UNIVERSITI PUTRA MALAYSIA

THE INVOLVEMENT OF EXTENSION AGENT IN PLANNING, IMPLEMENTING AND MONITORING PADDY CULTIVATION PROJECT BASED ON RICE CHECK AT IADA SEBERANG PERAK

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BY

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A project report submitted to Faculty of Agriculture, Universiti Putra Malaysia, in fulfillment of the requirement of PRT 4999 (Final Year Project) for the award of the degree of Bachelor of Agricultural Science

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ENDORSEMENT

The project report entitled "The Involvement of Extension Agent in Planning, Implementing and Monitoring Paddy Cultivation Project Based on Rice Check at IADA Seberang Perak" is prepared by Nurnabilah Binti Azizan and submitted to the Faculty of Agriculture in fulfillment of the requirement of PRT 4999 (Final Year Project) for the award of the degree of Bachelor Agricultural Science.

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ABSTRACT

Rice is the main food in Malaysia and it is categorized the important crop after oil palm. Malaysia only achieved 73% of self-sufficiency and that is not enough to feed Malaysian. Paddy productivity in Malaysia can be classified low. There are large gap between potential yields with current yield in Malaysia. Government has support various research especially agency such as Malaysia Agricultural Research and Development Institute (MARDI) to do research and produce new variety to improve paddy yield in Malaysia. DOA had produced Manual Paddy Technology and Rice Check technology since 2002. A new variety which is MR219 has been produced by MARDI. The potential yield of the variety is 10mtan/ha however after 13 years been release the yield do not achieve as potential yield. According to DOA (2013) the variety had been grown by the majority of farmers from eight (8) granaries in Malaysia. The problem is why the yield do not achieved target? We want to study whether extension agent involvement is related to the problem or not. This study was carried out with the purpose to identify work performance and involvement of extension agent in deliver rice check technology in Seberang Perak. Respondent consists of 150 farmers from 4 blocks; block A, C, D and F. The result of involvement level in objective setting is high, planning is high, implementing is high, monitoring is high and work performance is also high. Monitoring activities show high correlation with work performance. Regression analysis from this survey shows that monitoring and objective setting are highly significant with performance. Objective setting and monitoring activities are strongly related to work performance. For recommendation, extension agents are advice to improve in objective setting and monitoring as it is significant with work performance In conclusion, monitoring and objective setting are important aspects for extension agents in transferring technology.

ABSTRAK

Beras adalah merupakan makanan ruji di Malaysia dan boleh diklasifikasikan sebagai tanaman penting di Malaysia selepas kelapa sawit dan getah Malaysia hanya mencapai 73% tahap sara diri. Terdapat jurang yang sangat besar antara potensi hasil dengan hasil sebenar. Kerajaan telah memberi dana dan sokongan kepada agensi kajian terutamanya MARDI untuk menjalankan kajian dan menghasilkan varieti dan teknologi baru untuk meningkatkan hasil padi di Malaysia. Jabatan Pertanian telah menerbitkan sebuah Manual Teknologi Padi dan "Rice Check" sejak 2002 untuk menjadi panduan kepada para petani. Varieti baru juga telah dikeluarkan hasil kajian MARDI iaitu MR219. Potensi hasil padi yang dijangka dapat dihasilkan oleh varieti ini adalah 10 mtan/hektar. Setelah digunakan sejak 13 tahun yang lalu ia tiada peningkatan dalam penghasilan padi di Malaysia. Menurut Jabatan Pertanian (2013) varieti ini telah ditanam oleh majoriti petani di lapan (8) jelapang padi utama di Malaysia. Mengapakah hasil tidak mencapai sasaran? Kajian ini untuk mengetahui adakah penglibatan agen pengembangan berkait dengan masalah hasil padi tidak meningkat? Tujuan kajian untuk mengenalpasti prestasi kerja dan penglibatan agen pengembangan dalam menyampaikan Manual Teknologi Padi di Seberang Perak. Responden kajian adalah seramai 150 orang daripada 4 blok iaitu A,C,D,F. Hasil kajian penglibatan pegawai pengembangan dalam objektif, perancangan, perlaksanaan, pemantauan dan prestasi kerja adalah tinggi. Aktiviti pemantauan meunjukkan perkaitan yang tinggi dengan prestasi kerja pegawai. Regressi menunjukkan aktiviti pemantauan dan objektif adalah sangat berkaitan dengan prestasi. Sebagai cadangan agen pengembangan perlu memantapkan aktiviti pemantauan dan penetapan objektif kerana berkait dengan prestasi kerja. Kesimpulannya, pemantauan dan penetapan objektif adalah aspek penting kepada agen pengembangan dalam penyampaian teknologi.

