

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY,
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A Project Report on

“AUTOMATED SOIL SAMPLING AND FARM MAPPING DEVICE”

Submitted in partial fulfillment of the requirement for the degree of

Bachelor of Engineering in

AUTOMATION AND ROBOTICS ENGINEERING

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ABSTRACT

Soil analysis is a valuable tool for farming as it determines the inputs required for efficient and economic production. A proper soil test will help us to ensure the application of right amount of fertilizer to feed balanced nutrients to the crop. It will help us in determining the requirements and diagnose nutrients deficient areas.

It is very important that sampling technique should be correct as the results are only as good as the sample we take. Manual sample collection technique is tedious and involved with non-uniformity. Also for large farms the number of samples to be taken should be more and correct records are to be maintained about the location of sampling without proper record of soil sample location it would be difficult to apply variable amount of nutrients depending upon the requirements which in turn would increase the cost of fertilization. Hence there is need for automating the soil sampling process and also at the same time mapping the entire farm in terms of soil samples so that nutrients can be applied at a variable rate leading to economy of fertilization.

Scope and principal objectives of the project –

- 1) Soil sampling process-mechanism for collecting required amount of soil samples in structured manner from various places with mentioned depth and quantity
- 2) Farm mapping process-analyzing the farm and dividing into small sections with help of Magnetic compass, guide to driver to stop at the sections, from these sections samples are collected.

An integrated mechanism (Automation) will be developed which will be in the form of an attachment to a tractor and which will draw motion power from the tractor or may be self powered and will assist in automatic soil sampling and provide guidance for the tractor driver for farm mapping. The system will have a self contained microcontroller based system which will have on board communicator for storing and transferring the data. The data so generated can be reused for locating points or areas on the farms.

With completion of this project we will get a device which can be able to do farm mapping, and can collect uniform soil samples which in turn will help in proper testing of soil samples gives proper report of nutrients deficiency. Based on the report, farmer can apply right amount of fertilizers to the particular areas of land. This will reduce the cost of fertilizers. Or a robot can be developed for applying right amount fertilizer when it comes to automated farming.