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Business Analysis of Jakarin 1 Composite Maize Seed Production in Bukit Peninjauan II, Sukaraja District, Seluma Regency

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ABSTRACT

Jakarin 1 composite maize is a superior variety capable of adapting to unfavorable environmental conditions and has high economic potential. This study aimed to analyze profitability, efficiency, feasibility, and the break-even point (BEP) of the Jakarin 1 composite maize seed production enterprise in Bukit Peninjauan II, Sukaraja District, Seluma Regency. The study was conducted from August to November 2024 using a census method involving the entire population of seed breeder farmers (four respondents). Primary data were collected through interviews using questionnaires, while secondary data were obtained from supporting literature. The analyses included income analysis, efficiency ratio (R/C), feasibility ratio (B/C), and break-even point analysis for both production and sales. The results showed that the average total production cost was IDR 10,415,040.87, while total revenue reached IDR 32,756,717.50, resulting in a net profit of IDR 22,341,676.63. The R/C ratio was 2.17 and the B/C ratio was 1.17, indicating that the enterprise is economically efficient and feasible. The break-even point was achieved at a sales volume of 347.17 kg of seed. Therefore, the Jakarin 1 composite maize seed production enterprise has promising prospects to be developed as a main source of farmers' income.

Keywords: *Composite Maize, Seed Production Enterprise, Business Efficiency, Bukit Peninjauan II, Sukaraja District, Seluma Regency*

1. INTRODUCTION

Food is a fundamental necessity for the global population. Food availability must be sufficient to meet the needs of every individual. Adequate food availability is essential for food security, ensuring that food can be reliably accessed on a daily basis. Without guaranteed food availability, individuals cannot be considered food secure, highlighting the importance of a consistent food supply in meeting population needs [1]. In Indonesia, rice is the primary staple food for the majority of the population and the most widely consumed source of daily carbohydrates. Nevertheless, Indonesia possesses fertile soils and a favorable climate that support the cultivation of various food crops, including maize. Maize (Zea mays L.) can serve as a secondary alternative to rice in meeting staple food requirements. In addition to functioning as a carbohydrate source substituting rice, maize has relatively high nutritional value and can be processed into various food products that contribute to national food security [2]. Therefore, it is essential to conduct continuous monitoring and in-depth research on maize production to ensure its availability and ability to meet the steadily increasing demand of the population over time. Maize, which has long been widely recognized and cultivated in Indonesia, is one of the staple food sources that plays a vital role in supporting daily livelihoods, particularly in rural communities. In addition to serving as a primary food substitute for rice, maize also has high economic value, as it contributes significantly to the supply of animal feed, serves as a raw material for various food and non-food industries, and plays an important role in the overall development of the agribusiness sector [3]. Given its multifunctional potential, maize is a strategic commodity that must be optimally managed and developed in order to continuously provide economic and social benefits and to support national food security for the Indonesian population. According to the National Food Agency (2023), maize demand in 2023 reached 15.70 million tons, which was met by domestic production of 13.79 million tons and imports amounting to 1.19 million tons. Indonesia continues to import maize due to the fact that the application of modern breeding technologies has not yet been optimally implemented domestically, whereas in developed countries such technologies have advanced rapidly. Seed quality is a determining factor in the success of crop cultivation [4]. High-quality and uniform seeds will produce outputs with superior quality and higher yields.

There are several types of maize, one of which is composite maize. Composite maize is a type of maize developed through breeding processes to improve various characteristics, such as yield, resistance to diseases, and seed quality [5]. Composite maize is produced by crossing several maize varieties or populations that possess superior traits, followed by selection to obtain the desired genetic mixture capable of producing improved maize plants. The development process of composite maize begins with the selection of several maize varieties that exhibit desired characteristics, such as high yield or resistance to diseases [6]. These varieties are then crossed to produce seeds with a mixed genetic composition. The seeds resulting from the crosses are tested across various locations and environmental conditions to evaluate their performance. The results of these trials are assessed to select maize with the best characteristics, and seeds from plants that demonstrate superior performance are chosen as composite seed. The selected composite maize seeds are subsequently distributed to farmers for cultivation.

The advantages of composite maize lie in its relatively short life cycle, allowing it to be harvested in a shorter time compared to other varieties and enabling farmers to practice crop rotation within a single year. In addition, this variety has a strong ability to withstand pest and disease attacks, thereby minimizing yield losses and reducing the need for chemical pesticide use [7]. Another equally important advantage is its ease of repeated cultivation without requiring farmers to depend on purchasing new seeds every planting season. Consequently, composite maize provides greater economic benefits for farmers by reducing production costs and enhancing their self-reliance in managing agricultural land. [8]. Composite maize is widely utilized as a primary food source, animal feed material, and raw material in various processing industries. One of its main advantages lies in its ability to adapt to diverse land and climatic conditions, making it suitable for cultivation in areas with varying levels of soil fertility and rainfall [3] In addition, the use of composite maize can reduce farmers' dependence on commercial seeds that generally must be purchased every planting season, as this variety allows farmers to utilize seeds from the previous harvest. In Indonesia, composite maize is often chosen within traditional farming systems, particularly by smallholder farmers who prioritize cost efficiency and farm sustainability. With these various advantages, composite maize serves as a valuable alternative for farmers who require cultivation options that are more economical, environmentally friendly, and supportive of local seed self-reliance.

