

# Maximising Smallholders' Income through Agro-tourism

Kalsom Zakaria\*;  
Azman Ismail\*;  
Balu Nambiappan\* and  
Kamalrudin Mohamed  
Salleh\*

## Article history:

Received date: 13 Dec. 2019

Accepted: 14 Feb. 2020

Available online: 25 March 2020

## ABSTRACT

*In Malaysia, there are about 650 000 oil palm smallholders who rely on the oil palm industry for their livelihoods. The fluctuation in world palm oil prices directly affects the oil palm industry in Malaysia, especially the smallholders. At the moment, the government promotes the integration of oil palm plantation with crops and livestock through MPOB to improve the oil palm smallholders' income. Nevertheless, some smallholders integrate their oil palm farm with agro-tourism. Smallholders' involvement in integration involving other crops has long been studied; however, the integration between oil palm smallholdings with agro-tourism has yet to be studied. Therefore, this study aims to examine the extent to which the integration between oil palm smallholdings and agro-tourism would increase the smallholders' income by using a cost-benefit analysis. This study which focuses in Perak had showed that whether smallholders integrate their farm with agro-tourism or concentrate on oil palm farming alone, both options have the potential to provide smallholders with consistent returns. The cost-benefit analysis conducted showed a positive net present value (NPV) and high internal rate of return (IRR) for both options. This study also revealed that for the oil palm-based agro-tourism model, although the occupancy rate was reduced to between 70% and 50% of the current level, the agro-tourism model was still viable. Nevertheless, if the occupancy rate was reduced to 20% of the current level, this study showed that the NPV and IRR for the model with agro-tourism were lower than that of the model without agro-tourism. Therefore, to ensure the maximisation of their income, the oil palm smallholders should diversify their activities to include other activities, such as agro-tourism.*

**Keywords:** agro-tourism, cost-benefit analysis, smallholder, income, price.

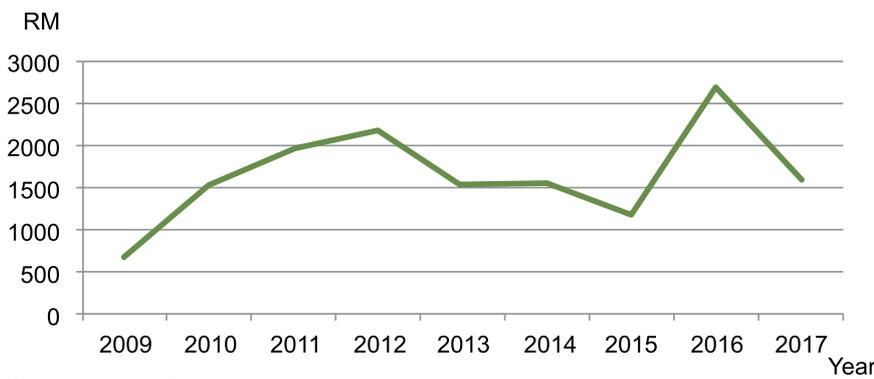
## INTRODUCTION

Oil palm smallholders in Malaysia are defined as those cultivating less than 100 acres (or 40.46 ha) of land (Simeh *et al.*, 1998). In Malaysia, there are currently more than 650 000 oil palm smallholders (Yee, 2019) of which 250 000 are independent smallholders. Most of the independent smallholders have low incomes, depending on

the oil palm prices and fresh fruit bunch (FFB) yield. *Figure 1* shows the average income of oil palm smallholders in 2009 was RM700. The income increased year by year until 2012 (RM2185). From 2013 to 2017, the average income of smallholders was inconsistent.

