

Factors that affect soil electrical conductivity (EC) based system for smart farming application

Absract

This paper presents the design and implementation of a soil electrical conductivity (EC) based system for a smart farming application using Arduino MEGA microcontroller. This work aims to establish the co-relationship between the measured EC values from the developed system with the amount of required NPK (nitrogen, phosphorus, potassium) fertilizer. Experimental results show that the soil EC is directly proportional to the nutrient concentration and inversely proportional to the depth of the soil. Besides, the soil EC values reflect the soil salinity (salt concentration) where, the higher the EC value, the higher the salt concentration in the soil and vice versa. It is also noted that the EC values and the total dissolved solids (TDS) could be used to estimate the amount of required NPK fertilizer.