

## Development of an IoT System for Smart Crop Production

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**Abstract :** Nutrients are required for any soil with which plants thrive to improve efficient growth and productivity. Amongst these nutrients required for proper plant productivity are nitrogen, phosphorus and potassium (NPK). Due to factors like leaching, nutrients uptake by plants, soil erosion and evaporation, these elements tend to be in low quantity and the need to replenish them arises. But these replenishment of soil nutrients cannot be done without a timely soil test to enable farmers to know the amount of each element in short quantity and evaluate the amount required to be added. Though wet soil analysis is good but it comes with a lot of challenges ranging from soil test gargets availability to the technical knowledge of how to conduct such soil test by the common farmer. Internet of things test kit was developed to fill in the gaps created by wet soil analysis, as it can test for N, P, K, soil temperature and soil moisture in a given soil at the time of test. In this implementation, sample test was carried out within 0.2 hectares of land divided into smaller plots. The kits perform adequately well as the range of values obtained across the segments were within a very close range.

**Keywords :** Internet of Things, soil nutrients, test kit, soil temperature

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