

Analysis of Income in Tiung Chili Farming (*Capsicum Frutescens* L) in 3B Batu Balian Village, Simpang Empat District, Banjar Regency

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ABSTRACT

Chili is one of the commodities with high economic value. Based on these grounds, a study was conducted to determine the expenses incurred, revenues, income, and profits of farmers in the village. The research aims to analyze the income of tiung chili farming (*Capsicum frutescens* L) in 3B Batu Balian village, Simpang Empat district, Banjar regency. Observations were carried out on tiung chili farmers in 3B Batu Balian village, Simpang Empat district, Banjar regency. The collected data was processed into tabulated forms with financial analysis involving costs, to estimate the magnitude of revenues and income from tiung chili farming in 3B Batu Balian village, Simpang Empat district, Banjar regency. The tiung chili farming activities in 3B Batu Balian village are quite satisfactory. The average production of tiung chili obtained by respondent farmers in one production cycle is 126 kg/farmer. The average explicit costs in tiung chili farming are Rp. 3,138,537.50. The average revenue obtained during one production cycle or harvest is Rp. 4,662,000, and the total income obtained during one production cycle or harvest averages Rp. 1,523,462.51.

Keywords: *Tiung Chili, Income, Farming Business, Batu Balian*

INTRODUCTION

Chili is one of the commodities with high economic value (Permadi et al., 2017). The consumption of chili in Indonesian society continues to increase along with the growth of the population, making chili one of the profitable horticultural commodities for farmers. Tiung chili, in particular, is believed to increase appetite for some people (Puspitasari, 2020). Tiung chili has become a favorite commodity for trading and consumption among people regardless of social status (Timisela et al., 2017). From an economic perspective, tiung chili is a commodity with a relatively high economic value, as reflected in its contribution to Indonesia's inflation rate. Inflation itself is heavily influenced by commodity prices, which in turn affect the purchasing power of the society.

Chili plants can be classified into two types: large chilies (*Capsicum Annum* L), which consist of red and curly chilies, and small chilies known as tiung chilies (*Capsicum frutescens* L). Compared to large chilies, cultivating tiung chilies is relatively easier because they have the advantage of being more resistant to pests and diseases and can be grown in any type of soil (Setiadi, 1999). There are three types of chili fruits: large and somewhat short, large and elongated,

and small (tiung chili). Large chilies, which are somewhat elongated, have a less spicy taste, are red and green in color, but consumers in Indonesia usually prefer them when they are still green for vegetables or eaten raw as a side dish. Similarly, elongated large chilies are mostly harvested after turning red, either as a vegetable mixture or dried into powder (Kartasapoetra, 1988).

Tiung tiung chili is a perennial plant from the nightshade family (Solanaceae) with the scientific name *Capsicum sp.* Chilies originated from the American continent, specifically the area of Peru, and spread to countries in the Americas, Europe, and Asia, including Indonesia. Besides Indonesia, chilies also grow and are popular as a seasoning in other Southeast Asian countries. In English, they are known as Thai pepper or tiung chili pepper (Makmur, 2017).

The 3B Batu Balian Village is one of the areas located in the Simpang Empat District of Banjar Regency where the residents have various livelihoods, one of which is in agriculture, specifically as farmers of Tiung Tiung chilies.

The cultivation of Tiung Tiung chilies has been practiced for quite some time in this area, but farmers still encounter challenges in its implementation. The most common constraints experienced by Tiung Tiung chili farmers include the simple cultivation practices, traditional production technologies, and limited capital (Sondakh and Rengku, 2017). The cultivation of chili plants is not yet economically oriented, thus not considering the expenses incurred during the production process and the income obtained. The use of production costs and other expenses has not been extensively studied from a business perspective in the cultivation activities carried out by small-scale farmers. These include land conditions that are not supportive, insufficient capital for chili cultivation, incomplete availability of facilities and infrastructure, pest and disease management for chili plants, and many more. Based on these factors, research

was conducted to determine the expenses incurred, revenue, income, and profits of farmers in the village. The research aims to analyze the income from Tiung Tiung chili farming (*Capsicum frutescens L*) in 3B Batu Balian Village, Simpang Empat District, Banjar Regency.

MATERIALS & METHODS

Time and Place of Research

Observations were conducted on Tiung Tiung chili farmers in 3B Batu Balian Village, Simpang Empat District, Banjar Regency.