One well-known type of composite maize is the Jakarin 1 variety. The main advantage of Jakarin 1 maize lies in its ability to withstand drought conditions and to adapt to environments that are generally less favorable for crop growth. This variety exhibits high tolerance to drought-induced stress, enabling the plants to grow optimally and produce good yields even when cultivated in areas with low rainfall or prolonged dry seasons. The seed production process of Jakarin 1 composite maize is carried out using shelled maize kernels that have previously been selected or sorted to ensure the quality of the resulting seeds [9]. Considering the advantages possessed by this variety, many farmers in Bukit Peninjauan II Village, Sukaraja District, Seluma Regency, Bengkulu Province, have begun to shift toward becoming seed breeder farmers of Jakarin 1 composite maize. At present, seed breeding activities for Jakarin 1 composite maize in the study area are still conducted on a limited scale, with an average cultivated land area of approximately 0.56 hectares per farmer. This seed production enterprise is also relatively newly introduced and implemented by the farmers. Nevertheless, the farmers have high expectations that the outcomes of this maize seed breeding enterprise will provide significant additional income and improve their household welfare in the future.

Based on the results of a study conducted by Ade Epa Apriani (2021), maize farming was found to generate a profit of IDR 3,551,903.90 per hectare per planting season, with an R/C ratio of 1.51 [10]. With the price of Jakarin 1 composite maize seed reaching IDR 30,000 per kilogram, it is expected that the maize seed breeding enterprise in Bukit Peninjauan II Village will generate higher profits and operate more efficiently compared to conventional maize farming for consumption. Therefore, the objective of this study is to analyze the level of profit, business efficiency, business feasibility, and to calculate the break-even point (BEP) of the Jakarin 1 composite maize seed production enterprise in Bukit Peninjauan II Village.

2. LITERATURE REVIEW

2.1 Composite Maize

Maize is a major food commodity that plays a strategic role as a source of carbohydrates, protein, fat, and vitamins for the population. Based on a study conducted by [11] maize kernels are often utilized as a basic ingredient in the production of processed food products such as tortilla chips. However, the use of maize as a single ingredient in food products has limitations, particularly due to its relatively low protein content. To address this limitation, maize can be processed into flour and combined with other ingredients through composite flour formulation to enhance the functional value and physicochemical characteristics of the final product.

Furthermore, research by [12] explains that composite maize is one of the superior varieties with a very broad adaptive capacity across diverse land conditions. This type of maize is known to grow well on soils with both high and low fertility levels and to exhibit good tolerance to drought stress, making it highly suitable for development in dryland areas. Several composite maize varieties commonly used in cultivation practices include Sukmaraga, Jakarin, and Bisma.

Overall, composite maize can be defined as a food crop variety that is not only agronomically superior due to its strong adaptability to marginal lands, but also has great potential to be developed into processed food products with high nutritional value. Its flexible physical characteristics allow composite maize to be integrated into various composite flour formulations to improve the nutritional profile of food products.

2.2 Income

Income is a crucial element in profit and loss statements and is often broadly interpreted as revenue or income. According to [13] income is the result of work or business activities received by individuals or organizations in various forms, such as wages, salaries, rent, and business profits. In the context of a company, income is considered the "lifeblood" of the business, as the level of income determines the entity's ability to finance operations and ensure the continuity of all business activities. Technically, income reflects an increase in a company's capital arising from the sale of products or the provision of services to customers within a certain period.

2.3 *Efficiency*

Efficiency is a measure of organizational performance assessed by the ability to achieve objectives through the optimal use of resources, including inputs, processes, and outputs. According to [14] work efficiency cannot be separated from effectiveness, as it is closely related to the ability to complete tasks in a timely manner and to apply the most appropriate methods to achieve maximum performance. In the context of health services, efficiency parameters can be measured through the quality of work outcomes, the volume or quantity of tasks completed, and the timeliness of task completion. Therefore, the achievement of high efficiency reflects that each task is carried out in accordance with quality standards without excessive time consumption.

2.4 *Feasibility*

Feasibility analysis in the agricultural sector is a procedure used to assess whether a farming enterprise generates economic returns that are proportional to the costs and risks incurred. According to [15] a farming enterprise is considered feasible if the total income received exceeds the total production costs incurred during one harvest cycle. This assessment is commonly measured using indicators such as the revenue-to-cost ratio (R/C ratio), where a value greater than one indicates that the enterprise is profitable and feasible to continue. The primary focus of this feasibility analysis is to ensure that the cost structure, including both fixed and variable costs, can be covered by sales revenue so that farmers do not experience financial losses.

In addition to the economic aspects of farming, feasibility can also be evaluated based on the availability and standardization of supporting facilities, such as infrastructure or agricultural machinery and equipment. According to [16], facility feasibility analysis aims to assess the conformity between actual field conditions and established ideal standards. Facilities are considered feasible if they meet criteria of completeness and functionality that support optimal work productivity. Thus, the concept of feasibility encompasses two important dimensions: the financial dimension, which ensures income sustainability, and the technical dimension, which ensures that supporting facilities are in a ready-to-use condition to achieve the expected work efficiency.

2.5 *Break Even Point*

The Break-Even Point (BEP) is a condition in which a company, in its operations, neither earns a profit nor incurs a loss. According to [17] This analysis functions to determine the level of sales and product composition required to cover all costs incurred within a certain period. At this point, the total revenue received by the company is equal to the total costs incurred, resulting in zero profit or loss. Break-even point (BEP) analysis is very important for managers in determining the minimum production level to avoid losses and in predicting the sales volume required to achieve optimal profit targets.

