

Fumigants & Pheromones

Issue 102
Spring 2012

Routing:



EPA Award Winner
Best of the Best

A Newsletter for the Insect Control & Pest Management Industry

Pest Management Around the World

Bagging Bugs Reduces Post-Harvest Losses

Simple Hermetic Technology Improves Food Security and Income of Small-Scale Farmers in Africa



By Dieudonne Baributsa, Ph.D.
*Team Manager, PICS
Purdue University,
International Program
in Agriculture*

Cowpea is the most economically and nutritionally important indigenous African grain legume grown by millions of resource-poor farmers. It is a key cash crop and is also a staple food for many millions of people in West and Central Africa. Storage is often identified as the key challenge for small scale cowpea growers. Many farmers sell cowpea grain at low harvest time prices rather than risk losses by insects during storage. Farmers use several traditional storage methods for small quantities of cowpea, but these methods are not scalable. Other farmers buy pesticides, which are relatively expensive and when misused present health risks. For the past quarter century Purdue University and partner organizations have led efforts to develop and implement chemical-free hermetic storage technology, with focus on low resource farmers. Insects in hermetic containers are controlled by limiting access to oxygen. Insects held in low oxygen conditions cease feeding, growing and reproducing.

With funding from the Bill and Melinda Gates Foundation, the Purdue Improved Cowpea Storage (PICS) project has implemented in ten countries to increase the adoption of hermetic storage through (i) large-scale extension activities and (ii) the development of the supply chain to ensure bags are available to farmers. By December 2011, the project reached over 30,500 villages in all ten countries. More than 150,000 households/farmers tested the efficacy of the technology for at least 4 months. More than 1,820,000 triple-layer plastic PICS bags have produced and sold by 6 manufacturers, 10 distributors and an estimated 1,000 vendors. The PICS project is fostering the development of the private sector around business of this post-harvest technology. PICS has reduced risks associated with the overuse and misuse of pesticides on cowpea during storage.

Farmers as well as other members of the cowpea value chain are taking advantage of the technology to increase their income. With an investment of two to four dollars for a 100 kg PICS bag, a farmer can double his/her cowpea income. Benefits can be up to \$80/bag in



Video story of a local farmer and businesswoman from Ghana: <http://www.youtube.com/watch?v=8F-1DIEpYgA>.

only four months. The benefit of the use of the technology is going beyond farm level. Cowpea traders are taking advantage of the technology to store large quantities and sell when prices are high. Consumers alike, including students in school feeding programs, are eating clean and healthy cowpea.

Contact: Dieudonne Baributsa, Purdue University, Email: baributs@purdue.edu

Mission Statement

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

Bad Bugs...

ILTs, Small Flies, and a New Visitor



By **Alain VanRyckeghem, BCE**
 Technical Director
 InsectHelp@insectslimited.com

Insect Light Traps (ILTs) with glue boards provide essential 24 hour monitoring of tiny flying insects in food facilities. Examining and identifying the captured insects on a regular basis can give you numerous clues to determine if the pests are originating from inside or outdoors.

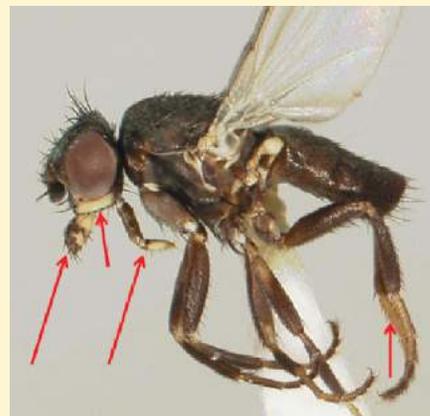
I find the most difficult group of insects to identify is the small flies. Their tiny size, similar body structure, and numerous species makes it a daunting task to identify every one that has been caught; and most likely the average technician does not want to take on that task either. Two excellent publications to help the novice and seasoned technician are: **Field Guide for the Management of Structure-Infesting Flies**, by Stoy Hedges and the **Peterson Field Guide to Insects** by D.J. Borror & R.E. White. The Peterson field guide is especially useful for identifying families of flies found outdoors.

