Feasibility Analysis Of Watermelon *(Citrullus Vulgaris)* Farming In Tajur Village, Long Ikis District, Paser Regency

IlmaElpandari, Subar

*FEASIBILITY ANALYSIS OF WATERMONE **(CITRULLUS VULGARIS)** FARMING IN TAJUR VILLAGE, LONG IKIS DISTRICT, PASER REGENCY*

StiperMuhammadiyah Agribusiness Study Program Tanah Grogot, Paser Regency, East Kalimantan

Abstract

This research aims to discover the average income of watermelon farmers in Tajur Village, Long Ikis District, Paser Regency, to determine the average income of watermelon farmers in Tajur Village Long Ikis District Paser Regency, to find out whether watermelon cultivation is feasible in Tajur Village. Long Ikis District, Paser Regency. This examine was conducted in Tajur Village, Long Ikis District, Paser Regency, from September 6, 2020, to December 30, 2020. By using two data sources, namely primary data and secondary data. The sampling technique in this study was the Total Sampling method used for farmer respondents. The number of respondents in this study was ten respondents. The data analysis in this research is qualitative data analysis and quantitative data analysis. Based on the calculation results of watermelon cultivation (Citrullus Vulgaris) in Tajur Village, Long Ikis District, Paser Regency, the average production cost of watermelon farmers is Rp. 30,439,500.00 in 1 planting season with an average income of Rp. 44,769,000, 00, the average income soybean farmers earn is Rp. 14,329,660.00. Based on the research that has been done, it can be seen that the R/C Ratio reaches 1.5. Thus, watermelon (Citrullus Vulgaris) cultivation in Tajur Village, Long Ikis District, Paser Regency is feasible because the R/C Ratio > 1.

Keywords: R/C,feasibility, watermelon.

I.   Introduction

1.1.   Background

Indonesia is rich in horticultural plant resources, including fruits. The world of agriculture is growing quite rapidly, including knowledge about fruit plants which is also progressing. The types of fruits with high economic value are still getting the attention of farmers.

Watermelon plants originate from Africa and have spread worldwide, both in sub-tropical and tropical areas. Watermelon plants are seasonal and relatively fast production (Sunarjono, 2006). The attractiveness of watermelon cultivation for farmers lies in its high economic value. Some of the advantages of watermelon farming include a relatively short age (early), only about 70 to 80 days, can be used as a cropping plant in paddy fields during the dry season, and is easy for farmers to use in the usual (conventional) or semi-intensive to intensive way, and provide business benefits. Adequate.

The area of watermelon plants in Indonesia continues to grow; in 2014, it was recorded that the area of watermelon plants reached 35,865 hectares, while in 2015, the area increased to 39,810 hectares (BPS 2014 & 2015). Meanwhile, watermelon production figures in Indonesia also experienced significant growth, namely in 2014, reaching 653,974 tons, while in 2015, it increased to 719,371 thousand tons.

Watermelon production in East Kalimantan in 2015, with an area of 5,463 ha, produced 21,340 tons of watermelon per year. The highest watermelon productivity was achieved by the province of East Java at 18.71 tons ha-1 (8,841 ha while the production was 165,469 tons), while the one with the lowest watermelon productivity was Gorontalo, namely the province at 6.28 Ton Ha-1 (9 ha while the production was 57 tons) (BPS 2015). Meanwhile, Paser Regency in 2015 was able to produce 11,327 tons of watermelon per year with a land area of 76 hectares. This figure is a fairly high increase when compared to the figure in 2014 of 8,135 Tons. In comparison, the potential for national watermelon productivity can reach 14 tons ha-1 and 18 tons ha-1. The gap in watermelon yields was caused by a very extreme climate in 2014, the entry of imported fruit and human resources (human resources). Long Ikis sub-district produced 1.345 tons of watermelon per year in 2014 with a land area of23 ha, while in 2015, it can produce 1.495 tons of watermelon per year.

