



**UNIVERSITI PUTRA MALAYSIA**

***CHALLENGE OF EXTENSION AGENTS AGAINST FLOOD AND  
NATURAL DISASTERS TO DEVELOP AGRICULTURE SECTORS IN  
KELANTAN, MALAYSIA***

**NUR AMIRAH BINTI ZAINI**

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**NUR AMIRAH BINTI ZAINI**

**FACULTY OF AGRICULTURE  
UNIVERSITI PUTRA MALAYSIA  
SERDANG, SELANGOR DARUL EHSAN**

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MALAYSIA**

**BY**

**NUR AMIRAH BINTI ZAINI**

**A project report submitted to Faculty of Agriculture, Universiti Putra Malaysia, in  
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This project report entitled “Challenges of Extension Agents Against Flood and Natural Disasters to Develop Agriculture Sectors in Kelantan, Malaysia” is prepared by Nur Amirah Binti Zaini and submitted to Faculty of Agriculture, Universiti Putra Malaysia, in fulfilment of the requirement of PRT 4999 (Final Year Project) for the award of the degree of Bachelor of Horticultural Science.

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Student’s signature:

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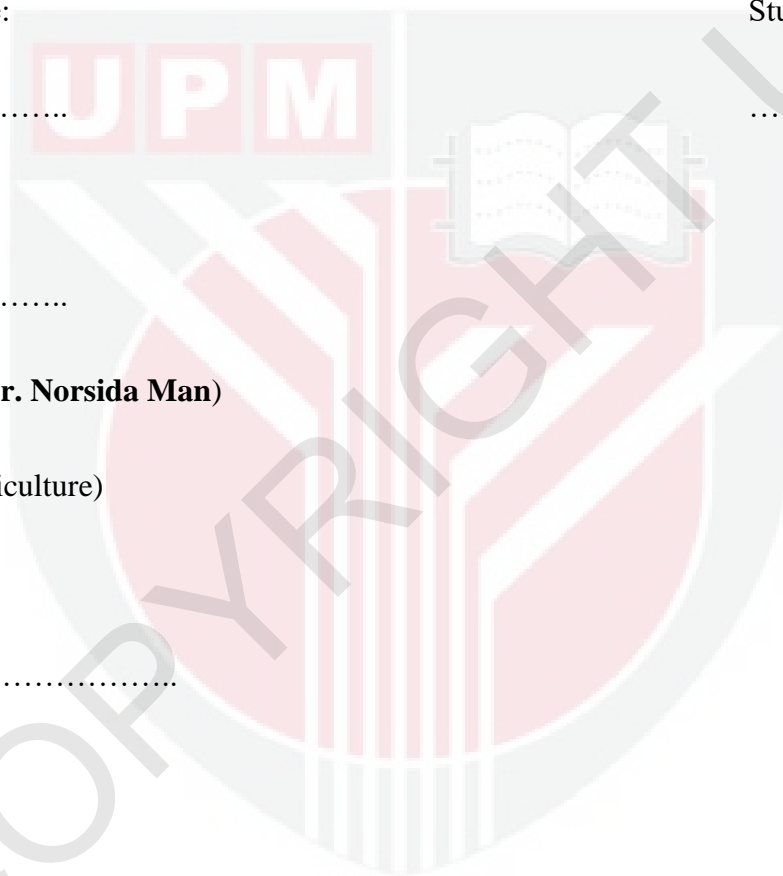
Certified by:

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**(Assoc. Prof. Dr. Norsida Man)**

(Faculty of Agriculture)

Date: .....



