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The Ability of Mangosteen Farmer to Finance Mangosteen Farm in Subang District Area

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Abstract

The market share of mangosteen in the domestic and in the word is still large, but Indonesian export of mangosteen is less than 10% of their production because of low quality. In the reality many mangosteen farmer used low input of production in their farm such as fertilizer. The purpose of this study is to analyze the ability of mangosteen farmer to finance mangosteen farm. The study used secondary and primary data from the mangosteen farmer in Subang district by using survey method. The data was analyzed by mathematic analysis. The result shows that mangosteen farmers have low ability to finance the mangosteen farm.

Keywords: mangosteen, family income, family expenditure, the ability of farmer.

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1. Introduction

The contribution of horticultural commodities is second largest after food crops commodity, these commodities accounted for approximately 21.17% of GDP [1]. One of horticultural commodities that have good prospects for export and the domestic market is mangosteen (*Garcinia mangostona, L*). Mangosteen is the first fruit export of Indonesia.

The market share of mangosteen is still large, both in the domestic market and world market. The demand of both markets exceeds the domestic production. The destinations of Indonesia's export are China, Hong Kong, Taiwan, the Middle East and Europe.

The location centres of Mangosteen in Indonesia are East Kalimantan, Central Kalimantan, West Java, East Java, North Sumatera, West Sumatera, Riau and North Sulawesi. West Java contributes 38% of national production. Mangosteen production centres in West Java are Purwakarta, Subang, Bogor and Tasikmalaya. The contribution of those four districts is around 90% of West Java total production.

The export of mangosteen requires high quality and quantity, while the quality of mangosteen that produced by farmers is low [1–4]. The reasons it has low quality is due to many factors, such as the traditional cultivation practice, rare fertilizing and

trimming activities. There are few mangosteen farmers who implement standard operating procedures (SOP) as well as in Subang District [2]. Moreover, the low quality and quantity of mangosteen happens because of traditional farm management, the production highly depend on the nature, many of mangosteen tree is old-over 100 years old, generally inherited from their parents, etc. Replanting of mangosteen tree has been done in the 1990s [1].

Indonesia's mangosteen that can be exported is less than 10% of total production. The fruit is not supported by the high quality of fruit, while, in the world market, the number of producers is still limited such as Malaysia, Thailand and the Latin of America. Thailand is a potential world producer, because the country is able to produce a cheaper price. This condition could threaten Indonesian mangosteen export. To win the competition, Indonesia should be able to produce cheaper and better quality of mangosteen. Therefore, in order to increase market share in the domestic and exports, it is necessary to increase the quantity and quality of Indonesia's mangosteen.

The low maintenance of mangosteen farm can be caused by many factors such as a shortage of farmer funds. Agriculture finance is a micro-study of how to provide fund, use and control of fund in an agricultural sector [5]. Financing means how to control, dominate, and use of fund, it can be through purchase, borrow, rent, etc. An agricultural finance in the micro level is examining financial problems of an agriculture company. The source of financial of agricultural enterprises come from institutions, there are a formal institution (banks, cooperatives, non-bank financial institutions) and informal institution (individual, family, neighbours, local rich people). Farm financing patterns include: (1) the total number of disbursed capital, (2) the terms of use of capital, conditions and situations encountered in the use of capital and (3) how the capital is used [6].

Additional fund to finance the farm is needed for improving the quality and quantity of mangosteen. To overcome the limitations of the fund, it needs to be analysed the pattern of mangosteen farm financing at the present, and to analyse the financial ability of farmers to maintenance of mangosteen farm. Base on those conditions, the purposes of this study are as follows. First is to analyze the financing patterns of mangosteen farms. Second is to analyze the ability of manggosteen farmers to finance manggosteen farm.

