

Fumigants & Pheromones

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Routing:



EPA Award Winner
Best of the Best

A Newsletter for the Insect Control & Pest Management Industry, est. 1981

AUSTRALIA: Adelaide 2016

Have you ever wanted to visit Australia? Maybe you have been to Australia but you only visited the major cities of Sydney, Melbourne, and Brisbane on the eastern coast. How about The Great Barrier Reef near Cairnes or Beautiful Tasmania in the South or the Great Ocean drive between Melbourne and Adelaide? The outback and Australia's unique wildlife begins as one leaves the populated coastal cities.

Vineyards, kangaroos, sheep, and wheat are a part of the landscape that makes Australia seem so vast but still civilized and productive. In addition to all these earthly wonders, there is one more reason to visit Australia and New Zealand... the people, friendly and welcoming.

You are invited to explore Australia and to learn more about stored product protection at the 12th Fumigants & Pheromones Conference in Adelaide, South Australia on March 6-9, 2016.



Now you might think, Australia is far away. Imagine this: board a big airplane at your home airport for a few hours. The service staff brings food and beverage. Now watch a movie, sleep for a couple of hours, wake up and read a good book, more beverages, another selected movie and a short nap before you land. Think of it as an all-day pass at the local movie theatre. Ok, it is a long trip for most, but it is worth it. For more details the conference program is available online at www.insectslimited.com.

Sharing Through Education

This conference is different from most trade meetings or scientific working groups. The speakers who are chosen to present are industry experts with decades of experience in their field. The practical information you receive and the people you meet at these gatherings of like-minded people from throughout the world will make you better at your trade. The previous 11 conferences since 1993 have offered these updates in technology and created a network of friends who gather every two years to share through education. In all, over 2500 people from 60 countries have attended. This truly is an international event.

We hope to see you in Adelaide in March.

VISIT US AT : www.insectslimited.com

Bad Bugs...

Fungus Feeding Grain Beetles



Alain VanRyckeghem, BCE
Technical Director

That time of the year has arrived when the combination of heat, humidity and harvest time creates the perfect environment for molds to develop on maturing field crops and in flat grain storages. Foreign grain beetles *Ahasverus advena*, and hairy Fungus beetles *Typhaea stercorea* are developing on the corn smuts and molds of maturing corn plants in the fields, as well as the spilled grains and residues around storage bins. Flat and rusty grain beetle, *Cryptolestes pusillus*; *C. ferrugineus*, populations are exploding in numbers in grain piles sitting on cool damp ground, or in bins of summer wheat or corn that are being moved to make room for the new crop.

While the name 'grain beetle' suggests they are feeding on stored grains, there are some differences. The foreign grain beetles and hairy fungus beetles actually feed on the molds and fungi (*Penicillium sp.* and *Aspergillus sp.*) that grow on the wheat or corn in poor storage conditions. Poor aeration programs and high moisture

content contribute to the storage conditions that allow the molds to proliferate. Flat and rusty grain beetle larvae prefer to feed on the germ, but also eat on broken kernels and grain dust.

Adult foreign grain beetles are about 3 mm long. They are reddish brown having three distinct clubs on antennae, and a thorax with small rounded nubs on the front corners. These are very distinctive and diagnostic features for this species.

The hairy fungus beetle is 3-4 mm long, hairy, reddish brown with antennae having three distinct clubs, but the thorax does not have the rounded nubs like the foreign grain beetle.

The flat and rusty grain beetles are very similar to each other; with both species being about 1.5 - 2 mm long, reddish brown and have very long thin (filiform) antennae. The back of the head of the flat grain beetle has a tiny ridge running completely across, while the rusty grain beetle does not run completely across. Other features are less distinctive as there are differences in antennal lengths of males and females.

All four species live about 9 months as adults. The adult



Foreign Grain Beetle



Rusty Grain Beetle



Flat Grain Beetle



Hairy Fungus Beetle

females lay about the same number of eggs (100-300). The life cycle of the foreign grain beetle requires 15-24 days while that of the rusty grain beetle and the flat grain beetle requires 27-40 days. The rusty grain beetle develops faster than the flat grain beetle at similar temperatures.

All the adult beetles are great fliers and are attracted to lights including insect light traps. Using grain probe traps set just below the surface of the wheat or corn can provide data that gives you advanced notice of increasing populations. Aeration and/ or fumigations when populations are low will provide greater control and prevent losses in grain weight and low grades. Rusty and flat grain beetles show high resistance to phosphine and require high doses of sulfuryl fluoride for control.