The instability of smallholders' income is partly due to inconsistencies between palm oil prices and oil palm yield. As

\* Malaysian Palm Oil Board,  
6 Persiaran Institusi,  
Bandar Baru Bangi,  
43000 Kajang, Selangor, Malaysia.  
E-mail: kalsom@mpob.gov.my



Source: MPOB (2017). unpublished

Figure 1. Malaysia - Monthly average oil palm smallholder's income.

shown in Figure 2, the average monthly prices of FFB (at mill gate) are volatile. From 2009 to 2018, the highest prices were in February 2011, with the average prices of RM835, RM799, and RM762 for grade A, grade B, and grade C, respectively. Meanwhile, the lowest prices were in January 2009, with the average prices of RM335, RM318, and RM301 for grade A, grade B, and grade C, respectively. Ahmad *et al.* (2015) also found that 47.6% of the smallholders in Johor, Sabah and Sarawak earned less than RM2000 per month. In addition, Nordin *et al.* (2017) found that 37.8% of the independent smallholders in Sabah and Sarawak earned around RM1000 to RM2500 per month.

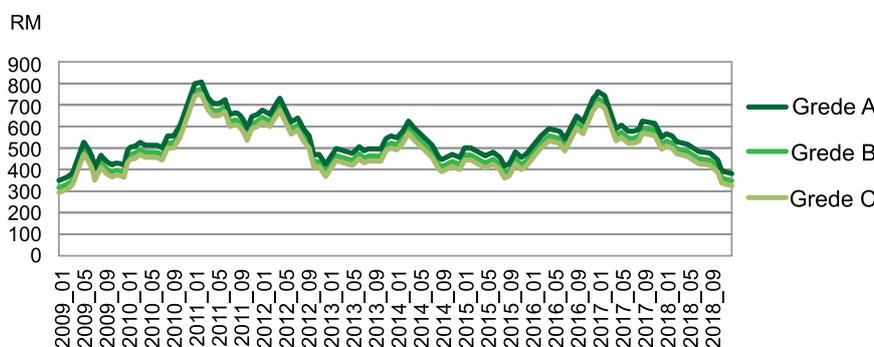
According to the Malaysian Palm Oil Board (2018), the Malaysian oil palm industry had a challenging

performance in 2018 as compared to the achievement in 2017. Palm oil production, exports, prices as well as export earnings declined, while imports and closing stocks of palm oil showed a significant increase. Meanwhile, the yield of fresh fruit bunches (FFB) witnessed a significant decrease due to a biological effect after experiencing a high yield in 2017, coupled with the unpredictable rainy season which affected the harvest.

Previous studies showed that the smallholders' income was quite low. Thus, the integration programme was introduced by the government to enhance their income. There are several incentives provided by the government through MPOB, such as *Integrasi Tanaman dengan Sawit* (ITA), which was the Government's incentive to the smallholders of RM3000 per hectare and limited

to only 4 ha for purchasing agricultural input to implement crop integration in the oil palm area. However, this incentive ended in 2017. The *Integrasi Ternakan dengan Sawit* (ITE), for the livestock integration, MPOB offers three options for smallholders to select; either 11 heads of cattle (1 bull and 10 cows) or 22 heads of goat (2 bucks and 20 does) or 22 heads of sheep (2 rams and 20 ewes). It is aimed to encourage smallholders to increase their productivity and income. Various studies have been conducted to highlight the benefits of integration in oil palm plantations. According to Jalaludin (1996), integrating livestock farming with oil palm plantations will ensure long-term profitability as well as the sustainability of the agriculture industry in a very competitive environment. Latif and Mamat (2002) studied the financial aspect of cattle integration in oil palm plantations using cost-benefit analysis (CBA), net present value (NPV), internal rate of return (IRR), and benefit-cost ratio in three estates. The study on the three estates showed that cattle rearing at oil palm plantations could be pursued successfully. A study carried out by Gabdo and Ismail (2013) in Johor found that integration contributed significantly to the reduction of production cost through land use maximisation, thereby increasing the smallholders' income. Ismail and Wahab (2014) also concluded that the adoption of an integrated farming system in the plantations is able to increase the smallholders' income as well as their standard of living.