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ABBREVIATION

IADA	Integrated Agriculture Development Area
SPSS	Statistical Package for Social Science
UPM	University Putra Malaysia
SSL	Self-sufficiency Level
DOA	Department of Agriculture
NAFP	National Agriculture Food Policy
CM	Competency Model
ETP	Economic Transformation Program
NKEA	National Key Economic Area
MOA	Ministry of Agriculture

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Chapter 1 is about the introduction of this study. This chapter covers history of rice planting, paddy planting in Malaysia, Integrated Agricultural Development Authority (IADA), and background information of IADA Seberang Perak, competencies, problem statement, research questions, objective and significant of study.

1.1 History of Rice Planting

Oryza sativa was originated from the wild grass *Oryza rufipogon* roughly 10,000 – 14,000 years ago. The two main subspecies of rice, *indica* is prevalent in tropical regions and *japonica* is prevalent in the subtropical and temperate regions of East Asia are not believed to have been originated from independent domestication events. Another cultivated species, *O. glaberrima*, was domesticated much later in West Africa.

Recent genetic evidence show that all forms of Asian rice, both *indica* and *japonica*, come from a single domestication event that occurred 8,200 –13,500 years ago in the Pearl River valley region of China. Rice was believed to have first been domesticated in the region of the Yangtze River valley in China. Rice has been cultivated in China since ancient times and was introduced to India before the time of the Greeks. Chinese records of rice cultivation go back 4,000 years. In classical Chinese the words for agriculture and for rice culture are synonymous; indicating that rice was already the staple crop at the time the language was taking form.

In several Asian languages the words for rice and food are identical which showed that rice was a staple food at several Asian countries. Rice cultivation has been carried into all regions having the necessary warmth and abundant moisture help to its growth, mainly subtropical rather than hot or cold. The crop was common in West Africa by the end of the 17th century. It is thought that slaves from that area that was transported to the Carolinas in the mid-18th century. He introduced the complex agricultural technology, thus playing a key part in the establishment of American rice cultivation. Their labour then insured a flourishing rice industry. Modern culture makes use of irrigation, and a few varieties of rice may be grown with only a moderate supply of water.

Countries in the league of top ten largest producers of rice are as follows: China (194.3 million tons), India (148.3), 3, Indonesia (60.3), Bangladesh (46.9), Vietnam (38.7), Myanmar (30.5), Thailand (30.5), Philippines (16.8), Brazil (12.1), and lastly Japan (11.0). Malaysia is at rank 25th with a total rice production of about 2.4 million tons (Teh, 2010). Both China and India are, by far, the two largest producers of rice, producing half of the world's rice.

1.2 Rice Planting in Malaysia

Rice is the third most important crop in Malaysia after rubber and palm oil which were the first and second respectively in terms of production and is mainly grown in the eight granary areas in Peninsular Malaysia covering an area of about 209,300 ha (Azmi and Mashhor, 1995). Even though the land area for rice production has remained rather constant, rice productivity has been increasing every year from 2.1 ton/ha in 1961 to 3.6 ton/ha in 2010 with an annual increase of 2.0% per year or about 28,000 tons per year.

