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Farmers Motivation to Change Land Use and its Impact on Farmers Income

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ABSTRACT

This research is a survey method of the phenomenon of conversion of cocoa land to corn land in Kebo Village, Lilirilau District, Soppeng Regency, South Sulawesi Province, lasting for 6 (six) months. Data was obtained from observations, interviews using questionnaires. And documentation. The population size is difficult to know, so the Lemeshow formula was used to determine the sample size of 43 farmers. Data analysis uses quantitative descriptive analysis with scoring, analysis of farming income, and analysis of the impact of land conversion. The research results show that pest and disease attacks on cocoa plants provide the highest contribution in motivating farmers to change land use, with an index value of 93.49%. The conversion of cocoa land to corn land has had a positive impact on increasing farmers' income.

ABSTRAK

Penelitian ini merupakan metode survei fenomena alih fungsi lahan kakao menjadi lahan jagung di Desa Kebo, Kecamatan Lilirilau, Kabupaten Soppeng, Provinsi Sulawesi Selatan, berlangsung selama 6 (enam) bulan. Data diperoleh dari hasil observasi, wawancara dengan alat bantu kuesioner. Dan dokumentasi. Jumlah populasi sulit diketahui, sehingga menggunakan rumus Lemeshow untuk menentukan jumlah sampel sebanyak 43 petani. Analisis data menggunakan analisis deskriptif kuantitatif dengan skoring, analisis pendapatan usahatani, dan analisis dampak alih fungsi lahan. Hasil penelitian menunjukkan bahwa faktor serangan hama dan penyakit pada tanaman kakao memberikan kontribusi tertinggi yang memotivasi petani melakukan alih fungsi lahan, dengan nilai indeks 93,49%. Alih fungsi lahan kakao menjadi lahan jagung berdampak positif terhadap peningkatan pendapatan petani.

INTRODUCTION

In the years to come, the patterns of population growth and economic development will continue to lead to an increase in the amount of land that is being consumed. As a result of the fact that land is a natural resource that can not organically replenish itself, the total surface area of the Earth is unable to increase. As a consequence of this, there will be a trend toward the conversion of land use in order to satisfy needs, particularly for newly developed agricultural land as well as land that is not currently being utilized for agricultural purposes. According to Adiyaksa and Djojomartono (2020) the transformation of land use occurs as a consequence of anthropogenic processes, which are understood to be processes that are purposefully caused by humans. In order to turn the land from its original function into a function that was desired or had been planned in advance, alterations are done on purpose in order to accomplish this transformation.

It is the demand for agricultural commodities, notably food crops that are less promising for the economies of farmers, that serves as the beginning point for the shift of land use. There is a potential that farmers will make the decision to convert land in order to turn commodities that are seen to be less profitable into various commodities that are thought to improve earnings. They are the ones who make this deliberate adjustment by replacing crops on their property in accordance with their expectations, which they believe will result in greater earnings. Farmers

made this adjustment. According to Putri & Mubarak (2020), land use conversion is something that occurs not just when farmers want to change their commodities, but also in non-agricultural sectors, such as the establishment of residential areas, infrastructure, and industrial growth, among other things. This is something that happens in a variety of different ways. Both farmers and farm laborers will experience a reduction in employment opportunities as a consequence of this, which will have an effect on both groups correspondingly.

Cocoa, which is often referred to as Theobroma cacao L., is one of the agricultural commodities that plays a significant role in the accomplishment of agricultural development projects. As a result of the cultivation of cocoa, not only does it result in the creation of job opportunities and the development of regions, but it also improves the well-being of farmers and increases the revenue of the nation. On the other hand, a substantial percentage of cocoa farmers are unable to achieve their goals due to the presence of pests such as cocoa pod borer (CPB) and Helopeltis antonii Signoret (Hemiptera: Miridae). These pests are responsible for the failure of cocoa producer businesses. Utami et al. (2017) conducted research that suggests that these pests have the potential to target cocoa beans, cocoa shoots, cocoa buds, young leaves, cocoa stems, and cocoa branches. Additionally, they have the ability to attack cocoa buds. In addition, the cultivation of cocoa is frequently accompanied by the appearance of a wide variety of diseases, such as fruit rot, blister blight, swollen shoots, root diseases, anthracnose, leaf spot, broom disease, moniliasis, and vascular streak dieback.

The cocoa farming sector is the primary source of income for the majority of the population in the Soppeng Regency, and more specifically in the Lilirilau District. In spite of this, cocoa farmers have been converting their land since the year 2018, as a consequence of the declining prices of cocoa. This has led to monetary losses, attacks from pests, and an increase in the number of illnesses that are prevalent. The cultivation of cocoa is no longer profitable from an economic point of view, and it is not possible for cocoa to provide for human families financially. Additionally, at roughly the same time, the growth of maize cultivation, which requires post-harvest processing that is less complicated, has lured a large number of farmers to pursue corn cultivation rather than cocoa farming. A representation of the growth of cocoa and grain land in Lilirilau District, Soppeng Regency, throughout the period of 2013-2022 (BPS, Kabupaten Soppeng, 2023) may be found in Figure 1.

