ANALYSIS OF THE INFLUENCE OF HARVEST LABOR ON PALM OIL PRODUCTION IN PT. AGRO SYNERGY NUSANTARA–ACEH

Riyand Hadirijal N[1], Aswin Nasution[2]

[1,2] Department of Agribusiness, Faculty of Agriculture Universitas Teuku Umar
Corresponding email: aswinnasution@utu.ac.id

Abstract

In the oil palm plantation business, harvesting labor is one of the key factors in the company's success in obtaining maximum production. This research was conducted to determine the effect of harvesting labor on oil palm FFB production. The results analyzed by multiple linear regression showed that the variables age, recent education, work experience, land conditions, harvest premiums, foreman attention, and road conditions had a positive effect on the FFB production of harvest labor. However, the variable family dependents and the distance between the house and the garden have a negative effect. Partially only the variables of age and work experience have a significant effect on the FFB production of harvest labor, but simultaneously all variables have a significant effect. Therefore, to increase the company's FFB production, in terms of harvesting workforce, companies need to pay attention to and maintain harvesting labor as an operational factor by increasing worker capacity.

Keywords: ***Labor harvest, oil palm, FFB***

1.INTRODUCTION

The rapid development of the globalization era demands that every country be able to take advantage of its potential to create sustainable development. Indonesia as an agricultural country has a great opportunity to become a market share in the field of global agricultural commodities(Mariadi and Faizin, 2022). The development of the agricultural sector is currently undergoing a transformation towards the industrial sector which is able to increase the per capita income of the community, the national economy(Haryanti, 2019), especially as a provider of employment and foreign exchange (Herman et al., 2009;Students, 2022). According to(Swandi, 2022)Indonesian oil palm plantations experienced an increase of 15.08 million Ha with a production of 49.7 tons in 2021 from 13.60 million Ha with a production of 48.3 million in 2020. Oil palm plantations produce crude palm oil (CPO) and palm kernel oil (PKO) which is the raw material for various industrial products such as cooking oil, soap, shampoo, and other products. According to(Heriyanti and Pandria, 2022). Therefore, the increasing industrial demand, the higher the demand for oil palm plantations to produce vegetable oil. This encourages oil palm plantation companies to continue to evaluate existing human resources to increase production, especially harvesting labor.

According to(Lubis, 2020)Harvesting workers are individuals who work specifically and have special abilities in harvesting fresh fruit bunches of oil palm. Harvest labor is one of the most important factors in determining the productivity of a company. Harvest labor productivity is a benchmark for the company to obtain a good production level. If the harvest labor productivity increases, it is certain that production will increase. According to(Suardi et al., 2019)Labor productivity can be seen from two dimensions, namely (1) the dimension that leads to work achievement, namely quantity, quality and efficiency, and (2) the comparative dimension between inputs, achievement results and targets to be achieved. Meanwhile according to(Heriyanti and Pandria, 2022)harvest labor in producing oil palm is influenced by factors of wages, education, years of service/experience, training and age.

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PlantationBatee Puteh oil palm plantation PT. Agro Sinergi Nusantara is one of the oil palm plantations located in West Aceh District. As with other plantation companies, FFB production in the company has fluctuated as shown in Figure 1.
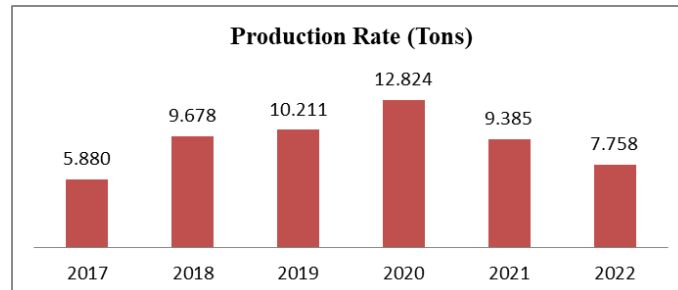

Figure 1. Palm Oil Production Level (Source: PT ASN, 2022)

From Table 1 it is known that the company's FFB production has increased from 2017 to 2020. However, it has decreased from12,824 tons in 2020 to 9,385 tons in 2021. This decrease will also occur in 2022, where plantations are only able to produce 7,758 tons. Thereforethe company needs to identify the factors that decrease production in order to make decisions to increase the amount of FFB production again. Research conductedMariadi and Faizin (2022)stated that labor productivity had an effect on increasing palm oil production, while the research was conductedFikriman and Herdiansyah (2017)that labor factors such as length of service, number of family responsibilities, age and wages of workers have a partial influence on the level of FFB production in the company. From the results of previous research, it appears that it is necessary to identify harvesting labor as a factor affecting production or harvest levels in helping companies improve harvest management. So based on these various problems it is necessary to analyze the effect of harvesting labor on palm oil production at the Batee Puteh Plantation of PT. Agro Synergy Archipelago.

