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Strategies for Oil Palm Smallholders to Improve Their Livelihood: A Qualitative Study

Remie Jugah¹, Sharifah Wan Yusuf¹, Abdul Rahman Saili^{1*}, Kamalul Adham Che Ruzlan, Zaiton Sapak, Nur Badriyah Kamarul Zaman, Nur Hazwani Mohammad Azam, Ivy Jugah

¹ Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, Cawangan Sarawak Kampus Samarahan, Sarawak, Malaysia

² Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300, Kota Samarahan, Sarawak, Malaysia

³ Faculty of Plantation and Agrotechnology Universiti Teknologi MARA (UiTM), Malacca Branch, Jasin Campus, 77300 Merlimau, Melaka, Malaysia

⁴ Faculty of Administrative Science and Policies Studies, Universiti Teknologi MARA, 94300, Kota Samarahan, Sarawak

*E-mail: arsaili@uitm.edu.my

Abstract. Oil palm is widely cultivated for its high yield of edible oil. While Malaysia is known for large-scale oil palm production, Sarawak stands out for its numerous smallholder plantations. In this region, smallholders play a vital role in both subsistence farming and cash crop agriculture, though they face challenges in maintaining productivity and improving livelihoods. This study investigates the strategies oil palm smallholders in Sarawak, Malaysia, use to enhance their livelihoods. A qualitative approach was employed, using semi-structured interviews with fifteen smallholders in Sri Aman, Sarawak, selected through snowball sampling. Thematic analysis identified key strategies adopted by these farmers. Findings show that smallholders improve their livelihoods through replanting, crop diversification, engaging in additional farming activities, and seeking support from relevant authorities and organizations. These strategies help smallholders sustain plantation performance despite challenges. This study provides important insights into how smallholders navigate the oil palm sector, emphasizing the need for targeted support to bolster their livelihoods and the overall sustainability of small-scale plantations.

1. Introduction

Oil palm (*Elaeis guineensis*) is extensively grown for its high oil yield, making Malaysia one of the world's leading producers and exporters of this crop. Malaysia is the second largest producer of palm oil, accounting for more than 44% of the global palm oil exports after Indonesia [1].

According to a report by [2], Datuk Dr. Ahmad Parveez Ghulam Kadir, the Director General of MPOB, stated that in 2022, the total oil palm planted area decreased by 1.1% to 5.67 million hectares from the previous year's 5.74 million hectares. Sarawak retained its position as the state with the largest oil palm cultivation, accounting for 1.62 million hectares, or 28.6% of the total area. Sabah followed closely with 1.51 million hectares, representing 26.6% of Malaysia's total oil palm plantation area. Peninsular Malaysia accounted for 2.54 million hectares, or 44.8% of the total planted area.

1.1 Small-holder oil palm

Various stakeholders are involved throughout the entire production chain of oil palm, including smallholder farmers who cultivate oil palm as their main source of income and typically manage less than 50 hectares of plantation land [3]. These small-scale farmers play a significant role in Malaysia's palm oil sector, contributing around 40% of the country's total palm oil output [4]. In Malaysia, smallholders are divided into two main groups: Independent Smallholders (ISH) and Organized Smallholders (OSH). Independent smallholders operate autonomously, managing their own finances and resources without affiliation to any specific mill [5]. In contrast, Organized



Smallholders are collectively supervised by governmental bodies such as the Federal Land Development Authority (FELDA), Sarawak Land Consolidation and Rehabilitation Authority (SALCRA), or other federal and state agencies [4].

Smallholder oil palm has proven to be a relatively productive livelihood strategy high returns to household labor and capital, even if the yield per unit of land is low. However, oil palm smallholders who play an important role in the palm oil sector are often faced with finding the right strategy to maintain the performance of palm oil cultivation and sustaining their livelihood. Hence, the aims of this study were to discover the oil palm (*Elaeis Guineensis*) smallholder strategies to improve their livelihood. A qualitative approach was employed by using interviews to identify the strategies by smallholder.

