

ANALYSIS OF ECONOMIC ASPECT WITH IN SUSTAINABILITY FARMING OF CHRYSANTHEMUM GEMAH RIPAH FARMER GROUP AT SEMARANG REGENCY, INDONESIA

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ABSTRACT

This study aimed to analyze the stability of chrysanthemum prices, the contribution of chrysanthemum farming income to the total farmer household income, and the income risk of chrysanthemum farming. The study was conducted on October 2018 at the member of GemahRipah Farmer Group of Bandungan District, Semarang Regency, Central Java. Census was used as the research method. Thirty-one farmers who are members of GemahRipah Farmer Group and cultivating chrysanthemum chosen as respondents. Data analysis method uses price stability analysis, income contribution analysis, and income risk analysis. The results showed the value of coefficient variation (CV) of price was 49.55%, and this value indicates the price of chrysanthemum was classified as unstable because the price was called stable if it has a coefficient of variation between 10-30%. The average income from chrysanthemum farming was Rp. 7,851,521.61 / month on a land area of 1,168.55 m². Chrysanthemum farming income contributes 88% to total farmer household income, which means that income from chrysanthemum farming contributes very high. The coefficient variation of income was 39.43% indicates that income risk of chrysanthemum farmers was high because it has more than 30% of the coefficient variation.

Keywords: Chrysanthemum, Farmer, Income contribution, Price.

INTRODUCTION

The development of the population rapidly increases toward the increasing of daily needs. . (Mc Keown and Brown 1955; Sherbinin et al. 2007) Since art decoration develops for the community, florist needs also increase. Chrysanthemum flowers are included in the floriculture sub-sector of the horticulture sector. (Korthals Altes and van Rij 2013; Golban 2016) Chrysanthemum flower is one of the community's needs as an ornamental flower for decorating various kinds of events. Demand for chrysanthemums always increases from year to year. This condition provides a good opportunity for farmers or flower entrepreneurs to improve their quality and strengths. According to the Ministry of Agriculture (2014), the prediction of demand for chrysanthemum in Indonesia in 2014 until 2019 is from 39,435

tons, 45,683 tons, 51,931 tons, 58,179 tons, 64,427 tons, to 70,676 tons with an average growth of 12.40% per year. Increasing demand for chrysanthemum has the potential to increase the farmer's income.

The main challenge for the ornamental flower farmers such as chrysanthemum is that farmers have a weak position in determining prices as a result of inadequate market information and access so that income levels are more received by traders and other agribusiness actors in the downstream (Hayati, 2017). However, Ridwan et al. (2005) reported that chrysanthemum farmers still received a fairly high income. In a scale of farming of 2,237.5 m², farmer obtained a net income of Rp. 24,426,500.00 in 4 months or Rp. 73,279,500.00 annually.

Sustainable development of agriculture emphasizes several aspects in

its implementation, including ecological, economic, social, institutional, and technological aspects. (Erbaugh et al. 2019; Kanter et al. 2018) The economic aspect directly leads to the results received by farmers in the context of utilization to meet needs and achieve prosperity. (Benoît, Le Goff-Pronost, and Picard 2018; Xu 2019) Considering that one of the functions of the farmer group is as a production unit, the farmer strives for farming to achieve a profitable and sustainable economic scale (Hermanto and Swastika, 2011). The economic aspect is how farmers can generate income from the agricultural production process. (Tchalla 2018; Tran and Goto 2019)

There are nine parameters on the economic aspects (Alam 1990; Parry, Martorano, and Cotton 1976) that have a role in the sustainability of farming, included the stability of product prices, contributions to farmers' incomes, superior commodity crops, prices of commodity products, management of agricultural products, area of arable land, availability of marketing products, contributions to Regional Income, and the use of credit loans (Saida et al., 2011). The contribution of farm income to the total income of farmers and the stability of the selling price of crops, including attributes that are sensitive in economic aspects (Susilawati et al., 2013).

Chrysanthemum, including other ornamental plants, are widely cultivated by farmers. Chrysanthemums are cut flower which has the highest harvested area in 2016, about 1,091.42 hectares with a production of 433.10 million stems. Chrysanthemum export volume also increased from 59.62 tons to 60.65 tons. Bandungan Subdistrict was the largest contributor compared with other districts in Semarang Regency in 2016 in terms of harvested area (m²), production (stalk), and productivity (stalk/m²) for chrysanthemum, which has a harvest area of 1,184,500 m², production of 94,368,000 stems, and productivity of 80 stalks/m² (Central Statistics Bureau, 2016a).