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## LIST OF ABBREVIATIONS

FELDA	: Federal Land Development Authority
FELCRA	: Federal Land Consolidation and Rehabilitation Authority
RISDA	: Rubber Industry Smallholders Development Authority
FAMA	: Federal Agriculture and Marketing Authority
BPM	: Agrobank Malaysia (BankPertanian Malaysia)
MARDI	: Malaysia Agriculture Research and Development Institute
LPN	: Malaysian National Rice and Paddy Institution
BERNAS	: Malaysian National Rice Corporation
LKIM	: Fisheries Development Authority of Malaysia
MADA	: Muda Agricultural Development Authority
KADA	: Kemubu Agricultural Development Authority
IADA	: Integrated Agricultural Development Area
FRIM	: Forest Research Institute Malaysia
MCB	: Malaysian Cocoa Board
MPOPC	: Malaysian Palm Oil Promotion Council
IADP	: Integrated Agricultural Development Project
FOA	: Farmers Organisation Authority
GDP	: Gross Domestic Product
REAS	: Rural and Environment Analytical Services
RERAD	: Environment Research and Analysis Directorate
MFDRPM	: Malaysian Flood Disaster Relief and Preparedness Machinery
NDMRC	: National Disasters Management and Relief Committee

## ABSTRACT

This study concerned the challenges of extension agents against flood and natural disasters to develop agriculture sectors in Kelantan, Malaysia. The study conducted in Kelantan which was affected by the massive floods in 2014 that recorded at most RM105 million in losses. Agricultural extension agent who are the intermediary between agencies and farmers play an important role in the development of agriculture in the affected areas. A questionnaire form was constructed in the Malay language as the main medium which contained 69 questions in several sections based on the objectives. The data were analysed using SPSS® for descriptive analysis and chi-square analysis. Socio-demographic profile of extension agents in Kelantan was established along with the current performance of the agents and their perception towards flood and natural disaster. The first objectives of this research project is to know the perception of extension agents toward flood and natural disaster, found that respondents' has a high level of awareness toward the first objective. The second objective is to examine perception of respondents on knowledge, skill and practices toward post disaster farm management, which the respondents have a moderate level of knowledge, skill and practices on post disaster farm management. The third objective is to identify the challenges of extension agents on post natural disaster farm management, which also show moderate level of challenges. Lastly, to determine relationship between socio-demographic factor and respondent's perception on knowledge, skill and practices toward post flood and natural disaster farm management. In the chi-square analysis, there was a relationship between age and the total annual income of respondent toward post flood and natural disaster farm management. To conclude, there is a room for improvement for better natural disaster farm management. To provide more training on climate change is highly recommended to government and private agencies for improvement. Besides, recruitment of new extension personnels from higher education institute will be a good way to implement latest technologies from high educational institutions.

## ABSTRAK

Kajian ini merupakan cabaran agen pembangunan terhadap banjir dan bencana alam bagi membangunkan sektor pertanian di Kelantan, Malaysia. Kajian yang dilakukan di Kelantan ini terjejas akibat banjir besar pada tahun 2014 mencatatkan kira-kira RM105 juta kerugian. Agen pembangunan pertanian adalah perantara agensi dan juga petani yang memainkan peranan penting dalam pembangunan pertanian di kawasan terjejas. Borang soal selidik dirangka dalam bahasa Melayu sebagai bahasa pengantar utama ini mengandungi 69 soalan dalam beberapa bahagian berdasarkan objektif. Data dianalisis menggunakan SPSS® bagi analisis deskriptif dan *chi-square*. Profil sosio-demografi agen di Kelantan diperoleh dengan prestasi semasa agen dan persepsi mereka terhadap banjir dan bencana alam. Objektif pertama projek penyelidikan ini adalah untuk mengetahui persepsi agen pembangunan ke arah banjir dan bencana alam, didapati bahawa responden mempunyai tahap kesedaran yang tinggi terhadap objektif pertama. Objektif kedua adalah untuk mengkaji persepsi responden terhadap pengetahuan, kemahiran dan amalan ke arah pengurusan ladang selepas bencana, dimana responden mempunyai tahap sederhana terhadap pengetahuan, kemahiran dan amalan pengurusan ladang selepas bencana. Objektif ketiga adalah untuk mengenal pasti cabaran agen terhadap pengurusan ladang selepas bencana alam, yang juga menunjukkan tahap sederhana. Akhir sekali, untuk menentukan hubungan antara faktor sosio-demografi dan persepsi responden terhadap pengetahuan, kemahiran dan amalan terhadap banjir dan pengurusan ladang selepas bencana alam. Dalam analisis *chi-square*, terdapat hubungan antara umur dan jumlah pendapatan tahunan responden terhadap banjir dan pengurusan ladang selepas bencana alam. Kesimpulannya, terdapat ruang untuk penambahbaikan bagi pengurusan ladang bencana alam yang lebih baik. Menyediakan lebih banyak latihan perubahan iklim amat disyorkan kepada agensi-agensi kerajaan dan swasta untuk penambahbaikan. Selain itu, melantik agen pembangunan daripada institut pengajian tinggi amat baik untuk melaksanakan teknologi terkini dari institusi pendidikan tinggi.

