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Implementation of Financial Management in Garlic Farming: Case Study of Garlic Farmers in Cipendawa Village, Pacet, Cianjur, West Java

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Abstract

Efficient farming is farming with high productivity. This can be achieved if the management of the farm is managed properly. Thus, it is hoped that the results of farming will increase significantly. This research aims to analyze the implementation of financial management in garlic farming. The research was conducted in Cipendawa Village, Pacet, Cianjur, West Java from March to May 2021. The respondents interviewed were 13 garlic farmers. The data then were analyzed by income analysis and calculation of the R/C ratio. The results showed that the largest average income was the garlic farming business with an intercropping pattern of Rp. 33,903,475. Meanwhile, R/C ratio in garlic farming with an intercropping pattern (2.17) is larger than that in cropping pattern monoculture (1.71). It indicated that garlic farming using an intercropping pattern was more profitable than a monoculture cropping pattern.

Keywords
garlic farming; income analysis; R/C ratio; cropping pattern; intercropping pattern

I. Introduction

The handling of agribusiness activities, starting from business planning, providing facilities and infrastructure, cultivating plants, to handling the results and marketing, should be carried out in an integrated and mutually supportive manner. Therefore, the good corporate governance can summarize the factors of nature, capital, labor, and technology with the factors of facilities and infrastructure, as well as marketing (Rahardi et al., 2003).

Marketing is a process of planning and execution, starting from the conception stage, pricing, promotion, to the distribution of goods, ideas and services, to make exchanges that satisfy the individual and his institutions (Dianto in Asmuni *et al*, 2020). According to Tjiptono in Marlizar (2020) marketing performance is a function that has the greatest contact with the external environment, even though the company only has limited control over the company's environment. In the world of marketing, consumers are assets that must be maintained and maintained their existence in order to remain consistent with the products we produce (Romdonny and Rosmadi, 2019).

Horticulture plays an important role in the agricultural sector and the national economy which can be seen from the value of Gross Domestic Product (GDP). The GDP contribution of this sector increased significantly from IDR 110.4 trillion in 2015 to IDR 123.2 trillion in 2020 (Center for Agricultural Data and Information Systems, 2020). In addition, the need for garlic never subsides, but always increases according to population growth as the factor that most determines the amount of garlic demand. Based on the Food Consumption on Bulletin of the Ministry of Agriculture (2021), the population in Indonesia in 2017 was 261.4 million people where the garlic consumption reached about 298,660 tons. However, in 2020 the population in Indonesia was 264.1 million people, in

which the garlic consumption was estimated around 301,867 tons. This phenomenon explains that the consumption of garlic in Indonesia has increased steadily, along with the growth of population.

There are several locations that have been designated by the Ministry of Agriculture, which can be seen through the presence of suitable areas for garlic cultivation, and also the existence of garlic farmers, that all contributes to the added values of farming. The locations reside in several areas including Bali & Nusa Tenggara, Java, and Sumatra. Based on the 2021 Central Statistics Agency database, the production of garlic in West Java occupied the third position after West Nusa Tenggara (10,245 tons) and Central Java (6,043 tons), with a production of 1,395 tons, in which Regency of Cianjur was the biggest garlic suppliers within West Java province. Therefore, based on the background, we want to conduct financial analysis in garlic cultivation in Cipendawa Village, Pacet, Cianjur, West Java.

II. Review of Literature

2.1 Farm Income Theory

The amount of income that will be obtained from a farming activity depends on several factors such as land area, production level, entrepreneur identity, planting, and efficient use of labor. In carrying out farming activities, farmers hope to increase their income so that their daily needs can be met (Suratiyah, 2008).

According to Daniel (2002) productivity is nothing but a conception of business efficiency (physical) with land capacity. Physical efficiency measures the number of output obtained from a given input unit. Meanwhile, land capacity is the ability of the land to absorb labor and capital to produce results. In agricultural economics, it does not only take into account the productivity of a farm (i.e. physical productivity) but also has to consider the economic factors.

Increased profits can be achieved by farmers by doing their farming efficiently (Daniel, 2002). This efficient concept is known as the concept of technical efficiency, price efficiency, and economic efficiency. In economics, this way of thinking is called the profit maximization approach. Farming income consists of gross income and net income. Gross farm income is defined as the total value of farm production within a certain period of time, while net farm income is defined as the difference between the gross farm income and farm expenses.

