Cek Plagiasi Agnes Factors that Determine Income of Porang Farming on Community Forest Land

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Factors that Determine Income of Porang Farming on Community Forest Land

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Abstract

Porang is an under utilized plant which is a source of glucomannan which is widely used in medicine industry, food and beverage, cosmetics, adhesive/glue and others. The demand for dry chips or chips for export in one year reaches 10,000 tons, while Indonesia can only meet about 4,000 tons, so it still lacks about 6,000 tons. The purpose of this study was to analyze the determinants of income of porang farm on community forest land. The population in this study was the porang farmers in the community forest area of Pandansari Village, Ngantang District, which is 93 people. The sample in this study amounted to 40 farmers determined using Simple Random Sampling method. The method of analysis used is descriptive quantitative and multiple linear regression. The result of the research shows that the income of porang farming is IDR. 48,271,125/ha/year. The determinants of the income of porang farming are the number of family members, the area of arable land and the labor cost.

Keywords: Porang, forest, community, income, land.

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Introduction

Various commodities as alternative foodstuff began to be developed. It aims to make people not only depend on the basic needs of rice, but also other food sources such as tuber crops. One type of tuber plants that began to be developed is porang (Amorphophallus oncophyllus synonym Amorphophallus muelleri Blume) which usually grows wild in the forest. Perhutani public companies in some areas have been coaching local communities around the forest to utilize the porang plant. Porang is also an adaptive plant with limited water and has the ability to live under the shade. Growing nature is rarely owned by other cultivated plants, its planting land can utilize the land under forest stands and does not need to compete with other food crops (Santosa et al., 2004; 2006; Budiman and Arisoesilaningsih, 2012; Sari and Rahardi, 2013). Its wildly groomed maintenance system will minimize maintenance costs and may use vacant land, or non-functioning land.

Porang is an under utilized plant with unique morphology (Hariyati and Mastuti, 2014), which is a source of glucomannan (Santosa, 2014, Haryani et al., 2016) or low-digestible carbohydrates widely used in the drug, food and beverage, cosmetics, glue and others (Widjanarko, 2008), and can improve health (Nurliyani et al., 2017). Porang tubers also have high minerals that are important for metabolism namely potassium, magnesium, and phosphorus and trace elements such as selenium, zinc and copper.

The need of porang is huge in recent years and the business opportunities are increasing. Porang has economic value and is exported to Japan (Indriyani and Widoretno, 2017). Japan each year requires 3,000 tons of porang, but only 600 tons (Pitojo, 2007). In 2009, the need for porang chip reached 3,400 tons (Widjanarko, 2008). East Java as one of the porang producing provinces, its production in 2009 was only about 3,000-5,000 tons of wet bulb or only 600-1,000 kg dried chip (Suheriyanto et al., 2012). The need of dry chips or chips for export to some foreign countries such as China, Japan, Australia, Sri Lanka, Malaysia, Korea, New Zealand, Pakistan and Italy, can reach 10,000 tons per year. While Indonesia can only meet about 4,000 tons, so it still lacks about 6,000 tons (Hartoyo, 2012). Indonesia still imports glucomannan flour averaging 20 tons/year equivalent to foreign exchange more than US $ 3 million (Santosa, 2014).

Porang has not been widely developed in Indonesia, and is often regarded as a wild plant. Although there have been farmers who planted it as an intercropping plant but the cultivation system has not been maximized. Limitations of knowledge and skills of farmers in the cultivation of porang is one of the factors causing low productivity which impact on the large income obtained from porang farming. It is also expressed by Syahza (2002) that the income of farmers depends on the production and selling price that is influenced by socio-economic factors of farmers. In Pandansari Village, many farmers have done porang cultivation, but the production is relatively not optimal because of limited knowledge and skills of farmers.

The aim of this study was to analyze the income of porang farmers in Pandansari Village, Ngantang District, and the factors that influence it.

Research method

This research was conducted in Pandansari Village, Ngantang District, Malang Regency. In Desa Pandansari there are quite a few porang farmers in community forest land and have the potential to be developed under timber stands.

The population of this study is farmers who do porang farming under stands of community forest land Pandansari Village, amounting to 93 people. The sample is determined by 40 farmers using Simple Random Sampling method. This method is chosen because the population is homogeneous.

Primary data were collected directly from porang farmers using interview method and questionnaire. Primary data includes socio-economic characteristics of farmers, total cost and income of porang farming during the past year. Secondary data were collected by documentation method.

Descriptive analysis applied on the socio-economic characteristics of respondents such as age, education level, length of business, the number of family dependents, land area and farm income of porang. Processed data are presented in the form of frequency tables and cross tables, and are described.

Multiple linear regression analysis was used to determine the effect of age, education level, duration of farming, number of family member, farming area, seed cost, fertilizer cost and labor cost to farm income of porang. Multiple linear regression equation model used was:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 \quad (1)$$

Where: Y = farm income porang, a = constant, bi = regression coefficient, X1 = age, X2 = education level, X3 = experience in porang farming, X4 = number of family members, X5 = cultivated area, X6 = cost of seed , X7 = fertilizer cost, X8 = labor cost.

