Intelligent Agricultural Crop Selection System

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Declaration

We declare that this thesis is our own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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Dedication

This dissertation is dedicated to my beloved father who gave me endless courage whenever I was discouraged and to my beloved mother who taught me that even a large task can be accomplished if it is done one step at a time.

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I am very thankful to all the great people who have helped me to make this project a success.

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Abstract

Farm managers have to deal with many conflicting objectives when planning which crop to cultivate. Soil characteristics are extremely important when determining yield potential. Fertilization and liming are commonly used to adapt soils to the nutritional requirements of the crops to be cultivated. Planting the crop that will best fit the soil characteristics is an interesting alternative to minimize the need for soil treatment, reducing costs and potential environmental damages. In addition farmers usually look for investments that offer the greatest potential earnings with the least possible risks. According to the objectives to be considered the crop selection problem can be difficult to solve using traditional tools. Therefore, this work proposes an approach based on Expert System Concept to help in the selection of an appropriate cultivation plan considering crop alternatives and objectives simultaneously.

Users of the Artificial Intelligent Crop Selection System would be modern farmers. Inputs for the system are some environmental factors such as soil pH value, soil Type, rainfall, temperature etc. Output of the system would be a list of suitable crops for a given land. Process of the project include design and develop an interface for inserting the input values for the system and getting the output of the system, designing and developing the knowledge base with a selected crop list and their best suited land conditions for a healthy growth of crops, designing and developing the inference engine to query the knowledge base, and giving the best suited crops.

Top level design of the proposed system consists of three major components as User interface, Inference engine and the knowledgebase. User Interface is to interact with the system in case of providing inputs and receiving outputs. Knowledge base is used to store the knowledge factors about the selected crops. And the inference engine to search through the knowledge base and giving an intelligent answer.

The purpose of this project is to develop a system for addressing the lack of agricultural knowledge in the community to select best crops suited for their agricultural fields at their natural conditions with the use of expert systems shell concept.

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Abbreviations

IACSS - Intelligent Agricultural Crop Selection System