Dave's Soapbox

...for what it's worth

by David Mueller



THE ART OF WRITING A LETTER

Keith Story is an acquaintance of mine. He is the inventor of FICAM W, an insecticide used successfully for many years in the pest control industry. I had met Keith several times in England and in America at educational functions, once was when he arranged a meeting in the Wordsworth Room at Cambridge University in England. He spoke the way they do on Downton Abbey. The poetry that Keith recited from Wordsworth that day just sounded different than any place else.

I received a letter from Keith Story recently. It is one I will keep in my special drawer where I keep special mementos like letters from my parents, pictures of my kids, and old tickets to sporting events that seemed so important at the time. I wish I could write like Keith did in this letter. First, to take the time to write a full letter is a lost art. We email, text, but really never take the time to express our feelings in writing anymore. Keith did in the following letter.

Dear Dave,

Request to terminate receiving Newsletter

It seems a long time since we worked together on the 7th Edition of the Mallis Handbook of Pest Control. You and your family have come a long way in building your companies and I congratulate you on having such a good team.

Over the years I have enjoyed receiving and learning from your Newsletter and I want to thank you for sending me complimentary copies.

Family health problems prevented me from getting back full-time into the industry, and now I have fully retired. Consequently, I would be grateful if you would take my name off the Newsletter circulation list.

I'll never forget my years in the industry, particularly in the USA, which provided such a positive and welcoming business environment. Those years were also enriched by knowing and welcoming people like you and Arnold Mallis, Gary Bennett, Bill Brehm, John Osmun, Norm Ehmann, Austin Frishman, Doug Mampe, Dick Foster, etc.

While officially retired, I am still active and my family and I are planning to buy a small farm and operate a conservation grazing system to enhance wildlife biodiversity. It would be nice to leave a small piece of the planet better than we found it.

Best wishes for the future, and good luck with the Adelaide Conference next year.

Keith Story



Now Available:

New Insects Limited Product Guide!

EPA Proposes Stronger Pesticide Standards

The agency is proposing stronger standards for pesticide applicators who apply “restricted-use” pesticides.

Key Points

- A nationwide **minimum age of 18** for those applying Restricted-Use Pesticides
- Mandatory certification renewal **every 3 years**
- Additional certification required for those doing **fumigations**
- Annual **safety training** and increased working under the supervision of a certified applicator
- **Training records** of non-certified applicators must be kept for 2 years
- Supervising applicator must have a means for **immediate communication** with non-certified applicator(s) in the field

WASHINGTON — On Aug. 6, 2015, the U.S. Environmental Protection Agency (EPA) proposed stronger standards for pesticide applicators who apply “restricted-use” pesticides. These pesticides are not available for purchase by the general public, require special handling, and may only be applied by a certified applicator or someone working under his or her direct supervision.

“We are committed to keeping our communities safe, protecting our environment, and protecting workers and their families, said Jim Jones, EPA assistant administrator for the Office of Chemical Safety and Pollution Prevention. “By improving training and certification, those who apply these restricted-use pesticides will have better knowledge and ability to use these pesticides safely.”

The goal, EPA says, is to reduce the likelihood of harm from the



misapplication of toxic pesticides and ensure a consistent level of protection among states. Pesticide use would be safer with increased supervision and oversight.

EPA is proposing stricter standards for people certified to use restricted-use pesticides and requirements for all

people who apply restricted-use pesticides to be at least 18 years old. Certifications would have to be renewed every three years.

EPA is proposing additional specialized licensing for certain methods of application that can pose greater risks if not conducted properly, such as fumigation and aerial application. For further protection, those working under the supervision of certified applicators would now need training on using pesticides safely and protecting their families from take-home pesticide exposure.

State agencies issue licenses to

pesticide applicators who need to demonstrate under an EPA-approved program their ability to use these products safely. The proposed revisions would reduce the burden on applicators and pest control companies that work across state lines. The proposal promotes consistency across state programs by encouraging inter-state recognition of licenses.

The proposal also updates the requirements for States, Tribes, and Federal agencies that administer their own certification programs to incorporate the strengthened standards. Many states already have in place some or many of EPA's proposed changes. The proposed changes would raise the bar nationally to a level that most states have already achieved. The estimated benefits of \$80.5 million would be due to fewer acute pesticide incidents to people.

A copy of the proposal and more information about certification for pesticide applicators can be found here: <http://www2.epa.gov/pesticide-worker-safety/epa-proposes-stronger-standards-people-applying-riskiest-pesticides>.