This is the time of year small flies are active both indoors and outside. Light attracted flies will invade your structure during warm nights. They are attracted to the lamps on walls, as well as light passing through your windows. Gaps at the bottom of doors or poorly fitting gaskets allow light to come through and flies to come in. Large numbers of outdoor flies like fungus gnats, midges, or minute black scavenger flies may indicate open doors during the night shift. In special situations, fungus gnats and minute black scavenger flies may breed indoors. This is usually associated with leaks in the roof or flooring around drain pipes, or in drip pans and drains.

Some small flies are common indoor pests associated with decaying plant or animal materials. These include the drain fly or moth flies, phorid flies, fungus gnat, Small Dung flies, and fruit or vinegar flies. All of these flies, with exception of the fruit flies are strongly attracted to ILTs which can catch large numbers. You can catch some fruit flies in the ILTs but they seem to be more attracted to food baited traps.

Freeloader Flies

I have encountered a family of small flies in the light traps of food plants with more frequency this winter. The Milichiidae are a small group of flies with diverse habitats and some specialized behaviors. They are often called 'freeloader flies' or 'jackal flies' because they



Freeloader Fly, (*Desmometopa varipalpis*) is the likely species found in ILTs. This fly has patterned palps, white 'cheeks' a long proboscis and yellowish colored hind tarsal segments.

take advantage of other insects. Some attach themselves to bees to be carried along to the next flower (like hobos riding a train); while others hang about praying mantises and spiders to feed off the newly captured prey (like jackals). These are small dark flies about the size of fruit flies. The most easily detectible features of the species caught on the ILTs were the long palps with a varied pattern of color and a characteristic 'M' on top of the head (see photos). Little



The prominent 'M' on the head is a key feature for this genus.

is known on the life cycle of these flies, but we know they can breed in septic tanks and sewage beds on decaying vegetables, so I would concentrate on the pipes and drains with odors from decaying rotten vegetation or organic matter. This is similar habitat for phorid flies, drain flies and dark-eyed fruit flies (*Drosophila repleta*) as well.

By identifying and understanding the nature of the small flies you catch on the ILTs, you can properly focus on sanitation or exclusion/light management to reduce your pest problems.

Dave's Soapbox

...for what it's worth



2012 – A Record Year

Bugs are Hitting the Windshield Early



The first insect hit my windshield on February 10.

In the Pest Management and Food Safety Business you know the time to get busy again is when the 'Bugs are hitting the windshield'. I get excited when that first arthropod splat takes place. I have been known to stop the car and do a dance that looks like a cheerleader after a winning touchdown. Yes, I get really strange looks, but after months of winter, it is my way of coming out of hibernation and stretching my body like a bear leaving his cave.

Over 14,000 towns and cities in the Eastern two thirds of the United States had record high temperatures in the month of March 2012. When you think about the impact of this warming trend you may want to make predictions on what the remaining months in 2012 may look like.

Now, I will stop here and tell you that this is not the Dave's Soapbox on Global Warming. I have found that talking about global warming

is like talking about religion. So, depending on your beliefs, you may have your own opinion on global warming. Amen.

Insects are totally logical. I mean totally logical and predictable. They are programmed to respond to various stimuli, like temperature, light, and mating. Because insects are cold blooded, they respond to temperatures much differently than humans.

We as humans turn up the thermostat or put on more clothing when we are cold. We are warm blooded and we can better regulate our body temperature than insects. A one to two degree difference affects where insects hide and when they will fly into your windshield.

Humans are illogical. We often believe that all animals think and behave like humans. Pest management can become very challenging when we believe we are conquerors of nature and our control strategies don't incorporate the predictability of insects.

