

## Economic Factors Affecting Corn Commodity Switching (Zea Mays) To California Papaya Commodity (Carica Papaya L.) In South Oku District

Sibuan<sup>1</sup>, Munajat<sup>2</sup>, Fifian Permata Sari<sup>3</sup>

<sup>1,2,3</sup> Lecturer of Agricultural Economy Study Program University of Baturaja, Indonesia

Email: [munajat.ub@gmail.com](mailto:munajat.ub@gmail.com)

Entered : May 22, 2024  
Accepted : June 19, 2024

Revised : May 27, 2024  
Published : June 27, 2024

### ABSTRACT

Current conditions in South Ogan Komering Ulu Regency, generally California papaya farming income is greater than corn farming income. This is influenced by several economic factors. Therefore, the purpose of this study was to analyze the economic factors affecting the transfer of corn commodity (zea mays) to California papaya commodity (carica papaya l.) in South OKU District. This research was conducted in South OKU District, Muaradua Subdistrict and Buay Rawan Subdistrict. Determination of the location was carried out intentionally (Purposive). The sampling method used was the multistage sampling method. Multistage sampling with a total sample size of 60 samples. The research method used in this research is the survey method. This data processing method used is the logit regression analysis method. Based on the research that has been done, it is concluded that the economic factors that influence land conversion from corn commodity to California papaya in South OKU Regency are independent variables, namely price, farming costs, farming experience, land area and income have a significant effect on consumer decisions.

**Keywords:** economic factors, corn commodity, California papaya commodity, logit regression

### INTRODUCTION

The agricultural sector is an important sector in supporting national economic development. With a priority on agricultural development to realize food sovereignty, namely meeting food needs from domestic production, regulating food policies independently and protecting and prospering farmers as the main actors of food agricultural businesses (Nurul, 2021).

Maize is also a food crop commodity that can be used as a substitute for rice, besides that it can also be used as animal feed. National corn production reached 5.79 million tons with a moisture content of 14%, the center of corn production in Indonesia is East Java Province with 37 tons, Statistics Indonesia (2021). Baba et al. (2021) stated that corn commodities, apart from being a source of carbohydrates, are also grown as animal feed (forage and cobs), oil is taken (from seeds), flour is made (corn flour or cornstarch), and industrial raw materials (from seed flour and cob flour). (Sherly, 2021).

South OKU District is one of the districts where the agricultural sector makes the largest contribution to the economy. The contribution of the agricultural sector in South OKU Regency tends to increase in 2019-2021. In 2021 the agricultural sector contributed 31.88%. South OKU Regency is very famous for its agricultural sector, especially plantations and crops.

Secondary crops are also something that is widely cultivated by farmers in this Regency. In 2023, it was recorded that corn was the most harvested crop with a total harvest area of 57,216.5 ha, which can be seen in the following table:

Table 1. Production of Crops in OKU Selatan Regency (Tons), 2020-2023

Tanaman	Production of secondary crops (Tons)		
	2020	2021	2022
Palawija			
Jagung	242 376	392 258	395 703
Kedelai	0	361	1 242
Kacang Tanah	107	103	147
Kacang Hijau	1	0	0
Ubi Kayu	1 878	1 144	791
Ubi Jalar	129	277	163

Source : BPS OKU Selatan 2023.

Based on Table 1, it can be seen that maize is the crop commodity with the highest production in South OKU District. In South OKU District, farmers cultivate both rice and maize in addition to the food sector. Along with the high interest of farmers in growing corn, there are problems that often arise at the farm level such as low prices received by farmers and various other problems that often arise both weather factors and pest and disease attacks so that many of the farmers want to switch to other commodities which according to them in addition to the quality of the chain of pest and disease attacks they also hope for profit by planting other commodities. The following is the number of maize crop households in South OKU District:

Table 2. Number of Maize Crop Business Households in OKU Selatan District, 2023

No	Kecamatan	Number of Households			
		2020	2021	2022	2023
1	Mekakau Ilir	24	26	30	25
2	Banding Agung	116	120	111	121
3	Warkuk Ranau Selatan	10	13	15	18
4	BPR Ranau Tengah	203	189	146	130
5	Buay Pemaca	695	701	714	765
6	Simpang	1 086	1.097	1.101	1.109
7	Buana Pemaca	713	700	716	727
<b>8</b>	<b>Muaradua</b>	<b>474</b>	<b>321</b>	<b>179</b>	<b>90</b>
<b>9</b>	<b>Buay Rawan</b>	<b>636</b>	<b>478</b>	<b>239</b>	<b>211</b>
10	Buay Sandang Haji	77	80	87	86
11	Tiga Dihaji	35	37	37	32
12	Buay Runjung	16	18	23	27
13	Runjung Agung	17	20	23	25
14	Kisam Tinggi	8	9	12	15
15	Muaradua Kisam	12	13	18	15
16	Kisam Ilir	8	8	10	9
17	Pulau Beringin	8	11	15	19
18	Sindang Danau	14	17	19	20
19	Sungai Are	0	0	0	2

Source: Department of Agriculture and Food Security, 2023.

