## Research Article

# DEVELOPING AN AGRICULTURAL WEB PORTAL FOR CROP DISEASE PREDICTION USING DATA MINING TECHNIQUES

## Samiksha Bhor[1]., Shubha Kotian[2]., Aishwarya Shetty[3] and Prashant Sawant[4]

Department of Information Technology, K.J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai, Maharashtra, India

## ARTICLE INFO

## ABSTRACT

Agriculture is the basic occupation of all Indians. Farmer is said to be man of nation. We consider this as our responsibility to explore this occupation and take it to a higher level from technology point of view. The basic purpose for developing this system is crop disease prediction using various data mining techniques. Our project describes a new approach to crop disease prediction which helps to prevent future economical losses. This project emphasizes on every single concept related to crop diseases. This is accomplished by building a web platform in which farmers can interact with expert, share their experiences and knowledge. This results in a dynamically-growing online survey, which ultimately helps in data collection that can be used to identify various crop diseases and helps to prevent them. This portal can be used for multiple purposes where agro based industries can use our data to launch their products as well as acquire feedbacks. Agricultural institutes can explore new patterns in crop diseases and use required technology to prevent them. This system will be helpful for students perceiving agriculture studies, they can collect the correct information from the appropriate source and in precise manner.

## INTRODUCTION

India is a cultivated country and about 70% of the population depends on agriculture. Large range of diversity for selecting various suitable crops and finding the suitable pesticides for plants is found. Disease on plant leads to the significant reduction in both the quality and quantity of overall agricultural products. The studies of plant disease refer to the visually observable patterns on the plants. Monitoring of diseases on plant plays an important role in successful crop cultivation. In early days, the monitoring and analysis of plant diseases were done manually by the expertise person in that field. This process requires tremendous amount of work hence requires excessive processing time. The plant disease detection can be done effectively with the help of various image processing techniques. In most of the cases disease symptoms are seen on the leaves, stem and fruit.

The early detection of diseases on plants is really required as a very small number of diseased crops can spread the infection to the whole batch of fruits and vegetables and thus affects further storage and sales of agriculture products. This effect of plant diseases are very destructive as a lot of farmers were discouraged to the point where some decided to give up the work of crop cultivation.

## LITERATURE SURVEY

Agricultural production of the world sustains annual loss of about 20 to 30% on an average due to plant diseases in different countries and in different crops. In most of the cases, the losses rise even to 100% or when no control measures are undertaken in case of some important diseases. Plant diseases are considered as one of the major bottlenecks in Agriculture in irrigated crops, in monoculture cultivations and in certain widely grown rainfed crops as well. To avoid such losses, therefore, it is necessary to know in detail plants and their diseases. Under given optimum conditions for plant growth that is soil type, climate and nutrition, the crops are usually affected by two undesired factors i.e. diseases and/or pests. [4]

The drop in the production of exportable crops such as peppers and coconuts because of diseases needs attention. Plants get affected by number of disease causing reasons. Plant pathogen or micro-organisms cause various diseases in plants resulting in diseased growth of plants. In case of crop plants various diseases are difficult to cure as they already caused damage to plant systems before using control measures. Hence, identifying the diseases in early stages and immediate measures should be taken. Accurate diagnosis is essential before recommendations can be made using various disease

---
*Corresponding author:* **Samiksha Bhor**
*Department of Information Technology, K.J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai, Maharashtra, India*

management strategies. Fungal root rots can be caused by many pathogens.

### Existing System

In existing system, communication is one of the major barrier which makes system less interactive. The existing system works on static data and does not take into account dynamic data. Lack of technological advancement is another major barrier in existing system. As the system is less interactive it is not much efficient. Existing system does not predict the occurrence of crop diseases and thus cannot provide feasible solutions to prevent them. The lack of expert advice is also a barrier in the existing system.

### Proposed System

In proposed system, there is no communication barrier which makes the system more interactive. This system can handle dynamic data which makes system more efficient. The proposed system makes use of recent technological advancements. This system is more efficient than the existing system.

The system predicts the occurrence of diseases using various data mining techniques and provides preventive measures .This increases the overall crop production and increases overall contribution of GDP. Expert advice is provided to provide more accurate solutions.

