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Sustainable Palm Oil Management in the Tani Jaya Palm Oil Farmers Group, Rumbai Jaya Village

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ABSTRACT

Background: The Indonesian government implements the Indonesia Sustainable Palm Oil (ISPO) standard to ensure environmentally responsible management of oil palm plantations. Compliance with ISPO is mandatory for both enterprises and independent smallholders involved in oil palm cultivation.
Aims: A training program was established to educate these smallholders in agricultural business practices in line with ISPO principles, integrating both theoretical classroom instruction and practical field experience.
Method: The training involved 45 participants, including 40 from the members of Farmer group and five independent non-member smallholders. Following this training, participants showed significant improvement in their understanding of farm business management metrics, including Equity Ratio (ER), Total Asset Turnover Ratio (TAT), and Return on Equity (ROE), among others.
Results: The courses also covered essential ISPO principles such as Legal Compliance, Good Agricultural Practices, and Environmental Management. Evaluation of knowledge acquisition through written and oral assessments revealed a 95% increase in farmers' understanding of these management practices and ISPO criteria.

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1. Introduction

The Tani Jaya Palm Oil Farmers Group of Rumbai Jaya Village, Kempas District, Indragiri Hilir Regency is committed to ensuring that the development of the palm oil industry remains sustainable and meets the sustainability standards of the Indonesia Sustainable Palm Oil (ISPO) that must be met. To fulfill this commitment, the Tani Jaya Oil Palm Farmer Group collaborated with LPPM Indragiri Islamic University to carry out training and managerial introduction for farming as well as ISPO principles and criteria.

One of the problems faced by independent smallholders in oil palm cultivation is the lack of understanding of farm management, such as combining income from the plantation to meet daily needs. In sustainable oil palm cultivation, independent smallholders face obstacles in the implementation of legal compliance (such as cultivation certificates), plantation practices (such as obtaining certified seedlings), and GAP (good application practice).

As referred to by the research of Gatti *et al.,* 2019; Purnomo *et al.,* 2024; Widiati *et al.,* 2020; and Yanita and Ningsih, 2021, an assessment of the capabilities of independent smallholders and target competency performance initiatives related to knowledge of sustainable business improvement in Indragiri Hilir in meeting ISPO standards shows that, as a result of the lack of modular training by agricultural consulting, constraints along the value chain, and programs In the context of ISPO, the adoption of sustainable business improvement skills that are in line with existing values, past experience, and needs can be understood and used. This process has been tested to influence farmer behavior (Apriyanto *et al.,* 2022; Apriyanto, *et al.,* 2021; Nurhaliza *et al.,* 2021; Rosnita *et al.,* 2022).

Solutions provided for increasing independent smallholders' understanding of farm management and ISPO principles and criteria through training (Apriyanto, *et al.,* 2021; Dharmawan *et al.,* 2021). The objectives of the activity are achieved in three stages. First, demographic characteristics and economic infrastructure are identified. The result is a better understanding of the unique traits that farmers have. In the second stage, management knowledge is needed to improve the skills needed to make sustainable farming. This management knowledge includes the following: (i) the level of expenditure does not exceed income, where profits and expenses are balanced over the same period of time; (ii) have a reserve fund to operate if things don't go as planned; and (iii) the debt ratio tends to be low. This results in farmers who better understand the knowledge of sustainable farming. In the third stage, the evaluation of PKM activities was carried out. The purpose of this evaluation is to find out more about oil palm cultivation knowledge and practices. For evaluation practice, theoretical evaluation is carried out orally.

2. Methods

The Tani Jaya Oil Palm Farmers Group, supported by Two Universities, shows community service through training and issuance of ISPO certificates. 45 independent smallholders who are members. PKM will be held from October to December 2024. The training method and introduction to sustainable farming considers three important aspects of farming activities: oil palm cultivation, which includes maintenance, fertilization and harvesting in accordance with the GAP; prepare the administration of oil palm cultivation, such as seed sources, fertilization times, and harvest times; and provide farming management training, such as informing the Equity Ratio (ER), Total Asset Turnover Ratio (TAT), and livestock to To support their commitment to achieve sustainable development of the palm oil industry, PKM seeks to provide skills to independent oil palm smallholders related to sustainable agriculture. This is done through three stages of Indonesian palm oil sustainability standards (ISPO):

1. First stage

Identify the characteristics of independent oil palm farmers. The purpose of identifying these characteristics is to determine whether these characteristics affect the knowledge and skills of independent oil palm smallholders in carrying out sustainable farming management activities and practices.

