



FINANCIAL FEASIBILITY ANALYSIS OF CHILI (*Capsicum frutescens* L.) FARMING IN THE MANEBALA FARMERS GROUP

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Abstract

Capsicum frutescens L is one of the horticultural commodities that has economic value and has the potential to increase farmers' income. This study aims to determine the financial feasibility of this commoditizing farming in at Manebala Farmers Group in Kabuna Village, Kakuluk Mesak District, Belu Regency. The method used in this study is a quantitative descriptive method. Data was obtained through interviews, observation, and documentation. Data analysis was carried out by calculating production costs, revenue, income, R/C Ratio, B/C Ratio, as well as the Break Even Point (BEP). The results showed that the total production cost of bird's eye chili farming was IDR 53,175,000 per year or IDR 7,623,700 per planting season. The total revenue obtained was IDR 172,640,000 per year and IDR 86,320,000 per planting season, while the income was IDR 119,465,000 per year and IDR 59,732,500 per planting season. The R/C Ratio was 3.25 per year and 1.62 per planting season, while the B/C Ratio value. amounting to 2.25 per year and 1.12 per planting season. The production BEP was 1,329 kg per year and 664.69 kg per planting season, and the price BEP was Rp.12,320/kg per year and Rp.6,160.22/kg per planting season. Based on the research results, chili farming at the Manebala Farmers Group is considered feasible and profitable to cultivate and develop.

Keywords: *Capsicum frutescens L*, Financial Feasibility, Income, R/C Ratio, B/C Ratio.

Abstrak

Cabai rawit (*Capsicum frutescens L.*) merupakan komoditas hortikultura bernilai tinggi yang fluktuasi harganya mempersulit pengambilan keputusan di tingkat petani. Penelitian ini menilai kelayakan finansial usahatani cabai rawit yang dilakukan oleh Kelompok Tani Manebala di Desa Kabuna, Kecamatan Kakuluk Mesak, Kabupaten Belu, Provinsi Nusa Tenggara Timur. Metode deskriptif kuantitatif diterapkan dalam penelitian ini. Data primer dikumpulkan melalui wawancara terstruktur dan observasi lapangan terhadap enam responden petani yang mengelola lahan seluas 2.500 m² selama dua musim tanam pada tahun 2026. Analisis finansial mencakup biaya produksi, pendapatan, pendapatan bersih, Revenue-Cost Ratio (R/C Ratio), Benefit-Cost Ratio (B/C Ratio), dan Break-Even Point (BEP). Hasil penelitian menunjukkan bahwa total biaya produksi mencapai Rp53.175.000 per tahun (Rp7.623.700 per musim), sedangkan total pendapatan sebesar Rp172.640.000 per tahun (Rp86.320.000 per musim). Pendapatan bersih sebesar Rp119.465.000 per tahun (Rp59.732.500 per musim). R/C Ratio sebesar 3,25 per tahun dan 1,62 per musim; B/C Ratio sebesar 2,25 per tahun dan 1,12 per musim. BEP produksi mencapai 1.329 kg per tahun (664,69 kg per musim), dan BEP harga sebesar Rp12.320/kg per tahun (Rp6.160,22/kg per musim). Volume produksi aktual dan harga jual keduanya melebihi

ambang batas titik impas, yang mengonfirmasi bahwa usahatani ini layak secara finansial dan menguntungkan untuk terus dikembangkan.

Kata Kunci: B/C Ratio; BEP; cabai rawit; kelayakan finansial; R/C Ratio.

I. INTRODUCTION

Agriculture remains one of the strategic sectors supporting national economic development, supplying food, generating rural employment, and sustaining household welfare. Within the agricultural sector, the horticulture sub-sector contributes materially to food security and inflation control. Among horticultural commodities, cayenne pepper (*Capsicum frutescens* L.) stands out for its consistently high market demand and relatively stable price premium.¹

Cayenne pepper is consumed daily in Indonesian households and processed by the food industry, giving it strong and recurring demand across all regions. Demand has grown in parallel with population growth and expansion of the culinary sector.² However, price volatility at the farm gate driven by seasonal supply fluctuations, weather disruptions, and the fragmented nature of local marketing chains directly reduces farmer income and raises the risk of financial loss. Under these conditions, evidence-based financial analysis becomes indispensable for farmers to judge whether their operations generate adequate returns.

