

A Review on Detection of Nutrients of Soil Using NPK and Moisture Sensors

Shravani¹, Shetty Diya Nithyananda², Raghavendra M O³, Ramu Shivappa Hirur⁴, Tenson Jose⁵
Department of Electronics and Communication¹⁻⁵

Alvas's Institute of Engineering and Technology Dakshina Kannada, Karnataka, India

shravanibhat07@gmail.com¹, diyashetty2456@gmail.com²,

raghavendramo608@gmail.com³, ramushivappahirur2004@gmail.com⁴

Abstract: *With an emphasis on the combination of NPK (nitrogen, phosphorus, and potassium) and moisture sensors, this review paper explores the critical role that contemporary sensor technology plays in identifying soil nutrients and moisture levels. Precision agriculture, which seeks to optimize irrigation and fertilization techniques based on real-time data, depends on accurate measurement of these parameters. The study looks at different kinds of moisture and NPK sensors, describing how they operate and how they are used in agricultural settings. There are various advantages to incorporating these sensors into farming operations. One of the biggest benefits is increased agricultural yields since optimal plant growth is ensured by accurate fertilizer and moisture management. Another important advantage is cost effectiveness; farmers can save input costs and boost profitability by eliminating excessive fertilization and irrigation. Additionally, efficient resource usage promotes sustainable farming methods, which improve soil health and lessen environmental deterioration. The content of vital nutrients in the soil can be determined using NPK sensors. These sensors allow farmers to customize their fertilization plans to match the unique requirements of their crops by giving them real-time information on the levels of nitrogen, phosphorus, and potassium. This accuracy guarantees that plants get the appropriate quantity of nutrients at the right time, leading to improved crop yields and reduced environmental impact. This paper identifies the need for developing superior systems for soil monitoring to strengthen precision agriculture, crop production, and sustainable farming.*

Keywords: NPK Sensors, Moisture Sensors, Soil Nutrient Detection, Real-Time Data, Crop Yield Improvement, Soil Health Monitoring, Sensor Technology in Agriculture