

FEASIBILITY STUDY OF RICE FARMING IN JATISARI VILLAGE, KEBUMEN REGENCY

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Abstract

The agricultural sector in Indonesia plays a strategic role in food supply and the national economy. One of the main commodities supporting food security is rice, which serves as the primary source of carbohydrates for the population. Jatisari Village, located in Kebumen District, Kebumen Regency, is one of the regions with significant rice farming potential. However, rice farming in this area faces challenges such as fluctuating rice grain prices, rising production costs, and efficiency in land and labor utilization. This study aims to analyze the financial feasibility of rice farming in Jatisari Village. The research was conducted through a survey method involving 40 farmers from the Sri Waluyaningtani farmer group. Data were collected through interviews using structured questionnaires and analyzed using cost analysis, income analysis, and the R/C ratio. The results indicate that farmers incur significant production costs, with hired labor being the largest component of the cost structure. Rice productivity is influenced by land ownership, the use of production inputs, and the irrigation system. The feasibility analysis shows that the R/C ratio is greater than 1, indicating that rice farming in Jatisari Village is financially viable and profitable for farmers. However, to improve efficiency and sustainability, strategies are needed to manage production costs and enhance access to more efficient agricultural technology.

Keywords: Rice farming, financial feasibility, production costs, income, Revenue Cost Ratio (R/C)

INTRODUCTION

Agriculture is one of the important sectors for the economy in Indonesia. Data indicate that the contribution of the agricultural sector to the Gross Domestic Product (GDP) is substantial, with an average contribution of approximately 12.98% between 2020 and 2023 (BPS, 2024a). Agriculture not only directly contributes to GDP but also creates significant employment opportunities, particularly in rural areas (Keefe et al., 2024). Agricultural activities drive the demand for inputs and services such as fertilizers and agricultural tools, which in turn stimulate other economic sectors. This creates business opportunities and increases local community income (Pan et al., 2024).

A significant portion of Indonesia's population relies on rice (*Oryza sativa* L.) as a staple food. Therefore, this commodity serves as an essential carbohydrate source for the majority of Indonesians (Rozi et al., 2023). Rice, the processed product of paddy, is an indispensable staple food and is difficult to replace with other food sources such as corn or tubers. The availability of rice in Indonesia remains a government priority due to its impact on food security and socio-economic stability. Rice plays a strategic role in national food security. Therefore, rice production must be sustainably increased to fulfill the rising needs of the population (Hashim et al., 2024).

Kebumen District, located in Kebumen Regency, has significant agricultural potential. With a total area of 42 km², Kebumen District has 2,202.10 hectares of paddy fields, contributing significantly to

the agricultural sector, particularly in rice production (BPS, 2024b). Most of these paddy fields have a technical irrigation system that enables farmers to cultivate rice up to twice a year. The harvested area for rice in Kebumen District, Kebumen Regency, was recorded at 2,296 hectares, with a total production of approximately 4,238.30 tons in 2023. This indicates that Kebumen District is not only important as a rice-producing area but also serves as an economic activity center for farmers.

A similar potential is also found in Jatisari Village, Kebumen District, Kebumen Regency. This area contributes 122 hectares of agricultural land for rice cultivation. The productivity of rice in this village is influenced by various interrelated factors, including soil conditions, irrigation systems, and agricultural technology. Soil conditions are a key factor affecting rice productivity (Purbiati et al., 2024). The irrigation system also plays a crucial role in enhancing rice productivity. Sufficient and controlled water availability through irrigation can significantly increase yields. A well-managed technical irrigation system allows farmers to regulate water supply according to crop needs, particularly during the dry season (Morchid et al., 2024).

Production costs are one of the main challenges faced by rice farmers in Jatisari Village, Kebumen District, Kebumen Regency. The rising prices of agricultural inputs such as seeds, fertilizers, pesticides, and labor have significantly increased production costs (Salam et al., 2024). This has led to shrinking profit margins for farmers. On the other hand, farmers face high risks due to fluctuating rice prices, which can impact their income levels. Fluctuations in rice prices in the market often do not match production costs, making it difficult for farmers to obtain a fair profit. Lengthy marketing chains can reduce the efficiency of rice marketing, resulting in lower prices received by farmers (Prasada, 2023).