2. Methodology

2.1 Qualitative research

A qualitative approach was used in this study. Qualitative research investigated the use and collection of a wide range of empirical materials, such as case studies, personal experiences, introspective life stories, interviews, observational, historical, interactional, and visual texts, in terms of routine and problematic moments and meanings in people's lives [6]. Due to the oil palm smallholder farmers' continued anonymity, the snowball sampling approach was employed in this study. Typically, the researchers started with a small number of initial contacts (seeds) who were invited to participate in the study because they satisfied the criteria [7].

2.2 Data collection

The semi-structured interviews used in this study's qualitative research were conducted. The interviews took place in a language that the interviewees felt comfortable speaking, whether that be English, Bahasa Iban, or Malay. By doing this, the researcher and participants could communicate with one another more precisely. The choice of Sri Aman as the primary focus area for this research study anticipates the acquisition of valuable insights into the challenges and opportunities associated with small-scale oil palm farming in the region.

2.3 Data Analysis

The data for this study were analyzed using thematic analysis. Thematic analysis was particularly well-suited as an analytical method for qualitative research with social justice objectives [8]. During the data analysis, new interview subjects were discovered and included in the framework [9]. For each topic, the most crucial issues were totaled and identified. The data were then examined by looking for recurrent themes and highlighting differences and similarities.

In this study, fifteen of oil palm smallholder at Sri Aman were selected as a participants. Table 1 presents the demographic characteristics of the participants. To safeguard their privacy, numerical identifiers were employed instead of names.

Table 1. Participant profile.

No	Name	Gender	Age	Highest Education	Experienced In planted oilpalm (year)	Total farm size (ha)
1.	Participant 1	Female	53	Year 6	20	1.5
2.	Participant 2	Female	54	Year 6	20	4.86
3.	Participant 3	Female	61	-	6	0.809
4.	Participant 4	Male	60	Form 3	10	9.79
5.	Participant 5	Male	60	Form 3	25	52.60
6.	Participant 6	Male	60	Form 5	6	1.45
7.	Participant 7	Male	52	Form 5	15	3
8.	Participant 8	Male	55	Year 5	11	12.14
9.	Participant 9	Male	63	Form 3	20	2.83
10.	Participant 10	Male	40	Form 5	23	6
11.	Participant 11	Male	55	Form 3	30	4
12.	Participant 12	Male	59	Year 2	5	3
13.	Participant 13	Male	35	Form 6	5	2.5
14.	Participant 14	Female	53	Form 3	7	3
15.	Participant 15	Female	47	Form 2	7	3

3. Result

3.1 *The oil palm (Elaeis Guineensis) smallholder strategies to improve their livelihood.*

The main themes emerged from the results data of this study is strategies. These themes were developed based on the objective of the study. The interviewees discussed and mentioned their various strategies to improve their livelihood. This theme has brought up the sub-themes which are replanting, cultivating another crop, doing other farming activities and seeking for any agricultural support and assistance from responsible parties and organizations

3.1.1 *Replanting*

A few interviewees expressed intentions to engage in oil palm replanting within the upcoming years. Additionally, some are considering planting oil palm in a new area. Replacing old or unproductive oil palm trees through replanting initiatives offers multifaceted advantages across economic, social, and environmental spheres. This practice contributes to heightened productivity and income generation among farmers, forming a program aimed at rejuvenating plantations by systematically introducing new plants either entirely or gradually [10]. Notably, this approach stands to enhance the economic well-being of smallholder farmers [11].

My oil palm tree is already 20 years old, I plan to replant it in the next three to four years. At the same time, I intend to plant oil palm in a new area.

(Participant 1)

I aim to commence replanting next year as my current oil palm tree has reached the age of 20. Subsequently, I intend to initiate oil palm cultivation in a different location.

(Participant 2)

As my 20-year-old palm trees have reached maturity, I'm planning to replant them and establish new palm trees in a different area. Currently, I'm in the process of clearing the land for this purpose.

(Participant 9)

Once my oil palm trees have aged beyond 20 years, I will undertake replanting. Currently, I've commenced land clearing for the cultivation of new oil palm trees in a different farming area.

(Participant 14)

I have a future plan to replant oil palm trees when they reach the appropriate age.

