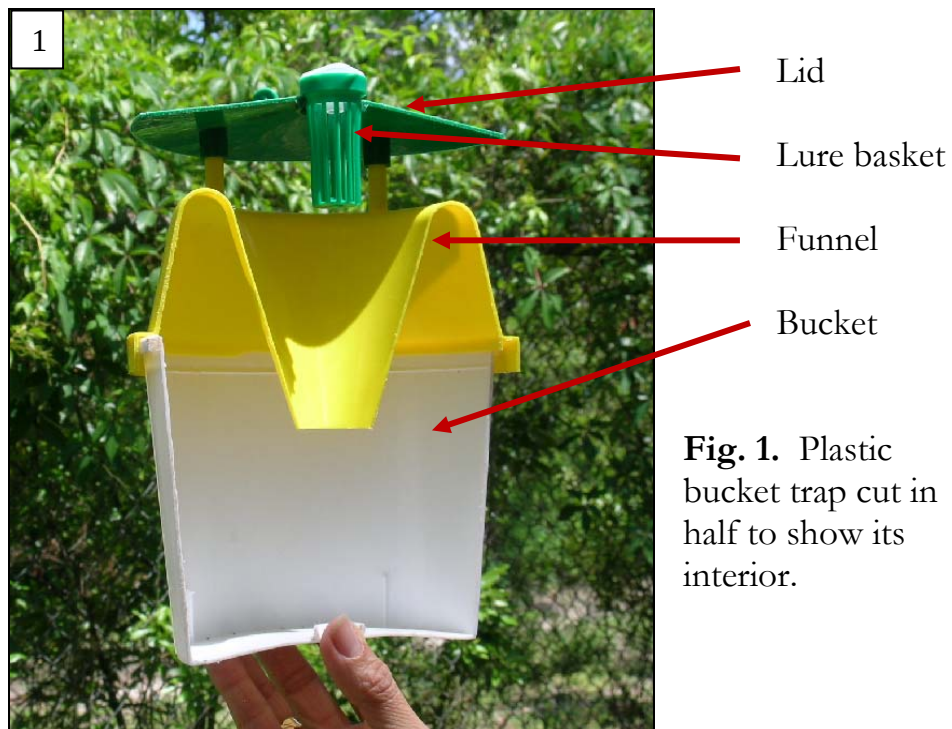




Plastic Bucket Trap Protocol

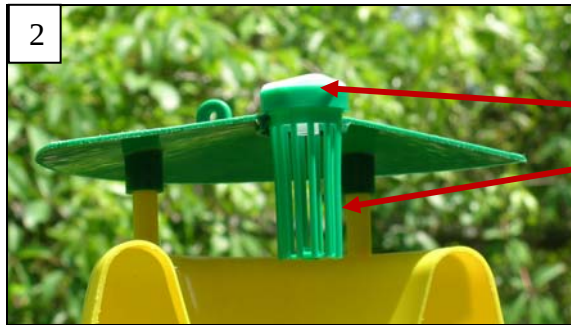
The plastic bucket trap is a long-lasting insect trap used in conjunction with a lure to monitor or detect various species of moths. The plastic bucket trap is the preferred trap for some moth species as it is able to catch large numbers of moths without damaging some of their identifying characters. The trap has four parts: 1) lid, 2) lure basket with cap, 3) funnel, and 4) bucket. The trap is available in various color combinations. For PPQ programs, the trap consists of a green lid, yellow funnel, and white bucket. Fig. 1 is a photograph of a trap cut in half.



Follow the steps below to prepare the bucket traps for use in the field.

1. Pheromone

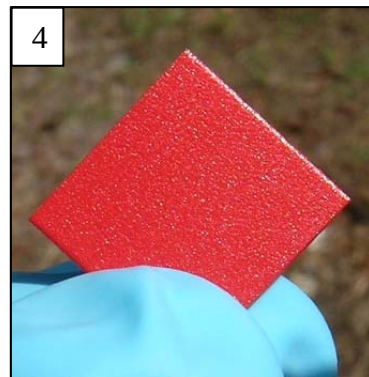
Unwrap a pheromone lure and place it inside the lure basket. Handle lures with gloves (see Fig. 4). Close the basket with a cap and insert the basket through the circular opening on the center of the lid (Fig. 2). If the cap no longer snaps snugly into the trap lid opening, secure it with a piece of tape.



Cap
Lure basket

Fig. 2. Lure basket with cap inserted through center of lid.

The synthetic pheromone is embedded in a small rubberized square (as seen in the photos below) or septum (similar to a pencil eraser). If the lure is flat and small (Figs. 3 and 4) you may attach the lure to a small paper clip and fold the clip so that the lure does not fall out of the basket. If a lure basket is not available, attach the lure to a cork with a pin and place the cork in the lid's opening. Always carry extra corks.

