farm income analysis measures the difference between total revenue and total cost, while the revenue-cost ratio evaluates whether the farming activity is financially feasible. Break-even point analysis further identifies the minimum output and minimum price required to avoid losses. Together, these indicators provide a more complete picture of farm performance than revenue alone (Listiani *et al.*, 2019; Surya *et al.*, 2023).

Previous studies have examined income and feasibility in various farming systems, including patchouli and other agricultural commodities. However, local-level evidence remains important because patchouli profitability is highly sensitive to production practices, labor costs, access to distillation, and local price conditions. For Pasie Raja District, such analysis is needed to provide a practical basis for farmers, extension workers, and policymakers to improve production efficiency and reduce income risk. This study, therefore, aimed to analyze the income, revenue-cost ratio, break-even production, and break-even price of patchouli farming in Pasie Raja District, South Aceh Regency.

RESEARCH METHODS

Research Location and Period

The research was conducted in Pasie Raja District, South Aceh Regency, from December 2023 to February 2024. The location was selected purposively because the district is one of the areas where farmers actively cultivate patchouli and process it into patchouli oil. The study covered five villages: Pucok Krueng, Ladang Teungoh, Panton Bili, Ladang Tuha, and Rambong.



Research Design and Sampling

This study used a descriptive quantitative approach. The population consisted of all active patchouli farmers in the selected villages. Because the total population was relatively small, the census method was used; therefore, all 37 active patchouli farmers were included as respondents. This approach allowed the analysis to represent the observed farmer population in the study area without drawing a separate sample.

Data Collection

The data consisted of primary and secondary data. Primary data were collected through direct field observation, interviews with farmers, questionnaires, and documentation of farming activities. The information collected included land area, production, selling price, input costs, labor costs, distillation costs, equipment depreciation, and other costs related to patchouli farming. Secondary data were obtained from relevant institutions, previous studies, books, and scientific literature supporting the analysis.

Data Analysis

The production cost was calculated by adding fixed and variable costs. Fixed costs included equipment depreciation, while variable costs included seedling costs, fertilizers, pesticides, labor, and distillation costs. Total cost was calculated as follows:

$$TC = TFC + TVC$$

where TC is total cost, TFC is total fixed cost, and TVC is total variable cost. Total revenue was calculated by multiplying production volume by selling price:

$$TR = Q \times P$$

where TR is total revenue, Q is production quantity, and P is the selling price per kilogram. Farm income was calculated as the difference between total revenue and total cost:

$$I = TR - TC$$

where I is farm income. Feasibility was assessed using the revenue-cost ratio:

$$R/C \text{ ratio} = TR / TC$$

A farming activity is considered feasible when the R/C ratio is greater than 1, breaks even when it equals 1, and is not feasible when it is less than 1. Break-even point analysis was used to identify the minimum production quantity and minimum selling price required to cover production costs.



RESULTS AND DISCUSSION

Characteristics of Patchouli Farmers

The 37 respondent farmers were distributed across five villages in Pasie Raja District. Most farmers operated patchouli farms on a small scale. Based on land area, 20 farmers or 54% cultivated less than 0.25 ha, 16 farmers or 43% cultivated 0.25-0.5 ha, and only one farmer or 3% cultivated more than 0.5 ha. This structure shows that smallholders dominate patchouli farming in the study area. Small land ownership limits economies of scale and makes income highly dependent on productivity, selling price, and cost efficiency (FAO, 2017).

Table 1. Patchouli Farm Land Area in Pasie Raja District, South Aceh Regency

No	Land area (ha)	Number of farmers	Percentage (%)
1	< 0.25	20	54
2	0.25-0.5	16	43
3	> 0.5	1	3
	Total	37	100

Source: Primary data processed, 2023

Production Cost Analysis

Patchouli production costs consisted of fixed and variable costs. The fixed cost recorded in this study was equipment depreciation, while variable costs consisted of seedling, fertilizer, pesticide, labor, and distillation costs. The average total production cost was IDR 8,412,694 per planting season. Labor was the largest cost component, at IDR 5,737,838, followed by equipment depreciation at IDR 974,839 and distillation cost at IDR 640,150. This cost structure indicates that patchouli farming in Pasie Raja is labor-intensive. Consequently, any increase in labor cost or inefficiency in farm operations can quickly reduce net income.