Rice farming in Jatisari Village, Kebumen District, Kebumen Regency, faces several challenges, such as fluctuations in rice selling prices and high agricultural input costs. These challenges impact the sustainability and profitability of rice farming. Therefore, a financial feasibility analysis is essential to assess whether rice farming in Jatisari Village is economically viable and can provide sustainable profits for farmers.

RESEARCH METHOD

This research was conducted in Jatisari Village, Kebumen District, Kebumen Regency involving 40 farmers as respondents from the Sri Waluyaningtani farmer group. Respondents were selected using the simple random sampling method. The method for determining the location of the study was carried out using the purposive sampling method, considering that Jatisari Village is one of the villages in Kebumen District that has high production and productivity compared to other areas in Kebumen District. Data collection was carried out through interviews using structured questionnaires. The data analysis process was carried out by considering primary data obtained through interviews with farmers. The method used to determine the feasibility of lowland rice farming in Jatisari Village, Kebumen District, Kebumen Regency was carried out with the following steps:

The first step was to conduct a cost analysis with the aim of determining the total costs incurred by farmers in running lowland rice farming with the following formula (Nugroho et al., 2018):

$$TC = TFC + TVC$$

where *TC* is total cost, *TFC* is total fixed cost, and *TVC* is total variable cost.

After that, the next stage is to analyze the revenue and profits of rice farming businesses using the following formula (Nugroho et al., 2018):

$$TR = P \cdot Q$$

$$\pi = TR - TC$$

Where TR shows the income from rice farming carried out by farmers, P is the selling price of rice, Q shows the quantity of rice sold by farmers, while π is the profit obtained by farmers from marketing activities for the rice they produce.

The last step is the feasibility analysis which is done using the R/C ratio indicator. The R/C ratio formula can be written mathematically as follows (Nugroho et al., 2018):

$$R/C \text{ Ratio} = \frac{TR}{TC}$$

The decision on whether or not rice farming is feasible for farmers is determined using several categories as follows: If the $R/C \text{ Ratio} = 1$, then the rice farming is BEP. $R/C \text{ Ratio} < 1$, then it is not feasible to be cultivated. $R/C \text{ Ratio} > 1$, then the rice farming is feasible to be cultivated.

RESULTS AND DISCUSSION

Rice is one of the main agricultural commodities in Jatisari Village which is a source of livelihood for most farmers. The planting pattern applied in Jatisari Village follows the seasonal cycle, where rice is planted twice a year. This cycle consists of the rainy season and the first dry season, each of which has its own characteristics in terms of water availability and plant growth conditions. Rice planting patterns are usually adjusted to the availability of water and different climate conditions between the rainy and dry seasons (Arifah et al., 2022). Ownership of agricultural land by farmers in Jatisari Village also varies. Some agricultural land has the status of self-owned land, some is rented, and some is sakap (production profit sharing) (Table 1.).

Table 1. Ownership of agricultural land by farmers in Jatisari Village

Land ownership status	Land area (Ha)	Percentage (%)
Self-owned land	0.183	91.209
Rented land	0.012	6.194
Profit sharing land	0.005	2.597
Total	0.200	100.000

Source: Primary data analysis, 2025

Table 1. shows the land ownership of rice farmers in Jatisari Village, Kebumen District, Kebumen Regency, which is divided into three categories of ownership status. These categories include self-owned land, rented land, and production profit sharing land. From the data presented, it can be seen that self-owned land has a total area of 0.200 ha, which is the largest land of the total land area controlled, which is 0.183 ha. Meanwhile, the rented land is 0.012 ha, and production profit sharing land is 0.005 ha. Agricultural land is an important input for rice farmers, where the wider the agricultural land managed by farmers, the higher the potential yield that can be obtained (Prasada, Dhamira, et al., 2022).

This difference in land ownership status has an impact on the income received by farmers (Fauziyah et al., 2025). Farmers who own their own land only need to bear the cost of land tax, which is

relatively lower compared to farmers who rent land, who have to pay rent. On the other hand, farmers who rent land must share the harvest with the landowner, which can reduce their net income. Thus, farmers who own their own land tend to have lower cost burdens compared to farmers who rent or lease, which ultimately affects their farm income (Touch et al., 2024).