Data analysis

The collected data was processed into tabular form with financial analysis involving costs to estimate the magnitude of revenue and income from Tiung Tiung chili farming in 3B Batu Balian Village, Simpang Empat District, Banjar Regency. According to Boediono (1982), to calculate the total revenue, the formula is as follows:

$$TEC = \sum_{i=1}^n EC (i=1,2,3,\dots,n)$$

$$TR = P \times Q$$

Dimana:

TR = Total revenue (Rp)

P = Price (Rp/Kg)

Q = Quantity (Kg)

Mathematically, to calculate income, the formula used is as follows:

$$I = TR - TEC$$

Dimana:

I = Income (Rp)

TR = Total Revenue (Rp)

TEC = Total Explicit Cost (Rp)

RESULT

Seed

The seeds used in Tiung Tiung chili farming are purchased from agricultural stores in the local area at a price of Rp. 75,000 per packet. One packet of Tiung Tiung chili seeds

weighs 10 grams. The amount of seeds used in Tiung Tiung chili farming varies among respondent farmers depending on the size of their land. The quantity of seeds used in Tiung Tiung chili farming is 10 packets (100 grams), and the average amount used per farmer is 2.5 packets (25 grams).

Nursery

Before sowing the seeds, calculate the required amount based on the area you intend to plant. For instance, if you plan to plant on one hectare of land, your requirement would be 0.5 kg. Next, prepare a shaded nursery area to avoid direct sunlight, protect from rain, maintain stable humidity and temperature, and shield from strong winds.

Prepare polybags sized 5x10 cm, then fill them with soil as the sowing medium. You can mix soil, husk charcoal, and compost in a 1:1 ratio. The sowing medium should have a loose structure to facilitate root growth. Sieve all materials to achieve the desired soil structure.

Next, soak the seeds in warm water at a temperature of 50 degrees Celsius for one hour to break seed dormancy. Then, plant the seeds into the polybags to a depth of 0.5 cm, and cover them with sowing medium. Subsequently, water regularly every morning and evening. Tiung Tiung chili seedlings can be transplanted to open fields after growing 4-6 leaves or approximately 1.5 to 2 months old. According to Hariyadi, Ali, & Nurlina (2017), it is advisable to water the seedlings immediately after planting to maintain soil moisture and plant humidity.

Land Preparation and Planting

Land preparation is done by plowing to a depth of 40 cm. Then, beds are formed with a width of 90-100 cm and a height of 30-40 cm, with a spacing of approximately 60 cm between rows. Before that, measure the soil pH. If it is too acidic, you can add dolomite lime to neutralize the acidity of the soil. If the soil lacks nutrients, you can add organic fertilizer. Let it sit for at least two weeks.

Afterward, add urea chemical fertilizer as needed and let it sit for another 20 days.

For planting, dig holes in a zigzag pattern with a size of 50 cm. Planting holes are made in two rows within one bed with a spacing of 60 cm between rows. Then, in the transplanting stage, which involves moving seedlings from polybags to the field, it is recommended to do it in the morning or evening. Planting should be done quickly and neatly across the field.

Maintenance and Care for Tiung chili

Caring for Tiung chili plants is relatively straightforward. Watering can be done based on the moisture level of the plants. If the soil becomes dry, water should be applied to maintain its moisture. Alternatively, the "bedengan" system can be used, which involves flooding the beds to half their height, especially in areas with abundant water sources.

To stimulate and accelerate plant growth, promote new branches, increase the number of shoots, and enhance leaf and fruit quality, you can apply a tonic fertilizer called "Green Tonik" to the plants. Spray the plants with a dose of 2-3 ml per liter of water evenly on the leaves, stems, and entire plant. This spraying should be done once a week.

Tiung Chili contains compounds such as capsaicin, carotenoids, ascorbic acid, essential oils, resin, and flavonoids. It is commonly consumed fresh or processed, often used as a flavor enhancer to increase the taste of dishes and provide high nutrition. Additionally, Cabai Rawit is widely used as a raw material in the food industry for sauces, chili powder, seasoning, and in the pharmaceutical industry.

Fertilization Follow-Up

After the initial fertilization, it's essential to add supplementary fertilizer approximately one month after planting Tiung chili, and then continuously after each harvest. You can use compost or organic fertilizer, or opt for liquid fertilizer. Add the liquid fertilizer, diluted at a ratio of 100 ml per plant. If using

compost, apply 500-700 grams per plant. Alternatively, if using NPK pearl fertilizer, mix one tablespoon of NPK pearl fertilizer with one liter of water, stir until dissolved. One liter of NPK pearl fertilizer solution can be used for six Tiung chili plants. Ensure that the plant stems do not come into contact with the fertilizer solution during watering, as this can stress or wilt the plants, or even cause them to die.