# CHAPTER 1

## INTRODUCTION

### 1.0 Introduction

Chapter 1 is about the general information of the study. This chapter covers the agriculture in Malaysia, agriculture and risks, natural disaster, flood and impacts, agriculture extension agencies, and agriculture extension agents. Also included in this introduction are problem statements, the objective of the study, and significance of study.

### 1.1 Agriculture in Malaysia

The Malaysian agricultural sector has improved since the Federation of Malaya gained its independence from British colonization back to 58 years ago, forming what we know of today as Malaysia. Back then, the Federation of Malaya only focused on subsistence and traditional farming.

The main crops cultivated at that time were rice, cassava, coconut and fruits. The industry of rubber plantation was introduced in 1887 where the first rubber seed was planted in Kuala Kangsar, Perak. The establishment of Rubber Research Institute in 1926 had changed Federation of Malaya as a major rubber production in the world. The industry had survived until the late of the 1980s. On the other hand, the seed of oil palm crops was actually native to South Africa was grown in Rantau Panjang, Kuala Selangor as ornamental plants.

The early history of the oil palm crops industry in Malaysia has started as early as 1917, when the Dura oil palm seed of Rantau Panjang, Selangor was first cultivated in Tannamaran Estate, Kuala Selangor. As the knowledge of genetic inheritance increase, the commercial cultivation shifted and to eradicate poverty among the rural population, the government had introduced the Federal Land Development Authority (FELDA) in 1960 with the opening of land for large-scale plans as one of the country's Gross Domestic Product and export earnings.

The establishment of regional development institutions, land consolidation, and rehabilitation agencies as FELCRA, RISDA, and regional development agencies have intensified clearing of new land for industrial plants as well as achieve the goal of eradicating poverty through the New Economic Policy (NEP). Meanwhile, the establishment of specialized agencies such as FAMA (1965), Bank Pertanian Malaysia (BPM) (1969) which now had changed into new names, Agrobank and MARDI (1969). Lembaga Padi dan Beras Negara (LPN) (1971) is now taken by BERNAS. Also we have Fisheries Development Authority of Malaysia (LKIM) (1971), Muda Agricultural Development Authority (MADA) (1970), Kemubu Agricultural Development Authority (KADA) (1972), the Farmers Organisation Authority (LPP) (1973) and several other agencies that have been providing marketing facilities, research, credit and support services to target groups and accelerate development of the agricultural sector.

### **1.1.1 Production**

Agriculture production in Malaysia has diverse as the year has passed. From subsistence farming and traditional agriculture back then has improved and crops such as coconut, tropical fruits, vegetables, flowers, and annual crops are being grown by the smallholders and the private

sector. Oil palm, rubber, cocoa and rice continued to be the major crops grown by the private and public sectors.

The production of Malaysia crops not only contributes to national development in terms of export earning, gross domestic product (GDP) but as well as employment and income, involving about 420,000 smallholders and 53,000 estate agents (Tunku Mahmud, 2001).