Production cost structure is the primary determinant of farm profitability. In cayenne pepper farming, fixed costs include the depreciation of agricultural equipment and structures, while variable costs cover seed, fertilizer, pesticides, labour, mulching material, and transportation. Variable costs represent the largest share of total cost and respond most sensitively to changes in output level.³ A farm earns profit only when revenue exceeds total cost, making accurate cost accounting the prerequisite for any feasibility assessment.

Revenue is determined by the interaction of yield volume and selling price. Studies consistently confirm that production level, selling price, and land area exert a positive and significant influence on farmer income.⁴ The use of certified high-yielding seed such as varieties supplied by PT Panah Merah improves germination rate, disease resistance, and productivity, yet also elevates initial input cost.⁵ The net financial benefit of adopting premium

seed therefore depends on whether the productivity gain generates revenue sufficient to offset the additional expenditure.

Financial feasibility in agriculture is typically evaluated through a set of complementary indicators: the Revenue-Cost Ratio (R/C Ratio), which benchmarks revenue against cost; the Benefit-Cost Ratio (B/C Ratio), which relates net income to total cost; and the Break-Even Point (BEP), expressed in both output volume and price terms, which defines the minimum conditions under which the farm avoids loss.⁶ A farm is considered viable when the R/C Ratio exceeds 1.0, confirming that each unit of expenditure generates more than one unit of return.

The Manebala Farmer Group, based in Kabuna Village, Kakuluk Mesak District, Belu Regency, represents a small-scale farming collective that adopted certified cayenne pepper seed and cultivated the crop on a 2,500 m² plot across two consecutive planting seasons. Despite completing two production cycles, the group had no systematic financial record to evaluate whether the enterprise had been profitable or to guide investment decisions in subsequent seasons. This information gap motivated the present study.⁷

This study therefore aimed to: (1) quantify production costs by cost category; (2) determine revenue and net income from cayenne pepper farming at the Manebala Farmer Group; and (3) assess financial feasibility using the R/C Ratio, B/C Ratio, and BEP indicators.

II. LITERATURE REVIEW

Financial Feasibility Analysis in Farming

Financial feasibility analysis in agriculture evaluates whether a farming enterprise generates sufficient returns to justify its cost. At its core, the approach compares total production expenditure against total revenue and net income over one production period. A farm is financially feasible when revenue covers all costs and yields a meaningful profit margin.⁸ In practice, feasibility is determined through a combination of income analysis and efficiency indicators, each capturing a different dimension of financial performance.

Revenue-Cost Ratio (R/C Ratio)

The R/C Ratio is defined as total revenue (TR) divided by total cost (TC). A value exceeding 1.0 signals that the farm earns more than it spends, indicating a viable enterprise. An R/C Ratio equal to 1.0 marks the break-even threshold, while a value below 1.0 denotes a

loss-making operation. In horticultural crops subject to price swings, the R/C Ratio is among the most widely applied feasibility indicators.⁹

Benefit-Cost Ratio (B/C Ratio)

The B/C Ratio compares net income the residual after subtracting total cost from total revenue against total cost. It answers the question of how much net benefit the farm generates per unit of expenditure. A B/C Ratio above 1.0 means the enterprise is profitable; a ratio at or below 1.0 indicates break-even or loss. The B/C Ratio complements the R/C Ratio by focusing on the income layer rather than gross revenue.¹⁰

Break-Even Point (BEP)

BEP analysis identifies the minimum operational conditions under which a farm neither profits nor loses. BEP Production is calculated as total cost divided by selling price per kilogram, yielding the minimum output volume required to recover costs. BEP Price is calculated as total cost divided by total production volume, yielding the minimum price at which the farm breaks even. When actual production exceeds BEP Production and actual price exceeds BEP Price, the enterprise generates profit. For cayenne pepper, where market prices fluctuate sharply between seasons, BEP Price provides farmers with a practical floor reference for marketing decisions.¹¹

