

GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES INCOME ANALYSIS AND COST EFFICIENCY OF CHILI PEPPER (*CAPSICUM FRUTESCENS L.*) FARM

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ABSTRACT

This study aims to determine the amount of income and cost efficiency of chili pepper farming in Wonggeduku District, Konawe Regency. The number of chili pepper farmers were 98 people, while the sample were 65 farmers and selected randomly. The data used primary data which is collected through interviews based on a list of questions, and secondary data collected through document searches from relevant agencies. The data analysis method uses the formula income: TR-TC, and TR/TC to calculate the level of farm cost efficiency. The results showed that the average income of chili pepper farming in Wonggeduku district, Konawe Regency were Rp. 35,338,154/0.5 hectares per season, while the level of cost efficiency of the R-C ratio was 3.66.

Keywords: *Cost efficiency, farming, chili pepper, income.*

I. INTRODUCTION

Indonesia, known as an agrarian country, and has enormous potential. The great potential of the agricultural sector includes the commodity resources of chili pepper. The development of these commodities can be directed towards improving people's nutrition, supplying domestic market demands, expanding employment and business opportunities, as well as increasing the income and welfare of the community especially the farmers community (Rukmana and Yudirachman, 2017).

Chili pepper is one of the important commodities in Indonesian community's lives, where almost all households consume chili pepper every day as a complement to family dishes. Consumption of chili pepper continues to increase, both in the form of wet, dry and processed chilies. The increasing tendency of demand has encouraged farmers to develop chili pepper agribusiness. The development of chili pepper agribusiness promises a high profits but not infrequently it also leads to failure and loss (Daryatmi, 2015).

The success of chili pepper agribusiness is inseparable from the four business principles, which are market-oriented, profitable, efficient, and technologically advanced. In addition to the need for technological support, sufficient skills and capital, there are many technical factors that really need to be considered, such as growing requirements, superior varieties, technical cultivation, post-harvest handling and processing of yields (Rukmana and Yudirachman, 2017) Konawe Regency is one of the regencies in Southeast Sulawesi that has the potential to develop chili pepper. Data on land area and production of chili pepper in Wonggeduku District are presented in Table 1.

Table 1. Data on Harvest Area, Production and Productivity of Chili pepper in Wonggeduku District, Regency

No.	Year	Harvest Area (Ha)	Production (Ton)	Productivity (Ton/Ha)
1.	2014	6	118	31.3
2.	2016	21	104	4.9
3.	2017	27	135.00	5.0
4.	2018	27	350.00	12.9

Source: Central Bureau of Statistics (Konawe Regency in number, 2014-2018).

Based on Table 1, it shows that the data of chili pepper production in Wonggeduku District from 2014-2018 has increased and decreased the amount of production every year, seen in 2014 and 2017 experiencing an increase in productivity while in 2016 there was a decrease in productivity (Central Bureau of Statistics, 2018).

Wonggeduku District known with the majority of the community works as chili pepper farmers and is their main livelihood. The number of obstacles in the business of chili such as diseases, pests, the high cost of production makes farmers sometimes lose money.

The decrease in chili pepper production was due to the use of suboptimal production factors, including the limitations of cultivation technology owned by farmers. The technology limitation is due to the lack of information technology obtained by farmers. In general, farmers still use locally grown seeds and many other pre-harvest technology components have not been implemented properly (Yusriadi, 2018).

The factors of chili pepper farming production can be obtained maximum productivity if used efficiently. The importance of the cost efficiency of chili farming is to measure the success of the allocation of production factors. With the existence of cost efficiency, farmers can find out the level of income in accordance with the costs incurred. Therefore, farmers must be able to combine these factors of production in order to achieve maximum cost efficiency and income. Based on this description raises the question of how the level of income and cost efficiency of chili pepper farming (*Capsicum frutescens* L.), which is interesting to study.

II. MATERIALS AND METHODS

The study was carried out in Wonggeduku Subdistrict, Konawe District, Southeast Sulawesi. Determination of the location was done purposively based on the consideration that the Subdistrict of Wonggeduku was the center of chili pepper production in Konawe District.

The population of this study was 98 people of chili pepper farmers in Wonggeduku District. Determination of the number of samples using the Slovin formula (Umar, 2004).

$$n = \frac{N}{1 + N(e)^2}$$

Based on the calculation results from the Slovin formula, the total sample of 65 farmers was obtained. The type of data used is primary data, which is collected through direct interviews based on a list of questions, and secondary data, through document searches from relevant agencies.

Analysis of the data used to determine the income of chili pepper farming is used the formula (Soekartawi, 1995):

$$Pd = TR - TC$$

where:

Pd: Farming income

TR: Total revenue

TC: Total Cost

Decision making criteria:

- a. $TR > TC$, shows that chili pepper farming is profitable
- b. $TR < TC$, shows that chili pepper farming is not profitable

While analyzing the data to find out the cost efficiency of cayenne farming is used the formula:

$$R - C \text{ ratio}$$

Decision making criteria:

- a. $R/C \text{ ratio} > 1$, means the use of production costs for efficient cayenne farming is efficient.
- b. $R/C \text{ ratio} = 1$, means the use of production costs for cayenne farming experiences a break-even point (BEP).
- c. $R/C \text{ ratio} < 1$, means the use of production costs for cayenne pepper farming is inefficient.