Meanwhile, research by [18] emphasizes that the BEP method is a highly applicable tool for profit planning across various industrial scales, including food processing industries. The application of this analysis enables entrepreneurs to identify the specific sales volume that must be achieved to fully recover invested capital. In addition, break-even analysis assists management in determining pricing strategies and managing production costs comprehensively in order to avoid financial losses. If the level of sales falls below the BEP, the business will incur losses, whereas sales above the break-even point will begin to generate profits for the business owner.

It can be concluded that the Break-Even Point is a crucial financial management instrument for maintaining business continuity through measurable profit planning. By understanding the break-even point, company leaders can make strategic decisions related to selling prices, fixed and variable cost efficiency, and future sales volume targets. The use of this analysis not only provides an overview of financial safety through the margin of safety, but also serves as a guideline in determining more effective production policy directions.

3. METHODS

This study was conducted from August to November 2024 in Bukit Peninjauan II Village, Sukaraja District, Seluma Regency, Bengkulu Province. The selection of the study location was based on the presence of maize seed breeder farmers cultivating a newly introduced variety, namely Jakarin 1 composite maize, which has begun to be developed in the area. To obtain the required data and information, the researchers used a questionnaire as the research instrument, which was distributed to farmers engaged in Jakarin 1 composite maize seed breeding. This method was expected to capture relevant information related to the conditions of the seed breeding enterprise in the study area.

This study employed a census method involving four respondents. The census method is a sampling technique in which all members of the population are included as research samples [19]. According to [20] a population is the entire collection of elements that exhibit specific characteristics that can be used to draw conclusions. Therefore, the population in this study consisted of all farmers engaged in Jakarin 1 composite maize seed breeding in Bukit Peninjauan II Village, Sukaraja District, Seluma Regency.

Primary data were collected through direct interviews with farmers engaged in Jakarin 1 composite maize seed breeding using a structured questionnaire prepared in advance. The questionnaire contained questions related to input aspects, production facilities, production volume, business costs, yields, selling prices, and other relevant information required to support this study. In addition, data collection was also conducted using secondary data collection techniques by reviewing various sources, including literature, scientific journals, and books related to Jakarin 1 composite maize and the analysis of maize farming enterprises.

3.1 Data Analysis Techniques

1. Income Analysis

Income or returns represent the monetary value obtained from agricultural production, calculated as the quantity of output multiplied by the selling price. Every activity or business operation is carried out with the objective of obtaining output and profit [21]. Farm income is defined as the difference between total revenue and total costs. In other words, farm income consists of gross income (total revenue) and net income. Gross income or total revenue refers to the total value of agricultural commodity production before deducting production costs [22].

$$Y = TR - TC$$

Where:
Y = Income (Rp)
TR = Total Revenue (Rp)
TC = Total Cost (Rp)

2. Efficiency Analysis

To measure the efficiency of farming enterprises, the R/C Ratio (Return–Cost Ratio) analysis is used, which compares total revenue with total production costs. For each farming enterprise, the magnitude of costs incurred is calculated, including both fixed and variable costs. According to [23] the economic performance of a farming enterprise is assessed using the Revenue–Cost Ratio (R/C Ratio). A higher R/C ratio indicates a more efficient farming enterprise [24].

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

Where:
R/C = Return Cost Ratio
TR = Total Revenue (Rp)
TC = Total Cost (Rp)

The R/C ratio criteria are:

a. a value of the ratioR/C > indicates that the Jakarin 1 composite maize seed business is efficient and profitable.
b. value of the ratio R/C < 1 indicates that the Jakarin 1 composite maize seed business is not efficient to operate.
c. value of the ratio R/C = 1 indicates that the Jakarin 1 composite maize seed business breaks even, generating neither profit nor loss.

3. Feasibility Analysis

The Benefit–Cost Ratio (B/C) is the comparison between profit and total costs incurred [25]. Based on the value of the B/C ratio, it can be determined whether a business is feasible or not. The formula is:

$$B/C = \frac{TR - TC}{TC}$$

Where:
B/C = Benefit Cost Ratio
TR = Total Revenue (Rp)
TC = Total Cost (Rp)

B/C Ratio criteria:

a. If B/C Ratio > 1, indicates that the Jakarin 1 composite maize seed business is feasible to continue.
b. If B/C Ratio < 1, indicates that the Jakarin 1 composite maize seed business needs to be reviewed.
c. If B/C Ratio = 1, indicates that the Jakarin 1 composite maize seed business breaks even, with income and expenses balanced.

4. Analisis *Break Even Point* (BEP)

The Break-Even Point (BEP) is the level of output at which a company earns neither profit nor loss. BEP represents the point where total revenue equals total costs [10].

a. Break Even Point (BEP) Production

$$Q = \frac{TC}{PQ}$$

b. Break Even Point (BEP) Sales

$$BEP\ Q\ X\ PQ$$

Where:
PQ = Output Price (Rp)
TC = Total Cost (Rp)
BEP Q = BEP Production.