According to the statistics department, the gross domestic product (GDP) and the contribution of the agriculture sector declined from 28.8% to 7.3% in 1970 and 2010 respectively. But in Perlis and Sabah, agriculture's share of GDP can be as high as 25%-30%. While the importance of agriculture is declining, it is still important to the economy and deserves attention because many people are dependent on it. We need agriculture for the sake of food security and stock of important and vital food, especially rice because the country is still far from the self-sufficiency level (Idris Jala, 2013).

### **1.1.2 Farmers**

Farmer's category in Malaysia can be divided into an innovator, initial recipient, early majority, late majority and left out. Farmer's experiences are also different depending on their involvement in the selected area. Some farmer's in MADA, Kedah experience for above than 40 years in a paddy field. The new ones are below than 10 years. As the experience differs between the farmers, their ages also differ.



Majority farmers in Malaysia, works in the agriculture sector as full-time farmers, while the minors as a part-timers while having another job. So, the minority part timer farmers have low-interest time for the agriculture sector.

Farmer's education also separated in a category such in primary school, secondary school or Malaysian's certificate and above. Their knowledge must be different in any way that we can observe.

## **1.2 Agriculture and Risks**

The development of agriculture is a continuous process to contribute to Malaysia's economy. However, we are facing the new issues and challenges, resulted from the changes in global economy, trade liberalization, and natural uncertainty.

According to the Rural and Environment Analytical Services (REAS) and Rural and Environment Research and Analysis Directorate (RERAD) in their final report of Risk and Risk Management Strategies in Agriculture: An Overview of the Evidence for the Scottish Government stated that although definitions of risk vary within the literature, in agriculture risks arising from uncertainties overdetermining factors returns to agricultural production (OECD 2008). Natural uncertainty and biophysical conditions influenced the quality of production as well as the value of production and output price. The risks in agriculture include climate and weather, natural catastrophes, pests, and diseases, which combine to cause highly variable production outcomes (Okezie and Baharuddin, 2012).

There are five (5) general risks in agriculture including risk in production, price or market risk, risk in financial, risk in institutional, and human or personal risk (Economic Research Service, 2014). Some of the above risks occur when there are factors such as natural uncertainty and biophysical conditions influences. The contributions and performances of production in agriculture depending on the how the farmers and agriculture agencies to averse the challenges and risk.

### **1.3 Natural Disaster**

The most serious environmental threats of the 21st centuries are the climate change or global warming. Extreme or severe weather on the condition that larger, more serious and devastating scale can create a natural disaster. A disaster caused by climate change could be defined as a serious disruption to the functioning of a community or a society causes widespread human, material, economic loss or environments beyond the capability of the affected community or society to cope using its own resources.

In general, Malaysia has not experienced frequent climate-related disasters such as floods and droughts that had a noticeable socio-economic impact to the country, although lately some minor climate-related disasters have been recorded. Landslides caused by heavy rains and strong winds occur in hilly regions and at the coast, the latter causing minimal damage (Mustafa, 2007).

Even though it is not big significant impact, the agriculture sector in Kelantan recorded about RM105 million losses to large floods from 15 December 2014 to 3 January 2015 which hit the state, said Ex Agriculture and Agro-based Industry Minister Datuk Seri Ismail Sabri Yaacob (Zaain, 2015).

#### **1.4 Flood and Impacts**

The most significant natural hazard worldwide maintain caused by flooding. Flooding is a natural phenomenon and has a devastating impact on communities. The effects of flooding are wide-ranging, impacting on the economy, social wellbeing and the environment.

In Malaysia, the worst statistic recorded was from 15 December 2014 to 3 January 2015 when more than 200,000 people were affected and 21 killed in floods. This flood has been described as the worst floods in decades.

As part of the northeast monsoon, heavy rains has affected almost all coastal area in Malaysia, including Sabah. In southern Malaysia area affected are Johor and Negeri Sembilan state. While the situation worsens in Kelantan and Terengganu followed by Pahang, due to heavy rain. It also affects some part of Kedah which is near to the east coast.