Ayob and Kabul (2009) investigated the viability of cattle rearing integration in oil palm plantations through systematic management. The results showed that the integration of cattle into oil palm plantations through



Source: MPOB 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2019.

Figure 2. Malaysia – Monthly average FFB price (mill gate).

systematic management is economically sustainable. The results also indicated that cost savings in maintenance, labour requirement, and labour cost could be achieved. Zaimah *et al.* (2017) investigated the crop-livestock integration among oil palm smallholders, focusing on oil palm smallholders in Johor. The study found that majority of the smallholders intended to continue integrating their oil palm farms in the future as they were satisfied with the integration that had been carried out over the years. The study also found that integration increased the oil palm smallholders' income. Based on the previous studies, it can be concluded that integration is capable of increasing oil palm smallholders' income.

At this moment, the focus of integration in oil palm farms is with other crops or livestock. However, several other integrations can also be applied to the oil palm farms, such as agro-tourism. Tourism has been increasingly perceived as part of the global economy and culture. Moreover, the prevailing concerns regarding sustainability have placed tourism practices in the limelight. Sustainable tourism ensures that its products and services are operated in harmony with the local environment, community and culture so that these entities become the beneficiaries instead of casualties of tourism development. The role of tourism in development, especially in rural areas, is primarily economically oriented towards improving the quality of life. Thus, tourism has a robust multiplier effect which contributes to development. By consuming local tourism and non-tourism products and services, tourism can be a potent vehicle for development in many areas, including the rural regions (Hassan *et al.*, 2006).

Currently, agro-tourism has become an additional business activity to increase the incomes of some oil palm smallholders. The

positive growth of the Malaysian tourism industry has indirectly provided opportunities for agro-tourism. Several studies have found the tourism sector as one of the sectors contributing to the country's economic growth. Idowu (2009) found a direct relationship between tourism and economic growth. Similarly, Salleh *et al.* (2010), Samimi *et al.* (2011), Savas, Beskaya, and Samiloglu (2010), Narayan *et al.* (2010), and Katircioglu (2009) found a positive relationship between tourism and economic growth. These studies show that tourism is an essential sector for economic growth. Agro-tourism is one of the components in the tourism sector. According to the World Tourism Organisation (2002), agro-tourism is part of rural tourism and is related to tourism on farms. It provides farmers with the opportunity to expand their activities and also to increase their income.

Several studies have been conducted on the impact of agro-tourism on income. Catalino and Lizardo (2004) argued that a well-developed agro-tourism industry would result in a market mechanism that generates additional income. It shows that agro-tourism has the added benefit of promoting sustainable agricultural practices. Snyman (2014) studied the impact of eco-tourism employment on rural household incomes and social welfare in six southern African countries. Extensive socio-economic interviews were conducted in camps run by Wilderness Safaris in Botswana, Malawi, Namibia, South Africa, Zambia, and Zimbabwe. The results showed that rural households were relying heavily on the market economy, mainly in the form of eco-tourism, which support and highlight eco-tourism employment's important role in the local socio-economic development in remote, rural areas. Sakhile Nsukwini and Urmilla Bo (2016) also agreed on the positive impact

of eco-tourism. This study focused on the impact of eco-tourism on the socioeconomic aspect in rural areas. The results indicated that the Nompondo community benefited in various ways from eco-tourism.

A study by Budiasa and Ambarawati (2014) on the linkages between the demand and offer of agro-tourism products and services of the Salak Sibtan plantation found that the attractions of the plantation including visiting a salak plantation and picking fresh salak fruits, visiting a winery, as well as crispy chip demonstration and tasting could attract visitors to visit the plantation. Besides, Ummiroh and Hardiyani (2013) found that plantations could be used as a tourist attraction. Their study focused on a coffee plantation in Jember District, Indonesia.

