

Efficacy of a Beap Co. Surge Protector with Built in Bed Bug Trap for Trapping Bed Bugs

Objective: To Evaluate the Efficacy of a “Surge Protector with Built in Bed Bug Trap” for detecting bed bugs.

Questions:

1. Is heated trap effective in trapping bed bugs?
2. Does a chemical lure help increase the trap catches?

Material and Methods

The Surge Protectors with Built in Bed Bug Trap were provided by Beap Co., Waterloo, ON. A heating element inside the trap raised the surface temperature of the trap to 37-40°C when it was connected to the power source. A chemical lure was added to the trap to increase trap efficacy. We tested traps with heat only and heat + chemical lure. Plastic tray arenas (80 by 75 by 5 cm) (length by width by height) with bottom lined with brown paper were used (Figure 1). A layer of fluoropolymer resin was applied to inner walls of the arenas to prevent the bugs from escaping. A filter paper (15 cm diameter) was placed on the floor in the center of each arena, and then a plastic ring (13.3 cm diameter and 6.4 cm height) was placed on the filter paper for confining the bed bugs. A piece of folded cardboard and folded fabric was placed on the filter paper to provide harborages for bed bugs. Six additional paper harborages measuring 5.1 cm long and 3.3 cm wide were placed along the edges of the floor of each tray arena. Three arenas were placed simultaneously in a non-ventilated, closed room measuring 4 m long and 2.3 m wide at 24-25°C. A 12:12 hour (L:D) cycle was maintained in the room that was used for bioassays.

Forty bed bug adult males were placed in each arena and confined with a plastic ring. The bugs were acclimated for approximately 15 hours prior to the start of the experiment. The test was conducted over two consecutive days. Three arenas were used and each arena had an unbaited trap and a trap baited with heat or heat + chemical lure. On first day, heat was tested in three arenas and on second day, heat + chemical lure was tested in the same manner. At 2 hour after dark cycle, two traps were placed at opposite corners in the arena (Figure 1). CO₂ @ 100 ml/min was released in the room and the plastic ring confining the bugs was removed. The

numbers of bed bugs trapped in the traps and those in the arenas were counted after 6 hours with the aid of a red light. All the bugs were replaced with new batch of bugs and confined in plastic rings for 15 hours before starting the next bioassay. One-way Analysis of Variance was used to determine significant differences in trap counts between two treatments.

Results and Discussion

The mean number of bed bugs trapped in traps baited with heat and their corresponding unbaited traps were 9.0 ± 0.57 and 0.33 ± 0.33 , respectively (Figure 3). Trap catch in traps baited with heat + chemical lure and unbaited traps were 14.33 ± 1.6 and 0, respectively (Figure 3). Traps baited with heat or heat + chemical lure trapped significantly more bugs than their corresponding unbaited traps. Adding chemical lure to heat significantly increased (1.6 times) trap catches (Figure 3). Further studies are needed to determine Surge Protector with Built in Bed Bug Trap performance in naturally infested environments.

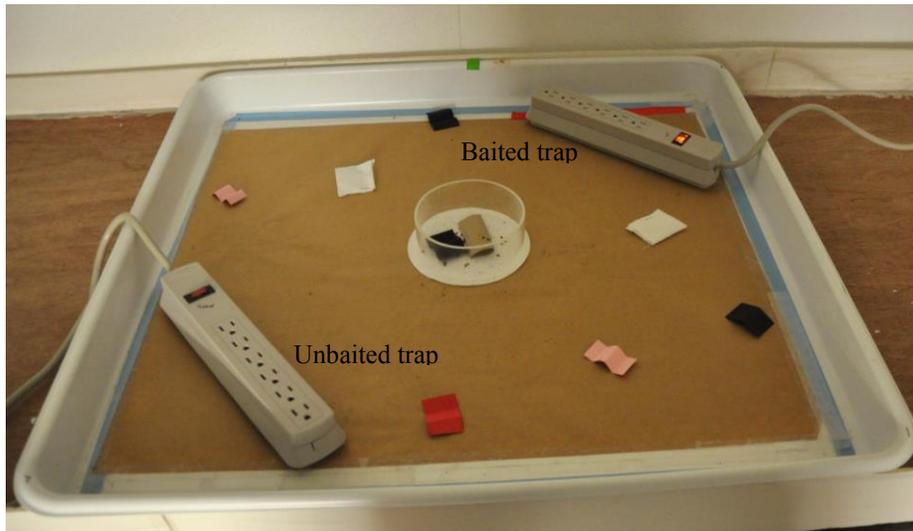


Figure 1. Experimental set up to evaluate the efficacy of a Surge Protector with Built in Bed Bug Trap baited with heat or heat + chemical lure.

