UNIVERSITI PUTRA MALAYSIA

ORGANIZED SMALLHOLDERS' KNOWLEDGE AND ATTITUDE TOWARD OIL PALM FARMLAND BIODIVERSITY AND WILLINGNESS TO PARTICIPATE IN SUSTAINABLE PALM OIL CERTIFICATION IN FELDA LAYANG-LAYANG, JOHOR

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BY

NURUL IZATI BINTI WAGIMIN

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DEDICATION

This is dedicated to my family and friends.

A special feeling of gratitude to my loving family especially my parent, Mr. Wagimin bin Othman and Mrs. Rubiah binti Wahab whose give me a constant love.

I also dedicated this dissertation to all my friends who has guided and helped me throughout the process and also to all my coursemate who has supported me and I will always appreciate all they have done.

Last but not least,
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Thanks for Everything and May Allah Bless All of Us

ABSTRACT

Although biodiversity will undoubtedly be higher in natural forest systems than other forest systems, carefully designed oil palm landscapes may provide some opportunities for the conservation of forest wildlife species outside protected areas. Palm oil sustainability standards and certifications have been introduced to oil palm growers to provide the sustainable management of oil palm plantation with biodiversity conservation. The problem is the certification was not parallel with the smallholders' acceptance. The objectives of this study were to determine smallholders' knowledge and attitude towards biodiversity in oil palm oil farmland and to determine smallholders' attitude and willingness to participate in sustainable palm oil palm certification. Convenience sampling was applied to collect data for a period of four weeks. Fifty usable questionnaire forms were obtained from FELDA Layang-layang, Johor. In order to achieve the objectives, descriptive analysis was conducted to describe smallholders' background and to estimate the knowledge, attitude and willingness to pay to participate in biodiversity conservation and sustainable palm oil certification schemes (SPOCS). One sample t-test analysis was employed to compare the net revenue per hectare between the organized smallholders from this study and the estate and independent smallholders of previous study. The test also used to compare the annual fee between this study and the RSPO's fee. Our result showed that most of the smallholders were knowledgeable and have some positive attitudes on conserving biodiversity. Ninety percent of the smallholders agreed to follow the requirements and willing to pay the SPOCS if it is ideal and affordable to them to enhance sustainable oil palm farmland, which is a good sign for better implementation of the SPOCS. By joining any SPOCS, the smallholders not only can gain knowledge about biodiversity but also can increase the net revenue of their crops yield.

ABSTRAK

Walaupun kepelbagaian biologi dalam sistem hutan semula jadi sudah pasti akan menjadi lebih tinggi berbanding dengan sistem hutan yang lain, rekaan landskap kelapa sawit yang lebih berhati-hati dan mampan boleh memberi peluang bagi pemuliharaan spesies hidupan liar hutan di luar kawasan perlindungan. Standard dan pensijilan minyak sawit mampan telah diperkenalkan kepada pengusaha ladang kelapa sawit untuk menyediakan pengurusan ladang kelapa sawit yang mampan dengan pemuliharaan biodiversiti. Walau bagaimanapun, pensijilan tersebut tidak selari dengan penerimaan pekebun kecil. Objektif kajian ini adalah untuk menentukan pengetahuan dan sikap pekebun kecil terhadap biodiversiti di ladang kelapa sawit dan untuk menentukan sikap dan kesediaan pekebun kecil untuk menyertai pensijilan kelapa sawit lestari. Teknik persampelan mudah telah digunakan untuk mengumpul data dalam tempoh empat minggu. Lima puluh borang soal selidik yang boleh digunakan diperolehi daripada FELDA Layang-layang, Johor. Dalam usaha untuk mencapai objektif, analisis deskriptif telah dijalankan untuk menggambarkan latar belakang pekebun kecil serta untuk menganggarkan pengetahuan, sikap dan kesanggupan untuk membayar untuk mengambil bahagian dalam pemuliharaan biodiversiti dan SPOCS. Analisa menggunakan kaedah ujian-t satu sampel telah digunakan untuk membuat perbandingan pendapatan bersih per hektar antara pekebun kecil daripada kajian ini dengan estet dan pekebun kecil bebas daripada kajian sebelumnya. Perbandingan yuran tahunan antara kajian ini dan yuran tahunan yang dikenakan oleh RSPO juga telah dianalisa menggunakan kaedah yang sama. Keputusan yang kami perolehi menunjukkan bahawa kebanyakan pekebun kecil berpengetahuan dan mempunyai beberapa sikap yang positif terhadap memulihara biodiversiti. 90% daripada jumlah keseluruhan pekebun kecil di kawasan kajian telah bersetuju untuk mengikuti keperluan dan sanggup membayar untuk mengambil bahagian dalam SPOCS sekiranya ia adalah sesuai dan berpatutan dengan mereka untuk meningkatkan tanah ladang kelapa sawit yang mampan, yang merupakan satu petanda baik untuk pelaksanaan SPOCS yang lebih baik. Dengan menyertai sebarang SPOCS, pekebun kecil bukan sahaja dapat menimba ilmu tentang biodiversiti tetapi juga boleh meningkatkan pendapatan bersih hasil tanaman mereka.