Recently, several oil palm plantations have been integrated with agro-tourism activities, such as Sinar Eco Resort of Johor, Homestay Ladang Moccis, Ladang Kurau Stone and Ecotourism Espek of Perak, Felda Gedangsa, Felda Sungai Tengi, Felda Tengi Selatan, and Felda Soeharto of Selangor. Among the activities conducted in these areas are jungle trekking, treasure hunts, plantation visits, all-terrain vehicles (ATV), and flying fox. Each oil palm plantation has its own uniqueness in attracting tourists to visit their place. Therefore, to ensure the attractiveness of agro-tourism, diversification of tourism activities should be introduced and implemented. It would increase tourist arrivals, thus, improving the income and standard of living of oil palm smallholders.

## METHODOLOGY

### Materials

For the purpose of this study, the oil palm agro-tourism model discussed in this study is based on a 16 ha oil palm project, of which 12 ha are used for oil palm

cultivation and the remaining 4 ha are used for the chalet area. The model discussed here is based on a 25-year project. Two scenarios are developed, one is a plantation without agro-tourism and the other is a plantation with agro-tourism. The cost for a plantation and an agro-tourism project can be classified into several categories, as shown below:

#### Plantation

- a) Development cost
- b) Production cost

#### Agro-tourism

- a) Capital expenditure
- b) Administration and operational cost
- c) Maintenance cost

#### Method

This study employed in-depth interviews with successful agro-tourism operator in Perak, whereby the model can be applied to oil palm smallholdings with agro-tourism. Based on the in-depth interviews, this study used cost-benefit analysis (CBA) to analyse the viability of integrating oil palm smallholdings with agro-tourism.

**Cost-benefit analysis.** Cost-benefit analysis (CBA) was used to evaluate the integration of agro-tourism with oil palm smallholdings to ascertain whether those projects are worthwhile. This analysis employed three main economics tools, *i.e.* net present value (NPV), benefit-cost ratio (B/C ratio), and internal rate of return (IRR).

**Net present value.** Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting to analyse the profitability of a projected investment or project.

$$= \sum_{t=1}^T \frac{C_t}{(1+r)^t} - C_0 = 0$$

where:

- $C_t$  : Net cash inflow during the period t
- $C_0$  : Total initial investment cost
- $r$  : Discounted rate
- $t$  : Number of time periods
- $\sum$  : Total

#### Benefit-cost ratio (B/C ratio).

A cost-benefit ratio is the total discounted benefits divided by the total discounted costs. This analysis attempts to summarise the overall value of money of a project or proposal.

$$= \sum \{B_t / (1+r)^t\} / \sum \{-C_t / (1+r_t)^t\}$$

where:

- $B_t$  : Cash outflow during the period t
- $C_t$  : Cash inflow during the period t
- $r$  : Discounted rate
- $t$  : Number of time period
- $\sum$  : Total

#### Internal rate of return (IRR).

IRR is used to estimate the profitability of potential investments. It is a discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero.

$$= \sum \{(B_t - C_t) / (1+r)^t\} = 0$$

where:

- $B_t$  : Cash outflow during the period t
- $C_t$  : Cash inflow during the period t
- $r$  : Discounted rate
- $t$  : Number of time period
- $\sum$  : Total

The cash flow projection was estimated for 25 years because it is assumed that by the end of the fifth year, the life span of the capital items used for the agro-tourism project would have ended. The costs of materials and labour under both methods of agro-tourism projects were captured under the operating cost, whereby a 10% contingency was estimated to cater for any extra costs since they are variable costs and have high tendencies of increasing due to price changes. The total cash outflows included total operating costs and capital costs. The net cash flows for the two methods were estimated as a result of the difference between the cash outflow (costs) and the cash inflow (returns).