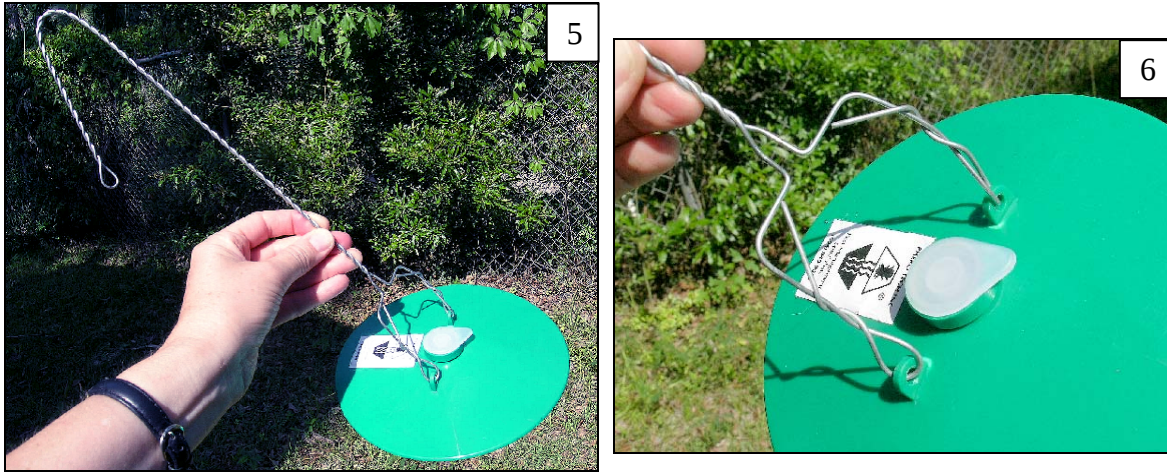


Figs. 3 and 4. Lure made of a small rubberized square with embedded synthetic pheromone chemicals.

When not in use, the lures should be stored, unwrapped, in a freezer not used for food or drinks. MSDS documents for the pheromones to be used should be available and should be read.

2. Handle

Attach a wire handle to the lid through its two loops, as shown in the photos below (Figs. 5 and 6). A wire handle is usually included with each purchased trap. If a handle is not included, is lost, or is damaged and needs to be replaced, make one with a 12-inch long wire or with string, but the latter does not last as long as the wire.



Figs. 5 and 6. Wire handle attached to trap's lid.

3a. Sponge

Place a dry cellulose sponge in the bottom of the trap, as shown in Fig. 7. The sponge will absorb rainwater (except for extremely heavy amounts) that may enter the trap, keeping the moths somewhat dry.

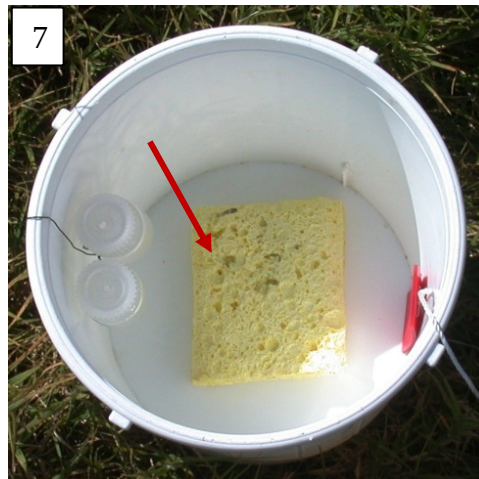


Fig. 7. Cellulose sponge inside the trap.

3b. Wire screen

Alternatively, the bottom part of the trap, the bucket, requires two modifications. Drill two to four drain holes in the bottom (see Fig. 8). If water remains in the trap, the killing agent (the pesticide) can spoil; in addition, the trapped insects may decay, making identification impossible.

