

Study of Horticultural Farming Income in Women Farmers Group, Kedung Halang Village, North Bogor District, Bogor City, West Java Province

Anak Agung Eka Suwarnata^{1*}, Agista Rosiana², Nia Sonani³

^{1,2}*Agribusiness/Faculty of Agriculture, University of Nusa Bangsa, Bogor, Indonesia*

³*Management/Faculty of Economics, University of Nusa Bangsa, Bogor, Indonesia*

**Corresponding author: 1985.agungeka@gmail.com*

Abstract. *The purpose of this study was to analyze the income and efficiency of horticultural farming in the Gemilang Women Farmers Group, Kedung Halang Village, with commodities of kale, caisim, and spinach, banana, papaya and avocado, as well as medicinal plants, namely red ginger. The analysis used in this research is the analysis of farm income, R/C ratio analysis, and analysis of B/C (Benefit and Cost) ratio. Primary data were obtained directly by interviewing the Women Farmers Group (KWT) and supported by secondary data from the literature. The research found that KWT Gemilang's revenue from cash costs was IDR 1,732,389.00, income IDR 1.214.789,00 per year with an arable area of 200 m², with the results of the R/C ratio for cash costs 3.35 and B/C ratio for cash costs 2.35. This means that the KWT Gemilang horticultural farming activities are still feasible to be continued or developed. In order to develop KWT Gemilang, it is recommended that there should be training on good farming records, additional production, as well as digital marketing training for horticultural commodities to increase KWT income.*

Keywords: *farming, horticulture, income*

1. INTRODUCTION

The population / population, especially in urban areas around the world, is estimated to continue to increase from 55% in 2018 to 68% in 2050 (Nations, 2018). The increase in population in urban areas will have positive and negative impacts on natural resources on earth, one of which is land resources. Land, especially in urban areas, has changed its function from agriculture to housing or industry. This certainly has an impact on decreasing agricultural production and affects food security. On the other hand, the need for food is increasing. Food problems in urban areas are not only related to land, but other factors also influence, one of which is the spread of disease / viruses. We know that in April 2020, the whole world is experiencing a food crisis. A report estimates that the number of people suffering from hunger could jump from 135 million to 250 million according to the World Food Program (WFP) (BBC, 2020).

In this case, the population, government, and farmers in urban areas need to pay attention to the function of food supply for urban communities, so that urban agriculture is considered very important. Producing high quality agricultural products in densely populated areas and polluting environments, is a major issue related to urban agriculture (De Bon, Parrot, & Moustier, 2009).

Bogor, one of the cities in Indonesia, is one of the centers for horticultural commodities. Bogor City Government has a special role in the development of horticultural crops. Therefore, the role of farmer groups in urban areas is very much needed in the development of horticultural commodities because as the population

increases, it is estimated that the demand for horticultural commodities will increase.

One of the women farmer groups in Bogor City that is active in horticultural farming is the Gemilang Women Farmer Group. During the course of their business, this group experienced several obstacles, including capital, labor, and pandemic conditions. This has not diminished the business spirit of this group, so that it is still surviving. It is interesting to study, therefore, the analysis of the income, efficiency, and farming feasibility of this group needs to be known.

2. LITERATURE REVIEW

2.1 Urban Agriculture

Rural Urban Agriculture Foundation (RAUF) in 2008, states that the definition of urban agriculture is agricultural activities that are found in and around cities. The most striking difference between urban agriculture and rural agriculture is the integration of urban economic systems and urban ecosystems. This integration can be seen from the existence of the urban poor as labor, the use of urban resources (sub-optimal land as agricultural land, urban wastewater for watering crops, and organic waste for compost,) directly related to consumers (urban people), has a direct impact on urban ecology (both positive and negative), is part of the urban food system, competition for land with other urban functions, is influenced by urban planning and policies, etc. (RAUF, 2008).

Urban agriculture describes the growth of plants and animals in and around cities and involves activities such as the production, processing, shipping and marketing of agricultural products. Urban fabrics can comprise different types of urban and suburban farms depending on the spatial (e.g., rooftop gardens and indoor farms), the actors involved (e.g., family farms and community-supported agriculture), and organizational perspectives (e.g., market orientation including urban farming or subsistence activities such as urban gardening) (Artmann M., 2020).

2.2 Farmer Women Groups (Kelompok Wanita Tani/KWT)

One of the government programs that aims to help realize the welfare of farmers is by rolling out the Women Farmers Group (KWT) program, where the goal is to further enhance and develop the ability of farmers and their families as subjects of agricultural development through a group approach to play a more role in development. (Pertanian, 1990).

