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FEASIBILITY ANALYSIS OF DRAGON FRUIT (Hylocereus polyrhizus) FARMING IN THE ORGANIC VILLAGE OF BEJI VILLAGE, WONOGIRI REGENCY

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Abstract : *Dragon fruit plants are one of the horticultural products that are included in international commodities. Since entering the mid-2000s, dragon fruit has multiplied in various regions in Indonesia. Dragon fruit is one of the commodities whose prospects are increasing in the market. The increasing demand and consumption of dragon fruit cause the need for ways to increase productivity in several production centers. This study aimed to determine the feasibility of dragon fruit farming. The research was conducted in the Organic Village of Beji Village, Wonogiri Regency, with a descriptive method. The data analysis used were farming costs, revenue, income, and feasibility. Organic dragon fruit farming costs with a land area 1000m^2 in the first year amounted to Rp.17,470,000, in the second year, amounted to Rp. 4,660,000, and in the third year, amounted to Rp. 3,370,000. Organic dragon fruit farming revenue with a land area 1000m^2 in the first year amounted to Rp. 2,304,000, in the second year, amounted to Rp. 11,520,000, and in the third year, amounted to Rp. 10,800,000. The income level of organic dragon fruit farming with a land area of 1000m^2 in the first year amounted to Rp. 15,166,000, in the second year amounted to Rp. 6,860,000, and in the third year, it amounted to 7,430,000. The feasibility of organic dragon fruit farming with a land area of 1000m^2 in the first year amounted to -0.87, in the second year amounted to 1.48, and in the third year amounted to 2.20.*

Keywords*: Farming, Feasibility, Dragon Fruit, Organic*

1. Introduction

Indonesia is an agrarian country where the majority of the population grows crops. Geographically, Indonesia is also an archipelago that has excellent natural potential, not only in the marine sector but also in agriculture. Indonesia's high agricultural potential is partly because Indonesia has a land area that is one-third of its total area passed by the world's mountain ranges. The agricultural sector is the spearhead of the Indonesian nation to realize the achievement of national development in meeting food needs. The development success in this sector is expected to ensure food security rooted in the diversity of food resources, institutions, and local culture.

The geographical condition of Indonesia, which is a tropical region, has a wet climate, and is located in the equatorial region, is very suitable and supportive for use in plant cultivation, especially fruit crops. Fruits are one of the horticultural commodities that contain vitamins, minerals, and fiber that are needed by the body. Some of the types of horticultural crops, one of which is dragon fruit. According to Emil (2011), dragon fruit plants, also widely known as dragon fruit or pitaya, are cactus-type plants that originated from Mexico, Central America, and South America. Because dragon fruit plants have an

exotic appearance and produce consumable fruit, these plants are in great demand for cultivation and eventually spread throughout the world. This unique fruit has long been recognized by the Chinese people and is believed to be a fruit that brings blessings.

Since its entry in the mid-2000s, dragon fruit has multiplied in various regions in Indonesia. The increasing number of people who know and like the sweet, legit, and fresh taste of dragon fruit makes this fruit one of the idols of the people in Indonesia until now. No wonder the demand for dragon fruit in Indonesia is increasing yearly. The high demand for dragon fruit is due to its unique shape, fresh taste, and attractive flesh color when served as 'table fruit'. Dragon fruit is also efficacious as a medicine to alleviate various diseases, such as lowering blood sugar and cholesterol levels. In addition, dragon fruit has potential as a raw material for the food, beverage, and cosmetic processing industries, as well as other health products (Hardjadinata, 2010).

Dragon fruit cultivation business has a great opportunity considering the increasing demand in the market. Farmers have generally conducted economic calculations, but not in writing, and many still need to calculate the level of farm income they are cultivating. As a basis for developing a farm, an information system is needed to determine the feasibility of a farm. This study aims to determine the feasibility of dragon fruit farming in the Organic Village of Beji Village, Wonogiri Regency.

2. Research Methods

The method used in this research is descriptive, with the type of survey method. According to Nazir (2005), the descriptive method examines the status of a human group, an object, a condition, a system of thought, or a class of events in the present. The research location was determined purposively in Kampung Organik Beji Village, Wonogiri Regency. Sampling was conducted using the simple random sampling method, which is a method that considers all sample members to have the same characteristics, so that anyone taken can represent the population (Mardikanto, 2006).

The data in this study include primary data and secondary data. The data collection techniques used include Interviews, namely data collection by asking respondents directly using questionnaires. Observation is the acquisition of information data by relying on direct observation in the field and Recording, namely sources of information from the library and related agencies.

