DESIGN OF AUTOMATIC CONTROL SYSTEM OF TOTAL DISSOLVED SOLID(TDS) AND POTENTIAL OF HYDROGEN(PH) WATER GREEN LETTAGE WITH DEEP FLOW TECHNIQUE (DFT) HYDROPONIC SYSTEM BASED ON ARDUINO UNO

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ABSTRACT

Planting green lettuce with the Deep Flow Technique (DFT) hydroponic system is a concept of planting without using soil media but utilizing a continuous circulating water flow and the installation has the concept of water that still has water left in it with a height of 2 cm. Circulated water is water that has nutrients in accordance with the needs of lettuce plants with a Total Dissolved Solid (TDS) value of 500-1200 PPM and a potential value of Hydrogen of 6.0-7.0. By understanding the need for TDS and pH, an idea emerged for giving the value of TDS and pH value to green lettuce plants using the DFT hydroponic system. The design of this tool uses Arduino Uno R3 as a controller, TDS Gravity TDS Meter V1.0 sensor and DM PH-4502C pH sensor as a measurement of TDS and pH parameters and Real Time Clock (RTC) as a green lettuce plant age calculator. Based on the design of this TDS and pH automatic control device, the implementation of this tool can facilitate automatic control of water nutrients in the DFT hydroponic planting system for green lettuce plants according to their needs and nutritional stability (TDS and pH). Based on the results of testing this tool system, the results obtained are on the tds sensor with an initial tds value of 1102 PPM and a target reduction to the interval limit of 550-650 according to the needs of the tds value of green lettuce at the age of 0-10 days after planting, the time is obtained for 14 minutes. And the test results on the pH sensor with the initial pH value of 2.4 and the target increase to the interval limit of 6.0-7.0 according to the needs of the pH value of green lettuce until the harvest period is 120 seconds or 2 minutes.

Keywords: arduino uno R3; DFT hydroponics; green lettuce; pH sensor; TDS sensors.