Table 2. Average production cost of patchouli farming in Pasie Raja District, South Aceh Regency

No	Cost component	Average cost (IDR)
1	Fixed cost: equipment depreciation	974,839
2	Variable cost: seedlings	631,757
3	Variable cost: fertilizers	217,030
4	Variable cost: pesticides	211,081
5	Variable cost: labor	5,737,838
6	Variable cost: distillation	640,150
	Total	8,412,694

Source: Primary data processed, 2023

Revenue and Income Analysis

Revenue was obtained by multiplying patchouli oil production by the selling price. The average production of patchouli oil was 26 kg per planting season, and the average selling price was IDR 570,270/kg. Therefore, the average revenue was IDR 15,315,237 per planting season. After deducting the average total production cost of IDR 8,412,694, the average farm income was IDR 7,578,294 per planting season.

**Table 3.** Revenue and income of patchouli farming in Pasie Raja District, South Aceh Regency

No	Description	Production (kg)	Selling price (IDR/kg)	Value (IDR)
1	Production/revenue	26	570,270	15,315,237
2	Production cost	-	-	8,412,694
3	Farm income	-	-	7,578,294

Source: Primary data processed, 2023

The positive income value shows that patchouli farming generated an economic surplus for farmers under the observed conditions. However, this result should not be interpreted as a guarantee of long-term stability. Since labor accounts for the largest share of production costs and the selling price of patchouli oil is volatile, farmer income remains vulnerable. A decline in selling price or an increase in production cost could significantly reduce profitability. Therefore, improving technical efficiency and strengthening market access are central requirements for maintaining income (FAO, 2022).

Feasibility Based on Revenue-Cost Ratio

The revenue-cost ratio was calculated by comparing average revenue with average total cost. The R/C ratio of patchouli farming in Pasie Raja District was 1.82. Because this value exceeds 1, patchouli farming is financially viable. This means that every IDR 1.00 spent by farmers generated IDR 1.82 in revenue. In practical terms, the activity was profitable during the research period. Nevertheless, the feasibility margin still depends on farmers ability to maintain productivity and sell patchouli oil at prices above the break-even level (Kay *et al.*, 2019).

Break-Even Point Analysis

The break-even production value indicates the minimum amount of patchouli oil that must be produced so that farmers do not incur losses. The analysis showed that the break-even production was 14.752 kg. This value was lower than the actual average production of 26 kg, indicating that farmers had produced above the minimum loss-avoidance level. The break-even price was IDR 317,535/kg, while the observed average selling price was IDR 570,270/kg. This means that the selling price received by farmers was above the minimum price needed to cover production costs.

Table 4. Revenue-Cost Ratio and Break-Even Point of Patchouli Farming

No	Indicator	Value	Interpretation
1	R/C ratio	1.82	Feasible because > 1
2	Break-even production	14.752 kg	Below actual production of 26 kg
3	Break-even price	IDR 317,535/kg	Below selling price of IDR 570,270/kg

Source: Primary data processed, 2023



The break-even results confirm that patchouli farming was profitable at the observed level of production and price. However, the results also reveal the vulnerability of the enterprise. If the price falls toward IDR 317,535/kg or production declines toward 14.752 kg, farmers will lose their profit margin. Therefore, expanding cultivation alone is not a sufficient strategy. Farmers need better planting material, improved crop management, efficient distillation, stronger collective marketing, and timely market information so that they are not trapped in weak bargaining positions (Barret *et al.*, 2022).

CONCLUSION

Patchouli farming in Pasie Raja District, South Aceh Regency, generated an average income of IDR 7,578,294 per planting season, derived from average revenue of IDR 15,315,237 and average total production cost of IDR 8,412,694. The R/C ratio of 1.82 indicates that the farming activity was financially feasible and profitable. The break-even production of 14.752 kg was lower than the actual average production of 26 kg, while the break-even price of IDR 317,535/kg was lower than the observed average selling price of IDR 570,270/kg. These results show that patchouli farming remains economically viable under current conditions. However, its sustainability depends on cost efficiency, productivity improvement, better distillation practices, stronger farmer market access, and risk management against patchouli oil price fluctuations.

