OPERATIONAL AND SCIENTIFIC NOTES

A PORTABLE CHILL TABLE FOR IMMOBILIZING LIVE MOSQUITOES[1]

J. S. SMITH AND J. K. OLSON

Department of Entomology, Texas A&M University, College Station, TX 77843

Mosquito insecticide susceptibility screening tests involving wind-tunnels (Mount et al. 1976) or field cage tests often require a means for maintaining large samples of wild-caught adult mosquitoes immobile for the period of time that it takes to count and transfer them to holding containers. The use of wet ice has long been used to accomplish insect immobilization; and in recent years, there have been several refrigerated or chill tables designed to provide immobilizing temperatures needed to handle live insect samples (Harris et al. 1965, Sudia et al. 1965, Harris and Frazar 1968). We have found the tables that blow cooled air up through or over insect samples (Harris and Frazar 1968) to be most suitable for our mosquito work when adequate laboratory facilities are available. However, the air tables previously described require alternating current (110–120 v) and are of a size and weight that make them unsuitable for transport to and use in remote locations where AC electricity sources are often not available. To solve this problem, we developed a simple, inexpensive, portable chill table which utilizes forced, refrigerated air up through target insect samples and includes many features of the more expensive models whose designs are based on this principle. The total cost for building this portable chill table is approximately $100–150 (to include labor) depending on the quality of materials selected for its construction.

The portable chill table may be constructed from a plastic or styrofoam ice chest fitted with a removable screen partition or tray approximately midway between the top and botton of the chest (Fig. 1). This partition is constructed by stretching aluminum window screening over a wooden or aluminum frame that will easily slide inside the chest and attaching the screening to the frame with tacks or grommets. Some ice chests have an internal ridge or constriction midway between the top and the bottom upon which the screen partition can rest. If such a ridge is lacking, one can be constructed by cutting 1.5 × 1.5 cm strips of wood to lengths corresponding to the inside dimension of the chest and fastening these strips to the inside walls of the chest at the proper location with epoxy glue (Fig. 1).

A hole is cut in one end of the chest approximately halfway between where the screen tray will rest and the bottom of the chest (Fig. 1). The size of the hole should be such that the hose leading from the source of forced air will fit snugly into it. If a water drain spout is lacking on the ice chest, another small hole (1.5 cm inside diameter) should be cut approximately 1.5 cm above the bottom of the chest on the end opposite from the air hole and fitted with a no. 1 rubber stopper or a drain spout device from another cooler (Fig. 1).

The lid of the ice chest is modified by cutting a square opening (15 × 15 cm) near its center. A removable 2.5 cm deep, screen-bottomed sorting tray is made to fit snugly into this opening using 6 mm (¼ in) plexiglas® or plywood strips for the frame and 40 or 60-mesh hardware cloth for the bottom of the tray (Fig. 1). This tray can also be made without a frame by simply cutting and bending the hardware cloth into the proper configuration. To insure that the sorting tray will not fall through the opening, standard window screening may be attached to the underside of the ice chest lid over the opening such that the bottom of the sorting tray will come to rest on the screenwire. Also, to facilitate observation of insect samples, the bottom of the sorting tray may be carefully sprayed with a fine coat of white paint so as not to fill in the holes in the hardware cloth.

To operate the portable chill table, the screened partition is placed into the position in the chest and crushed ice is placed on top of the partition to a level approximately 5 cm below the top of the chest. The lid is placed firmly onto the chest, the sorting tray is placed into position, and the hose leading from the

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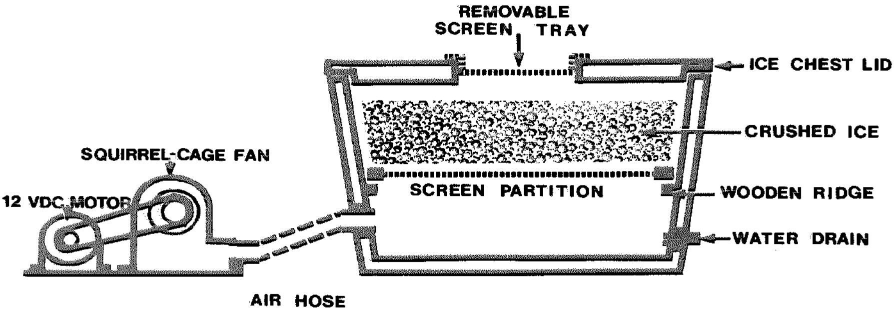

Fig. 1. A diagramatic sketch of a portable insect chill table (longitudinal view).

source of forced air is fitted into the air hole. The source of forced air is a matter of choice. We have most commonly used either a small squirrel cage fan powered by a variable speed 12V DC motor attached to a car battery or the fan system associated with the portable windtunnel described by Mount et al. (1976). A portable, 12V DC powered car vacuum cleaner wired in reverse or a cylinder of compressed air can be substituted as an air source; but, these sources must be checked to insure that they will provide a low, constant air flow (ca. 10 cm/sec has been most suitable for our purposes). The air forced into the chest flows up through the crushed ice and out through the sorting tray opening in the lid of the chest. The drain hole should be open during operation to allow excess water collecting in the bottom of the chest as the ice melts to flow out.

Before mosquito sorting is initiated, air should be allowed to flow through the chest for 10–15 min or until the temperature of the air flowing out through the sorting tray opening stabilizes at 2–8°C, which we have found safely immobilizes mosquitoes and other Diptera. Once this air temperature is reached, place insect samples (anesthetized initially by CO_2 or exposure to cold) into the sorting tray. As sorting proceeds, the amount of the ice remaining in the chest and the temperature of the air flowing out through the sorting tray should be checked periodically. Depending upon the ambient temperature, 4.5 kg (10 pounds) of crushed ice should be sufficient to support 1.5–2.0 hrs of continuous operation. If the temperature at the tray begins to read above 8°C, more ice should be added or a small amount of rock salt may be mixed with the remaining ice.

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A MODIFIED LECO REMOTE CONTROL PANEL MOUNTED OUTSIDE THE TRUCK

CHARLES F. BURR, JR.

Georgetown County Mosquito Control, Georgetown, SC 29440.

Several safety problems were noted by Georgetown County Mosquito Control ULV truck operators concerning the inside cab-mounted Leco Remote Control Panel.[1] These included: the concentration of adulticide

[1] Lowndes Engineering Company, Inc., Valdosta, GA 31601.