This has not in any way, guaranteed self-sufficiency as over 700,000 tons or 30% of its rice needs were being imported from their neighboring countries annually. In Malaysia, rice is the most important commodity because rice is the staple food for Malaysian. We can say that one Malaysian consumed rice twice daily. Malaysian rice production is still low and cannot meet the demand by consumers so Malaysian government imported a given amount of rice commodity mostly from our neighboring country, Thailand to accommodate the demand. Former Malaysian Minister of Agricultural and Agro based Industry Datuk Seri Ismail Sabri Yaakob said at that time that the Ministry wants Malaysia to achieve full self-sufficiency level in paddy production by the year 2020. To achieve this aim, the ministry will spend RM 2.2 billion out of its RM6 billion budgets allocated, so that farmers could increase their paddy yield.

To rely on imported rice would mean that national governments of Asia would have less control over the basic food supply, and would be more vulnerable to political pressures from abroad. All those involved in Asian rice farming are also aware that taking rice fields out of production for any length of time tends to be a one-way process. Rice fields and their irrigation systems require constant maintenance if they are to remain productive (Hamzah & Mohd, 2008). If paddy fields are taken out of rice production completely and converted to other uses, it might not be easy to resume rice cultivation if the situation changes at some time in the future. Rice self-sufficiency levels in Malaysia was based on the context of food security that consists of 3 pillars which are food availability in terms of consistency of food and adequacy, accessibility of adequate and nutritious food and nutrient food that is capable of providing sufficient nutrition (Ministry of Agriculture, 2008). Malaysian government actually targeted for Malaysia to reach 90% self-sufficiency level in 2015 but apparently it seems impossible to achieve the target. Malaysia's average paddy yield is around 3.3 ton per hectare

while the average paddy yield among the main granaries is around 4.9 ton per hectare and it's still considered low. Malaysia's mean rice productivity, though increasing each year, is only 3.3 ton/ha per year (Abdullah & Yusoff, 2011)

Table 1.1: Ranking of Granary Areas in Malaysia

Rank	Granary Area	Average Yield (ton/ha)
1.	IADA Barat Laut Selangor (BLS)	6.3
2.	IADA Pulau Pinang	5.8
3.	IADA Terengganu Utara (KETARA)	5.5
4.	MADA	5.0
5.	IADA Seberang Perak	4.6
6.	IADA Kerian	4.5
7.	KADA	4.1
8.	IADA Kemasin Semarak	3.5

(Adapted from: Malaysian Paddy Statistics, 2013)

Table 1.1 shows Malaysian Paddy Statistic Data for the year 2013. We can see that IADA Seberang Perak in the ranking number 5 with average 4.6 ton per hectare. The annual growth rate of rice production from year 2000 to 2013 was about 1.47%. Rice production increased from 2.14 metric ton in 2000 to 2.63 metric ton in 2013. Despite fluctuated in the harvested area from 698, 702 hectares to 688, 702 hectares during the 1990-2013 period; the average annual yield has consistently increased from 3064 metric tons in 2000 to 3082 metric tons in 2013. Thus the SSL of rice has increased from 70% in 2000 to 73.5% in 2013 (Teh, 2010).

The annual growth rate was around 0.26%. However, the import of rice has considerably increase from 592 000 metric tons to 876 100 metric tons due to increase in consumption as a result of increase population.

To ensure the rice supply is adequate for the nation, government has formulated various policies that will advance this industry. The policy formulation and economic development in this country has always been revising depending on current local situation and also the world rice market. For example instability in rice price in world market such as in 1970, 1980 and 2008 food crisis has a negative impact to the country. Thus, the government has to look at the impact of this situation the paddy farmers in terms increasing of cost production and the possibility of decrease of their income.

Many policies have been developed by the government for the future of rice industry in Malaysia. The paddy and rice development policies started before the independence era and continue after independence in 1957. During the pre-independence there were no significant support programs especially in term of infrastructure development and R&D. During the colonial era there are some policies introduce as a measure to enhance the industry such as the formation of rice cultivation committee, program to restrict labour or farmers left out from rice cultivation and the introduction of food security measures. However, this policy failed to increase the production of rice.

