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# PROCEEDING

International Conference and Congress of The Indonesian Society of Agricultural Economics (ICC-ISAE)

New Social Economics of Sustainable Agriculture and Food System: The Rise of Welfare State Approach

> Grand Inna Bali Beach Hotel, Bali - Indonesia 23-25 August 2017

> > Editors: Bayu Krisnamurthi Erizal Jamal Amzul Rifin Feryanto

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#### **Editors**:

- Bayu Krisnamurthi
- Erizal Jamal
- Amzul Rifin
- Feryanto

**Technical Editors:** 

- Rizky Prayogo Ramadhan
- Herawati

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Rizky Prayogo Ramadhan

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## The Indonesian Society of Agricultural Economics (ISAE/PERHEPI)

Secretariat: Campus of IPB Dramaga, Wing 4 Level 4, Bogor - Indonesia 16680 Phone/fax :+62-251 - 8422953

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# FARMING ANALYSIS OF BANANA IN SOUTH LAMPUNG, INDONESIA

# Fadila Marga Saty <sup>1</sup>, M. Irfan Affandi <sup>2</sup>, Fembriarti E. Prasmatiwi <sup>2</sup>

<sup>1</sup> State Polytechnic of Lampung <sup>2</sup> Lampung University e-mail: <sup>1</sup> fadila@polinela.ac.id

#### ABSTRACT

This study aims to analyze the comparison of banana seedling farming and tissue culture in South Lampung. The research was conducted in seven subdistricts and eleven villages in Lampung Selatan, such as: Ketapang, Penengahan, Bakauheni, Kalianda, Raja Basa, Katibung, and Palas. The number of respondents wass 40 farmers of tissue culture and 42 farmers buds. The method of analysis used was farming income analysis with cost theory and income theory. The results showed that (1) The cost average as log five years of larger banana tissue culture farming was issued that is 5.547.807,00/ha from the cost of banana seed buds Rp3.897.306,00/ ha; (2) Production and acceptance on banana farming between banana farmers tissue culture and buds tillers did not differ much. The average production produced by farmers varies based on the area of banana-growing land and by climate. The cost of each banana seedlings at the beginning of the year cost is greater and for the next year there is a significant decrease. This situation is inversely proportional to the acceptance, at the beginning of the year there is no revenue for the next year increased and decreased.

Keywords: banana, cost, income, production, seedling farming, tissue culture

#### INTRODUCTION

Bananas are one of the leading fruit commodities in Indonesia. The spread of banana plants can easily be found throughout the province in Indonesia. The biggest driving factor is the easy to find banana cultivation, because it does not require a big investment. The development of banana production in Indonesia from 1980 to 2015 has a positive trend with an average growth of about 4,16% per year. The largest contribution of banana production comes from Java Island. In 2011-2015 the contribution of banana production from Java was 54,07% (Bappenas, 2016). The biggest contributor of production comes from East Java Province, followed by West Java Province.

Lampung Province is one of the provinces in Indonesia. The province is located on the island of Sumatra. Sumatra Island as the second after Java Island in the largest contribution of banana production in Indonesia. Lampung Province is the center of banana production in Java Island. If sorted, Lampung Province is the top three in banana production in Indonesia. Lampung Province contributed 18,20% to Indonesia's banana production (Badan Pusat Statistika, 2015).

Lampung Province consists of 14 districts/cities. In 2015, banana production in Lampung is supplied by Pesawaran Regency. Other districts that also play a major role in supplying bananas are East Lampung and South Lampung. The contribution of each regency was 51,61% (Pesawaran), 23,46% (East Lampung), and 22,02% (South Lampung).

Generally banana cultivation conducted by farmers is still not market-oriented. Banana cultivation is still dependent on nature and small scale yard trade (0,5-5 Ha). This situation is experienced by banana farmers in South Lampung District, so the impact on low productivity and quality. One of the local government's efforts is to help farmers in technology. Government through banana development program, providing assistance of tissue culture banana seedlings. Efforts made by the government of South Lampung Regency in order to improve the quality of bananas South Lampung regency.

The government aims to provide seeds for tissue culture to improve the productivity and quality of bananas. The impact on farmers can increase the selling price, so the income of farmers also increased. Meanwhile, the aid provided can not access all banana farmers in South Lampung District. Therefore, there are banana farmers who still use conventional banana seedlings that are buds. Is

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the existence of new technology in banana seedlings can increase farmers' income?

## **RESEARCH METHODOLOGY**

#### Theoretical Framework

The science of farming is the study of how one allocates the available resources effectively and efficiently for the purpose of obtaining high profits at any given time. Farming is said to be effective if farmers or producers can allocate their resources as best as possible, and are said to be efficient if the utilization of these resources produces output that exceeds inputs (Soekartawi, 1995).

