INTELLIGENT MOBILE PADDY DISEASES USING FUZZY TEMPORAL INFORMATION

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ABSTRAK

Padi merupakan tanaman kontan yang terbesar di Malaysia. Kebanyakan penyakit padi telah menyebabkan kerugian yang besar kepada pesawah padi. Sebagai contohnya, penyakit Tungro berupaya memusnahkan lebih daripada 90% tanaman dalam satu-satu musim padi. Oleh itu, adalah penting untuk mengesan penyakit-penyakit padi dalam peringkat awal supaya jangkitan dapat dikawal dan mengelak penyakit-penyakit tersebut daripada merebak ke seluruh tanaman. Hasil kajian ini telah membawa kepada pembangunan sistem mudahalih mengesan awal penyakit padi menggunakan maklumat temporal fuzi. Sistem ini dapat memberi amaran awal kepada petani apabila terdapat penyakit padi menyerang tanaman. Teori set Fuzi telah digunakan bagi menjelaskan perkara ini dalam format merujuk kepada konsep Fuzi; sementara itu taakulan berasaskan kes, telah digunakan bagi tujuan mencari persamaan kes. Data sebenar yang merujuk kepada sejarah-sejarah kes penyakit padi yang telah lalu dan yang dijangkakan juga turut diguna pakai. Prototaip yang mengenal pasti penyakit tersebut mengesahkan keberkesanannya dan tahap kecekapannya.

ABSTRACT

Paddy (Rice) cultivation is the major food crop enterprise in Malaysia. Numerous diseases of paddy have been found in paddy field cause considerable crop losses field. For example, Rice Tungro Disease can destroy up to 90 Percent of the rice crop during growing seasons. Therefore, there is an urgent need to predict them in the early stages, so that fast and effective control measures can be taken to avoid diseases outbreaks. This study led to the development of intelligent mobile Paddy diseases detection system using fuzzy temporal information to early predict the paddy diseases. Fuzzy Set theory is used to represent the cases in fuzzy concept format while Case –Based Reasoning (CBR) is used to retrieve similar cases. Real data which cover historical cases of several aspects of paddy diseases were used. The prototype in predicting the diseases confirms the perfection and efficiency.

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LIST OF ABBREVIATIONS

AI	Artificial Intelligent
ANN	Artificial Neural Network
CBR	Case -Based Reasoning
DOA	Department of Agriculture
ES	Expert System
EWS	Early-Warning System
HTTP	Hypertext Transfer Protocol
IDE	Integrated Development Environment
KDD	Knowledge Discover Database
MADA	Muda Agriculture Development Authority
MARDI	Malaysian Agricultural Research and Development Institute
PDA	Personal Digital Assistant
UML	Unified Modelling Language

CHAPTER 1

INTRODUCTION

This chapter briefly explains the background of the study that mainly involves the integration between Case –Based Reasoning (CBR), Fuzzy Set and temporal information to help in predicting paddy diseases. The problem statement, objectives, significance of the project and scopes will also be introduced.

1.1 Background

Agriculture has played a vital role in the development of modern Malaysia and continues to make a significant contribution to the national economy. Malaysian's agriculture sector was accorded renewed and extra importance by the government after the economic crisis of 1997, with a particular drive to reduce the food importation bill. Rice (paddy) is the major agricultural and food crop enterprise in Malaysia. Together with other agricultural crop, Paddy crop covered almost 97 percent of the total cultivated agricultural land in Malaysia (Food and Agriculture Organization of the United Nations, 2004), and one third of Malaysia's total

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