3. Results and Discussions

1. Cost of Dragon Fruit (Hylocereus polyrhizus) Farming with 1000 m^2 land area

Table 1. Fixed and Variable Costs of Year 1 Dragon Fruit Farming

NO	Description	VOLUME OF UNIT	UNITS	UNIT PRICES	COST	AMOUNT
A	**FIXED COSTS**					
	Land Rent	1000	m^2	600.000	600.000	
	Total					600.000
B	**VARIABLE COSTS**					
	Manpower					
1	Land preparation	2	HOK	60.000	120.000	
2	Dragon Fruit Pole Making	10	HOK	60.000	600.000	
3	Hole-making & compost application	2	HOK	60.000	120.000	

4	Planting	2	HOK	60.000	120.000	
5	Fertilization	1	HOK	60.000	60.000	
6	Weeding (branch reduction)	1	HOK	60.000	60.000	
7	Harvesting	1	HOK	60.000	60.000	
	Means of Production					
1	Organic Fertilizer	4320	Kg	750	3.240.000	
2	Dragon Fruit Seedlings	576	Trunk	5.000	2.880.000	
3	Pole Making Cost	144	Trunk	65.000	9.360.000	
	Other					
	Harvest transportation	1	Pick Up	250.000	250.000	
	Total					16.870.000
	Total Cost					**17.470.000**

Source: Primary Data Analysis, 2023

Table 2. Fixed and Variable Costs of Year 2 Dragon Fruit Farming

NO	Description	VOLUME OF UNIT	UNITS	UNIT PRICES	COST	AMOUNT
A	**FIXED COSTS**					
	Land Rent	1000	m^2	600.000	600.000	
	Total					600.000
B	**VARIABLE COSTS**					
	Manpower					
1	Land preparation	2	HOK	60.000	120.000	
2	Fertilization	1	HOK	60.000	60.000	
3	Pest and Disease Control	1	HOK	60.000	60.000	
4	Weeding (branch reduction)	1	HOK	60.000	60.000	
5	Harvest	1	HOK	60.000	60.000	
	Means of Production					
1	Organic Fertilizer	4320	Kg	750	3.240.000	
2	Biological Pesticides for Pests and Diseases	1	Package	150.000	150.000	
	Other					
	Harvest transportation	1	Pick Up	250.000	250.000	
	Total					4.060.000
	Total Cost					**4.660.000**

Source: Primary Data Analysis, 2023

Table 3. Fixed and Variable Costs of Year 3 Dragon Fruit Farming

NO	Description	VOLUME OF UNIT	UNITS	UNIT PRICES	COST	AMOUNT
A	**FIXED COSTS**					
	Land Rent	1000	m^2	600.000	600.000	
	Total					600.000
B	**VARIABLE COSTS**					
	Manpower					
1	Land preparation	2	HOK	50.000	100.000	
2	Fertilization	1	HOK	50.000	50.000	
3	Pest and Disease Control	1	HOK	50.000	50.000	
4	Weeding (branch reduction)	2	HOK	50.000	100.000	
5	Harvest	1	HOK	50.000	50.000	
	Means of Production					
1	Organic Fertilizer	2160	Kg	750	1.620.000	
2	Biological Pesticides for Pests and Diseases	2	Trunk	150.000	300.000	
	Other					
	Harvest transportation	2	Pick Up	250.000	500.000	
	Total					2.770.000
	Total Cost					**3.370.000**

Source: Primary Data Analysis, 2023

Every farming activity is always faced with the problem of costs that must be incurred to produce production. Production costs can be divided into two, namely, fixed costs and variable costs. Fixed costs are costs whose size does not depend on the production size. Variable Costs. Variable costs are costs whose size depends on the size of the production volume. Total cost is the sum of fixed costs and variable costs.

From the research that has been carried out, it is obtained that the total costs incurred by respondent farmers in organic dragon fruit farming with a land area of 1000 m2 in the first year amounted to Rp 17,470,000, the second year amounted to Rp 4,660,000, and the third year amounted to Rp 3,370,000. The largest percentage is in variable cost expenditures, which is because in variable costs, farmers use production factors, including seeds, fertilizers, pesticides, and labor, in large quantities so that the costs incurred are also large (Yulianawati, 2022).

