10. Earthworms

Earthworms are most active during the spring and fall, which are the best times to observe their activity.

Materials needed to measure the number of earthworms:

- **tap water (2 L)**
- **hand trowel or shovel**
- **large jar or container for worm collection and cleaning**
- **mustard solution (2 tablespoons mustard powder in 2 liters of tap water)**

Did You Know?
Earthworm burrowing improves infiltration and their casts improve aggregation. Earthworms also break down larger bits of residue for use by other soil organisms.

Considerations: When examining the soil for earthworms, avoid places where their populations might be affected, such as near mulch or compost piles. The abundance of earthworms is usually patchy within a field and varies with season. Therefore, count earthworms several times during a season and use the average to gauge changes from year to year.

1 Dig Plot

Measure a square-foot plot and dig down 12 inches with the hand trowel or shovel (**Figure 10.1**). Try to minimize the number of cuts with the shovel to avoid damage to the earthworms. **Dig the hole first, then sort for earthworms.**

Figure 10.1

2 Count the Number of Earthworms

Sort the soil samples against a pale-colored background to help locate the earthworms. Separate and count the number of earthworms.

3 Add Mustard Solution (optional)

To facilitate extraction of deep burrowing earthworms, add two liters of mustard solution to the hole. **First**, make sure the bottom of the hole is level. The deep burrowing worms should appear within five minutes (**Figure 10.2**). Count the number of worms.

Figure 10.2

4 Record Total Number of Earthworms

Record the total number of earthworms (those found in the hole and after adding the mustard solution) on the Soil Data worksheet. **[The mustard solution should not harm the worms. Rinse them in water before returning them to the soil.]**