REFERENCES

- Adharini, D. W. (2009). Budidaya dan penyulingan tanaman nilam Aceh (*Pogostemon cablin* Benth.) di Deni Nursery and Gardening.
- Barrett, C. B., Reardon, T., Swinnen, J., & Zilberman, D. (2022). Agri-food value chain revolutions in low- and middle-income countries. *Journal of Economic Literature*, 60(4), 1316–1377. <https://doi.org/10.1257/jel.20211621>
- Buton, L. K. (2023). Analisis pendapatan petani nilam di Desa Wasuamba Kecamatan Lasalimu Kabupaten Buton. 8(1), 226-236.
- Destria, R., Kusmia, N., & Basri, Z. (2022). Analisis pendapatan petani pada produksi minyak atsiri nilam di Desa Tampak Kurra Kecamatan Tabulahan Kabupaten Mamasa. *Jurnal Agroterpadu*, 1(2), 148. <https://doi.org/10.35329/ja.v1i2.3277>
- Effendy, E., Yusuf N, M., Romano, R., & Safrida, S. (2019). Analisis struktur biaya produksi dan kesenjangan pendapatan petani akibat fluktuasi harga minyak nilam. *Jurnal Ekonomi Pertanian dan Agribisnis*. 3(2), 360-375. <https://doi.org/10.21776/ub.jepa.2019.003.02.12>
- Engin, M. (2002). Kontribusi Pendapatan Usaha Tani Nilam Terhadap Pendapatan Rumah Tangga Petani di Kecamatan Sampoiniet Kabupaten Aceh Jaya. 23(4), 1-16.
- Food and Agriculture Organization. (2017). *The state of food and agriculture: Leveraging food systems for inclusive rural transformation*. FAO. <https://www.fao.org/3/I7658E/I7658E.pdf>



- Food and Agriculture Organization. (2022). *The State of Agricultural Commodity Markets 2022: The geography of food and agricultural trade—Policy approaches for sustainable development*. FAO. <https://doi.org/10.4060/cc0471en>
- Herianti, V. (2020). Analisis pendapatan pada usaha tani nilam. *Sustainability (Switzerland)*, 4(1).
- Hermanton, H., Ansyar, M., & Hermawan, Y. (2023). Analisis pendapatan usahatani nilam (*Pogostemon cablin* Benth.) di Wilayah Resort Malimbu BKPH Rinjani Barat. *Jurnal Ekonomi dan Bisnis*, 3(2), 142-147. <https://doi.org/10.56145/jurnalekonomidanbisnis.v3i2.70>
- Kay, R. D., Edwards, W. M., & Duffy, P. A. (2019). *Farm Management* (9th ed.). McGraw-Hill Education.
- Kharismawati, J. (2022). Analisis pendapatan petani pada sistem usahatani sayuran rotasi musiman di Desa Purworejo Kecamatan Kuala Kabupaten Nagan Raya.
- Listiani, R., Setiadi, A., & Santoso, S. I. (2019). Analisis pendapatan usahatani pada petani padi di Kecamatan Mlonggo Kabupaten Jepara. *Agrisocionomics: Jurnal Sosial Ekonomi Pertanian*, 3(1), 50-58. <https://doi.org/10.14710/agrisocionomics.v3i1.4018>
- Pamungkas, I., & Irawan, H. T. (2021). Analisis break-even point pada usaha produksi minyak nilam di Kabupaten Aceh Selatan. *Journal Industrial Servicess*, 6(2), 112. <https://doi.org/10.36055/62005>
- Sultan, M. S. D., & Antara, M. (2016). Analisis pendapatan usahatani jagung manis pada Kelompok Tani Sukamaju 1 di Desa Bulupontu Jaya Kecamatan Sigi Biromaru Kabupaten Sigi. *Jurnal Agrotekbis*, 4(3), 335-342.
- Surya, N., Agustiar, & Mahrizal. (2023). Analisis pendapatan usahatani padi di Desa Blang Dalam Kecamatan Darul Hikmah Kabupaten Aceh Jaya. *Jurnal Pertanian Agros*, 25(3), 2202-2209.