The marketing of watermelons from Tajur village has spread to several areas such as Balikpapan, Samarinda and Tanah Grogot. This indicates that watermelon production in this village is feasible. The level of fruit consumption every year is increasing along with the increase in population and people's eating patterns. This causes the demand for fruits, especially watermelons, to increase, while the supply from production centres and local areas is insufficient.

Based on the description above, the authors are interested in researching on.**"Feasibility Analysis of Watermelon *(Citrullus Vulgaris)* Farming in Tajur Village, Long Ikis District, Paser Regency".**

1.2. Formulation of the Problems

Based on the above background, several research problems can be formulated as follows:
1.   What is the average income per ha for watermelon cultivation in Tajur Village, Long Ikis District, Paser Regency in one harvest period?
2.   What is the average income per ha of watermelon farmers in Tajur Village, Long Ikis District, Paser Regency in one harvest period?
3.   Is watermelon cultivation feasible in Tajur Village, Long Ikis District, Paser Regency in one harvest?

1.3. Objectives of the Research

Based on the formulation of the problem that has been disclosed above, the objectives of this rstudy are:
1.   To determine the average acceptance of watermelon farmers in Tajur Village, Long Ikis District, Paser Regency.
2.   To discover the average income of watermelon farmers in Tajur Village, Long Ikis District, Paser Regency.
3.   To determine whether watermelon cultivation is feasible in Tajur Village, Long Ikis District, Paser Regency.

1.4. Significance of the Research

It is expected that the results of this study will be helpful to various parties, including the following:
1.   For writers as part of completing studies in the Agribusiness Department at the Muhammadiyah College of Agricultural Sciences.
2.   As consideration for the government or policymakers in developing watermelon technology.
3.   As information and comparison material for other researchers who will continue developing this research.For writers as part of completing studies in the Agribusiness Department at the Muhammadiyah College of Agricultural Sciences.

II.   Hypothesis

Based on the background and problems above, the following hypotheses can be put forward:
"That watermelon farming income in Tajur Village, Long Ikis District, Paser Regency is quite profitable or feasible to cultivate".

III.   Research Methods

3.1. Place and time of research

The research was carried out from September 6, 2020, to December 30, 2020. Starting from the site survey, interview and data collection. The research occurred in Tajur Village, Long Ikis District, Paser Regency.

3.2. Data Types and Sources.

The types of data used in this study are:
1.   Primary Data
Primary data is obtained directly from respondents through direct interviews using a list of questions.
2.   Secondary Data
Secondary data is data obtained indirectly in the form of data. The data was obtained through literature, library books, village monograph data, related agencies and data taken from the object under study.

3.3. Data Collection Technique

The techniques used in data collection are:
1.   Interview
The interview method is one of the data collection by holding direct interviews with the object to be studied.
2.   Observation

The observation method is data collection by direct observation of the object of research, in this case, watermelon farmers in Tajur Village, to obtain information that can be used as material in research.
3.   Questionnaire
The questionnaire method collects data through a list containing a series of questions regarding a problem or field to be studied

3.4. Sampling Method
Sampling was carried out using the census method, where all population members were taken as samples or respondents. There were ten watermelon farmers sampled in Tajur Village.
The above follows the opinion of Sugiyono (2008), which states that in social and economic research, if the population is less than 100, the entire population should be taken as a sample and if the population is more than 100, between 15-20% can be taken.

3.5.   Data Analysis Method
The data that has been collected is processed in the form of numbers and then analyzed according to the research objectives. Data analysis can be done in two ways: using qualitative descriptive methods and quantitative analysis.

