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THE ANALYSIS OF COST STRUCTURE, INCOME, AND PROFITABILITY FOR HORTICULTURE FARMING ON COASTAL SAND AREA IN BUGEL VILLAGE, PANJATAN DISTRICT, KULON PROGO REGENCY

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ABSTRACT

This study aims to determine the structure of production costs, income, profits, and feasibility of horticulture farming in coastal sand fields in Bugel Village, Panjatan District, Kulon Progo Regency. The basic method used descriptive analysis. The study area was chosen by using purposive sampling. The data were taken from 30 farmers for each commodity with the total sample of 90 farmers. This study applied feasibility analysis R/C ratio, BreakEven Point (BEP), and π/c ratio. The results showed that the production cost of watermelon in a year was Rp38,134,004/ha, melon was Rp56,035,979/ha, and red chili wasRp111,737,665/ha, respectively. The yearly income of watermelon farming was Rp57,879,874/ha with profit Rp34,018,223/ha, melon farming was Rp166,089,543/ha with profit Rp136,115,829/ha,and red chili farming was Rp218,789,869/ha with profit Rp176,519,018/ha, respectively. Watermelon, melon, and red chili farming are economically feasible. R/C ratio of watermelon was 2.52; melon was 4.09; and red chili was 3.55, respectively. For watermelon farming, BEP revenue was Rp9,082,318, BEP production was 4,045 kilograms, BEP price was Rp1,449, and BEP land size was 2,431 m^2. For melon farming, BEP revenue was Rp14,837,943, BEP production was2,403 kg; BEP price was Rp2,294; and BEP land size was 764.98 m^2. While for the red chili farming, BEP revenue was Rp3,239,110, BEP production was 251 kilograms; BEP price was Rp5,884; and BEP land size was 401 m^2. π/C ratio of watermelon farming was 0.55; melon farming was 1.51; and red chili farming was 1.19, respectively.

Keywords: *Horticulture, cost structure, income, profit, feasibility, coastal sand fields.*

INTRODUCTION

The horticultural sub-sector is one of the sub-sectors that is important to be developed. Horticultural commodities include fruits, vegetables, ornamental plants, and medicinal plants. Watermelon is an annual fruit crop that does not take a long time from planting to harvesting. The attractiveness of watermelon cultivation lies in its high economic value and relatively short life, which is 70-80 days (Harjadi and Octavia, 2008). According to Sobir and Siregar (2010), the short harvest life and high demand make watermelon farming in great demand and occupied by farmers, because it can provide quick profits.

The next horticultural crop is melon. The relatively high price of melon fruit compared to similar commodities is a great opportunity to increase the income and welfare of farmers or melon farming entrepreneurs (Rukmana cit. Suwardi et al., 2016). The short harvest life and the high price of melons can be an opportunity for farmers to get higher income, so that melon farming is starting to be in great demand.

Horticultural plants other than fruits that are good for cultivation are red chilies. According to Syukur et al. (2012) states that chili fruit is not durable and is consumed mostly in fresh condition, causing the demand and need for chili at all times, both at household and industrial scale. To meet the increasing demand and need for red chilies, a higher scale of red chili farming is also required. The high demand for chilies will certainly attract the attention of farmers to cultivate red chilies.

Watermelon, melon, and chili plants are plants that can be cultivated in coastal sand land. According to Sutardi (2017), sand land has several advantages, namely wide, flat, rarely floods, abundant sunlight, and shallow groundwater depth. Currently, the land of beach sand can be used to cultivate various types of horticultural crops and has become productive land, and has been used as the main source of income by many sand farmers in the south D.I. Yogyakarta.

Panjatan Subdistrict is the highest producer of watermelon and red chilies in Kulon Progo Regency, while the highest producer of melon is Temon District. Panjatan sub-district is in the fourth position with the highest melon producers. In 2017, Panjatan District produced 47,920 ku of watermelon, 10,552 ku of melons, and 94,039 red chilies (BPS Kabupaten Kulon Progo, 2018).

Panjatan sub-district consists of 11 villages, and Bugel Village is one of the villages that produces the three horticultural commodities, namely watermelon, melon and red chili.