In principle, farm income is the amount of benefits received by farmers which is calculated based on the value of production minus all types of expenditure used for production (Soekartawi, 2006). For this reason, it is influenced by the amount of production costs, maintenance costs, post-harvest costs, as well as the value of production and distribution. It can also be interpreted as remuneration received by farmers as a result of the combination of production factors in farming. Technically, farm income is calculated from the reduction between the total cost of revenue and the total costs incurred in the production process.

2.2 Production Factors in Farming

According to Suratiyah (2008), there are five main elements in farming which are often referred to as factors of production, namely as follows:

a. Farm Land

Farm land can be in the form of yard land, dry fields, and rice fields (Suratiyah, 2008). The land can be obtained by clearing the land itself, buying, renting, profit sharing, state grants, inheritance or waqf. Land use can be cultivated in monoculture or polyculture or intercropping.

b. Labor

The type of workforce is divided into male, female and child workers which are influenced by age, education, skills, experience, health level and natural factors such as climate and land conditions (Suratiyah, 2008). This workforce can come from inside and outside the family (e.g. usually by means of wages).

c. Capital

In farming, capital is an economic good that is used to earn income and to maintain the income of the farming family (Suratiyah, 2008). Capital in farming is used to buy production facilities and expenses during farming activities. Sources of capital are obtained from own property, loans or credit (e.g. bank credit and moneylenders/family/neighbors), gifts, inheritance, and other businesses or rental contracts.

Capital is goods or money which together with other production factors (i.e. land and labor) produce goods in the form of agricultural production. The capital can be divided into two characteristics, among others (Suratiyah, 2008):

1. Fixed capital is goods that are not used up in one production, such as agricultural equipment, buildings, which are calculated for maintenance and depreciation costs per growing season.
2. Movable capital is goods that are immediately used up in the production process, such as seeds, fertilizers, medicines and so on.

d. Farm Management

Farm business management is the ability of farmers to determine, organize and coordinate the production factors under their control, as well as to provide agricultural production as expected (Suratiyah, 2008). An introduction to an understanding of technical and economic principles is necessary to become a successful manager. The technical principles include: (a) the behavior of the decided business branch; (b) technological developments; (c) the level of technology mastered and (d) cultivation methods and other alternative methods based on other people's experiences. Economic principles include: (a) determining price developments; (b) a combination of business branches; (c) marketing of results; (d) farm business financing; (e) the classification of capital and income as well as reflected in the decisions taken so that the risk is highly dependent on:

e. Production

Production is the result of physical production, which is obtained by farmers from farming results, in one growing season and is measured in Kg per hectare per season, specifically for the type of plant being cultivated (Suratiyah, 2008). The production can also be expressed as a set of procedures and activities that occur in the creation of commodities in the form of farming and other business activities.

III. Research Method

This research was carried out from March to May 2021 in Cipendawa Village, Pacet District, Cianjur Regency, West Java Province. The population is the total number of garlic farmers who are members of the Farmer Group Association (Gapoktan) of Multi Tani Jaya Giri. Multi Tani Jaya Giri have 5 farmer groups, namely Jaya Lestari, Giri Lestari, Muda Mandiri, Bina Muda Lestari, and KWT Indah Jaya farmer groups. The selection of farmer groups is done purposively. Of the 5 farmer groups, only 2 farmer groups were selected, namely the Jaya Lestari and Giri Lestari farmer groups as they had been doing garlic farming for more than two years. Sampling was carried out randomly and a sample of 13 farmer respondents who carried out garlic farming either in monoculture or intercropping.

The primary data obtained were first tabulated, then a qualitative descriptive analysis was performed. The sample farmers were divided into three subgroups based on the type of cropping pattern, namely farmers who intercropped garlic with tomatoes and chilies, and farmers who cultivated garlic with monoculture cropping patterns.

The collected qualitative analysis is grouped and compiled, while the quantitative data is analyzed using farming analysis including variable costs and fixed costs to determine the total production costs (TC), so that the farming income is obtained through the difference between total production costs and total revenues (TR) as well as the share between revenue and production costs to get the R/C ratio.

IV. Results and Discussion

Farming costs are all costs incurred during farming. These costs include variable costs and fixed costs. Variable costs are costs whose amount is constantly changing in line with business developments, namely the procurement of seeds, fertilizers, drugs/pesticides, and labor, while fixed costs are costs that are relatively in number even though the production obtained is large or small, in other words the amount of these fixed costs does not depending on the size of the production obtained. In this study, the fixed costs incurred by farmers consist of tax costs, equipment depreciation, and equipment rental (Nurrohmah, 2016).

