

Future Bed Bug Technologies

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Future Options

- **Alarm Pheromones** — Research phase, 4-oxo-hexenal and 4-oxo-octenal in immature bed bugs. The releasing of alarm pheromones, which are defensive compounds, causes aggregated bed bugs to scatter. This would cause insects to disperse, increasing the likelihood of bed bugs coming into contact with other control agents increases.
- **Nymphal Bed Bug Pheromones** — Research phase, Behavioural tests show that the nymphs' smell is repulsive to both adult individuals and other nymphs. The researchers believe that this repellent effect could be used in control systems where alarm pheromones make the bed bugs more mobile and therefore increase the effectiveness of agents to kill them

Future Options

- **Bean Leaves (*Phaseolus vulgaris*)** – Research phase- leaf trichome tips pierce the tarsi of bed bugs and permanently entrap them. Research going on for a synthetic version, no success to date
- **Alternatives/Biologicals** – Many untested, unverified options: Neem Oil – works on all stages including eggs, registered in all of the 50 US states but no data to back up the claims of success (ex. Cirkil). Natural Enzymes.... Other plant based materials... no scientifically peer reviewed products. Most do kill some but not all.

Future Options

- **Fungus – (*Beauveria bassiana*)** Research phase, data to date shows a 100% kill to all bed bugs that come in contact with the fungus. Easily transferred between individuals, the infected bedbugs carried the biopesticide back to their hiding places, infecting those that did not go out in search of blood meals.
- **Ivermectin (Mectizan)-** Research phase, preliminary results show that a single dose of the antiparasitic medicine will kill bed bugs when they feed on the blood of humans by taking just 1 pill. Effectiveness decreases over time. Not a real viable solution.

Future Options

- **Canine** – Success is dependant on the handler and the dog; need to be certified, only a few registered training options in the US. More research required in success rates
- **Bed Bug Bombs or Foggers** – not effective, many people buy them, likely increasing resistance to the actives.
- **Heat and Cold Treatments** – Many options and sizes available. Landlords are now creating their own heat boxes to make sure that no bed bugs are coming into the rental units from a new tenants belongings. If it occurs then the tenant is responsible for the costs of eradication.

Future Options

- **Education and Prevention** – more, more, more.
- **IPM** – using more alternatives in conjunction with known existing products.
- **Self Treatment** - Remove the ability for homeowners to self treat for bed bugs.
- **Increase the chemical actives toolbox in Canada** - Look at additional chemical classes, would need to approach the chemical manufacturers for this purpose. A difficult exercise to convince industry as there is not a large enough market to make the investment.

Future Options

- **Granting and Assistance Programs** – To increase the success of treatments. Creating 12-24 hour locations away from their residence for infirm, aged, mentally challenged people when their unit is being treated (Bed Bug lounges with food, drink, and amenities). This should increase the overall effectiveness of the treatment program.
- **Aggregation Pheromones**- Research phase, identified the 10 aggregation pheromones - nonanal, decanal, (E)-2-hexenal, (E)-2-octenal, (2E,4E)- octadienal, benzaldehyde, (+)- and (-)-limonene, sulcatone, benzyl alcohol] proved to be essential components of the *C. lectularius* airborne aggregation pheromone. In aggregated groups they may be easier to control with alternative options.

Future Options

- **Unpublished research** - many researchers are looking at alternative options for attractants and control options. With the enactment of US **Bill H.R.9671H** “Bed Bug Management, Prevention and Research Act”, funding is available for graduate and post-graduate work. This is necessary for alternative measures to be found.
- ******Note****** – this Bill identifies bed bugs as ‘a pest of public health significance’ and ‘a public health pest’. Section 2 – Part 4 (b) (C) and other technical sections.

Future Options

- Consistent Pest Control Treatment Protocols
- Likely other options are in the works....

Questions?