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APPROVAL SHEET

I certify that this research project report entitled “Organized Smallholders’ Knowledge and Attitude toward Oil Palm Farmland Biodiversity and Willingness to Participate in Sustainable Palm Oil Certification in Felda Layang-layang, Johor” by Nurul Izati binti Wagimin has been examined and approved as a partial fulfillment of the requirements for the degree of Bachelor of Forestry Science in the Faculty of Forestry, Universiti Putra Malaysia.

Approved by:

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CPKO	Crude Palm Kernel Oil
CPO	Crude Palm Oil
CSPO	Certificate Sustainable Palm Oil
EPP	Edible Plant Project
EU	European United
FAMA	Federal Agriculture of Marketing Agency
FAO	Food and Agriculture Organization
FELDA	Federal Land Development Authority
FFB	Fresh Fruit Bunches
GAP	Good Agriculture Practices
Ha	Hectares
IOI	Industrial Oxygen Incorporated Sdn. Bhd.
IRPA	Intensification of Research in Priority Areas
ISH	Independent Smallholders
ISPO	Indonesia Sustainable Palm Oil
IUCN	International Union for Conservation of Nature
MPOB	Malaysian Palm Oil Board
MSPO	Malaysian Sustainable Palm Oil
MSPO P&C	Principles and Criteria
NGO	Non-Government Organization
OSH	Organized Smallholders
PORIM	Palm Oil Research Institute of Malaysia
PORLA	Palm Oil Registration and Licensing Authority
PPH	Yield Collection Centers
RSPO	Roundtable Sustainable Palm Oil
RSPO P&C	Principles and Criteria
SPOC	Sustainable Palm Oil Cluster
SPOCS	Sustainable Palm Oil Certification Scheme

TPB	Ajzen-Fishbein's Theory of Planned Behavior
TRA	Ajzen-Fishbein's Theory of Reasoned Action
WWF	World Wide Fund for Nature

CHAPTER 1

INTRODUCTION

1.1 General Background

One of the world's most rapidly expanding equatorial crops is oil palm (*Elaeis guineensis)* (Fitzherbert et al., 2008). Oil palm gives the highest yield per ha among all oil seed crops (Aikanathan et al., 2015). Malaysian landscape dominated by oil palm plantation. Oil palm expansion causes lot of biodiversity losses and deforestation in the Tropics (Wilcove & Koh, 2010). However, contributes economic revenues to palm oil producing countries such as Indonesia and Malaysia. Palm oil sustainability standards and certifications have been introduced to oil palm growers to provide the sustainable management of oil palm plantation. For examples, Indonesian Sustainable Palm Oil (ISPO), Roundtable Sustainable Palm Oil (RSPO), and Malaysian Sustainable Palm Oil (MSPO) are some of the existing certification schemes.

In Malaysia alone, in December 2015, Figure 1.1 shows that the oil palm established in plantation estates and smallholdings covered 5,642,943 ha in total and based on the distribution information in Figure 1.1, shows that 13% from the total area are smallholders with 733,582.59 ha (Malaysia Palm Oil Board (MPOB), 2015). Plantation estates differ greatly from smallholdings in terms of infrastructure and other characteristics (Azhar et al., 2013). In 2015, the smallholders hold about 40% of the total areas in MPOB. There are 112,635 settlers of the Federal Land Development Authority (FELDA) in 2015.