4. RESULTS AND DISCUSSION

4.1 Characteristics of Respondents in the Jakarin 1 Composite Maize Seed Business

The total number of respondents involved in the Jakarin 1 composite maize seed business in Bukit Peninjauan II Village was four. Of these, three were male and one was female. On average, the respondents were 58 years old, indicating that this farming activity is still dominated by the older age group. All respondents had received formal education, although only up to the elementary school level (SD), reflecting a relatively low level of formal education. Regarding household structure, the respondents had an average of four household members. The number of household members influences the labor responsibilities that the respondents must fulfill. Therefore, with a relatively large number of household members, the respondents are able to conduct maize seed breeding activities that can provide substantial benefits to meet daily household needs. However, among all household members, only one person—the respondent themselves—was actively involved in the maize seed breeding activities. This indicates that the operational role in this enterprise is still primarily dependent on the individual respondent.

The Jakarin 1 composite maize seed business conducted in Bukit Peninjauan II, Sukaraja Subdistrict, Seluma Regency, serves as the main source of livelihood for the respondents. This activity is not merely a side job, but has become a primary source of income. On average, the land area managed by the respondents for seed production was 0.56 hectares. Although relatively small, this area is sufficient to carry out a sustainable seed production process. The respondents have an average farming experience of 39 years, indicating that they possess considerable knowledge and skills in agricultural practices. The longer the farming experience, the greater the flexibility in applying strategies to overcome various challenges in maize seed production. Long-term experience is highly valuable, particularly in addressing both technical and non-technical problems that arise during the production process. The production period for the Jakarin 1 composite maize seed business typically lasts 100 days, covering the entire cultivation cycle from land preparation to seed harvesting.

1. Maize Seed Production Process

The seed production process of Jakarin 1 composite maize begins with planting activities carried out in the early stage, approximately 100 days before physiological maturity is reached in the cobs. Selected cobs are taken from healthy plants that are free from pest and disease attacks, and have uniform size and shape. After planting, the maize cobs are sun-dried in a clean area, such as a tarp, with the aim of reducing their moisture content and ensuring the quality of the seeds. Once sufficiently dried, the cobs are shelled using a mechanical thresher to separate the kernels from the cob. The kernels are then further dried until the moisture content reaches approximately 12–13% to ensure safe long-term storage. The drying process is carried out evenly by routinely turning the seeds to prevent uneven drying.

The next stage is sorting, which involves selecting seeds based on physical condition, size, and shape. Seeds that are healthy, full, and free from defects are chosen as seeds for planting, while damaged, cracked, or broken seeds are discarded. After sorting, the seeds are packaged in clean, dry 5 kg plastic containers and labeled with important information, such as the variety, harvest date, and moisture content. Finally, the seeds are stored in a cool, dry, and safe location away from potential hazards, ensuring that their quality and viability are maintained until they are used.

2. Land Rent

In the implementation of Jakarin 1 composite maize seed production in Bukit Peninjauan II, Sukaraja District, Seluma Regency, Bengkulu Province, the respondents initially utilized rented land as a cultivation area. The average area of land rented by the farmers was 0.56 hectares. The annual cost of renting this land for the seed production activities reached an average of IDR 4,375,000 per year. If calculated based on a single production cycle, which lasts approximately 100 days, the average land rental cost incurred by the farmers per production cycle was IDR 1,198,630.14. This cost reflects the fixed expense that must be considered by farmers in planning the overall production cost. Therefore, land rental constitutes one of the key components influencing the total cost structure and the economic feasibility of Jakarin 1 composite maize seed production in Bukit Peninjauan II.

3. Depreciation of Tools

Table 1. Tool Depreciation

No	Tool Name	Depreciation
1	Hoe	9.246,57
2	Tank Sprayer	28.767,12
3	Sickle	4.109,58
4	Machete	12.876,71
5	Scythe	15.068,49
6	Tarp	27.397,26
7	Dibble	18.750,00
	Total	116.215,37

Source: Primary Data (Processed)

The determination of the material is one of the components that remains constant, which is primarily influenced not by the total volume of the material but by its inherent characteristics [26]. The material depreciation value represents the value that arises from the repetition of asset depreciation over a certain period of time [27]. In the context of composite maize cultivation in Cycle 1 at Peninjauan II Hill, Sulkalraljal District, Selulmal Regency, Bengkulu Province, the data presented in Table 1 indicate that the total material depreciation costs reached IDR 116,215.37 per production period. Among the various materials used, the sprayer recorded the highest depreciation value of IDR 28,767.12, followed closely by the hoe with a depreciation value of IDR 27,397.26. Meanwhile, other materials such as the sickle, rake, plank, hoe blade, and bone exhibited relatively lower depreciation values, amounting to IDR 9,246.57; IDR 4,109.58; IDR 12,876.71; IDR 15,068.49; and IDR 18,750.00, respectively. Although the depreciation of these materials does not require direct replacement each planting season, it is still categorized as a significant economic cost. Therefore, material depreciation must be accounted for in the overall cost analysis in order to obtain a more accurate depiction of efficiency and profitability in the production process.

3. Labor Costs

Labor costs constitute one of the key components in the structure of production costs, encompassing the entire type of labor employed. The calculation of these costs is based on the total labor used, which includes the number of working hours per day and the total number of days worked during the production process, and is subsequently adjusted according to the prevailing local wage standards [28].

