

COST PROFIT VOLUME ANALYSIS OF BIG CHILI FARMING IN JEMBER REGENCY

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Abstract: This study aims to determine the total cost of production, revenue and income, and BEP of Big Chili farming per hectare in Jember Regency. Data was obtained from primary and secondary sources. Primary data was obtained from 120 farmers in Ambulu and Wuluhan Subdistricts (Big Chili farming centers in Jember Regency) by using a multistage sampling technique. Secondary data was obtained from the Agriculture Service and the Central Statistics Agency. This study uses the absolute Profit analysis and Break Event Point analysis. The results showed that big chilli farming per hectare in Jember Regency required a total production cost of Rp52.4 millions, resulting in a total revenue of Rp177.5 millions, and a net profit of Rp125.1 million. In addition, the minimum production of Big Chili farming in Jember Regency so that farmers do not experience losses is 3.771 kg per hectare. While the minimum price of Big Chili farming in Jember Regency so that farmers as not to suffer loss is Rp4.106 per kilogram.

Keywords: *Cost, Profit, Volume, Big Chili Farming*

INTRODUCTION

Jember Regency is located in East Java Province with an area of 3,293.34 km². Jember consists of 3 city sub-districts with 22 villages; and 28 village sub-districts with 225 villages. The main food commodities include rice, corn, soybeans, peanuts, cassava, sweet potatoes and vegetables, while plantation commodities include tobacco, coffee, rubber, chocolate, and edamame soybeans. The contribution of food crops to regional income is greater than the contribution of plantation products (ILO, 2007).

The area of rice fields in Jember Regency is 86,568.18 hectares. Land use in Jember Regency is dominated by the function of cultivation, where the land cultivated for agriculture is 46.41% of the total area, while the rest is used for settlements covering 9.93%, forests covering 21.17% and others as big as 22.49% (BPS Jember, 2016).

Horticultural plants commonly developed in rice fields include; Melon, Watermelon, Chili (big/small), Cabbage, Long Beans, Cucumber, Eggplant, and Tomatoes. Judging from the availability of natural resources and human resources (farmers), Jember Regency is very potential for horticultural development activities (Firdaus, 2009). One of the highest spread horticulture plants is Big Chili. The spread of Big Chili farming in Jember Regency are in 19 sub-districts of 31 sub-districts, namely in Kencong, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Jenggawah, Ajung, Umbulsari, Semboro, Jombang, Sumberbaru, Sukorambi, Ledokombo, Sumberjambe, Sukowono, Kaliwates, Sumpersari, and Patrang (Firdaus, 2016).

Chili (*Capsicum annum* L) is one of the vegetable commodities that are widely cultivated by farmers in Indonesia (including in Jember Regency) because it has a high selling price. In the future, the need for chilli raw materials will continue to increase every year with the increasing of diversity of human needs and the development of technology in medicines, cosmetics, dyes, mixing drinks and others (Puslitbanghorti, 2010).

In developing their farms, the Big Chili farmers always expect that their total revenue are greater than their production costs. Therefore, in planning profits the relationship between cost, volume, and profit plays a very important role. This relationship can be known through the Break Even Point (BEP) analysis.

BEP analysis is a technical way to determine the relationship between production volume, sales volume, selling price, fixed costs and variable costs (total cost), and profits. So BEP analysis is also called Cost Profit Volume Analysis (CPV Analysis) (Riyanto, 2010). This study aims to determine the total production cost, total revenues, and total income, and the point of BEP for Big Chili farming per hectare in Jember Regency.

RESEARCH METHODS

Time and Place

This study lasted for almost four months, from May to mid-August 2018. This research was conducted in Wuluhan and Ambulu Districts, Jember Regency.

Types and Data Sources

There are 2 types of data sources used in this study, namely: primary data and secondary data.

1. Primary data, namely data which was obtained by researchers directly from respondents using the interview method based on a list of questions that have been prepared (questionnaire). Data taken include production data, selling prices, use of production facilities, data on labor requirements, and pesticides.
2. Secondary data obtained from agencies and or other parties related to Big Chili farming. Data taken include data from the Department of Food Crops Agriculture, BPS of Jember Regency and from related literature, such as research reports and scientific journals.

Method of Collecting Data

Collecting data in this study uses methods of observation, interviews, and literature studies.

1. Observation, namely by conducting direct observation and recording carefully and systematically, directly at the location of the object of research, so that a clear picture of the object under study is obtained.
2. Interview, namely by holding a question and answer directly with farmers as respondents, using a questionnaire (questionnaire) that has been prepared in accordance with the research objectives to collect data and information needed.
3. Literature study, namely by reviewing the literature related to this research.

Sampling Methods

This study uses a multistage sampling technique with a total sample of 120 farmers as respondents. Sampling is carried out through certain stages. So one population can be divided into first-level clusters, then these first-level clusters can also be divided into second-level clusters and second-level clusters can still be divided into further level clusters. This is called multi stage cluster sampling (Mantra and Kasto in Singarimbun and Efendi (2011).

The highest main centers of Big Chili farming in Jember Regency are Ambulu and Wuluhan Districts (Firdaus, 2016). 4 villages were chosen from Ambulu sub District, namely Sumberejo, Sabrang, Andongsari, and Pontang. From Wuluhan sub-district, 4 villages were chosen, namely Kesilir, Tanjungrejo, Ampel, and Tamansari. From each village 15 farmers were taken as respondents.