Based on the harvested area and the volume of chrysanthemum exports recorded by the Central Statistics Bureau (2016b), chrysanthemum farming has a good opportunity to develop. However, farmers, in general, do not calculate in detail the farm business analysis (Jamalimoghaddam et al. 2019; Sivaraman, Krishnan, and Radhakrishnan 2019)

This study aims to analyze the stability category of chrysanthemum flowers; to analyze the contribution category of chrysanthemum farming income to the total income of farm households, and to analyze the risk of chrysanthemum farm income.

RESEARCH METHOD

The study located the Gemah Ripah Farmer Group in Clapar Hamlet, Duren Village, Bandungan District, Semarang Regency, Central Java and conducted in October 2018. The research method used was a census. The number of members of the Gemah Ripah Farmers Group was 37 farmers, but only 31 respondents were selected, who planted chrysanthemums.

Data analysis. The Ministry of Agriculture (2018) states that looking at price stability refers to the coefficient of variation as an indicator with good categories 10-30%, very good <10%, and not good > 30%. The vulnerability of farmers' income risk can also be measured by the coefficient of variation (Putri et al., 2017). Analysis of price stability and income risk data used refers to, as follows:

$$CV = \frac{s}{\bar{x}} \cdot 100\%; \text{ where}$$

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n-1}} \dots \dots \dots (1)$$

- CV = Coefficient Variation (%)
- s = Standard deviation
- x = Selling price (Rp)
- \bar{x} = Average of selling price (Rp)
- n = number of sample

Analysis of income refers to Pebriantari et al. (2016), as follows:

= TR – TC; where

$$TR = P \times Q \dots\dots\dots (2)$$

- = net income (Rp/harvest)
- TR = Total Revenue (Rp / harvest)
- TC = Total Cost (Rp / harvest)
- P = Production Selling Price (Rp / Tie)
- Q = Production (tie / harvest)

Farmer household income was calculated using the Patty (2010) formula:

$$Prt = Put + Plut \dots\dots\dots (4)$$

Where :

- Prt = Farmer's household income (Rp / harvest)
- Put = Income from chrysanthemum farming (Rp / harvest)
- Plut = Income from outside chrysanthemum farming (Rp / harvest)

Income contribution is how much of the partial farm income to the farmers household income which can be formulated as follows (Dewi and Qanti, 2018):

$$KR = \frac{Put}{Prt} \cdot 100\% \dots\dots\dots (5)$$

where:

- KR = Contribution of chrysanthemum farm income (%)
- Put = Income from chrysanthemum farming (Rp / Planting harvest)
- Prt = Total farm household income (Rp /harvest)

The contribution category of chrysanthemum farm income to the total farm household income can be classified into four categories (Harsati et al., 2016):

- a. Very low if the contribution of chrysanthemum farming income was less than 25% of the total farm household income
- b. Low if the contribution of chrysanthemum farming income ranged from 25% to 49% of the total farm household income
- c. High if the contribution of chrysanthemum farming income ranged from 50% to 75% of the total farm household income
- d. Very high, namely if the contribution of chrysanthemum farming income is more than 75% of the total farm household income.

RESULTS AND DISCUSSION

General Situation of Gemah Ripah Farmers Group. The GemahRipah Farmer Group located in Clapar Hamlet, Duren Village, Bandungan District, Semarang Regency. This farmer group has 31 chrysanthemum members. Most of them directly sell the chrysanthemum to the Bandungan traditional market. The location of the market situated on the main road in Bandungan Subdistrict and only 2.8 km from Dusun Clapar. As many as 90.32% or 28 farmers sell chrysanthemum to Bandungan traditional market, and three others sell to intermediaries who come to their land or house.

Chrysanthemum Prices. The price of chrysanthemums in one growing season recorded in Table 2.

Based on data analysis in Table 2, it is known that coefficient variation was 49.55%. It is indicated high and shows that the stability of chrysanthemum prices in the category was not excellent. Rachman (2005) stated that the coefficient variation of commodity price data in time series could be used to determine price stability. The smaller the coefficient of variation, the price of the commodity is relatively stable. Chrysanthemum price is affected by market demand. It is, however, not every month. The results of Pratomo and Andri's research (2013) indicated that in certain months, the need for chrysanthemum is low, but in other months, it will be very high. The demand for chrysanthemum in East Java generally increases in February, April, August, and December. Changes in prices in East Java have little difference with the development of prices in Central Java where price increases began on April, June, August, October, and December.

