
Registration Seminar

Seminar Title	: Development of sensory system for on-line macro nutrient measurements for enhanced crop productivity.
Speaker	: Peteti Syam Sundar Manikanta Babu (Rollno : 519id1002)
Supervisor	: Prof. B.B.V.L. Deepak
Venue	: Online Platform Through MS Teams (Code: qmyz2tx)
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Abstract	: Agricultural practices are indigenous and accounts for considerable Gross Domestic Product(GDP) of most nations. In recent decades, due to enormous world's population growth and dwindling of cultivable land, cultivation practices are to be improved for the supply for agricultural produce with respect to demand, which could be possible through farm mechanization and precision agriculture. Withal soil factors viz., pH, moisture content, strength, pulverization, macro nutrient content (Nitrogen, Phosphorous and Potassium ratio in the soil-NPK ratio), micro nutrients (Zinc, Iron, Calcium, Magnesium, Sulphur, Sodium etc.) also affects crop productivity as well. Among the soil factors enlisted, NPK ratio is considered to be a major trait as 'Nitrogen' is accountable for leaf development 'Phosphorous' for root growth and 'Potassium' for flower, fruit proliferation and assists in transportation of water, other elements in the crop. The excess/dearth availability of NPK contents (in the form of fertilizer) will not just have adverse effect on crop growth but also on soil and environment too. Hence before cultivation, the farm NPK content measurement, enables farmer to use apt amount of fertilizer for the crops. The macro nutrients are generally measured through two ways viz., chemical method (titrating NPK agents in soil aqueous solution and visualized for change with reference to NPK color charts) and with sensors (soil sample is placed under sensors and sensor response is calibrated) viz., Optical, Vision(cameras), Soil probes, Chemical (Ion Selective Field Effect Transistor-ISFET). The chemical method is most primitive and the accuracy of results depends individual's expertise and experience. Nevertheless, technological developments, challenges namely random collection of soil samples from the farm, measuring the NPK contents through sensors or chemical methods in the laboratory, approximation of NPK content and suggestions on quantity of fertilizer to be used are to be addressed. Considering these challenges, this research investigation is aimed to develop a new sensory system (multi sensor unit integrated with optical, vision, soil probes and chemical sensors) which could be mounted along with any secondary tillage implement during field operation assisted by Global Positioning System(GPS). The multi sensor unit along with GPS captures the soil NPK content and spatial data of agricultural field with least processing time.