3.5.1.   Qualitative Descriptive Analysis
It aims to provide a general description of matters relating to the research object. The things that can be given the description are as follows:
1. Characteristics of Respondents
2. Research location
3. Watermelon Cultivation Techniques *(Citrullus Vulgaris)*
4. Obstacles in Cultivating Watermelon *(Citrullus Vulgaris)*
5. Watermelon marketing techniques

3.5.2.   Quantitative Data Analysis
The data obtained in the field is processed in tabular form and then analyzed so that the components, the amount of revenue and profit costs, and the business feasibility of watermelon *(Citrullus Vulgaris)* will be known.
1.   Total Cost
Biaya total (TC) diperolehdari total biayatetap (FC) dan total biayatidaktetap (VC). MenurutSoekartawi (1995), *TotalCost* (biaya total) merupakanpenjumlahandari*total fixed cost* (total biayatetap) dan*Total variabel cost* (total biayatidaktetap), yang secaramatematis menurut Soekartawi (1995)dapatdirumuskansebagaiberikut:
The total cost (TC) is obtained from the total fixed costs (FC) and the total variable costs (VC). According to Soekartawi (1995), Total Cost is the sum of Total Fixed Costs and Total Variable Cost, which mathematically, according to Soekartawi (1995), can be formulated as follows:
TC = TFC + TVC
Description :
TC   = Total Cost
TFC   = Total Fixed Cost
TVC   = Total Variabel Cost
2.   FixedCost
The costs incurred in watermelon farming consist of fixed costs. Fixed costs include equipment depreciation costs and cost calculations. Tool depreciation can be found using the formula proposed by Yacob Ibrahim (2003) as follows:

$$D = \frac{B - S}{N}$$

Description :
        P   = Amount of depreciation
        B   = Purchase price
        S   = Residual value
        N   = Tennis age

3.   Revenue
Total revenue is the gross income received by farmers. In other words, revenue is still in the stage of not being reduced by total costs. According to Soekartawi (1995), the total revenue is the product of price and quantity (production), which can be mathematically formulated as follows:

$$TR = P \times Q$$

Description :
TR   = Total Revenue
P   = Price
Q   = Quantity

4. Income

Income is the net income generated by farmers. To find out the amount of income earned by watermelon farmers. According to Soekartawi (1995), income is the total revenue minus the total cost, which can be mathematically formulated as follows:

$$I = TR - TC$$

Description :
I   = Income
TR   = Total Revenue
TC   = Total Cost

5. Break Even Point.

Based on the unit can be calculated in the form of units or the price depending on the needs by using the following formula:

$$BEP\ Price : \frac{TC}{P}$$

$$BEP\ Production : \frac{TFC}{P-V}$$

Descriptiom:
TC   = Total cost (Rp)
P   = Price (Rp)
V   = Variable
TFC   = Total fixed cost

3.6. Business Feasibility Analysis

To find out whether the business carried out is feasible or not, the calculation carried out is the comparison of total revenue with total costs according to Soekartawi (1995), mathematically it can be written as follows:

$$R/C = \frac{TR}{TC}$$

Description :
R/C   = Revenue Costrasio
TR   = Total Revenue (Rp)
TC   = Total Cost (Rp)

Theoretically, if the R/C value> 1, this business can be said to be profitable; on the contrary, if the R/C value < 1, the farm is at a loss.

3.7. Operational Definition

To avoid misunderstandings and misunderstandings in this study, the following operational definitions and limitations are given:
1. Watermelon farmers are people who carry out watermelon plant cultivation activities intending to get results and benefits from these activities.
2. Farmers carry out the watermelon cultivation process for one growing season.
3. Watermelon production results from watermelon farming in the form of fruit in kg per growing season.
4. Production factors are everything related to the production process to produce output.
5. Net income is the difference between the income from the watermelon farming business and the total production cost of the watermelon plant business.
6. Cost is several consumer values needed during the implementation of farming in one period of production in rupiah.
7. Fixed costs are costs that do not change or whose function is fixed so that it does not affect the size of the production volume of watermelon farming in rupiah.
8. Variable costs are costs whose amount depends on the level of production in rupiah.

9. Price is the value that applies at the Farmer level during the research; the unit is in rupiah.

IV. OVERVIEW OF THE RESEARCH LOCATION
4.1.   Geographical Location and Condition
Tajur Village is part of the Long Ikis District, Paser Regency, precisely at a position of 2°25 "south latitude and 113°44" - 119°00 east longitude. The total area of Tajur Village is ± 10,200 ha divided by 24 Neighbourhoods, 5 Hamlets and 3 Villages. The topographic characteristics of Tajur Village are generally hilly and mountainous. The condition of the land is hilly, with an altitude between 1 m to 50 m above sea level. In Tajur Village, there are soil types with red and yellow podzolic soil conditions found in undulating and hilly areas.