The cost of obtaining appropriate inputs in order to produce good production is certainly needed in cultivating watermelons, melons and red chilies in coastal sand lands. The costs incurred will affect the amount of income that farmers will get. Farming aims to get the highest income possible for the farming family. The amount of income earned is one of the determining factors for the sustainability of farming and also affects the improvement of the farmer's standard of living. Farmers in Bugel Village, Panjatan District, Kulon Progo Regency need to pay attention to many things to get high income so that watermelon farming can be efficient.

METHODS

The basic method used in this research is descriptive analysis method, which is a method aimed at describing existing phenomena, which are taking place today or in the past. This method aims to make a systematic, factual and accurate description, description or painting of the facts, properties or relationships between the phenomena to be investigated (Hamdi and Bahruddin, 2014).

The research was conducted in Bugel Village, Panjatan District, Kulon Progo Regency, which was carried out by purposive sampling, namely purposive sampling method because this village is an area that has the potential for the cultivation of watermelons, melons and red peppers.

One-way analysis of variance (one way anova) was conducted to compare the feasibility of farming watermelons, melons, and red chilies in coastal sand land in Bugel Village, Panjatan District, Kulon Progo Regency. The significance of feasibility in this study was tested by using the LSD (Least Significance Difference) test. The procedure for testing the hypothesis is as follows (Sugiyono, 2014).

Hypothesis :

Ho : $\beta_1 = \beta_2 = \beta_3$

Ha : $\beta_1 \neq \beta_2 \neq \beta_3$

The test criteria are:

1. If Sig.>α

It means that Ho failed to be rejected, it means that statistically the farming feasibility of watermelons, melons and red chilies is not significantly different.

2. If Sig.>α

It means that Ho is rejected, it means that statistically the farming feasibility of watermelons, melons and red chilies is significantly different.

RESULTS AND DISCUSSION

A. Cost Structure Horticulture Farming

Production costs are the costs incurred to produce a product. The following figure is a cost structure diagram with each percentage of input costs to the total cost of horticultural farming in coastal sand land in Bugel Village.

a. Watermelon

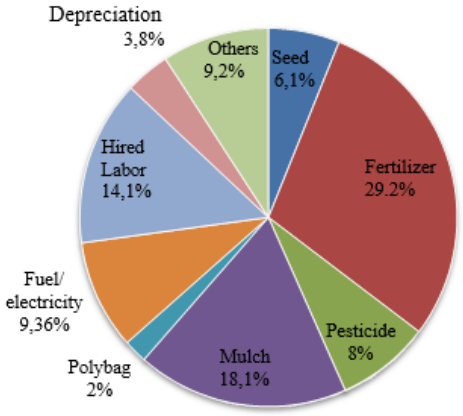

Figure 1. Cost Structure Diagram in Watermelon Farming

The production cost of watermelon farming per hectare in one year (three times planting) is Rp 38,134,004. Based on Figure 1, it can be seen that the largest percentage of watermelon farming production costs is fertilizer costs, which is 29.2%, then mulch is 18.1%, hired labor are 14.1%, and costs the lowest production is in polybags, which is 2%. Other costs consist of land rental fees, land taxes, salvation, repair of agricultural equipment, and savings fees.

b. Melon

The production cost per hectare of melon farming in one year (three times planting) is Rp 54,292,467.

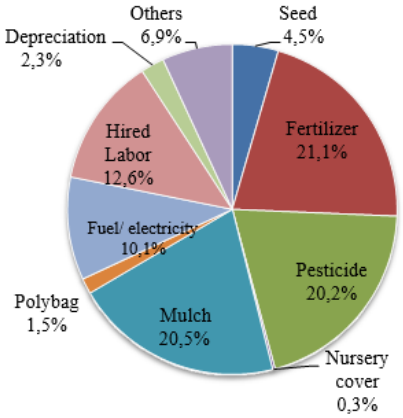

Figure 2. Cost Structure Diagram in Melon Farming

Based on Figure 2, it can be seen that the largest percentage of production costs for melon farming is the cost of fertilizer, which is 21.1%, then pesticides and mulch respectively 20.2%. Other costs consist of land rental costs, repair of agricultural equipment, salvation, and sakap fees. Based on information obtained from melon farmers in Bugel Village, melon plants are plants that are susceptible to pests and plant diseases, so the pesticide costs incurred are high enough so that the plants can produce good production.