(Participant 13)

With ample uncultivated land available, I intend to replant my oil palm trees, beginning on new and more extensive plots.

(Participant 11)

Due to my limited land availability, I am currently waiting for the opportune moment to proceed with replanting.

(Participant 15)

I've devised a plan to replant my oil palm tree since it has reached 23 years of age.

(Participant 10)

3.1.2 *Cultivating another crop*

Some of interviewees mentioned that they are interested to cultivate cash crop such as Durian (*Durio zibethinus*), Dabai (*Canarium odontophyllum*), Pineapple (*Ananas comosus*), Coffee (*Coffea*), Rubber (*Hevea brasiliensis*), Manggo (*Mangifera indica*), Guava (*Psidium guajava*), Langsat (*Lansium domesticum*), Mangosteen (*Garcinia mangostana*) and vegetables. They indicated that they have individual motives behind their desire to cultivate that particular crop.

I would like to propose cultivating pineapple and rubber as future endeavors.

(Participant 3)

Recently, I got a pineapple planting scheme from the Department of Agriculture. I have already planted 1,000 Pineapple trees.

(Participant 5)

Most of interviewees expressed interest in cultivating lucrative cash crops like Durian (*Durio zibethinus*) and Dabai (*Canarium odontophyllum*) due to the belief that these fruits can yield favorable results, given their high market prices. Cultivating cash crops such as Durian and Dabai holds promise for smallholder farmers, attributed to their high market value that can elevate incomes, enhance living standards, and positively impact nutrition and health [13].

I intend to cultivate fruits like Durian and Dabai that promise profitable returns.

(Participant 15)

My strategy to improve my future livelihood is to grow fruits such as Durian, Dabai and Pineapple.

(Participant 13)

I intend to cultivate fruits and vegetables for commercial purposes, such as Durian, Dabai, Mango, Guava, and various others.

(Participant 11)

I intend to cultivate Durian, Dabai, and Langsat fruits. Despite their seasonal nature, these fruits command high prices.

(Participant 9)

A farmer mentioned intentions to start cultivating coffee, inspired by a friend who had prior experience growing coffee in a neighboring nation. Growing coffee can bring about a range of beneficial effects on the environment, economy, and local community. Its cultivation not only fosters improved healthcare, education, and opportunities for families but also aids in community development and infrastructure enhancement [14].

I plan to cultivate coffee inspired by a friend who previously grew coffee in a neighboring country. I gained some insights into coffee cultivation through my interactions with them.

(Participant 12)

3.1.3 Doing other farming activities

Apart from considering crop cultivation and replanting, certain interviewees expressed interest in diversifying into fish farming, sting-less bee farming, livestock rearing, as well as exploring hydroponic and fertigation methods.

Two of interviewees expressed interest in hydroponic techniques and fertigation methods. They are planning to cultivate vegetables through this farming techniques. Hydroponic methods and fertigation practices adopted by small-scale oil palm farmers can significantly benefit their agricultural endeavors. These approaches facilitate enhanced vegetable yields, decreased water consumption, and better control over nutrient administration [15]. Fertigation, on the other hand, delivers nutrients and water directly to the root zone, enhancing crop absorption and significantly improving fertilizer utilization efficiency [16].

I intend to engage in hydroponics and fertigation to cultivate vegetables commercially, capitalizing on the extensive open space available in my home area.

(Participant 7)

I'm exploring Fertigation for growing vegetables and studying Hydroponics techniques for cultivating vegetables.

(Participant 5)

Other than having interest in hydroponic techniques and fertigation methods, participant 7 also mentioned that he plans on raising livestock for commercial use and have begun seeking information on this endeavor.

I'm keen on raising livestock for commercial use and have begun seeking information on this endeavor.