2. Second stage:

Counseling and managerial knowledge lectures to support participation in the competency enhancement required by sustainable agriculture on the following: (1) Expenditure Levels Do Not Exceed Income, where profits and expenses are balanced over the same period of time; (2) Have a Reserve Fund to operate if things don't go as planned; and (3) Debt Ratio Tends to Be Low. The goal is for farmers to better understand sustainable farming.

3. Third stage:

After the exam, an evaluation of training activities is carried out. The test consists of twenty teroti questions and ten practical questions. The theory test consists of interviews and written exams, while the practical test involves tasks that each test taker must perform in tasks related to seed selection, fertilization, and planting. Using a questionnaire, evaluate the understanding before and after the training is conducted. The results were divided into three categories: not yet understood (score < 60), understood (score 61–79), and understood (score > 80).

3. Results and Discussion

The results of PKM training and introduction of ISPO certification for independent oil palm farmers are as follows:

3.1 First Stage

The age characteristics of independent oil palm farmers show that 90% of smallholders are of productive age; young or productive smallholders have a strong physique and high morale (Evalia *et al.,* 2024). Education greatly affects the ability of farmers to do farming. The level of education in junior high and high schools is still dominated, which means that it is still at an adequate level of education (Hartono, 2020). As a result, the level of education affects farmers' ability

to manage their gardens and increase farmer group businesses. Farmer education can influence the way farmers manage their businesses; For example, farmers who receive higher education become more dynamic. The individual farmer can be shaped by the combination of these traits with his environmental elements. The behavior of farmers is influenced by their personality. Characteristics of farmers can express the need for knowledge related to sustainable management (Brandi, 2020; Kurnia *et al.,* 2025) as presented in Table 1 and Table 2.

Tabel 1. Characteristics of Trainees and ISPO Introduction

No	Participant Characteristics	Gender	
		Male	Women
1	Age		
	25 years – 35 years old	15	25
	36 years – 40 years old	0	10
	> 41 years old	5	
2	Education		
	SD (Elementary School)	0	0
	SMP (Junior High School)	13	2
	SMA (Senior High School)	22	3
	Sarjana (Bachelor's degree)	2	
	Pasca Sarjana (Master's degree)	1	
3	Planters experience		
	< 3 years	3	10
	4 – 12 years	10	35
	> 13 years old	5	0
4	Farmer institutions		
	Members of Tani Jaya Farmers Group	15	25
	Non-members of Tani Jaya Farmers Group	5	

In Table 1, it can be seen that the most farmers are between 25 – 35 years old as many as 30 people, this shows that independent smallholders are of productive age, the education of the most participants in high school is 25 people so that it is possible and easy to receive new knowledge, from the institution of 40 participants are members of the Jaya Farmers group and the experience of oil palm plantation varies from 4 – 12 years and around 27 people. The longer their experience, the more knowledge they have as experience in managing farming related to increasing sustainable businesses.

The average plant age is over 7 years, generally the older the life of oil palm plants, the higher the competence of farmers in managing the plantation so that it can be said that the life of the plant also affects the competence of farmers (Habibie *et al.,* 2023; Priyanto *et al.,* 2025; Vicki *et al.,* 2021). The area of land, the number of trees, and the production also affect the competence of farmers in managing their gardens related to increasing sustainable businesses. The training on ISPO is theoretically carried out in the room, starting with collecting data on the characteristics of farmers, ISPO knowledge by the presenters. Theoretical activities continued with practice in the nursery by teaching about seed selection, planting methods, and fertilization as presented in Figure 2.

Tabel 2. Plant Conditions Belonging to Training Participants and Introduction to ISPO

No	Plant conditions	Remarks
1	Plant lifespan	
	< 3 years	2 ha
	4 – 10 years	50 ha
	> 10 years	8 ha
2	Land area owned	
	0.5 – 2 ha	20 people
	2 – 5 ha	15 people
	> 5 ha	5 people

Table 2 shows that the age of the plants owned by the participants is between 4 – 10 years, where this age is the productive age of oil palm plants, the land area owned by the participants is between 0.5 – 2 ha, this shows that the independent smallholders owned by the land are relatively low (Suhardjo & Suparman, 2025). Participants in the training and introduction to ISPO before training showed that most of them did not understand the principles and criteria of ISPO (Fadhillah *et al.,* 2021; Yanita & Ningsih, 2020). After the refinement and introduction of ISPO there was an increase as presented in Table 3.

