Cost analysis of semi organic spinach (*Ipomoea aquatica L*) cultivation in Polinela agricultural land, Bandar Lampung

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**ABSTRACT:** Indonesia is a country that is rich in agricultural products, this is because of Indonesia's natural conditions that support a large expanse of land and abundant biodiversity and has a tropical climate where sunlight occurs throughout the year so you can plant all year round. The reality of natural resources like that should be able to raise Indonesia into a prosperous country and meet the food needs of all its people. The water spinach cultivation research activity was carried out on March 14 – May 11, 2022. The research was carried out on the Food Agribusiness Field at the Lampung State Polytechnic. The research method used is descriptive qualitative. In the marketing of kale, it can be seen that the revenue is Rp. 172,000, the profit is Rp. 95,900, and an R/C ratio of 2.26 is obtained. R/C Ratio > 1, so that the kale business has an advantage economically. The B/C ratio is 1.26, which means that if the expenditure on the sale of kale is Rp. 1.00, the revenue obtained is Rp. 2.26. R/C Ratio > 1, so that the kale business has an advantage economically.

**Keywords:** b/c ratio, cost, r/c ratio, spinach

**INTRODUCTION**

Indonesia is a country that is rich in agricultural products, this is because of Indonesia's natural conditions that support a large expanse of land and abundant biodiversity and has a tropical climate where sunlight occurs throughout the year so you can plant all year round. The reality of natural resources like that should be able to raise Indonesia into a prosperous country and meet the food needs of all its people. This provides an opportunity for most Indonesians to carry out business activities in the agricultural sector (Henky Warsani, 2013). The Indonesian National Standard or SNI on organic food systems (2002) states that organic is a labeling term that states a product has been produced in accordance with organic food system standards and is certified by an organic certification agency (LSO) that has been accredited by the National Accreditation Committee (KAN). The Indonesian Consumer Protection Foundation or YLKI (2012) states that organic food is produced without containing any chemical elements such as fertilizers, pesticides, hormones and drugs (Berliana et al., 2018).

In line with public awareness of the dangers of degenerative diseases, it increases public awareness of the importance of health today (Clara Yolandika et al., 2017) (Bathara et al., 2021). This is indicated by changes in consumption patterns where the tendency to consume foods that are high in fat, salt, carbohydrates, cholesterol, food additives (BTP) and low in fiber has turned into a tendency for consumers to choose natural and healthy foods that function to prevent diseases. that may arise (Clara Yolandika et al., 2021). In the management of semi-organic agriculture, most of the production factors such as fertilizers and pesticides use organic materials, but they are still combined with factory-made non-organic production factors, both fertilizers and pesticides. Organic fertilizers and natural pesticides can be made by farmers themselves at lower costs but are still constrained by raw materials, while factory-made fertilizers and pesticides (chemicals) are constrained by expensive product prices that are not in accordance with the economic capacity of farmers (Sutarni et al., 2019). In the management of semi-organic agriculture, most of the production factors such as fertilizers and pesticides use organic materials, but they are still combined with factory-made non-organic production factors, both fertilizers and pesticides. Organic fertilizers and natural pesticides can be made by farmers themselves at lower costs but are still constrained by raw materials, while factory-made fertilizers and pesticides (chemicals) are constrained by expensive product prices that are not in accordance with the economic capacity of farmers (Sutarni et al., 2019).

Currently the main trend of the food industry is towards a concept of “Healthy, Functional, and Satisfied Foods” in producing a product. Products with the concept of “Healthy, Functional, and Satisfied Foods”
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Pay attention to the balance of nutrition, quality and also the safety of the raw materials used. This quality improvement has prompted a new trend of people in various countries and Indonesia to return to the concept of nature where people have started to abandon chemical and synthetic food products. One of them is to choose organic food ingredients. This type of food is free from chemical pesticide residues and free from the use of chemical fertilizers. Pesticides are used to eradicate plant pests, the raw materials of pesticides are toxic materials such as lead, antimony, arsenic, mercury, selenium, thallium, zinc and fluoride. Directly or indirectly, high chemical residues in food, especially non-organic vegetables, can affect human health. Although the potential for consumer demand in Indonesia is quite large for organic products, organic food marketers in Indonesia are constrained by perceptions of the price of organic food which is considered expensive (Hendrik et al., 2021).

Obstacles experienced by farmers in semi-organic agriculture are the high amount of land investment, not much and it is not easy to find land areas that are in good condition or not heavily polluted by chemicals, as well as remote and not strategic land locations. In addition, high production costs and low productivity have caused not many farmers to be motivated to produce semi-organic rice (C Yolandika et al., 2021). The non-organic rice farming is still mostly done by farmers because of high productivity and affordable prices so that there are still many consumers who like non-organic rice. The purpose of this study was to analyze the production costs, revenues, and incomes of semi-organic kale farming during one growing season.

**METHOD**

The water spinach cultivation research activity was carried out on March 14 – May 11, 2022. The research was carried out on the Food Agribusiness Field at the Lampung State Polytechnic. The research method used is descriptive qualitative (Zainuddin & Wibowo, 2018).