2. Methodology

2.1. Sampling Method

Subang district is one of the centres of mangosteen producers in West Java. Sagalaherang is the sub district-centre production in the Subang distric, Dayeuhkolot and

Sukamandi are the village-centre production in the Sagalaherang sub district. Random sampling was carried out to choose the sample. The amount of sample is 10% of population (79 respondents). When researchers have no knowledge of the population variance (S) or the proportion of the population (P) and they cannot predict it, then the sample size (n) can be taken 5%, 10%, and 25% of the population [7]. Furthermore, for the sample size that is larger than 30 persons, then the distribution of the data in the example would spread closer to the normal distribution [7]. Furthermore the considerations sampling is also based on the availability of funds and personnel possessed.

2.2. Data Analysis

To analyse the financing pattern of mangosteen farm, the description analysis will be used in this study, such as the amount of funds needed, the amount of funds to be applied, when the time funds are needed, etc. To analyse the ability of mangosteen farmer in financing the farm, mathematical analysis will be used in this study. The farmer capability is based on the ability of farmer to create income surplus. The more surplus which hold by farmer allows farmers to finance the farm. The income surplus is the difference between family income and family expenditure which is formulated as follows:

$$S_f = Y_j - C_i \tag{1}$$

Where: S_f: surplus (IDR); Y_j: family income (Rp); C_i: family expenditure (IDR)

If the value of $S_f \leq 0$, it means no capability, and the value of $S_f \geq 0$ it means the farmer has capability to finance the farm.

Mangosteen farmer's income consists of various sources of income such as income from mangosteen farm, other farm income and non- farm income, while consumption expenditure consists of the consumption of food, clothing, housing, health, education and community. The income surplus indicates the level of the farmer's ability to finance his farm, moreover the level of ability will be able to predict how much farmers need assistance outside capital (loans).

3. Results and Discussion

3.1. Characteristic of Respondent

Mangosteen farmer respondent characteristics including age, occupation, experience and education, those characteristics will be described below. Mangosteen farmer's age range is 38-74 years old, the average age of 58.15 years, thus farmer's age is old

age, and this indicates the owner of the mangosteen tree is the old age. Farmers age correlated with the age of mangosteen tree that the average age of the mangosteen tree is old (the age of mangosteen tree is discussed in section mangosteen farm characteristics).

The level of education of mangosteen farmers are elementary school and graduated from secondary school which is 39.3%, this indicates mangosteen farmer is low educated. Their main occupations were farmer, while the second jobs were trader, pensioner and entrepreneurs.

The average experience of the mangosteen farm is 26.8 years, so they have been cultivated mangosteen for long period. Based on the characteristics of the respondents can be concluded that farmers have long experience to cultivate mangosteen, they are quite old age, low-educated. Those characteristics are correlated with the characteristics of their mangosteen farming; the characteristic of mangosteen farming will be described here in after.

3.2. Characteristic of Mangosteen Farm

Mangosteen farm characteristics include the amount of the mangosteen tree, the amount of trees that produce fruit, mangosteen tree age, land area (land area mangosteen, non mangosteen land area, rice field area) and maintenance of land and harvesting system.

The amount of tree per farmer is 5-225 with an average of 60 trees. However, not all trees produce fruit because young age, while the average number of trees that produce fruit are 37.3 trees, therefore the ratio of the number of trees bearing fruit with the overall amount of the mangosteen tree about 62%. The average area of land owned by farmers is 0.99 hectares, of which approximately 0.41 hectares of mangosteen land (mix farming), the remaining 0.58 hectares of land is dry land farming and paddy farming.

3.3. Mangosteen Farm Financing

The financing pattern of mangosteen farm includes the amount of fund which invests in manggosteen farm, the amount of funds owned by farmers, schedule of using the funds and the source of funds. Financing patterns of manggosteen farm in Subang district is described as below: The amount of funds used by mangosteen farmers is Rp 25,519.51 per tree (Table 1), those funds for fertilizing, weeding and harvesting. Farmers do not issue a special fund for plantation expansion due to limited land owned.

