

Fumigants & Pheromones

Issue 103
Summer 2012

Routing:



EPA Award Winner
Best of the Best

A Newsletter for the Insect Control & Pest Management Industry

NEW TECHNOLOGY:

Multi-Fumigant Scrubbing System

This new technology was developed to capture and destroy fumigant gases such as methyl bromide, sulfuryl fluoride (Profume™ gas fumigant) and methyl iodide which might otherwise be

released into the atmosphere from a variety of fumigation situations. Removing harmful greenhouse gases and stratospheric ozone depleting gases is important now and will be more so in the future.

Uses for this system include, but are not limited to, pallets, export quarantine logs, ISPM-15 shipping containers, trailers, fumigation chambers, flour mills, and grain bins.

(continued on page 2)

Practical Applications of Scrubber

Recently the F.A.S.T. Scrubber was used to destroy ProFume™ (sulfuryl fluoride) at a flour mill in the Midwest. This flour mill was over one hundred years old and located on a congested main street in a historic downtown area. Normally the doors would be opened and the remaining fumigant would be exhausted into the air. Traditionally, it takes 6-8 hours to achieve a safe level for reentry into the fumigated building without assisted breathing equipment. Results of the first scrubbing in a flour mill were encouraging. In two hours the scrubber reduced the fumigant concentration by 60%.

This non carbon based scrubber works to eliminate bromine, fluorine, and iodine compounds. Applications for termite fumigations with Vikane™ are planned for the future. Houses being fumigated with SF are normally close together in highly populated California, Hawaii, Florida, and Arizona. Since sulfuryl fluoride is listed as a greenhouse gas, this scrubber has the ability to eliminate this potential environmental risk.

The first installation of the scrubber for quarantine purposes was installed at O'Hare Airport in Chicago in 2012. It is used to treat cut flowers and vegetables coming in from South America. About 20% of the methyl bromide still being used in the US for quarantine fumigations is on containers of logs. This represents tens of thousands of containers fumigated yearly in the US for export to places like Europe, China, and India. **This scrubber can help reduce the destructive effect of methyl bromide on the ozone in the stratosphere and greenhouse gases from sulfuryl fluoride.**



Pete Swords, pheromone chemist for Insects Limited, demonstrates a new patented technology for scrubbing fumigants at the recent 10th Fumigant & Pheromones workshop in Indianapolis.

Mission Statement

In all, our aim is to strive for quality service, provide the absolute best products available worldwide, to be a respected world-class organization, and maintain profitability with innovation, alternatives, and education.

VISIT US AT: www.insectslimited.com

Flat Grain Beetle

A Symptom of a Condition

The flat grain beetle is one of the smallest beetles that attacks stored grain and seed. It can be seen at sunset flying around grain bins. This insect is a secondary feeder that is attracted to moist grain. It is a symptom of a condition, and the condition is out of condition grain. When grain is spilled on gravel it will start to mold when it rains. This moldy condition will attract this tiny brown beetle from great distances away.

Resistance

According to research at Oklahoma State University and Kansas State University, this insect is increasing its level of resistance to phosphine to cause control failure. Considering it lives in near anaerobic conditions, it is a strong survivor of harsh conditions. Resistance testing is important to help the manager dial in the correct dosage rate and fumigant to control flat grain beetles.

Damage

The real damage this stored grain and seed pest causes is its mere presence. The flat grain beetle and other moisture loving insects aggregate in large numbers and can cause the grain to heat up. These hot spots can cause the grain and seed heat damage and a lowering of quality.

Control

If you offer this insect pest what it doesn't like it will leave or die. Dry sound grain and seed will offer these insects those conditions that it does not prefer and it will leave or die. Fungus feeding insects are symptoms of a condition. Keep it dry.



Notice the long antennae on this flat grain beetle. It is a good flyer and prefers out of condition grain.

The flat grain beetle is 1/8" long and flattened.

Scrubbing System

(continued from page 1)

The F.A.S.T System is designed to draw out and break down fumigant gases from the fumigated area by forcing contact of the gas with a **non-carbon based scrubbing material** through a specially designed filter head.

The fumigant is agitated with a solution causing a complete chemical breakdown of the fumigant gas into liquid and other non-hazardous by-products. Speed of the system can be increased or decreased to fit proper aeration and abatement allotments. Unlike most abatement systems, this new technique has the ability to destroy harmful fumigants on site, whereas others only capture the fumigant for a short time, eventually allowing it to escape into the atmosphere. The new durable and easily operated design allows an accelerated and convenient process for removing harmful and potential safety hazards from fumigants.

For more information please contact Pete Swords at p.swords@insectslimited.com.

