SPECIAL APPARATUS FOR COLLECTING INSECTS

By
Richard L. Post[1]
(Drawings by Norman Gary)

THREE new pieces of equipment for scientific investigations and specialized collecting of injurious insects have been constructed by the Department of Entomology. This equipment is to be used in investigating the occurrence, abundance, and biology of North Dakota insect pests.

Collecting Funnels

(1) Two Collecting Funnels have been devised for collecting soil insects and hibernating forms in trash, dried inflorescenses, soil, and forest litter. The apparatus (Fig 1.) consists of a sheet metal cylinder 14″ x 14″ to which a funnel is soldered. An inner cylinder 12″ in diameter and 10″ deep, with the bottom of 8-mesh wire screen fits inside the large cylinder. The cover in which an electric light socket has been inserted is placed over the funnel. Heat is provided by a 100-watt bulb which dries out the material. and to escape the heat and dessication, the insects pass through the sieve into a pint collecting jar placed beneath the funnel. The insects may be collected alive or in preservative. If living specimens are desired, a ring of vaseline or glycerin at the top of the collecting jar will prevent any insects from crawling out. Soil insects and hibernating forms which would require hours of sifting to collect are easily obtained in perfect condition with this equipment. Life histories and biological information about insect pests, such as the percent of survival of hibernating forms, depth they overwinter, and the stages which overwinter, can be determined.

A Concentrator

(2) A Concentrator (Fig. 2) has been designed for collecting aphids, thrips, plant bugs, and especially flower-inhabiting and secretive types of insects. It consists of a sheet metal cylinder 12″ tall and 6″ in diameter. An 8-mesh wire screen diaphragm is soldered midway in the cylinder. From this diaphragm, a funnel with a neck 2 5/16″ outside diameter extends almost even with the base. A quarter pint "Sealrite" card board container will just fit over the end of the funnel. A wooden lid with a piece of absorbent cotton tacked to the inside completes the assembly.

Flowers or plant parts are carefully cut off with scissors, taking care not to jar the plant, and dropped into one quart "Sealrite" containers and penciled notes made on the covers. Several containers may be carried in a large paper bag. The collected material is then emptied into the concentrator. Any insects still adhering to the smooth sides of the containers

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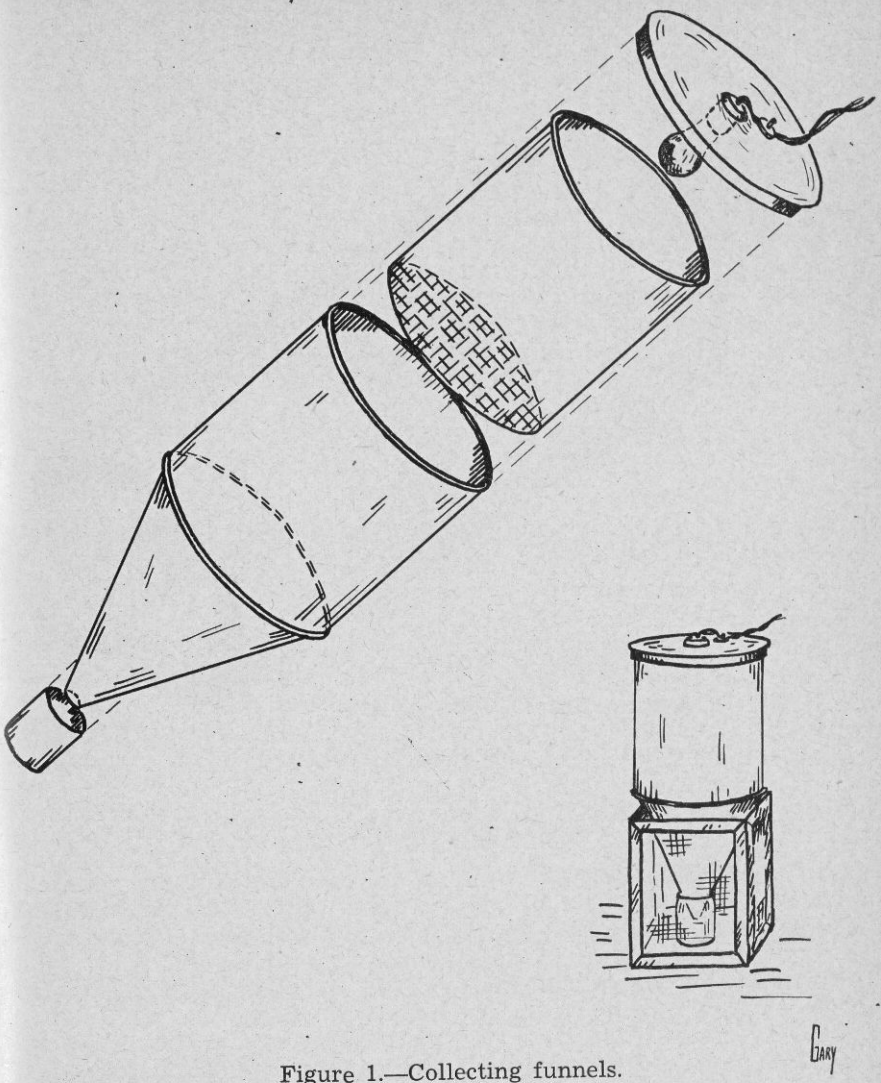

Figure 1.—Collecting funnels.