## RESULTS AND DISCUSSION

### Comparison of Oil Palm Smallholding between with and Without Agro-tourism

The model smallholder started its oil palm cultivation in 2011 with 16 ha. The smallholder invested about RM1 million to purchase the land to cultivate oil palm due to the high price of palm oil at that time. The development cost of starting oil palm cultivation was around RM10 000 per hectare in the first three years. The development cost includes felling and land clearing, terracing and platform, road construction, drain construction, bund and watergate construction, lining, holing and planting, basal fertiliser, planting material, cover crop, and others expenditures. The total development cost for 16 ha was around RM160 000. Meanwhile, the production cost is RM250 per hectare. The cost covers harvesting, fertiliser, and transportation to the mill. The average FFB yield for the model smallholding is 18.5 t/ha/yr.

The agro-tourism activity started operation from 2014.

It started with 3-room wood chalets (10 pax/night). The initial cost of agro-tourism was around RM2 million. Currently, the average night bookings is around 200-250 nights per year. This farm provides guests with two options, one is night stays only and the other is night stays with an agro-tourism package. There are two agro-tourism packages offered, two days one night with activities and meals as well as three days two nights with activities and meals. Compared with a night stay without a package, 80% of the guests prefer to take a night stay with a package. Most of the guests are group accommodations from government agencies and corporate companies. Hence, they prefer to take the package.

The profitability of integrating agro-tourism with oil palm depends, among other factors, on the number of guests staying at the chalets. The stay is mainly on holidays and weekends. The model smallholder uses 4 ha of the total 16 ha-land to develop chalets and landscaping for agro-tourism. Several costs are involved in developing agro-tourism, including the management cost such as administration and office expenses, maintenance, utilities, toiletries, rental and the purchase of equipment.

Table 1 shows the cost-benefit analysis comparison involving two scenarios: 1) an oil palm smallholding operating without integration with agro-tourism and 2) an oil palm smallholding operating with integration with agro-tourism. The business operation length calculated in this study was set at 25 years based on the economic lifespan of an oil palm tree. From the analysis, it is found that the net present values (NPVs) for the two scenario are positive and the highest NPV is the plantation with agro-tourism (RM8 625 809). Meanwhile, the NPV for the plantation without

**TABLE 1. OIL PALM WITHOUT AGRO-TOURISM AND WITH AGRO-TOURISM**

Items	Without agro-tourism (RM)	With agro-tourism (RM)
<b>Revenue</b>		
Estate	3 581 600	2 686 200
Agro-tourism	-	40 562 500
<b>Total Revenue (A)</b>	<b>3 581 600</b>	<b>43 248 700</b>
<b>CAPEX</b>		
Development Cost		
Estate	160 000	120 000
Agro-tourism	-	2 050 000
<b>Total CAPEX (B)</b>	<b>160 000</b>	<b>2 170 000</b>
<b>OPEX</b>		
Estate	1 628 000	1 221 000
Agro-tourism	-	10 900 000
Land Instalment	1 001 000	1 137 500
<b>Total OPEX (C)</b>	<b>2 629 000</b>	<b>13 258 500</b>
<b>Total cost (A+B)</b>	<b>2 789 000</b>	<b>15 428 500</b>
<b>NPV</b>	<b>125 355</b>	<b>8 625 809</b>
<b>IRR</b>	<b>16.52%</b>	<b>53.43%</b>

Source: MPOB, In-depth interview 2019.

Note: CAPEX (capital expenditure). OPEX (operational expenditure). NPV (net present value). IRR (internal rate of return).

agro-tourism is RM125 355. The time value of money was taken into account when calculating the NPV. For the internal rate of return (IRR), the IRR for the scenario with integration is 53.43%, which is higher than the IRR for the scenario without integration with agro-tourism (16.52%).

To evaluate the viability of integrating the oil palm smallholding with agro-tourism at various levels of occupancy rate, this study evaluated three additional scenarios. In Scenario One, the occupancy rate was reduced to 70% of the current level. In Scenario Two, the occupancy rate was reduced to 50% of the current level, while in Scenario Three, it was reduced to only 20% of the current level.