The impacts from the natural disaster affect palm oil and rubber prices which have disrupted supplies from Malaysia. Rubber output in Thailand and Malaysia will fall at least 30 percent and prices were forecast to rise. Palm oil production is decline sharply as floodwaters are not

receding in Malaysia. Even though Ministry of Agriculture have the Agro Disaster Fund amount of RM50 million, but considering the huge losses it will take lots to recover and develop in the agriculture sector.

### **1.5 Agriculture Extension Agencies**

Agriculture extension agencies are such an organizations combining both government and non-government to implement extension policies which affect the rural areas, development programmes, credit programmes, and bureaucratic and administrative procedures.

This kind of organizations cooperates by giving local support to farmers with the help of extension agents as political institutions and local political leaders. Besides that, the agriculture extension agencies is a support organization which supplies agricultural or other inputs, credit facilities or marketing services to the farmers when needed. Furthermore, the agencies set up to provide health services to ensure the development of agriculture and nutrition for the health needs of the local. The agencies are also required to provide education to new farmers to equip them with the knowledge and skills needed for farming.

The agencies are also important for the development of society to eliminate social barriers and transform the local culture, and also to encourage the community to know the programs that government departments are doing. Close cooperation not only prevent conflict and delivery info, and such but it does provide the opportunity to integrated farm programmes.

In Malaysia, such agencies are the Ministry of Agriculture itself, the department under it includes the department of agriculture, fisheries, irrigation and drainage, as well of veterinary services.

Besides, there are other agencies apart from the ministry such as Farmers Organisation Authority, Federal Agriculture and Marketing Authority (FAMA), Fisheries Development Authority of Malaysia (LKIM), Kemubu Agricultural and Development Authority (KADA), Malaysia Agriculture Research and Development Institute (MARDI), Malaysia Agricultural Bank, Muda Agricultural and Development Authority (MADA), Integrated Agricultural Development Project (IADP), National Hydraulic Research Institute of Malaysia, Pepper Marketing Board, Forestry Department Peninsular Malaysia, Forest Research Institute Malaysia (FRIM), Malaysian Cocoa Board (MCB), and Malaysian Palm Oil Promotion Council (MPOPC).

### **1.6 Agriculture Extension Agents**

The idea of extension agents is to advise, to counsel and to extend an innovation, special information or perhaps a governmental instruction to the farmers. An extension worker is usually advanced technically trained people with very good people skills. They like to work with people, can deal with the complex technical and social, is a holistic thinker, a good problem solver and have a very good empathy skills. Top of that, they must be confident and able to allow others to take control. Good communications skills are a must as the agricultural extension is all about communicating with the farmers and delivering information.

Extension agents also often involve in other job besides implementing extension work. In agriculture they may be involved in applied research, marketing, providing specialist services and regulation. There are many different roles an extension worker can do that will be determined by their employer.

The personal qualities required by a good extension agent is often discussed. This quality is more difficult to determine but, nevertheless, they are qualities to look for when selecting an extension agent. Some of the features proposed are personal characteristics, and it is important to assess whether the agent had them before appointing him to do extension work. The personal qualities required in extension agents is can give commitment with a sense of dedication and determination in extension activities, especially in remote rural areas. Besides, extension workers must be a reliability in terms of doing extension work also in connections with farmers. Extension workers must have a sense of humanity and be sensitive to wishes and feelings of the farmers in order to respects for their knowledge and ideas. Lastly, extension workers must have confidence in their abilities and determination in achieving something because they often work with little supervision and need self-confidence and courage in order to do something.

The above areas of knowledge, personal skills and qualities are not exhaustive. They are not presented as a checklist against which to judge the competence of an individual to do extension work but to show the very demanding nature of the work and to act as a guide when selecting and training extension agents.

## 1.7 Problem Statements

Natural disaster in agriculture can affect human, material, economic and gives environmental losses. In Malaysia, a natural disaster occurred when the climate changes such as floods and droughts. Sometimes, landslides due to excessive rainfall and strong winds occur in hilly areas and on the beach but the biggest worry of our nation is flood.