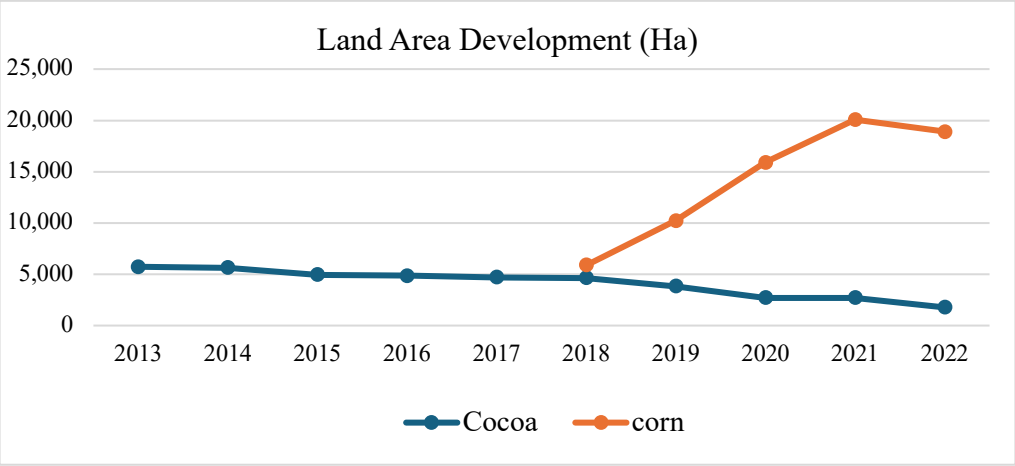

Figure 1. Development of Cocoa and Corn Land Area Beforeand After Land Use Change

An average loss rate of -20.35 percent is shown in Figure 1, which depicts a decrease in cocoa plantation area from one year to the next in the Lilirilau District of the Soppeng Regency. This decrease occurred both before and after the shift of land use. As a consequence of this, there has been a substantial expansion in the area that is devoted to the production of corn following the conversion of land use. Between the years 2018 and 2022, there was a significant growth of +37.45% in the total expenditure.

Increasing the amount of corn that is cultivated in the Lilirilau District of the Soppeng Regency has established the region as a significant contributor to the overall corn production in South Sulawesi. According to information provided by the Dinas Pertanian Kabupaten Soppeng (2023) , the annual average amount of corn that was produced in the Lilirilau District over the years 2018 to 2022 was 69,767 tons.

RESEARCH METHODS

The research was conducted in Lilirilau District, Soppeng Regency, considering that the local community had shifted from cocoa to corn cultivation since 2018. The population and sample size comprised 43 farmers, determined using the Lemeshow formula (Riyanto and Hatmawan, 2020). Data analysis employed quantitative descriptive analysis, farm analysis, and land use conversion impact analysis.

Quantitative descriptive analysis was conducted using scoring techniques and cumulative frequency methods (Sugiyono, 2018). A Likert scale was utilized to quantify variables, sub-variables, and indicators based on categories ranging from strongly agree (score 5), agree (score 4), disagree (score 3), strongly disagree (score 2), to strongly disagree (score 1). These indicators were then used as a reference for developing the research instrument (Riduwan, 2022).

Table 1. Variables, Sub Variables and Research Indicators

Variabel	Sub Variabel	Indikator
Motivation for land conversion	1. Economic Factors	a. Production b. Pests and diseases c. Selling price
	2. Social Factors	a. Labour b. Culture of gotong royong c. Secondary needs

Source: Modified from (Hastuty, 2018); (Firdaus, 2022)

Analyse the impact of cocoa land conversion to maize on farmers' income by comparing cocoa farm income before conversion with maize farm income after conversion. If π cocoa $\geq \pi$ maize, the impact is negative, but if π cocoa $< \pi$ maize, the impact is positive.

RESULTS AND DISCUSSION

The identity of the respondent describes the condition of the farmer which consists of age, education, and land area (Haris et al., 2018). The average age of respondents was 50 years, including the age category of productive farmers. Formal education averaged junior high school (46.5%), categorised as low education. They control an average of 0.63 hectares of maize land.

Factors Motivating Farmers to Change Land Use

Factors that motivate farmers to change land use from cocoa to maize consist of 2 (two) factors, namely economic factors (production, pests and diseases, selling price) and social factors

(labour use, culture and secondary needs) (Nurhapsah, 2019; Firdaus et al., 2023). Furthermore, it is presented in Table 2 below.