Based on Table 2, the number of households growing maize in South OKU District has decreased every year in two sub-districts. Some phenomena that occur at this time in South OKU District are the conversion of the corn commodity into California papaya, precisely in Muara Dua Subdistrict, Pelangki Village and Batu Belang II Village, in Buay Prone Subdistrict, precisely in Ruos Village and Banjar Agung Village, the following number of California papaya land areas that increase every year can be seen in Table 2 below:

Table 3. Land area under papaya in OKU Selatan District, 2023

No	Kecamatan	Land Area (Ha)			
		2020	2021	2022	2023
1	Mekakau Ilir	-	-	2,00	2,10
2	Banding Agung	-	-	-	0,25
3	Warkuk Ranau Selatan	-	0,25	3,00	5,00
4	BPR Ranau Tengah	5,00	8,00	11,50	13,00
5	Buay Pemaca	0,50	2,00	4,00	6,00
6	Simpang	5,00	7,00	9,00	10,00
7	Buana Pemaca	23,00	25,00	26,00	26,50
<b>8</b>	<b>Muaradua</b>	<b>8,00</b>	<b>10,00</b>	<b>11,00</b>	<b>13,00</b>
<b>9</b>	<b>Buay Rawan</b>	<b>0,25</b>	<b>3,00</b>	<b>4,00</b>	<b>4,50</b>
10	Buay Sandang Haji	1,00	4,00	5,00	5,60
11	Tiga Dihaji	8,00	10,00	11,00	12,10
12	Buay Runjung	-	-	2,00	2,30
13	Runjung Agung	-	2,00	3,00	3,50
14	Kisam Tinggi	13,00	15,00	15,50	17,00
15	Muaradua Kisam	12,00	16,00	16,50	17,10
16	Kisam Ilir	-	-	1,00	1,50
17	Pulau Beringin	8,00	11,00	11,20	12,30
18	Sindang Danau	-	-	0,50	1,00
19	Sungai Are	5,00	8,00	8,10	8,50

Source: South Sumatra Agriculture and Horticulture Office, 2023.

Based on Table 3, it can be seen that the increase in the area of papaya crops in the two sub-districts, namely Muara Dua and Buay Rawan, several farmers mentioned several reasons for their conversion, namely the selling price of corn which has decreased several times during the harvest period. According to Astusti et al. (2011) commodity switching occurs because the selling price of the old commodity is low compared to the new farming on the land. This makes farmers switch commodities in the hope that the profit of the new commodity is higher than the old commodity. Although regulations have been issued regarding land conversion set by the government, it does not make farmers reluctant to do land conversion or commodity switching, this is done because farmers feel more positive economic impacts after switching commodities. In addition to economic factors, some of the factors that influence commodity switching are social factors. According to (Saputra and Budhi, 2015), social factors that can also affect commodity switching by farmers are the number of family dependents, education level and farming experience. In addition, commodity switching is also carried out because of some encouragement that requires commodity switching.

Some of these villages choose California papaya with a new papaya variety that has its own fruit superiority, tastes sweeter, is more durable, and can be harvested faster than

other varieties of papaya In addition, some of the advantages of California papaya papaya can be harvested once a week, papaya is available throughout the year because papaya cultivation does not recognize the season (Aliyudin et al., 2017). The increasing public awareness of the importance of the fruit, can increase the demand for papaya so that the number and supply of papaya must also be increased, to overcome these problems it is necessary to develop papaya cultivation and increase its productivity by means of production efficiency and expansion of business scale. Technological development is an important requirement for increasing papaya production. One of the prerequisites for the development of papaya cultivation is the use of superior varieties and quality seeds of papaya varieties that can increase production yields, namely California papaya. In addition, California papaya is one of the tropical agricultural commodities that has a great opportunity to be developed as an agribusiness business with promising prospects.