Table 2 shows the cost-benefit analysis comparison at

the occupancy rate of 70% of the current level for two scenarios: 1) the oil palm smallholding operating without integration with agro-tourism and 2) the oil palm smallholding operating with integration with agro-tourism. From the analysis, at a 70% occupancy rate, it is found that the NPV for the integrated operation is RM4 906 038, higher than the scenario without agro-tourism (RM125 355). For the IRR, the study shows that at a 70% occupancy rate, the IRR for the scenario with integration is 34.92%, which is higher than the IRR for the scenario without integration with agro-tourism (16.52%).

Table 3 shows the cost-benefit analysis comparison at the occupancy rate of 50% of the current level for two scenarios: 1) the oil palm smallholding

**TABLE 2. OIL PALM WITHOUT AGRO-TOURISM AND WITH AGRO-TOURISM (70% occupancy rate)**

Items	Without agro-tourism (RM)	With agro-tourism (RM)
<b>Revenue</b>		
Estate	3 581 600	2 686 200
Agro-tourism	-	28 697 500
Total Revenue (A)	3 581 600	31 383 700
<b>CAPEX</b>		
Development Cost		
Estate	160 000	120 000
Agro-tourism	-	2 050 000
Total CAPEX (B)	160 000	2 170 000
<b>OPEX</b>		
Estate	1 628 000	1 221 000
Agro-tourism	-	9 280 000
Land Instalment	1 001 000	1 137 500
Total OPEX (C)	2 629 000	11 638 500
Total cost (B+C)	2 789 000	13 808 500
NPV	125 355	4 906 038
IRR	16.52%	34.92%

Source: MPOB, In-depth interview 2019.

Note: CAPEX (capital expenditure). OPEX (operational expenditure). NPV (net present value). IRR (internal rate of return).

operating without integration with agro-tourism and 2) the oil palm smallholding operating with integration with agro-tourism. From the analysis, at a 50% occupancy rate, it is found that the NPV of the integrated operation is RM1 944 200, which is still higher than the scenario of without agro-tourism (RM125 355). For the IRR, the study shows that at a 50% occupancy rate, the integrated operation has an IRR of 20.21%, which is higher than the IRR of the operation without agro-tourism (16.52%).

Table 4 shows the cost-benefit analysis comparison at the occupancy rate of 20% of the current level for two scenarios: 1) the oil palm smallholding operating without integration with agro-tourism and 2) the oil palm smallholding operating with

integration with agro-tourism. From the analysis, at a 20% occupancy rate, the NPV of the integrated operation is RM806, lower than the scenario of without agro-tourism (RM125 355). For the IRR, the study shows that at a 20% occupancy rate, the integrated operation has an IRR of 10.00%, which is lower than the IRR of the operation without agro-tourism (16.52%).

### CONCLUSION

This study indicates that both models, i.e. with and without agro-tourism, were financially viable and could provide consistent returns to the smallholders, as the analysis showed positive NPV values and high IRR. This study shows that based on the current situation, the integration with

agro-tourism was financially viable. Although the occupancy rate was reduced to between 70% and 50% of the current level, the results still showed that agro-tourism was viable. However, when the occupancy rate was reduced to 20% of the current level, the results showed that the NPV and IRR values of the operation with agro-tourism were lower than without agro-tourism. The results indicate that for most of the scenarios, agro-tourism was financially viable to be integrated with oil palm smallholding operations. However, to integrate agro-tourism with oil palm, several factors must be considered first, such as the minimum total area must be not less than 10 ha, the minimum occupancy rate of 60 pax/night, the smallholders' farms should be close to natural attractions, and the farms should provide activities to attract guests. Finally, knowledge of managing agro-tourism is the most crucial element that smallholders should have before integrating oil palm with agro-tourism.

