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Environmentally friendly practices of oil palm cultivators

Halima Begum [1, *], Chamhuri Siwar [2], A.C. Er [1], A. S. A. Ferdous Alam [3]

[1]*Faculty of Social Sciences and Humanities, National University of Malaysia, Bangi, Selangor, Malaysia*
[2]*Institute for Environment and Development, National University of Malaysia, Bangi, Selangor, Malaysia*
[3]*School of International Studies, Universiti Utara Malaysia, Sintok, Kedah, Malaysia*

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ABSTRACT

Since the 1960s, Federal Land Development Authority (FELDA) has been focused on cultivator's development in the rural vicinities in Malaysia. However, recent study mentioned that cultivators are mostly responsible for environmental pollutions, deforestation, bureaucratic barriers, etc., whereas it directly affects the community as well as the Gross National Income. The study is to measure mainly the environmental awareness and friendly practices amongst the cultivators. It has been collected through questionnaire survey and interviews on 50 smallholders from FELDA Pahang State in Malaysia. To analyze and draw the inferences of primary data, this study uses the descriptive statistics, spider diagram to test the hypothesis. The result indicates that the summit of the supported smallholders has zero and negative knowledge and consciousness towards environment consistent at that location that is in keeping with best agricultural practices where as other schemes were not scrutinized in the study.

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1. Introduction

Due to increase in global population and oil consumption the capacity in total has been jumped by 128% over the last decade, growing strongly as 58m tonnes per year (Darrel Webber, secretary general of the Roundtable on Sustainable Palm Oil, (RSPO, 2013). Oil palm cultivation is mainly centralized in some countries in Southeast Asia, South America, Africa and Oceania. Major countries producing Oil palms are Malaysia, Indonesia, Thailand, Ecuador, Colombia, Nigeria and Papua New Guinea (FAO, 2009) and whereas the existing are expanding. Nearly 85 % of the production is concentrated in Indonesia and Malaysia, but its use is rapidly spreading whole world as China and India are the main importing countries, next to the EU (USDA, 2012; MPOB, 2014). As Oil palm has been cultivated on approximately 15 million ha across the world as global demand for palm oil is expected (Mielke, 2008; FAO 2009; Fitzherber et al., 2008).

Oil Palm is among the main drivers of agricultural sectors of Malaysia and the palm oil industry is the 4th largest industry contributing to the Malaysian national economy (ETP, 2009). In recent years, Malaysia got enormous attention from different parts of the world and is recognized globally for its various success stories, including the alleviation of poverty, equal wealth distribution, etc. (Deininger, 2011) and this development in palm oil production is not only strengthening the economy but also participating in poverty alleviation, rural and social development (Feintrenie et al., 2010; Basiron, 2007; Halima et al., 2014a; Ferdous et al., 2015). However, the lucrative returns attracted neighboring Indonesia to expand its oil palm cultivation (Basiron, 2007).

Moreover, the oil palm contributes to uplift the quality of life of people, which is a key plank of the high production of oil palm (Abazue et al., 2015). During 1960's the Country increased cultivation pace of oil palms as introduced of land settlement schemes (e.g. FELDA smallholders) to eradicate poverty on an initial size of 375 ha to help the landless farmers and committed to the environment guides their operations for putting into action in sustainable practices. Since 18 October 2004, Federal Land Development Agency (FELDA) FELDA has been an active member of the Roundtable on Sustainable Palm Oil (RSPO) which was attributed to the higher yields such as FELDA for organizing oil palm smallholders, such as independent and supported smallholders mainly in Peninsular Malaysia (Begum et al, 2015a; Dompok, 2010). It has since then above 442 schemes whereas covering roughly 800,000 ha and involving more than 100,000 families (FELDA, 2006), FELDA has a significant contribution in maintaining higher yield. Smallholders can be further grouped into organized

* Corresponding Author.
Email Address: halima.shilpi@gmail.com

smallholder under the management of government agencies and independent smallholders, which accounts for 25 per cents and 14 percent of total cultivated area respectively (MPOB, 2014). While the rest of 61% of total cultivated area is dominated by large plantation companies either solely owned by the private orgovernment-linked company, according to Malaysian Palm Oil Board (MPOB), there are also many local plantation companies with R&D facilities in Malaysia such as FELDA, Federal Land Consolidation and Rehabilitation Authority (FELCRA), Golden Hope, United Plantations and Applied Agricultural Research.