Prior Research

Multiple studies have documented the financial viability of chili farming across Indonesian provinces. Dabutar and Husein confirmed that production volume, price, and land area are significant positive determinants of farmer income.¹² Arti et al. found that variable costs dominate the cost structure of red chili farming, and that total revenue routinely exceeds total cost under normal market conditions.¹³ Subastian and Yuliawati reported an R/C Ratio of 1.64 for cayenne pepper farming in Magelang Regency, with actual production and price both above their respective break-even thresholds.¹⁴ Sarki et al. demonstrated that certified seed

adoption raises productivity and income, but also increases input cost making feasibility analysis essential before investment decisions.¹⁵ Research specific to cayenne pepper farming in Belu Regency, East Nusa Tenggara, has not been previously published, establishing the present study as the first systematic financial assessment of this locality.¹⁶

III. RESEARCH METHOD

This study applied a quantitative descriptive method to systematically describe the financial condition of cayenne pepper farming at the Manebala Farmer Group. Research was conducted between April and May 2026 at Kabuna Village, Haliwen Hamlet, Kakuluk Mesak District, Belu Regency, East Nusa Tenggara Province. The study population consisted of all active members of the Manebala Farmer Group who grew cayenne pepper during the observation period. Since the active membership was small and bounded, a census approach was used, with all six farmer-members serving as respondents. Primary data were collected through structured interviews using a pre-tested questionnaire covering land area, production volume, selling price, input quantities and prices, and marketing channels. Supporting information was gathered through direct field observation and documentation of input purchase receipts and harvest records. Secondary data on regional production statistics and agricultural context were sourced from the Central Bureau of Statistics (BPS) and the Belu District Agriculture Office. Financial analysis was conducted using the following indicators: (1) Total cost ($TC = FC + VC$); (2) Total revenue ($TR = P \times Q$); (3) Net income ($I = TR - TC$); (4) R/C Ratio (TR/TC); (5) B/C Ratio (I/TC); (6) BEP Production (TC/P); and (7) BEP Price (TC/Q). Results are reported both per production year (two seasons) and per single planting season.

IV. RESULTS AND DISCUSSION

Respondent Profile

The six respondents at the Manebala Farmer Group ranged in age from 18 to 48 years, placing all members within the productive age category (15–64 years). Half of the respondents (50%) were between 15 and 30 years old, 33% were between 31 and 45 years, and 17% were between 45 and 60 years. This age composition is favourable for adopting new cultivation

techniques and responding to market signals, as younger farmers tend to exhibit greater openness to technological innovation and higher physical work capacity.¹⁷

Educational attainment was concentrated at the primary school level, with 83% of respondents holding only elementary school certificates and one respondent (17%) holding a senior high school diploma. None of the respondents had completed secondary or tertiary education. While formal education level was modest, the collective farming arrangement of the Manebala Farmer Group provides a social learning environment that partially compensates for limited individual literacy, facilitating shared knowledge about cultivation practices, input management, and market access.

Production Costs

Total production cost for the two-season farming cycle was IDR 53,175,000. Fixed costs comprising the annual depreciation of eleven categories of agricultural equipment and one nursery structure amounted to IDR 45,290,000 in asset value, with annual depreciation of IDR 5,101,200. The largest depreciation item was the nursery structure (IDR 2,025,000 per year), followed by pipe infrastructure (IDR 1,170,000 per year) and water pumps (IDR 684,000 per year). Table 1 presents the complete breakdown of fixed-cost items.¹⁸

