

Cooperative Agricultural Pest Survey (CAPS) Approved Methods Guidance: *Dendrolimus pini* and *D. sibiricus*

Approved Methods for *Dendrolimus pini* and *D. sibiricus*

The approved method for *Dendrolimus pini* (pine-tree lappet) and *D. sibiricus* (Siberian silk moth) is a modified milk carton trap with a plastic funnel insert and the *Dendrolimus pini* - *Dendrolimus sibiricus* Lure.

The names in the IPHIS Survey Supply Ordering System are 1) Milk Carton Trap, 2) Milk Carton Funnel Insert, 3) *Dendrolimus pini* - *Dendrolimus sibiricus* Lure, and 4) Pesticide Strip – DDVP, Large.

To Assemble Trap

1. *Modify the milk carton trap.* The entry ports on each side of the milk carton trap must be large enough to accommodate the moth. Use a utility knife or similar tool to cut out the section of paperboard between the two existing entry ports, making a single large entry port (2.5 cm wide x 3 cm high [1 in x 11/8 in]) (Fig 1).



Figure 1. Milk carton trap with modified entry port.

Use binder clips or staples to fasten the bottom of the milk carton trap. Medium-sized binder clips are recommended because they fit without distorting the bottom of the trap, provide enough tension to stay in place, and are easier to remove and replace when servicing a trap in the field (Fig. 2). Fold outer wire loops down for strongest hold.



Figure 2. Fasten bottom of milk carton trap with medium-sized binder clips.

2. *Insert the funnel into the milk carton trap.*
Fold the four flaps of the funnel down and place the plastic funnel (Fig. 3) inside the trap with the tube pointing toward the bottom of the trap. Position the funnel so that the top edge of the funnel is level with the bottom of the entry ports. The tube should not touch the bottom of the trap.

The milk carton funnel insert is reusable. At the end of the survey season, clean the funnel with unscented soap before storing.

Tip: Place the trap on its side. In one hand, hold the funnel with the long flaps pressed against the tube. Insert the funnel through the bottom of the trap with the top of the funnel slightly



Figure 3. Milk carton funnel insert with flaps folded down.

slanted. Straighten the funnel out once the leading edge of the funnel reaches the bottom of the entry ports. This will lock it in place.

Note: In 2019, PPQ procured new funnels. Some states reported that the new funnels were difficult to insert into the milk carton trap without cracking or tearing the corners of the trap (Fig. 4a). This may be due to the squared corners of the top of the funnel (Fig. 4b). PPQ will make adjustments with the vendor and explore options to modify existing stock. However, if you have already received funnels, they can be modified in the field for a better fit.



Figure 4. a. Milk carton trap with cracked and torn edges caused by inserting milk carton funnel insert. b. Squared corner of milk carton funnel insert. Images courtesy of Dale Anderson (South Dakota Dept. of Agriculture)

Modify the funnel insert by rounding the squared corners. With the four flaps of the funnel folded down remove 2-3 mm (approx. $\frac{1}{8}$ in) of material from the corners (Fig. 5a) using a [rotary tool](#) with a grinding tip, utility scissors, or a similar tool. Be sure to round or square any sharp edges created when removing material. The funnel should still fit snugly inside trap so that it does not freely slide to the bottom of the trap (Fig. 5b).