**Profitable Add-On
Pest Control Service
and Over-the-Counter Sales!**

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- ✓ **Ready to Use**
- ✓ **Lasts for Months**
- ✓ **Guaranteed**

**Less than \$2.00 per trap
containing 5 pheromones**



Pheromones:

- Indianmeal moth
- Almond moth
- Warehouse beetle
- Cigarette beetle
- Flour beetles
- Rice weevil
- Varied carpet beetle
- Black carpet beetle
- Powder post beetle
- Drugstore beetle
- Webbing clothes moth
- Grain borers

...and more!

New Pheromones Now Available:

Rice weevil



Webbing
clothes moth



Varied
carpet beetle



Insects Limited, Inc.

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www.insectslimited.com

or ask your distributor for Pantry Patrol



Insects Limited

Dave's Soapbox

...for what it's worth



There are rare moments in your life when you feel proud, happy, sad, relieved, and satisfied...at the same time. The minute the 10th Fumigants & Pheromones Conference and Workshops was over I experienced them all and more.

Our careers are filled with great experiences and friendships. At no time have I ever felt so proud of the people at Insects Limited and Fumigation Service & Supply as when I sat back and watched this "four day production" unveil. After two years of preparation and many, many hours of work, we offered our very best to an international group that traveled long distances. They have become more than our customers and colleagues, but our friends...good friends. After 20 years of offering this specialized training we have accommodated some great people who enjoy each other. To see the looks on their faces when they reunite makes the effort worthwhile. Here are a few pictures and stories about the conference and workshop. If you missed it, remember to mark early June 2014 on your calendar for the next conference in Krakow, Poland; one of the most beautiful cities in the world.

You can find the speakers' notes posted on our website. "Sharing through Education" is the ongoing purpose of these educational programs. I hope you get a chance to experience one some day. It is fun and educational.

D. K. Mueller
Dave Mueller
 President, Entomologist



225 people from 33 countries covering six continents came to Indy to network and learn about the latest advancement in pest management. The Fumigants & Pheromones Conference is held every two years. The next edition will be in Krakow, Poland in May 2014.

INDY 2012: Conference Speaker Notes can be found at www.insectslimited.com or www.fumigationzone.com

Attendees were from the following countries: **Argentina, Australia, Belgium, Canada, China, Croatia, Denmark, Ecuador, England, Finland, France, Germany, Greece, India, Italy, Japan, Lebanon, Malawi, Malta, Mexico, Mozambique, Netherlands, Nigeria, Philippines, Poland, Slovenia, Slovakia, Spain, Sweden, South Africa, Taiwan, United States, Zimbabwe.**



David Mueller, of Insects Limited, demonstrates to Jon Fournier of the British Columbia Ministry of Environment the difference between a male and female Indian meal moth during the mating disruption demonstration at the hands-on workshop.

Presenters and topics included:

Gale Price, *Food Safety Around the World*; Dr. Michael Doyle, *The Changing Dynamics of the US Food Supply and Major Food Safety Implications*; David Mueller, BCE, *Reducing Customer Complaints*; Dr. Darka Hamel, *How is Europe Surviving Without Methyl Bromide?*; Dr. Paul Fields, *Pest Management on Stored Products in Canada*; Dr. Dieudonne Baributsa, *Food Storage in Western Africa*; Dr. Dave Barnekow, *ProFume Gas Fumigant Regulatory and Label Update*; Kim Kemp, *Protecting a Brand*; Dr. Bobby Corrigan, *What I have Learned from Rodents in New York City*; Keith Delpont, *Pest Management Experiences in Central Africa*; Vasilis Sotiroidas, *Heat Treatment and Controlled Atmosphere Treatments in Europe*; Alain VanRychehem, BCE, *The Dirty Dozen, Stored Product Insect Biology and Identification*; Augustin Barrutia, *Integrated Pest Management of Mites in Seeds*; David Liszka, *Advancements in Pest Management in Central Europe*; Dr. Mike Scharf, *How We Use Molecular Physiology to Better Understand Pest Biology and Resistance.*

(continued on page 4)

2012 Conference & Workshop

(continued from page 3)

Krakow, Poland



Permission to reprint

Krakow 2014

David Liszka along with Anna Francisco and Pawel Olejarski ICB Pharma of Krakow, Poland gave a breathtaking presentation to the group about the location of the 11th Fumigants & Pheromones Conference in May 2014 in beautiful and historic Krakow, Poland.

Different techniques were demonstrated during the Fumigants & Pheromones Workshop in Westfield, Indiana. Participants learned new techniques to control pests in stored products. Dave Mueller, organizer of the workshop said, "We have been working two years on this conference and workshop. I am very pleased that it came together so well."

Workshop

Nine demonstrations were performed for 170 attendees on the final day in Westfield, Indiana. They included: Indian meal moth mating disruption in a retail setting, grain bin fumigations with sulfuryl fluoride and phosphine, new technology for phosphine gas monitoring, the F.A.S.T scrubber on export containers containing sulfuryl fluoride and methyl bromide, fogging demonstration in large warehouses, mating disruption and new technologies

The attendees at the workshop were broken into small groups.

