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(31) Priority Document No	:NA	(72) Name of Inventor :
(32) Priority Date	:NA	1)Dr. TRIPTI SHARMA
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(57) Abstract :

The present invention discloses an IoT-based model for smart agricultural soil health monitoring. The system integrates soil sensors (101), wireless communication modules (102), a microcontroller-based gateway (103), cloud analytics (104), user dashboard (105), and solar power unit (106). It enables continuous real-time monitoring of soil parameters, predictive analytics, and actionable recommendations. Experimental validation demonstrates improved crop yield, reduced water and fertilizer usage, and sustainable operation, making the invention a cost-effective, scalable, and environmentally friendly solution for precision agriculture.

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