ABSTRACT

Soil plays an important role in agriculture as it determines the type of farming activities. Changes in soil fertility due to climate can affect plant genetics, environmental conditions, and soil media. Subang is known as one of the largest pineapple producers in Indonesia. However, its management is still conventional, resulting in uneven crop yields due to farmers' and the community's lack of understanding of soil conditions. A soil fertility mapping system, consisting of hardware for soil condition measurement, a website, and an Android application for remote monitoring and mapping, can help address these issues.

This soil fertility mapping system uses decision algorithms for data processing, allowing users to understand the condition of the soil based on predetermined parameters. The hardware subsystem includes three sensors for soil data processing: a pH sensor and a moisture sensor, both highly accurate with average errors of less than 5%, and an NPK sensor with an average error of less than 13%. Additionally, it is equipped with the Adafruit Ultimate GPS (Global Positioning System) V3, which has an average error of 2.30 meters, providing accurate measurement location points for mapping. The average inter arrival packet delay transmission produced by the system is 0.649 seconds.

The website subsystem enables remote viewing of measurement data and location mapping, particularly for Curugrendeng Village, Jalancagak, Subang, as the implementation area. The Android application subsystem also allows for remote viewing of measurement data and can provide directions to the hardware location. The soil fertility mapping system, comprising these three subsystems, is expected to significantly assist the community in improving the efficiency of their plantation management. With better information, users can analyze soil conditions and take more appropriate steps to increase crop yields.

Keywords: Subang, pineapple plant soil, mapping system, pH, Humidity, NPK, Android application, Website.