In January to March 2018, the price of chrysanthemum rose compared to the previous year, from Rp. 800.00 to Rp. 1,000.00 per stalk. Price differences also occurred in July to September where in 2017 the price of chrysanthemum was still

Rp. 1,000.00 per stalk, but in 2018 it reached Rp 1,500.00 per stalk. In October to December 2017 and 2018 chrysanthemum prices are always at the peak position compared to previous months. The demand for chrysanthemums increased for various reasons. For example, weddings, Christmas, and new year. Yeginugraha et al. (2017) state that chrysanthemums are ornamental plants that produce flowers that are usually

bought by consumers for decorations. The price of chrysanthemum is more influenced by market demand compared to the amount of supply from farmers. Andri (2013) explained that sometimes farmers lack supply when the need for chrysanthemum is very high. In contrast, when the market falls, sometimes farmers have difficulty in selling their products, which causes prices to fall.

Table 1. Characteristics of Respondent Farmer Households in Chrysanthemum Flower Farming

Description	Number of people	Percentage (%)
The average age of the farmer		
< 30	3	9.68
30-39	10	32.26
40-49	9	29.03
50-59	4	12.90
> 59	5	16.13
The average number of household members (people)		
2	4	12.90
3-4	20	64.52
5	7	22.58
Average land area (m ²)		
1.050	21	67.74
1.051-1.750	5	16.13
1.751	5	16.13
Average farming experience (years)		
< 6	7	22.58
6-10	14	45.16
> 10	10	32.26
Total	31	100.00

Source: Primary Data Processed, 2018.

Table 2. Prices and Risks of Chrysanthemum Prices in Bandungan District.

Month	Year	Price (Rupiah/stalk)
January – March	2017	800
April – June	2017	1.000
July – September	2017	1.000
October – December	2017	2.500
January – March	2018	1.000
April – June	2018	1.000
July – September	2018	1.500
October – December	2018	2.500
Standard deviation		699,87
Average		1.412,50
CV (%)		49,55

Source: Primary Data Processed, 2018.

Table 3. Production in one growing season

Kind	production (stalk)	Percentage/BussinessUnit (%)
Sheena (<i>Chrysanthemum morifolium</i> var. <i>sheena</i>)	8,392	26.08
Remix (<i>Chrysanthemum morifolium</i> var. <i>remix</i>)	5,356	16.64
Bacardi (<i>Chrysanthemum morifolium</i> var. <i>rhino white</i>)	6,560	20.39
Puspita Nusantara (<i>Chrysanthemum morifolium</i> var. <i>towntalk</i>)	6,705	20.84
Lamet (<i>Chrysanthemum morifolium</i> var. <i>yellowfiji</i>)	5,164	16.05
Total	32,177	100,00

Source: Primary Data Processed, 2018.

Table 4. Production Costs and Chrysanthemum Flower Farmer Income.

Cost	Rata-Rata (Rupiah/MusimTanam)
Fixed costs (FC)	
Cost of depreciation	4,001,026.98
Property tax	20,677.42
Land rent	221,505.38
Variable Cost (VC)	
Seedling	6,754,838.71
Fertilizer	1,139,641.94
Pesticide	759,338.71
Newspaper	685,774.19
Isolation	34,258.06
Electricity	451,161.29
Transportation	25,709.68
Maintenance	78,494.62
Bamboo greenhouse	
Irrigation	10,000.00
Employer	5,769,193.55
Total cost (TC)	19,951,620.53
Production (Stalk)	32,177.00
Receipt (TR)	52,091,935.48
Net income ()	31,406,086.43

Source: Primary Data Processed, 2018.

Chrysanthemum Production. Chrysanthemum production period was four months. The average chrysanthemum production in one growing season is shown in Table 3.

Based on the data analysis in Table 3, there were five production variations based on the type of chrysanthemum planted by farmers. Sheena had a high

percentage compared to other kinds of chrysanthemums, which was 26.08%. Farmers planted Sheena compared to other since more preferred by consumers. The result of this study was in line with the results of Maghfira et al. (2017) in the villages of Duren and Kenteng, Bandungan sub-district, Semarang Regency. Sheena

more often has a higher selling price than other types of chrysanthemum flowers.