Every year, the floods remain the main problems we need to face. It is caused by the northeast monsoon heavy rain each year. Northeast monsoon heavy rain causes floods not only in the coastal area but also affects the river to cause major flooding in Kelantan. These floods cause a large number of disruptive and it is hard to the farmers to cope the losses by their own resources.

Besides, flooding also affects Malaysia's economic where agriculture contributes to the gross domestic product (GDP). Agricultural agencies need to help those farmers through the agents. Agriculture agents play a big role to help farmers to cope with their losses but it is a big challenges to the agents as agencies and farmers depending on them to develop agriculture sectors in a place affected by the flood and natural disaster.

Research questions for this study are:

- 1) What is the perception level of respondents' toward flood and natural disaster?
- 2) What is the perception level of respondents on knowledge, skill and practices toward farm management after flood and disaster?

- 3) What are the challenges of extension agents at different aspect toward flood and natural disaster?
- 4) What is the relationship between the level of socio-demographic factor and perception of respondents on knowledge, skill and practices toward farm management after the flood and natural disaster?

## **1.8 Objective of Study**

### **1.8.1 General Objectives**

The broad objective of the study is an in-depth analysis of the challenges of extension agents against flood and natural disasters to develop agriculture sectors in Kelantan, Malaysia.

### **1.8.2 Specific Objectives**

The specific objectives of this study are:

- 1) To identify the respondents' profile
- 2) To clarify the perception level of respondents' toward flood and natural disaster.
- 3) To examine the perception level of respondents on knowledge, skill and practices toward farm management after flood and disaster.
- 4) To examine the challenges of extension agents at different aspect toward flood and natural disaster
- 5) To determine the relationship between the socio-demographic factor and perception level of respondents on knowledge, skill and practices toward farm management after the flood and natural disaster.



## **1.9 Significance of Study**

The study of the challenges of extension agents against flood and natural disasters to develop of agriculture sectors in Kelantan, Malaysia hopes can give general significance and help to stimulate further investigations and theory-building yet the study also carries implications for understanding the challenges of agriculture agents and their perceptions in general. In this study, the perceptions of agriculture agents from varies of agriculture agencies were divulged. The result of the studied will help the agricultural agencies, especially Department of Agriculture to review the framework of risk management and policies that give great challenges to agriculture agents in order to develop back areas affected by the flood and natural disasters.

The current status of socio-demographic and challenges of agriculture agents in Kelantan are revealed. Which helps to evaluate current performance of the agents and their perception towards flood and natural disaster. The level of knowledge, skill, practices of agriculture agents on farm management was also revealed based on collected data. From this information current problem on farm management to develop the area affected have been identified and solved.

## **1.10 Thesis Organization**

The objectives proposed in this research is to know the perception of extension agents against flood and natural disasters to develop of agriculture sectors in Kelantan, Malaysia. The reader can had a brief overview of the research in the proposed methodology. Given below is a brief outline of the topics discussed in this thesis:

## **Chapter 1**

The first part of this chapter is a background of agriculture history in Malaysia, the extension agencies and their agents, problem definition, research objectives, and the thesis outline.

## **Chapter 2**

The second chapter in the thesis provides an overview of the problems encountered regarding the flood and natural disaster impact to agriculture sectors in Kelantan, Malaysia.

## **Chapter 3**

The chapter 3 acquaints the reader with the methodology used for analysing the relation between demographic factor and perception of respondents on knowledge, skill and practices toward farm management after flood and disaster.

## **Chapter 4**

The chapter 4 discusses the results of the analysis for each data collected from the questionnaires based on perception of respondents in Kelantan, Malaysia.

## **Chapter 5**

The chapter 5 is summarize of the chapter 4, which includes the limitation of the study and offers recommendations for improvements to the agencies.

## **Chapter 6**

All the cited journal and readings are being arrange alphabetically in the references section.

## **Chapter 7**

The example of the questionnaire used to collect the data is included in the appendix.



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