Furthermore, the use of labor in rice farming activities carried out by farmers in Jatisari Village also varies greatly. Rice farming labor is focused on several activities including seeding, land processing, planting, maintenance, and harvesting (Table 2.).

Table 2. Average use of labor in rice farming in Jatisari Village

Type of labor	Per farm (person-days)	Per hectare (person-days)
Within Family		
Sowing	0.510	2.547
Land cultivation	0.000	0.000
Planting	0.770	3.846
Maintenance	1.620	8.092
Harvest	2.280	11.389
Total labor within family	5.180	25.874
Outside Family		
Sowing	1.450	7.243
Land cultivation	2.550	12.737
Planting	4.860	24.276
Maintenance	2.720	13.586
Harvest	7.270	36.314
Total labor outside family	18.850	94.156
Total labor utilization	24.030	120.030

Source: Primary data analysis, 2025

Table 2 shows that the use of labor in rice farming in Jatisari Village shows that the cultivation process is still very dependent on human labor, both from family members and outside labor. The total labor requirement was recorded at 120.030 person-days per hectare, consisting of 25.874 person-days of family labor and 94.156 person-days of outside labor. This number indicates that almost all activities in the rice farming process are still carried out manually, with high work intensity. Family labor only contributes 5.180 person-days per farm, for maintenance activities 1.620 person-days and harvesting 2.280 person-days per farm. Meanwhile, in land processing, no family labor is used, because this activity requires heavy labor or special skills such as plowing rice fields using a tractor. On the other hand, outside labor plays a dominant role with 18.850 person-days per farm and 94.156 person-days per hectare. Then at the harvest stage, the number of non-family workers involved is 7.270 person-days per farm and 36.314 person-days per hectare, which absorbs the most labor because this activity requires a lot of energy in a short time. The limited number of skilled workers makes farmers increasingly use labor from outside the family (Hogan et al., 2024). The high dependence on labor from outside the family reflects the limited productive labor in farmer households (Sevgili Canpolat, 2024).

Overall, lowland rice farming in Jatisari Village is classified as intensive in the use of labor, which also opens up opportunities for local job creation. To maintain cost efficiency, technological innovation is needed, especially at the planting and harvesting stages which absorb the most outside labor.

Dependence on labor from outside the family needs to be managed wisely so as not to reduce farmers' profits in the long term (Robinson, 2024).

In addition to labor, farmers also use other farming inputs in the form of seeds, fertilizers, and pesticides (Table 3.). The use of each of these inputs varies between farmers depending on the habits of the farmers.

Table 3. Average use of rice farming production facilities in Jatisari Village

Types of farm inputs	Per farm	Per hectare
Seeds		
Ciherang (kg)	19.650	98.152
Mekongga (kg)	0.750	3.746
IR 46 (kg)	2.250	11.239
Fertilizers		
Urea (kg)	108.870	543.806
Phonska (kg)	97.120	485.115
TSP (kg)	10.900	54.446
Organic (kg)	20.000	99.900
NPK Booster (ml)	10.000	49.950
Pesticides		
Fostin (ml)	10.000	49.950
Tebalo (ml)	140.000	699.301
Sidatan (ml)	90.000	449.550
Score (ml)	25.000	124.875
Greta (ml)	50.000	249.750
Super Flora (ml)	60.000	299.700

Source: Primary data analysis, 2025

Table 3 shows the average use of production inputs in lowland rice farming in Jatisari Village, including seeds, fertilizers, and pesticides. These production facilities are important components in determining the success of farming, especially in increasing productivity and efficiency of harvest results. In the use of seeds, farmers in Jatisari Village chose the Ciherang variety as the most dominant, with an average of 19.650 kg per farm or 98.152 kg per hectare. The Mekongga and IR 46 varieties are used in smaller amounts, namely 0.750 kg and 2.250 kg per farm. This shows that farmers prefer superior varieties that are adaptive to local conditions and have high productivity, such as the Ciherang variety. The Ciherang rice variety is one of the superior varieties and has high yields (Slameto et al., 2022).