When an insect is cold it slows down body functions and breathes slower. This is why fumigants are less effective in the colder months because insects take in less gas. Contact insecticides are less effective in the cold months because the insects are less mobile. They hibernate (diapause) in the winter months like a bear in a cave or a bug in a crack. They can produce a glycerol liquid substance that much like automobile coolant, allows their body fluids not to freeze in harsh winter months.

Pest management is about predicting potential problems and reacting to them before they become customer complaints.

When the temperatures in the spring time are warmer than usual, we can predict that there will be more insect problems. Stored grain temperature rises faster, the outdoor ground temperatures rise faster, the ponds near the food plant warm faster, and insects move from one generation to the next faster.

Just the Facts, Dave

Most insects are active between 60° and 104°F (15 and 40°C). The ideal temperature for insect reproduction is between 77° and 90°F (25°- 35°C). Warehouse beetles can develop twice as fast at 90°F (32°C) as they can at 75°F (24°C). **They can go from egg to adult in 32 days at 90°F and 62 days at 75°F.**

The difference between a normal insect year and a troublesome year is when pest populations go through an extra generation. A fourth generation in the late summer for Indianmeal moth in the Midwest is the difference of a reproductive potential of 64 million offspring with three generations per year and 1.6 billion offspring with four generations in a season (400 x 400 x 400 x 400).

The moral of the story about pest management is simple... understand the temperatures that insects live in. Find out what the insects do and do not like. Offer conditions they do not like and they will leave or die. If the pest likes warm, give it cold, if it thrives in humidity, dry the conditions. If it needs food to survive, remove those sources. And if an insect orients its flight at night time to a human light source, turn it off.

David Mueller, BCE
d.mueller@fumigationzone.com

10th Fumigants & Pheromones Conference and Workshop

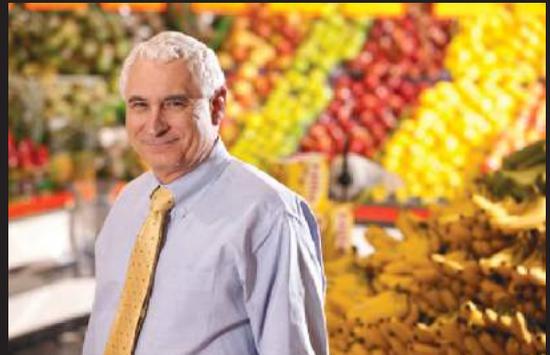


The Changing Dynamics of the US Food Supply and Major Food Safety Implications

Dr. Michael P. Doyle PhD is a world-renowned authority on food safety. Dr. Doyle published more than 400 scientific publications, edited two authoritative books, *Foodborne Bacterial Pathogens* and *Food Microbiology: Fundamentals and Frontiers*. He has given more than 500 invited presentations at national and international scientific meetings. He serves as a Director of Roka Bioscience, Inc. In 2004, he received the American Meat Institute Foundation Scientific Achievement Award. Dr. Doyle is a Member of the Institute of Medicine, National Academy of Sciences, USA, and is a graduate of the University of Wisconsin-Madison where he received a B.S. in Bacteriology, an M.S. and a Ph.D. in Food Microbiology.

Dr. Doyle is a Regents Professor and Director of the Center for Food Safety at the University of Georgia. He serves on food safety committees of many scientific organizations and has served as a Scientific Advisor to many groups, including the World Health Organization, the Institute of Medicine, the International Life Sciences Institute-North America, the U.S. Food and Drug Administration, the U.S. Department of Agriculture, the U.S. Department of Defense, and the U.S. Environmental Protection Agency.

A FEATURED SPEAKER



Dr. Mike Doyle
University of Georgia
 Director, Center for Food Safety
 Regents Professor of Food Microbiology

Dr. Mike Doyle is the go-to person when there is a food safety outbreak. He clearly understands how these complaints can affect a company's reputation. With the majority of food products being shipped into the United States now coming from international sources, the chances of a breach in food safety standards are greater. Mike will explain these trends and how this can affect you and your company. Mike is an interesting speaker with decades of experience and knowledge. Come hear what Dr. Mike Doyle has to say. "I have heard Dr. Doyle speak many times and I can't wait to hear him again."

