USDA NRCS
Natural Resources Conservation Service

Soil Fauna Extraction

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Introduction

Soil fauna play an important role in the decomposition and cycling of organic matter (OM) in soil systems. Insects, earthworms, and other arthropods churn the soil and promote formation of soil structure, aeration, reduction in bulk density, and nutrient cycling. They also enhance water movement. Some soil fauna ingest organic matter by taking in soil, applying digestive enzymes, and excreting the soil/OM complex, thus providing a more readily available food source for other soil fauna and soil micro-organisms.

Experimenters can view the extracted soil fauna through a light microscope or magnifying glass. Classification and enumeration of the fauna can be performed with an illustrated insect/arthropod identification book. In this way, mature soil fauna can often be identified to the family or genus level.

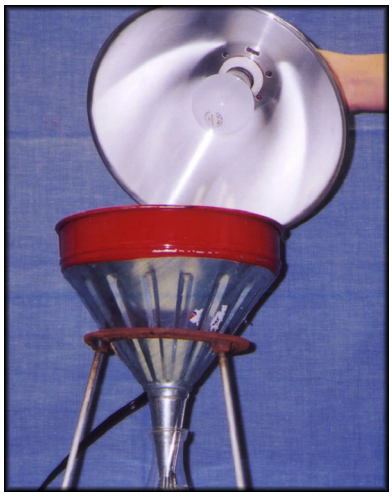
Examining, identifying, and enumerating soil fauna can help us assess the functioning of the soil ecosystem — indicating community diversity, soil health (or degradation), soil quality, and appropriate nutrient cycling.

Summary of Method

This simple method is designed to extract live soil micro- and meso-fauna from an undisturbed soil sample using heat.

Equipment

- ✔ Funnels (metal or plastic, 8-12" diameter, narrowing to 1-1.5" diameter)
- ✔ Aluminum-hooded shop lights
- ✔ Incandescent bulbs (40 to 60 watts)
- ✔ Wire mesh (cut to support the soil sample in the funnel)
- ✔ Cheesecloth (if needed, to prevent soil loss through the funnel)
- ✔ Erlenmeyer flasks (or other collection jars)
- ✔ Analytical balance
- ✔ Petri dishes



Reagent

Isopropyl Alcohol

Procedure

A. Setup

1. Weigh the soil sample.
2. Partially fill the collection jar with alcohol.
3. Support the funnel in the collection jar.
4. Make sure the fauna cannot escape where the funnel meets the jar.
5. Place the wire mesh in the funnel.
6. Insert the soil sample (~ 1 cup) into the funnel (supported by the mesh).
7. Suspend the shop light over the funnel.
8. Apply heat and light (2 to 10 days).
9. Check periodically for soil fauna in the collection jar.

B. Preparation for viewing the extractant

1. Remove the soil sample and mesh from the funnel.
2. Rinse the inside and tip of the funnel with alcohol.
3. Collect this alcohol in the jar.

C. Examination of the specimens

1. Examine the alcohol/fauna solution using a microscope or hand lens.
2. Identify and count the fauna.

Report

Report the total number of fauna/g. soil, number of species present, and number of specimens/species.

Reference

Woolley, T.A. 1982. Mites and Other Soil Micro-arthropods. **In**: Page, A.L. (ed.) *Methods of Soil Analysis, Part 2, Chemical and Microbiological Properties*, Second Edition, American Society of Agronomy, Inc., Soil Science Society of America, Inc., Madison, Wisconsin.

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