The coefficient of determination is used to measure the ability of the model in explaining the variation of the dependent variable. The coefficient of determination is between zero and one. The higher the coefficient value of determination, the more appropriate the model used. F test is used to prove whether all independent variables in the model have a mutual influence on the dependent variable. Criteria for decision-making are based on probability numbers of significance. If the probability significance <0.05, then the independent variables significantly affect the dependent variable. T test is used to test the significance of partial independent variable influence to the dependent variable. If the probability significance <0.05, then the independent variables significantly influence partially to the dependent variable.

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Results and discussions

Characteristics of Porang Farmers

Porang farming in Pandansari Village was started more than 6 years ago by 15% of current porang farmers (Table 1). Gradually, the number of farmers continues to grow because these businesses are considered to provide economic benefits. Currently, most (62.5%) of porang farmers have had a 4-5 year business experience. Porang farmers are generally> 50 years old. However, generally (82.2%) farmers are only educated elementary school with the number of family members 3-4 people. Porang farming area is generally still narrow 0.25 ha. In order to develop better, the business of porang can involve women because women are good business managers (Pudjiastuti, 2015).

Table 1 Socio-Economic Characteristics of Farmers

Category	Frequency (person)	Persentage (%)
Age		
20 - 35 years	6	15,0
36 - 50 years	12	30,0
> 50 years	22	55,0
Education		
Primary School	33	82,5
Junior High School	5	12,5
Senior High School	2	5,0
Number of family members		
1 - 2 person	1	2,5
3 - 4 person	33	82,5
> 5 person	6	15,0
Experience of farming		
1 -3 years	9	22,5
4 - 5 years	25	62,5
> 6 years	6	15,0
Land area		
0,25 ha	25	62,5
0,50 ha	6	15,0
0,75 ha	2	5,0
1,00 ha	7	17,5
Total	40	100,0

Source: Primary data processed, 2018

The characteristics of porang farmers largely determine their response to development activities undertaken by government and private agencies. Low response is indicated by the fact that farmers have not utilized community forest land optimally. The development of porang farming system gets routine guidance from the Forestry Service of Malang Regency and the Forest Service of East Java Province. The guidance is done through farmer group Pandan Arum VII. Assistance has been obtained in the form of: 1) plot of planting porang area of 10 hectares, 2) tool chopper tuber porang into chips as much as 2 units. In addition to government agencies, farmers also get facilities from private

institutions that CV Bumi Hijau in terms of marketing of porang bulbs and needs of tuber porang.

Porang Farm Income

The equipment used in porang farming is so simple that the fixed costs to the farmers are relatively small, only IDR 60,000 per hectare per year. Calculation of equipment depreciation assumes that the economic life of the sickles and hoes, each of which is 10 years and depreciation is calculated flat over the lifetime of the equipment.

Porang farming in Desa Pandansari requires funds to buy seeds, fertilizers and labor wages. The largest variable cost component in porang farming per hectare is seed (41,3%) and manure (35,5%) respectively IDR 9,312,000 and IDR 7,990,000. Total variable cost is IDR 22,461,375. These two means of production are only once used in porang farming or as an initial investment. Furthermore, porang will breed generatively through seeds. These seeds will fall on the ground and grow into new porang plants. So, farmers do not need to spend to buy seeds or fertilizers. The cost of production, and income of porang farm in Pandansari Village is presented in Table 2.

Porang farm income of IDR 70,792,500/ha and net income of porang farmers in one year is IDR 48,271,125/ha. It is clear that porang farming in Pandansari Village is very advantageous because R/C = 2.14, as stated Anindita et al. (2011). This result is in accordance with the opinion of Santoso (2015) that porang plant is feasible to be developed due to high profit, but the market is oligopsoni so that there needs to be contract farming.

Table 2. Production Cost and Income of Porang Farming (Hectare/Year)

Variable	Need	Price (IDR/unit)	Value (IDR)	Persentage (%)
Depreciation				
Sickle (unit)	3	50,000	15,000	0,1
Hoe (unit)	3	150,000	45,000	0,2
Seed (kg)	1,164	8,000	9,312,000	41,3
Fertilizer				
Urea (kg)	202.25	5,000	1,011,250	4,5
NPK (kg)	199.75	7,500	1,498,125	6,7
Manure (kg)	15,980	500	7,990,000	35,5
Labor (day work)	33.13	80,000	2,650,000	11,78
Total production cost			22,521,375	100
Production (kg)			23.597,5	
Price (IDR/kg)			3.000	
Revenue (IDR)			70.792.500	
Income/profit (IDR)			48.271.125	

Source: Primary data processed, 2018

Factors that determine Porang Farm Income

The coefficient of determination (R^2) is 0.629 (Table 3) shows that 62.9% of the income of porang farming was influenced by age, education, experience of farming, number of family members, land area, seed cost, fertilizer cost, and labor cost. In part, 37.1% is influenced by other variables outside the model. The model can be said goodness of fit. Regression analysis results are presented in Table 3.