**RESULT AND DISCUSSION**

The kale seeds used in cultivation are under the trademark Cap Arrow Red. The acquisition of kale seeds is from the Lampung State Polytechnic institution. The initial stage in land preparation is making a plot. For the cultivation of kale, the planted area is 6 m², with a bed width of 80 cm², a distance between beds of 60 cm², and a bed height of 15 cm². The first tillage was using a tractor using a singkal plow by technicians at the Lampung State Polytechnic. The purpose of the first tillage is to turn the soil into large chunks. Land cultivation in kale cultivation is the second type of tillage using a manual system, namely the hoe. The second purpose of tillage is to break up the chunks and form beds so that the land can be planted. After making the beds, the land is left for 1 week. Basic fertilization in kale cultivation uses manure or animal manure. Each bed is given 5 buckets, so the total basic fertilization given to 4 beds is 20 buckets. After doing basic fertilization, the land is left for 1 week and is ready to be planted (Kusumawati et al., 2020). The first planting was carried out on March 28, 2022 and the second planting was carried out on April 4, 2022. In the first and second plantings, 2 beds were planted each. By making a line or an array then the seeds are sown in the array sufficiently then the seeds are covered in arears of loose soil. Watering is done twice a day, in the morning and in the evening (Anggraini et al., 2022). Watering is done using a sprinkler which is done in the morning and evening by Food Agribusiness students. Fertilization in kale cultivation is done 10 days after planting. The fertilizer used is urea fertilizer. Its application is by using a cocoon system, the dose used is 20 grams dissolved in 16 liters of water for 1 bed. Weeding is done around the kale plants. Weeding is done manually by hand, namely pulling weeds. Harvesting is done on kale which is 20-25 days after planting by pulling the kale (Salim & Darmawaty, 2016). The post-harvest activity of water spinach is that the kale is cleaned of weeds and soil that is still attached to the roots, then the kale is tied and then washed in running water. The last post-harvest stage is marketing the kangkung production by means of online promotion (whatsapp and instagram) and sold directly to market traders and to consumers (Kartadinata, 2000).
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Cost Analysis
Costs that will be used to carry out a project or business activity. In fact, for some businesses and projects, a cost budget is a document that must exist in order to see the nominal costs required (Saputra, 2019). Can be seen in Table 1.

<table>
<thead>
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<th>No</th>
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<th>Unit</th>
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<td>Unit</td>
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<td>Labor</td>
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<td>HOK</td>
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<tr>
<td></td>
<td>b</td>
<td>Land</td>
<td>0.6</td>
<td>HOK</td>
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<tr>
<td></td>
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<td>Plant</td>
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<td>Sub Quantity</td>
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</table>

Cost Analysis
1. Total Cost
After identifying fixed costs and variable costs (material costs and labor costs), a total cost plan for cultivation is obtained semi-organic kale is Rp.76.100. The results are based on the following calculations:
TC = TFC + TVC (Jemadi & Siti, 2011)
= Rp. 7.600 + ( Rp. 38.500 + Rp 30.000)
= Rp 76.100,-

2. Selling price
The selling price that has been set in the marketing of semi-organic kale is Rp. 2,000/kg which is sold directly to consumers and retailers (Bulanta, 2019).

3. Reception
The revenue obtained in the marketing of semi-organic kale is (Sundari & Utami, 2012)
TR = P X Q
= Rp. 2.000 X 86 ikat
= Rp. 172.000,-

4. Profit
The advantages of semi-organic kale marketing are (Soekartawi, 1995):
π = TR – TC
= Rp 172.000 – Rp 76.100
= Rp. 95.900,-
5. R/C ratio
Based on the results of the R/C ratio that has been obtained, the curly chili business is feasible to run based on the following calculations (Nubatonis, 2016):
\[
R/C Ratio = \frac{TR}{TC} = \frac{Rp. 172.000}{Rp. 76.100} = 2.26
\]
That is, if the expenditure on the sale of kale is Rp. 1.00, the revenue obtained is Rp. 2.26. R/C Ratio > 1, so that the kale business has an advantage economically.

6. B/C ratio
Based on the results of the B/C ratio that has been obtained, the curly chili business is feasible to run based on the following calculations:
\[
B/C Ratio = \frac{\pi}{TC} = \frac{Rp. 95.900}{Rp. 76.100} = 1.26
\]
That is, if the expenditure is Rp. 1.00, the profit on the sale of kale is Rp. 1.26. B/C Ratio > 0, so that economically the kale business has an advantage.

7. BEP (Break Even Point)
BEP is used to determine the break-even point of a business. Semi-organic kale cultivation activities are:
\[
AVC = \frac{TVC}{Q} = \frac{Rp. 68.500}{86 \text{ ikat}} = Rp. 796.51
\]
\[
BEP unit = \frac{TFC}{(P - AVC)} = \frac{Rp. 7.600}{(Rp. 2000 - Rp. 796.51)} = 6.31 \text{ atau 7 ikat.}
\]
\[
BEPRp = \frac{TFC}{(1 - (TVC/P))} = \frac{Rp. 7.600}{(1 - (Rp. 68.500/Rp. 2.000))} = Rp. 228.57
\]

CONCLUSION
In the marketing of kale, it can be seen that the revenue is Rp. 172,000, the profit is Rp. 95,900, and an R/C ratio of 2.26 is obtained. R/C Ratio > 1, so that the kale business has a advantage economically. The B/C ratio is 1.26, which means that if the expenditure on the sale of kale is Rp. 1.00, the revenue obtained is Rp. 2.26. R/C Ratio > 1, so that the kale business has an advantage economically.

REFERENCE


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