### System flow diagram

### Comparison

## CONCLUSION

The early detection of diseases on plants is much required as a very small number of diseased crops can spread the infection to the whole crop in the field and thus affects further storage and sales of agriculture products.This system can be used for multiple purposes where agro based industries can launch their products and acquire feedbacks. Agricultural institutes can explore new inventions and technologies for farmers. This system will help to increase income from overall crop production. This system will be an interactive one which helps to overcome communication barrier through interaction between farmers and experts. The system reduces ocurrences of diseases in crops and thus prevents future economical losses.
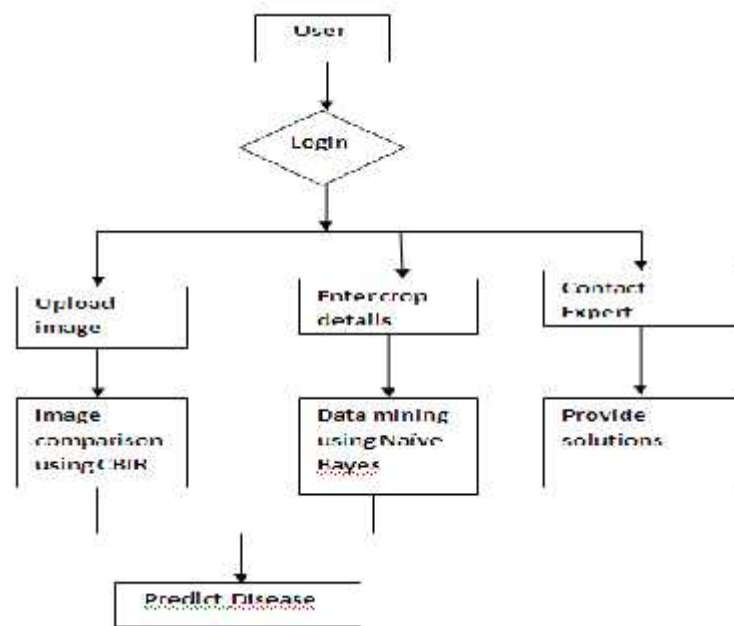


**Figure 1** System flow diagram

**Table 1** Comparison of proposed and existing system

| Proposed System | Existing System |
|---|---|
| 1. In proposed system there is no communication barrier as web portal is available in English as well as regional languages. | 1. In existing system ,there is a communication barrier. |
| 2. In proposed system , expert advice is present to impart knowledge to farmers. | 2. In existing system,lack of expert advice . |
| 3. Proposed system can predict occurrence of diseases by applying data mining and image comparison techniques. | 3. Existing system cannot predict occurrence of diseases . |
| 4. Proposed system provides solutions to crop diseases on the basis of crop history and present scenario . | 4. Existing system does not provide necessary solutions to crop diseases. |
| 5. Proposed system uses various data mining and technological advancements. | 5. Existing system use traditional methodology which is not as much flexible as proposed system. |
| 6. Proposed system is more user-friendly as farmers can directly interact with the experts. | 6. Existing system is not interactive and user-friendly. |
| 7. Proposed system works efficiently. | 7. Existing system does not work as efficiently as proposed system. |

# References

1. Cios K J, Pedrycz W, Swiniarsk R M.Data Mining methods for knowledge discovery.[J].IEEE Trans Neural Netw.1998,9(6): 15331534
2. Turechek W W. Nonparametric Test in plant disease epidemiology: Characterizing disease association [J]. Phytopathology. 2004, 94(9) :1018-1021
3. K.Srinivas," Mining Association Rules from Large Datasets towards Disease Prediction", 2012International Conference on Information and Computer Networks (ICICN 2012) IPCSIT.
4. S.Mahendra Dev, General Arun Kumar "Small Farmers in India: Challengesand Opportunities". http://www.igidr.ac.in/pdf/publication/WP-2012-014.pdf
5. Xu X M, Ridout M S. Effects of quadrat size and shape, initial epidemic conditions, and spore dispersal gradient on spatial statistics of plant disease epidemics.[J]. Phytopathology. 2000, 90(7): 738-750.
6. Fayyad U M, Piatetsky-Shapiro G, Smyth P. From data mining to knowledge discovery: an overview [M]. Advances in knowledge discovery and data mining, American Association for Artificial Intelligence, 1996, 1-34.
7. Poorani, Prathiba, Ravindran, "Integrated Feature Extraction for Image Retrieval", IJCSMC Vol. 2, Issue. 2, February2013.
8. M. H. Saad, H. I. Saleh, H. Konbor, M. Ashour, "Image Retrieval based on Integration between Color and Geometric Moment Features", *Arab Journal of Nuclear Sciences and Applications*45(2)447-454(2012), 2012.

*******

**How to cite this article:**

Samiksha Bhor *et al*.2017, Developing An Agricultural Web Portal For Crop Disease Prediction Using Data Mining Techniques. *Int J Recent Sci Res.* 8(2), pp. 15507-15509.