Table 3. Participants' understanding of ISP principles and criteria

No	Plant conditions	Before			After		
		<60	61-79	>80	<60	61-79	>80
1	Legal Compliance	42	3	0	0	35	10
2	Implementation of Good Garden Practices	45	0	0	0	40	5
3	Environmental, Natural Resources, and Biodiversity Management	43	2	0	0	33	12
4	Implementation of Transparency	41	4	0	0	30	15
5	Continuous Business Improvement	40	5	0	0	40	5

The level of knowledge of farmers related to ISPO knowledge, knowledge and completeness of documents on legality and plantation management, smallholder organization and plantation management, knowledge and management related to environmental management and monitoring, and knowledge about improving sustainable businesses (Pareira, 2023; Plantation, 2023).

3.2. Second Stage

This activity began with an introduction to the basics of farm management, including recording activities, bookkeeping the use of costs used in cultivation and determining the price of fresh fruit bunches. The managerial basis of this farming business shows how to book income. Then continued training on financial managerial which includes making sustainable farming records related to the measurement of aspects of Equity Ratio (ER), Total Asset Turn-Over Ratio (TAT), Farm to Non-farm Receipts Ratio (FNF), Liquidity Ratio (RL), Farm Business Payment Ratio (FPR), Return on Capital (ROC), Return on Equity (ROE), Total Gross Margin (TGM) (Figure 1).

Figure 1. Implementation of Training in the Classroom

Figure 2. Implementation of sustainable palm oil practices

Managerial knowledge for participation in improving competencies is necessary for the creation of sustainable farming records by taking into account (Hamidi *et al.,* 2024). The level of expenditure does not exceed income, Having a reserve fund to continue operating if things go unplanned, Positive growth of the cash balance by dividing the profits to be invested a little in farming and the rest to replenish the reserve fund, The level of debt ratio tends to be low (Wibowo *et al.,* 2023).

Farmers' knowledge in making sustainable farming records related to the measurement of aspects of Equity Ratio (ER), Total Asset Turn-Over Ratio (TAT), Farm to Non-farm Receipts Ratio (FNF), Liquidity Ratio (RL), Farm Business Payment Ratio (FPR), Return on Capital/Return on Capital (ROC), Return on Equity (ROE), Total Gross Margin (TGM) as a whole is still unsatisfactory with the results presented in Table 4.

Table 4. Participant's Managerial Skills Before and After Training

No	**Activities**	**Before**			**After**		
		<60	**61-79**	**>80**	**<60**	**61-79**	**>80**
1.	Equity Ratio (ER)	40	5	0	0	35	10
2.	Total Aset Turn-Over Ratio (TAT)	45	0	0	0	40	5
3.	Farm to Non-farm Receipts Ratio (FNF)	40	4	1	0	43	2

4.	Race Residue (RL)	35	9	1	0	39	6
5.	Farmer Business Payment Ratio (FPR)	39	6	0	0	40	5
6.	Return on Equity (ROE)	40	5	0	0	38	7
7.	Total Gross Margin (TGM)	45	0	0	0	30	15

Table 4 shows that there has been an increase in understanding from all trainees so that the training and introduction of ISPO are successful. The participants turned out to have no managerial experience in oil palm plantation, so this training experienced initial obstacles in introducing and providing an explanation of the managerial of farmers and the terms (Rinaldi & Mashur, 2022).

3.3. Third Stage

The evaluation of PKM activities aims to determine the improvement of knowledge and practices of oil palm cultivation. Theoretical evaluation in written form for practice Evaluation is carried out orally. The results of the evaluation as presented in Table 3 and Table 4 show an increase in understanding from the participants. Evaluation of comprehension skills before and after training through questionnaires with results scored into 3 categories of not understanding (score < 60), understanding (score 61 – 79) and understanding (score > 80).

Tabel 5. Prsentase Peningkatan Kemampuan Peserta

No	Activities	Before			After		
		Don't understand it yet	Understand	Percentage	Don't understand it yet	Understand	Percentage
1	Farm Managerial	40	5	11,1%	0	45	100%
2	ISPO Principles and Criteria	41	4	8.88%	2	43	95%

Table 5 shows that there was an increase in the understanding of all participants in farm business management from 11% to 100%, then in the principles and criteria of ISPO from 8.8% to 95%. Based on this data, it can be concluded that this activity has succeeded in providing an increase in understanding.

4. Conclusions

The characteristics of independent oil palm farmers affect the competence and knowledge of farmers in sustainable farming after the training, there is a change in understanding, from those who do not know to understand and understand. So that the training has significantly encouraged farmers' knowledge and skills related to aspects of ISPO knowledge, knowledge and completeness of legality and plantation management documents, knowledge of planter organizations and plantation management, knowledge of environmental management and monitoring, and knowledge of sustainable business improvement.

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6. Authors Note

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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