Pest and Disease Control

Tiung Chili plants are generally resilient against pests and diseases. However, it's important to anticipate potential issues before they occur. Upon transplanting Tiung chili seedlings, apply matador irrigation at a dosage of 0.5 ml per liter to prevent pests like soil caterpillars. If using a spraying device with a 15-liter tank, the dosage per tank would be 0.5 ml x 15, which equals 7.5 milliliters per tank.

Common pests found on Tiung chili plants include fruit flies, aphids, and leafhoppers, typically affecting the fruit. They can cause a disease called "patek" by implanting larvae

into the fruit, resulting in decay. To control this disease and protect the plant stems, apply topsin at a rate of approximately 3 ml per liter when the first fruit buds appear, with an interval of four days between applications.

Harvesting

Harvesting can be done at the age of 2.5-3 months from planting. Harvesting can continue until the Tiung chili plants reach 6 months or more, with the maximum age being 16 months. Beyond this age, the yield will decrease, and the quality will decline, making it economically unviable. With successful cultivation, yields of Tiung chili can reach up to 30 tons per hectare or even more. Harvesting is preferably done in the morning by picking the fruit along with its stem. Good-quality fruits are slim and dense. This type of fruit has a spicy taste and is highly valued in the market compared to other types of chili peppers. The harvesting of Tiung chili in Desa 3B Batu Balian yields varying weights each week, as shown in the table below.

Table 1. Average Yield of Tiung Cayenne Pepper Farming for One Month

No	Harvest Days	Average Weight (Kg)	Percentage (%)
1	7	38,25	30,35
2	7	34	26,98
3	7	27,75	21,42
4	7	26	20,63
Jumlah	28	126	100

From the table above, it is known that in the first week, the average yield of Tiung chili was 34 kg or 30.35%, in the second week, there was an increase in weight reaching 38.25 kg or 26.98%, and there was a decrease in the third week to 27.75 kg or 21.42%, and in the fourth week to 26 kg or 20.68%.

Financial Aspect of Tiung chili Farming

The cost components calculated and analyzed in Tiung chili farming for one planting season, which is 3 months, include production facility costs, equipment costs, land taxes, and labor costs.

Production Facility Costs

For a clearer understanding of the production costs in Tiung chili farming, please refer to the following Table 2.

Table 2. Average Production Facilities for Tiung Cayenne Pepper Farming in Village 3B Batu Balian

No	Cost	Description (Rp)	Percentage (%)
1.	Seeds	187.500	10,93
2.	Fertilizer	1.096.500	60,97
3.	Medicine	430.000	25,08
4.	Total	1.714.000	100

Production Facility Costs are calculated by multiplying the quantity of production inputs used by their respective prices. Production facility costs include the average seed

requirement of Rp187,500 per farmer, fertilizer costs averaging Rp1,096,500 per farmer, and medication costs averaging Rp430,000 per farmer. The percentage breakdown of these costs shows that seed expenses account for 10.93%, fertilizer expenses for 60.97%, and medication expenses for 25.08% of the total.

Depreciation Costs

As agricultural production tools depreciate over time, it is necessary to calculate the

depreciation costs of durable equipment, which involve assessing the reduction in the value of these tools each year. Depreciation costs depend on the initial value of the equipment, its economic lifespan, the residual value after the economic lifespan (considered as 0), and the effective working period of the equipment in Tiung chili farming. For further clarity, please refer to the table below.

Table 3. Average Equipment Depreciation Costs in Tiung Cayenne Pepper Farming in Village 3B Batu Balian

No	Cost	Description (Rp)	Percentage (%)
1.	Hoe	4.375	10,65
2.	Machete	1.375,00	3,34
3.	Spray	9.688	23,59
4.	Water Pump Machine	23.500	57,22
5.	Tray pot	2.125	5,17
	Total	41.063	100

Based on the data in the table above, the largest depreciation cost is attributed to the use of water pump machines, amounting to Rp. 23,500 per farmer.

External Family Labor Costs

In Tiung chili farming activities conducted by farmers during one planting season, external family labor includes land preparation, weeding, and harvesting. For

respondents no. 1 and 2, External Family Labor (EFL) consists of 3 individuals working for 2 days per harvest. Considering there are 4 harvests in one month, the calculation involves multiplying 3 days by the number of EFL used, and then by the number of harvests in one month. For further details, refer to the following Table 4.

