

1. Title:

Research and Outreach in Integrated Pest Management for Bed bug in New York and Beyond.
Project funded in part by a grant from the Northeast IPM Center

2. Project Leaders:

Jody Gangloff-Kaufmann – NY State Integrated Pest Management Program
Craig Hollingsworth – Department of Entomology, University of Massachusetts at Amherst

3. Cooperators:

Laurel Hansen, Department of Biology, Spokane Falls Community College, Spokane, WA
Jeffrey Hahn, Department of Entomology, University of Minnesota, St. Paul MN
Bradford Kard, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK
Michael Waldvogel, Department of Entomology, North Carolina State University, Raleigh, NC

4. Type of grant:

Please select the category that best describes your project:

- Training practitioners to use IPM techniques
- Public education
- Other – Survey of pest management practices

5. Project location(s):

All portions of this project have national scope, although direct outreach to individuals is focused mainly on the New York area. The online fact sheet has national scope.

6. Abstract:

Bed bugs are a significant reemerging problem in homes, hotels, dormitories, and other living facilities throughout the United States and worldwide. The IPM Program has addressed the problem locally, regionally, and nationally in several ways. A fact sheet was written in 2003 and posted on the NY State IPM Program website. Today it is among the most popular pages on the site. A survey of the pest control industry was conducted with funding from the NE IPM Center. This survey characterized the bed bug problem nationally from the perspective of the pest control industry, including details about how bed bug problems are typically handled. The results from this survey were presented at the Entomological Society of America 2005 Annual Meeting. In addition, many hours were spent in direct phone consultation with individuals and facility managers faced with the daunting task of controlling bed bugs.

7. Background and justification:

Summarize pertinent IPM efforts, the need, and producer interest. Tell how the project addresses commodity priorities and how it might address water quality or the FQPA.

The common bed bug, *Cimex lectularius*, has again become a household word. In the past several years bed bugs have reemerged as a significant pest problem of homes, hotels, dormitories, and other types of living facilities. There is no easy solution for a bed bug infestation, and many experts believe that it is impossible to control them without pesticides. More importantly, controlling bed bugs requires training, experience, and good identification. The pest control industry is therefore a central component in the search for sound IPM solutions to bed bug problems. A survey of the pest control industry will help to characterize the status of bed bugs as a pest, pesticides used, the challenges faced and innovations in management techniques.

The Northeast IPM Center working groups on Community and Public Health IPM have listed priorities that include bed bugs and bed bug IPM, in residences and as pests of public health significance. By addressing the need for greater understanding about bed bugs through the online fact sheet and direct consultations, the IPM Program staff aim to improve management while reducing risks to people posed by the overuse of pesticides where people live.

8. Objectives:

1. Conduct a national survey of the pest management industry about the specific experiences of each company surveyed with the challenge of managing of bed bugs.
2. Present the results of the bed bugs survey project at a national meeting.
3. Act as a resource for New York State for individuals and organizations with specific questions about bed bugs and their management.

9. Procedures:

1. A survey project was undertaken with some funding from the Northeast IPM Center. Six entomologists were gathered from different regions of the United States and together a survey of the most important 15 multiple-part questions was drafted. The survey was administered by the Survey Research Institute, School of Industrial and Labor Relations, Cornell University. A total of 225 surveys were completed.
2. Results of the pest management industry survey about bed bugs were presented at the Entomological Society of America Annual Meeting in 2005, Fort Lauderdale, FL. This was an invited 30-minute talk for a Section Fb symposium, titled "Not Letting the Bed Bugs Bite...Bed, Lab, and Beyond".
3. The IPM Program serves as an information resource to anyone who inquires. The online fact sheet has been accessed by thousands of people and dozens of individuals have called to speak with a specialist about their particular problems with bed bugs.