This demonstration of a grain bin fumigation had a camera inside the bin allowing the attendees to watch how the FSS crew fumigated stored grain safely and effectively with phosphine.



Alain Van Ryckeghem, technical director for Insects Limited, offers a firsthand look at stored product insect pheromones and other attractants.



Pete Mueller, Regional Manager of Central Illinois for FSS, demonstrates safety procedures using boom lifts to seal metal grain bins from the outside (non confined space entry).



Pat Kelley, VP of Insects Limited, and Jose Roca, president of Roca Defisan of Valencia, Spain.

in bulk packaging materials from Germany, Pheromone demonstration in a pheromone laboratory, sulfuryl fluoride monitoring in containers, bar coding for pest management monitoring devices, a structural fumigation using ProFume.™



David Mueller, Indy 2012 organizer, and Henrik Lange of Tanaco, Denmark, during the workshop.



Dr. Dieudonne Baributsa, Purdue University, spoke on the PICS grain storage program in western Africa. This program has been implemented in 33,000 villages to date.

Phosphine Resistance

Insects can become resistant to fumigants and other insecticides like humans can become resistant to penicillin.

There are three things that you can do to overcome this genetically linked resistance.

- 1. Test for resistance**
- 2. Increase the dosage rate**
- 3. Rotate to another chemical with a different mode of action**

Since its first patent in 1952, phosphine fumigants have been a staple to the seed, grain, and milling industries. Unfortunately, after 60 years of use and misuse, evidence of insect resistance to phosphine is showing up in many parts of the United States. Oklahoma State University has confirmed a high resistance to rusty grain beetle to phosphine. Lesser grain borers are also showing high resistance levels in most of the United States.

As grain is shipped and mixed around the country and around the world, those insects with resistance will spread their genes more rapidly.

Tolerance vs. Resistance

There is a difference between insect pests that have a strong tolerance to phosphine and those that are truly resistant. The difference lies

in the fact that those pests that are resistant to phosphine have a genetic link which was passed down to them from their parents, and which they will pass along to their offspring. We can do something about controlling resistance.

Resistance Testing

If you perform a fumigation with phosphine and you see survivors in a few weeks, maybe you have resistant insects or maybe



Lesser grain borer on wheat

it was a poor fumigation. Our staff of experienced chemists and entomologists can provide the information you need to make critical fumigation decisions

about phosphine resistance. By simply sending insect samples to Insects Limited in Westfield, Indiana, we will provide a report on whether your pests are resistant to phosphine. Cost: \$250 per test. Each test will require at least ten live adult insects.

Rotation

Sulfuryl fluoride (Profume™ Fumigant Gas) has a different mode of action when compared to phosphine. Since this is a newly labeled fumigant for grain and seed, the insects' genes have not been exposed to this molecule yet. The best way to prevent resistance is to kill all stages of insect life so their genes don't survive.

Conclusion

Maybe after some years, the grain and seed industry can return to using phosphine in those regions where phosphine resistance is causing control failure. Testing, increasing dosage rates in accordance to the label directions, and rotation may save a very useful and relatively safe phosphine fumigant to live another day.

Call 1-800-992-1991 for more information.

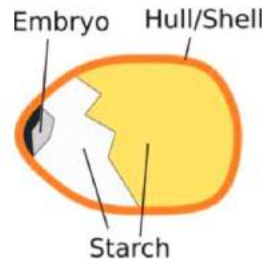


Non-Confined Space Entry Grain Fumigation

Safe and precision sealing of eaves and roof vents is essential to achieve a successful grain bin fumigation.

What Makes Popcorn POP?

Popcorn differs from other types of corn in that its hull has just the right thickness to allow it to burst open. Each kernel of popcorn contains a small drop of water stored inside a circle of soft starch. The soft starch is surrounded by the kernel's hard outer surface. Popcorn needs between 13.5 and 14 percent moisture to pop.



As the kernel heats up, the water begins to expand. Around 212 degrees the water

turns into steam and changes the starch inside each kernel into a superhot gelatinous goop. The kernel continues to heat to about 347 degrees. The pressure inside the grain will reach 135 pounds per inch before finally bursting the hull open.

As it explodes, steam inside the kernel is released. The soft starch inside the popcorn becomes inflated and spills out, cooling immediately and forming into the odd shape we know and love.

