

# CROP DISEASE IDENTIFICATION AND CLASSIFICATION USING FUZZY CLASSIFIER

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## ABSTRACT

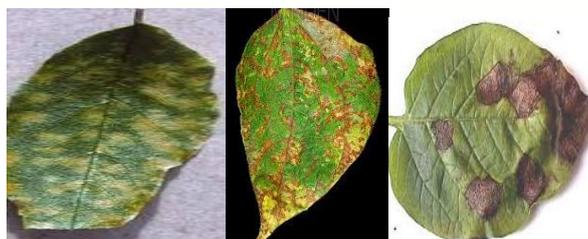
India is agriculture based country which has majority of the people depend on the agriculture. It has the direct effect of the Indian economy also. Due to the end of the digital techniques in the agriculture the addition of modern technologies will help to increase the total yield. In specific the use of the grams in every house, hotels, and functions is considered to be compulsory. In the Maharashtra, Karnataka states only the production of grams is around 70% of the country. Hence detection of the disease in the early stage of the grams plant leafs will help to detect and also cure the leaf to increase the total yield. We have used the red gram, black gram and green gram samples in specific to carry out the experiment.

**Index Terms**— Image preprocessing, enhancement, segmentation, MLC, fuzzy-c.

## 1.INTRODUCTION

India is known to be the country of villages. The village people mainly depend on the profession of agriculture. It is an ancient profession which has Been passed on from centuries now. In India especially in the villages the people depend on the Profession of the agriculture. And hence it will affect directly Indian economy. Introduction of the of modern technologies in production will help to Increase the total yield and strengthen the economy of the country and also increase profit to the farmers. The Gram is one of the main types of the food seed produced in the India which is used in every house, hotels, and functions. By survey Maharashtra, Karnataka states produces around 70% of the country. There are many type of the grams produces like red gram, green red, black gram etc. these will be used in the different cooking processes. The diseases are caused for such crops are mainly due to the climate changes and insects attack or may be due to low quality seeds.

The formers of the Karnataka Maharashtra borders areas depend mainly on the production of the grams. The production of the gram will help the formers to live a happy life. Hence the monitoring of gram plant is important, detection of the disease in the early stage of the gram plant leafs will help to detect and also cure the leaf to increase the total yield. In the proposed work we have used the red gram, black gram and green gram samples in specific to carry out the experiment by using the digital image processing techniques.



**Fig: Sample images of gram crop leaves**

We have used the digital image processing techniques for the detection and classification of the diseased crop from the input image. The process is performed by using the trusted database of sample images. Initially the process is performed on the database as the training in which the feature values are recovered and store in the system database, later the input sample image is passed to the system the use of features like entropy, texture color will be use full for recognizing the diseased part. The image is than segmented by using the region based image segmentation. Later by using the fuzzy classifier the result is declared in the user.

## **II.LITERATURE SURVEY**

In the paper [1] the author of Dr.Nitin Bilgi has stated the problem associated with the banana plant. The cause of the disease to the banana plant is mainly by the attack of the viruses like panama wilt, yellow sigatoka, black sigatoka etc. It allows the user to recognize and also classify the banana leaf based on the disease which will help in increasing the yield to the formers. In the paper [2] Monzurul Islam the author has stated the problem associated with the on potato plants. The Diseases causing substantial yield loss in potato are Phytophthora infestans and Alternariasolani. The proposed approach presents a path toward automated plant diseases diagnosis on a massive scale. In this paper [3] the Dr.L.padma Suresh author proposed an automatic pest identification system using image processing techniques. Color feature is used to train the SVM to classify the pest pixels and leaf pixels. Morphological operations are used to remove the unwanted elements in the classified image. This paper [4] the author Dr.G.h.agrawal gives thought regarding estimation of diverse climatic parameters of plant and investigation of leaf sickness discovery utilizing picture handling and sends the whole data over web by method for term IoT. In this paper [5] the Yan Cheng Zhang has stated about fuzzy feature selection approach fuzzy curves and surfaces is proposed to select features of cotton disease leaves image. In order to get best information for diagnosing and identifying, a subset of independent significant features is identified exploiting the fuzzy feature selection approach.. The results show that the effectiveness of features selected by the FC and FS method is much better than that selected by human randomly or other methods.

## **III.EXISTING SYSTEM**

The existing systems which have been proposed in past also been achieving significant amount of success over managing the crop leaves by keeping the proper track on the leaves manually and also by technology.

## **PROPOSED SYSTEM**

To overcome the drawbacks of the existing system we have proposed a system of detection and classification of gram leave disease by using fuzzy classifier is performed on the database as the training in which the feature

values are recovered and store in the system database. User input sample image is passed to the system to extract the features. The image is than processed in multiple stages by using the region based image segmentation classification feature based fuzzy classifier to give final result.

