

# Evaluation of Predictive Data Mining Algorithms in Soil Data Classification for Optimized Crop Recommendation

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# Abstract

- ▶ Agricultural research has strengthened the optimized economical profit, internationally and is very vast and important field to gain more benefits.
- ▶ However, it can be enhanced by the use of different technological resources, tool, and procedures.
- ▶ Today, the term data mining [1][2] is an interdisciplinary process of analyzing, processing and evaluating the real-world datasets and prediction on the basis of the findings.
- ▶ Our case-based analysis provides empirical evidence that we can use different data mining classification algorithms to classify the dataset of agricultural regions on the basis of soil properties.
- ▶ Additionally, we have investigated the most performing algorithm having powerful prediction accuracy to recommend the best crop for better yield.

# Existing system

- ▶ Data mining is a vital area of modern research world for processing, analyzing and evaluating large datasets; to identify associations, classifications, and clustering, etc.;
- ▶ between different attributes and predict the best results with relevant patterns.
- ▶ Significantly, these methods can be used in the field of agriculture and can produce extraordinary significant benefits and predictions that can be used for commercial and scientific purposes. Agricultural research has strengthened the optimized economical profit, internationally and is very vast and important field to gain more benefits.
- ▶ However, it can be enhanced by the use of different technological resources, tool, and procedures.

# Disadvantage

- ▶ The primary objectives of our study are:
- ▶ To classify the soil under different agro-ecological zones in Kasur district, Punjab, Pakistan by different classification algorithm available in data mining.
- ▶ To recommend the relevant crops depending on their classification.
- ▶ To evaluate the performance of predictive algorithms for better knowledge extraction.

# Proposed system

- ▶ In this research, the soil samples that are being used were collected from different fields and the surrounding of Kasur district Punjab, Pakistan.
- ▶ We have acquired the test center data from Soil Fertility Department, Kasur in the form of unstructured and manual format.
- ▶ The data was collected by surveying different locations on different dates and containing the test samples of soil for different properties.
- ▶ After the acquisition, the digitization of record has been made to convert data into the structured format for further processing.

# Advantage

- ▶ Additionally, we have investigated the most performing algorithm having powerful prediction
- ▶ accuracy to recommend the best crop for better yield.

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# HARDWARE REQUIREMENTS

- ▶ Processor – Pentium -III
- ▶ Speed – 1.1 Ghz
- ▶ RAM – 256 MB(min)
- ▶ Hard Disk – 20 GB
- ▶ Floppy Drive – 1.44 MB
- ▶ Key Board – Standard Windows Keyboard
- ▶ Mouse – Two or Three Button Mouse
- ▶ Monitor – SVGA

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# SOFTWARE REQUIREMENTS

- ▶ Operating System : Windows 8
- ▶ Front End : Java / DOTNET
- ▶ Database : Mysql / HEIDISQL

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# Conclusion

- ▶ In this study, we have presented the research possibilities for the classification of soil by using well-known classification algorithms as J48, BF Tree, and OneR and Naïve Bayes; in data mining.
- ▶ The experiment was conducted on data instances from Kasur district, Pakistan. We have observed the comparative analysis of these algorithms have the different level of accuracy to determine the effectiveness and efficiency of predictions.
- ▶ However, the benefits of the better understanding of soils classes can improve the productivity in farming, reduce dependence on fertilizers and create better predictive rules for the recommendation of the increase in yield.
- ▶ In the future, we contrive to create a Soil Management and Recommendation System, which can be utilized effectively by agriculturist and laboratories for Soil Testing.
- ▶ This System will help to recommend a suitable fertilizer and predict for better yield.

# Reference

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