Table 4. TKLK costs incurred during one harvest month

no responder	Harvest			Total
	One Harvest Month (Day)	Person	HKO	
1	8	3	60.000	1.440.000
2	8	3	60.000	1.440.000
3	4	1	60.000	240.000
4	8	2	60.000	960.000
Total	28	9	240.000	4.080.000
Average	7	2	60.000	1020.000

In the above table, the total harvest days in one month amounted to 4 harvests carried out by External Family Labor (EFL). The expenses incurred by Respondent Farmers no. 1 and 2 were Rp 1,440,000, Respondent no. 3 was Rp. 240,000, and the 4th respondent was Rp 960,000.

The management of this farming business involves production costs divided into two types: implicit costs and explicit costs.

Implicit costs are those not directly incurred but still considered, such as family labor, land rent, and interest on capital. Meanwhile, explicit costs are the actual expenses incurred in the business, such as external family labor, seed costs, land taxes, and equipment depreciation (Mubyanto, 2009).

Land Tax

Land tax depends on the area owned by farmers and the duration of its production. During the observation period, the applicable land tax was Rp 100,000/ha. Based on the above calculations, the average land tax cost for Tiung chili farming in 3B Batu Balian village amounted to Rp. 23,475.

Explicit Costs

Explicit costs refer to the total expenses incurred during one planting season, including equipment depreciation, land tax, External Family Labor (EFL), and agricultural inputs. For further details, refer to Table 5 below.

Table 5. Average Explicit Costs Incurred in Tiung Cayenne Pepper Farming in Village 3B Batu Balian

No	Cost	Description (Rp)	Percentage (%)
1.	Tool Depreciation	41.062,50	1,30
2.	Land Tax	23.475	0,74
3.	Saprodi	1.714.000	54,61
4.	TKLK	1.360.000	43,33
	Total	3.138.537,50	100

From Table 5, it is evident that the highest expenditure is on External Family Labor (EFL) at 54.61%, while the lowest is on land tax at 0.74%. Revenue is calculated by multiplying the total production by the prevailing price at that time. From interviews with all respondent farmers, the average total production was found to be 126 kg per farmer. Meanwhile, the total revenue in the first month on average was Rp. 4,662,000 per farmer.

During the research, the obtained price of Tiung chili was Rp. 37,000 per kg, and this price remained unchanged throughout the month.

Tabel 6. Rata-Rata Penerimaan Yang Di Peroleh Dalam Satu Bulan Panen

No	Harvest (kg)	Price (kg)	Revenue (Rp)
1	136	37.000	5.032.000
2	153	37.000	5.661.000
3	111	37.000	4.107.000
4	104	37.000	3.848.000
Total	504	148.000	18.648.000
Average	126	37.000	4.662.000

During the first week, the total harvest of Tiung chili by farmers was 136 kg with a

price of Rp 37,000 per kg, resulting in a revenue of Rp 5,032,000. In the second week, there was an increase in harvest to 153 kg, yielding a revenue of Rp 5,661,000. The third week showed a decrease with a weight of 111 kg and revenue of Rp 4,107,000, while in the fourth week, there was a harvest of 104 kg with revenue of Rp 3,848,000.

Income

Income is the result of subtracting total revenue from total explicit cost ($I=TR-TC$) incurred by farmers in the first month. The average income obtained by farmers in the first month was Rp 1,523,462.51 per farmer. The income from Tiung chili farming in Desa 3B Batu Balian is considered moderate, indicating that the cultivation of tiung chili peppers is viable and profitable. To increase income levels, there needs to be an improvement in cost efficiency and an increase in revenue (TR) through increased production output.

Revenue is the multiplication of total physical output by the unit price of production. The magnitude of revenue obtained, in addition to the costs incurred, will affect the revenue of a farming business. Additionally, consideration is given to the profit obtained from the use of production factors involved in the production process, whether it is profitable or not. Income is the difference between revenue and total explicit cost (the actual incurred cost). The income obtained by a farmer is the reward obtained by the farmer's family from the use of production factors, labor, and capital invested in the business.

CONCLUSION

The cultivation of Tiung chili in Desa 3B Batu Balian is already quite successful. The average production of tiung chili peppers obtained by respondent farmers in one production cycle is 126 kg per farmer. The average explicit cost in Tiung chili farming is Rp. 3,138,537.50. The average revenue obtained during one production cycle or

harvest is Rp. 4,662,000, and the total income obtained during one production cycle or harvest is Rp. 1,523,462.51.

Declaration by Authors

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