

## Battery-less Wireless Chip-less Sensors for Subsoil Moisture Monitoring

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**Categories:**

- Agriculture
- Food and Nutrition

**Keywords:**

- Agriculture
- Battery-free
- Crop Management
- Food and Nutrition
- Multi-point Wireless Sensors
- Plant Growth
- Plants
- Sensors
- Soils

Researchers at Purdue University have developed new battery-less, wireless, chip-less sensors for actively monitoring moisture in sublayers of soil in agricultural applications. Maintaining soil quality is paramount for crop health and for producing enough food to meet the needs of a growing global population. Current sensing systems often require an extensive wiring setup that is typically expensive and can easily be disturbed such as in harvesting crops or during inclement weather conditions. The new low-cost, noninvasive sensors created by Purdue researchers allow for large-scale determination of soil quality by actively measuring volumetric water content (VWC). The sensors have been validated by attaching them to two different types of tags and inserting them below ground into soil where they exhibited excellent durability, linear charge, and range of VWC detection.

**Advantages:**

- Chip-Less
- Wireless
- Battery-Free
- Low-Cost
- Noninvasive to Soil

**Potential Applications:**

- Crop Management
- Botany

-Horticulture

Technology Validation: The new sensors were validated by placing them in soil samples with tags and observing sensor charge response as well as capability of detecting water measurements.

**People:**

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**Intellectual Property:**

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