OIL PALM PLANT MONITORING AND MANAGEMENT TOOLS

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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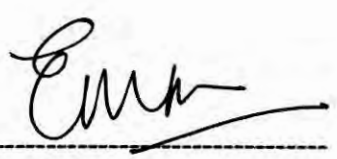

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OIL PALM PLANT MONITORING AND MANAGEMENT TOOLS

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This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Software Development)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2011

DECLARATION

I hereby declare that this project report entitled

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is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT : _____ Date: 30-6-2011

(RAHMAT ILAHI)

SUPERVISOR : _____ Date: 5 JULY 2011

(EMALIANA KASMURI)

DEDICATION

To my beloved parent who always make me never give up, and my friends who always give me motivation.

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I really want to thank to Allah that give me the strength and the blessing to complete this thesis. I was also really indebted to all my lecturers who have taught me since the first semester until this final semester, especially for my Projek Sarjana Muda (PSM) supervisor, Ms. Emaliana Kasmuri who always give me the motivation and idea to complete this thesis. My thanks also given to Mr. Satrya Fajri Pratama and Ms. Lustiana Pratiwi who always give me ideas and new knowledge to help me to complete this thesis.

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ABSTRACT

In plantation, one of very important part is plantation monitoring. The growth of plantation is very critical part to determine the quality and quantity of the plantation. It is applies as well as in oil palm plantation. Usually the problem that faced by the owner of plantation is to monitor their plantation properly, especially when they stay far away from the plantation area. To solve this problem, the system that called Oil Palm Plant Monitoring and Management Tools (OP2M2T) will be built.

The proposed system will help the owner to monitor and record the growth of their plantation well. This system will change the manual record into computerized record, and help them to integrate all information into one whole system. Hopefully this system will help the owner and an employee of oil palm plantation to solve their problem in monitoring their plantation.

ABSTRAK

Di dalam perkebunan, salah satu bagian yang paling penting adalah memonitoring tanaman. Pertumbuhan tanaman adalah bagian yang paling kritikal untuk menentukan kualitas dan kuantitas tanaman. Ini juga berlaku pada perkebunan kelapa sawit. Biasanya masalah yang dihadapi oleh pemilik perkebunan adalah untuk memonitor tanaman mereka secara baik, terutama ketika mereka tinggal jauh dari perkebunan. Untuk menyelesaikan masalah ini, system yang diberi nama Oil Palm Plant Monitoring and Management Tools (OP2M2T) akan dibagun.

System yang diusulkan iniakan membantu pemilik perkebunan untuk memonitor dan merekod pertumbuhan tanaman mereka secara baik. System ini akan menggantikan rekod manual menjadi recod berbasis komputer, dan membantu untuk menyatukan semua informasi di dalam sebuah sistem. Diharapkan sistem ini dapat menolong pemilik perkebunan dan karyawan perkebunan untuk menyelesaikan permasalahan mereka untuk memonitor perkebunan kelapa sawit.

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CHAPTER I

INTRODUCTION

1.1 Project Background

Nowadays, oil palm plantation is one of a growing industrial plantation in the world. It is because many household or industrial needs made from palm oil-based materials especially for food ingredients. Now, along with the development technology, the result of this plant could be an alternative fuel instead of fossil fuel. It makes many palm plantations growing everywhere.

The reason many people want to spend their money to plant palm oil is not only because this plant has great potential, but also because this plant is easy to grown. Generally, oil palm plantation has three phases from beginning until it can give profit to the owner. Those phases are cultivation, treatment, and harvest. All of those phase will be monitored by an authorized employee that hired by the owner, and all of monitoring result will be reported periodically to the owner.

The problem was happened when the owner especially the one that has residences far away from their palm plantation. They have problem to monitor and control the growth, the fertilization, and the harvest result of their palm oil. It is because, until now no system was existed to handle those problems. The employee has to record the monitoring result in books manually, and every time

the owner comes to the plantation, they will give those results to the owner. This manual system has high risk, since the data can easier to manipulate by the employees.

The manual system make the authorized employee has to record the plantation every week, and write it in the books. When the owners come and check the result. They will have difficulty to look and to evaluate it, because usually the employee did not write the record in organize form. The owners have to rewrite it in new book to get the fix result. They also have to record the harvest result in different book because it has different form format. It is including how many fruits in every area, weight of fruits, and other information, so it will make them have to work twice and it will be difficult to save the information in one data storages.