HANDS-ON WORKSHOP



Many people learn by listening in a lecture format and some people learn by watching and asking questions. This conference will offer both. It will feature new and practical applications of pest management with a hands-on workshop with field demonstrations.

Demonstrations will include:

1. Grain bin fumigation with cylinderized phosphine
2. Grain fumigation with sulfuryl fluoride
3. New fogger technology
4. ProFume gas fumigant of a building
5. Pheromone demonstration by Alain VanRychehem and Pat Kelley
6. New packaging materials used in Germany for protection of stored products
7. New F.A.S.T. fumigant scrubber
8. Bar coding in pest management
9. Gas monitoring demonstration

Plan to attend the 10th Fumigants & Pheromones Conference and Workshop in Indianapolis, USA. Go to www.insectslimited.com for more information and call 1-317-896-9300 to register.

Dow AgroSciences LLP is our Gold Sponsor for this event. Other sponsors for the conference and workshop include: UPI (Silver Sponsor), and Curtis Dyna Products, Cytec (Bronze Sponsor).



Media Sponsors: PCT, QA, PEST, World Grain, Grain Journal, and Milling Journal

VISIT US AT: www.fumigationzone.com

GALA DINNER



Indy 500 winner Arie Luyendyk

The Gala Dinner will be held on May 16, after the first day of the conference. Buses will take the attendees and their spouses to the Indianapolis 500 track in Speedway, Indiana where they will have a chance to visit with the two time Indy 500 winner Arie Luyendyk. Arie was born in The Netherlands and has been a part of open wheeled racing all his life. He is currently mentoring Formula One racers and his son Arie Luyendyk, Jr.

We will visit the famous Indianapolis 500 Motor Speedway and Hall of Fame Museum, food and open bar, Gift Shop, a narrated trip around the track, and a stop at the Indy 500 Speedway finish line strip of bricks.

NEW TECHNOLOGY: Fumigant Scrubber



Pete Swords
Pheromone Chemist
F.A.S.T. System

In early February, the F.A.S.T. system fumigant abatement and destruction apparatus was installed in the new quarantine treatment facilities for Rose Pest Solutions. This new technology will expel and chemically break down methyl bromide gas being used to fumigate imported cut flowers and vegetables coming into the US from other countries under quarantine.

The F.A.S.T. system was customized to be a stationary 250 gallon unit to work in tandem with a

stationary fumigation chamber equipped with a gas monitoring station/office a few hundred feet away. This unit will turn over four air exchanges per hour. This durable and easily operated design allows an accelerated and convenient process for removing fumigant. Rose Pest Solutions contacted Insects Limited after the USDA in Raleigh recommended the need to eliminate the methyl bromide at this site. This unit is located on the boundary of the world's busiest airport. The F.A.S.T. system has been in use successfully for several weeks in Illinois and over one year in Indiana with no issues.

The speed of this new patented technology can be increased or decreased to fit proper aeration and abatement allotments.



Installation at O'Hare Airport in Chicago

The system can destroy methyl bromide, sulfurlyl fluoride (ProFume™ gas fumigant) and methyl iodide from a variety of fumigation situations including but not limited to: pallets, logs, shipping containers, trailers, fumigation chambers, fumigated homes, mills, and bins.

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

Congratulations



Fumigation Service & Supply, Inc. is pleased to announce the recent promotion of **Jeff Waggoner** to the position of **General Manager**. FSS is a 30 year old fumigation specialty company with offices in Indianapolis, Cincinnati, Chicago, Central Illinois, Ft. Wayne, and Cedar Rapids. Jeff started with FSS as a summer intern while attending Purdue

University. Jeff brings to this position 18 years of experience in the fumigation industry. Jeff has field researched and developed many of the new fumigation techniques used today, including Heat, CO₂ and Phosphine, EcoFume, and ProFume™. He has implemented advanced integrated pest management programs for the grain, seed, milling and food processing industry.