(Participant 7)

One of oil palm smallholder farmers at Sarawak mentioned that he plans to cultivate fish in ponds for commercial use because he believes that this type of farming is profitable. According to FAO Fisheries & Aquaculture, aquaculture serves as a prevalent income source in Malaysia, where the nation boasts a thriving aquaculture sector, specifically focusing on cultivating high-value species such as shrimp, marine fish, and valuable freshwater fish. Commercial fishpond farming in Malaysia presents substantial promise, particularly in cultivating fish varieties such as catfish, empurau, and tilapia. Research has highlighted the advantages of incorporating environmental enrichment methods in catfish farming to enhance well-being and decrease stress, ultimately refining aquaculture techniques [17]. Hence, embracing fishpond farming for commercial purposes, specifically focusing on these fish species, offers significant potential for small-scale farmers in Malaysia. This avenue not only allows them to enhance their livelihoods but also contributes positively to the rural economy.

I intend to engage in farming endeavors like cultivating fish in ponds for commercial use for example Catfish and Empurau.

(Participant 13)

An interviewee is contemplating entering the stingless bee (Kelulut) farming sector due to its favorable pricing, lack of substantial competition, and its significance as a pollinator.

I'm considering venturing into stingless bee (Kelulut) farming due to its promising prices, limited competition, and its role as a pollination agent. I've recently begun familiarizing myself with this farming practice.

(Participant 10)

3.1.4 Seeking any agricultural support and assistance from responsible parties and organizations.

Oil palm smallholder farmers are eager for more help in inputs and guidance from relevant organizations. They've emphasized the problem of insufficient support from responsible entities, especially impacting rural farmers. Small-scale oil palm farmers often confront difficulties in receiving adequate assistance and guidance from responsible bodies, particularly affecting those in rural areas.

As a small-scale farmer with limited income, we are hoping for assistance from the appropriate entities, such as support with agricultural resources and inputs.

(Participant 4)

As a rural farmer, I earnestly wish for assistance from the relevant authorities, specifically in the form of agricultural resources and guidance services.

(Participant 2)

I intend to cultivate different crops, but due to the substantial financial requirement, it poses a challenge. Hence, we, as small-scale farmers, anticipate assistance from the authorities.

(Participant 1)

Given the current scarcity of inputs, assistance with these resources is genuinely needed by us small-scale farmers, if possible.

(Participant 14)

In our rural community, we require support in terms of guidance, supplies, and personal protective gear. We hope the relevant authorities can take this into account.

(Participant 12)

I wish for support from the relevant authorities regarding input and guidance services of oil palm cultivation. Specifically, guidance on hydroponics and fertigation techniques would be greatly appreciated.

(Participant 11)

We, as small-scale farmers, are currently hoping for assistance from the appropriate authorities. The cost of agricultural inputs has become prohibitively high.

(Participant 8)

I believe it's necessary for the relevant authority to establish a revenue collection center in our locality. Additionally, as small-scale farmers, we require assistance in terms of input and advisory services.

(Participant 7)

4. Discussion

4.1 Replanting

In exploring the future aspirations of oil palm smallholders to enhance their livelihoods, a common theme emerges—strategic planning. Smallholder farmers revealed a spectrum of strategies aimed at improving their economic prospects. The first strategy they mentioned was replanting. Some interviewees have indicated their plans to participate in oil palm replanting in the coming years, while others are considering planting oil palm in new areas. Replacing old or unproductive oil palm trees through such replanting initiatives offers various advantages across economic, social, and environmental dimensions. This practice contributes to increased productivity and income generation among farmers, establishing a program aimed at revitalizing plantations by systematically introducing new plants either entirely or gradually [10]. Importantly, this approach has the potential to improve the economic status of smallholder farmers [11]. Revitalizing oil palm plantations can create job opportunities, promote rural development, and help alleviate poverty [18]. However, not all stakeholders benefit equally from this practice, as some may face constraints on customary land use rights and experience land loss. Renewing oil palm cultivation has both positive and negative implications for the environment. While it can lead to deforestation, biodiversity loss, and soil erosion [19], it also provides opportunities for establishing and restoring riparian buffers, thus supporting ecosystem functionality [20]. Additionally, this practice can improve soil health and reduce the need for fertilizers by reintegrating waste biomass into the soil [21]. When oil palm smallholder farmers replant their trees approximately every thirty years, it presents an opportunity to rejuvenate plantations, increase productivity, and ensure sustainable livelihoods. However, this process requires expertise, resources, and financial support. Mishandling or delaying this task could exacerbate existing challenges in small-scale oil palm farming, impacting both the environment and livelihoods [22].