Expenditures or farming costs represent the value of the use of production facilities and others charged to the product concerned. In addition to the cash costs that must be incurred, there is also a calculated cost of the value of the use of goods and services produced and derived from the farm itself.

The calculated costs are used to calculate the actual income of the farmer's work if capital and performance values are taken into account. Farm income earned by a farmer in one year is different from the income received by other farmers. This farmer's income difference is influenced by various factors, such as can still be changed within the limits of farmers ability, such as farming area, work efficiency and production efficiency. But there are also irreversible factors such as climate and land type. Regarding the size of income and profits, Soekartawi (2003) put forward several definitions:

- a) Farm receipt: the value of money received from the sale of farm products. Cash receipts do not include loan money for farming purposes.
- b) Farm payment: the amount of expenses incurred for the purchase of goods and services for farming, and does not include loan interest and principal amount of the loan.
- c) Farm net cash flow: the difference between farm cash receipts and cash disbursements.

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- d) Total farm revenue: receipts from all farming sources that include the amount of inventory addition, the value of the sale of the proceeds and the value of the use for family consumption.
- e) Total farm expensive: all operational costs with no interest calculated from farming capital and work value from farm management. These expenditures include cash disbursements, physical property depreciation, reduced inventory value and the value of unpaid labor or family labor.
- f) Total farm income: is the difference between total revenue and total expenditure.

Profit or net income is essentially the difference between the value of production, i.e. the amount of production multiplied by the price of production and reduced by all expenses incurred during the production process whether issued in cash or which is taken into account. The formula to know the income as follows:

$$\pi = y.py - \sum_{i=1}^{n} xi.py - BTT$$

Business efficiency can be determined from the ratio of total revenue to total cost that can be formulated as follows:

$$R/C rasio = \frac{Total Revenue}{Total Cost}$$

Effort is said to be efficient if the R / C ratio is greater than one, the greater the R / C ratio then the higher the profit of the farm. A method can be said to be more efficient than other methods, if it is capable of producing higher outputs of value for the same cost or equivalent or generating the same profit at a smaller cost.

#### Methods

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The research was conducted in Lampung Selatan District. The location was chosen purposively with the consideration that South

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### **RESULT AND DISCUSSION**

#### General Condition of Respondents

Data from 40 farmer respondents of banana tissue culture farmers and 42 respondents of budding banana seedlings by age can be seen in Table 1.

Age Grup	Tissue culture		Seedling fa	rming
(year)	Number of people	Number of (%) people		(%)
27 - 38	7	17,5	9	21,43
39 - 50	28	70,0	26	61,90
51 - 62	5	12,5	7	16,67
Total	40		42	
Average	100	100		
	45		43	

Table 1 explains that banana growers using both tissue culture and budding seedlings are in the 39-50 years age group of more than 60% of the respondent farmers in this group. Banana growers tissue culture is 45 years old and farmers shoot tillers average age of farmers 43 years old. Based on this age group it can be said that the majority of banana growers are at productive age, hence very big chance to increase banana production by doing more optimal farming so that can increase farmer income.

The number of family dependents of tissue culture banana peasants as many as 4-5 people dominates in the research area, with a percentage of 47,5 percent (Table 2). This situation illustrates the average one head of a family of tissue culture farmers has 4 dependent family members. While the number of banana shoots farmer count in the research area majority bear 2 to 3 people equal to 52,4%.

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Number of	Tissue culture		Seedling farming	
dependents of the family (people)	Number of (% people		%) Number of ( people	
2-3	12	30,0	22	52,4
4 - 5	19	47,5	18	42,8
6 - 7	8	20,0	1	2,4
8 - 9	1	2,5	1	2,4
Total	40	100	42	100
Average	4		4	
	10		9,5	

Table 2. Number of Dependents of The Family (People) Farmer

#### Analysis of Banana Farming in Lampung Selatan District

The data in Table 3 shows that the largest expenditure cost is in the first year for both banana tissue culture and banana buds. But if compared to both, the cost average as log five years of larger banana tissue culture farming was issued that is 5.547.807,00/ha from the cost of banana seed buds Rp3.897.306,00/ ha. The annual cost conditions can be seen in table 3, differences in expenditure in the first year. This situation is caused by the cost of seedlings issued in tissue culture farmers greater than the cost of seedling buds, which amounted to Rp7.000,00/stem and Rp1.000,00/stem. In subsequent years also costs incurred in banana culture of tissue culture is greater than the sapling buds. The largest cost incurred annually in banana farmers tissue culture and budding is the cost of land rent and labor.

This situation is also in line with the research that has been done by Utami (2009). These results illustrate that the use of means of means of production, labor, the use of both farmer and owner cost is the same.