Table 1. Comparison of Fixed Costs in Garlic Farming with Monoculture and Intercropping Patterns

Fixed Cost (FC)	Pattern	
	Monoculture	Intercropping
	Value (Rp)	Value (Rp)
Land Tax	100,000	100,000
Tool Depreciation Cost	1,942,089	1,457,324
Land Rental Fee	5,500,000	5,442,857
Equipment Rental Fee	1,250,000	1,250,000
Amount	8,792,089	8,250,199

Source: Author's calculation (2021)

Based on the table 1, the average fixed cost (FC) per 1 ha of monoculture cropping pattern is IDR 8,792,089, while for the intercropping pattern is around IDR 8,250,199. Of the average total fixed costs above the monoculture cropping pattern has the largest fixed

cost due to a large depreciation in equipment costs and a large appreciation in land rental costs. For monoculture cropping patterns, equipment depreciation costs are related to hand sprayer equipment, machines and compressors which all have the shorter of economic life. Meanwhile, in the case of tool depreciation in the intercropping pattern, the farmers have agricultural equipment which has fewer items than monocultures, so the depreciation cost is low and has a relatively long economic life. The land rental costs are much cheaper than in the monoculture cropping pattern because the more easily accessible land by vehicles, the more expensive the rental price.

Table 2. Comparison of Variable Costs in Garlic Farming with Monoculture and Intercropping

Variable Cost (VC)	Cropping Pattern	
	Monoculture Value (Rp)	Intercropping Value (Rp)
Total Seed Cost	2,687,981	5,543,727
Total Fertilizer Cost	2,169,275	5,622,698
Total Pesticide Cost	994,426	2,556,453
Total Labor Cost	2,126,321	3,490,167
Amount	7,978.004	17,213,045

Source: Author's calculation (2021)

The average variable cost for a monoculture cropping pattern is IDR 7,978.004 while for intercropping pattern is IDR 17,213,045. Of the total variable costs, farming with intercropping pattern has the largest variable cost due to the large cost of fertilizer, pesticide and labor costs. Seed is the main factor to start farming activities. The number of seeds used has an effect on the level of income obtained. The garlic seeds used at the research location were green lumbu, yellow lumbu, sangga sembalun and tawangmangu while for chili seeds the farmers at the research location used green cayenne pepper, dry red chili, curly red chili and large red chili. Based on table 2 the average cost of seeds in the intercropping pattern is higher by IDR 5,543,727 compared to a monoculture cropping pattern of IDR 2,687,981.

Fertilizer is a source of nutrition for all types of plants. The fertilizers used consist of organic fertilizers and chemical fertilizers. Organic fertilizers commonly used are manure and compost. The manure used comes from farmers who sell manure around the research area. Chemical fertilizers used in garlic and chili farming consist of urea, NPK, Phonska, KCl, and TSP fertilizers. Based on table 2, the average cost of fertilizer in the intercropping pattern was IDR 5,622,698 compared to the monoculture cropping pattern of IDR 2,169,275. This is because the intercropping pattern requires large amounts of fertilizer.

Meanwhile, the average pesticide cost for intercropping is IDR 2,556,453 while for monoculture is IDR 994,426. Farmers with intercropping patterns use more pesticides to control pests and diseases on garlic and chili plants. Pests and diseases attack on garlic and chili plants with different times and types, this causes the use of pesticides in intercropping patterns to be more than the use of pesticides in monoculture cropping patterns.

Labor is one of the factors of production that will determine the success of farming. Labor in the farming process can be obtained from the workers of the farmer's own family or workers from outside the family. The majority of farmers in the research location

employ workers outside the family from their neighbors and other villages. Based on Table 2, the average labor cost for the intercropping pattern is IDR 3,490,167 while the monoculture cropping pattern is IDR 2,126,321. The intercropping pattern has a higher labor cost than the monoculture cropping pattern because in the cultivation process the former is slightly different from the monoculture cropping pattern. The number of workers and the amount of working time in the intercropping pattern is much greater than the monoculture cropping pattern.

Farming revenue is the product of the production in one growing season obtained with the prevailing price. The amount of farmer income is influenced by the production obtained and the prevailing price (Yasa & Hadayani, 2017). Based on the results of the research, the selling price of garlic at the time of the study for the price of wet garlic was IDR 10,000 per kilogram, the price of dry garlic for 2 (two) months was IDR 18,000 per kilogram, and the price of dry garlic for 4 (four) months was IDR between 40,000 and IDR 45,000.