Table 2. Labor Costs

No	Activity	HKSP	Labor costs		
			Male	Females	Machine
1	Land Cultivation	10.387	175.000,00	25.000,00	843.500,00
2	Fertilization	1,05	75.000,00	30.000,00	
3	Planting	2,2	-	220.000,00	-
4	Assignment	1,75	75.000,00	100.000,00	-
5	Spraying	4,75	375.000,00	100.000,00	-
6	Weeding	1	75.000,00	20.000,00	-
7	Harvest	5,2	175.000,00	320.000,00	-
8	Drying Corn Flakes	4,28	337.500,00	90.000,00	-
9	Dryinh Corn Seed	4,28	337.500,00	90.000,00	-
10	Packaging	1,9	150.000,00	40.000,00	-
11	Labeling	1,9	150.000,00	40.000,00	-
	Average	5,6935	175.000,00	103.500,00	76.681,81

Source: Primary Data (Processed)

Based on the data presented in Table 2, the average labor cost for male workers in the cultivation of composite maize in Cycle 1 amounted to IDR 175,000 per person. Meanwhile, the labor cost for female workers was lower, at IDR 103,500. In addition to manual labor, machine-based labor was also utilized, with an average cost of IDR 76,681.81. The value of the Average Daily Labor Unit per Male Worker (ADLU-M) used by farmers in this production was 5.6935. Although there are nominal differences in overall labor costs, after conversion using the ADLU-M, the labor compensation provided to male workers, female workers, and machines is essentially equal, at IDR 100,000 per ADLU-M. This information reflects that labor costs, both manual and mechanized, constitute an important aspect in determining the total production costs in this cultivation.

4. Production Facilities

Production facilities include the equipment and materials used in the production process, such as machinery, technology, and consumable materials, including fuel, chemicals, and other related items [29].

Table 3. Production Facilities

No	Saprodi	Composite Maize Seed Production (Jakarin 1) Business 1 (IDR)
1	Seeds	300.000,00
2	Fertilizer	3.621.575,00
3	Pesticides	320.687,50
4	Fungicides	67.500,00
5	Laboratory Costs	38.920,00
6	Corn Shaller Rental	367.050,00
7	Packaging	338.725,00
8	Labels	69.737,50
	Average	640.524,37

Source: Primary Data (Processed)

Based on the data presented in Table 3, in the cultivation of composite maize in Cycle 1 at Peninjauan II Hill, Sulkalraljal District, Selulmal Regency, the farmers who participated as respondents utilized various production facilities to support their farming activities. These production facilities included seeds, fertilizer, pesticides, fungicides, laboratory materials, corn sheller rental, fuel, and labels. The total cost of all these production facilities per planting season amounted to IDR 640,524.37. Among all input components, the largest expenditure was for fertilizer, approximately IDR 362,157.50 per hectare per season. Meanwhile, seeds cost IDR 300,000.00, pesticides IDR 320,687.50, fungicides IDR 67,500.00, and sorting costs IDR 38,920.00. Additionally, corn sheller rental amounted to IDR 367,050.00, fuel expenditure to IDR 338,725.00, and label purchase to IDR 69,737.50. These values indicate that production facilities play a crucial role in the overall cost structure of maize cultivation. Therefore, the proper utilization of production facilities, in terms of quantity and quality, has a significant impact on the productivity and efficiency of the cultivation process. For this reason, the planning and management of production facilities must be carried out carefully and systematically, in line with the expected yield, to support the economic sustainability of maize cultivation.

5. Total Cost (TC) of Jakarin Composite Corn Seed Business 1

Table 4. Total Cost

No	Description	Amount (IDR)
1	Fixed Costs	
	Land Rent	1.198.630,14
	Equipment Depreciation	116.215,37
	Total Fixed Costs	1.314.845,87
2	Variabel Cost	
	Seeds	300.00,00
	Fertilizer	3.621.575,00
	Pesticides	303.187,50
	Fungicides	67.500,00
	Sorting Costs	38.920,00
	Corn Shaller Rental	367.050,00
	Packaging	338.725,00
	Labels	69.737,50
	Labor	3.993.500,00
	Total Variable Costs	9.100.195,00
	Total Costs (TC)	10.415.040,87

Source: Primary Data (Processed)

6. Income Analysis of Composite Maize Seed Production (Jakarin 1)

Farm revenue represents the yield obtained from multiplying the total production by the unit price of the product over a certain period, expressed in monetary terms.[27].

Table 5. Reception

No	Production	Amount(kg)	Cost/IDR	Reception
1	Corn Seeds	1.064,29	30.000,00	31.928.775,00
2	Corn Flakes	118,28	7.000,00	827.942,50
		Total		32.756.717,50

Source: Primary Data (Processed)

Based on the results of the study on the cultivation of composite maize seeds (Jakarin 1) conducted in Peninjauan II Hill, Sulkalraljal District, Selulmal Regency, Bengkulu Province, the total revenue obtained by farmers reached IDR 32,756,717.50. This indicates that the cultivation of composite maize seeds (Jakarin 1) has significant economic prospects and the potential to be implemented sustainably in the long term. The revenue in this cultivation is calculated based on the total amount of seeds produced and sold, multiplied by the selling price per unit. According to the data presented in Table 5, the total seed production reached 1,064.29 kg. At a selling price of IDR 30,000 per kg, the total revenue from seed sales amounted to IDR 32,756,717.50. In addition, there were residual corn cobs that did not pass the quality selection process for seeds. The total amount of these residuals was 118.28 kg, with a selling price of IDR 7,000 per kg. Therefore, the additional revenue from these residual corn cobs amounted to IDR 827,942.50. The farmers' total revenue derived from these two main sources demonstrates the economic feasibility and sustainability potential of Jakarin 1 composite maize seed cultivation in Peninjauan II Hill.

