

Fumigants & Pheromones

Insects Limited, Inc.



James Feston, M.S

12th International Working Conference on Stored Product Protection (IWCSPP)

Beginning on October 7th, 2018, four members of Insects Limited attended the 12th International Working Conference on Stored Product Protection (IWCSPP) in Berlin, Germany.

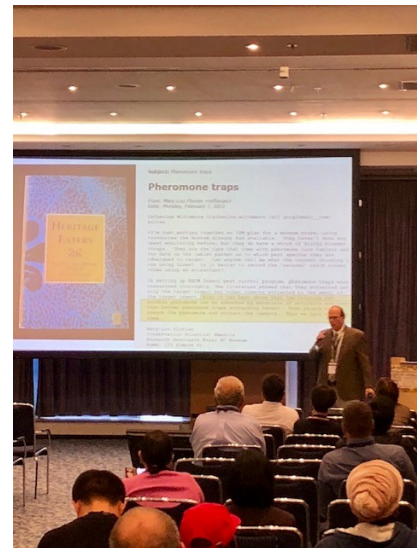
IWCSPP is the world's largest international conference focused on the stored product pest industry and has been held every four years since the first conference in Savannah Georgia in 1974. The primary goal of the conference is to share and develop knowledge and techniques to safeguard postharvest food stuffs from destructive organisms.



Set in the beautiful and historically rich city of Berlin, this year's conference attracted a record number (nearly 600) of preeminent stored product scientists, researchers, and industry leaders from over 50 countries. Attendees shared their knowledge about the biology and control of both the smallest of insect pests like psocids to some of the bigger emerging issues around the world like red-legged ham beetle.

The conference was kicked off by talks about world food security and the humanitarian supply chain, which served to set the tone of the conference and underscore the importance of the work of stored product researchers and professionals.

Over the course of the 7th to the 11th, we learned about everything from the logistics of postharvest food storage and transport in Africa, to the methods and detail that goes into grain bin sealing in Australia. From the research side, Patrick Kelley from Insects Limited presented a study showing that clothes moth pheromone from lures does not transfer over to textiles.



Patrick Kelley from Insects Limited presenting a study on clothes moths at IWCSPP

We also learned about vital concerns facing the academic side of the German stored product industry as researchers and academics are retiring or leaving without replacement. From the emerging pest side, we learned about the spread of red-legged ham beetle across Italy and other parts of Europe and the US.

Finally, from the basic science side, we learned what it takes biologically and behaviorally for some insects to be good packaging penetrators and not others. Turns out that to be a good packaging penetrator it takes 3 things. Mandibles that are capable of grabbing or chewing (sorry mosquitoes and butterflies), a good stance with tarsi

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(feet) that can grip for leverage, and finally an instinct and behavior that encourages chewing (makes sense when you think how many of our stored product insects are also seed feeders that must do a lot of chewing work for their food).

The conference was followed up by a gala dinner river cruise, as well as workshops detailing good fumigation practices, info on mycotoxins, sealing and testing of grain storage structures, and museum IPM.



Conference Organizer, Cornel Adler, serenades the group during the dinner cruise with a little help from his friends.

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Tom Mueller

PestWorld 2018 – Automated Pest Management

It is impossible not to get wrapped up in the excitement of PestWorld. From the preparation before you leave to the reflection of the entire meeting, the whole process has the feeling somewhere between exhilaration and exhaustion. For anyone who spent any amount of time in the exhibit hall, it was easy to identify this year's theme, Automated Pest Management. From routing software to devices alerting you of pest activity, it is easy to see the direction the pest management industry is heading.

Take it from a company with a booth showcasing one version of this type of technology (SightTrap™ - Remote Pheromone Monitoring), the feedback was either a love for or hatred of this trend, but whatever your stance, new technology will have to be embraced because it is here. Comments about new technology included anything from concern regarding the buy-in from auditing companies to the buy-in from technicians as well as customers. It was even stated once or twice that a piece of technology like this cannot replace a good technician with a nice flashlight. Like any other new products, the tools are only as good as the professional using them. Imagine taking that same good technician with the same nice flashlight and giving him or her a better idea of where their efforts should be spent within a facility before they even leave from their office that day.

Austin Frishman had a great statement during his PestWorld presentation, "A Historical Look at the Pest Management Industry." He challenged us to look at the countries who set the trends for environmental pushes and the pest management industry. He then challenged us to look at which companies are doing a great majority of acquisitions in the US. There is overlap between the two, and the countries that are setting these trends are utilizing tools such as automated and remote pest management technology.