Through the formation of a forum / organization for Indonesian female peasants, the forms of women's roles in development have been outlined in the hope that their roles in development can increase. Women not only act as housewives in the world of agriculture, but many women play a role or make a real contribution to the business run by their family. In fact, about 50 percent of women farmers, besides working at home as housewives, also work in the fields or in the fields and even open their own jobs by joining the Women's Farmers Group (KWT). This is done because they hope that with the role or involvement of women farmers, the amount of business productivity will increase (Soetrisno, 1997).

2.3 Farm Management

Farm management, making and implementing the decisions involved in organizing and operating a farm for maximum production and profit. Agricultural management refers to the agricultural economy for information on prices, markets, agricultural policies, and economic institutions such as leasing and credit. It also refers to plant and animal science for information on soil, seeds, and fertilizers, on control of weeds, insects, and disease, and about ration and breeding; on agricultural engineering for information on agricultural building, machinery, irrigation, crop drying, drainage, and erosion control systems; and psychology and sociology for information about human

behavior. In making his decisions, an agricultural manager integrates information from the biological, physical, and social sciences (Bliss, 2017).

2.4 The Concept of Efficiency of Food Farming and Its Implications for Increasing Productivity

The main problems faced in the development of farming are the unrealized quantity, quality, variety, and continuity of supply of various agricultural products in accordance with the dynamics of market demand. In connection with these problems, efforts to increase agricultural productivity can be done by increasing new technology and efficiency. The results of a review of empirical studies on the achievement of technical efficiency (TE) of food farming in Indonesia are moderate to high (0.50-0.80), which indicates that the farming of several commodities is not yet fully technically efficient. Meanwhile, the level of allocative efficiency (AE) of several food farms ranged (0.45-0.70) and economic efficiency (EE) ranged (0.35-0.60), at low to moderate levels. Arable area variable, household income variable, household formal education variable, and household experience variable in farming are socio-economic factors that affect to reduce technical inefficiency in food farming. Efforts to improve farming efficiency can be done by changing farming from traditional farming to industrial culture, then it must lead to farming that is driven by scientific and technological innovation, as well as adequate and skilled human resources. (Saptana, 2016).

3. RESEARCH METHODS/METHODOLOGY

The research was conducted at the Gemilang Women Farmers Group (KWT), Kedung Halang Village, North Bogor District. The research location was chosen deliberately (Sugiyono, 2011) based on the consideration that the group has been working on horticultural commodities for eight years. The research period was from September to November 2020, with the consideration that researchers obtained data related to farm income during the COVID-19 period.

This research is included in the type of quantitative research with survey techniques, which have variable cash costs, total cash costs, receipts, and KWT Gemilang income. Data were collected using survey techniques, interview observation, and documentation study directly to the farm location using a questionnaire (Sugiyono, 2011). The data were processed using descriptive qualitative and quantitative methods. Data processing was assisted by Microsoft Excel 2010 software and a calculator. Farmers' income is measured using farm income analysis, while efficiency analysis is measured by R / C Ratio. The value of R / C theoretically shows that every one rupiah of costs incurred will get revenue, if $R / C > 1$ then farming activities are efficient to operate, if $R / C < 1$ then farming activities are not efficient to operate (Soekartawi, 1984). Meanwhile, for the feasibility analysis of group horticulture farming, the Benefit cost ratio was used (Gittinger, 2008). With an indication of $B/C \text{ Ratio} > 1$ the business is feasible to run, if the $B / C \text{ Ratio} = 1$ the business breaks even, and the $B / C \text{ Ratio} < 1$ is rejected because it is not profitable.

4. RESULTS AND DISCUSSION

The results showed that the Gemilang women farmer group in the city of Bogor cultivated more than one crop on the same land for one year (multiple cropping). Horticultural crops produce vegetables such as kale, caisim, and spinach. Horticultural production of fruit types in the form of bananas, papayas and avocados, and production of family medicinal plants is red ginger. The land used specifically for horticultural crops is approximately 200 square meters.

Production and Revenue

The Woman Tani Gemilang group produces kale per harvest season or 27 planting days of 2,250 grams or approximately 5 bunches with an average weight of 300 grams per bunch and an average weight per plant of water spinach is 40 grams. Water spinach is sold for IDR 3,000 per bunch. The results of the calculation per year, obtained a harvest of 14 times with a total production of approximately 20,278 grams or approximately 68 bunches. If it is assumed that the selling price of water spinach is IDR 3,000 per bunch, then in a year the Gemilang Women Farmers Group will receive an income of IDR 202,778.00.