Table 3. Comparison of Revenue on Garlic Farming with Monoculture Cropping Patterns and Intercropping Patterns

	Cropping Pattern Total Receipts (TR)	
	Intercropping Value(Rp)	Monoculture Value (Rp)
Garlic	29,277,917	23,868.030
Chilli	0	21,861,243
Amount	29,277,917	45,729,029

Source: Author's calculation (2021)

From Table 3 it is known that the average yield of monoculture cropping patterns is IDR 29,277,917 while for the intercropping pattern is IDR 45,729,029. Intercropping pattern is the biggest yield. This is because in garlic farming with an intercropping pattern, farmers get additional income from chili plants, which at that time were relatively good prices and supported by good weather conditions so that production was optimal. Most farmers with an intercropping pattern directly sell garlic in a wet state, because the farmers do not want to carry out a drying process that requires no small amount of money.

Income analysis in this study is used to determine the amount of income obtained by respondent farmers of garlic farming in Gapoktan by calculating the difference between the total revenue and the total costs incurred, it is necessary to know in advance the level of acceptance obtained and the costs incurred in advance of the level of revenue earned and costs incurred in doing a farming (Pratama, 2014).

Table 4. Comparison of Income in Garlic Farming with Monoculture Cropping Patterns and Conversion Cropping Patterns

Total Income (I)	Cropping Pattern	
	Monoculture Value (Rp)	Intercropping Value (Rp)
Reception	29,277,917	45,729,029
Total Production Cost	16,770.093	25,463,245
Amount	12,146,715	20,266,274

Source: Author's calculation (2021)

Table 4 above shows the different total incomes based on the cropping pattern. The monoculture cropping pattern yields IDR 12,146,715 while the intercropping pattern yields IDR 20,266,274. Based on the results of the study, it is known that the intercropping pattern has the greatest yield. It is influenced by total revenue, total production and selling price. If the production and selling price of garlic and chili is higher, it will increase revenue. This is in accordance with Mardika's et al. (2017) results, where income depends on the amount of production, product prices, and production costs. The higher the production and selling price of a commodity, the higher the income. On the other hand, the higher the cost of production, the lower the income.

Every farmer in running a farm expects big profits. Analyzing the feasibility of farming is useful to find out whether a farm is feasible or not. To find out it can be done by calculating the Return and Cost Ratio (i.e. R/C analysis), which is the comparison between total revenue and total production costs (Wibowo, 2012).

Table 5. Comparison of R/C Ratio Values in Garlic Farming with Monoculture Cropping Patterns and Intercropping Patterns

R/C Ratio	Cropping Pattern	
	Monoculture Value (Rp)	Intercropping Value (Rp)
Total Receipt	29,277,917	45,729,029
Total Production Cost	16,770.093	25,463,245
R/C Value	1.74	1.80

Source: Author's calculation (2021)

Based on Table 5, it shows that the R/C ratio in garlic farming with a monoculture cropping pattern is 1.74, while the R/C ratio in garlic farming with an intercropping pattern is 1.80. The R/C ratio of the two farms is more than 1 which indicates that the two farms can be said to be profitable. However, the largest R/C ratio was found in the intercropping pattern. This shows that this pattern tends to be more profitable than a monoculture cropping pattern. This is in line with (Soekartawi, 2006) who stated that if R/C Ratio is greater than 1, then garlic farming is feasible. Therefore, every time farmers spend IDR 100 in cultivation of garlic with intercropping pattern will generate revenue of IDR 180.

V. Conclusion

The average total cost of garlic farming production that is issued per 1 ha on a monoculture cropping pattern is IDR 16,770,093 while the intercropping pattern is about IDR 23,207,054. Meanwhile, the largest average income is found in garlic farming with an intercropping pattern with IDR 20,266,274. The R/C ratio for garlic farming with a monoculture cropping and intercropping pattern was 1.74 and 1.80, respectively. This shows that garlic farming using an intercropping pattern is feasible cultivated and more profitable than monoculture cropping patterns. Judging from the R/C ratio, the intercropping pattern is more profitable than the monoculture cropping pattern. So it is better for novice farmers who do not have large capital and only have a land area of less than 1 ha to be able to do garlic farming with an intercropping pattern. There is a need for continued research in garlic farming on marketing and studies on government policies related to garlic commodities.

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