### REFERENCES

- Ahmad, A; Omar, A R C; Osman, L H; Syukor, M S and Jusoh, M A (2015). Oil palm smallholder's engagement in business activities. *International Academic Research of Social Science*, 1(2): 192-198.
- Ayob, M A and Kabul, M A (2009). Cattle in oil palm plantation through systematic management. *International Seminar on Animal Industry, Bogor, 23-24 November 2009*. [online] available at: [https://www.researchgate.net/profile/Mohammad\\_Ayob/publication/267726937\\_Cattle\\_Integration\\_in\\_Oil\\_Palm\\_Plantation\\_through\\_Systematic\\_Management/links/559f39e908aefab5687dd6c/Cattle-Integration-in-Oil-Palm-Plantation-through-Systematic-Management.pdf?origin=publication\\_detail](https://www.researchgate.net/profile/Mohammad_Ayob/publication/267726937_Cattle_Integration_in_Oil_Palm_Plantation_through_Systematic_Management/links/559f39e908aefab5687dd6c/Cattle-Integration-in-Oil-Palm-Plantation-through-Systematic-Management.pdf?origin=publication_detail)

**TABLE 3. OIL PALM WITHOUT AGRO-TOURISM AND WITH AGRO-TOURISM (50% occupancy rate)**

Items	Without agro-tourism (RM)	With agro-tourism (RM)
<b>Revenue</b>		
Estate	3 581 600	2 686 200
Agro-tourism	-	20 510 000
Total Revenue (A)	3 581 600	23 196 200
<b>CAPEX</b>		
Development Cost		
Estate	160 000	120 000
Agro-tourism	-	2 050 000
Total CAPEX (B)	160 000	2 170 000
<b>OPEX</b>		
Estate	1 628 000	1 221 000
Agro-tourism	-	9 250 000
Land Instalment	1 001 000	1 137 500
Total OPEX (C)	2 629 000	11 608 500
Total cost (B+C)	2 789 000	13 778 500
NPV	125 355	1 944 200
IRR	16.52%	20.21%

Source: MPOB, In-depth interview 2019.

Note: CAPEX (capital expenditure). OPEX (operational expenditure). NPV (net present value). IRR (internal rate of return).

Budiasa, I W and Ambarawati, I G A (2014). Community based agro-tourism as an innovative integrated farming system development model towards sustainable agriculture and tourism in Bali. *J. ISSAAS*, 20(1): 29-40.

Catalino, A H and Lizardo, M (2004). Agriculture, environmental services and agro-tourism in the Dominican Republic. *Electronic J. Agricultural and Development Economics*, 1(1): 87-116.

Gabdo, B H and Ismail, A (2013). Analysis of the benefits of livestock to oil palm in an integrated system: Evidence from selected districts in Johor, Malaysia. *J. Agricultural Science*, 5(12): 47-55.

Hassan, F; Badarulzaman, N; Omar, M Z and Rindam, M (2006).

Sustainable tourism in plantation areas in Malaysia: Case of Felda land scheme. NIE-SEAGE Conference.

Idowu, K O (2009). A dynamic panel analysis of the effects of international tourism export on African economic growth. A Paper Presented at the 14<sup>th</sup> African Econometrics Society (AES) conference in, Abuja, Nigeria.

Ismail, D and Wahab, K H A (2014). Sustainability of cattle-crop plantations integrated production systems in Malaysia. *International J. Development and Sustainability*, 3(3): 252-260.

Jalaludin, S (1996). Integrated animal production in the oil palm plantation. In: Livestock feed resources within integrated farming systems. Second FAO Electronic Conference on Tropical Feeds.

Latif, J and Mamat, M N (2002). A financial study of cattle integration in oil palm plantations. *Oil Palm Industry Economic J.*, 2(1): 34-43.

