

Recommended Equipment for Soil Food Web Students

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Microscope Specification

There are numerous manufacturers offering thousands of different microscopes. We use a Compound Microscope with the minimal following specification:

Total magnification: 40X-100X-400X

Eyepieces: wide field WF10X

Objective: achromatic DIN 4X, 10X, 40X(S)

Viewing head: 45 degree inclined, 360 degree swiveling trinocular **Sliding adjustable interpupillary distance:** 2-3/16inch ~ 2-15/16 inch (55mm ~ 75mm)

Ocular diopter: adjustable on one or both eye-tubes

Nosepiece: revolving quadruple

Stage: mechanical double layer size: 4-1/2 inch 4-15/16inch (115mm x 125mm)

Stage x-y stroke (travel range): 2-13/16inch x 1-3/16inch (70mm x 30mm)
Condenser and diaphragm: NA1.25 Abbe condenser with iris diaphragm
Transmitted (lower) illuminator: at least 3 Watt LED light, intensity adjustable
Focus adjustment: Coaxial coarse and fine knobs on both sides **All metal mechanical components**
Power supply: AC/DC adapter, 100V-240V (UL approved)
5-year warranty against manufacturing defects

Please take a look at [this document](#) which contains information and pricing on several specific models of microscope and cameras that we have tested.

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Microscopy Supplies

(Please NOTE: The blue links provide examples, only. These exact products may not be available in your area or may be out of stock. You can find other brands that meet the same specifications.)

1. [Optical Lens Cleaner](#) – Works for all lenses of microscopes - objectives, eyepieces, etc.
2. [Slides](#) – Size: 1" x 3" x 0.04" (25.4x76.2x1mm)
3. [Coverslips](#) – 18mmx18mm Square Microscope Glass Cover Slides 4.
4. [Transfer Pipettes](#) – Karter Scientific 206H2 - 3ml Graduated Transfer Pipettes, Vol 7ml, 1/2ml Graduations, 155mm
5. [Digital Pocket Scale](#) – Digital Scale with a capacity of 100 g \pm 0.01 g (optional, for calibrating pipettes)
6. [Test tubes](#) – Size: 15ml, Conical bottom, Plastic, with screw top Lid, 1ml graduations
7. [Lab Scoop](#) – Stainless Steel Scoop for easily transferring samples to test tubes
8. [Microscope Stage Micrometer](#) – This may come with your microscope, but if

you don't have one, you will need to purchase one like or similar to this

Composting Equipment

(Please NOTE: The blue links provide examples, only. These exact products may not be available in your area or may be out of stock. You can find other brands that meet the same specifications.)

1. Thermometer - at least 3 ft. (1 m) long stem from [RioTemp](#), or [T.I. Compost Thermometer](#).
2. Penetrometer/ Soil Compaction Tester - [DickeyJohn](#), [AgraTronix](#) (they sell both sizes of replacement tips, just email them), Penetrometer from [Spectrum Technologies](#) (they have both sizes of replacement tips available online).
3. [Pallet](#) and [¼-inch hardware cloth](#)- this is optional, depending on the climatic conditions of your area. It is to keep the compost from becoming water-logged at the bottom.
4. Welded wire fencing to make cages for your compost piles. Any sturdy fencing will do to make a cage. See this [fencing](#) example.
5. Pitchfork and shovel to hand turn the pile.

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Nematode Extraction Equipment

(Please NOTE: The blue links provide examples, only. These exact products may not be available in your area or may be out of stock. You can find other brands that meet the same specifications.)

1. [Nematode Filters](#) – Micron Zooplankton Stackable Sieve for straining nematodes from the extraction liquid
2. [RODAC plates](#) – BD Falcon RODAC with Gridlines - 10mm grid with 21 squares - Surface area: approximately 25cm². Manufacturer: BD 210340 (500 Pack); plastic lab dish with partitioned fields that facilitate counting of large numbers of nematodes. This is an example, only. Research online for more economical alternatives.
3. [Wash Bottle](#) – LDPE Squeeze Bottle for gently washing nematodes off the micron filter using a minimal amount of water
4. **Funnel Stand** – either use an easily constructed custom made wooden stand or purchase a [Lab Support Ring Stand](#) and 5-inch (127mm) [Support Rings with Clamps](#)
5. [Funnels](#) – 6-inch (152mm) widest edge
6. [Flexible Tubing](#) – (Approx. 8-10 inches (20-25cm) per funnel; inside diameter (ID) of tubing should equal outside diameter (OD) at bottom of funnel stem; must be a snug fit to hold. Make sure the tubing is not too thick [1/16"-3/32" (1.6-2.4mm)] so Hoffman clamps can pinch off the section of tubing securely, i.e., with no leakage.

7. [Hoffman Tubing Clamps](#) – (2 for each tube), sized to fit tubing
8. [Strainer-Baskets](#) – Stainless Steel Asian Spider Strainer Baskets, 5-inch (127mm), long handle removed if wood or shortened if stainless steel. Alternatively, [1/4" Mesh Hardware Cloth](#), about 8 x 8 inches (20 x 20 cm) per basket.
9. **Paper Towels** or **Large Coffee Filter**, or similar
10. **Scale** or balance (± 0.5 g), can use the Digital Pocket Scale listed under Microscope Supplies.
11. **Transfer Pipettes**, can use those listed under Microscope Supplies. 3

Protozoan Infusion Equipment *(Please NOTE: The blue links provide examples, only. These exact products may not be available in your area or may be out of stock. You can find other brands that meet the same specifications.)*

1. Commercial Extractor/Brewer, for example from [Tea Lab](#). 2.

Alternatively, purchase the following:

- a. 5-gallon Bucket
- b. Air Pump which pumps air at 714 GPH (gallons per hour) up to 990 GPH.
- c. Tubing to deliver the air into the bucket
- d. Rack of some sort to hold the tubing in place, for instance, an up-side-down tomato cage with the tubing fixed in place at various points around the cage for even bubbling.