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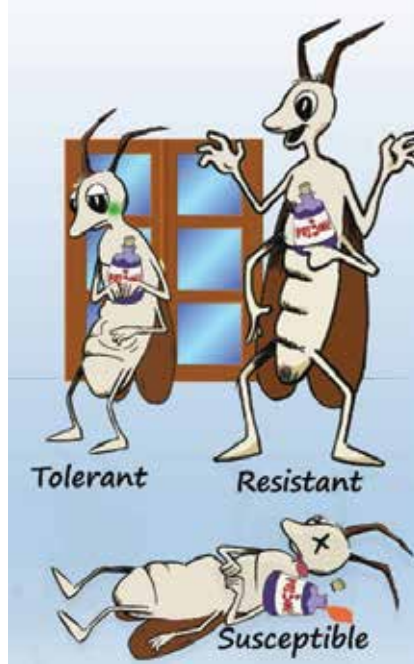
Insecticide Resistance vs Insect Tolerance and Susceptibility



by **Pat Kelley**
Vice President

Insect Susceptibility: Although all insects can have resistant traits in their genes, with no previous exposure to an insecticide, nearly all of the population will generally be affected. Insect species that have not built up any genetic resistance to a particular insecticide are considered susceptible. Susceptible strains of insects will die at much lower dosages of an insecticide than resistant strains of that same insect. (Note: The USDA keeps active colonies of susceptible insect pests that were gathered in the 1950's, prior to exposure to most insecticides, for the purposes of testing and possible reintroduction into the environment.)

Insect Tolerance: In order for us to understand insect tolerance let's use an analogy in human terms of a respiratory and intestinal flu virus. Imagine a small hospital room with an elderly man in the bed who has many ailments. By his side is a young, healthy nurse who competes in triathlons during her free time. If a person sick with the flu walks into that room and coughs in their general direction, although they both may become sick, the elderly man is the more likely to pick up the virus because he has less cells to fight off the virus and he has a weaker immune system than the healthy nurse. The same is true of insects



A single pest species can react dramatically differently to the same dose of an insecticide, depending on the strain.

fighting off insecticides. Healthy, well fed insects can overcome exposure to an insecticide much better than insects that are stressed from drought or malnourishment. This is insect tolerance. Insect tolerance

is not due to genetics, but is instead an inborn ability to survive a dose of insecticide without prior exposure. Tolerant insects may require a higher dose of insecticide before results are seen.

Insecticide Resistance: This has everything to do with genetics. After a dose of insecticide has been introduced into a large pest population, there is a small chance that a few individuals may have certain genes that assist them in overcoming the toxin. If all of the other insects in a population die from the exposure except the few that have these genes, then those few pass along the survival genes to all of the next generation. The susceptible insects are all gone and only the resistant ones survive. It can be thought of as an accelerated evolution. This typically occurs as a response to poor pest management practices over time. Resistant strains of insects require higher than normal doses of insecticide before they die. Eventually they may have no ill effects at all from a given insecticide.

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Sensor Technology Sniffs Out Khapra Beetle

PHOTO: WWW.AGRIC.WA.GOV.AU



Researchers are working on a method to detect a notorious insect pest in food cargo, without ever opening the container.

Smaller than a grain of wheat, the khapra beetle is listed as a high-risk cargo pest in Australia, while in the US it is the only stored product pest with quarantine status. Able to survive nearly anywhere if protected from cold temperatures, detection of the khapra beetle is particularly challenging as the beetle is capable of living years without food and can be found in non-food commodities such as textiles or packaging materials.

The beetle can destroy a significant proportion of unprotected stored grains due to its 'dirty eating' behavior, which sees the beetle eat only a little of a single grain before moving on to others. Contamination in food products also presents a food safety concern as the hairs associated with larvae and cast skins are potential allergens and respiratory hazards, particularly for young children.

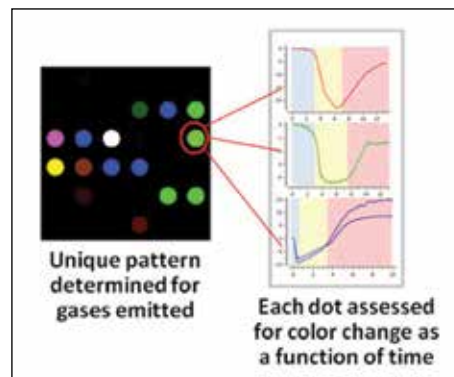
Edgewood Chemical Biological Center researchers are studying the use of colorimetric sensor arrays (CSAs) to detect this invasive species in shipping containers. The inexpensive disposable sensors, manufactured by iSense, are approximately 6.5 cm² and spotted with 73 dyes which change color in response to various vapors. Samples are identified by the combination of color changes across multiple spots forming a 'fingerprint' that can be used to identify compounds. The CSA color changes are sensitive enough to detect even trace amounts of some vapors (odors), allowing for the broad spectrum detection of a number of volatile organic compounds (VOCs).