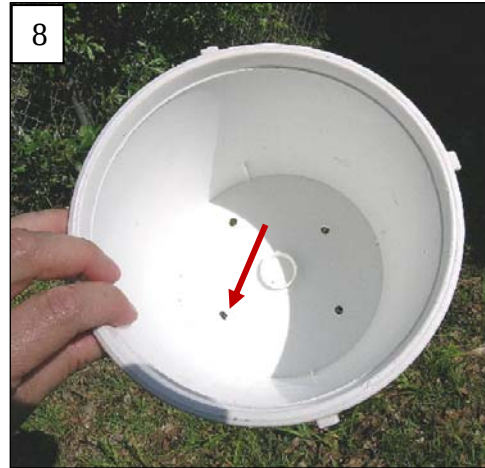
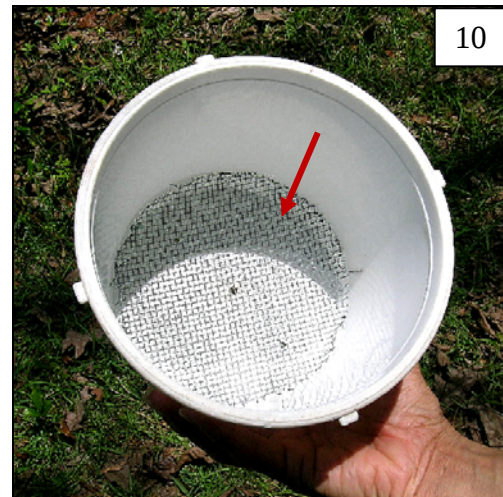


Fig. 8. Bucket with four drilled holes.

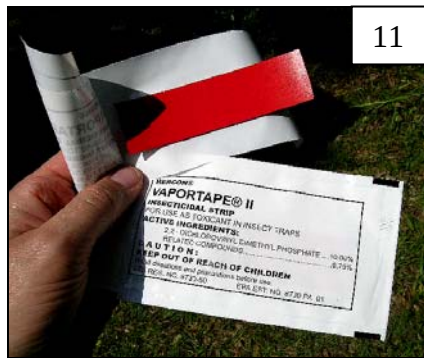
Then, add a wire screen slightly larger than the bucket bottom's inside diameter (Figs. 9 and 10). The screen keeps the pesticide strip(s) and the moths from getting too wet from rainwater accumulated in the trap. Prepare a cardboard template for long term use. Cut the wire mesh with metal-cutting scissors.



Figs. 9 and 10. Metal wire screen inside the bucket.

4. Insecticidal strips

Place two insecticidal strips (Figs. 11 and 12), which kill the moths that enter the bucket. The active ingredient in the strips is Dichlorvos, also known as DDVP and Vapona. The strips should be handled with gloves. Read and have available the MSDS documents for this product. Store unopened strips in a freezer not used for food or drink. Rain, wind, high heat or an abundance of captured moths may reduce its potency from 3 to 4 weeks to a week or less. If using only one kill strip, change it every 2 weeks.



Figs. 11 and 12. Pesticide strips.

5. Label the trap

Attach a rain-proof printed label (see Fig. 13) or handwrite a note with a water-proof black marker on the bucket trap. It should indicate that the trap belongs to a state or a PPQ program. Include a phone number in case someone has concerns or questions about the trap.



Fig. 13. Label on the trap's lid.

6. Placement of traps

The traps function best when placed in the open, away from foliage, as illustrated on Fig. 14. When hung under foliage, the 3-dimensional shape of the pheromone plume (chemical in the air) is disrupted and the effectiveness of the trap is much reduced. Hang the traps from such places as greenhouse roofs or in the open using metal rods (see Fig. 14) or other materials.



Figs. 14. Trap set away from foliage, in open field.

In the field, transfer the caught moths to labeled zip-loc bags and store them in a cooler (Figs. 15 and 16). Place them overnight in a freezer to kill any surviving specimens.



Figs. 15 and 16. Moths placed in a ziploc bag and stored in a cooler.

Prior to shipping, screen the samples. Remove any moth vastly different from the target and all other arthropods (beetles, flies, spiders). Write on PPQ Form 391 the approximate number of moths being submitted. Place an absorbent paper, such as a piece of a paper towel, inside each plastic bag to reduce moisture and to pad the specimens for their protection. The specimens should be well padded inside a box to prevent the specimens from being crushed or otherwise damaged. If longer-term storing is necessary, freezing works best, but refrigeration is acceptable as well.

The general recommendation for maintenance of the plastic bucket traps is to wash them occasionally with soap and water to keep them clean, and to store them indoors, or at least protected from sun, rain and dust. Keep the wire handle and the wire screen in good repair. The traps can be used multiple times and for multiple species since the chemicals degrade quickly in outdoor conditions. These traps usually last more than 5 years.

This protocol is designed to aid in the detection of exotic moths of concern by giving instructions on how to use generic plastic bucket traps. All photos were taken by J. Brambila and R. Meagher. These instructions are primarily based on work by R. Meagher.

This aid was prepared by Julieta Brambila (USDA/APHIS/PPQ Eastern Region), Lisa Jackson (USDA/APHIS/PPQ/CPHST), and Dr. Robert L. Meagher (USDA/ARS/CMAVE), on April 2010.