



SOIL MOISTURE INDICATOR



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BACKGROUND

Depletion of available water resources for agriculture is a cause of concern. This can be addressed by efficient irrigation management practices. In most of the farmers' fields, irrigation scheduling based on soil moisture is almost not in practice. During 2008-10, Sugarcane Breeding Institute (SBI) had conducted on farm trials in different locations on various water conservation techniques, one of which was scheduling irrigations based on soil moisture using the Tensiometer (a device, for measuring soil moisture). This considerably reduced the number of irrigations required for cultivating the crops without affecting the yield, thereby saving considerable quantity of water. However, there were certain drawbacks linked with this gadget such as higher cost, obligatory multiple installations, regular filling of water, regular blockages, damages to the ceramic cup, and other maintenance issues.

Considering all these problems, SBI has attempted and successfully developed a simple and farmer-friendly electronic soil moisture-indicating gadget which has been named as 'Soil Moisture Indicator (SMI)'. Prototype of this SMI

was validated at Sugarcane Breeding Institute's farm and farmers' fields across the state of Tamil Nadu for wider adoption by the farmers.

CONSTRUCTION OF SMI



SMI comprises a sensor rod and a casing. There are either two metal sensor rods (two individual rods spaced at distance of about 3 cm) or a combined rod. The casing houses an electronic printed circuit board with an integrated circuit, electronic components, ten lamps / LEDs, a provision for batteries and a on/off switch.

HOW TO USE AN SMI?

To assess the soil moisture the sensor rods need to be inserted into the soil to a required depth. The resistance between the sensor rods depends on the moisture content in the soil between the rods. The electronic circuit is designed in such a way to display moisture levels by glow of one lamp out of ten lamps.



Blue colour glow indicates the presence of 'ample' moisture in the soil, while green for 'sufficient', orange for 'caution' for low-status and red for low moisture. Orange and a red glow indicates 'urgent' call for irrigation. A provision is given in the gadget for fine-tuning so that the gadget can be suited for different soil-types and irrigation water situations.



ADVANTAGES

- * Suitable for use in agricultural farms as well as in potted plants
- * Instant indication of soil moisture status
- * Suitable for different soil types
- * Low cost (about Rs. 500/-)
- * Indicates soil moisture level with more objectivity by ten different coloured LEDs

Patent pending
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Design patents

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