#### IV.ARCHITECTURE DIAGRAM

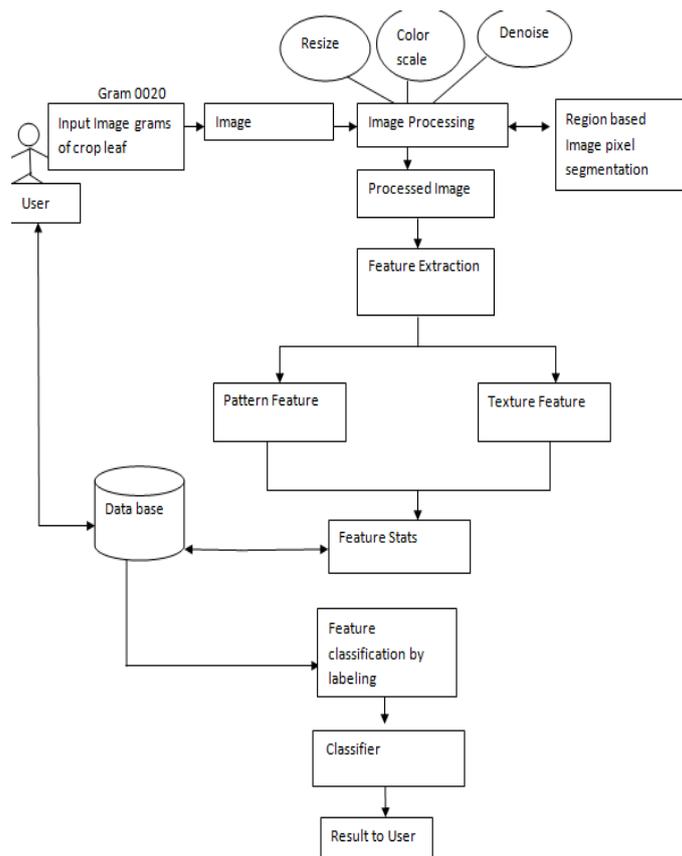


Fig: System architecture

#### IMPLEMENTATION

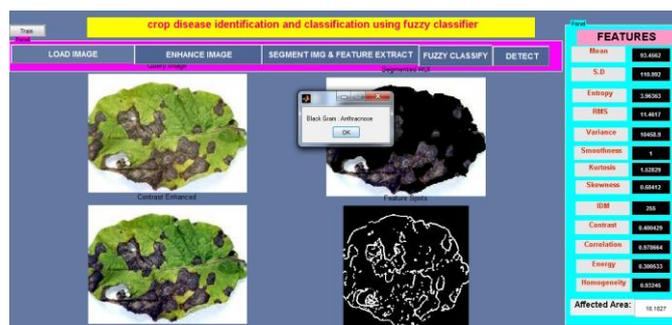
1. **Image preprocessing-** The preprocessing is the process of reading the image from the stored location and resizing it to the system requirement.
2. **Image Enhancement-** Image enhancement is a process of improving the quality of the pixels which are present in the image input. It is done by contrast adjustment method which is done pixel by pixel based mode.
3. **Texture scanning and MLC based segmentation-** Region based texture scanning and cluster based image segmentation the process of image segmentation is consider to be vital in digital image processing. It is performed by using the k-means clustering and the GLCM for the texture analysis. The process is carried out on the selected region of clusters based on the user interest (ROI).
4. **Feature extraction-** Feature Extraction of the leaf images are possessed by using two methods.
  - Extraction of Feature in pattern: Clustering

- Extraction of Feature in Texture: GLCM

**5.Feature based Fuzzy classifier-** Fuzzy classification is the process of grouping elements into a fuzzy set whose membership function is defined by the truth value of a fuzzy propositional function.

## V.EXPERIMENTAL RESULTS

The datasets can be collected from the agriculture department of Gulbarga .it's helpful from the working the in the datasets. The 100 images are taken and stored the data sets and results are obtained .the experimental can be done and input image taken in image preprocessing, enhanced, segmented and fuzzy classifier using detect the disease. Input image are stored in the location. This image is enhanced by using image size, contrasts adjacement etc.this feature are extracted from this cluster labeling etc.learn the textured feature are proposed to fuzzy classifier and extracted the data from disease is recognized based on fuzzy classifier The result is obtained. The future work of the proposed method includes recognizing the disease in multiple gram leaves and providing the user.



**Fig: Experimental result of proposed work**

## CONCLUSION

In this work we have proposed a novel approach which performs gram plant leaves disease detection and classification by using the DIP methods as explained in the above segments. Proposed system of detection and classification of gram leaf disease by using fuzzy classifier is performed on the database as the training in which the feature values are recovered and store in the system database. User input sample image is passed to the system to extract the features. The image is than processed in multiple stages by using the region based image segmentation feature extraction and feature based fuzzy classifier to give final result. We also use the preprocessing and enhance method initially for removing the possible noise present in the image. Later image can be processed and image labeling for perception will increase the accuracy. With help of advanced fuzzy classifier the result has shown in accurate on the given dataset for about 85% to 92%. And the system is user friendly which will give user the efficient result to the user. The future work of the proposed method includes recognizing the disease in multiple gram leaves and providing the user the cure and precaution messages to user.

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