An Open-source Low-cost Portable Apparatus for Soil Fauna Sampling

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A low-cost apparatus for the extraction of living soil animals from soil or litter samples is presented. The main unit consists of a modular bank system with three horizontal shelves designed to accommodate lamps and soil samples over funnel and jar systems for animal collection, thus serving as a practical and standardized modification of the well-documented Berlese-Tullgren funnel. Shelves are vertically adjustable, sliding on 5 mm threaded rods and securing with wing nuts for easy assembly/disassembly and stability. Shelf material is 4 mm plywood (or similar), laser-cut (or similar) to accommodate lamp sockets, tubes and funnels at respective levels. Soil samples are inserted in 10 cm tubes from standard Ø50 mm PVC piping that can also function as direct collection corers for softer soils. Tubes are fitted in the tube bank shelf, each directly under a 25 W reflector lamp and over a funnel and jar system. Lamps are located 25 mm over the tubes' top creating a relatively constant 10 ^{o}C temperature gradient that drives soil animals away from heat and light, and towards the bottom end of the tube which is fitted with a suitable fabric mesh. Standard 106 ml panelled jars, filled with a safe-to-handle preservative (e.g. propylene glycol) to the lower end of the funnel fitted in them, trap and preserve soil organisms until identification. The apparatus offers flat-pack portability and scalability using low-cost standard material. Design specifications and Drawing eXchange Format (dxf) files for apparatus reproduction are provided.