Production Costs and Farmer's Household Income. Production cost and income from chrysanthemum farming in one growing season are shown in Table 4.

Based on data analysis, it is known that the average net income of chrysanthemum farming () was Rp. 31,406,086.43 per harvesting or four months earned from revenue reduced by total production costs. Watering land obtained by farmers from the mountain water. Irrigation costs in Table 4 were the cost of maintaining the supply of water from the mountain. Each farmer paid 10,000.00planting season. The farmers who employed labors to manage their land provide a wage of Rp. 60,000.00 daily within 8 hours working time.

Total farmer household income will be used to meet family needs. The whole household income of chrysanthemum farmers can be seen in Table 5 as follows.

The average income of Gemah Ripah Group was Rp 7,851,521.61 per month. It is indicated a high value compared to the research of Maghfira et al. (2017), which conducted on December 2016.

There was a time difference that caused the price difference. Additionally, the selling price of chrysanthemum in December 2016 was down to Rp 600.00 to 1,200.00 per stalk.

Sixteen of the 31 chrysanthemum farmer households also had a side job. Therefore they can generate other income, for instance, from goat breeders, leek farmers, lettuce farmers, celery farmers, and sources of income from non-farming, namely having rice millers, musicians, carpenters, and entrepreneurs. The average income from chrysanthemum farming was about 88%. It contributes to the total household income of chrysanthemum farmers. The average income of the farmers classified as very high. It can be said that farmers rely on chrysanthemum farming, as their primary occupation, have a significant role in fulfilling their lives and family needs. According to Sugiarto (2012), the source of income that requires more time and as the most significant incomes is considered as the main income. The results of this study, in term of high income of the farmer, differ from those of Maghfira et al. (2017) where the contribution of chrysanthemum farming income to the total household income of 59.34%, and the average of non-farm chrysanthemum non-farm income was Rp 5,681,896.00. This study found smaller income of the farmer, which was about Rp 1,604,019.53 . Harwood et al. (1999) explained that farmers would seek income from outside their farming to face the fluctuations in income.

Table 5. Total Revenue of Chrysanthemum Farmer Households.

Source of Income	Total (Household)	Average income (Rp/Month)
Chrysanthemum farming	31	7,851,521.61
Goat farming	2	347,052.08
Lettuce farming	2	490,645.83
Leek farming	1	429,833.33
Celery farming	1	719,083.33
Not a farming business	12	1,570,000.00
The average income outside chrysanthemum farming		1,604,019.53
The average farmer household income		8,679,402.66
The average contribution of chrysanthemum farming (%)		88.00

Source: Primary Data Processed, 2018.

Table 6. Risk Of Income For Chrysanthemum Farmers In The Gemahripah Farmer Group.

Income	Value
Standard deviation	2,744.34
Average	6,959.50
CV (%)	39.43

Source: Primary Data Processed, 2018.

Risk of Chrysanthemum Flower Farming Income. Revenue risk is a deviation between the real income obtained by farmers and the income expected by farmers and can be analyzed with the coefficient of variation. The risk of income from chrysanthemum farming in one growing season is shown in Table 6.

Based on Table 6, it is known that the coefficient variation was 39.43%. CV values of more than 30% indicate the risk of chrysanthemum farm income is relatively high, or it can be said that its stability is not excellent. According to Darmawi (2004), the stability of farm income is low due to the tremendous variation value. The results of this study in line with the results of the research of Aditya et al. (2017). They studied water hyacinth flower farming, which also has a high coefficient of variation, which had CV by 57% and 50% in the rainy season and dry seasons respectively.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion.

Based on the results of the study, the stability of chrysanthemum prices was relatively not good enough with a coefficient of price variation of 49.55%. The average income of chrysanthemum farming was Rp 7,851,521.61/month/1,168.55 m². The income from chrysanthemum farming contributed 88% of the total income of farmers' households. It means that the income from chrysanthemum farming gave a very high contribution. The coefficient variation value of the income of 39.43% indicated that the risk of chrysanthemum farmer income was high or income stability is not good.

Suggestion.

Based on the above conclusion, we suggest that innovation or breakthrough should be made regarding chrysanthemum marketing efforts. It is to overcome prices and sales levels in certain months that have declined demand, such as holding cooperation with government agencies, restaurants, hotels first. Further, the income risk will decrease, so that chrysanthemum farming increasingly becomes a commodity that is continuously promising.

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