N O T E

A Portable Aspirator for Separating Large Numbers of Insects in the Field[1, 2]

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J. Entomol. Sci. 25(1): 44-45 (January 1990)

KEY WORDS Insecta, vacuum, threecornered alfalfa hopper, *Spissistilus festinus*.

A large number of threecornered alfalfa hopper, *Spissistilus festinus* (Say), adults were needed in 1988 for damage threshold field tests on soybean. Approximately 10,000 adults were needed the first week of the experiment and 2000 - 2500 adults weekly, thereafter. Rearing this number on a set time schedule was not economically feasible, so native insects were field collected from their perferred host, alfalfa.

The alfalfa was swept with conventional 38 cm diameter sweep nets in sets of 25 to 200 sweeps per sample. Sample size was determined by age and condition of the alfalfa which affected the amount of debris and other insect numbers collected. It was very important to insure that the *S. festinus* adults were not injured and that they were quickly separated from debris and the other insects, particularly predators.

As samples were collected, they were taken to the field vehicle and placed in a glass windowed and sleeved, wooden separator box. Originally a mouth aspirator was used to separate the *S. festinus* adults, but not only was this time consuming but breathtaking as well. An aspirator modification was devised to make the operation more efficient.

A 12-volt Bon-Aire Super Vacuum (Model BA-747, Bon-Aire Industries, Inc., Long Beach, CA), commercially designed as an automobile vacuum cleaner with a cigarette lighter plug adapter, was used to provide air suction for the field aspirator (Fig. 1A, B). The vacuum crevice tool was modified to connect the aspirator to the vacuum. The narrow end of the crevice tool was cut off where the diameter was a full circle and a No. 7 (37 mm at top) rubber stopper was inserted in the opening (Fig. 1C). Two holes were bored through the rubber stopper with a No. 4 cork borer (9 mm diameter). A 7 mm (inside diameter) copper tube was inserted through one hole and the other hole was left open as an air intake. The 250 ml Nalgene collecting container on the aspirator was also fitted with a No. 7 rubber stopper with two holes as the other stopper (Fig. 1D). Two pieces of the copper tubing (7.5 to 12 cm long) were inserted through the holes in the rubber

[1] Accepted for publication 20 July 1989.

[2] This research is published with the approval of the Director, Arkansas Agricultural Experiment Station, and supported in part by the Arkansas Soybean Promotion Board.

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stopper. A brass 50 mesh spray nozzle strainer (Tee Jet Spraying Systems Co., Wheaton, IL) was soldered to the container end of the exhaust copper tube. Two pieces of surgical rubber tubing (7 mm inside diameter), each approximately 100 cm long, were used for the intake and exhaust of the aspirator. The rubber tubing connected to the exhaust copper tube was connected to the copper tube in the other stopper.

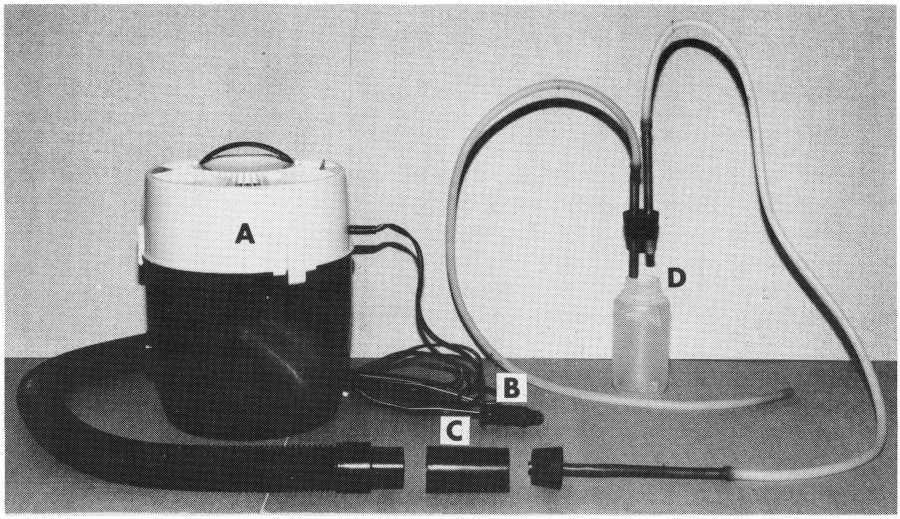

Fig. 1. Portable Aspirator.
A. 12 - volt Bon-Aire Super Vacuum
B. Cigarette lighter plug adapter
C. Modified crevice tool
D. Aspirator collecting container stopper with permanent air strainer and Nalgene (250 ml) bottle used as collecting container.

The portable aspirator proved to be very effective and convenient. The electrical cord and vacuum hose combined were long enough to reach from the cigarette lighter socket in the vehicle to the tailgate, which was used as the work table. When samples were placed in the separater box, the *S. festinus* adults readily moved to the upper glass portion and were easily aspirated into the collecting Nalgene bottle. *S. festinus* adults were aspirated from the separator box in groups of 250 and placed in 3.8 liter (1 gal) glass jars with dampened paper towels and several green bean pods, *Phaseolus vulgaris* L., for holding during transit to the laboratory. When the number of *S. festinus* adults was not limiting, 2000 - 2500 adults could be aspirated and placed in transport containers in 60 - 75 minutes. This separating method could be adapted for many arthropod species.