c. Red Chili

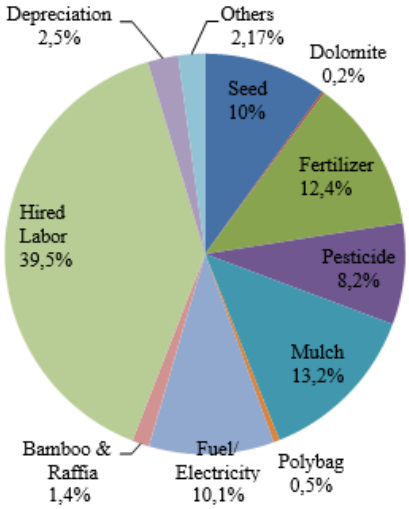

Figure 2. Cost Structure Diagram in Red Chili Farming

The production cost per hectare of red chili farming in one year (two times planting) is Rp 111,737,665. Based on Figure 6.3, it can be seen that the largest percentage of red chili farming production costs is hired labor wages, which is 39.5%, then mulch is 13.2%, and fertilizer is 12.4%. The red chili plant is a plant that can be harvested 15-20 times, so that in each harvest it requires labor outside the family. This results in high costs incurred for labor outside the family. Other costs consist of land rental costs, repair of agricultural equipment, salvation, and land taxes.

B. Income and Profit Analysis

The income earned in farming is a criterion for determining the success of a farm in carrying out the production process. Some things that need to be considered and taken into account in running a farm are revenue, production costs, income, and farming profits.

Table 1. Revenue, Costs, Income, and Profits of Watermelon Farming in Sand Beach in Bugel Village.

Components	Per farming*/ year	Per Ha/year
1. Revenue (Rp)	37,359,000	96,013,878
a. Productivity (kg)	16,640.61	42,766.91
b. Price (Rp/kg)	2,245	2,245
2. Explicit fees	14,837,941	38,134,004
3. Income (Rp)	22,521,059	57,879,874
4. Implicit costs (Rp)		
a. Land rent (Rp)	2,320,352	5,963,381
b. Hired labor (Rp)	5,925,561	15,228,890
c. Capital interest (Rp)	1,038,656	2,669,380
Total implicit costs	9,284,569	23,861,651
5. Profit	13,236,491	34,018,223

Source: Primary Data Analyzed in 2018 * watermelon land area average = 3,891 m^2

Table 1 shows that the production of watermelon agroforestry in one year (three times planting) is 42,766.91 per hectare. The seeds commonly used are Bali Flower and Passport. The fertilizers used consist of manure, NPK, ZA, and phonska. The pesticides commonly used are anthracol and ridomil, while some other pesticides are only used by a few farmers. Hired labor is usually only used in land cultivation and planting activities. The watermelon harvest is usually sold by a slash system. This means that the farm owner does not have to pay for hiring workers to do the harvesting, because the labor has been provided directly by the cutter.

Table 2. Revenue, Costs, Income, and Profits of Melon Farming in Sand Beach in Bugel Village.

Components	Per farming*/ year	Per Ha/year
1. Revenue (Rp)	181,156,000	222,125,522
a. Productivity (kg)	31,420.00	38,526
b. Price (Rp/kg)	5,766	5,766
2. Explicit fees	40,760,248	56,035,979
3. Income (Rp)	136,308,418	166,089,543
4. Implicit costs (Rp)		
a. Land rent (Rp)	5,271,176	6,091,967
b. Hired labor (Rp)	18,820,286	20,253,582
c. Capital interest (Rp)	3,139,331	3,628,166
Total implicit costs	27,230,292	29,973,714
Profit	107,644,330	136,115,829