2. Dragon Fruit Farming Revenue

Farm revenue is influenced by several factors, including land area, commodity prices, and total production. The formula can calculate revenue:

TR = P x Q

Description:
TR= Total revenue (Rp)
P = Price (Rp)
Q = Quantity (kg)

Table 4. Dragon Fruit Farming Revenue

Year-	Production (Kg)	Price (Rp)	Total Revenue (Rp)
1	144	16.000	2.304.000
2	720	16.000	11.520.000
3	720	15.000	10.800.000

Source: Primary Data Analysis, 2023

In Table 4, it can be seen that the acceptance of dragon fruit farming in the first year amounted to Rp. 2,304,000 with a total production of 144 kg. This is because, in the first year, plant productivity has yet to be maximized. In the second and third years, the revenue amounted to Rp. 11,520,000 and Rp. 10,800,000 with a total production of 720 Kg.

3. Income level of Dragon Fruit (*Hylocereus polyrhizus*) farming
Income analysis can be calculated using the formula:

I = TR – TC

Description:
I = Income (Rp)
TR = Total revenue (Rp)
TC = Total cost (Rp)

Table 5. Dragon Fruit Farming Income

Year-	Total Revenue (Rp)	Total Cost (Rp)	Income (Rp)
1	2.304.000	17.470.000	-15.166.000
2	11.520.000	4.660.000	6.860.000
3	10.800.000	3.370.000	7.430.000

Source: Primary Data Analysis, 2023

Income is the difference between revenue and total costs (Soekartawi, 2006). Farm income depends on the amount of production, product prices, and production costs. In order to increase income, farmers should reduce production costs and increase production, for example, by using certified superior seeds and balanced fertilization (Solikah, 2022). Farm income can be used to see whether a farm is profitable or disadvantageous, up to how much profit or loss.

Table 5. Organic dragon fruit farming income in the first year amounted to Rp. 15,166,000. This is because the initial investment is quite high, which includes supporting facilities for cultivation and plant productivity that have not been maximized. In the second year, the income increased compared to the first year, which amounted to Rp. 6,860,000, and in the third year, the income increased further, which amounted to Rp. 7,430,000.

4. Feasibility of Dragon Fruit Farming

The B/C ratio compares profits with costs used to realize planning and operate a business that sees the benefits obtained by farmers with a unit of rupiah expenditure (Yacob, 2003). The mathematical formula used is as follows: Feasibility of Dragon Fruit Farming*Benefit Cost Ratio* (B/C) $= \frac{\text{TI}}{\text{TC}}$

Description:
B/C ratio = Comparison between total revenue and total cost
TI = Total Income(Rp)
TC = Total Cost (Rp)
Kriteria :
Criteria:
B / C> 1, farming is feasible
B / C < 1, farming is not feasible
B / C = 1, the farm is said to break even

Table 6. Feasibility of Dragon Fruit Farming

Year-	Total Income (Rp)	Total Cost (Rp)	Feasibility of FarmingB/C ratio
1	-15.166.000	17.470.000	-0.87
2	6.860.000	4.660.000	1.48
3	7.430.000	3.370.00	2.20

Source: Primary Data Analysis, 2023

B/C stands for Benefit Cost Ratio. B/C analysis is used to compare between income and costs. In Table 6, the feasibility of dragon fruit farming in the first year amounted to -0.87 (less than one). This means that in the first year, dragon fruit farming has not provided profit due to high production costs used for production facilities for dragon fruit cultivation, and dragon fruit plants have not been maximally fruitful. In the second year, the feasibility of dragon fruit farming amounted to 1.48. This means that the comparison produces a value above the value of 1 (B / C ratio> 1). Dragon fruit farming is feasible because, economically, farmers make a profit. This is because the total cost of production decreased compared to the first year and the dragon fruit plants have maximum fruit. In the third year, the feasibility of dragon fruit farming increased compared to the second year, which amounted to 2.20. this is because production costs have decreased compared to the first and second years.

4. Conclusion

Based on the analysis that has been carried out, conclusions can be drawn:

1. Organic dragon fruit farming costs with a land area of 1000m^2 in the first year amounted to Rp. 17,470,000, in the second year, amounted to Rp. 4,660,000, and in the third year, amounted to Rp. 3,370,000.
2. Organic dragon fruit farming revenue with a land area 1000m^2 in the first year amounted to Rp. 2,304,000, in the second year, amounted to Rp. 11,520,000, and in the third year, amounted to Rp. 10,800,000.
3. The income level of organic dragon fruit farming with a land area of 1000m^2 in the first year amounted to Rp. 15,166,000, in the second year, amounted to Rp. 6,860,000, and in the third year, it amounted to 7,430,000.
4. The feasibility of organic dragon fruit farming with a land area of 1000m^2 in the first year amounted to -0.87, in the second year amounted to 1.48, and in the third year amounted to 2.20.

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