The use of fertilizers recorded that farmer use various types of inorganic and organic fertilizers. Urea fertilizer is used as much as 108.87 kg per farm or 543.806 kg per hectare, followed by Phonska 97.120 kg per farm or 485.115 kg per hectare, TSP 10.900 kg per farm or 54.446 kg per hectare, and organic fertilizer as much as 20,000 kg per farm or 99.900 kg per hectare. In addition, liquid NPK Booster is also used with a dose of 10.000 ml per farm or 49.950 ml per hectare. The use of fertilizers properly and in balance is very important to support plant growth and maximum yields (Shanmugavel et al., 2023).

As for controlling plant pests, farmers use several types of pesticides, including Fostin, Tebalo, Sidatan, Score, Greta, and Super Flora. Tebalo pesticide is the pesticide most widely used by rice farmers in Jatisari Village. However, the number of its use is relatively low because most farmers tend not to take preventive measures if the pest attack has not spread widely. In fact, some farmers prefer to leave the attacked plants without further treatment, unless the attack is already severe. Overall, the pattern of use of production facilities in Jatisari Village reflects good cultivation practices, with the selection of superior varieties and the use of fertilizers in fairly high amounts. However, pest control is still a challenge because not all farmers have implemented integrated pest management optimally. Farmers' understanding of the concept of integrated pest management, especially preventive measures, is crucial in efforts to increase crop yields and reduce losses due to attacks by plant pests (Rezaei et al., 2019).

The use of inputs in rice farming carried out by farmers is then calculated the cost of using these inputs. This cost calculation is something that needs to be done in order to identify the feasibility of rice farming carried out by farmers in Jatisari Village (Table 4.).

Table 4. Average cost of rice farming in Jatisari Village

Types of costs	Per farm (IDR)	Per hectare (IDR)
Fixed Costs		
Land Rent	70,000.000	349,650.350
Land Tax	185,063.000	924,390.609
Depreciation	23,011.000	114,940.060
Total Fixed Costs	278,074.000	1,388,981.019
Variable Costs		
Labor		
Outside Family	1,510,703.000	7,545,969.031
Machine Tool Rental	95,425.000	476,648.352
Production Inputs		
Seeds	316,150.000	1,579,170.829
Fertilizers		
Urea	317,950.000	1,588,161.838
Phonska	314,100.000	1,568,931.069
TSP	13,425.000	67,057.942
Organic	15,000.000	74,925.075
NPK Booster	13,425.000	67,057.942
Pesticides		
Liquid	26,250.000	131,118.881
Others		
Profit Sharing	32,500.000	162,337.662
Irrigation	95,425.000	476,648.352
Equipment Repair	6,375.000	31,843.157
Total Variable Costs	2,756,728.000	13,769,870.130
Total Costs	3,034,802.000	15,158,851.149

Source: Primary data analysis, 2025

Table 4 shows the main expenses in farming activities consist of fixed costs and variable costs. Fixed costs include land rent, land tax, and equipment depreciation. Land rent for each farming unit is recorded at IDR 70,000 or IDR 349,650 per hectare. This rental value illustrates the level of farmer control over land resources used in one planting season. Furthermore, the land tax paid of IDR 185,063 per farm or IDR 924,390 per hectare reflects the fiscal obligations that farmers must fulfill to the state. Meanwhile, equipment depreciation costs of IDR 23,011 per farm or IDR 114,940 per hectare indicate the annual depreciation value of production facilities that are used repeatedly, such as agricultural tools. If added up, the total fixed costs reach IDR 278,074 per farm or IDR 1,388,981 per hectare.

Meanwhile, variable costs show the dynamics of cost needs that change depending on the intensity of input use and farming activities. The largest variable cost component comes from non-family labor of IDR 1,510,703 per farm or IDR 7,545,969 per hectare. This indicates that operational activities such as land processing, planting, maintenance, and harvesting still largely rely on non-household labor, thus increasing the cost burden. In addition, the cost of renting agricultural machinery was recorded at IDR 95,425 per farm or IDR 476,648 per hectare. This cost is generally incurred by farmers who do not have their own agricultural equipment and rely on renting to other parties or farmer groups. The use of production facilities also contributes significantly to the total cost. The cost of purchasing seeds of IDR 316,150 per farm or IDR 1,579,170 per hectare is the basis for the availability of plants to be cultivated. Fertilization uses various types of fertilizers such as Urea, Phonska, TSP, organic fertilizers, and NPK Booster, each with varying costs, with a cumulative total reaching more than IDR 3 million per hectare. The use of liquid pesticides for pest control is also spent at IDR 26,250 per farm or IDR 131,118 per hectare.

