Report

Efficacy of bed bug barriers

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Objectives

To evaluate the effectiveness of screw-in bed bug barrier (original or roughened), castor barrier, and smooth tape barrier against bed bugs.

Methods

To determine the efficacy of bed bug barriers, 5 experimental trials were conducted. Experimental arenas (55.5 x 43.5 x 7.5 cm) with fabric bottoms were used for this study. Treatment table had one of five single leg treatments (original screw-in barrier, roughened screw-in barrier, green barrier tape, clear barrier tape, and castor barrier) applied to it. Diatomaceous earth was applied to the outer ring of the two screw-in barriers. There were four replicates including a control table with no barrier. Experiments were timed for 10 minutes with the number of bed bugs on the sides and top of wooden table recorded each minute. An Interceptor was placed under each leg (8 interceptors for 8 legs), and 10 bed bugs were added to the inner well of one interceptor. The leg of the table was made flush with the interceptor surface to allow access of the table to the bed bugs. The CO^2 source consisted of a small foam cup (250ml) inside an insulated paper cup (420ml) filled with dry ice pellets (215g) with a flow rate of 195ml/min. The coffee cup of dry ice was placed within a pitfall trap (a small petri dish of 6.3 cm in diameter and 2.2 cm in height within a larger petri dish of 8.8 cm in diameter and 1.9 cm in height) and was placed on top of each table. The recently collected Jersey population of bed bugs was used.

Results

Overall, the plastic barriers were highly successful in preventing bed bugs from reaching the top of the wooden treatment table. The screw-in barriers regardless if they were roughened or smooth kept all bed bugs from reaching the surface of the table (100%). Likewise, the smooth, clear tape prevented bed bugs from passing (100%). However, the brown, rough tape did not prevent bed bugs from passing through. Among 40 observations (10 bed bugs were observed each time), bed bugs passed the tape in 32 (or 80%) observations. In the control 73% of the observations had bed bugs reaching the table top surface or edge. The plastic castors were also successful (100%) in keeping bed bugs from reaching the leg of the table.

Figure 1. Control table with bed bugs crawling in surface.

Figure 2. Bed bugs inside the roughened screw-in barrier (table upside down for display purposes).

Figure 3. A bed bug climbing past the brown, rough tape.

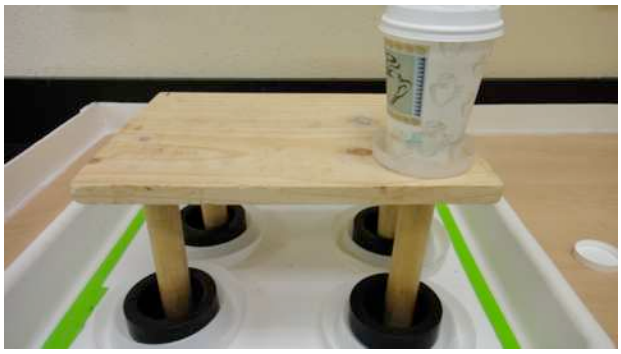

Figure 4. Castor set up with bed bugs added. Castor is directly below CO^2 lure.

Figure 5. Bed bugs were released outside of the castor.

Figure 6. Bed bugs at bottom of clear tape. They cannot pass the tape.