

# Installation of Soil Moisture Sensors

## Field Guide

### Task

To install the soil moisture sensors

### What You Need

- Soil Auger
- Meter stick
- Soil Moisture and Temperature Station with 4 Watermark Soil Moisture Sensors
- 4-L soil holding/mixing buckets
- One 1 m x 2 cm PVC guide tube
- One 120 cm x 2 cm PVC or other tube for protecting wires
- Water for moistening the soil (0.5 L)
- Soil packing stick (e.g. an old broom handle)
- Permanent marker

### In the Field

1. Place the sensors in water and **soak overnight**.
2. Use a permanent marker to place marks on the sensor cables near the contacts. Use 1 line drawn completely around the cable for the 10 cm sensor. Use 2 lines for 30 cm, 3 lines for 60 cm, and 4 lines for 90 cm.
3. Auger a hole to the appropriate depth for the soil moisture sensor (10 cm, 30 cm, 60 cm or 90 cm). Each sensor will go in its own hole. Make sure the cable can reach the Soil Moisture and Temperature Station with some slack.
4. 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.
5. Drop the moist soil ball to the bottom of the hole. Make sure it reaches the bottom.
6. Push the wire lead from one of the sensors through the PVC guide tube.
7. 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.
8. 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.
9. Feed the wire through the protective PVC or other tube.
10. Repeat steps 2-9 for each sensor.

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11. Connect the leads to the Soil Moisture and Temperature Station. The 10 cm sensor is connected to channel 1, 30 cm to channel 2, 60 cm to channel 3, and 90 cm to channel 4.

**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.

*Installed Soil Moisture Sensor Configuration*