Table 1. Fixed Costs of Cayenne Pepper Farming at Manebala Farmer Group

Item	Qty	Unit	Unit Price (IDR)	Total Value (IDR)	Useful Life (Yrs)	Depreciation/Year (IDR)
Hoe (Cangkul)	4	Unit	100,000	400,000	2	180,000
Machete (Parang)	4	Unit	150,000	600,000	5	108,000
Water Pump	2	Unit	3,800,000	7,600,000	10	684,000
Water Tap (Pipe Fitting)	4	Unit	300,000	1,200,000	5	216,000
PVC Pipe	65	Unit	200,000	13,000,000	10	1,170,000
Nursery Structure	1	Unit	18,000,000	18,000,000	8	2,025,000

Shovel (Sekop)	2	Unit	100,000	200,000	5	36,000
Sprayer (Viber)	1	Unit	3,200,000	3,200,000	5	576,000
Watering Can (Gembor)	2	Unit	20,000	40,000	5	7,200
Bed Measuring Rope	1	Unit	50,000	50,000	5	9,000
Spraying Sheet	2	Unit	500,000	1,000,000	10	90,000
Total				45,290,000		5,101,200

Source: Field Research, 2026.

Variable costs totalled IDR 7,885,000 for the full year (two seasons combined) and IDR 2,522,500 per single planting season. Labour cost and mulching material accounted for the largest shares. Seed cost stood at IDR 480,000 per year (IDR 240,000 per season) for eight packets of certified *Capsicum frutescens* seed (Bisi Internasional Juwita F1 variety, supplied by PT Panah Merah), priced at IDR 60,000 per packet. Table 2 summarises variable cost items.¹⁹

Table 2. Variable Costs of Cayenne Pepper Farming at Manebala Farmer Group

Cost Item	Unit	Per Year (IDR)	Per Season (IDR)
Certified seed (8 pkts × IDR 60,000)	Packet	480,000	240,000
Organic fertilizer (liquid)	Bottle	50,000	25,000
Electricity and water	Monthly	225,000	112,500
NPK fertilizer	Bag (50 kg)	200,000	100,000
Urea fertilizer	Bag (50 kg)	200,000	100,000
Pesticide	Bottle	560,000	280,000
Transportation	Trip	500,000	250,000

Labour	Person	2,400,000	200,000
Mulching material	Roll	2,520,000	840,000
Wire clips (Kawat Penjepit)	Kg	750,000	375,000
Total Variable Cost		7,885,000	2,522,500

Source: Field Research, 2026.

Combining both cost categories, total production cost for the two-season cycle reached IDR 53,175,000 per year and IDR 7,623,700 per planting season. Fixed cost constituted approximately 85% of annual expenditure, driven largely by the high value of the nursery structure and irrigation infrastructure. Variable cost, at roughly 15% of the annual total, was comparatively modest because the group shared equipment and sold produce without further processing.²⁰

Revenue and Net Income

The Manebala Farmer Group harvested 4,316 kg of cayenne pepper over the full year (2,158 kg per planting season), selling at an average price of IDR 40,000 per kilogram. Total revenue reached IDR 172,640,000 per year and IDR 86,320,000 per season. After deducting total production cost, net income was IDR 119,465,000 per year and IDR 59,732,500 per season. Table 3 presents the combined revenue and income analysis.²¹

Table 3. Revenue and Income Analysis, Manebala Farmer Group

No.	Item	Unit	Per Year	Per Season
1	Fixed Cost	IDR	45,290,000	5,101,200
2	Total Variable Cost	IDR	7,885,000	2,522,500
3	Total Production Cost	IDR	53,175,000	7,623,700
4	Production Volume (kg)	kg	4,316	2,158
5	Average Selling Price	IDR/kg	40,000	20,000
6	Total Revenue	IDR	172,640,000	86,320,000
7	Net Income	IDR	119,465,000	59,732,500

Source: Field Research, 2026.

The revenue-to-cost gap is substantial: revenue of IDR 172,640,000 against total cost of IDR 53,175,000 translates to a net income margin of approximately 69% relative to gross revenue. This high margin reflects two converging factors: the IDR 40,000/kg selling price maintained throughout the harvest period, which stood well above cost-recovery requirements, and the group's relatively lean variable cost structure, which kept total expenditure low relative to output value.