The government effort continues to support rice industry after independence through formal policies which is known as National Agriculture Policy (NAP). It was formulated to address the agriculture issues including issues in paddy and rice industry. It was introduce in 1984 and ended in 1991. The NAP 2 period was from 1992 to 2010 and NAP 3 was in 1998 to 2010. Due to the importance of development of food sector, and enhancement of food security the NAP was replaced with National-Agro Food

Policy (NAFP) which to be effective from 2011 to 2020. The NAP 1 and NAP 2 were developed for overall agricultural sector where the objectives were to maximize income from agriculture sector through resource utilization and increase agricultural productivity. Efforts were further increase to improve the efficiency of paddy industry. Meanwhile more focus was given to issues and problems in paddy and rice industry in third NAP. The development of 8 granaries areas as the designated national paddy production hubs gave significant impact in increasing rice productivity.

Similarly, strategies to enhance the efficiency and productivity of paddy yield and cropping intensity had also contributed to increase in rice production. The (NAFP) also focus on strengthening the economic aspects especially in areas of research and development, extension and advisory services, irrigation and drainage facilities, credit, marketing and farmer institutions. Another strategy is sourcing of rice from offshore investments especially in low cost rice producing countries and promotion of sustainable development of rice industry by adopting environment friendly farm practices.

Also, Malaysian government has announced Economic Transformation Program (ETP) in 25th September 2010 as a way to increase national income per capita. This will be achieved through Gross National Income (GNI) development. The first pillar of ETP is the 12 National Key Economic Areas (NKEA). These NKEAs are an approach towards achieving sustainable economic growth that can drive Malaysia to become high income country and increase Malaysia competitiveness (Performance Management and Delivery Unit, 2010).

The agricultural NKEA is focused on sub-sectors that have high development potential which are aquaculture, seaweeds culture, swift bird nest, herbal products, fruits and vegetables. Other than that, paddy and livestock feedlot are also chosen because of their

importance in national food security. The government will encourage commercial scale cultivation, improving irrigation density and speed up the use of new technology with the aim of enhancing yield to 10 tons per hectare in 2020. In granaries that were operated by Integrated Agricultural Development Area (IADA), the focus during the initial phase is to provide incentives to encourage the outsourcing of land management (Ministry of Agriculture, 2015).

1.3 Integrated Agricultural Development Authority (IADA)

1.3.1 History of IADA

Integrated Agricultural Development Projects (IADPs) were adopted since 1965 in Malaysia. When initiated, however, there were eight IADPs in Malaysia and they have then been renamed as IADAs. The eight (8) designated granaries, under the IADPs will be covering a total area of 212,000 hectares, produced about 68.5 per cent of the total paddy production. These eight granaries were introduced by the National Agro Food Policy (NAFP) as strategies to increase rice production. The difference between paddy planting in these granaries from paddy planting outside granaries is that in this granaries there will be improved facilities and drainage, advisory services from extension agent from government and also many subsidies and help in terms of fertilizers, herbicides and etc. The yield will be monitored from time to time.

The average yield in these granaries is expected to be increase from paddy yield outside granaries because it has been utilized with many facilities and supports. The agriculture development programs were aimed at expanding per annum during the review period, surpassing the Eighth Malaysia Plan target project to increase production and income through integrated farming and paddy. In order to sustain the self-sufficiency level and food security of the nation through increasing food productivity, income, and the

provision of improved irrigation and drainage facilities and other complementary inputs, such as fertilizers, pesticides, and herbicides and etc. And other agricultural services such as extension, credit, marketing and subsidies, in order to increase rice production. Various places such as Perak, Penang, Selangor, Kelantan, and Terengganu have been chosen to establish 8 granaries under the IADPs.