4.2 Cultivate another crop

Notably, there was a shared intent among interviewees to engage in oil palm replanting and diversify into cultivating a range of cash crops such as Durian (*Durio zibethinus*), Dabai (*Canarium odontophyllum*), Pineapple (*Ananas comosus*), Coffee (*Coffea*), Rubber (*Hevea brasiliensis*), Manggo (*Mangifera indica*), Guava (*Psidium guajava*), Langsat (*Lansium domesticum*), Mangosteen (*Garcinia mangostana*) and vegetables. Two of the interviewees mentioned that they are interested in cultivating cash crops such as Pineapple (*Ananas comosus*). Past research emphasizes the favorable aspects of cultivating pineapples alongside oil palms. This combined cultivation offers smallholder farmers an additional income source, fostering rural development and potentially easing poverty [12]. Efficient management of oil palm agroforestry holds promise, suggesting that growing multiple crops closely could be pivotal in lessening the impact of oil palm plantations on forests [23].

Most of interviewees expressed interest in cultivating lucrative cash crops like Durian (*Durio zibethinus*) and Dabai (*Canarium odontophyllum*) due to the belief that these fruits can yield favorable results, given their high market prices. Cultivating cash crops such as Durian and Dabai holds promise for smallholder farmers, attributed to their high market value that can elevate incomes, enhance living standards, and positively impact nutrition and health [13]. Furthermore, incorporating these crops alongside oil palm through intercropping not only has the potential to curb deforestation and heighten biodiversity but also augments farmers' earnings without

compromising palm oil yield [23]. Research exploring the medicinal properties and phytochemicals of native tropical fruits highlights Dabai as a promising indigenous fruit in Malaysia, particularly in Sarawak, with potential for commercial growth and development [24].

A farmer mentioned intentions to start cultivating coffee, inspired by a friend who had prior experience growing coffee in a neighboring nation. Increased income from coffee farming enables individuals to sustain their families, afford education for their children, and acquire essential goods. Engaging in sustainable coffee production stands as a potent tool in combating climate change by reducing reliance on pesticides, curbing deforestation, and advocating for organic, regenerative farming methods [25]. Furthermore, the practice of cultivating shade-grown coffee aids in conserving water resources [26]. Overall, coffee farming, when conducted sustainably, supports biodiversity preservation, organic and regenerative agriculture, and the conservation of natural resources [25]. These sustainable farming approaches not only ensure the long-term health of coffee farms but also foster economic stability, social development, and the production of high-quality beans.

4.3 Doing other farming activities

interviewees expressed a keen interest in diversifying into various activities such as fish farming, sting-less bee farming, livestock rearing, hydroponic farming, and fertigation methods. Two of the interviewees expressed interest in hydroponic techniques and fertigation methods. They plan to cultivate vegetables through these farming techniques. These approaches facilitate enhanced vegetable yields, decreased water consumption, and better control over nutrient administration [15]. Moreover, the utilization of hydroponics allows year-round vegetable cultivation, offering farmers a more dependable income stream [15]. Hydroponic setups diminish pesticide reliance, fostering eco-conscious crop cultivation while also supporting sustainable practices by minimizing land and energy requirements [29]. Fertigation, on the other hand, delivers nutrients and water directly to the root zone, enhancing crop absorption and significantly improving fertilizer utilization efficiency [16]. Embracing these agricultural methods can result in a more eco-friendly and effective farming system, bringing advantages to the environment, economy, and nearby communities.

One of the participants mentioned that he plans on raising livestock for commercial use and has begun seeking information on this endeavor. The livestock sector is a vital segment of Malaysia's agriculture, serves as a source of employment, providing valuable animal protein for the populace while bolstering the country's agricultural GDP. In 2021, the livestock industry contributed an estimated 16.52 billion to Malaysia's GDP [27]. It satisfies the domestic demand for meat, milk, and dairy products, generating income and supporting the economy [30]. Nonetheless, alongside its positive impacts, livestock farming in Malaysia poses challenges such as environmental degradation, greenhouse gas emissions, unsustainable practices, and land/resource competition [28]. Despite its economic benefits, addressing these challenges through sustainable farming practices is crucial [33] to ensure long-term success while mitigating adverse effects.