Cultivators or smallholders may be defined as (the definition used by the Roundtable on Sustainable Palm Oil, (Vermeulen and Goad, 2006)), oil palm smallholder to mean family-based enterprises producing palm oil from less than 50 ha of land. In practice, people in this smallholder category are often also holders of customary rights (or otherwise new settlers) and perhaps also laborers on nearby plantations, all of which affect the choices they make as smallholders. Indonesia and Malaysia, both two countries are responsible for over 80% of world oil palm production, smallholders account for 35-40% of the total area of plants, oil palm and as much as 33% of the output and West African countries that produce mainly for domestic and regional markets, smallholders produce up to 90% of the annual harvest (Vermeulen and Goad, 2006). However, Smallholders form a vital part of the global agricultural community, yet they are often neglected (UNEP, 2013). Dauvergne and Neville (2010) There is a major opportunity to improve smallholder agriculture by developing and distributing seeds of more-resilient crops that will thrive under smallholder cultivation conditions (FAO, 2009). However, environment and cultivators are highly interrelated. Small farmers achieved many of those developments previously supported through government or donor-funded extension services.

However, most times the provisioning of ecosystem services diminishes, e.g. lack of water, lack or imbalance of nutrients, pest damage, weed competition and lack of pollination (Miller et al., 2010). Oil palm growers should adopt sustainable practices to reduce deforestation and ensure food security. Therefore, the study argues that increased production of palm oil has an environmental effect with other effects for the future to identify promising options for improvement. Supported/independent/schemed smallholders therefore have a definite positive effect through the awareness and by environment friendly practices through the direct supervision of MPOB.

2. Methodology

This study mainly used primary data. Primary data were gathered through field visits to the research area that were collected from FELDA Sungai Tekam in Pahang State in Malaysia. The data of the study were collected through face to face interview of 50 smallholders using a set of questionnaire. The survey was carried out from October to November 2013. Therefore, the method used was personal interviews and non probability random sample technique. The advantage of using these methods gives certain substantive subfields than others (Brecher and Harvey, 2002). The minimum sample size (n) was 50 and interviewed by a Malaysian enumerator with the language of Bahasa Malay through the technique of non probability sampling. FELDA was chosen as our study because it has improved in their products as it is directly involved with smallholders.

3. Findings and discussions

Table 1 describes the demographic profile of the respondents. However, it shows the number of percentages of the respondents (smallholders) according to their age, gender, ethnicity, educational qualifications, involvement of schemes time and the size of their family member. 78.7% respondents mention that maximum smallholders' age is between 41 to 60 years. As finding shows that the majority of oil palm smallholders are male (98%) while female smallholders make up the rest (2%) of those that participated in the study. According to interviewing, the majority of the smallholders tend to be from Malays which are 100%. However, 53.4% mentions that the majority of the oil palm smallholders only completed their primary levels. More than 10 years settlers involved in Felda scheme. The number of family members of the respondents has maximum 4 to 6 members, whereas only 3% have 10 members.

Table 1: Background of the respondents

Issues	1	2	3	4
Age	21-40 (2.7%)	41-60 (78.7 %)	61-80 (17.5%)	81≥ (1.2%)
Gender	Male (98%)	Female (2%)		
Ethnicity	Malay (100%)			
Level of Education	Diploma Degree (5%)	Primary school (53.4%)	Secondary school (25.4%)	Not in school (22.2%)
Involvement Durations in Scheme (years)	1-3 (1.6%)	4-6 (6.6%)	7-9(33.8%)	10≥ (58.0%)
Households Members	1-3 (17%)	4-6 (58%)	7-10 (22.1%)	10≥ (3.0%)