Tajur village is an area with a wet tropical climate and does not have a clear season difference, with moderate wind speeds and an average temperature throughout the year 24-25°C; this is influenced by latitude and regional topography. The population distribution by age group indirectly provides an overview of the number of family dependents in an area.

V.   RESULTS AND DISCUSSION
Qualitative Analysis
5.1.1. Characteristics of Respondents
The results of this study will provide an overview of the characteristics of respondents who become resource persons. The number of respondents sampled in this study was 10 watermelon farmers. Where these 10 farmers always do watermelon planting.
5.1.2. Respondents Age
The respondents' age ranged from 41-55 years, and the most significant number was the age interval of 53-55 years, which amounted to 6 people; age and experience impacted their farming. The classification of respondents based on the age of the research location can be seen in table 7.

Table 7.Based on the Respondents' Age in Tajur Village, 2020.

No	Age Interval (Years Old)	Number of Respondents (Soul)	Percentage%
1	41-48	2	10%
2	48-53	2	10%
3	53-55	6	80%
	Total	10	100%

Source: Primary data (processed) 2020

From the data above, the number of respondents aged 41-48 by 10%, ages 48-53 and 53-57 by 10%, and ages 57-69 by 80%.

5.1.3. Respondent's Education
Education is an essential factor that can affect how farmers manage their farms. The level of education is a means of supporting farmers' life because education affects farmers' behaviour in introducing new technology. The level of education achieved by farmers in detail can be seen in table 8.

Table 8. Number of Respondents Based on Education Level in Tajur Village in 2020.

No	Education Level	Number of Respondents (Soul)	Percentage %
1	Primary School	2	10%
2	Junior High School	2	10%
3	Senior High School	6	80%
	Total	10	100

Source: Primary data (processed) 2020.

Quantitative Analysis
In the production structure, costs can be categorized into fixed and variable costs. Fixed costs are costs that do not change when the number of output varies, and variable costs affect the quantity of production.

5.6.1. Cost of depreciation

The depreciation costs of tools incurred in watermelon farming are hand sprayer, hoe, sickle, machete, artco, bucket, alkon hose, gembor. The average fixed costs for watermelon farming in Tajur Village are detailed in table 11

Table 11. Average Fixed Cost of Watermelon/Mt Farming in Tajur Village in 2020

No	Description	Average (Rp)
1	Land Tax	40.000,00
2	Depreciation	1.403.480,00
	Total	1.443.480,00

Source: Primary data (processed) 2020..

The table data above shows that the average depreciation cost for land tax is Rp. 40,000.00/ha, and the equipment depreciation cost is Rp. 1,403,480,00. It can be concluded from the data that the average fixed cost in watermelon farming analysis in Tajur Village is Rp. 1,443,480.00/Mt. (Appendix 4-8).

5.6.2. Variable Cost

Variable costs of watermelon farming include production facilities, including purchasing seeds, fertilisers, pesticides, labours, sacks, raffia ropes, and land processing. For more details, the average fixed costs for watermelon farming in Tajur Village are detailed in table 12.

Table 12.Variable Costs in Watermelon/Mt Farming in Tajur Village in 2020.

No	Description	Average (Rp)
1	Seeds	144.000,00
2	Fertilisers	4.661.000,00
3	Pesticides	3.132.000,00
4	Labours	13.671.000,00
	Total	21.608.000,00

Source: Primary data (processed) 2020.

From the table data above, seeds with an average cost of Rp. 144,000.00 Fertilisers with an average cost of Rp. 4,661,000.00. Pesticides with an average cost of Rp. 3,132,000.00 labour with an average cost of Rp. 13,671,000.00. It can be concluded from the description of the average cost of using variable costs in watermelon farming of Rp. 8,704,800.00. (Appendix 9-22).