During an assay, CSA sensors are exposed to odors emitted into the headspace above bulk grain infested with beetles. Over time, changes in the colored spot patterns emerge, and by using software designed specifically for this project, unique color fingerprints are revealed. The goal of the project is the development of unique and individual spot patterns capable of differentiating between invasive, quarantined khapra beetle infestation and other non-invasive species.

ECBC envisions a solution where an inexpensive, disposable reader could be placed within a crate prior to shipment, then later queried by a smartphone to allow inspectors at the port of destination to assess food security and quality without ever having to open the container.

The first step in making this method a reality is the development of a reproducible signature library capable of differentiating between beetle-infested grain and pristine grain. Since khapra beetles are a quarantined species, scientists began testing the CSAs using the common warehouse beetle, which is closely related to the khapra beetle.

Samples are identified not by any single spot color change, but instead by the combination of color changes across multiple spots, forming a 'fingerprint' that can be used to identify compounds found in a sample.



While the research is still in its infancy, researchers have been able to distinguish between the warehouse beetle-infested and non-infested grain based on the response of the CSAs to the VOCs present in the headspace above the grain. The group expects to complete its first round of testing during the second half of 2015.

*By Food Processing Staff
Friday, 31 July, 2015*




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Research and Development

Research and development plays a vital role in Insects Limited and its vision. Here are some new items from that effort: New pheromones, improved pheromones, the new All Beetle trap, the multispecies lures, and a continuously updated website that receives hundreds of hits daily. Recently James Feston, a new master's graduate from Purdue's Entomology Department was hired to handle more R & D projects and pheromone quality control. This continuous search for better ideas is what separates Insects Limited from other pheromone companies. We do our own in-house research and development rather than source it out. We see the results from our efforts through the growth of our products. The technical support of five degreed board certified entomologists can tackle your hard questions. It is our passion to be the best at providing pheromone based monitoring tools, organizing domestic and international training, and professional assistance if you have a problem or a question. In short, Insects Limited strives to produce excellent products, provide technical support, offer updated website information and conduct ongoing research and development that looks to the future needs of our industry.



Every year licensed applicators need to attend a state sanctioned educational program to accumulate points to update their restricted-use pesticide license in the state(s) they do business. This training is also good for first time fumigators who haven't passed their certification exam and need some classroom time to understand the fumigation field better to help take their exams later on.

Local and international training will be organized by Insects Limited and Fumigation Service & Supply in December and March respectively. If you are a license holder for fumigating and food processing in your state, you may want to attend one of the three continuing education programs being held in Indianapolis, Bloomington, IL or Columbus, OH in December. If you are interested in international educational training from speakers from around the world discussing how to protect stored products, you may want to attend the March 6-9, 2016 training conference in Adelaide, South Australia.



12th Fumigants & Pheromones Conference



MARCH 6-9, 2016 | ADELAIDE, SOUTH AUSTRALIA



Fumigants & Pheromones is published by Fumigation Service & Supply, Inc. and Insects Limited, Inc. We hope that the information that you receive from this newsletter will help you in your business, and you, in turn, will support our business efforts. If you have an associate who would be interested in receiving this newsletter, please contact the address below. We would welcome any comments or suggestions for topics. Address correspondence to: Peggy Rutkowski, Fumigation Service & Supply, Inc., 16950 Westfield Park Rd., Westfield, IN 46074 USA.

Fumigation Service & Supply, Inc.

16950 Westfield Park Road
 Westfield, IN 46074-9374 USA
 (1) 317-896-9300
 email: insectsltd@aol.com
 websites: www.insectslimited.com
 www.fumigationzone.com
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CALENDAR OF EVENTS

- ** September 23, Indianapolis, IN:
International Operative Millers Association
- * October 20 - 22, Nashville, TN:
PestWorld National Pest Management Association
- *** December 2, 2015, Columbus, OH:
Continued Education Training for Fumigators
- *** December 9, 2015, Westfield, IN:
Continued Education Training for Fumigators
- *** December 16, 2015, Bloomington, IL:
Continued Education Training for Fumigators
- *** March 6 - 9, 2016, Adelaide, South Australia:
12th Fumigants & Pheromones Conference
(see page 1)

* attending *** organizer
 ** invited speaker ^ exhibiting



“Quotable Quotes”

Diagnostic Ants

“Diabetes was first described in Egypt about 3,500 years ago. The name diabetes means “to pass through,” referring to the frequent urination that occurs in diabetics. The urine also contains glucose, a sugar, hence the name mellitus from the Latin mel that translates to honey. In fact, many physicians in years past diagnosed the disease by watching the attraction of insects, particularly ants, to a patient’s urine.



— Source: John Roberts, MD

PHOTO: CLARKSEST.COM