7. Revenue Analysis of Composite Maize Seed Production (Jakarin 1)

The analysis of farm revenue represents the difference between the revenue received and the initial costs [22]. From the cultivation activities of composite maize seeds (Jakarin 1) in Peninjauan II Hill, revenue is calculated as the difference between total revenue (TR) and total production costs (TC). Mathematically, this analysis can be expressed by the equation: Y = TR - TC, where Y represents the net revenue obtained by the farmers [21]. Through this approach, the efficiency and profitability of the cultivation can be assessed, serving as a basis for evaluating the economic feasibility of the seed production activities.

Table 6. Revenue

No	Description	Amount (IDR)
1	Total Revenue (TR)	31.928.775,00
2	Total Cost Production (TC)	10.415.040,87
	Total	22.341.676,63

Source: Primary Data (Processed)

Based on the data presented in Table 6, the total revenue obtained from the cultivation of composite maize seeds (Jakarin 1) in Peninjauan II Hill reached IDR 22,341,676.63. This value reflects the substantial net profit earned by farmers after deducting all production costs incurred during one production period. These figures indicate that the cultivation of composite maize seeds (Jakarin 1) is not only technically feasible but also economically profitable. With this significant net revenue, the cultivation has the potential to be further developed and can serve as an alternative source of income for farmers in Peninjauan II Hill.

8. Efficiency Analysis of Composite Maize Seed Production (Jakarin 1)

To calculate the efficiency of the cultivation, the R/C ratio is used. This ratio is obtained by dividing total revenue by the total costs incurred in production [30].

Table 7. Efficiency

No	Description	Amount (IDR)
1	Total Revenue (TR)	22.341.676,63
2	Total Cost Production (TC)	10.415.040,87
	Total	2.17

Source: Primary Data (Processed)

Based on the data presented in Table 7, the efficiency value of the maize cultivation carried out by farmers in Cycle 1 reached 2.17. This indicates that the R/C (Return to Cost) ratio is greater than 1, meaning that this cultivation generates revenue more than twice the total costs incurred. In other words, every IDR 1.00 spent generates revenue of IDR 2.17. This finding indicates that the cultivation of composite maize in Cycle 1 is not only efficient but also economically feasible and profitable to implement. The relatively high R/C value provides evidence that this cultivation can serve as an alternative source of income for farmers in Peninjauan II Hill and has the potential to be developed sustainably.

9. Feasibility Analysis of Composite Maize Seed Production (Jakarin 1)

The B/C ratio analysis is used to calculate the economic feasibility of this maize cultivation in Cycle 1 by dividing the difference between total revenue and total cost by the total cost [24].

Table 8. Feasibility Analysis

No	Description	Amount (IDR)
1	Total Revenue (TR)	22.341.676,63
2	Total Cost Production (TC)	10.415.040,87
	Total	1.17

Source: Primary Data (Processed)

Based on the data presented in Table 8, the Benefit-Cost (B/C) ratio received by farmers in the cultivation of composite maize in Cycle 1 was 1.17. This value indicates a B/C ratio greater than 1, meaning that the benefits obtained exceed the total costs incurred. In simple terms, every IDR 1.00 spent generates a net benefit of IDR 1.17. This finding indicates that the cultivation of composite maize in Cycle 1 is economically feasible to continue.

4.2 Analysis *Break Even Point* (BEP)

The Break-Even Point (BEP) represents a production condition in which the operation does not generate a profit nor incur a loss. At this point, total revenue is equal to total costs, meaning that the net profit is zero (revenue = total cost) [31]. A According to [10] Implicit analysis (Break-Even Point) represents a method to determine the minimum sales volume at which a business does not incur a loss, although it has not yet generated a profit (i.e., net profit is zero). The Production BEP is calculated by dividing the total costs by the product price. Meanwhile, the Sales BEP is obtained by multiplying the Production BEP by the product price.

Table 9. BEP Product

No	Description	Amount (IDR)
1	Total Producti Cost (TC)	. 10.415.040,87
2	Product Price (PQ)	30000,00
	Total	347,17

Source: Primary Data (Processed)

Based on the results of the analysis, it was found that the cultivation of composite maize in Cycle 1 reaches the Break-Even Point (BEP) at a production level of 347.17 kg of maize seeds. This means that at this level of production, the total production costs incurred by the farmers are fully covered by the revenue obtained, without generating any profit or loss. If production exceeds this amount, farmers begin to earn a profit. Conversely, if production falls below the BEP, the cultivation will incur a loss. Thus, the BEP serves as an important indicator in farm planning, as it helps farmers determine the minimum production level required to ensure that the cultivation remains financially viable.

Table 10. BEP Sales

No	Description	Amount (IDR)
1	BEP Product	347,17
2	Product Price (PQ)	30.000,00
	Total	10.415.040,87

Source: Primary Data (Processed)

Based on the analysis results, it was found that the break-even point (BEP) for the sales of Jakarin 1 composite corn seeds was 347.17 kg. At this sales level, the total production costs incurred by the farmers were fully covered by the revenue earned, amounting to IDR 10,415,040.87. Therefore, this figure represents the minimum sales volume that must be achieved to avoid losses. If sales exceed 347.17 kg, the business will start generating profit. Conversely, if sales fall below this level, the business will experience losses. Consequently, BEP analysis is considered very important as a reference for decision-making in operating and developing the seed business more efficiently and sustainably.