To solve all of those problems, the new system will be proposed. This system will solve those problems by record all the information about palm oil from the cultivations, treatment periods, and until the oil palm ready for the harvest in one system. It will change the manual record system into computerize system. It also make the owner can easier to monitoring their plantation. The other benefit of this system is the owner can save the plantation data from many years ago, so they can recall the record anytime they want. For building this proposed system, it will divided into two development phase, *Projek Sarjana Muda 1 (PSM 1) and Projek Sarjana Muda 2 (PSM 2).*

1.2 Problem Statement

There are several problems in the manual system:

i. Weak in data storage

The current system has a weakness in data storage, because it records the result of palm oil monitoring and harvest in manual books, and it separates in several books, so it will be problems if any book is missing or damage.

ii. Weak in monitoring

The current system requires the owner of plantation to monitor and look at the plantation very often. It is because they cannon access the plantation result without go to the plantation and also it will cost them very much if their residence is far away from the plantation.

iii. Risk of Security

In the current system, the owner cannot monitor their plantation properly. It is because in the manual book they cannot process the data automatically. Sometimes it will make the employees can easier to manipulate the plantation report, especially the harvest results. It will affect to the profit of the plantation.

1.3 Objective

a. To help owner to monitoring their palm plantation

The owner of palm plantation that resident far away from their plantation has a difficulty to monitoring their plantation every time. It makes them do not know the problem or the growth of their plantation. To solve this problem, the system will perform

a weekly report for their references. Although they stay far away from their plantation, they can know the new information about their palm plantation immediately.

b. To help employee to manage monitoring result

In every plantation, in this case the palm plantation, the authorize employee have to report their monitoring result or the harvest result to the owner. In manual system, they have to write it in different book. This method has a weakness, because they have to write the result in a good format, to help the owner easier to understand. In the proposed system, they can easier to input these result, because it provide the fix format, and also the system automatically create the graphic from these result, so it will help the employee to manage their monitoring result easier.

c. To integrate the cultivations, treatment periods, and the harvest records in one data storage.

Oil palm plantation have three main periods, there are cultivation, treatment, and harvest. This periods will controlled by the employee, and the result will be recorded in different book, because it prevent the data change each other. Because data is separated into three books, it will be risked if one of the books is missing. In the proposed system, this data or result will be recorded in one integrated system, it will make the processing data easier than the manual system, and also to prevent lost of data, because all data will be save in one database.

d. To change manual system into computerize system.

Oil palm plantation is the computerize system that can save and process the data automatically and more organize. It will help the employee to organize and report their monitoring result easier and also can help the owner to get the report faster than before. This system can also call the previous data, so the owner can compare the previous data with the current data.

1.4 Scope

In this scope, there are two elements that will be described; there are user and the system.

1.4.1 User

This system has two users, there are:

a. Oil Palm Owner, his authority is :
   - Act as the admin.
   - Can register new users.
   - Get report from user.
   - Can control the system.

b. The authorize employee , they responsible to :
   - Register new oil palm plantation.
   - Add weekly monitoring records.
   - Add harvest result.
   - Add incoming fertilizer record.
   - Send harvest report to the owner.

1.4.2 System

The system will focus to record the growth of palm oil from cultivations, treatment periods, and until the oil palm ready for the harvest. It's include how many fertilizers needed every month, what action needed for the treatment, the total of harvest every month, and all the thing that needed by those plant. The system will show the area of the plantation by using map system, so the users can check the total of plantation every area.

This system have 7 basic modules to support the user, there are:

a. Login Module

This module is developed to provide system security where the system can be accessed only by the authorized users. Authorized user need to enter the right username and password to login the system. The system will provide default username and password for oil palm owner to enter the system, and the owner can add the authorized employee to get access to the system.

b. Oil Palm Monitoring

The function of this module is to help the authorized employee and the owner to monitoring the growth of their oil palm plantation. The monitoring result from employee will be inputted here, and the system will process the data, after that, the information can be access by the user, especially the owner.

c. Harvest Record

This function of this module is to record all the harvests results in the plantation. This result will help the owner to know the productivity of their plantation. The owner can compare the result every sector and also with the previous result, so it can be referenced to them to improve their harvest quality.

d. Fertilizer Record

This module will help the employee to record incoming fertilizer to the system. This modules is important because the fertilizer is very expensive and it easy to be manipulated.

e. Notification

Notification is the module that can support the system to send the important report or information to the owner of the plantation. Usually the harvest must be reported to owner immediately, because the factory or the buyer will transfer the money through bank, so they have to know how much the money that they will get. So to solve this problem, the system will send the latest harvest result to the owner by using email and Sort Message Service (SMS) notification.

f. Map System

Map is a module of the system that can visualize the location of plantations. The map will show the location of cultivation, treatment and harvest, so the user will know the specific location in plantation.