3.1. Sustainable environment of Oil palm cultivations in FELDA

The smallholder's level of practices for environmental sustainability in their settlements (Table 2). As 60% respondents agree to giving emphasize on environmental conservation and safety, especially in the field of development activities. The majority of the respondents almost 82% agree and are aware to practice sustainable agriculture for reducing pollution such as air, water and soil pollutions and as a result of application of they do so in order to increase yields and reduce damages due to pests. In addition, 60% mentioned that they care about environmental safety. They (76%) said (independent) that until such a time they are able to procure crop resistant materials that they are left with no choice considering the amount of money invested in procuring lands and planting materials and other inputs for the issue of environmental pollution whereas finding indicates the lack of proper education of farmers. Nonetheless, (30%) denied that their method of clearing the land has protected ecosystems. 42% settlers mentioned that pesticides used on the farm might contaminate the water, soil and air Settlers' whereas 26% did not sure about this contaminations. As this will ensure that minimal damage is done to the environment. As shown in Table 2; most respondents (46%) agree that their plantation activity contributes to compliance to the standards of the good farm practice scheme in Malaysia (SALM). The ecosystem is protected the ecosystem among settlers agree that they can manage systematic farming waste as mentioned by 68% smallholders. For instance, FELDA operates through laws and enactments, including, the adopting of Environmental Policies and requirements, implementation of Good Agriculture Practices (GAP), Implementing Codes of Practices (COPs) and a study by MPOB on the Life Cycle Assessment (LCA) along an oil palm supply chain, and the Conservation efforts (MPOB, 2011) all towards sustainability. Reviewing periodically by FELDA in the farm could overcome environmental pollution, which mentioned by 62%. However, there is a national scheme in Malaysia from RSPO, 2010 namely; Malaysia National Interpretation Working Group (MY- NIWG) for reviewing periodically. As scheme managers should ensure that they're organized smallholders are aware of and comply with relevant legal requirements. Indeed, the majority of the respondents observes that much has improved in terms of environmentally friendly practices in the operations over the last decades compared to the earlier years of the industry in the country.

3.2. Diagnostic tests of spider diagram

The results of spider diagram show estimates between factors and variable loadings on factors for each variable (Fig. 1). The findings stated that the settlers are highly considerable for practicing above factors related to sustainability, whereas diagram mentions that among the factors 60% agreed about to keep environmental safety, 82% mentioned that their farming activities to reduce environmental pollution. In addition, 76% answered that they are using modern technology for farming and protecting ecosystem indicated by 68%. The settlers using Pesticides on the farm by 42%, Good farming practice scheme by 46%. On the other hand, the scheme has been Reviewed periodically (62%) by FELDA officers. The factors are consistent with previous research that focused the factors for environment, sustainability was influencing positively due to the actions of settlers (Halima et al., 2014b). Among the environment variables, overall environmental practices among the cultivators are really encouraging, able and promising. According to the results the smallholders are getting training continuously to reduce environmental pollutions. Though they are declaring that, but it has been contradicted by previous research, whereas UNEP, (2013) mentioned that smallholders are mostly responsible for creates environmental pollutions. However, the settlers gave less response about using modern pest during cultivations. The key informanant (Felda Smallholder during interview) mentioned about the increased price of pesticides, whereas those have to import from the outsides of the country. It is creating difficulties and one of the most challenge among the poor oil palm smallholders whereas day after day they are unable to buy good pest for higher growth.

Table 2: Factors of sustainable environment of oil palm cultivations in FELDA

ISSUES	1	2	3	Mean	SD
Environmental safety (X1)	17(34%)	3 (6%)	30(60%)	4.22	.58
Reduce environmental pollution (X2)	1(2%)	8(16%)	41(82%)	3.96	.64
Modern technology of farming (X3)	11(22%)	1(2%)	38(76%)	4.20	.45
Protected Ecosystem (X4)	15(30%)	1(2%)	34 (68%)	3.80	.70
Pesticides used on the farm (X5)	16(32%)	13(26%)	21(42%)	3.06	.94
Good farm practice scheme (X6)	15 (30%)	12 (24%)	23 (46%)	3.12	.94
Review periodically by FELDA (X7)	15(30%)	4 (8%)	31(62%)	4.22	.58

