Combating Bed Bug Resurgence through Better Detection and Control Strategies
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Abstract

Bed bugs resurged as an important public health pest in recent years in the U.S., Canada, Europe, and Australia. They pose serious financial burden to communities and affect people’s quality of life. A survey of 17 affordable housing communities in New Jersey showed up to 40% of the housing units were reported being infested with bed bugs. Major factors contributing to the increasing bed bug infestations include, lack of early detection, failure of resident cooperation, and ineffective control practices. The experimental bed bug lure improved the efficacy of bed bug monitors reduced infestation rate by 82% after 12 months.

Methods

Community-wide inspections using a combination of visual inspections, interviews, and placing Climbup interceptors under furniture legs were conducted in 4 low income housing communities in New Jersey during February-April 2014 (Figs. 5, 6). The inspections revealed that bed bug infestation rates in low income communities were high. The average infestation rate was 13.1% (Wang, C., unpublished data) (Table 1).

Table 1. Bed bug infestations in four low income communities in 2014.

<table>
<thead>
<tr>
<th>City</th>
<th>n</th>
<th>Infestation rate (%)</th>
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<tbody>
<tr>
<td>Bayonne</td>
<td>669</td>
<td>8.5</td>
</tr>
<tr>
<td>Hackensack</td>
<td>489</td>
<td>5.7</td>
</tr>
<tr>
<td>Irvington</td>
<td>359</td>
<td>24.5</td>
</tr>
<tr>
<td>Paterson</td>
<td>855</td>
<td>13.8</td>
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Results

In field studies, a pitfall trap made from an inverted dog bowl was 2.8 times more effective than Climbup™ Insect Interceptor, the most effective passive monitor (monitor without attractant) in the market. A dry ice and a sugar-yeast monitor were also highly effective for detecting low level bed bug infestations (Wang et al. 2011, Singh et al. 2013) (Fig. 9).

Discussion

Low income communities are currently experiencing a high rate of bed bug infestations. Lack of financial sources, lack of awareness, poor resident collaboration, and use of ineffective control methods contributed to the chronic and high level of infestations.

Adopting a building-wide bed bug IPM program incorporating proactive monitoring and biweekly treatments of infested apartments utilizing nonchemical and chemical methods can successfully reduce bed bug infestations to very low levels.

Further research, education, and demonstration of cost-effective management methods are in great need to help solve the current bed bug resurgence. Without such efforts, bed bugs will continue to spread and pose increasing financial and health impact to the society.

Fig. 7. Effect of Seizer™ lure on trap catch. Data were based on placement of pairs of Climbup interceptors baited and non-baited in infested apartments for two days.

Fig. 8. Patterns of new bed bug infestations in four low income communities in New Jersey.

Fig. 9. A) a custom-made bed bug monitor modified from a dog bowl; B) a dry ice monitor consisted of an inverted dog bowl and a thermos containing dry ice; C) a sugar-yeast monitor consisted of a bucket holding sugar, yeast and warm water, two dog bowl traps, and a bed bug lure under the bucket.

References


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