1.3.2 IADA Seberang Perak Irrigation Scheme

IADA Seberang Perak covers 2 schemes namely Irrigation Scheme Seberang Perak and Sungai Manik Irrigation Scheme. Because Sungai Manik is closer to IADA Seberang Perak compared to IADA Kerian so, Sungai Manik joined together under same management with IADA Seberang Perak. Seberang Perak Irrigation Area (Blocks A, B, C, D, E, F & G), one of the country's granary and has an area of 8529 hectares located in Perak Tengah district. The irrigated area has developed the concept of (IADP) in the early 1980s. After agricultural infrastructure development projects for the area covering more than 4,000 hectares of rice (Block E, F and G) prepared in 1990, the Federal Land Consolidation and Rehabilitation Authority (FELCRA) took over the region in terms of the management of the estate. However, Department of Irrigation and Drainage (DID) components and Department of Agriculture Seberang Perak are maintained in line with the government's commitment to continue to promote the agricultural sector specifically to rice granary.

Starting in 2007 IADPs has been converted to (IADA) to continue the work of operation and maintenance under the Department of Irrigation and Drainage (DID) Perak Tengah. Sungai Manik Irrigation Scheme was started in 1933. Construction work on the program was implemented in four stages. Works of irrigation and drainage directed to take back (reclaim) swampy forest land for rice planting season. Water for irrigation is taken from construction supplies in Sungai Batang Padang. Stage 1, 2 and 3

covering an area of 4,047.6 hectare was completed in 1941. Paddy planting twice a year had begun in 1966 with an area of 1,642.8 hectare capacity increased to 4,200 hectare in 1969 and grew to 6,200 hectare in 1976. Sungai Manik Irrigation Scheme which has an area covering 5,611 hectare of rice crops in the districts of Hilir Perak. The irrigation scheme consists of two sub area known as Sg. Manik scheme and Labu sub scheme Kubong.