Dr. Austin Frishman entertains crowd at PestWorld 2018 with stories and experience during his presentation of "A Historical Look at the Pest Management Industry."

There is going to be a day when remote pheromone monitoring devices and automated rodent monitors send data to a software that analyzes the information and creates the best possible route for a technician highly skilled at conducting pest inspections to locate and correct the origin of the problem. There will be no use for a technician highly skilled in simply counting and recording pest activity.



Vice President Pat Kelley, BCE and Director of Retail and Marketing, Casey Vollmer showcase Insects Limited's latest innovation. A remote pheromone technology, the SightTrap™ & ForesightIPM™.

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David Mueller, BCE

Understanding Cold- and Warm-Blooded Animals

...will help you control them better.



Take home message: *Insects are difficult to kill when it is cool. Rodents are easy to kill with 40 times less fumigant over a shorter period.*

Based on regulating one's internal body temperature, animals are grouped into these two categories: cold-blooded and warm-blooded.

Cold blooded animals are not able to regulate internal body temperature; rather they seek out external sources of heat such as an electric motor, a dust collector, or an area near a HVAC system to get themselves warm. When their external environment is cold, their body tends to be cold. To survive at night especially in colder regions, cold-blooded animals need sunlight during the daylight hours to gain radiation. Some insects even migrate from outdoor grain fields in the fall to warm indoor grain bins when the nights get cool.

It is also seen that insects remain inactive in cold temperatures or during the winter season. For example, insects move deeper into a grain mass or a bag of seed in the winter where the temperatures are warmer compared to where they were living. Some species may die in winter season, while other species such as honey bees produce heat in their hive with friction from the movements of wings.



Rodents are warm blooded animals. A house mouse has a rapid heartbeat. It beats as much as 180 beats per minute. When fumigants are used, house mice are easy to kill because their heart is pumping the fumigant gas that they inhale into their body rapidly. An example of this is that a house mouse will die at 38-ounce hours of ProFume fumigant, whereas a red flour beetle will need about 40 times more fumigant to be lethal.

Cold insects respire slowly. They can shut down their respiration in the winter time. Because cold insects respire slower, it may take up to ten days to kill all stages of insects when it is below 40°F. Reversely, you can speed up the fumigation process by heating the structure or commodity.

From 60° F to 85° F you can double an insect's respiration. From 85°F to 95°F you can double it again. Hot insects die faster and with less insecticide.

Imagine if you are climbing the stairs of a 10-floor building. The first few floors are not bad to climb, the next four stories you start to physically stress, finally, the last three floors cause you to breath hard and perspire. Imagine when you get to the top of the stairs and someone opens the door and punches you in the nose. Could you fight back?

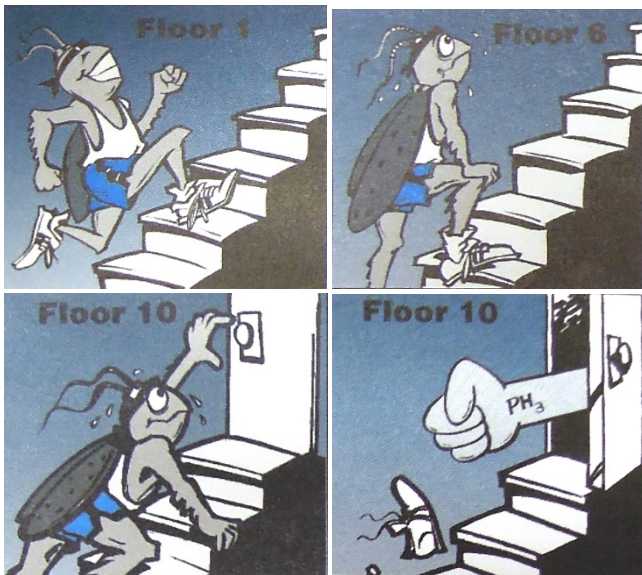
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Cold-blooded animals cannot regulate their internal body temperature and they keep on changing their temperature along with the changes in external environment temperature. Although Warm-blooded animals attempt to keep their internal body temperature maintained and does not change the same along with changes in external environment.

This is a good way to look at fumigation and fogging. If you condition the insects with higher temperatures, you can accomplish more thorough control in less time and with less product. That is a good example of pest management. If your insects are cold, you may not want to fumigate or allow the fumigation to run much longer.

Our best fumigations are on July 4th weeks and Labor Day weekends in the warm summertime in the USA. Our least effective fumigations are over Easter and Thanksgiving. Why??

Knowing the pest is half the battle in controlling it.

David Mueller, BCE, founder of Insects Limited
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