Based on the price side, California papaya has a higher price compared to other papayas, so it is profitable to develop. Generally, California papaya farming income is greater than ordinary local papaya (Triana, 2018). Efforts to increase farmers' income can be by introducing California papaya plants to the community by changing land functions, because some farmers with these considerations prefer to change functions. In general, farmers have never analyzed their California papaya farming business, they have never calculated in detail what costs, revenues, income, efficiency levels and in what month the farming capital can return or for payment (Rahmawati, 2015).

Based on the description above, it is interesting to study the analysis of economic factors that influence farmers in changing the land use of corn commodities to California papaya commodities in South Ogan Komerung Ulu Regency.

## RESEARCH METHODOLOGY

This research will be conducted in South OKU District, Muaradua Sub-district and Buay Rawan Sub-district. Purposive location determination was carried out considering that there is a phenomenon of land conversion from corn to California papaya in these two sub-districts in South OKU District. The research was conducted from April to May 2024.

The research method used in this research is the survey method where according to Sriati (2018), this method is used by tracing all information related to the representation of population characteristics in the field. This method is also a method used to obtain factors from existing symptoms and seek factual information both about social, economic or political institutions of a group. The sampling method used is the multistage sampling method. Multistage sampling is a method used to obtain samples from a population by dividing the population into smaller groups and sampling individuals in the resulting smaller groups as follows:

Tablw 2. Sampling with . Multistage sampling

Kabupaten	Kecamatan	Desa	Populasi	Sampel	Persentase
Kecamatan	Muaradua	Pelangki	29	15	50%
		Batu belang	30	15	50%
	Buay Rawan	II			
		Ruos	32	16	50%
		Banjar agung	28	14	50%
Total				60	100%

The data used in compiling this research are primary and secondary data. Primary data in this study is a questionnaire (questionnaire) containing statements given to respondents to answer. Secondary data in this study were obtained from literature studies and other books related to the discussion.

This data processing method used is the logit regression analysis method.

$$\text{Log} \left( \frac{Y}{1-Y} \right) = b_0 + b_1 \text{Log}X_1 + b_2 \text{Log}X_2 + b_3 \text{Log}X_3 + b_4 \text{Log}X_4 + b_5 \text{Log}X_5 + \dots + e$$

**Description :**

$b_i$  = Koefisien persamaan regresi atau parameter regresi (untuk  $i = 1,2,\dots,k$ )

$X_i$  = Variabel bebas (untuk  $i = 1,2,\dots,k$ )

$e$  = Error atau gangguan dalam persamaan

$Y$  = Keputusan Alih Komoditi (1), Keputusan tidak Alih Komoditi (0)

$b_0$  = Konstanta

$b_i$  = Koefisien persamaan regresi atau parameter regresi (untuk  $i = 1,2,3,4,5$ )

$X_1$  = Harga (Rp/Kg)

$X_2$  = Biaya Usahatani (Rp/Kg/Tahun)

$X_3$  = Pengalaman Usahatani (Tahun)

$X_4$  = Luas Lahan (Ha/Kg/Tahun)

$X_5$  = Pendapatan (Rp/Kg/Tahun)

In order to test whether all independent variables have an influence on the dependent variable, the F test is used with the following formulation:

$$F \text{ hitung} = \frac{\text{Quadran Middle Regression}}{\text{Quadran Middle Remaining}}$$

**Criteria For Decision Making:**

- a.  $F\text{-count} \leq F\text{-table}$  ( $\alpha = 0.05$ ), then accept  $H_0$ , meaning that all independent variables have no effect on income (dependent variable).
- b.  $F\text{-count} > F\text{-table}$  ( $\alpha = 0.05$ ), then accept  $H_0$ , meaning that all independent variables have no effect on income (dependent variable).

In order to find out how much the dependent variation is caused by the variation of the independent variables, the coefficient of determination is calculated with the following formula:

$$R^2 = \frac{\text{Total Regression Quadrant}}{\text{Total Center Qadrant}}$$

Re 2 Value  $R^2$  range  $0 \leq R^2 \leq 1$

Often the coefficient of determination ( $R^2$ ) increases if the number of independent variables added to the model decreases the degree of freedom. An assessment of this can be used adjusted coefficient of determination with the following formula (Wibowo, 2000):

$$R^2 \text{ Adjuster} = R^2 [(n - 1) / (n - k - 1)]$$

**Description:**

$k$  = Number of independent variables in the estimation model

$n$  = Amount of data

If the test results obtained  $F_{count} > F_{table}$ , then proceed with the t-test to determine the effect of each independent variable on the dependent variable.

$$t_{hitung} = \frac{b_i}{S_{b_i}}$$

$$S_{b_i} = \sqrt{\frac{\text{Number of Remaining Quadrant}}{\text{Sum of Remaining Centers}}}$$

**Discussion:**

$b_i$  = Koefisien regresi ke-i

$S_{b_i}$  = Standart deviasi ke-i

**Decision making criteria:**

- a.  $t_{count} \leq t_{table}$  ( $\alpha = 0.05$ ), then accept  $H_0$  which means the independent variable does not have a real influence on land conversion (dependent variable).
- b.  $t_{count} > t_{table}$  ( $\alpha = 0.05$ ), then reject  $H_0$  which means the independent variable has a real influence on land conversion (dependent variable).