Table 3. The Results of Regression Analysis

Model	Unstandardized Coefficients		Sig.	Status
	B	Std. Error		
(Constant)	14458479,425	17063900,801	0,403	not significant
Age (X_1)	-336777,465	211316,527	0,121	not significant
Education (X_2)	1536352,904	4088831,132	0,710	not significant
Experience of farming (X_3)	2414330,660	1710415,767	0,168	not significant
Number of family member (X_4)	6477076,638	2713834,353	0,023	significant
Land area (X_5)	83624246,506	42149696,358	0,026	significant
Cost of seed (X_6)	2,946	2,065	0,164	not significant
Cost of fertilizer (X_7)	-,536	,474	0,267	not significant
Cost of labor (X_8)	-22,887	8,924	0,015	significant
R^2 : 0,629 F Statistik : 6,557 Sig. F : 0,000 Dependent Variable : Income of porang farming (Y)				

Source: Primary data processed, 2018

Based on the results of the analysis, multiple linear regression models of determinants of porang farm income can be formulated as follows:

$$Y = 14.458.479 - 336.777\,X_1 + 1.536.353\,X_2 + 2.414.331\,X_3 + 6.477.077\,X_4 + 83.624.246\,X_5 + 2,946\,X_6 - 0,536\,X_7 - 22,887\,X_8 \quad (2)$$

Test simultaneously (F Test)

Based on the results of regression analysis in Table 3, the probability of F is 0.000, which means that age, education, experience of farming, number of family members, land area, seed cost, fertilizer cost, and labor cost, together significantly of porang farm income. Partial test (t test) can be done to know which variable which influence siginifikan to earnings of porang farming.

Test Partially (t Test)

Factors that determine the income of porang farming are partially explained below.

1) Age: Regression coefficient variable age of farmer equal to - 336.777, indicating the higher age of farmer, hence earnings of farmer will decrease. This variable has no significant effect.

2) Education: The regression coefficient variable of farmer education level is 1,536,353, indicating that the higher education of farmer, the income of porang farming will increase. This variable has no significant effect, so it can be said that porang farming does not require education level.

3) Experience of farming: The regression coefficient of the old variables of the porang is 2,414,331, this means, the longer the farmers experience in the porang farm, the income received will increase. This variable has no significant effect. This shows that porang farming can be done by newcomers.

4) Number of family members: The regression coefficient of this variable is 6,477,077, this means, the more the number of family members of the farmers, the income of porang farming will increase. This variable has a significant effect. Farmers can rely on increasing household incomes from porang farms to meet family needs.

5) Area of arable land: The regression coefficient variable width of land porang, equal to 83.624.246, this means, every increase of 1 ha of land in porang farming, hence will increase earnings porang farming equal to Rp. 83.624.246. This variable has a significant effect. Farmers can expect increased revenue by expanding the area of land with a relatively large amount.

6) Seed costs: The regression coefficient variable cost of seeds porang of 2.946, this means, any increase in costs incurred for the porang farming seeds, it will increase the income of porang farming. This variable has no significant effect. As noted, porang farming requires only a one-time purchase of the initial investment, then the porang plant will breed itself from the seed spread in the soil around the existing plant. This is an indication that for initial investment in porang farming, it is not necessary on a large scale. After the plant produces seeds, the scale of business will increase by itself through the spread of old seed. However, no information on the optimal scale of porang farming.

7) Fertilizer costs: Regression coefficient of variable of fertilizer cost equal to -0,536, this mean, every increase of expense for fertilizer, hence will decrease porang farm income equal to 0,536. This variable has no significant effect. This indicates that the actual fertilizer applied in the porang farm has been saturated so it must be reduced. It can't be shown which fertilizer is too much because the cost is accumulated.

8) Labor costs: The regression coefficient of labor cost variable is -22,887, it means every increase of expense for labor, hence will decrease income

received in porang farming equal to 22,887. This variable has a significant effect. This finding is a signal that the labor costs incurred have exceeded, either too much or too high wages. So, cost of labor should be reduced, so that the income of porang farmers increases.

The findings of this study are in accordance with Kerbler's findings (2012) that not only economic factors influence the success of farming, but also other factors. The factors that stand out the most are those through which tradition or traditional thought and behavioral patterns are expressed, as well as the factors that express the standpoints, perceptions, and opinions of farm owners. Otherwise, the influencing factors will be different for other types of plants, as done by Karmini (2016).

Conclusion

Porang farm income in community forest land in Pandansari Village was IDR 48,271,125/ha/year. The determinants of the income of the porang farm are the number of family members, the land area and the labor cost. Other factors such as age, education level, length of farming, seed cost, and fertilizer cost have no significant effect. Porang farming has the opportunity to be developed because it is easy to cultivate and produce relatively high profit. The development of porang farmers through farmer groups has also been carried out by both government and private institutions.

Farmers in Pandansari Village should have optimal porang business because of their high economic value, relatively simple and low cost of exploitation. The planting of porang in the community forest will be able to increase income due to export demand that has not been fulfilled so that the product will surely be sold. Building partnerships with market players will guarantee sales of porang, especially in the form of chips. Supervision of porang farmers on the guidance that has been done by government and private institutions will be able to realize the welfare of the people around the forest Pandansari Village.

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