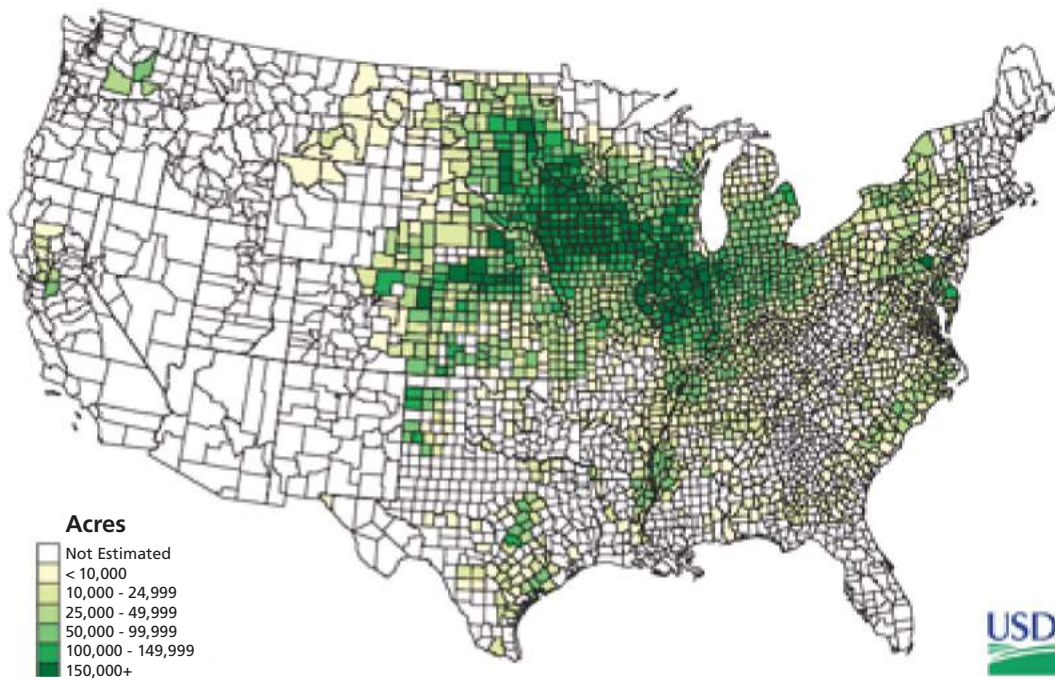
Source: Indiana State Museum, Indianapolis, Amazing Maize Exhibit



In the early 20th Century, scientists made discoveries in corn breeding that revolutionized both American agriculture and the science of genetics. Scientists came to understand how to manipulate the crossing of corn plants by taking advantage of the separate male tassel and female ear. The major breakthrough came with the discovery of "selfing" which is controlling inbreeding of corn plants by forced self-pollination to purify the genetics of a parent line.

Source: Indiana History Museum, Indianapolis

Corn for All Purposes 2010 Planted Acres by County for Selected States



The green shows the growing regions of corn. The United States has the largest growing region for corn in the world.

Inspection Tools for Tackling Food Facilities

A food facility can vary from a hot dog truck to a 2-million-square-foot-plus processing plant. By setting your standards high, you will be equipped for whatever comes. The laundry list of inspection tools needed for pest management at food facilities includes, among others:

- Hard hat or bump cap, even if your head is bald.
- Safety goggles or proper eyeglasses.
- Proper work shoes for safety but with minimum grooves that can trap food or dirt.
- Extension mirror made of stainless steel, not plastic.
- Knee pads.
- 2 explosion-proof flashlights, one strong enough to light a ceiling 30 feet high.
- Pencil and notepad.
- Handheld recorder that can download reports instantly.
- Collecting containers, including plastic zipper bags.
- Leatherman™ or similar hand tool.
- Your ears: to hear chirps of birds, for example.
- Your nose: to smell for rancid odors.
- Your eyes: to observe all.
- Laminated ID badge provided by the food plant or your own.



Austin Frishman, PhD

Source: *Pest Management Professional*, April 2011

Before starting any inspection, become familiar with the safety policies and union rules (if any). To further assist you, review an aerial map of the exterior before you begin. In complex facilities, you may need simple maps of each section.

Quotable Quotes



“Change is the law of life. And those who look only to the past or present are certain to miss the future.”

— John F. Kennedy



“There is no training that can compensate for common sense.”

— Jeff Waggoner,
General Manager,
Fumigation Service & Supply

FUN FACTS

*If you yelled for 8 years,
7 months and 6 days,
you would have
produced enough
sound energy to heat
one cup of coffee.*



*Cockroaches can
live for nine days
without their heads,
at which point
they die of starvation.*

Your FSS Contacts

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Technicians • Account Managers • Team Workers • Regional Managers • Food Safety

Fumigation Service & Supply and Insects Limited specialize in a unique niche of pest management that started out as an idea and has developed into a business that provides a range of products and services that are becoming mainstream in protecting stored food, grain, tobacco, timber, museums, and fiber worldwide. Our companies pride themselves on innovative pest solutions through our quality products, supplies, and outstanding service.



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