**RESULT AND DISCUSSION**

Economic factors influencing land conversion from corn to California papaya in OKU Selatan Regency are described descriptively. The data used in this analysis is primary data where the independent variables are price, farming costs, farming experience, land area and income. Based on the logit regression analysis in the appendix, the coefficient of determination R Square = 0.820 was obtained. This indicates that 82.0% of the variation in the decision variable to change function is influenced by price, farming costs, farming experience, land area and income.

To analyze the relationship of economic factors affecting land conversion from corn commodity to California papaya in OKU Selatan Regency, logit regression was used. The results of the logit regression of economic factors affecting land conversion from corn to California papaya in OKU Selatan District can be seen in Table 3.6 as follows:

Table 3.6 Logit Correlation Results Economic factors affecting land conversion from corn to California papaya in OKU Selatan District, 2024

		Variables in the Equation				
		B	S.E	Wald	Sig.	Exp(B)
Step	X1	.857	.495	16.730	.003*	-1.572
1	X2	4.254	.462	4.638	.004*	6.297
	X3	.587	.431	4.287	.002*	2.265
	X4	1.098	.503	5.674	.001*	-2.124
	X5	4.398	.585	4.477	.003*	1.975
	Constant	-1.278	.104	25.578	.000	.267
		$R^2 = 0,820$				

\* = Significantly affected 0.01

Based on Table 3.6, we can analyze the relationship between economic factors affecting land conversion from corn commodity to California papaya in South OKU District. From the regression results, the value of  $R^2 = 0.820$  states that 82% of the farmers' decision to change the function of land from corn commodity to California papaya in South OKU Regency can be explained by the variable price ( $x_1$ ), farming costs

(x2), farming experience (x3), land area (x4), and income (x5). While the remaining 18% is influenced by other variables that are not in the model. Chi Square of 41.589 explains that together the variables of price (x1), farming costs (x2), farming experience (x3), land area (x4), and income (x5) have a real effect on farmers' decisions to convert land. For more details, the results of the logit regression analysis of the factors influencing land conversion from corn commodity to California papaya in OKU Selatan Regency will be explained as follows:

### **1. Price (X1)**

The logit regression results show an Exp(B) value of -1.572, meaning that every 1% increase in maize price will decrease the chance of farmers' decision to convert by 1.572%. After doing the wald test, it turns out that the significance of 0.003 is smaller than  $\alpha = 0.01$ . Therefore, the price has a significant or real effect on farmers' decisions in land conversion. This is in line with the research of Astuti et al (2021), based on their research 40 out of 50 consumers decided to choose land conversion because of the relatively cheaper price factor compared to other commodities.

### **2. Farming Costs (X2)**

The regression results show the Exp(B) value of product quality is 6.297. This means that every farming cost increases or increases by 1%, it will increase the chance of farmers' decisions to change functions by 6.297%. After doing the wald test, it turns out that the significance of 0.004 is smaller than  $\alpha = 0.01$ . This means that farming costs have a significant or real effect on the decision of corn farmers to switch to California papaya. This is in line with Yanti's research (2021), based on the results of her research as many as 62 farmers (68.89%). So it can be said that the variable farming costs affect farmers decide to switch to other commodities.

### **3. Farming Experience (X3)**

The logit regression results show the Exp(B) value of farm experience of -2.265. This means that every additional 1% experience time will increase the chance of farmer decisions by 2.265%. After doing the wald test, it turns out that the significance of 0.002 is greater than  $\alpha = 0.01$ . So the farming experience has a significant effect or a real effect on the decision of corn farmers to convert to California papaya plants. In line with the results of research from Sumawardhani (2023) the experience variable has the largest answer strongly agree as many as 45 consumers (50%), From the test results it is known that the length of farming experience has a significant and positive effect on the area of land converted. The probability value of  $0.03 > 0.05$  at the 5% level, means that the area of land converted by farmers in Kuwu Village is not influenced by this variable.