Ninety thousand five hundred and eleven settlers from the total are oil palm smallholders while the others are rubber.

STATE	MATURE	%	IMMATURE	%	TOTAL	%
JOHORE	665,795	90.0	73,788	10.0	739,583	13.1
KEDAH	81,905	93.9	5,339	6.1	87,244	1.5
KELANTAN	106,314	70.0	45,659	30.0	151,973	2.7
MALACCA	50,272	92.1	4,331	7.9	54,603	1.0
NEGERI SEMBILAN	152,021	85.5	25,720	14.5	177,741	3.1
PAHANG	627,210	86.5	98,029	13.5	725,239	12.9
PERAK	350,073	87.9	48,241	12.1	398,314	7.1
PERLIS	287	97.6	7	2.4	294	0.0
PENANG	13,657	94.5	790	5.5	14,447	0.3
SELANGOR	126,318	92.0	11,018	8.0	137,336	2.4
TERENGGANU	141,409	81.9	31,178	18.1	172,587	3.1
PENINSULAR MALAYSIA	2,315,261	87.1	344,100	12.9	2,659,361	47.1
SABAH	1,375,229	89.1	168,994	10.9	1,544,223	27.4
SARAWAK	1,168,907	81.2	270,452	18.8	1,439,359	25.5
SABAH & SARAWAK	2,544,136	85.3	439,446	14.7	2,983,582	52.9
MALAYSIA	4,859,397	86.1	783,546	13.9	5,642,943	100.0

Figure 1.1: Oil palm planted area by state as at December 2015 (ha) (MPOB, 2015).

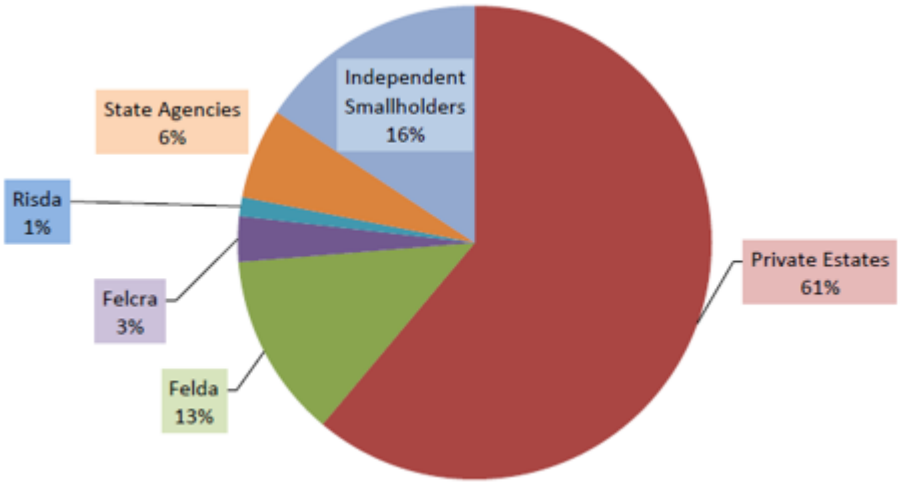

Figure 1.2: The distribution of oil palm planted area by category as at December 2015 (MPOB, 2015).

The need for a transition to environmental-friendly oil palm plantation practices has become apparent in recent years, because of growing interest in environmental conservation and the sustainable use of resources. The MSPO standard can be used by all oil palm operations in Malaysia, which is something that was difficult to achieve for small and mid-range farmers under the RSPO standard.

Although biodiversity will undoubtedly be highest in natural forest systems, carefully designed oil palm landscapes may provide some opportunities for the conservation of forest mammals outside protected areas (Azhar et al., 2014). We argue that it is critically important to understand the role of habitat complexity at the local and landscape scales for maintaining biodiversity in oil palm farmland.

