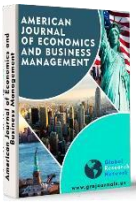

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Article

Strategies For Increasing The Income Of Cayenne Pepper Farming In Tangsil Wetan Village, Wonosari Sub-District, Bondowoso Regency

Eko Soemarjono

1. Agriculture Faculty, Bondowoso University
* Correspondence: ekosoemarjono2525@gmail.com

Abstract: Tangsil Wetan Village, Wonosari District, Bondowoso Regency, East Java, is one of the cayenne pepper production centers in Bondowoso Regency. So the cayenne pepper farming business in Tangsil Wetan Village needs to be analyzed regarding the feasibility of its cost efficiency. The farming business and its strategy for increasing income are carried out using the FFA [Force Field Analysis] method. The aim of the research is [1] determine the efficiency of cayenne pepper farming. [2] find out strategies for developing income from cayenne pepper farming. The method for determining the research location was purposive, because Tangsil Wetan village has the potential to produce cayenne pepper. The number of respondents to this study was 30 respondents using a simple random sampling method. The analytical methods used were cost, revenue and income analysis, cost efficiency analysis, and force field analysis [FFA]. The research results mean the total average cost is IDR. 240,225,000,-/hectare/season. Average total revenue Rp.661,557,000,-/hectare/season, Average total income Rp.421,332,000/hectare/season. Cost efficiency level of 2.75. Income development strategy from FFA research results is driving factor of 3.23. and the inhibiting factor is 1.72, so the strategy is in a positive direction or has prospective market opportunities.

Keywords: Cayenne Pepper, FFA, Bondowoso

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1. Introduction

Biro Pusat Statistik (1) noted that the production of cayenne pepper in Indonesia reached 1.51 million tons in 2020. This number increased by 9.76% compared to the previous year which amounted to 1.37 million tons. The production of cayenne pepper in Indonesia has continued to increase since the last five years. During the 2016-2020 period, the average increase in cayenne pepper production was 13.6% per year. In 2020, the highest cayenne pepper production occurred in August, reaching 177.91 thousand tons. While the lowest chili production occurred in February, which was 86.31 thousand tons. East Java is the province with the highest cayenne pepper production in Indonesia, reaching 684.94 thousand tons last year. The province contributed 45.41% to the national cayenne pepper production[1]–[3].

Bondowoso (Madurese: Bândâbâsa) is a regency in East Java Province, Indonesia. The capital of Bondowoso Regency is Bondowoso District. The regency capital is located at the crossroads of the route from Besuki and Situbondo regencies to Jember. Bondowoso Regency is the only regency that does not have a coastal area in the Horseshoe region of

East Java. In 2020, the population of Bondowoso Regency totaled 776,151 people with a population density of 498 people/km. The price of cayenne pepper in Bondowoso recently touched Rp 100,000 per kilogram. The cause of the high price of chili is said to be the weather[4]–[6].

Totok Haryanto in (2) , Head of Trade at the Bondowoso Diskoperindag, explained that chili production is reduced during the rainy season, causing prices to skyrocket. In addition, chilies produced in Bondowoso are also sent out of town. As a result, the availability of chili peppers is increasingly minimal. In fact, Bondowoso is not a chili barn. Based on Diskoperindag in (2) monitoring results, as of March 19, 2023, the price of cayenne pepper in Bondowoso City ranged from Rp 100,000 to Rp 110,000 per kilogram. Normally, the price of cayenne pepper is around Rp 30,000-Rp 40,000 per kilogram.

Totok Haryanto explained that his office has made efforts to control prices by monitoring prices in the markets. Not only that, communication with chili farmer groups continues to be established so that prices decline. (2)

Wonosari is a sub-district in Bondowoso Regency, East Java Province, Indonesia. The sub-district is about 10 km from the capital of Bondowoso Regency to the east. The government center is in Wonosari village. Wonosari is one of the cayenne pepper farming areas, especially in Tangsil Wetan village, the cayenne pepper variety planted by farmers in Tangsil Wetan village is the genie variety. Fertilizers and medicines used to eradicate pests and diseases use chemical pesticides, each harvest season the production of cayenne pepper plants always experiences fluctuating price levels[7], [8].

