Abstract

Melon is one of the fruits that is highly demanded by the entire community. However, plant diseases are inevitable and can cause losses in melon production if not identified and controlled effectively or practically crop failure. This research aims to develop a system that identifies diseases in melon plants, by means of identification based on leaf images and nutrients in plants based on the Internet of Things (IoT). This process requires two stages. First, the identification of leaf images in machine learning using the K-Nearest Neighbors (KNN) method for the classification process based on color (Hue, Saturation, Value) HSV and (Red, Green, Blue) RGB for texture feature extraction which is the first step in the initial identification of the plant indicated disease or not. Measurement of nutrient content using sensors that include Nitrogen, Phosphorus, Potassium and soil pH using the arduino uno microcontroller and ESP32. Data from this sensor is uploaded to firebase and displayed on the website. This research methodology uses an experimental approach with a dataset consisting of 224 images of melon leaf images. This system gets 95% accuracy with the nearest neighbor or K = 1 compared to the SVM comparison method with 86% accuracy. The results of this image are validated again with sensor data to support the results of image identification. This research is expected to make a positive contribution in increasing the productivity and efficiency of melon farming as well as reducing losses caused by diseases in melon plants.

Keywords: *K-Nearest Neighbor, Watermelon, Internet Of Things*