Source: Primary Data Analyzed in 2018 * watermelon land area average = 3,891 m^2

Table 2 shows the income, income, and profit of melon farming in one year (three times planting). The seeds that are commonly used are the action brand. The fertilizers used consist of manure, phonska, ZA, NPK, TSP, KCL, KNO, and SP36. The pesticides commonly used are anthracol, ridomil, confidor, and emacel, while some other pesticides are only used by a few farmers. Outside the family labor is usually used in land cultivation, planting, basic fertilization and pesticide spraying, while most of the maintenance activities are carried out by the farm owners themselves. The harvest is usually sold by weighing, so the buyer must pay according to the quantity of the product produced at a price agreed upon with the owner of the farm. The total implicit cost is Rp. 29,973,714 / ha, so the profit is Rp. 137,859,341 / ha.

Table 3. Revenue, Costs, Income, and Profits of Red Chili Farming in Sand Beach in Bugel Village.

Components	Per farming*/ year	Per Ha/year
1. Revenue (Rp)	80,713,333	397,612,737
a. Productivity (kg)	6,275.00	30,912.12
b. Price (Rp/kg)	12,863	12,863
2. Explicit fees	25,972,632	111,737,665
3. Income (Rp)	54,740,701	218,789,869
4. Implicit costs (Rp)		
a. Land rent (Rp)	995,862	3,866,667
b. Hired labor (Rp)	8,136,750	33,809,212
c. Capital interest (Rp)	1,818,084	4,594,973
Total implicit costs	10,950,697	42,270,852
Profit	43,790,004	176,519,018

Source: Primary Data Analyzed in 2018 * watermelon land area average = 3,891 m^2

Table 3 shows the income, income, and profit of red chili farming in one year (two crops). The seeds commonly used are profit and helix. The fertilizers used consist of manure, pearls, phonska, ZA, SP36, urea, and foliar fertilizer. The pesticides commonly used are anthracol, ridomil, confidor, pegasus, and bamex, while some other pesticides are only used by a few farmers. Outside the family labor is usually used in land cultivation, planting and harvesting activities, while most of the maintenance activities are carried out by the farm owners themselves. The total implicit cost is Rp 42,270,852 per hectare, so you get a profit of Rp 176,519,018.

Table 4. Comparison of Income and Profits of Horticultural Farming in Sand Beach Land in Bugel Village, Panjatan District, Kulon Progo Regency

Uraian	Watermelon (Rp/ha/year)	Melon (Rp/ha/year)	Red Chili (Rp/ha/year)
Revenue	96,013,878	222,155,522	397,612,737
Explicit fees	38,134,004	56,035,979	111,737,665
Implicit costs	23,861,651	29,973,714	42,270,852
Total costs	61,995,655	86,009,714	154,008,516
Income	57,879,874	166,089,543	218,789,869
Profit	34,018,223	136,115,829	176,519,018

Source: Primary Data Analyzed in 2018

Based on Table 4, it is known that the biggest profit in horticultural farming in one year is in red chili farming, then melons and the smallest is watermelon. Farmers who cultivate melons are generally farmers who have high capital and are brave enough to bear the risk of crop failure, because most farmers state that melons are very susceptible to pests and diseases, so they have to spray pesticides very often and this requires a lot of money. although the benefits obtained are much higher when compared to watermelon.

C. Farming Feasibility Analysis

Farming feasibility can be determined by using the analysis of R/C ratio, Break Even Point (BEP), and π/C ratio (Suratiyah, 2015).

Tabel 5. Feasibility of Horticultural Farming in Beach Sand Land in Bugel Village, Panjatan District, Kulon Progo Regency

Uraian	Watermelon	Melon	Red Chili
Revenue	37,359,000	181,156,000	80,713,333
Income	22,521,059	136,308,418	54,740,701
Profit	13,236,491	109,077,626	43,790,004
R/C ratio	2.52	4.09	3.55
Revenue BEP (Rp)	9,082,318	14,837,934	3,239,110
Production BEP (kg)	4,045.49	2,403.57	251.82
Price BEP (Rp/kg)	1,449.62	2,294.03	5,884.20
Area BEP (m^2)	2,431.09	764.98	401.31
π/C ratio	0.55	1.51	1.19

Source: Primary Data Analyzed in 2018

The feasibility analysis used is the analysis of the ratio of R/C, BEP, and the ratio of π/C. Based on table 5, it is known that the horticultural farming of watermelons, melons, and red chilies is feasible to develop, except for feasibility based on benefits on watermelon plants. Based on calculations, watermelon plants are not feasible to cultivate when viewed from the aspect of profit.

