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Analysis of Factors Affecting Cocoa Production in Lareh Sago Halaban District, Lima Puluh Kota Regency,West Sumatera, Indonesia

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Abstract

One of the government's efforts is to implement Gernas (national movement) for cocoa in 2013. However, the area of cocoa productive land is getting smaller in Indonesia, especially in Fifty Cities District. Based on the survey to the field that most of the farmers lack of maintenance of cocoa plants. Although the price of cocoa is currently quite stable. The purpose of this study was to identify the factors that affect the production of cocoa plants and analyze the factors that influence the production of cocoa plants in the Lareh Sago Halaban District, Lima Puluh Kota Regency. The research was carried out in June-September 2021 in Nagari Tanjung Gadang and Nagari Ampalu in Lareh Sago District, Halaban. The method used is a survey with a purposive sampling of 30 respondents. The data analysis used in this study was multiple linear regression analysis using SPSS version 24. The results showed that (1) the average cocoa production of farmers in Lareh Sago Halaban District was 127.96 kg (0.12 tons) per ha per hectare. years, (2) the factors that affect cocoa production are land area, frequency of pruning, and the amount of fertilizer have a positive and no significant effect. Meanwhile, the age of the plant and the number of workers had a significant and negative effect on cocoa production.

Keywords: cocoa production; factors affecting cocoa production; multiple linear regression.

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1. Introduction

The cacao plant or Theobroma cacao L., in Greek: Theos means god while Broma means food. So, Theobroma means the food of the gods. Theobroma cacao is the biological name given to the cacao tree by Linnaeus in 1753. The natural place of the genus Theobroma is in parts of tropical forests with lots of rainfall, high humidity and shade. The cacao plant is native to South America. The benefits of cocoa are numerous, namely improving mood, anti-aging, antidote to free radicals, lowering cholesterol, lowering high blood pressure, curing coughs, preventing liver disorders and cancer [1]. Indonesian cocoa products such as cocoa liquor, cocoa cake, cocoa butter and cocoa powder. Cocoa butter is the main product exported to the United States, the Netherlands, India, Estonia, Germany and China. So that the Indonesian cocoa plant is still one of the plantation crops that has great market prospects, because the world's cocoa demand is increasing. In October 2020 the price of cocoa increased due to an increase in world cocoa demand based on a report by the exporter group Gepex (a group of 6 large cocoa processing companies in the world) that in September 2020 processed cocoa increased 1.4% from 2019 [2]. In addition, the prospect of Indonesian cocoa is supported by the advantages of cocoa beans which have a high melting point and are rich in high fat content. So the prospect of developing the cocoa processing industry in Indonesia should be supported by the availability of raw materials (cocoa production).

Table 1: Area and production of cocoa plantation in lima puluh kota district 2021

Sub district	Not yet productive (Ha)	Productive (Ha)	Damage (Ha)	Total (Ha)	Production (Ton)
Payakumbuh	93	449	340	882	381.65
Akabiluru	5	523	750	1278	117.67
Luak	30	58	0	88	9.00
Lareh Sago Halaban	85	59	450	594	20.06
Situjuh Limo Nagari	195	231	394	820	143.22
Harau	86	418	110	614	170.54
Guguak	7	497	0	504	198.80
Mungka	50	64	92	206	60.00
Suliki	118	195	23	336	156.00
Bukik Barisan	40	552	219	811	378.12
Gunuang Omeh	0	50	11	61	25.00
Kapur IX	8	89	69	166	21.36
Pangkalan Koto Baru	6	94	237	337	47.00

Source: Lima Puluh Kota District in Figures (2021) [3]

One of the government's efforts is to implement national movement for cocoa in 2013. However, the area of cocoa productive land is getting smaller in Indonesia, especially in Fifty Cities District. It can be seen in Table 1 that the highest area of unproductive (damaged) land is in the Lareh Sago Halaban District as much as 450 Ha (75.8% of the total land area). Based on field surveys, most of the farmers do not take care of their cocoa plants, even though the price of cocoa is currently quite stable. This resulted in a slight production of only 20.06 tonnes in 2020.

[4] That unproductive cocoa plants in Kumpeh Subdistrict, Muaro Jambi Regency were caused by less optimal

cocoa plant maintenance (fertilization, pruning, pest and disease control), as well as spacing and plant age. Therefore, the authors are interested in researching what are the factors that cause unproductive cocoa plants in Lareh Sago Halaban District, Lima Puluh Kota Regency. Based on this background and problems, the objectives of this research are as follows:

a. Identify the factors that affect the production of cocoa plants in Lareh Sago Halaban District, Lima Puluh Kota Regency

b. Analyzing the factors that affect the production of cocoa plants in Lareh Sago Halaban District, Lima Puluh Kota Regency.