Data Analysis Methods

This study uses the Break Even Point (BEP) analysis. BEP analysis is used to find out the business limits that still allow them to not suffer losses. The BEP specified includes BEP sales prices and BEP production volumes (Suratiah, 2015; Firdaus, 2017).

BEP is a condition when the revenue obtained is equal to the costs incurred (Hanafiah and Saefudin, 2006). Farming BEP analysis is a way of analyzing in determining the minimum selling price and/or minimal production amount so as not to suffer losses. Thus, it can be used to make decisions in determining a farm in a feasible category or not to be cultivated.

The stages in the BEP analysis are:

1. Determine the Total Cost. Mathematically, the total costs incurred can be calculated using the following formula (Soeharno, 2007; Shinta, 2011):

$$TC = TFC + TVC$$

Information:

TC = total cost (Rp)

TFC = total fixed cost (Rp)

TVC = total variable cost (Rp)

2. Determine Total Revenue. Mathematically, total revenue can be calculated using the formula (Sugiyanto, 1995; Sukirno, 2002):

$$TR = P \times Q$$

Information:

TR = total revenue (Rp)

P = price/price (Rp/kg)

Q = quantity of production (kg)

3. Calculating Profit. According to (Suratiah, 2015; Mubyarto, 1995; Hernanto, 2003), total profit was determined using the formula:

$$\pi = TR - TC$$

Information:

π = income (Rp)

TR = total revenue (Rp)

TC = total cost (Rp)

4. Calculating BEP. Conceptually, BEP occurs when profit = 0, so that: $\pi = TR - TC$ becomes: $0 = TR - TC$ or $TR = TC$ (Firdaus, 2012). BEP analysis used in this study there are 2 types, namely:

- a. BEP prices, namely: $TR = TC$ and because $TR = P * Q$ then $P * Q = TC$, so that:

$$BEP(Q) = \frac{TC}{P}$$

- b. BEP volume, namely: $TR = TC$ and because $TR = P * Q$ then $P * Q = TC$, so that:

$$BEP(P) = \frac{TC}{Q}$$

RESULTS AND DISCUSSION

Production Costs of Big Chili Farming

Farming profitability (including Big Chili in Jember Regency), is affected by production and revenue costs. Production costs are all costs stated with the money spent to produce products in the form of agricultural products during one planting season (Mubyarto, 1995).

The production costs in the Big Chili farm include the cost of leasing land, seeds, fertilizers, pesticides, tractors, silver black mulch, labor, and others. Production costs per hectare of Big Chili farming in Jember Regency are as follows:

Table 1: Production Costs for Big Chilli Farming per Hectare per Season

No.	Production Costs	Amounts (IDR)	Percentages (%)
1.	Rent land	7.576.689	14,45
2.	Seedlings / seeds	4.110.337	7,84
3.	Fertilizers	6.263.867	11,95
4.	Pesticides	4.453.789	8,50
5.	Tractor	1.150.646	2,19
6.	Silver black plastic mulch	4.838.481	9,23
7.	Labors	22.801.182	43,49
8.	Other costs	1.228.947	2,35
	Total Production Costs	52.423.938	100,00

From the table above, it is known that Big Chili farming requires a production cost of IDR 52.42 million per hectare.

Revenue of Big Chili Farming

Total revenue is obtained from the multiplication between the amount of production and price (Firdaus, 2012). Big Chilli Farming in Jember Regency produces an average production of 12.95 tons per hectare with an average price of IDR 13.92 thousand per kilogram, so that the revenue is IDR 180.21 million per hectare.

Profit of Big Chili Farming

Profit is obtained from the difference between total revenue and total production costs (Firdaus, 2012). As already explained, the big chilli farming in Jember Regency requires a production cost of IDR 52.42 million/hectare and produces revenues of IDR 180.21 million. Thus, farmers earn a net profit of IDR 126.68 million per hectare.

BEP Big Chili Farming

BEP quantity of production of Big Chilli farming in Jember Regency is: $BEP(Q) = TC / P = 52,423,938 / 13,918 = 3,767$ kg. That is, so that there is no loss of Big Chili farming in Jember Regency, assuming other factors are fixed (*ceteris paribus*), the minimum production that must be produced is 3,767 kg per hectare.

BEP of Big Chilli farming prices in Jember Regency are: $BEP(P) = TC / Q = 52,423,938 / 12,948 = IDR 4,049$. That is, so that there is no loss of Big Chili farming in Jember Regency, assuming other factors are fixed (*ceteris paribus*), then the minimum price in the market must be IDR 4,049 per kilogram.

CONCLUSIONS

Based on the results and discussion, the conclusions are as follows:

1. Big Chili Farming in Jember Regency requires a total production cost of IDR 52.42 million per hectare.
2. Big Chili Farming in Jember Regency generates total revenues of IDR 180.21 million per hectare.
3. Big Chili Farming in Jember District generate net profit of IDR 126.68 million per hectare.
4. The minimum production of Big Chili farming in Jember Regency so that farmers do not lose is 3.767 kg per hectare.
5. The minimum price of big chilli farming in Jember Regency so that farmers do not lose is IDR 4.049 per kilogram.

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