Chapter 6

Prognosis for Crop Yield Production by Data Mining Techniques in Agriculture

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ABSTRACT

In agriculture, data mining technique is used for extracting information from a large dataset. The techniques for data mining are used in yield prediction for crop at broader spectrum. Agricultural system is very complex and vast therefore to deal with large data situation is a great factor. Different consultancy, industrial production department, organization related to crops is taking keen interest towards crop yield prediction. Here the focus is on the applicability of data mining techniques in agricultural field. The classification and clustering techniques of data mining are used recently in agriculture field. Data mining technology merged with the rapid development of computer science. This chapter focuses on collecting information and overcome the short comes of manual data handling and prediction of yield results of crop production. Data mining is a prominent agricultural research area for analysis of crop yield. These predictions are a very important in solving agricultural problems for crops.

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INTRODUCTION

Data mining is known as a process which extracts useful information from a vast amount of data. The novel research field of data mining is used in agriculture which is helpful in solving agriculture problems. The yield prediction of agricultural product becomes easier which can benefit farmers to improvise the productivity for specific field and crops.

The comparison of data mining procedures previously used and the latest updated gathered data help in understanding, learning and evaluating how to classify future yield predictions and give out the best out of information. Day by day increase in population worldwide increases the food demands and its production demand. To meet this vision the focus on improving production efficiency the use of crop models and decision tools are in demand in upcoming years. The combined study of agriculture, as well as advanced technology, is upgrading the advancement in the production field of agriculture and benefiting farmers.

All agriculture-related organizations, consultancy, and producers are new technology with the end use of crop yield prediction. This high percentage crop yield depends on a well defined bio-socio-economic system which depends on various factors like water, air and soil environment. This demands a comprehensive model which can facilitate by classical engineering expertise. The crop forecasting is an essential tool for predicting crop yields and production percentage within months before harvesting.

This philosophy based on data’s collection from different sources like agro-meteorological (yield), soil (water retention capacity) remotely sensed, agricultural statistics etc. This several conclusions based derives several indices which ultimately gives variables in determining crop yield, for instance, crop water satisfaction, surplus, and excess moisture, average soil moisture, etc. Information technology has played a vital role not only in industry but also in agriculture. The crops are grown in the field and the data collected are analyzed. These data are exact, accurate and small in scale. Data mining techniques benefit not only productivity but also farmer economy.

Data mining is a technique used for agriculture development. Depend on various climatic, ecological, geographical and economical aspects various risk factors for agricultural growth indifferent or a particular zone can be quantified by mathematical, statistical and advanced computing and challenges to extract information from agriculture database is much focused for agricultural progressive growth. The data mining technique used in agriculture is to discover interesting and useful patterns and finding correlation among huge amount data’s collected in a large volume in the concerned field. It synchronizes the data archaeology, data pattern analysis, extraction of knowledge, a combination of statistics, probability analysis and data technologies.
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