5.6.3. Total Production Cost

The total cost is the total cost used in watermelon farming in Tajur Village. For more details, the total cost of production can be seen in table 13.

Table 13.Total Production Costs in Watermelon/Mt Farming in Tajur Village in 2020.

No	Descrition	Average (Rp)
1	Fixed Costs	1.403.480,00
2	Variable Costs	29.209.000,00
	Total	30.702.480,00

Source: Primary data (processed) 2020.

From the data above, the total cost of watermelon farming production from 10 respondents based on the results of my research was obtained; the average fixed cost was Rp. 1,403,480.00. Plus, the average variable is Rp.29,209.000,00. It can be concluded that the average production cost of watermelon farming is Rp. 30,702,480.00 (Appendix 24).

5.7. Total Revenue

Revenue results from multiplying the number of products obtained with the prevailing selling price. The details of the acceptance of watermelon farming in Tajur Village can be seen in table 14.

Table 14. Average Revenue on Watermelon/Mt Farming in Tajur Village in 2020..

Description	Average production/Ha	Average price/kg	Average quantity (Rp)
Watermelon	14.923	3.000,00	44.769.000,00

Source: Primary data (processed) 2020.

Watermelon farming revenue from 10 respondents based on the research results obtained an average total revenue of Rp.44,769.000, 00 (Appendix 25).

5.8.Income
Revenue analysis is calculated based on the amount of revenue minus the total cost of production. The details of the acceptance of watermelon farming in Tajur Village can be seen in table 15.

Table 15.Total Income on Watermelon/Mt Farming in Tajur Village in 2020.

No	Description	Average (Rp)
1	Revenue	44.769.000,00
2	Production Cost	30.439.340,00
	Total	75.208.340,00

Source: Primary data (processed) 2020.
The average income of 10 respondents is Rp. 75,208,340.00/Ha per crop season (Appendix 26)

5.8.1. Break Even Point
Break Even Point analysis is an economic analysis to calculate where the Break Even Point or return on capital from a business occurs. BEP calculation is divided into three categories: BEP revenue, production BEP, and price. In determining the analysis of soybean farming in Tajur Village, Babulu District, PenajamPaser Utara Regency, it can be seen from the calculation of how much capital is spent and how much profit is obtained by watermelon farming that, in the end, farmers are able and can develop farming in the future.

Production BEP is Rp. 10,146.00, BEP Revenue is Rp. 30,439,500.00 and BEP Price is Rp. 2,051.00/kg. Thus, it can be concluded that the Production BEP, Revenue BEP, and Price BEP mean that watermelon farming in Tajur Village, Long Ikis District, Paser Regency has broken even (Appendix 28-29).
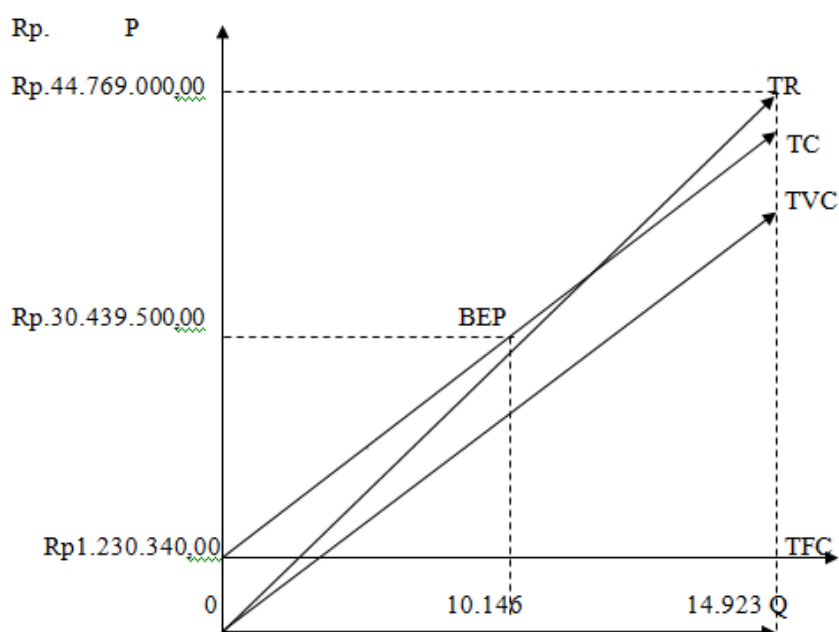The graph of the Break Even Point analysis (BEP) above can be seen in Figure 5.1 below:

Image 5.1 :Graph of Break Event Point (BEP) on Watermelon farming in Tajur Village..

The BEP graph above depicts watermelon farming in Tajur Village, Long Ikis District, Paser Regency; the Average Break-Even Point (BEP) value of the production volume is 10,146 kg per hectare per growing

season, with an average total cost ofRp. 30,439,500.00. So watermelon farming in Tajur Village, Babulu District, NorthPenajamPaser Regency has been able to pass the Break Event Point (BEP) value because the average revenue obtained is Rp. per planting season. The value of the Average Break Even Point (BEP) from the volume of watermelon prices, which is Rp. 2.051.00 from the BEP price, it can be seen that watermelon farming is feasible because the BEP price (Rp.2.051,00) is smaller than the Average price of watermelon, namely as much as Rp. 3,000.00. In other words, the income or production obtained from watermelon farming in Tajur Village, Long Ikis District, Paser Regency has generated profits.

5.9. Feasibility
To determine whether a business is being cultivated mathematically, we can use the R/C Ratio analysis formula. Can be seen in table 16.

Table 16.Feasibility Details for Watermelon/Mt Farming in Tajur Village in 2020.

No	Description	Total	Average (Rp)	Feasibility (TR/TC)
1	Penerimaan (TR)	447.690.000,00	44.769.000,00	1,5
2	BiayaProduksi (TC)	304.393.400,00	30.439.340,00	

Source: Primary data (processed) 2020.

The table above shows that the total income obtained from watermelon farming in Tajur Village, Long Ikis District, Paser Regency is Rp. 00, averaging Rp. 30,439,340.00. So the feasibility level of watermelon farming in Tajur Village, Long Ikis District, Paser Regency is 1.5, which means it is feasible to cultivate. The value of 1.5 is that for every Rp. 1.00 of production costs incurred, the receipt of Rp. 1,5.00 is obtained.

VI. CONCLUSIONS AND SUGGESTIONS
6.1. Conclusion
Based on the results of research conducted on watermelon cultivation in Tajur Village, Long Ikis District, Paser Regency, East Kalimantan, the following conclusions can be drawn:
1. The average cost incurred for watermelon *(Citrullus Vulgaris)* cultivation in Tajur Village, Long Ikis District, Paser Regency, is Rp. 30,439,500.00/Ha/Mt.
2. The average revenue of watermelon cultivation *(Citrullus Vulgaris)* in Tajur Village, Long IkisSubdistrict, Paser Regency is Rp.44,769.000,00/Ha/Mt.
3. The average income of watermelon cultivation *(Citrullus Vulgaris)* in Tajur Village, Long Ikis District, Paser Regency is Rp. 14,329,660.00/Ha/Mt.
4. The watermelon *(Citrullus Vulgaris)* cultivation business in Tajur Village, Long Ikis District, Paser Regency, has an Average R/C ratio of 1.5 which means it is feasible to cultivate because the R/C ratio is more than 1. The value of 1.5 is for every Rp. 1.00 of production costs incurred, receiving Rp. 1,5.00 is obtained.

6.2. Suggestions
1. By looking at research results on watermelon *(Citrullus Vulgaris)* cultivation, farmers are expected to use appropriate seeds and develop a balanced pattern of fertilizer use on plants.
2. Farmers are expected to regularly keep a more detailed record of expenses and income in watermelon *(Citrullus Vulgaris)* cultivation every planting season.
3. To the government, both the village government and the district government can support and assist the farmers in Tajur Village regarding technology and capital assistance

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