Tangsil Wetan village is one of the producers of cayenne pepper farming. Farmers in Tangsil Wetan village generally usually plant rice, because the price of cayenne pepper increases every year, some farmers in Tangsil Wetan village switch to planting cayenne pepper. Initially, only a few people planted cayenne pepper, but the price of cayenne pepper continued to rise every year and in the end many farmers in Tangsil Wetan village planted cayenne pepper. Perhaps the price continues to rise, which causes farmers who usually plant rice to switch to planting cayenne pepper. In 2023 the price of cayenne pepper fluctuated from Rp. 15000 - 40,000, and in 2024 the price of cayenne pepper reached 18,000 - 60,500 per kg. So most cayenne pepper farmers said it was better to plant cayenne pepper than to plant rice, because the income was greater, even though the maintenance was quite difficult[9]–[11].

This research has the following objectives: (1) To determine the feasibility efficiency of cayenne pepper farming in Tangsil Wetan Village, Wonosari District, (2) To find out the strategy of increasing the income of cayenne pepper farming

2. Materials and Methods

This research was conducted in Tangsil Wetan village, Wonosari sub-district, Bondowoso district, from April to May 2024. The reason the research was taken was because many farmers in Tangsil Wetan Village said that the income of cayenne pepper farming was greater than rice farming even though cayenne pepper farming was more difficult to maintain than rice farming. Also in Tangsil Wetan Village is where the researcher lives, so that researchers when conducting research can save time and money, and also in Tangsil Wetan Village there are already many farmers who cultivate green cayenne pepper.

The research methods used in this research are Descriptive, Qualitative, and quantitative methods. Data acquisition techniques and tools used: (1) Observation and (2) Interview. Data acquisition in this study is by Primary data and Secondary data, namely data obtained from other related agencies related to this research.

a. Data analysis technique

To test the data that has been obtained from farmers and to determine farm income can be analyzed by the revenue formula, total costs, income, and feasibility are as follows:

The concept of acceptance : TR = P x Q
Description:
TR = Total Farm Revenue
P = Production Price
Q = Total Production
Production cost : TC = TFC + TVC
Description:
TC = Total Cost
TFC = Total Fixed Costs
TVC = Total Variable Costs
Income Concept : B = TR - TC
Description:
B = Total farm income or profit
TR = Total farm income
TC = Total Cost.
Feasibility Analysis: R/C ratio = TR : TC
Description:
TR = Total Revenue
TC = Total Cost.
The greater the R/C ratio value of a commodity, the higher the profit or efficiency, the testing rules are as follows:

1. If the R / C ratio> 1 then the cayenne pepper commodity has a better income.
2. If the R / C ratio = 1 then the cayenne pepper commodity is not profitable and does not lose (break even).
3. If the R / C ratio < 1 then the cayenne pepper commodity is not good for production.

b. Cayenne pepper Farming Development Strategy

To find out the cayenne pepperfarming Business Development Strategy used Force Field analysis (FFA). The right strategy in the development of cayenne pepper farming is by analyzing the driving and inhibiting factors obtained from the FFA results. According to Sianipar and Entang (2003), the most effective strategy is to optimize the driving factors and minimize the inhibiting factors.

Indications of driving factors are a combination of strengths and opportunities, while inhibiting factors are weaknesses and threats. The development strategy is to optimize the driving factors and minimize the inhibiting factors.
According to [12] in conducting an evaluation, there are many terms that must be understood, these terms are as follows:

1. Total production (Y) is the amount of production per farm in kg.
2. Production price (P) is the price of production per unit with units of Rp / kg
3. Revenue or production value (R or S) is the amount of production multiplied by the price of production with units of Rp.
4. Variable costs (VC) are costs used to buy or provide raw materials that run out in one production. In this paper, the variable costs include the cost of production facilities and outside labor per farm in units of Rp.
5. Variable cost per unit (AVC) i.e. total variable cost divided by total production with units (Rp/kg).
6. Fixed costs (FC) are land rent, land tax, interest costs, depreciation per farm with units (Rp).
7. Total cost (TC or C) is the sum of variable costs and fixed costs per farm with units of Rp.
8. Farmer income (1) is the difference between revenue and total costs per farm with units (Rp)

9. Profit (B) is income minus wages of family labor (w) and interest on own capital per farm with units of (Rp).
10. Total labor devoted is the amount of family labor plus the amount of labor outside the family per farm with units of HKO.
11. Labor productivity is the ratio between income and total labor devoted per farm with units of Rp/HKO.
12. R / C ratio is the ratio between revenue and total costs per farm. (Ken Suratiyah.2011)

Knowledge of total costs can be divided into two, namely fixed costs and non-fixed costs (variable costs). Fixed costs are expenses that do not change in the amount, although the volume of production of goods increases or decreases. Variable costs are costs that are not used for a particular production process and the amount changes in proportion to the amount of production, such as the cost of depreciation of agricultural equipment, and taxes[13]–[15].