2. RESEARCH METHODOLOGY
2.1. Time and Place of Research
This research was conducted in August – November 2022 in the Batee Puteh oil palm plantation of PT. Agro Synergy Archipelago West Aceh District.

2.2. Types and Research Methods
This research uses a descriptive type with a quantitative method to see the influence of labor variables, namely age, last education, family dependents, work experience, distance from house to garden, land topography, harvest premium, foreman's attention, and road conditions as independent variables (X) on crop production as the dependent variable (Y).

2.3. Population and Sample
The population in this study is the harvest labor at PT. ASN with a sample taken of 41 people.

2.4. Data collection
Primary data collection was carried out using a questionnaire through questions posed to respondents, while secondary data collection was carried out through companies, agencies, and various data sources related to research.

2.5. Data analysis
Research data analysis was carried out using a multiple linear regression statistical approach, where this method is used to determine the relationship and involvement of the independent variables on the dependent variable, andmeasure the strength or relationship between variables(Ghozali, 2018).

The multiple linear regression formula used is:

$$Y = a + b_1x_1 + b_2x_2 + \ldots + b_9x_9 + e \quad (1)$$

Where : Y = Production; a = Constant; b = Regression coefficient; X_1 = Age; X_2 = Last education; X_3 = Family dependants; X_4 = Work experience; X_5 = Distance of house from garden; X_6 = Condition of harvested land; X_7 = Harvest premium; X_8 = Foreman's attention; X9 = Road conditions; and e = error term.

3. RESULTS AND DISCUSSION
3.1. General Description
PT. Agro Sinergi Nusantara is a subsidiary of PT Perkebunan Nusantara I and PT Perkebunan Nusantara IV with a share composition of 35.23% and 64.77%, respectively. The plantation locations are spread across 5 districts/cities in Aceh Province, namely Aceh Jaya, West Aceh, Nagan Raya, South Aceh and Subulussalam City. PT. Agro Sinergi Nusantara produces crude palm oil through plantations that are managed in a sustainable manner. PT. Agro Sinergi Nusantara was established in 2011 and is currently one of the largest oil palm plantation companies in Aceh, managing 11,222 hectares of oil palm plantations with 1,094 employees. PT business Agro Sinergi Nusantara includes nurseries,

3.2. Results and Data Analysis
The Correlation Test is used to determine the relationship or strength between two or more independent variables (X1. X2, ..., Xn) on the dependent variable (Y) simultaneously, the R value will indicate how big the relationship is between the independent variable (X) on the dependent variable (Y). The R value ranges from 0 to 1, the closer to 1 it means the relationship is getting stronger conversely if it is close to zero the relationship is getting weaker. Next adetermination analysis (R2) is used to determine the percentage of contribution, influence, ability to explain in the independent variable model (X) simultaneously to the dependent variable (Y)(Ghozali, 2018). The results of the correlation test and research determination are shown in Table 1.

Table 1. Correlation Test, Determination,Multiple Linear Regression, T and F.

Coefficientsa						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	std. Error	Betas		
1	(Constant)	17,735	6,371		2,784	.009
	X1	.347	.133	.517	2,609	014
	X2	.279	.949	043	.294	.771
	X3	-.823	.775	-.180	-1,061	.297
	X4	1,590	.436	.682	3,644	001
	X5	-.011	.124	-.015	-.092	.927
	X6	.922	.691	.194	1,334	.192
	X7	1,760	2,299	.344	.765	.450
	X8	2,686	2,355	-.516	1,141	.263
	X9	.314	.830	-.060	.379	.708
R = 0.630; R2 = 0.397 t Table = 2.040 F Count = 2.270; F Table = 2.255						

Correlation test (R) Table 1. of 0.630 indicates that the independent variable uharvester nuts, last education, family dependents, work experience, distance from house to garden, condition of harvest land, harvest premium, attention of foreman, and road conditionscollectively have strong power in influencing the dependent variable of palm oil production. This is in opinionGhozali (2018)that statethe interpretation of the correlation coefficient (R) is: 0.00 – 0.199 very low; 0.200-

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0.399 low; 0.400-0.599 moderate; 0.600-0.799 strong; and 0.800-1.00 is very Strong. While the results of the determination test (R^2) of 0.397 indicate the independent variables simultaneously affect 39.70% of the dependent variable of palm oil production, while the remaining 60.30% is explained or influenced by other variables not included in the model or research variables.