are easily dislodged by a few taps on the bottom of the inverted container. About five drops of Methyl isobutyl ketone are placed on the cotton and the lid put into position. This chemical has a repellent action and the insects fall through the screen in their frenzied efforts to escape, and they are collected in the quarter pint container at the bottom of the funnel. The insects are easily collected as the chemical anesthetizes them, but not before they have escaped from the plant parts. This system has distinct advantages, as one can collect from many species of plants in the daytime, and at night return to the laboratory and run the various lots through the concentrator. The collector can be selecting and counting the desired specimens

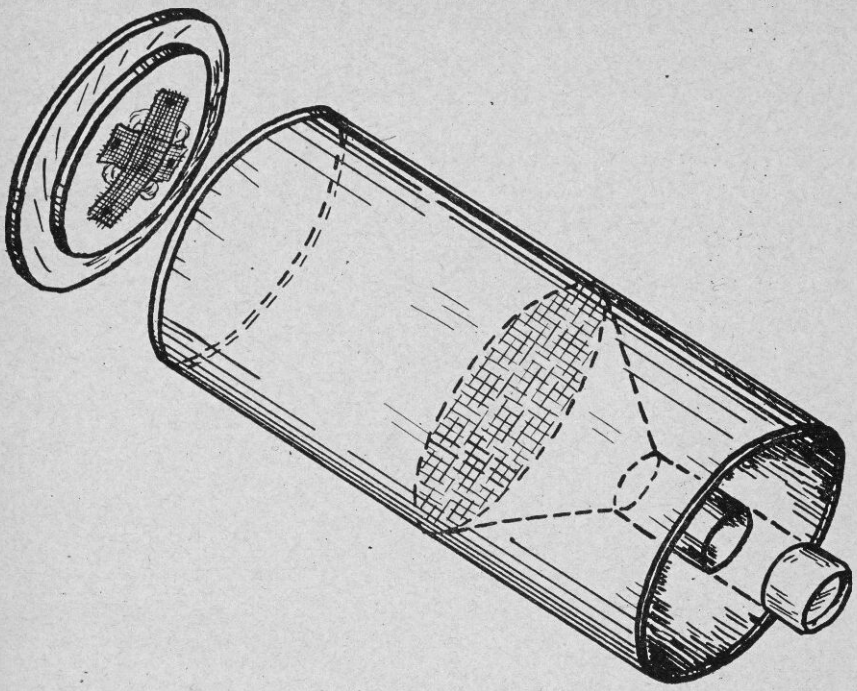

Figure 2.—A Concentrator.

with the aid of a binocular microscope while another lot of specimens are accumulating in the concentrator. Thus, a definite number of plants, infested leaves, or flower heads can be collected from different plants or control plots and the number of anesthetized insects counted to ascertain the relative abundance and relative efficiency of control methods.

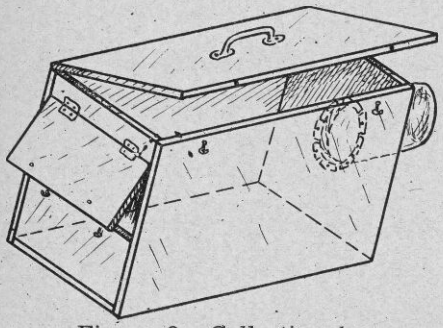

Figure 3.—Collecting box.

(3) A Collecting Box (Fig. 3) which has been designed recently has proven to be a handy device as an educational adjunct to show the insect fauna of crops or to collect perfect specimens for research.

The collector takes an insect net and vigorously sweeps over the plants from which he desires the insects. Insects and plant parts are placed in the collecting box, and the insects fly into a pint jar at one end from which they can be collected or observed. This box was used to advantage during the field day

meetings, as the growers were extremely interested in the living insects and were amazed at the number and kinds, both beneficial and destructive, which were collected from a few sweeps of the net. Progressive growers will probably use these boxes in order to determine pests present, since the new and specific sprays have been developed. The entire control program will eventually change from standard practices to particular treatments against certain pests, timed by their first appearance, as determined by the Collecting Box.

The box is 8"x13"x11". The insect net is emptied by inverting it into a hinged trap door at the back of the box. The liberated insects go toward the light from the glass jar at the opposite end. Damaged specimens are unable to fly or crawl into the jar, and only perfect specimens are collected. The top is provided with a handle and is also hinged in order to empty contents and permit cleaning.

DDT AS AN INSECTICIDE AGAINST THE ONION MAGGOT[1]

By
J. A. Munro, Entomologist

DDT as an Insecticide Against the Onion Maggot[1] The onion maggot was especially troublesome in the Fargo area in 1945. At the request of onion growers, an examination was then made of a few plantings. Results showed for four field plantings an average of 6 per cent of the plants infested, but of thirteen small garden plantings, an average of 28 per cent of the onions contained maggots. The samples for examination were taken at random from well distributed points throughout the plantings.

There was slight variation in the maggot incidence in the samples examined from field plantings, but wide variation in samples taken from gardens. This is probably due to a combination of factors including (1) the wider assortment of varieties grown in the small garden plantings, and (2) the fact that the small plantings were in the city where the closer proximity of gardens probably contributed to heavier infestations.

The heaviest infestation encountered in the small garden plantings examined, was a victory garden planting which included both the "Shallot" onions and "Bermudas" grown from seedlings. The "Shallots" were apparently 100% infested, while the nearby planting of "Bermudas" showed less than 10%.

To test the effectiveness of DDT, it was decided to treat one-half of the plot of "Shallot" onions and leave the balance untreated. The treatment given consisted of a suspension of 1 ounce of 25% DDT in one gallon of water. The mixture was applied from a garden sprayer (with the nozzle removed) to the base of the plants, as a coarse stream. Only enough spray was applied to dampen the

[1] Hylemya antiqua (Meig.)