Table 2. Economic and Social Factors that Motivate Farmers to Change Land Use

No	Economic and Social Factors	Total Score	Skor Maksimum	Index Value (%)
	Economic Factors			
1	Cocoa production	104	215	48,37
2	Maize production	194	215	90,23
3	Cocoa pests and diseases	202	215	93,95
4	Maize pests and diseases	111	215	51,63
5	Cocoa selling price	107	215	49,76
6	Maize selling price	197	215	91,63
	Social factors			
1	Cocoa labour use	193	215	89,76
2	Use of maize labour	148	215	68,84
3	Mutual assistance in cocoa farming	95	215	44,18
4	Mutual assistance in maize farming	191	215	88,84
5	Secondary needs of cocoa farming	98	215	45,58
6	Secondary needs of maize farming	201	215	93,49

Source: Data Analysis Result, 2023

Table 2 shows that the economic factor that makes the highest contribution is the difficulty of eradicating pests and diseases in cocoa plants with an index value of 93.95%. The results obtained are in line with the results of research by Hazlina (2022) that economic factors dominantly influence the conversion of cocoa plantation land into oil palm plantations in Tanjung Aru Village, East Sebatik Subdistrict, Nunukan Regency. Based on the frequency distribution, the factor of sensitivity to pests and diseases where there are 26 people with 86% with the highest score value.

The social factor that gives the highest contribution to the motivation of farmers to change land use is the fulfilment of secondary needs derived from corn farming with an index value of 93.49%.

Cocoa Farm Production and Income

Cocoa production is the average yield of cocoa produced during 1 (one) year, before land conversion. Cocoa production was 430 kg/0.63 ha or 686 kg/ha. This value is much lower than the average production at the Lilirilau Sub-district level of 1.07 tonnes/ha (Soppeng Regency Agriculture Office, 2023). Cocoa farmer income before land conversion averaged Rp 19,941,000/0.63 ha/year or Rp 15,861,351/ha/year.

Income (Rp) Respondents (People)

Table 3. Cocoa Farming Income Before Land Use Change

No	Income (Rp)	Respondents (People)	Percentage (%)
1	3.755.833 - 8.015.555	14	32,56
2	8.015.556 -12.275.277	15	34,88
3	12.275.278 -16.535.000	14	32,56
	Total	43	100,00

Minimum : IDR 3,755,833

Maximum : IDR 16,535,000
Average/0.63 ha : IDR 9,941,000/year
Average/ha : IDR 15,861,351/year

Maize production is the yield of maize obtained from 2 (two) planting seasons during 1 (one) year, after land conversion. Maize production in planting season-I was 2,934 kg/0.63 ha or 4,681 kg/ha/season. Furthermore, maize production in the second growing season was 2,923 kg/0.63 ha or 4,663 kg/ha/season. The average maize production for one year was 2,928.5 kg/ 0.63 ha or 4,672 kg/ha/year. The respondents' maize production was higher than the Lilirilau sub-district level of 4.6 tonnes/ha (Soppeng District Agriculture Office, 2023). Maize farmers' income after land conversion was IDR 18,597,415/ 0.63 ha/year or IDR 29,673,055/ha/year. As presented in Table 4.

Table 4. Maize Farming Income after Land Use Change

No	No Income (IDR)	Average (IDR/0.68ha/season)	Average (IDR/0.68ha/season)
1	Growing season-I	8.443.335	13.402.119
2	Growing season-II	10.154.080	16.270.936
	Total (Rp/year)	18.597.415	29.673.055

Impact of Land Conversion on Farmer Income

The conversion of cocoa land to corn land has an impact on farmers' income. A comparison of cocoa farming income before land conversion and maize farming after land conversion is presented in Table 5 below.

Table 5. Comparison of Income Before and After Land Use Change

No	Source of Income Income	Income (Rp/Farmer)	Income (Rp/Ha)
1	Cocoa farming (π1)	9.941.000	15.861.351
2	Maize farming (π2)	18.597.415	29.673.055
	Income Difference	8.656.415	13.811.704

Table 5 shows that the average income of farmers from cocoa farming (before land conversion) is Rp 15,861,351/ha/year. Furthermore, the average farmer income from maize farming (after land conversion) is Rp 29,673,055/ha/year. This shows that the conversion of cocoa land to corn land has a positive impact on farmers' income because cocoa farming income (before land conversion) is smaller than corn farming income (after land conversion). The results obtained are in line with the results of research by Nainggolan and Saragih (2021) that the conversion of cocoa land to corn land in Sepakat Segenap Village, Semadam District, Southeast Aceh Regency has a positive impact on farmers' income.

CONCLUSION

The economic factor that contributes the highest to farmers' motivation to convert cocoa land to corn land is the factor of pest and disease attacks on cocoa plants with an index value of 93.95%. The highest contributing social factor is the fulfilment of secondary needs from maize farming with an index value of 93.49%.

Cocoa production was 430 kg/0.63 ha or 686 kg/ha. Maize production in growing season-I is 2,934 kg/0.63 ha or 4,681 kg/ha/season. Furthermore, maize production in the second

growing season was 2,923 kg/0.63 ha or 4,663 kg/ha/season. The average maize production for one year was 2,928.5 kg/ 0.63 ha or 4,672 kg/ha/year.

Cocoa farmers' income before land conversion averaged Rp 19,941,000/0.63 ha/year or Rp 15,861,351/ha/year. Maize farmers' income after land conversion was Rp 18,597,415/0.63 ha/year or Rp 29,673,055/ha/year. The conversion of cocoa land to corn land has a positive impact on farmers' income because farmers gain additional income of IDR 13,811,174/ha.

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