(Note: 1= No, 2=Undecided, 3= Yes)

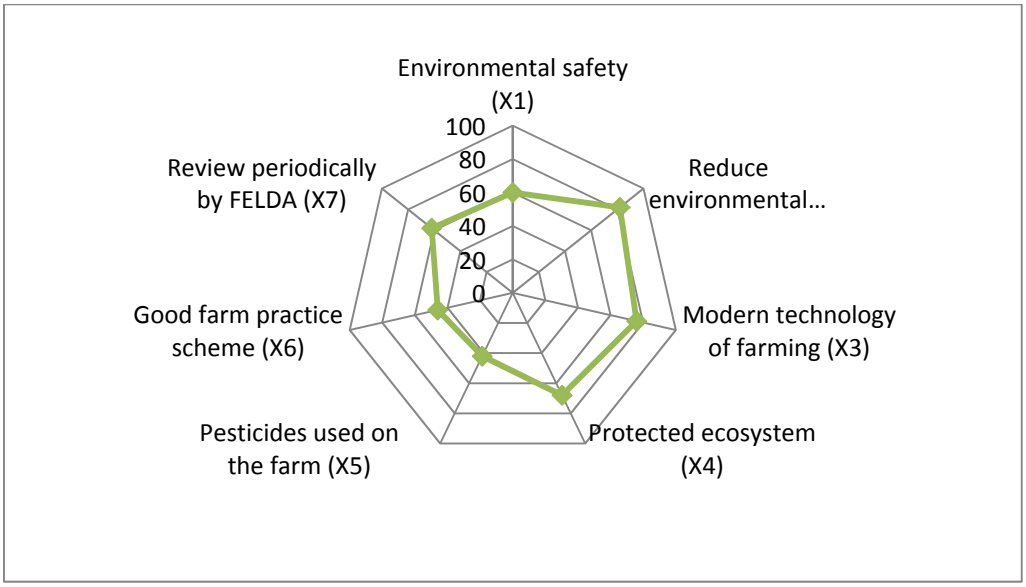

Fig. 1: Spider diagram for measuring environment friendly practices by cultivators in FELDA

The findings delineate that though cultivators are practicing friendly to protect the ecosystem, but some were not able to give the answer regarding all of the acts, policies and applicable methods. Some of unaware and did not know how and what is the meaning good agricultural practices. However, there are limited knowledge among cultivators and did not follow the principles and criteria related oil palm development. Henceforth, the ecosystem is harming through their lack of knowledge how to use pesticides on the firm. However, this is occurring due to lack of training and lack of education. Sometimes the government institutions fail to introduce effective training for them. This is asserted with previous research that he mentioned 'In many of these area government institutions are weak, traditional land rights are difficult to defend and spatial planning rules, if they exist, are rarely applied (Begum et al., 2015b; Feintrenie et al., 2010; Colchester and Jiwan, 2006).

4. Conclusion

Oil palm raises environmental concerns, in terms of deforestation, pollution and habitat loss. For keeping environment, sustainability, we have to go forward and put into action for producing remarkable agendas such as qualified training, reviewed periodically once in a month and give penalty those smallholders are creating pollutions. Findings consistent with previous researchers that that FELDA management plays an important role as a catalyst to enhance the smallholder's environment relation to sustainable agriculture in Terengganu (Begum et al., 2015). However, program or agenda related to sustainable agriculture need to be developed in order to realize sustainable development in the oil palm sector through the practice of good agricultural, environmental practices for improving Fresh Fruit Bunch (FFB) yield whereas it is directly related to a country's growth of the economy. Nevertheless, involved in the development of sustainable standards, the sustainability of oil palm focuses on best practice in palm oil management with the basis for evaluation of compliance with environmental concern. There is evidence that the adoption of best practice substantially from place to place and from company to company, according to the number of specific regulations in producer countries (McCarthy and Zen, 2012). Our further research is going forward based on the above findings why do not the oil palm smallholders under FELDA scheme respond 100 percent positively. For sustainability, we have to go in 100% response rate through a better communication and giving better knowledge about the environment.

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