Financial Feasibility Indicators

Table 4 summarises all feasibility indicators for the Manebala Farmer Group farming operation.

Table 4. Financial Feasibility Indicators, Manebala Farmer Group

Indicator	Unit	Per Year	Per Season
R/C Ratio	–	3.25	1.62
B/C Ratio	–	2.25	1.12
BEP Production	kg	1,329	664.69
BEP Price	IDR/kg	12,320	6,160.22

Source: Field Research, 2026.

The R/C Ratio of 1.62 per planting season confirms that every IDR 1.00 spent on production generates IDR 1.62 in revenue, yielding a return of IDR 0.62 per unit of expenditure. The annual figure of 3.25 reflects the compounded advantage of running two productive seasons without proportional increases in fixed cost. Both values substantially exceed the minimum viability threshold of 1.0. These results align with Rahmawati et al., who found that cayenne pepper farming remains viable with R/C Ratios above 1.0 even in disaster-prone areas, and with Subastian and Yuliawati, who reported 1.64 for a comparable small-farm context.²²²³

The B/C Ratio of 1.12 per season indicates that for each rupiah of cost, the farm generates IDR 1.12 in net income. The annual B/C Ratio of 2.25 reflects the leverage of a stable high selling price over a largely fixed cost base. Both values exceed 1.0, satisfying the profitability criterion. The B/C Ratio is particularly relevant for the Manebala context because

it captures the actual earnings retained by farmers after all expenditures the figure most directly relevant to household welfare.²⁴

BEP Production per season was 664.69 kg, meaning the group needed to produce at least that volume to avoid a loss in any given season. Actual production of 2,158 kg per season exceeded this threshold by a factor of approximately 3.2, providing a wide safety margin against yield shortfalls from pest pressure, drought, or other agronomic risks. BEP Price per season stood at IDR 6,160.22/kg. With an actual selling price of IDR 40,000/kg, the group operated at a price premium of IDR 33,839.78/kg above the break-even floor. Even if market prices fell to their reported seasonal low of IDR 10,000/kg still 62% above the seasonal BEP Price the enterprise would remain profitable at typical production volumes.²⁵

The favourable feasibility outcomes are attributable to three interacting factors. First, the use of certified seed from PT Panah Merah produced consistent plant vigour and reduced replanting losses, supporting yields of 2,158 kg per season on a 2,500 m² plot a volume well above break-even requirements. Second, the group's collective ownership of irrigation and nursery infrastructure spread fixed costs across six farmers, reducing the per-member burden. Third, the marketing strategy of direct sales to collectors (*pedagang pengepull*) at the prevailing market price, confirmed through price negotiation, secured the IDR 40,000/kg rate that drove the strong revenue outcome. These conditions are replicable but contingent: a prolonged price decline below IDR 12,320/kg (the annual BEP Price) or a yield collapse below 1,329 kg (the annual BEP Production) would erode the current margin. The group's reported experience of prices falling to IDR 10,000/kg during August–October underlines that the risk window is real and warrants ongoing cost-control and market diversification efforts.²⁶

V. CONCLUSION

Cayenne pepper farming at the Manebala Farmer Group, Kabuna Village, Belu Regency, is financially feasible and profitable under current operating conditions. Total production cost reached IDR 53,175,000 per year (IDR 7,623,700 per planting season), while total revenue was IDR 172,640,000 per year (IDR 86,320,000 per season) and net income IDR 119,465,000 per year (IDR 59,732,500 per season). The R/C Ratio of 3.25 per year and 1.62 per season, the B/C Ratio of 2.25 per year and 1.12 per season, and BEP indicators that actual

production and selling price both exceeded comfortably jointly confirm the enterprise's viability. The farming operation warrants continued support and can absorb modest input cost increases or limited yield reductions without tipping into loss territory. To strengthen long-term financial resilience, the group should maintain cost discipline, consider intercropping with complementary horticultural commodities to buffer against cayenne pepper price cycles, and establish simple seasonal financial records that allow timely detection of cost overruns or income shortfalls.

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