Name	Counterpart	Title
Zulkifli Alamsyah, Gina Fauzia, Mirawati Yanita	**C07**	The economic performance of non-plasma smallholder oil palm plantations based on plantation management practices in Muaro Jambi District of Jambi Province

Background and Objectives

Oil palm plantation in Indonesia, including in Jambi Province, can be divided into three categories, namely large private plantations, state plantations and smallholder plantations. Smallholder plantations can be divided into plasma plantations and independent plantations. Some studies have captured the poor governance problem in the plasma scheme (Suharno *et al.*, 2015; Abram *et al.*, 2017; Li, 2018). Therefore, some plasma farmers are trying to repay loans immediately in order to break away from ties to their partner companies. For both ex-plasma and independent smallholders, hereinafter referred to as non-plasma smallholders, the problem that arises is when plantation management is carried out by farmers with various backgrounds and diverse understandings of good agricultural practices, leading to variations in plantation management. The purpose of this study is to investigate the management practices and the economic performance of non-plasma oil palm smallholder and to compare the economic performance based on management practices of non-plasma oil palm smallholder

Methods

The research was conducted in Muaro Jambi Regency as the main producer of palm oil in Jambi Province. Samples of non-plasma farmers were taken from 2 sub-districts, namely Sungai Bahar District and Kumpeh Ulu District with a total of 114 farmers. Plantation management was examined and measured based on cultivation techniques. These include the use of seed type, spacing, plant age, application of fertilizers and agricultural chemicals, and weeding intensity. The economic performance was assessed from the net margin which is calculated from revenue (gross margin) and operational costs. To compare economic performance based on plantation management, the Kruskal-Walis test was used, in which farmers in the sample were grouped into 3 clusters according to how well they implemented good plantation management.

Major Results and Conclusion

Based on the plantation management score, the farmers in the sample were categorized into 3 clusters, namely Cluster-1, Cluster-2 and Cluster-3. The higher the score reflects the better plantation management implemented by the farmers. The number of farmers, the scores obtained and a description of the plantations covering land area, plant age and production in each cluster is presented in table 1.

The highest score in plantation management also has an impact on the productivity produced by farmers in cluster-1, which is the highest compared to the other 2 clusters. In addition to having an impact on increasing productivity, good plantation management also has an impact on FFB prices and net margins received by farmers. This condition is presented in table 2.

Table 1. Management plantation score, plantation area, plant age, and productivity based on plantation management clusters

Plantation conditions	Plantation Management Clusters		
	Cluster-1	Cluster-2	Cluster-3
Range of Management Score	16 - 20	12 - < 16	< 12
Average of Management Score	16,89	13,40	8.56
Number of respondents (total 114)	38	40	36
Plantation area (ha)			
- Range	1.0 – 7.0	1.0 – 6.0	1.0 – 6.0
- Average	2.6	3.0	3.1
- Coef. of variations	56.1	45.6	47.5
Plant age (year)			
- Range	5.0 – 19.0	5.0 – 18.0	5.0 – 18.0
- Average	10.0	10.9	11.9
- Coef. of variations	33.5	28.6	27.6
Productivity (ton FFB /ha/yr)			
- Range	16.35 – 33.75	13.45 – 33.95	11.75 – 29.93
- Average	22.25	20.08	15.82
- Coef. of variations	20.71	24.36	22.11

Table 2. FFB price, revenue, operational cost, and net margin based on plantation management clusters.

| FFB Price, Revenue, and Costs	Plantation Management Clusters		
	Cluster-1	Cluster-2	Cluster-3
FFB Price (Rp/kg)			
- Range	2,000 – 2,500	2,000 – 2,500	2,000 – 2,500
- Average	2,300	2,199	2,132
- Coef. of variations	6.39	8.78	7.48
Revenue (Rp.Million/ha/yr)			
- Range	36.78 – 73.70	27.00 – 84.88	25.89 – 62.86
- Average	50.97	44.76	34.53
- Coef. of variations	19.37	30.11	23.02
Operational cost (Rp Million/ha/yr)			
- Range	5.92 – 10.76	4.87 – 9.34	2.71 – 10.76
- Average	7.78	7.17	6.86
- Coef. of variations	17.44	16.94	30.83
Net Margin (Rp Million/ha/yr)	43.19	37.59	27.67
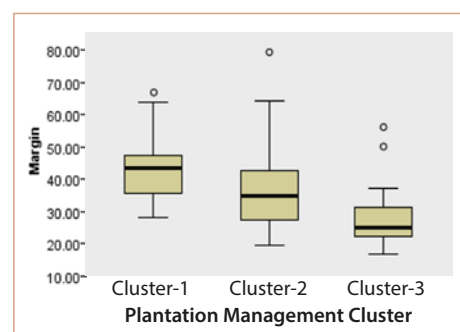
Figure 1. Kruskal-Wallis Test Results of Differences in Net Margin in Three Plantation Management Clusters

In line with the increase in productivity in better plantation management, the net margin received by farmers in Cluster-1 is also the largest compared to the other 2 clusters. Statistically, it can be proven that there are significant differences in net margin among clusters, as shown in figure 1 and table 3.

Table 3. Pairwise Comparisons Test of Each Plantation Management Clusters
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sides tests) are displayed. The significance level is .05.

Sample 1 – Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.
Cluster-3 – Cluster-2	28.411	7.593	3.742	.000	.001
Cluster-3 – Cluster-1	47.302	7.687	6.153	.000	.000
Cluster-2 – Cluster-1	18.891	7.487	2.523	.012	.035

Based on the results of this study, it can be concluded that the better the level of management of oil palm plantations by farmers, the better their economic performance will be. This is evidenced by the increase in productivity, the price of FFB produced, and the net margin obtained by farmers.

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