The purpose of fertilizing is to increase quantity and quality of production. Manggosteen farmers give the fertilizer since the trees are flowering. Unfortunately, farmers

TABLE 1: Cost of production of mangosteen farm.

Item	Average/farmer (IDR)	Percentage (%)	Average/tree
Variable cost	593,366.7	72.6	18,542.71
Fixed cost	223,257	27.3	6,976.79
Total cost	816,624	100.0	25,519.51

TABLE 2: Cost of material.

Material	Average per farmer (IDR)	Percentage (%)*
Fertilizer	62.597	7,5
Pesticide	17.276	2,0
Total	78.253	9,5
Note * Percentage of total cost		

give limited fertilizer, the amount of funds used for fertilization is IDR 9,867/tree (Table 2), and fertilizer fund is paid in May. 50% of farmers fertilize once a year, 3% of farmer fertilize twice a year, the rest 47% of farmers do not fertilize mangosteen trees. The limited of fertilizer funds is paid by farmers due to limited funds owned. Farmer commonly used manure fertilizer which is cheaper, farmer give a sack of manure fertilizer/tree. Farmers usually do not give fertizer to unfruit bearing trees. The lack of fertilizer that is given is a factor which causes lower quantity and quality of mangosteen fruit.

Farmers clear their garden while the mangosteen tree will be harvested in order to facilitate harvesting. Farmers clear the garden once in awhile. Weeding is done twice/year (by 61% of farmer, the rest of farmer clear the garden more than once a year. Cost of weeding is IDR 12,893/tree (Table 3). The reason why farmer rarely weed the garden because of a habit, the garden is mixed farms, limited funds and mangosteen farm give side income. The impact is that the gardens were filled with weeds and look less treated.

TABLE 3: Farm activity.

Farm activity	Average per Farmer (IDR)	Percentage (%)*	Average per tree
Clearing/weeding	201,212	24.6	12,893
Pruning	10,606	1.2	
Fertilizing	105,151	12.9	
Eradication	15,151	1.8	
Harvesting	94,954	11.5	
Delivery	94,954	11.5	
total	511,424	62.6	15,982
Note * Percentage to total cost			

TABLE 4: Total Fixed Cost.

Fixed Cost	Average per farmer (IDR)	Percentage (%)	Average per tree (IDR)
Depreciation of equipment	130.000	15,9	4.062,50
Tax of land	93.257	11,3	2.914,29
Total fixed cost	223.257	27,3	6.976,79

TABLE 5: The Revenue of Mangosteen Farm.

Harvesting system		Amount (IDR)	Note
(1)Slash system			
Average amount of tree per farmer	tree	39.25	60% respondent
Price/tree	Rupiah	124,203.80	
(2)Selling in weight system			
Average quantity per farmer	kilogram	489.29	40% respondent
Price/kg	Rp/kg	5,304	
Revenue per tree in weigh system	Rupiah	151,358.00	
Revenue of both system			
Total revenue	Rupiah	4,336,969.70	
Average amount of tree	tree	32	
Total revenue/tree	Revenue	135,658.76	

The other cost is paid by farmers is fixed cost. Fixed cost is divided by depreciation cost of equipment and tax of land. Fixed costs issued by farmer IDR 6979.29 per year.

Finally, farmer must pay harvesting cost IDR 750/kilogram of mangosteen and IDR 750/kilogram of mangosteen for delivery. The harvesting costs approximately 30% of the sale price received by farmers (the selling price is IDR 5,304/kilogram).

Harvesting system is divided into two system, slash systems and weight system. Slash is a simple system, farmers do not gather, delivery and find buyers. In the slash system farmers receive money quickly, despite he gets lower selling prices of mangosteen. Weight system is selling system which farmers sell mangosteen fruit in kilogram. The revenue with a slash system is IDR 124,024/tree, while the revenue with the weight system is IDR 151,358/tree (the selling price of IDR 5,304/kilogram and a tree produces 28.5 kilograms).

