A SIMPLE INEXPENSIVE PITFALL TRAP FOR COLLECTING ARTHROPODS[1]

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ABSTRACT

An easily constructed pitfall trap was made from a large cylindrical plastic container with a snap-on lid, a disposable aluminum pie plate, and heavy-duty aluminum foil. The trap is suitable for collecting with alcohol or volatile killing agents.

Studies at the Insects Affecting Man and Animals Laboratory at Gainesville, Florida, in conjunction with the evaluation of experimental formulations of mirex bait applied by aircraft for the control of the imported fire ant, *Solenopsis saevissima richteri* Forel, have required collection of large numbers of arthropods for determination of residues of mirex they contain. Pitfall traps appeared an ideal method of collecting these arthropods in the field. We therefore designed and built an inexpensive and easily constructed pitfall trap that is easily serviced. The other types of pitfall traps (Fichter 1941, Muma 1970, Whitcomb and Bell 1964) were designed to be used with alcohol and are not suitable for use with volatile killing agents.

The body of the trap (Fig. 1) consists of a cylindrical polyethylene plastic container 8 inches (21 cm) high×7 inches (17 cm) O.D., with a snap-on lid. A 5-inch (12.5 cm) circle was cut out of the center of the lid, and a disposable aluminum pie pan with the 3-1/4 inch (8.2 cm) diam. bottom removed was stapled to the bottom side of the lid. A cone formed from 0.0035-inch (0.0889 mm) thick heavy-duty aluminum foil was stapled to the outside of the pie plate to complete the funnel. The total cost of materials was approximately $0.72 per trap.

Since a large number of the traps was needed, all components were cut and placed in sequence for rapid assembly (Fig. 1). With this system, 380 traps were assembled in 1 week.

When the trap was to be used in the field, a hole was dug with a post-hole digger, the container was placed in the hole, and the soil was carefully replaced around the container so the top edge remained at ground level. (A rain cover was not used but one could easily be added if desired.) In wet areas, the traps often floated out of the ground, but this problem was handled by placing weights in the containers.

When the trap is in operation, a No. 2 tin can (sold for home canning purposes) is placed inside the plastic container under the funnel to catch the arthropods. In our work, the plastic containers are left in the ground between uses; the funnels, tin cans, and killing agent are placed in the traps on Monday; the catches are removed daily; and on Friday, the tin cans, killing agent, and funnels are removed.

[1]This paper reflects the results of research only. Mention of a pesticide or a proprietary product in this paper does not constitute a recommendation or endorsement of this product by the U.S. Department of Agriculture.

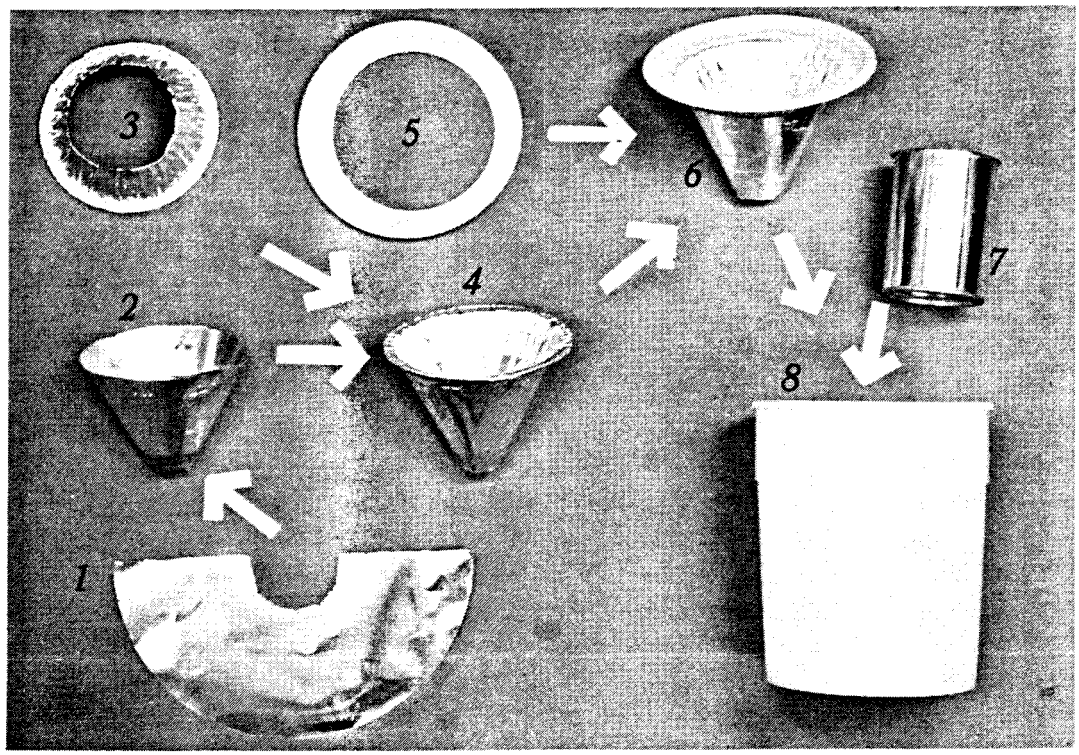

Fig. 1. Sequence for rapid assembling of pitfall trap. The foil is cut to shape (1) and formed into a cone (2). The pie plate (3) (with the bottom removed) is stapled to the foil cone (4). This assembly (4) is then stapled to the plastic lid (5) (with center removed) to complete the funnel (6). The tin can (7) is placed inside the plastic container (8) before the funnel (6) is snapped in place.

For faunal surveys or population studies, the killing agent can be isopropanol or 0.5% detergent water; however, these materials are not satisfactory if the arthropods are to be analyzed for residues of mirex or other chlorinated hydrocarbons (D. Carlson[2], unpublished data). Volatile killing agents (dichlorvos or technical chlorpyrifos crystals) have been used effectively in this trap. To date, in 4 surveys, the traps have proved very successful, and have caught large numbers of insects, spiders, and isopods. Earthworms, toads, frogs, lizards, snakes, shrews, and mice have also been trapped without damage to the traps.

Literature Cited

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