This research is expected tobe useful as a policy reference in making policies for the government of the Regency of Fifty Cities and the Province of West Sumatra.

2. Materials and Method

The study was carried out in June-September 2021. The study was carried out in Lareh Sago Halaban District, Lima Puluh Kota Regency. The method used is a survey by interviewing cocoa farmers and taking research samples purposively as many as 30 samples, namely 15 samples in Nagari Ampalu and 15 samples in Nagari Tanjung Gadang. The data obtained are primary and secondary data. Primary data obtained from interviews using a questionnaire. Secondary data were obtained from agencies related to information on cocoa plants.

The cocoa production model in Lareh Sago Halaban District is as follows:

$$Y = a+b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$$

Where: Y= cocoa production (Kg), X1= land area (ha), X2= pruning frequency (times) X3= amount of fertilizer (kg), X4= plant age (years), X5 = number of workers (HOK), a= constant and b1, b2, b3, b4, b5 = coefficient of each variable.

The data analysis used in this study is multiple regression analysis using SPSS version 24 software.

3. Results and Discussion

Cocoa Production in Lareh Sago District Halaban

The average dry cocoa production in Lareh Sago Halaban District is 127.96 kg (0.12 tons) per ha per year. Cocoa production is very low due to poor cocoa maintenance, namely 13 respondents who did not fertilize and 7 respondents who did not pruned, 22 farmer respondents did pruning only 1 time and 1 farmer respondent did pruning 2 times. According to [5] states that the effect of maintaining cocoa plants (giving fertilizer) has a significant effect on cocoa production in Tapango District, Polewali Mandar Regency.

Factors Affecting Cocoa Production in Lareh Sago District Halaban

The results of the analysis of the factors that affect cocoa production in Lareh Sago Halaban District are land area, pruning frequency and the amount of fertilizer that have a positive effect on cocoa production, while plant age and number of workers have a negative effect on cocoa production. This can be seen in Table 2.

Table 2 shows that land area has a positive effect, but does not have a significant effect (significant value 0.17>0.05). The coefficient of land area is 138.972, meaning that for every 1 percent increase in land area, cocoa production will increase by 138.972 percent. The frequency of pruning has a positive effect on cocoa production. However, the frequency of pruning had no significant effect on cocoa production (0.253 > 0.05). The coefficient of pruning frequency is 65.78, meaning that every time the pruning frequency increases, it will increase production by 65.78.

Table 2: The result of the regression analysis of the factors that affect cocoa production

Model	B	t count	Sig
Land area	138.972	1.413	.260
Trimming frequency	65.780	1.172	.170
Fertilizer Amount	0.007	.152	.253
Plant age	-5.138	-1.097	.880
Labor	-2.263	-.298	.283
Constant	109.316	1.153	.769
R square	0.403	1.413	.260

Source: Primary data processed (2021)

The amount of fertilizer has a positive effect on cocoa production. However, the amount of fertilizer had no significant effect on cocoa production (significant value 0.152>0.05). The regression coefficient for the amount of fertilizer is 0.007, meaning that every one percent increase, it will increase production by 0.007 percent.

Plant age had a negative and significant effect on cocoa production (-1.097<0.05). The regression coefficient of plant age is -5,138, meaning that the increasing age of the plant, it will decrease cocoa production by 5.138. Whereas the average age of farmers' cocoa plants is 14 years. The age of the plant should still be productive, but the maintenance of the cocoa plant is very low.

Labor has a negative and significant effect on cocoa production (-0.298<0.05) on cocoa production. The labor regression coefficient is -2.263, meaning that every 1 percent increase in labor will decrease production by 2.263 percent. This shows the number of workers for maintenance does not need to be added again. The results of research [6] cocoa productivity on smallholder plantations in Pidie Jaya Regency is influenced by land area, labor, capital, number of cocoa stalks, urea fertilizer and NPK fertilizer. Likewise, the results of research [7] that land area, number of workers, amount of fertilizer use, and amount of pesticide use have a positive effect on cocoa production in Malunda District, Majene Regency, West Sulawesi Province. In addition, the results of research [8] show that land area, labor supply have a positive and significant effect on cocoa production in Six Lingkung District, Padang Pariaman Regency.

4. Conclusion

Based on the results of the study, it can be concluded that (1) the average cocoa production of farmers in Lareh Sago Halaban District is 127.96 kg (0.12 tons) per ha per year, (2) the factors that influence cocoa production are area land, frequency of pruning, and the amount of fertilizer have a positive and no significant effect. Meanwhile, the age of the plant and the number of workers had a significant and negative effect on cocoa production.

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