### **4. Land Area (X4)**

The logit regression results show the Exp(B) value of land area of -2.124, meaning that any reduction in land area or an increase of 1% will increase the chances of farmers' decisions by 2.124%. After the wald test was carried out, it was found that the significance of 0.001 was greater than  $\alpha = 0.01$ . So the number of family dependents has a significant effect or a real effect on the farmer's decision to change the function. fulfilled. This is in line with the research of Fatmayati et al (2018), which states that from the results of the T test on the land area variable owned, it can be seen that the land area owned by farmers has a positive effect on the area of land converted. The probability value of  $0.000 < 0.01$  at the 1% level, means that if the more land owned by farmers, the wider the land area

that is converted will be. This happens because farmers have the opportunity to get more profit if they convert all their land.

### 5. Revenue (X5)

The logit regression results show an Exp(B) value of -1.975, meaning that every 1% reduction in income will increase the chance of corn farmers' decision to change land use by 1.975%. After doing the wald test, the significance of 0.003 is greater than  $\alpha = 0.01$ . Which means that income per month has a partial effect on the decision to buy vegetables in the Baturaja City spill market. So that the results of this study agree with the theory (Setiadi, 2023) which states that community income reflects the purchasing power of the community. High or low community income will affect the quality and quantity of demand. Lower income means that in total there is less money to spend, so people will spend less money.

### CONCLUSION

Berdasarkan penelitian yang telah dilakukan maka disimpulkan bahwa faktor-faktor ekonomi yang mempengaruhi alih fungsi lahan dari komoditi jagung menjadi pepaya California di Kabupaten OKU Selatan adalah variabel bebas yaitu harga, biaya usahatani, pengalaman usahatani, luas lahan dan pendapatan berpengaruh secara signifikan terhadap keputusan konsumen.

### REFERENCES

- Aliyudin, D., D. Rochdiani dan M.N. Yusuf. 2021. *Analisis Kelayakan Finansial Usaha Tani Pepaya California (Carica papaya L.)* (Studi Kasus pada Petani Pepaya California di Desa Cidolog Kecamatan Cidolog Kabupaten Ciamis)
- Astuti, U. P dan W. Wibawa (2011). Faktor yang mempengaruhi alih fungsi lahan pangan menjadi kelapa sawit di Bengkulu. *Forum Penelitian*,190-195. [http://repository.unib.ac.id/128/..](http://repository.unib.ac.id/128/)
- Badan Pusat Statitik (2023). OKU Selatan Dalam Angka, 2022 Kabupaten Ogan komering Ulu Selatan
- Dinas Pertanian Ketahanan Pangan Kabupaten OKU Selatan. OKU Selatan Dalam Angka 2023. Muaradua.
- Dinas Pertanian Ketahanan Pangan (2023). Petunjuk Teknis Ingegrated Farming Jagung 2023. Dinas Pertanian Kabupaten OKU Selatan
- Fatmayati, Mulyana, A dan Wildayana, E. 2018. Determinant Factors Of Gaharu Farmers Income at East OKU South Sumatera Indonesia. *Internasional Journal and Research (IJSR)* Vol 7 Issue 8.
- Nurul, P.P. (2021). *Pembangunan Pertanian. Potensi dan Solusi Pembangunan Pertanian*. Program Studi Agroteknologi Fakultas Pertanian Universitas Mulawarman. Budi Utama. Yogyakarta
- Rahmawati, L.A. 2015. *Analisis Usaha Tani Pepaya Varietas California (Carica papaya L.)* (Studi Kasus di Desa Bakalan Kecamatan Kapas Kabupaten Bojonegoro Propinsi Jawa Timur Tahun 2015)
- Saputra, I. G. S W dan M. S. Budhi (2021). *Faktor-faktor Yang Mempengaruhi Alih Fungsi Komoditi Padi Sawah Ke Tanaman Cabai Merah*. Rifki Busono. Program Studi Agribisnis. Fakultas Pertanian. Universitas Muhammadiyah Sumatera Utara. Medan



- Sherly. 2021. Analisis Pendapatan Petani Jagung Pemeliharaan Kuda di Desa Pinabetegan Kecamatan Tombaso Barat, Kabupaten Minahasa. Jurnal Agri Sosio Ekonomi. Vol 19. No 2.
- Sriati. 2018. Metodologi Penelitian Sosial Ekonomi. BKU Agribisnis. Universitas Sriwijaya.
- Triana, N. 2018. Analisis *Kelayakan Finansial Usaha Tani Pepaya California di Kecamatan Sumberejo Kabupaten Tanggamus*. Skripsi. Fakultas Pertanian Universitas Lampung.