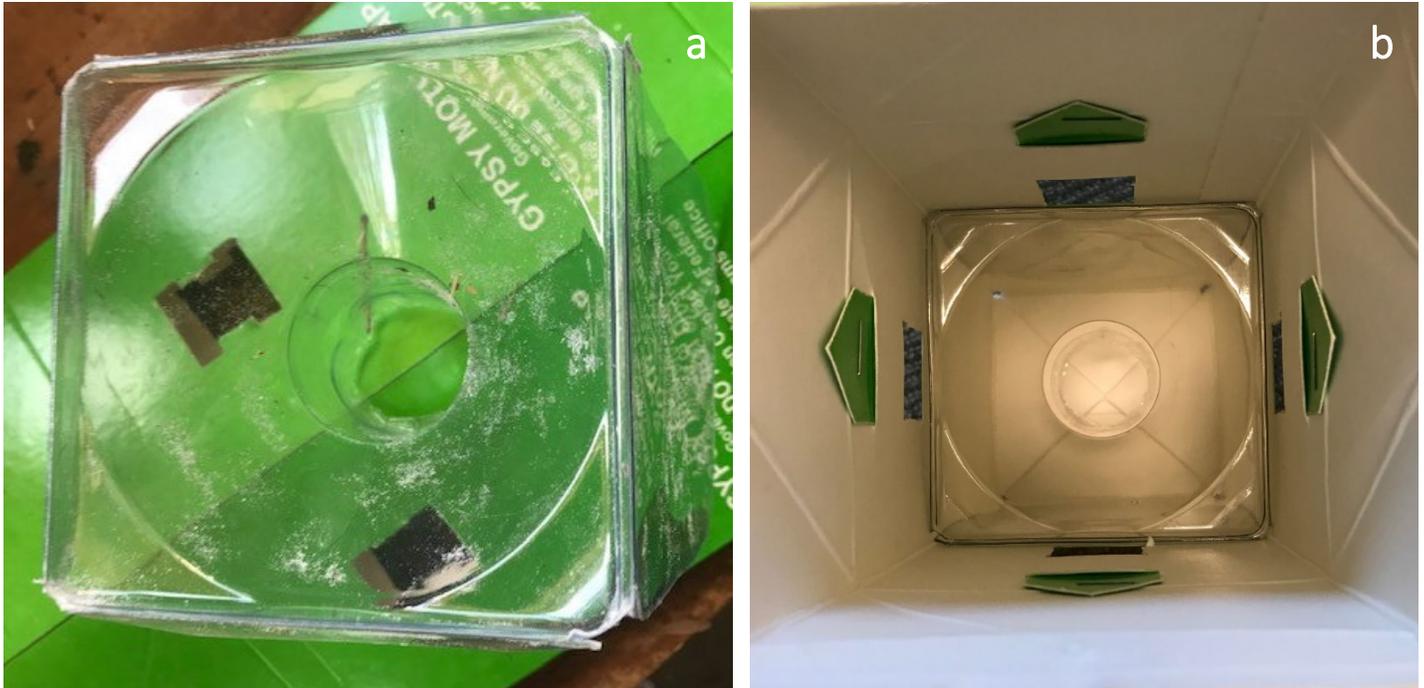


Figure 5. *a.* Modified milk carton funnel insert with rounded edges. Image courtesy of Dale Anderson (South Dakota Dept. of Agriculture). *b.* Milk carton funnel insert with rounded edges placed in the milk carton trap. Note top of funnel lines up with the bottom edge of the entry port.

To Install Lure and Pesticide Strip

The length of effectiveness is 60 days for the pesticide strip and 28 days for the lure. Replace the pesticide strip every other trap service. Follow appropriate safe handling protocols.

Lure: Hang the lure inside the trap above the funnel so that the septa is level with the entry ports. Select one of the following options:

Option 1: Lure holder

Place the lure inside the lure holder and staple the lure holder to the trap.

Option 2: String suspended

1. Cut a 10-inch length of durable twine (e.g., jute). Tie one end to a small binder clip and tie the other end to paperclip or safety pin (Fig. 6a). Attach the lure to the paperclip.
2. Place the lure into the trap from the top (Fig 6b). Close and staple the flap, being careful not to staple the string.
3. Look through the entrance holes and adjust the twine so that the lure hangs at the same level as the entrance holes. Once in proper position, secure the twine in place with the binder clip (Fig. 6c).
4. **To change the lure**, unclip the binder clip holding the twine. Hold the trap at an angle and grab the paperclip or lure with pliers and pull it through the entrance hole (Fig 6d). Once the lure is replaced, hold the trap level, return the lure to the correct position, and secure the twine with the binder clip.

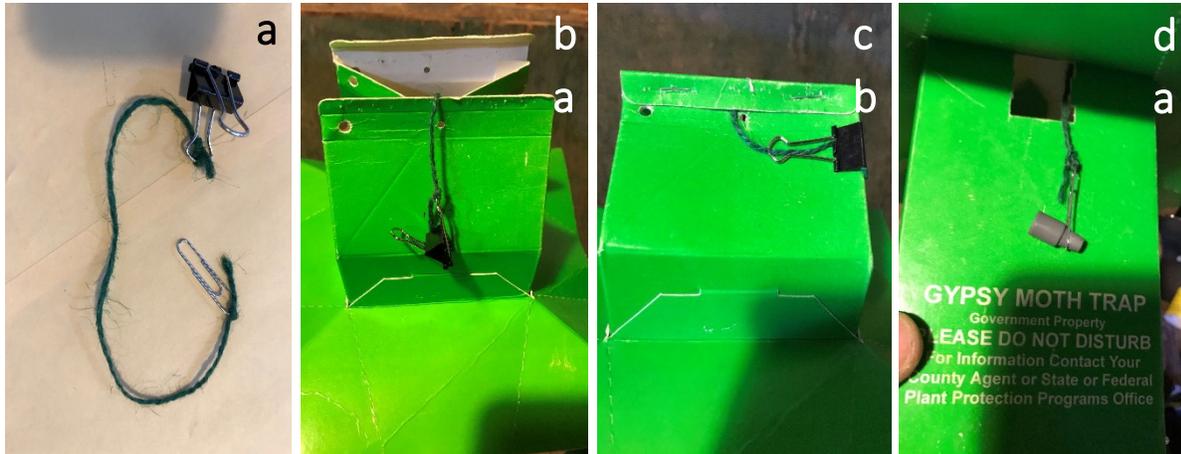


Figure 6. *a.* 10" twine with small binder clip and paperclip. *b.* Lure placed into top of milk carton trap before closure. *c.* twine secured in place by binder clip. *d.* lure and twine pulled through entrance hole to replace lure. Images courtesy of Dale Anderson (South Dakota Dept. of Agriculture).

Pesticide Strip: Place the pesticide strip (DDVP strip) inside the bottom of the trap below the funnel. If you want to reduce handling when collecting samples, you may attach the strip to the body of the trap using staples, plastic t-tags, etc. Check that the strip is not in the funnel tube as this could block the funnel or act as a “bridge” for moths to escape.

To Collect Samples

Collect samples through the bottom of the milk carton trap. Before you open the trap, listen and then look inside the trap for live moths above and below the funnel.

We recommend using medium-sized binder clips instead of staples because they are easier to remove and replace in the field. In addition, repeated stapling over the season may damage the bottom of the milk carton trap.

Tips and Tricks

Create a hinge to reduce wear and tear to the cardboard in windy areas. Use a 6-inch length of wire to create a loop through the hanging hole (Fig. 7) and attach the hanging wire to the loop. (Submitted by Dale Anderson, South Dakota Dept of Ag)

If you have tips or tricks for this or any CAPS approved method, please send them to STCAPS@usda.gov.



Figure 7. Hinge created with wire loop. Image courtesy of Dale Anderson (South Dakota Dept. of Agriculture).