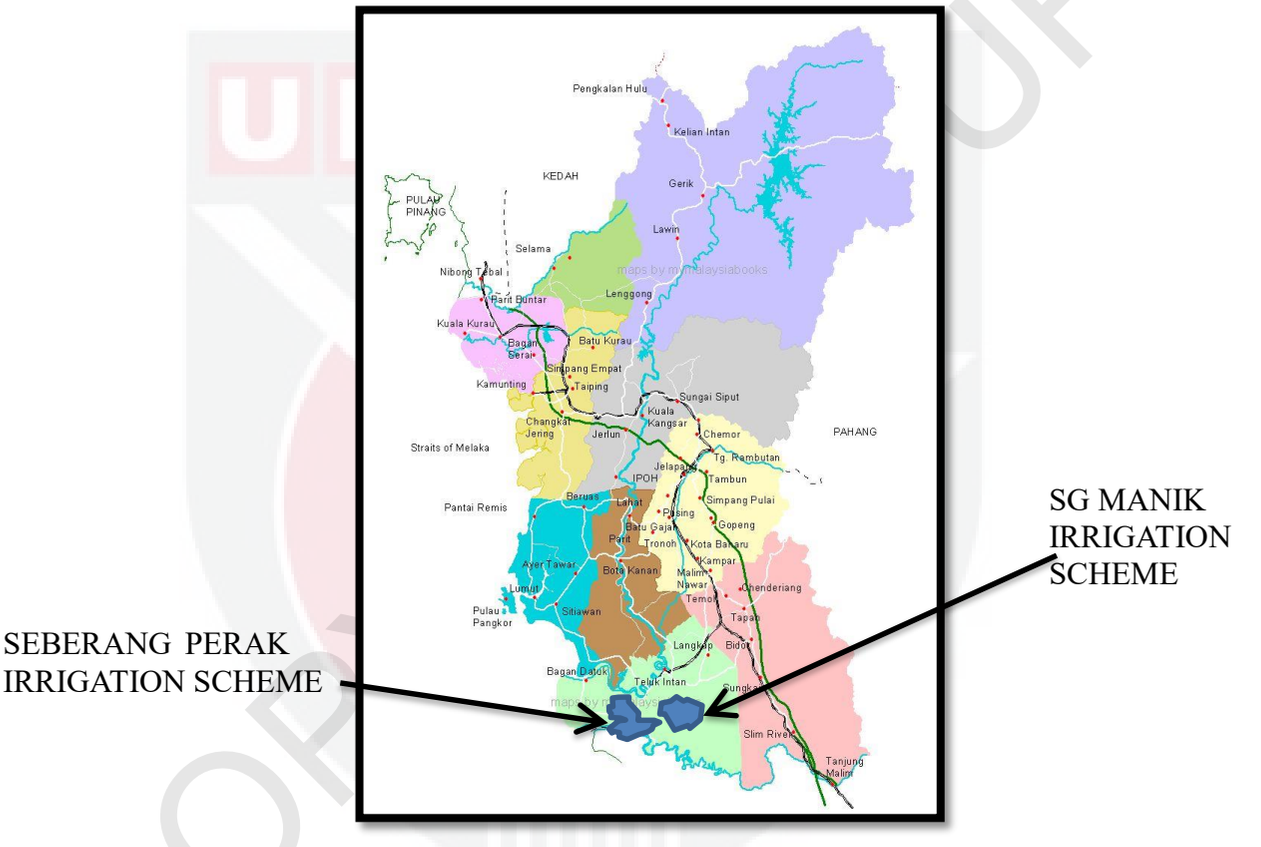

Figure 1.1: Maps of Irrigation Sheme for IADA Seberang Perak & Sg Manik

(Adapted from Laman Web IADA Seberang Perak, 2015)

Figure 1.1 shows maps of Sungai Manik and Seberang Perak Irrigation Scheme that was started to build in 1933. There are 2 schemes which are Sg Manik Irrigation Scheme and Seberang Perak Irrigation Scheme. IADA Seberang Perak consumes the water source from Seberang Perak Irrigation Scheme.

