

Installation of Soil Moisture Sensors

Field Guide

Task

To install the soil moisture sensors

What You Need

- Soil Auger
- Meter stick
- Four soil moisture sensors
- Four 10 cm long x 7.6 cm diameter PVC tube or tin cans for surface wire holders
- Two 4-L soil holding/mixing buckets
- Water for moistening the soil (0.5 L)
- One 1 m x 2 cm PVC guide tube
- Soil packing stick (e.g. an old broom handle)
- Pen or pencil

In the Field

1. Place the sensors into a container of water and **soak overnight**.
2. Auger 4 holes next to one another to the appropriate depth for each soil moisture sensor (10 cm, 30 cm, 60 cm or 90 cm). Each sensor will go in its own hole.
3. Place two large handfuls of soil extracted from the bottom of each hole into a small bucket or similar container. Remove any rocks. Add a small amount of water and stir to create soil that is moist enough that it stays together when pressed into a ball.
4. Drop the moist soil ball to the bottom of the hole. Make sure it reaches the bottom.
5. Push the wire lead from one of the sensors through the PVC guide tube.
6. Pull the end of the wire lead until the sensor fits firmly against the other end of the guide tube. Lower the tube into the hole with the sensor going in first. While holding the wire lead at the top of the pipe, gently push the tube down until the sensor is set into the moist soil at the bottom of the hole.
7. Hold the sensor in place with the guide tube while you begin to backfill the hole. As you slowly add soil to the hole, gently pack or tamp it with a broom handle or similar pole. After the sensor is covered, remove the guide tube. Continue adding soil a few handfuls at a time and tamping firmly as you backfill the hole. Hold on to the wire lead as you backfill so that it will come straight to the surface.
8. Place a short piece (about 10 to 20 cm long) of PVC pipe, tin can, or coffee can (with the top and bottom removed) around the wire lead at the surface to protect it and make it visible to anyone walking in the vicinity. Label the pipe or can with the appropriate sensor depth.

9. Put the wire through the pipe or can and press the pipe or can 2 to 5 cm into the soil to keep it in place. Do not cut the wire, but wind up the free end extending out of the ground and place it in the pipe or can to keep it out of the way between measurements. A small empty can (e.g. a soup can) should be inverted over the end of the PVC pipe to keep the rain out.
10. Repeat the above steps for each sensor.

Note: Do not report measurements for a week after installation. The sensors require at least one week to equilibrate to natural conditions. The wire leads are fragile, especially where they connect to the meter. If the end of the wire leads to the soil moisture sensors break, peel back the wire insulation and make new leads. It is important to leave enough wire above the ground for this.

Installed Soil Moisture Sensor Configuration