3. Results and Discussion

Profession of Cayenne Pepper Farmer

Of the 30 respondents, people who own cayenne pepper farms in Tangsil Wetan Village are not only native farmers, but there are also several people who work not as farmers but have cayenne pepper farming businesses and can be seen from the following table:

Table 1. Profession of cayenne pepper farmers

No	Profession	Jumlah(orang)
1	Petani	20
2	Wiraswasta	9
3	Pedagang	1
	Total	**30**

Education Level

The level of education plays a very important role in getting a job. The respondent's level of education also greatly affects the amount of income of a respondent. The higher a person's education, the more feasible and better their job and income will be. When associated with age, education and type of work have a related influence. In general, the level of education possessed is only up to elementary school level and many do not even graduate from elementary school[16]–[18]. There are also some residents who have a junior high school and high school education level. However, in this study the dominant population was those who did not graduate from elementary school (Arya Dwiandana Putri 2013).

The education level of farmers in Tangsil Wetan Village is a support in developing cayenne pepper farming, therefore clarification of the education level of cayenne pepper farmers can be seen in the following table:

Table 2. Education level of respondent farmers cayenne pepper

No	Pendidikan terakhir	Jumlah(orang)
1	Belum tamat SD	10
2	SD/MI	9
3	SMP/MTS	1
4	SMA/SMK	9
5	Perguruan tinggi	1
	Jumlah	**30**

Table 2 shows that of the 30 respondent farmers the highest level of education is not graduated from elementary school with a total of 10 people, and the lowest level of education is junior high school and college whose number is 1 person each. However, the level of education of a farmer does not really affect the income of farmers in Tangsil Wetan Village, Wonosari District, Bondowoso Regency, because a person's skills and knowledge are not only obtained in a formal school, but a person can learn from any place, the more skilled the cayenne pepper farmers are in managing the cayenne pepper farm, the greater the income the farmers get.

Respondent farmer land area

Land area is very influential on cayenne pepper farming in Tangsil Wetan Village because the more land used for cayenne pepper farming, the more cayenne pepper production is produced, and the more land used for farming, the more costs must be incurred by farmers who cultivate the cayenne pepper. For more details about the land area owned by respondent farmers in Tangsil Wetan Village, Wonosari District, Bondowoso Regency can be seen in the following table:

Table 3. Land area of respondent farmers cayenne pepper

No	Meter persegi	Jumlah(orang)
1	**500 – 1000**	**8**
2	**1100 – 1500**	**10**
3	**1600 – 2000**	**9**
4	**2100 - 2500**	**3**
	Jumlah	**30**

Based on table 3, The smallest land area is 500 - 1000 square meters, and the largest amount of land area is 2100 - 2500 square meters. Based on the results of the research, the area of land ownership owned by respondents is mostly 1100- 1500 square meters, namely as many as 10 people and shows that the farming of cayenne pepper farms that are cultivated by farmers are relatively narrow in size. However, where farmers cultivate an area of 1100-1500 square meters, it can reach 5,000 to 6,000 trees because cayenne pepper trees are small and when planting cayenne pepper does not require a large distance, which is approximately 30-40 cm distance between trees so that in the planting of cayenne pepper, the distance between trees is small.

Land ownership

Farmers in Tangsil Wetan Village on average own their own land for farming, but there are also farmers who rent land because the owner lives far away or the proceeds of the rental fee will later be used as a fee by the landowner who rents the land after the seawanya time is over. Land ownership in Tangsil Wetan Village is not all owned by Tangsil Wetan residents, there are also residents from outside Tangsil Wetan Village. Usually, land ownership of residents from outside the village will later be rented out or hired with a profit-sharing system because the owner cannot directly control every day his farm crops due to the condition of the land with a distant residence[19].

Analysis of costs and income of cayenne pepper farming

Variable costs are nominal expenses that change according to the proportion of products produced/sold. all costs incurred by respondent farmers for the purchase of fertilizers, seeds, plastic mulch, pesticides whose costs change. Variable costs in this study include fertilizer, seeds, plastic mulch, harvest wage costs, food costs, and pesticides. The following is a table of variable costs of cayenne pepper farming in Tangsil wetan Village.

Table 4. Total Variable Cost Results Of Cayenne Pepper Farming.