Caisim products, produced by the Gemilang Women Farmers Group during the growing season or 45 days are 1,050 grams, with an average plant weight of 90 grams, or approximately only 3 bunches of production with an average weight per bunch of 350 grams. If calculated per year, caisim production is only 8 times a year with a yield of 8,517 grams or approximately 24 bunches. Caisim is sold for IDR 4,000 per bunch, so the revenue from caisim is IDR 97,333.00. Spinach with a planting period of 20 days per season, for a year, you get 18 harvests and produce 27,300 grams of spinach, or about 91 bunches are sold at a price of IDR 3,000 per bunch. The Gemilang Women Farmer Group receives IDR 273,750.00 per year.

Production of fruit, namely bananas with a harvest that is not much only 6 combs, and counted only three times a year with an estimated yield of 18 banana combs. Per comb, bananas are sold for IDR 11,043.00, so that the sales revenue of bananas is IDR 201,528.00. Papaya fruit, harvest approximately 24 times a year, with an average yield of 4 papayas, then in a year you get 96 fruits. Papaya is sold at IDR 7,000 per piece, so that in a year the group's income is IDR 672,000. Furthermore, there is avocado, with a harvest once a year, yields 3 kilos, with a selling price of IDR 40,000, so the group receives IDR 120,000. The horticultural type of medicinal plant that has been sold is only 11 kilograms of red bean in the past year. Red ginger is sold at a price of IDR 15,000 per kilogram, so the farmer group receives a yield of IDR 165,000 per year.

Furthermore, the cash cost incurred by farmer groups in horticultural farming is the purchase of kale, caisim, and spinach seeds in a year worth IDR 38,500.00. Cash expenditures for purchasing 50 kg of manure for a year are valued at IDR 184,100.00, for the purchase of 5 kg of roasted husks worth IDR 20,000. Cash expenditure for labor, the group only pays cash to cultivate the land with a standard labor wage of IDR 55,000 per 6 hours worked. Special soil cultivation for horticultural crops is carried out five times a year, with a total value of IDR 275,000.00.

Farm Income Analysis

The analysis of farm income is a quantitative description of the income received by farmers from farming (Soekartawi, 2016). Analysis of horticultural farming income in the Gemilang Women Farmers Group in Bogor consists of two calculations, namely cash income and total horticultural farming income in one year. Cash income is obtained from horticultural farming receipts minus cash costs in horticultural farming. After calculating, the total cash cost of horticultural farming in the Gemilang Women Farmer Group is IDR 517,600.00, per year and the total revenue per year is IDR 1,732,389.00. Based on the calculation of the total cost and revenue, the results of the calculation of group farm income are IDR 1,214,789.00 per year.

Efficiency and Feasibility Analysis of Horticultural Farming

The ratio value between the amount of cash receipts and the total cash costs illustrates the measurement of the efficiency of each farm against each use of one input unit. The results of the analysis of the efficiency and feasibility of horticultural farming in the Gemilang women farmer group can be seen in Table 1.

Table 1. The results of the analysis of R / C and B / C ratio of horticultural farming of the Gemilang Women Farmers Group in 2020

Number	Description	Value (IDR/years)
1.	Acceptance of horticultural farming	1.732.389,00
2.	Total cash costs for horticultural farming	517.600,00
3.	Horticultural farming cash income	1.214.789,00
4.	R / C ratio over horticultural cash costs	3,35
5.	B / C Ratio over horticultural cash costs	2,35

Source: processed from 2020 primary data

In Table 1, it can be explained that the R / C value of the farming ratio is 3.35, which means that every KWT in Bogor issued IDR 1,000.00 will receive IDR 3,350.00 in revenue. This means that horticultural farming at KWT Gemilang in Bogor is efficient to run because the targeted input compared to the actual input is greater or equal to one (Soekartawi, 1984). While the feasibility of farming seen from the value of B / C ratio is 2.35 which means the business is feasible to operation.

In order to develop farming in KWT Gemilang, it is suggested that there should be training on good farming records, additional production, and training on digital marketing of horticultural commodities to increase KWT income.

CONCLUSION

Based on the results of the research, it is concluded that the cash income of horticultural farming at KWT Gemilang is worth IDR 1,214,789.00 per year. The results of the R / C analysis of the farm ratio is 3.35 which means this means that horticulture farming at KWT Gemilang in Bogor is efficient to run because the targeted input compared to actual input is greater or equal to one, while the feasibility of farming is seen from the B / C value. the ratio is 2.35 which means the business is feasible.

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