3.4. The Capability of Farmer

Total revenue of mangosteen is selling price per kilogram times to total quantity. The average revenue of mangosteen farm is IDR 4,336,969.7 per year per farmer, the average total cost per year per farmer is IDR 816,624 so that the income per farmer per year is IDR 3,650,345 (Table 6).

TABLE 6: Revenue, cost and income.

Item	Average per farmer (IDR)	Percentage (%)	Average per tree (IDR)
Revenue	4,336,969.7	100.0	135,658.76
Variable cost	593,366.7	72.6	18,542.71
Fixed cost	223,257	27.3	6,976.79
Total Cost	816,624	100.0	25,519.51
Income	3,650,345.5	84.2	110,010.79

TABLE 7: Family Farmer Income.

Income	Average per farmer (IDR)	Percentage (%)	Note
Mangosteen farm	3,650,345.50	13.9	Side income
Non Mangosteen farm	22,434,242.42	86.1	
	26,084,587.88	100.0	

Family income is divided into two sources: income from mangosteen farm and non mangosteen farm (income from other farm and income from non-farm). Income from other farm are rice farm and upland farm and income from non-farm are retirees income, self-employed income, etc. The average of family income of mangosteen farmer is IDR 22,434,242.42/year per farmer while mangosteen farm income contributes 13.9% (IDR 3,650,345.5) (Table 7). The remaining portion of 86.1% of income comes from non mangosteen farm (rice farm, upland farm, retires, self-employed income, etc), so that mangosteen income is called side income for mangosteen farmer in Subang district.

Family expenditure is divided into many kinds of expenditures such as basic need, electricity and water, education, health, secondary and society expenditure. The average of family expenditure is IDR 19,740,788/year/family, mostly (79.38%) (Table 8) is used for basic needs. The high percentage of family income for basic needs reflect their welfare level is still low.

The difference of income and expenditure is called family income surplus, the average of income surplus is IDR 6,343,800/year/farmer (24% of total family income)

TABLE 8: Family Expenditure.

Family expenditure	Average per farmer (IDR)	Percentage (%)	Note
Basic need	15,730,550	79.38	Majority of expenditure is basic need
Electricity and water	1,553,891.50	7.84	
Education	446,363.7	2.25	
Health	909,090.9	4.59	
Secondary	737,878.8	3.72	
Society	438,125	2.21	
Total	19,740,788	100.00	

TABLE 9: Family Income, Family Expenditure and Income Surplus.

Item	Average amount per farmer (IDR)	Percentage (%)	Note
Family income	26.084.587,88	100,0	
Family expenditure	19.740.788,88	73,0	
Income surplus	6.343.800,00	27,0	Owned by 61% farmers

(Table 9), and the surplus were owned by the part of farmers (61% of farmer), the remaining 39% of farmers in a fitting condition and mines income. The low surplus reflects the lower financial capabilities of mangosteen farmers. Many factors why mangosteen farmers have low income surplus such as small scale farming, mangosteen farm is a side business, and income from other sources is limited.

Household economic is a system that the economics activities are related each other in the system [8]. House hold share input to its production process, than the process yield an output which is sold to get an income, the income is used for consumption and investment. Therefore low income surplus of mangosteen farmer affect to mangosteen farm investment.

4. Conclusion

Mangosteen farmer has low income surplus which reflects the low ability of farmer to finance the mangosteen farm. The low income surplus due to small scale farming, mangosteen farm is a side business, and income from other sources is limited. Mangosteen farmers spend limited fund to mangosteen farm is due to less capital that is owned. The limited funds were given by farmers to mangosteen farm effect to the low quantity and quality of mangosteen.

Based on the research results it can be suggested: First, External funds for mangosteen farm must be supported, so that farmers can finance mangosteen farm and reduce slash system. Second, Mangosteen farmer need encouragement such as maintain the mangosteen garden, increase knowledge of mangosteen farm, better crop system.

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