CONCLUSION

The cultivation of Jakarin 1 composite corn seeds in Bukit Peninjauan II, Sulurajal District, Selumal Regency, has proven to be feasible and profitable. The research results indicate that the total revenue of farmers reached IDR 32,756,717.50, with total production costs of IDR 10,415,040.87, resulting in a net income of IDR 22,341,676.63 per planting season. Efficiency analysis using the R/C ratio of 2.17 and the B/C ratio of 1.17 shows that this business is economically efficient and profitable. The production break-even point was 347.17 kg, and the sales break-even point was IDR 10,415,040.87, indicating that production and sales beyond these values will generate profit. Therefore, the cultivation of Jakarin 1 composite corn seeds has the potential to be developed as a sustainable source of income for farmers in Bukit Peninjauan II, Sulurajal District, Selumal Regency.

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REFERENCES

[1] W. Kerr, "The three pillars of food security - availability, adequate income and increasing productivity," *Food Secur.*, pp. 1–12, 2023, doi: 10.4337/9781035312719.00006.

[2] A. Fatoni, K. D. Sari Utami, and B. Puspisanti, "Islamic Economic Criticists Toward The Indonesian Government Of Rice Policy," *Syi`ar Iqtishadi J. Islam. Econ. Financ. Bank.*, vol. 4, no. 2, p. 100, 2020, doi: 10.35448/jiec.v4i2.9846.

[3] K. S. Karnatam *et al.*, "Silage maize as a potent candidate for sustainable animal husbandry development—perspectives and strategies for genetic enhancement," *Front. Genet.*, vol. 14, no. May, pp. 1–24, 2023, doi: 10.3389/fgene.2023.1150132.

[4] O. Erenstein, M. Jaleta, K. Sonder, K. Mottaleb, and B. M. Prasanna, "Global maize production, consumption and trade: trends and R&D implications," *Food Secur.*, vol. 14, no. 5, pp. 1295–1319, 2022, doi: 10.1007/s12571-022-01288-7.

[5] F. Palobo, S. Tirajoh, M. K. Rumbarar, and M. Thamrin, "Performance of New Superior Varieties of Hybrid and Composite Corn in Papua," *J. Agric. Stud.*, vol. 8, no. 1, p. 111, 2020, doi: 10.5296/jas.v8i1.15445.

[6] M. P. Rani, C. R. Anusha, G. R. Lavanya, and M. S. Kiran, "Genetic Variability and Interrelationship in Maize (Zea mays L.) Genotypes for Grain Yield and Yield Component Characters," *Int. J. Environ. Clim. Chang.*, vol. 12, no. 11, pp. 3264–3271, 2022, doi: 10.9734/ijecc/2022/v12i111375.

[7] M. Javier Carena, "Earlytrop: a Program To Adapt 100% Tropical Maize Germplasm To Short-Season Environments," *Funct. Plant Breed. J.*, vol. 3, no. 1, pp. 11–21, 2021, doi: 10.35418/2526-4117/v3n1a2.

[8] Viana, "Maize Cultivars With Native Insect Resistance – Potential, Advances, and Challenges," *Rev. Bras. Milho e Sorgo*, vol. 21, 2022, doi: 10.18512/rbms2022vol21e1250.

[9] S. Chen *et al.*, "Genome-wide association study presents insights into the genetic architecture of drought tolerance in maize seedlings under field water-deficit conditions," *Front. Plant Sci.*, vol. 14, no. May, pp. 1–18, 2023, doi: 10.3389/fpls.2023.1165582.

[10] A. E. Apriani and M. N. Y. , Soetoro, "ANALISIS USAHATANI JAGUNG (Zea Mays L) (Suatu kasus di Desa Pancawangi Kecamatan Pancatengah Kabupaten Tasikmalaya)," *Agroinfo Galuh*, vol. 2, no. 3, pp. 201–206, 2021, [Online]. Available: https://jurnal.unigal.ac.id/index.php/agroinfogaluh/article/view/276/276

[11] F. Syaiful, M. I. Syafutri, E. Lidiasari, E. I. Astari, and B. Alat, "PENGARUH PENAMBAHAN TEPUNG KOMPOSIT (KACANG MERAH-KACANG KEDELAI) TERHADAP KARAKTERISTIK TORTILLA CHIPS," vol. 9, no. 2, pp. 39–45, 2022.

[12] S. Damaiyanti, A. Zainal, A. Alaydrus, and M. Saleh, "Respons tiga varietas jagung komposit terhadap pupuk daun naturalplus," vol. 22, pp. 1–12, 2025.

[13] R. J. Sahri *et al.*, "No Title," vol. 2, no. 10, pp. 3223–3230, 2022.

