

## ABSTRACT

One of the most important foods in the world is rice. The consumption and demand for rice is also increasing along with the world's population. The Food and Agriculture Organization (FAO) estimates that the main cause of global food production failure is about 20-40% pests and diseases. The presence of pests and diseases in rice plants results in huge economic losses for farmers every year. Indonesian farmers still face difficulties in finding the types of pests and diseases that attack their crops, which can cause a decrease in the quality and quantity of rice.

In this Final Project, through digital image processing, a machine learning-based system has been designed to detect diseases on rice leaves. Training and testing are two steps in the system design process. The image of rice leaves is divided into training image and test image and first goes through a preprocessing stage to change the image composition to be more optimal. Next, the rice leaf image goes through a feature extraction process using the Local Binary Pattern method. Then, the feature vector obtained from the previous process is used as input in the classification process using the Support Vector Machine method.

From the results of this Final Project research it can be concluded that the LBP and SVM methods used to detect diseases in rice leaves produce good accuracy values. Specifically, the LBP method has 3 types of patterns and the best accuracy result is the uniform pattern type with an accuracy value of 80.56%. Meanwhile, the SVM method has 6 types of SVM kernels and produces an accuracy value of 83.33% on the type of linear kernel and polynomial order 1.

**Keywords :** *Rice Leaf Disease, Local Binary Pattern, Support Vector Machine.*