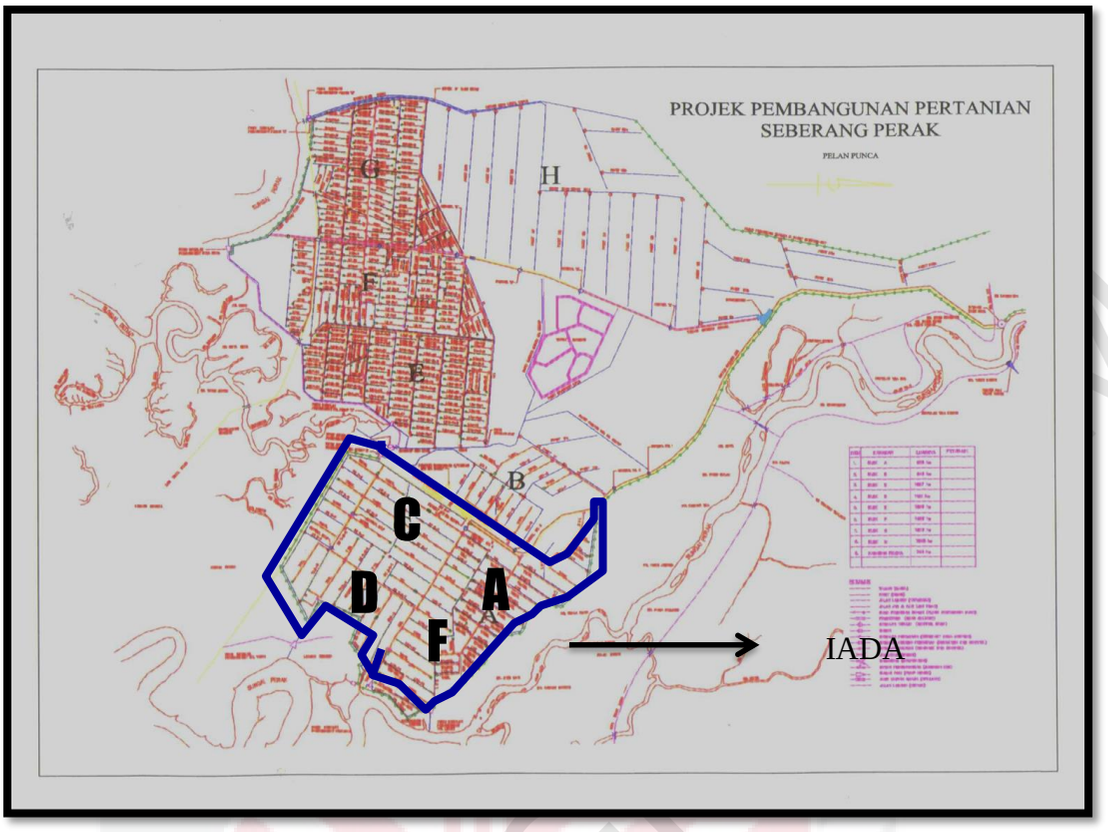

Figure 1.2 : Layout of Block in IADA Seberang Perak

(Adapted from Laman Web IADA Seberang Perak, 2015)

Figure 1.2 shows the layout of Block in IADA Seberang Perak. There are 4 blocks that can be see from the layout. All of the blocks are been maintained and supervised by IADA Officer.

Table 1.2: Area of Each Block in IADA Seberang Perak

BLOCK	IADA AREA (ha)
A	871
C	991
D	1159
F	329
TOTAL AREA	**8529 ha**

(Adapted from Laman Web IADA Seberang Perak, 2015)

Table 1.2 shows area for each block in IADA Seberang Perak. There are 4 blocks in IADA Seberang Perak. Block A is 871 ha, Block C is 991 ha, Block D is 1159 ha and Block F is 329 ha. All of the blocks made up 8529 hectare.

The concepts of IADPs have been introduced in 1965 with the establishment of project Agriculture Development Board. Organization structure and management that has been used by IADA divided into 2 which are corporate and board like has been practiced by MADA and KADA also management model that has been standardized by other IADAs. Basically, the concept of (IADPs) focuses on integration of all efforts and activities among all agencies and department under Ministry of Agriculture and Agriculture Based Industries and other agencies from any ministry if needed. Integrated approach like this will be needed in providing agriculture infrastructure facilities and other supported services.

1.3.3 IADA Seberang Perak

Mission of IADA Seberang Perak is to increase paddy production means 6.62 metric ton/hectare by 2020. Their vision is to increase family income to minimum RM3000 per month through increasing of paddy yield by year 2020. And, their vision is to increase paddy production to 90 000 metric ton by year 2020. Their objectives are to increase productivity and maximize salary of target group so that the difference in income compare to other sector can be reduced. Then, modernization of agriculture sector so that improve efficiency in productivity, save energy and time to compete in or outside of country. Also, increase of mean production yield of paddy to 6.62 metric ton per hectare per season by 2020. IADA main functions are to increase agriculture infrastructure especially irrigation system and drainage for certain region.

And also to improve social life of farmers to higher level by increasing their income through innovation and researches. Apart from that, to expand support services in agriculture and human resource management. Their main functions are also to standardized advisory services and extension services to target groups through human development programs.

Table 1.3: Information of IADA Seberang Perak

Location of scheme	Perak
Management of district	Perak Tengah
Area of physical scheme	16,114 ha
Area of paddy planted	8529 ha
Area of irrigationscheme	8707 ha
Paddy cultivation intensity	200%
Infrastructure intensity	$37/m^2$
Mean paddy size	1.9 hectare
Mean paddy yield	4.6 ton/hectare
No of farmers	3662 farmers
Average age of farmers	55 years old
PPK	PPK Seberang Perak
Irrigation Source	Rain, Irrigation of Teluk Sena.

(Adapted from IADA Seberang Perak Website, 2015)

Table 1.3 shows the background information about IADA Seberang Perak. We can see from the table that it is under management of district of Perak Tengah. Area of physical scheme is 16,114 ha but only 8529 ha are been planted with paddy. Paddy cultivation intensity is about 200% which is quite high. Infrastructure intensity is about $37/m^2$. Mean paddy size is 1.9 hectare and mean paddy yield is 4.6 ton/hectare. Number of farmers is about 3662 farmers. Average age of farmers is about 55 years old. Irrigation source is from rain and Irrigation of Teluk Sena.