3.3. Linear Regression Analysis

Multiple linear regression analysis is one of the regression models used by researchers to see the effect of the involvement of more than one independent variable on the dependent variable(Ghozali, 2018), while the results of processing using SPSS are as Table 1. The regression model of research data processing is:

$$Y = 17{,}735 + 0.347X_1 + 0.279X_2 - 0.823X_3 + 1.590X_4 - 0.011X_5 + 0.922X_6 + 1.760X_7 + 2.686X_8 + 0.314X9 \qquad (2)$$

This form of the regression model implies that: (1) If the independent variable is not taken into account or has a value of 0, then there is still 17.735 units of palm oil production; (2) If the age variable (X_1) increases by 1 unit, palm oil production will increase by 0.347 units; (3) If the last education variable (X_2) increases by 1 unit, palm oil production will increase by 0.279 units; (4) If the family dependent variable (X_3) increases by 1 unit, palm oil production will decrease by 0.823 units; (5) If the work experience variable (X_4) increases by 1 unit, palm oil production will increase by 1,590 units; (6) If the variable distance to the house (X_5) increases by 1 unit, palm oil production will decrease by 0.011 units; (7) If the land condition variable (X_6) increases by 1 unit, palm oil production will increase by 0.922 units; (8) If the harvest premium variable (X_7) increases by 1 unit, palm oil production will increase by 1,760 units; (9) If the foreman's attention variable (X_8) increases by 1 unit, palm oil production will increase by 2,686 units; (10) If the road condition variable (X_9) increases by 1 unit, palm oil production will increase by 0.314 units.

3.4. Partial Test t

The use of the t partial test in research according toGhozali (2016)AndPratiwi et al., (2022)is to analyze the effect of the significance of each independent variable separately on the dependent variable. The variable being tested can be said to have a significant effect if the tcount > ttable or the sig value <alpha ($\alpha = 0.05$). Based on the output of data processing results, the tcount value is obtained (Table 1), which is then compared with the ttable value of 2.040 at df 31, it is stated that only the age (X_1) and work experience (X_4) variables partially have a significant effect on the work results of oil palm harvesters. As for the last education variable (X_2), family dependents (X_3), distance from home (X_5), land conditions (X_6), harvest premium (X_7), foreman attention (X_8), and road conditions (X_9) partially have no significant effect on the work of oil palm harvesters at PT. Agro Sinergi Nusantara (ASN) Batee Puteh Plantation, West Aceh District.

3.5. F Distribution Test

The F distribution test is a test used to see whether the independent variable (X) can simultaneously affect the dependent variable (Y). Determination of the decision making test of the distribution of F independent variables (X) simultaneously has a significant effect on the dependent variable (Y) if the Fcount test value> Ftable(Wahyuni, 2022). With a value of df1 = (10-1 = 9) or (number of variables - 1) and a value of df2 = (41-9-1 = 31) or (number of cases/respondents - number of independent variables - 1) then the value of Fcount = 2.255 . If we compare the value of Fcount 2.270 > Ftable 2.255, it can be concluded that together the independent variables are age (X_1), last education (X_2), family dependents (X_3), work experience (X_4), distance from home (X_5), land conditions (X_6), harvest premium (X_7), the foreman's attention (X_8), and road conditions (X_9) have a significant effect on the production of oil palm from the work of harvesters.

5. CONCLUSIONS

Harvest labor is an operational factor that affects the production of palm oil FFB PT. Agro Sinergi Nusantara (ASN) where the variables of age, recent education, work experience, land conditions, harvest premiums, the foreman's attention, and road conditions have a positive effect on the FFB production of harvest labor. However, the family dependent variable and the distance between the house and the garden have a negative effect. Partially only the variables of age and work experience have a significant effect on the FFB production of harvest labor, but simultaneously all variables have a significant effect. Therefore, to increase the company's FFB production, in terms of harvesting workforce, companies need to pay attention to and maintain harvesting labor as an operational factor by increasing worker capacity.

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