[14] S. Ariani, M. I. Kesehatan, U. M. Sidoarjo, J. Timur, and A. History, "Analisis keberhasilan implementasi rekam medis

elektronik dalam meningkatkan efisiensi dan mutu pelayanan," vol. 2, no. 2, pp. 7–14, 2023.
[15] S. Abubakar *et al.*, "Analisis kelayakan usahatani jagung di kelurahan hepuhulawa kecamatan limboto kabupaten gorontalo," 2019.
[16] R. Maulana, F. Safriwardi, M. Batu, A. Utara, and P. Aceh, "Analisis Kelayakan Fasilitas Bengkel Teknik Kendaraan Ringan di SMK Negeri 1 Nisam," 2025.
[17] Aminus, "Jurnal Manajemen, Volume 10 No 3, Juli 2022," vol. 10, no. 3, 2022.
[18] A. I. Putri, "An Analysis Of Break Even Point (BEP) In Profit Planning At Kerupuk Sri Rasa Factory In Bengkulu Analisis Break Even Point (BEP) Dalam Perencanaan Laba Pada," vol. 2, no. 1, pp. 41–46, 2023.
[19] Y. Yusnita, Bagio, and V. Zikria, "Kontribusi Pendapatan Usahatani Jagung Manis Terhadap Pendapatan Keluarga di Desa Langkak Kecamatan Kuala Pesisir Kabupaten Nagan Raya," *J. Agriuma*, vol. 4, no. 2, pp. 97–106, 2022, doi: 10.31289/agri.v4i2.8249.
[20] M. Ridwan and U. Hasanah, "Pengaruh Karakteristik Individu Dan Karakteristik Pekerjaan Terhadap Kinerja Karyawan Bagian Pengantongan Pupuk Urea-1 (Ppu-1) Pada Pt. Pupuk Sriwidjaja Palembang," *Strategi*, vol. 12, no. 01, pp. 1–12, 2022, doi: 10.52333/strategi.v12i01.908.
[21] M. Wijaya, "Analisis Usahatani Jagung (Zea Mays L.) Di Lahan Peremajaan Kelepa Sawit Rakyat (PKSR) Desa Kungkai Baru Kecamatan Air Periukan Kabupaten Seluma," pp. 1–10, 2023.
[22] R. Ibrahim, A. Halid, and Y. Boekoesoe, "Analisis biaya dan pendapatan usahatani padi sawah non irigasi teknis di Kelurahan Tenilo Kecamatan Limboto Kabupaten Gorontalo," *AGRINESIA J. Ilm. Agribisnis*, vol. 5, no. 3, pp. 176–181, 2021.
[23] M. Rayhan, T. Fahrudin, R. Sukawati, and H. Hardiansyah, "Analisis Biaya Produksi, Pendapatan, Dan R/C Pada Usahatani Jagung Dan Padi : Studi Kasus Di Desa Selaawi Kecamatan Selaawi Kabupaten Garut," *J. Ilm. Manajemen, Ekon. Akunt.*, vol. 8, no. 3, pp. 919–931, 2024, doi: 10.31955/mea.v8i3.4428.
[24] A. Suryadi, I. K. Budastra, and H. Hayati, "Efisiensi Produksi Usahatani Jagung Pada Sistem Budidaya Olah Tanah Dan Tanpa Olah Tanah Di Kabupaten Lombok Barat," *J. Sos. Ekon. Dan Hum.*, vol. 10, no. 1, pp. 83–98, 2024, doi: 10.29303/jseh.v10i1.453.
[25] D. Taufik, Suhartina, I. S, and N. A, "Analisis Return Cost Ratio dan Benefit Cost Ratio Pada Usaha Peternakan Kambing di Desa Tandassura Kecamatan Limboro, Kabupaten Polewali Mandar," *J. Pertan. Agros*, vol. 25, no. 1, pp. 150–158, 2023, [Online]. Available: https://www.e-journal.janabadra.ac.id/index.php/JA/article/download/2374/1561
[26] N. Zarwati, H. Hayati, and M. Muktasam, "Analisis Usahatani Jagung Dan Kontribusinya Terhadap Pendapatan Rumah Tangga Pada Lahan Kering Di Kecamatan Jerowaru Kabupaten Lombok Timur," *Agroteksos*, vol. 33, no. 2, p. 625, 2023, doi: 10.29303/agroteksos.v33i2.850.
[27] I. Nafik, J. Sutrisno, and I. Nurhidayati, "Analisis Ekonomi Usahatani Jagung di Kabupaten Blora (Biaya dan Pendapatan)," *JIA (Jurnal Ilm. Agribisnis) J. Agribisnis dan Ilmu Sos. Ekon. Pertan.*, vol. 9, no. 6, pp. 603–612, 2024, doi: 10.37149/jia.v9i6.1646.
[28] K. Kosior, "Zagadnienia Ekonomiki Rolnej Problems of Agricultural Economics THE ADVANCEMENT OF DIGITALIZATION PROCESSES," vol. 371, no. 2, pp. 28–46, 2022.
[29] N. Noviani and S. Wahyuni, "Pengaruh Penggunaan Sarana Produksi Terhadap Pendapatan Usaha Tani Padi Sawah di Desa Melati II Kecamatan Perbaungan," *J. Agro Nusant.*, vol. 4, no. 2, pp. 109–113, 2021.
[30] R. Indriyani, A. Abubakar, and A. Melani, "Analisis Efisiensi Usahatani Padi pada Petani Sistem Resi Gudang Kecamatan Cilamaya Wetan Kabupaten Karawang," *Paspalum J. Ilm. Pertan.*, vol. 13, no. 1, pp. 123–131, 2025, doi: 10.35138/paspalum.v13i1.824.
[31] P. Manuho, Z. Makalare, T. Mamangkey, and N. S. Budiarso, "Analisis Break Even Point (Bep)," *J. Ipteks Akunt. Bagi Masy.*, vol. 5, no. 1, p. 21, 2021, doi: 10.32400/jiam.5.1.2021.34692.

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