D. One Way Onova Test for Horticultural Farming Feasibility (R/C ratio)

The requirement for conducting the One Way Anova test is that the data obtained meets the classical assumptions, normal and homogeneous data. The data to be analyzed meets the requirements, so the One Way Anova test can be done. The following is a table of the results of the One Way Anova test.

Table 6. Result of Feasibility Difference Analysis (R / C ratio) of Horticultural Farming in Beach Sand in Bugel Village, Panjatan District, Kulon Progo Regency

Feasibility	ANOVA				
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3.866	2	1.933	11.522	0.000***
Within Groups	14.595	87	0.168		
Total	18.461	89			

Source: Primary Data Analyzed in 2018 In which: ***=significant at α=0.01

Based on the results of the ANOVA analysis, it was obtained a significant value of 0.000 which was smaller than α (0.01). This means that statistically there is a difference in the feasibility of farming watermelons, melons and red chilies, so that further tests are needed to see the differences in the feasibility of each commodity.
Based on Table 7, it can be seen that the feasibility of watermelon and melon farming is significantly different, watermelon and red chili farming is not significantly different, while the business of melon and red chili is significantly different. This can be seen from the mean R/C ratio followed by the same letter index which shows insignificance at the 95% significance level.

Table 7. LSD Feasibility Test (R/C ratio) for Horticulture Farming

Multiple Comparisons Dependent Variabel: Kelayakan	
Commodity	R/C Ratio Average
Watermelon	2.52[a]
Melon	4.09[b]
Red Chili	3.55[a]

Source: Primary Data Analyzed in 2018

Table 8. Result of Feasibility Difference Analysis (π/C ratio) of Horticultural Farming in Beach Sand in Bugel Village, Panjatan District, Kulon Progo Regency

Feasibility	ANOVA				
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	12.906	2	6.453	10,461	0.000***
Within Groups	53.666	87	0.617		
Total	66.572	89			

Source: Primary Data Analyzed in 2018 In which: ***=significant at α=0.01

Based on the results of the ANOVA analysis (Table 8), the significant value was 0.000. This means that statistically there is a difference in the feasibility of farming watermelons, melons and red chilies, so that further tests are needed to see the differences in the feasibility of each commodity.

Table 9. LSD Feasibility Test (π /C ratio) for Horticulture Farming

Multiple Comparisons Dependent Variabel: Kelayakan	
Commodity	π /C Ratio Average
Watermelon	0.55[b]
Melon	1.51[a]
Red Chili	1.19[a]

Source: Primary Data Analyzed in 2018

The LSD test results show that there is an average difference between the feasibility of horticultural farming using the π / C ratio. The mean R / C ratio followed by the same letter index shows no significant difference at the 95% significance level, so it can be seen that the feasibility of watermelon and melon farming is significantly different, watermelon and red chili farming is significantly different, while melon and red chili business is not. real difference.

CONCLUSIONS AND SUGGESTION

The highest production cost, average income and profit of horticultural farming is red chilies, followed by melons, while watermelon farming constitutes as the lowest cost. Then based on the results of R / C ratio analysis, BEP analysis, and π / C ratio analysis, melon and red chilli farming in coastal sand land is feasible to be developed, while watermelon farming is feasible to be developed based on R / C ratio and BEP analysis. The results of the π / C ratio analysis indicate that watermelon farming is not feasible to develop. Based on the R / C ratio value, the most viable horticultural farming is melons, then red chilies, and watermelons. Beach sand has good potential for cultivating horticultural crops which can be used as the main source of income for farmers. As a suggestion, farmers should choose melon plants for the farming plan, due to a lowest cost, hence it can generate higher income. Furthermore, the potential of coastal sand in horticultural crop farming should be further developed.

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