No	Description	Total cost
1	Fertilizer	17.590.000
2	Seeds	15.220.000
3	Plastic mulch	33.450.000
4	Pesticide	18.120.000
5	Total cost of harvest wages	72.261.000
6	Total cost of food	17.600.000
7	Bed-making cost	19.250.000
8	Planting cost	6.250.000
9	Fertilization cost	27.374.000
10	Weed removal cost	6.430.000
11	Cost of installing plastic mulch	4.080.000
	Jumlah	**238.925.000**

The table above shows that the largest cost is the harvest wage cost of Rp. 72,261,000, and the lowest cost is the total cost of installing plastic mulch of Rp. 4,080,000. Harvest wage costs have a high price because when harvesting cayenne pepper the wage price depends on the ups and downs of the price of cayenne pepper, if the price of cayenne pepper is high then the wages given will also increase and if the cayenne pepper decreases then the wages given will also decrease, harvest wage costs are usually calculated per kg of cayenne pepper harvested and depending on the price of cayenne pepper. Harvest time labor is usually done by female farm laborers although there are also men, but the average in Tangsil wetan Village is done by female farm laborers. Other costs such as making beds are done by male farm laborers because they must require strong energy, besides other costs sometimes the landowner does it himself such as fertilizing and cleaning weeds to reduce costs incurred.

Regarding the cost of harvest wages, the following table shows the wage costs that will be paid by farmers:

Table 5. Harvest wage costs depending on the price of cayenne pepper per kg

No	Price of cayenne pepper (Rp)	Wage cost per kg (Rp)
1	1.000 – 15.000	2.000
2	15.500 – 20..000	2.500
3	20.500 – 30.000	3.000
4	30.500 – 40.000	4.000
5	40.500 – 50.000	5.000
6	50.500 – 60.000	6.000

Cayenne Pepper Farming Income

Table 6. Total Revenue, total cost and R/C Ratio of cayenne pepper

Total Penerimaan cabai rawit per kg			
No	Uraian	Satuan	Jumlah (Rp)
1.	Penerimaan (TR) = P.Q		
	Keterangan :		
	TR = Total Penerimaan usahatani		
	P = Harga Produksi rata-rata	Rp	25.261,84
	Q = Jumlah Produks	Kg	26.188
	TOTAL PENERIMAAN	Rp	661.557.000
	TOTAL BIAYA PRODUKSI CABAI RAWIT PER KG		
2.	Total Biaya (TC) = TVC+TFC		

	a. Biaya Variabel (TVC)	Rp	**238.925.000**
	b. Biaya Tetap (TFC)	Rp	**1.300.000**
	Total Biaya Produksi	**Rp**	**240.225.000**
Total Pendapatan usahatani cabai rawit			
3	Pendapatan n = TR – TC		
	a. Penerimaan	Rp	661.557.0**00**
	b. Total Biaya Produksi	Rp	**240.225.000**
	Total Pendapatan	**Rp**	**421.332.000**
Kelayakan R/C rasio			
4	**R/C Rasio**		
	Total R/C rasio		80,74
	R/C rasio Rata-rata		2,753

The existing R/C value can also show that the cayenne pepper farm in Tangsil wetan village has been profitable to develop because the revenue is greater than the costs incurred and provides benefits for cayenne pepper farmers which are influenced by the high price level of cayenne pepper. These results indicate that cayenne pepper farming provides benefits for farmers in Tangsil wetan Village because the price of cayenne pepper at the time of the study was at a high price level of Rp. 55,000, and while the lowest price was Rp. 15,500. The price of cayenne pepper in Tangsil wetan Village, Wonosari District, Bondowoso Regency has a price level that changes at harvest time so that it affects the income for farmers who cultivate cayenne pepper.

Development Strategy Analysis

Continuing the impact of the increase in fuel oil on cayenne pepper farming, an analysis of the Model and Strategy for the Development of Cayenne Pepper Farming is needed. Through judgment on the model and positive cayenne pepper farming development efforts can use a simple SWOT-based analysis method called Force Field Analysis (FFA) on various decision-making systems. Variables in decision making include all aspects that affect the development of cayenne pepper farming. Namely aspects of the production facilities supply subsystem, cultivation subsystem, marketing subsystem, and supporting institutional subsystem. The implementation of plantation development policies in East Java is expected to accelerate the progress of chili farmers which include:

a. general policy, namely empowering upstream and downstream to create added value and competitiveness of plantation businesses, through providing incentives, creating a conducive business climate and increasing the participation of the plantation community and the application of modern organizations based on science and technology.
b. Technical policies that include: commodity development, human resource development, business investment, institutional development and business partnerships, supporting food security, development of natural resources and the environment, development of plantation information systems.