Land resources owned by farmers can directly affect the amount of production obtained and the costs incurred by farmers. According to Hernanto (1999), there are three groups of farmers based on the area of land under cultivation, namely the area of narrow arable land (<0.5 hectare), area of arable land (0.5-2 hectare), and the area of arable land area (>2 hectares). In the study, the average area of land cultivated by respondent farmers was 0.5 hectares.

Analysis Revenue of Chili Pepper Farming

The income of chili pepper farming is the difference between the total revenue obtained from the sale of chili pepper with all the costs of farming. Revenue is determined by yields and the price level at the time of sale of the chili pepper. Farmer's income from selling chili pepper for one season for 0.5 hectares of land is presented in Table 2.

Tabel 2 Penerimaan Usahatani Cabai Rawit Selama Satu Musim per 0.5 hektar, di Kecamatan Wonggeduku Kabupaten Konawe Tahun 2019

Table 2. Revenue of Chili Pepper Farming for One Season per 0.5 hectare, in Wonggeduku District Konawe Regency in 2019

No.	Description	Unit	Value
1	Production	Kg	1.944
2	Selling Price	Rp/Kg	25,000
Revenue		Rp	48,601,563

Source: Primer Data

Based on Table 2. shows that the average production of chili pepper produced by farmers is 1.944 kg per 0.5 hectare. The production of chili pepper is harvested for 4 times. The average selling price of chili pepper from the first quotation to the fourth quotation is Rp. 25,000 per kg. So that one season the average acceptance of chili paepper farmers is Rp. 48,601,563.

Chili pepper is a plant that requires intensive care since preparation, tillage, planting, fertilizing spraying and harvesting. All stages of the activity need a cost, which are clarified into fixed costs and variable costs. Fixed costs consist of land tax (own property) and depreciation of farming equipment. The total fixed cost for an area of 0.5 hectares is Rp. 485,781 per planting season. While the variable costs are costs that are determined by the use of inputs, in the form of seeds, pesticides, fertilizers, labor, mulch plastics and tractor rental, the amount of which is based on the production area of cayenne pepper farming.

The need for labor in chili pepper farming is supplied by workers in and outside the family. Labor outside the family, especially when harvesting comes from residents around the area and even from outside the area. In this study all labor costs (within and outside the family) are calculated as variable costs. The total variable cost for one season for a 0.5 hectare farmer costs Rp. 12,777,628.

Table 3. Total Cost of Chilli Pepper Farming for One Season per 0.5 hectare, in Wonggeduku District Konawe Regency in 2019

No.	Description	Value (Rp/Ha)	Percentage (%)
1	Total Fixed Cost (TFC)	485,781	3.4
2	Total Variable Cost (TVC)	12,777,628	96.6

3	Total Cost (TC)	13,263,409	100
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Source: Primer Data

Table 3. shows from the results of the sum of fixed costs and variable costs of chili pepper farming obtained Rp. 13,263,409 per 0.5 hectares per season.

Based on the analysis of the average income of each farmer as listed in Table 4., that is Rp. 35,338,154 for one season for an area of 0.5 hectares.

Table 4. Chili Pepper Farming Income for one season per 0.5 hectare in Wonggeduku sub-district, Konawe district in 2019

No	Description	Value (Rp)
1	Total Revenue (TR)	48,601,563
2	Total Cost (TC)	13,263,409
3	Income (π)	35,338,154

Source: Primer Data

Based on Table 4., the average income of chili pepper farmers is Rp. 35,338,154 per planting season (6 months) or in the amount of Rp. 5,889,692 per month. From farmers' income of Rp. 5,889,692, far greater than the regional minimum wage of Konawe Regency which was only Rp. 2,100.00 per month. Thus the chili pepper farming in Wonggeduku District Konawe Regency has prospects for improving farmers' welfare.

Cost Efficiency of Chili Pepper Farming in Langgonawe Village

The efficiency of chili pepper farming was analyzed by R-C ratio. R/C ratio is a comparison between the total revenue with the total cost of chili pepper farming. Cost efficiency determines farm income (profits). If the use of costs is efficient, then the income is greater. Some ways to increase the efficiency value of chili pepper farming is to allocate the use of factors of production appropriately by combining the factors of production as well as possible. The calculation of the cost efficiency of chili pepper farming as shown in Table 5.

Table 5. Cost Efficiency (R-C Ratio) of Chili Pepper Farming for One Season per 0.5 hectare, in Wonggeduku District Konawe Regency in 2019

No.	Description	Unit	Value
1	Revenue	Rp	48,601,563
2	Total Cost	Rp	13,263,409
3	R - C Ratio		3.66

Source: Primer Data

With the value of the cost efficiency of chili pepper farming of 3.66 is greater than one shows that the cayenne pepper farming is quite efficient. This result gives meaning, that every Rp. 1 farming costs can generate revenue of Rp. 3.66.

IV. CONCLUSION

Based on the results of the analysis of the cost efficiency, the cultivation of chili pepper is feasible and profitable to continue working on. The implication is that efforts are needed to develop chili pepper farming both intensification and extensification on farms owned by farmers.

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