An interviewee is contemplating entering the stingless bee (Kelulut) farming sector due to its favorable pricing, lack of substantial competition, and its significance as a pollinator. A report from the Earth Journalism Network [34] highlights a shift among rural farmers toward raising stingless bees, signaling an increasing attraction to sting-less bee farming because of its potential role in pollination. In the Philippines, the presence of kiwot bees, a type of stingless bee, has reportedly amplified coconut yields by up to 50% [31]. Stingless bee cultivation not only aids in environmental preservation but also aids in the restoration of areas impacted by their activities, as beekeepers typically prioritize environmental conservation [32]. Within oil palm plantations, conservation initiatives for bees can play a role in local sustainable development and biodiversity support. Moreover, the medicinal properties of stingless bee honey, such as wound healing, anti-cancer attributes, and treatment for eye ailments, have been documented [35]. Ultimately, the stingless bee farming industry has the potential to bring substantial advantages to small-scale farmers and the nation, including heightened yields, better crop quality, economic prospects, environmental preservation, and increased resilience.

One of oil palm smallholder farmers at Sarawak mentioned that he plans to cultivate fish in ponds for commercial use because he believes that this type of farming is profitable. Research has highlighted the advantages of incorporating environmental enrichment methods in catfish farming to enhance well-being and decrease stress, ultimately refining aquaculture techniques [17].

4.4 Seeking agricultural support and assistance from relevant authorities and organizations.

The smallholder oil palm farmers emphasized the critical need for increased support and guidance from relevant organizations. They stressed the challenges they face in accessing adequate assistance, particularly in rural areas. Research has outlined multiple issues and hurdles encountered by these farmers, such as diminished yields, limited financial means, and a lack of agricultural expertise [11]. Scarce financial resources often hinder their capacity to adopt modern technology and enhance farming methods [36].

Additionally, deficiencies in agricultural expertise, such as fertilizer application and harvest timing, can adversely impact their agricultural ventures [11]. In Malaysia, social challenges faced by oil palm smallholders encompass land disputes, environmental concerns, and the clash between traditional practices and modern technology [36]. These challenges underscore the pressing necessity for increased support and guidance from pertinent organizations to aid these farmers in refining their agricultural methods, accessing benefits from oil palm cultivation, and addressing the social issues they encounter.

In conclusion, the shared vision among these farmers involves implementing diverse and innovative strategies to not only sustain but enhance their livelihoods, underscoring the importance of comprehensive support to realize these aspirations.

5.0 Conclusion

The objective of this study is to discover the oil palm (*Elaeis Guineensis*) smallholder strategies to improve their livelihood. In exploring the future aspirations of oil palm smallholders to enhance their livelihoods, a common theme emerges—strategic planning. Smallholder farmers revealed a spectrum of strategies aimed at improving their economic prospects. Notably, there was a shared intent among interviewees to engage in oil palm replanting and diversify into cultivating a range of cash crops, including Durian, Dabai, Pineapple, Coffee, Rubber, Mango, Guava, Langsat, and Mangosteen. Each farmer expressed unique motivations behind their choice of crops. Furthermore, interviewees expressed a keen interest in diversifying into various activities such as fish farming, sting-less bee farming, livestock rearing, hydroponic farming, and fertigation methods. Two participants specifically highlighted their plans to adopt hydroponic techniques and fertigation methods for cultivating vegetables, showcasing an openness to innovative farming approaches. Some farmers are also considering commercial ventures in livestock raising and fish cultivation in ponds, recognizing these methods as potentially lucrative. The smallholder oil palm farmers emphasized the critical need for increased support and guidance from relevant organizations. They stressed the challenges they face in accessing adequate assistance, particularly in rural areas. In conclusion, the shared vision among these farmers involves implementing diverse and innovative strategies to not only sustain but enhance their livelihoods, underscoring the importance of comprehensive support to realize these aspirations.

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