1.4 Competency of Extension Agents

In this research we want to survey competency that means, the involvement of extension agents in objective setting, planning, implementing, monitoring and their work performance. Competency can be define as able to apply or utilize sets of related learning, skills, knowledge and abilities needed to perform successfully or undertakings in a characterized work setting. Competency can also be described as hidden characteristics of an individual which brings out effectiveness and high commitment on the work (Klemp, 1980). Besides that, competencies can be defined in more detailed context which means a group or related information, attitudes and skills that result in a large portion of one's duty that corresponds with the work performance. It can be indicated through acknowledged standards and can be enhanced with motivation, courses, training and development (Parry, 1996).

1.5 Rice Check Technology

Rice check technology was published to be a guideline to farmers and also extension agents to manage the paddy crop according to the target. Basically, rice check has 10 main components and must be followed by farmers, extension agents, supervisor, and workers in order to get higher yield. The main component of rice check is (i) suitability of land, (ii) design of land, (iii) land preparations, (iv) sowing, (v) fertilizer application (vi) water management, (vii) pest and disease control, (viii) weed control, (ix) harvesting and (x) quality of rice (DOA, 2002).

1.6 Problem Statement

Competencies of extension agents are the important aspect that needed in transferring new technology to the farmers and guide them on how to cooperate with that. When the new technology has been release, three (3) aspects need to be taken care in order to make sure the technology or new knowledges has been accepted successfully. The three aspects in technology transfer they are; planning, implementing and monitoring. These are basic thing to make sure any program, technology or activities followed the flow that has been planned. As a new granary area, after MADA, KADA, and other granaries, IADA Seberang Perak has many things to catch up and learn in order to help Malaysia to achieve self-sufficiency level of paddy. IADA need to find a solution to increase productivity and yield.

So, IADA have tried many ideas and programs in order to increase paddy yield. The programs are courses, seminar and talks to farmers and also extension agent to build up their passion and enthusiasm in increasing paddy yield that have been aim by government. The program was conducted in order to boost up spirits of farmers.

Apart from that, government has made various efforts to improve paddy production in Malaysia through giving support and fund to Malaysian Agricultural Research and Development Institute (MARDI) to produce new paddy variety which is MR219 that has a potential yield up to 10 metric tons per hectare. However, the average production in IADA Seberang Perak is only 4.6 ton per hectare, (IADA Seberang Perak Annual Report, 2015) and IADA Seberang Perak is in the fifth rank of all eight (8) granaries ranked in ranking of granary areas in Malaysia. There is huge gap between the current yield and potential yield which is around 54%. So this is the problem we want to survey why there are huge gap between current yield and potential yield. Is this because of the involvement of extension agents that contribute to this problem?

Extension agents are responsible in technology transfers and involve in the management function in their job which are planning, implementing and monitoring. These aspects may influence the work performance which can be indicator in measuring the efficiency of technology transfer between extension agents to the farmers. Because there are huge gap between current and potential yield and the paddy yield do not increases although many efforts has been done so, we want to know whether the involvements of extension agents are related to this problem. Thus, the involvement level of extension agents in IADA Seberang Perak should be the topic to study in order to observe the relationship between those four aspects with extension agent work performance.

1.7 Research Questions

1. What is the involvement level of extension agents in objective setting, planning, implementing and monitoring stage in transferring technology to paddy farmers?
2. What is the work performance level of extension agents?
3. What is the relationship between objective setting, planning, implementing and monitoring stages with work performance?

1.8 Objective of the study

1.8.1 General Objective

To investigate the level of involvement of extension agents in IADA Seberang Perak in decision making according to Rice Check.

1.8.2 Specific Objectives

1. To identify the involvement level of extension agent in objectives setting, planning, implementing, and monitoring activities in transfer of technology based on Rice Check.

2. To determine the relationship between involvements in objective setting, planning, implementing and monitoring stages with work performance.

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