The Force Field Analysis technique states that a system is in a state of equilibrium if the driving factors strengthen the balance to a desired state. In this study, these factors are represented by variables D1 - D16. Restraining factors will inhibit the balance away from what is desired, both in the form presented by variables H1 - H15. Analyzing cayenne pepper farming activities based on the efficiency of cost use, driving factors, inhibiting factors will provide information for development strategies that can be implemented in the future. Factors - the driving and inhibiting factors in the development of cayenne pepper farming, the following values can be observed in Table 7 and table 8:

Tabel 7 Identification of Drivers:

No.	**Driving Factors**	Bobot	Skor	TNB
D1	There are already cayenne pepper seeds	0,07	3	0.21
D2	Cayenne pepper plants are resistant to pests and diseases	0,06	3	0.18
D3	Domestic market share, quite large	0,09	3	0.27
D4	The environment for chili farmers is supportive	0,06	3	0,18
D5	Experienced labor	0,07	3	0.21
D6	Easy harvesting	0,06	3	0.18
D7	Profitable farming	0,09	2	0.18
D8	Continuous production	0,07	2	0.14
D9	Transportation facilities are good	0,06	3	0.18
D10	TK is sufficiently available	0,07	3	0.21
D11	Saprodi available and smooth	0,07	2	0.14
D12	Easy marketing channels	0,06	3	0.18
D13	Own or borrowed capital	0,06	2	0.12
D14	Manufacturer demand is wide enough	0,08	4	0.32
D15	Continuous public consumption of chili	0,08	4	0.32
D16	Conducive business climate	0,07	3	0.21
	Total Driving Factors			3.23

Table 7 illustrates the driving factors in the force field analysis (FFA). Based on the analysis of the driving factors, the weight value of the driving factors is 3.23, which partially the driving factors are:

Table 8: Inhibiting Factors.

No.	Inhibiting Factors.	Bobot	Skor	TNB
H1	Lack of capital	0,05	2	0.10
H2	Lack of plant maintenance	0,06	2	0.12
H3	Lack of counseling and guidance	0,05	2	0.10
H4	Productivity is not optimal	0,06	2	0.12
H5	Lack of production quality	0,06	2	0.12
H6	Price is determined by supply and demand	0,10	2	0.20
H7	Low durability	0,05	2	0.10
H8	Productivity depends on climate	0,07	2	0.04
H9	Pests and diseases of cayenne pepper	0,06	1	0.12
H10	Low human resource quality	0,06	2	0.06
H11	Post-harvest processing technology is still traditional	0,05	2	0.14
H12	Expensive pesticides	0,05	2	0,12
H13	Labor is quite expensive	0,06	3	0.10
H14	Climate influence	0,04	1	0.10
H15	High transportation costs	0,06	2	0.18
	Total Inhibiting Factors.			1.72

Sumber: Data Primer Diolah tahun 2024

While the inhibiting factor obtained a total TNB value of 1.72 with the following description. Lack of capital, most chili farmers are poor so that the cost of farming in maintenance is simple and results in low productivity. Less plant maintenance, in terms

of care that should be mostly below standard, such as fertilizing some with doses that are less than standard. Counseling and coaching are lacking, most farmers lack counseling on good and correct chili farming techniques. So the presence of extension workers with the theory and practice of chili farming is expected. Especially education and training involving all cayenne pepper farmer groups. The total value of inhibiting factors is 1.72, thus development has been in a positive direction, which means that farming has prospective market opportunities to develop its business. As for the key factors in the development of cayenne pepper farming can be known by determining the Key Success Factors (FKK). FKK is obtained from determining the variables that have the greatest weight in the driving and inhibiting factors. The results of the analysis state the FKK in the development of cayenne pepper farming are listed in the following table:

Table 9. Key success factors of cayenne pepper farming

No.	Driving Factors	No.	Inhibiting Factors.
1.	Productive Varieties	1.	Some crops need optimal maintenance
2.	Large domestic market share	2	Lack of science and technology support in farming implementation
3.	Market opportunity is quite large.	3	Lack of farming costs
4.	Productivity is not yet optimal		

Source: Data on the situation and conditions in 2024

4. Conclusion

In conclusion from the results of data analysis and discussion above, the following conclusions can be obtained: (a) The average income of all respondent farmers of cayenne pepper farming obtained by farmers in Tangsil Wetan Village, Wonosari Subdistrict, Bondowoso Regency when summed up totals 13,767,716. (b) The largest average cost in cayenne pepper farming in Tangsil wetan Village is the cost of fertilization, which is Rp 723,750. (c) Cayenne pepper farming in Tangsil Wetan Village, Wonosari District, Bondowoso Regency is feasible to cultivate with (R/C ratio 2.753). (d) The strategy for increasing income is to seek information on the possibility of many rivals / cayenne pepper growers.

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