10. Results and discussion:

During the process of developing and administering the survey several unanticipated changes were made. The regions were reduced from the original six to five, due to the difficulty in finding a sixth regional cooperator. We believe that this made little difference in the results. The 225 completed surveys was lower than 360 planned. We expected a total of 360 completed surveys, 72 for each of five regions (originally 60 for each of six regions). It is not clear what impact fewer surveys will have on statistical analysis of the results but we expect little effect, as 225 surveys provides a substantial database. The databases, mainly collected from state regulatory agencies, were surprisingly inaccurate. Many phone numbers were invalid, resulting in wasted time and money for SRI, and ultimately for our project. This was the biggest factor in the reduced number of completed surveys. Administration of the survey was delayed by a couple of months and the delay may have contributed to a reduced number of completed surveys due to the increased workload of pest control companies in the spring. Otherwise, the project proceeded as expected.

Information gathered from the survey includes many ranked questions plus a few open-ended questions where we wanted to know as much as possible. Highlights of the survey are as follows:

- Two-thirds of the companies surveyed report an increase in bed bugs calls in the past 12 months.

- More than half of companies surveyed do not service multiple-family dwellings or hotels. Most companies do not service dormitories or vacation rentals.
- The majority of responses claimed that inspection time per bedroom was less than 1 hour.
- Nearly all companies reported that bed bugs are sometimes or always found on the mattress and box spring of a bed.
- Oddest locations for finding bed bugs included inside automobiles, inside radios, VCRs, cable boxes, a shower head, and on a person.
- An innovative monitoring technique was reported. The use of a heating pad with a sticky trap and occasionally carbon dioxide (dry ice) was reported several times.
- More than half of the companies participating make two or three visits to solve the problem.
- Respondents were divided between never, sometimes and always for the use of aerosol and dust insecticides but indicated that crack-and-crevice and liquid sprays of baseboards/ floors were most commonly used (more than 50%).
- The bed frame, box spring and mattress were very commonly treated. In fact, it is a surprising result that mattresses are so commonly treated (73% said sometimes or always).
- Insecticides most commonly used for managing bed bugs were the pyrethroids.
- Surprisingly, pyrethroids appear to be working well despite suspicions in the US and reports from other countries of insecticide resistance.
- Most companies do not use alternative bed bug control methods including steaming the mattress, heating the mattress or other property, freezing belongings, encasing the mattress and applying insecticide, or a sticky barrier on furniture legs.

It may be extremely helpful to repeat this survey in five years in order to record changes in bed bug incidence, prevalence, and control tactics used by the industry. Results from this survey may be used to begin to identify gaps in knowledge and needs of the pest control industry and the public. As bed bugs presumably become more widespread, public awareness will emerge as a greater priority because management is entirely dependent on the cooperation of those whose homes or facilities are infested. As the pest control industry learns more from scientists and gains more experience with bed bug IPM, their profitability will rise because their success in controlling bed bugs will increase.

Results from the bed bugs pest control industry survey were presented at the Entomological Society of America Annual Meeting in December, 2005, as a part of a symposium devoted to research and outreach on bed bugs. IPM staff prepared the presentation and a project cooperator presented it.

Outreach and education about bed bugs are accomplished through the online fact sheet "Bed Bugs are Back! An IPM Answer" and through direct consultation with individuals who call or send email questions. The online fact sheet has been extremely popular, and although it is difficult to accurately know the extent to which it has been accessed, staff estimate that the fact sheet is accessed thousands of times per month. It is also linked through the University of Maryland Consumer Horticulture website. Through the fact sheet, individuals can find IPM contact information and frequently call, write, or send emails. In 2005, there were over 16 phone consultations with people dealing with bed bugs. One ongoing issue involves a problem at a community home for mentally challenged individuals. Their beds and surroundings were infested with bed bugs, as well as other apartments run by this agency. An IPM Program specialist was able to offer recommendations of least-toxic products and methods to combat bed bugs, without poisoning the residents they care for. In other cases, residents with families called to ask about how to deal with bed bugs in their homes. These individuals were steered away from traditional use of "bug bombs" and toward the IPM procedures of thorough cleaning,

inspection, and using a knowledgeable pest control professional. Although detailed records are kept for most consultations, it would be useful to have a way to follow up with those who contact the IPM program, to measure the effectiveness of this outreach.

11. Samples of materials:

- o Online fact sheet "Bed Bugs are Back! An IPM Answer" (Published in 2003).
http://nysipm.cornell.edu/publications/bed_bugs/files/bed_bug.pdf
- o Survey results – See attached file: "Survey Results for NEIPMC report BB.doc"