In addition, there are other costs such as profit sharing of IDR 32,500 per farm or IDR 162,337 per hectare, irrigation of IDR 95,425 per farm or IDR 476,648 per hectare, and repair of agricultural equipment of IDR 6,375 per farm or IDR 31,843 per hectare. If calculated as a whole, the total variable costs reach IDR 2,756,728 per farm or IDR 13,769,870 per hectare. Thus, the total costs incurred in one farming cycle are IDR 3,034,801 per farm or IDR 15,158,851 per hectare. The high costs are mainly caused by external inputs such as labor and chemical fertilizers that are used intensively. This condition has an impact on the narrow profit margin of farmers. Production costs, selling prices, and productivity are the main factors that affect farmers' income (Salam et al., 2019). On the other hand, improvements in agricultural practices such as the use of superior seeds, targeted fertilization, and efficient use of labor can increase yields and profitability (Mandal et al., 2024).

After the analysis of farming costs, the calculation of revenue and profit as well as the feasibility analysis of rice farming can be done. Revenue can be calculated by utilizing average production and selling price data (Table 5.).

Table 5. Average profit and feasibility of rice farming in Jatisari Village

Description	Per farm	Per hectare
Revenue (IDR)	7,494,500.000	37,435,064.935
Paddy production (kg)	1,153.000	5,759.241
Selling price of paddy (IDR/kg)	6,500.000	6,500.000
Cost		
Fixed Cost (IDR)	278,074	1,388,981
Variable Cost (IDR)	2,756,728	13,769,870
Total Cost (IDR)	3,034,801	15,065,463

Profit (IDR)	4,459,699	22,369,602
R/C ratio	2.470	2.485

Source: Primary data analysis, 2025

Based on Table 5, the average income of paddy farming in Jatisari Village shows that the revenue and profit of the farming business provide a fairly significant picture of the financial feasibility of the farming business. Based on the table, the revenue per farm is recorded at IDR 7,494,500 or IDR 37,435,064 per hectare, which is obtained from the total production of dry milled grain (GKG) of 1,153 kg per farm or 5,759 kg per hectare with a selling price of IDR 6,500 per kg. The high production volume is the main factor driving the increase in total revenue, regardless of the stable selling price of GKG at the farmer level.

Financial efficiency indicators can be seen from the value of the ratio of revenue to costs (R/C Ratio). The R/C ratio value is 2.470 per farm and 2.485 per hectare. An R/C value above 1 is an indicator that the farm is economically feasible, and the higher the R/C value, the more efficient the farm is in utilizing production resources. Good farm management will have a direct impact on increasing farmers' income (Salam et al., 2019). The high R/C ratio value in Jatisari Village is due to several factors, including optimal land productivity, and the selection of superior seed varieties, as well as efficiency in the use of production inputs and labor. Previous studies have strengthened this finding, that cost efficiency and high productivity are key to increasing farmer profits (Sánchez et al., 2022). In addition, the stability of the selling price of dry milled grain at the farmer level also plays a role in supporting the income obtained by farmers (Prasada, Nugroho, et al., 2022). The high level of revenue, accompanied by cost efficiency and excellent R/C ratio, makes the rice farming business in Jatisari Village worthy of continued development.

Overall, the rice farming business in Jatisari Village has proven to be feasible and economically profitable. The high income generated reflects the effectiveness of farming management by local farmers, especially in utilizing technology and production inputs optimally. However, the high variable costs also indicate the need for attention to the sustainability of farming businesses in the future. Intensive use of inputs needs to be balanced with a sustainable agricultural approach to maintain land productivity and the sustainability of farmers' income in the long term.

CONCLUSION

The rice farming business in Jatisari Village, Kebumen District, is financially feasible and profitable, with an R/C ratio of 2.470 per farm and 2.485 per hectare. This success is influenced by factors such as optimal land use, selection of superior seed varieties, and good irrigation system management. The use of labor from outside the family is also quite large and is one of the main components of production costs. Therefore, the use of labor from outside the family must be considered so that the costs incurred by farmers do not increase too much.

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