1.2 Problem Statement

Oil palm industries faced controversy with the contemporary issues including controversial land use at global stage. Oil palm industries is the important revenue in Malaysia and the dominant agricultural landscape in producing countries but associated with many sustainability issues, including deforestation, erosion of biodiversity and violation of social rights.

Palm oil certification has been introduced to reconcile palm oil production with nature conservation. But, it is not parallel with the smallholders and the independent farmers' acceptance. Specifically, we asked: (1) Can they

understand the certification wholly? It is because the certification is based on ‘survey from up to bottom’ which is a survey that start with the agencies, stakeholders and followed by the smallholders, (2) What is the ideal certification for them? (3) Is the certification can be acceptance based on their knowledge and attitude? (4) Are they willing to pay to participate? and, (5) Is it affordable for them?

To understand this, the questions should be answered and the information should be gathered. Thus, we collect data related to the knowledge and perceptions from oil palm smallholders by run a ‘survey from bottom to up’ which is a survey that start with the smallholders and then followed by stakeholders and agencies. The findings then should be informed to the oil palm stakeholders to improve the certification schemes.

1.3 Objectives

The objectives of this study are:

1. To determine smallholders’ knowledge and attitude towards biodiversity in oil palm farmland.
2. To determine smallholders’ attitude and willingness to participate in sustainable palm oil certification.

REFERENCES

Aikanathan, S., Basiron, Y., Sundram, K., Chenayah, S., & Sasekumar A. (2015). Sustainable management of oil palm plantation industry and the perception implication. *Journal of Palm Oil & The Environment Health (JOPEH), 6*,10-24.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211.

Ajzen, I. (2005). Attitudes, personality, and behavior. *McGraw-Hill Education (UK), 2,* 117-140.

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. *Englewood Cliffs: Prentice-Hall,* 270-278.

Azhar, B., Lindenmayer, D. B., Wood, J., Fischer, J., Manning, A., McElhinny, C., & Zakaria, M. (2011). The conservation value of oil palm plantation estates, smallholdings and logged peat swamp forest for birds. *For Ecology Management, 62*, 2306-2315.

Azhar, B., Lindenmayer, D. B., Wood, J., Fischer, J., & Zakaria, M. (2014). Ecological impacts of oil palm agriculture on forest mammals in plantation estates and smallholdings. *Biodiversity Conservation (2014) 23*, 1175-1191.

Benn, J. (2010). *Human-wildlife conflict*. Retrieved from http://wwf.panda.org/about_our_earth/species/problems/human_animal_conflict/ on April 29th, 2016.

Convenience sampling-research methodology. Retrieved from http://research-methodology.net/sampling/convenience-sampling/ on April 29th, 2016.

Deaux, Y., & Wrightsman, L. (1984). Social psychologies in the eighties. *California*: *Cole Books, 4,* 220-235.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behaviour: An introduction to theory and research*. Massachutessets: Addision-Wesley,* 385-506.

Fitzherbert, E. B., Struebig, M. J., Morel, A., Danielsen, F., Brulh, C. A., Donald, P. F., & Phalan, B. (2008). How will oil palm expansion affect biodiversity? *Trends in Ecology & Evolution, 23*, 538-545.

Funding on RSPO (2016). Retrieved from http://www.mpob.gov.my/home/153/732-funding-roundtable-on-sustainable-palm-oilrspo on April 29th, 2016.

Gardner, T. A., Barlow, J., Chazdon, R., Ewers, R. M., Harvey, C. A., Peres, C. A., & Sodhi, N. S. (2009). Prospects for tropical forest biodiversity in a human-modified world. *Ecology letters*, *12*(6), 561-582.

Haron, K., & Chan, K. W. (2010). Potential measures for the maintenance, conservation and appropriate enhancement. *Oil Palm Bulletin, 63,*1-10.

Herzog, T. R. (1996). Research methods and data analysis in the social sciences. *Pearson, 1,*198-246.

Herzon, I., & Mikk, M., (2007). Farmers' perceptions of biodiversity and their willingness to enhance it through agri-environment schemes: A comparative study from Estonia and Finland. *Journal for Nature Conservation 15*, 10-25.