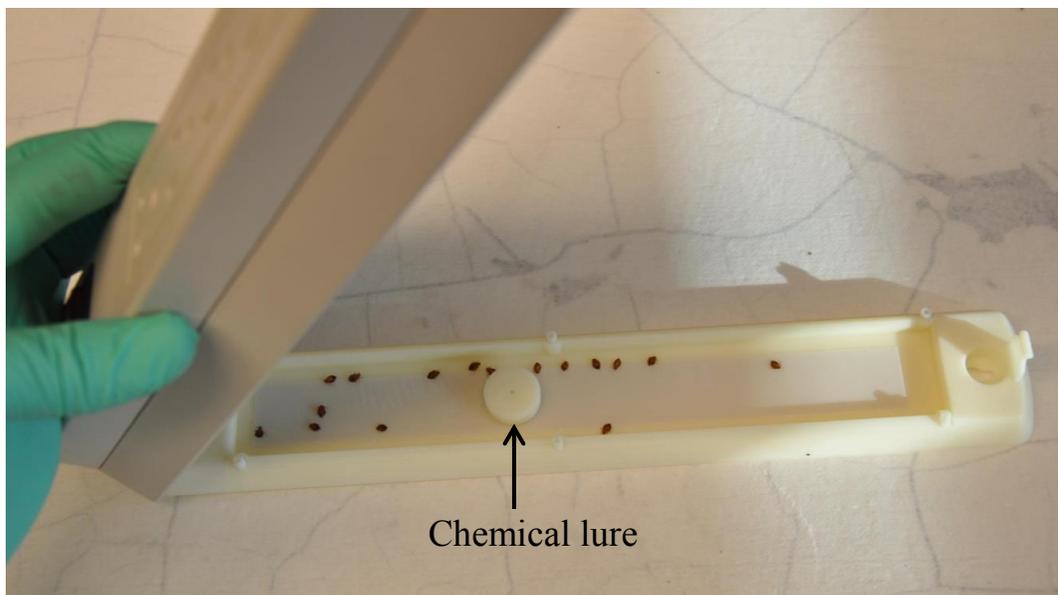


Figure 2. Bed bugs trapped in a Surge Protector with Built in Bed Bug Trap baited with heat + chemical lure.

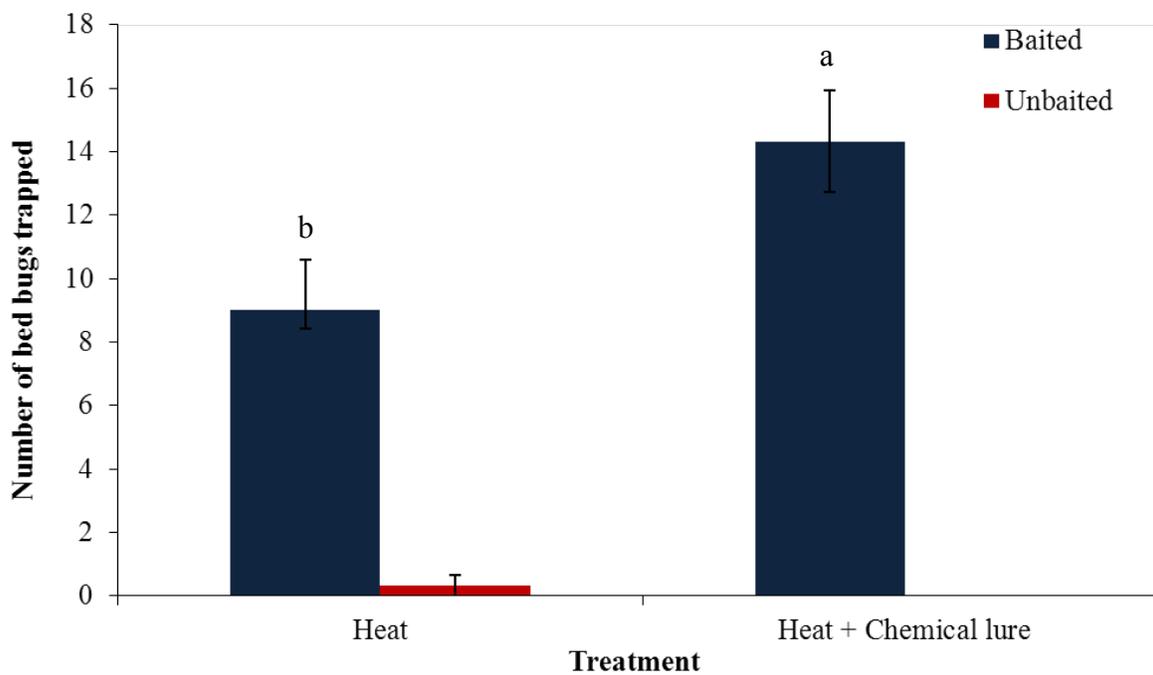


Figure 3. Trap catch in a Surge Protector with Built in Bed Bug Trap baited with heat, and heat + chemical lure.