Malaysian Palm Oil Board (2018). Overview of the Malaysian oil palm industry 2018. Retrieve on 15.5.2019 at: [http://bepi.mpob.gov.my/images/overview/Overview\\_of\\_Industry\\_2018.pdf](http://bepi.mpob.gov.my/images/overview/Overview_of_Industry_2018.pdf).

MPOB (2017). unpublished. Malaysian monthly average oil palm smallholder's income.

Narayan, P K; Narayan, S; Prasad, A and Prasad, B C (2010). Tourism and economic growth: A panel data analysis for Pacific Island countries. *Tourism Economics*, 16(1): 169-183.

Nordin, A Z A; Ahmad, S M; Sahidan, A S; Abdullah, N and Ain, H (2017). An economic study on technical efficiency among independent oil palm smallholders in Sabah and Sarawak. *Oil Palm Industry Economic J.*, 17(1): 16-31.

Nsukwini, S and Urmilla (2016). The socio-economic impacts of eco-tourism in rural areas: A case study of Nompondo and the Hluhluwe-iMfolozi Park (HiP). *African J. Hospitality, Tourism and Leisure*, 5(3): 1-15.

Salleh, N H M; Othman, R and Sarmidi, T (2010). An analysis of the relationship between tourism development and foreign direct investment: An empirical study in selected major Asian countries. *International J. Business and Social Science* 2(17).

Samimi, A J; Somaye Sadeghi and Soraya Sadeghi (2011). Tourism and economic growth in developing countries: P-VAR approach. *Middle-East J. Scientific Research*, 10(1): 28-32.

Savas, B; Beskaya, A K and Samiloglu, F (2010). Analysing the impact on international tourism on economic growth in Turkey. *J. Social Sciences*, 6(12): 121-136.

**TABLE 4. OIL PALM WITHOUT AGRO-TOURISM AND WITH AGRO-TOURISM (20% occupancy rate)**

Items	Without agro-tourism (RM)	With agro-tourism (RM)
<b>Revenue</b>		
Estate	3 581 600	2 686 200
Agro-tourism	-	8 137 500
Total Revenue (A)	3 581 600	10 823 700
<b>CAPEX</b>		
Development Cost		
Estate	160 000	120 000
Agro-tourism	-	2 050 000
Total CAPEX (B)	160 000	2 170 000
<b>OPEX</b>		
Estate	1 628 000	1 221 000
Agro-tourism	-	2 230 000
Land Instalment	1 001 000	1 137 500
Total OPEX (C)	2 629 000	4 588 500
Total cost (B+C)	2 789 000	6 758 500
NPV	125 355	806
IRR	16.52%	10.00%

Source: MPOB, In-depth interview 2019.

Note: CAPEX (capital expenditure). OPEX (operational expenditure). NPV (net present value). IRR (internal rate of return).

Simeh, M A; Idris, O and Mohd Nasir, A (1998). A planned approach towards future development of oil palm smallholders in Malaysia. *PORIM Bulletin*, 36: 1-12.

Snyman, S (2014). The impact of eco-tourism employment on rural household incomes and social welfare in six southern African countries. *Tourism and Hospitality Research*, Vol. 14, Issue 1-2.

Ummiroh, I R and Hardiyani, R (2013). Ecotourism management through cooperative based coffee plantation commodity to increase welfare of coffee farmer. *J. Economic, Business and Management*, 1(4): 347-349.

Zaimah, R; Lyndon, N; Sarmila, M S; Hussain, M Y; Tohiran, K A; Omar, R Z R; Dahari, N and Desa, H (2017). Crop-livestock integration among the oil palm smallholders. *Oil Palm Industry Economic J.*, 17(2): 7-15.

Yee, F K (2019). Wee: Desperate oil palm smallholders selling fruit below market price to feed their families. The Star Online, accessed on 20 April 2019. <https://www.thestar.com.my/news/nation/2019/03/30/wee-desperate-oil-palm-smallholders-selling-fruit-below-market-price#8T0s0ERloKmmApX4.99>.