Ismail, A., Simeh, M. A., & Noor, M. M. (2003). The production cost of oil palm fresh fruit bunches: The case of independent smallholders in Johor. *Oil Palm Industry: Economic Journal*, *3*(1), 1-7.

IUCN (2013). *About biodiversity*. Retrieved from http://iucn.org/iyb/about/ on April 29th, 2016.

Jacobson, S. K., Sieving, K. E., Jones, G. A., & Doorn, A. M., (2003). Assessment of farmer attitudes and behavioral intentions toward bird conservation on organic and conventional Florida farms. *Conservation Biology, 17,* 595-606.

Jupp, V., & Sapsford, R. (1996). Data collection and analysis. *The Open University, 1,* 39-45.

Kavoura, A., & Bitsani, E. (2014). Methodological considerations for qualitative communication research. *Procedia-Social and Behavioral Sciences, 147*, 544-549.

Kricher, J. C. (1999). A neotropical companion: An introduction to the animals, plants, and ecosystems of the New World tropics. *Princeton University Press, 2,* 29-60.

Linkie, M., Martyr, D. J., Holden, J., Yanuar, A., Hartana, A. T., Sugardjito, J., & Leader-Williams, N. (2003). Habitat destruction and poaching threaten the Sumatran tiger in Kerinci Seblat National Park, Sumatra. *Oryx, 37*(1), 41-48.

Locke, John (1960). An essay concerning human understanding. *Oxford: The Clamendon Press, 29,* 1-8.

Lulie, M. (2012). *The Star*. Retrieved from http://www.thestar.com.my/business/business-news/2013/05/14/oil-palm-on-peatland-debate-hots-up-sarawak-planters-on-the-losing-end-as-most-their-estates-are/ on April 29th, 2016.

Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and social psychology Bulletin*, *18*(1), 3-9.

Malaysia Palm Oil Board (2011) *Malaysian Sustainable Palm Oil Current Status*. Retrieved from http://www.mpob.gov.my on December 5th, 2015.

Martin, S., Rieple, A., Chang, J., Boniface, B., & Ahmed, A. (2015). Small farmers and sustainability: Institutional barriers to investment and innovation in the Malaysian palm oil industry in Sabah. *Journal of Rural Studies, 40*, 46-58.

McLeod, S. A. (2008). *Likert Scale*. Retrieved from www.simplypsychology.org/likert-scale.html on December 5th, 2015.

Minichiello, V. (1990). In-depth interviewing: Researching people. *South Melbourne: Longman Cheshire, 8,* 245-266.

Persekutuan, L. K. T. (2014). *Segamat*. Retrieved from http://www.felda.net.my/index.php/senarai-alamat-ranangan-di-wilayah- on April 29th, 2016.

Ramírez, P.A., & Simonetti, J.A. (2011) Conservation opportunities in commercial plantations: The case of mammals. *National Conservation, 19*, 351-355.

Robert Wood Johnson Foundation (2008). *RWJF-Qualitative research guidelines project.* Retrieved from http://www.qualres.org/HomeStru-3628.html on April 29th, 2016.

Roundtable of Sustainable Palm Oil (2014). *Definition of smallholders*. Retrieved from http://www.rspo.org/en/definition on October 10th, 2015.

Satoshi, N., Takahiro, T., Satoru, O., Kazuhiko, T., & Nisikawa, U. (2014). Exploring factors affecting farmers' implementation of wildlife-friendly farming on Sado Island, Japan. *Journal of Resources and Ecology, 5*(4), 370-380.

Vieira, I. C. G., Toledo, P. D., Silva, J. D., & Higuchi, H. (2008). Deforestation and threats to the biodiversity of Amazonia. *Brazilian Journal of Biology*, *68*(4), 949-956.

Web Finance (2016). *What is willingness to pay? Definition and meaning.* Retrieved from http://www.businessdictionary.com/definition/willingness-to-pay.html on May 11st, 2016.

Whitehead, J. (2010). *Willingness to pay and ecological economics.* Retrieved from http://www.env-econ.net/2006/07/willingness_to_.html on April 29th, 2016.

Zimmerman, M. (2001). Encyclopedia of the Self. *New Jersey. Prentice Hall,* 787-794.