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Cost	Cost per year				
	1	2	3	4	5
Tissue culture				The second second second second second	
Investation	13.290.504	-	-	-	-
Fertilizer	-	815.832	957.690	908,401	573,988
Labor	-	659.305	1.015.337	959.024	1.012.986
Tool	-	-	83.083	113.227	181.208
Land lease	1.152.938	1.276.000	1.413.250	1.553.000	1.713.250
Tax	8.903	10.215	11.587	13.791	15.507
Total	14.452.345	2.761.362	3.480.947	3.547.443	3.496.938
Sellding					
farming					
	5.988.009	·	-	-	-
Investation	-	824.166	336.041	774.927	734.092
Fertilizer	-	726.376	670.092	726.927	747,890
Labor	-	-	80.513	34.826	43.125
Tool	1.230.000	1.340.833	1.492.500	1.623.155	1.784.286
Land lease	9.247	10.623	12.007	14.254	16.132
Tax					-51104
Total	7.227.256	2.901.999	2.585.153	3.324.348	3.447.774
					CITT OF I

Table 3. Cost of banana farming per hectare in South Lampung District

Table 4 shows the percentage of failure rate of banana trees (dead due to disease/ dismantled/annihilated). The average percentage of tissue culture banana seed failure was 14,04%. The failure ranged between 0,5% - 25,3%, but the most common failure experienced by farmers was over 15%. This situation is very different from the seedlings of budding seedlings. Shooter farmers have an average failure rate of budding banana seedlings is 0,6% with failure percentage ranging from 0,0% - 3,0%. This means that the majority of budding banana seedlings are not much failure even there are 8 peasants whose banana tree 100% grow and produce.

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& Failure to Grow -	Number of People		
	Tissue Culture	Seeding Farming	
0-4	10	38	
5 - 10	0	4	
11 - 15	8	0	
16 - 20	20	0	
21 - 25	1	0	
26 - 30	1	0	
Total	40	42	

Table 4.	Percentage of seedlings deaths in the first year of tissue culture
	banana and seedling buds in South Lampung District

Figure 1 shows the graph of the increase and decrease of average production per hectare of tissue culture and banana budding farmers. Production on the tillers undergoes a normal production cycle for five years according to the economic life of the banana tree. There was a rise in production until the third year of harvest and subsequently decreased. While on tissue culture seedlings the rate of production continues to increase, because replanting done in the second and third year to replace the dead tree so that the loss of farmers can still be resolved.



Picture 1. Banana production per hectare for five years in South Lampung District

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Picture 2. The average production of bananas for five years based on grade in South Lampung regency

Based on the production of both banana tissue culture farmers and buds are not so much different, but when viewed from the quality of banana production there is a considerable difference. The quality of banana production can be known from the classification / price grade determined by the buyer. The buyer classifies it when purchasing crops done in the garden or at the farmhouse. The classification is divided into 3, namely (Picture 2):

- First point. Grade A, banana into the Super Class category is a banana weighing> 18 kg or in terms of its kind is Banana Kepok, Ambon, Tanduk and Raja Sere are good quality (the number of combs in each mark is sufficient, the age of harvest is sufficient and the state of banana Smooth).
- Second point. Grade B, is a banana that belongs to the class category Cabutan Rames is a banana weighing between 15 to 18 kg or in this category type of Jantan/ Uli and Raja Nangka are good quality.
- Third point. Grade C, is a banana that belongs to the category of Rames class is a banana that weighs <15 kg or in terms of its kind namely Banana Muli and all types of bananas which the number of comb in each mark is not enough, banana conditions are not old

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(harvest age is not enough) As well as the state of bananas are not smooth. Usually most Bananas are included in this class because the number of combs on each bunch of bananas is not full, the age of insufficient harvest and banana conditions are not smooth. If the condition of the number of comb, size and age of harvest enough then Bananas can enter into the class category Cabutan Rames.



Picture 3. The revenue of bananas for five years in South Lampung regency

Based on the income of banana growers tissue culture and seedling farming of tillers with real data for five years show the same situation. In the first year of receipt has not been in the medium can be large expenses incurred (Picture 3). The cost graph of each of the banana seedlings at the beginning of the year cost is greater and for the next year there is a significant decrease. This situation is inversely proportional to the acceptance, at the beginning of the year there is no acceptance for the next year increased then according to.

### CONCLUSIONS

Farmer-managed banana farming in South Lampung regency is a long-standing farming has been done. Farmers in banana cultivation using conventional methods of seedling seedlings and tissue culture

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technology. Production results show that banana production is divided into three grades (A, B, C). Based on the production and income of both farmers (seedling farming and tissue culture) did not different much.

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