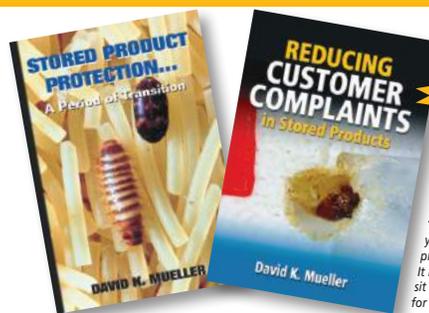
In his new role, Jeff is bringing his expertise to provide high level specialized fumigation and pest management programs with a focus on safety and results. He is a regular speaker on fumigation, food safety, and stored food safety pest management. Dave Mueller, President of FSS stated: *"Jeff's knowledge in this industry will be a valuable resource to advance our regional managers and our customers."*

Jeff is active with his family, community, and church. He is married to Brenda, and has four beautiful children; Elijah, Olivia, Isaiah, and Alaina.

40 years of Stored Product
Protection experience
captured in these two books
by entomologist
David Mueller



Special offer: Both books for \$89.95



Save \$68

"From cover to cover you can feel the tone of practical applications. It is not a book that will sit on a shelf unused. It is for people needing real answers to real situations."

Austin M. Frishman
Austin M. Frishman, Ph.D., BCE

Insects Limited
INCORPORATED

To order, call 1-800-992-1991
or go to www.insectslimited.com

Preserving Our History

Pests of Historic Houses and/or Homes with History



Patrick Kelley
p.kelley@
insectslimited.com

Whether or not you happen to work at a public historic house or you simply live in a house that has a lot of history behind it, chances are you are going to encounter similar pest issues.

Although fine craftsmanship may have gone into many homes built before the 1950's, certain structural imperfections arise after time that can allow pest entry and harborage. Cracks in the foundation, missing brick mortar and areas of wood decay can create pest highways into homes. It is interesting to note that an adult rat can fit through a ½ inch gap and many pest insects require less than a 1 mm gap to enter a structure.



Photo: P. Kelley

The Indiana Governor's Residence, built in 1928, is both a residence and historic house.

The table below lists some of the most commonly encountered pests of historic homes. Please contact Insects Limited for consultation on monitoring, treatment and management of these pests or other species that can cause damage to our cultural heritage or your own home.

Common Name	Scientific Name	Pest of:	Areas where commonly found
Furniture Beetles	<i>Anobium punctatum</i>	Wood	These beetles often first infest the wooden joists in high moisture areas like crawlspaces, after which they can move up into furniture.
Carpenter Bees	<i>Xylocopa spp.</i>	Wood	Carpenter bees love to nest in unfinished natural wood on the exterior of any home.
Carpenter Ants	<i>Camponotus pennsylvanicus</i>	Wood	Carpenter ants are attracted to moisture damaged wood around doors and windows or in kitchens and bathrooms.
Termites	<i>Reticulitermes, Incisitermes & Kaloterms sp.</i>	Wood	Termites can attack any wood or books in the house. They can originate from the soil (subterranean termites), fly into the house or can be brought into the home with wooden objects (Drywood termites).
Webbing & Casemaking Clothes Moth	<i>Tineola bisselliella, Tinea pellionella</i>	Fabric & Animal Material	Clothes moths are generally brought into the house with infested wool rugs, furs or clothing. Left undisturbed in attics and beneath furniture, they can be extremely destructive.
Dermestid Beetles	Multiple species; <i>Anthrenus, Attagenus, Trogoderma, Thylodrias</i>	Fabric & Animal Material	Dermestid beetles can be introduced into homes through infestations of abandoned wasp nests or accumulations of dead insects within the house or wall voids. Exterior gardens with Spirea or other flowering plants are attractive to many species.
Norway Rat	<i>Rattus norvegicus</i>	General	Norway rats prefer to make their nest in soil and will travel inside and to upper floors for food.
House Mouse	<i>Mus domesticus</i>	General	1/4 inch gaps allow entry from outdoors and mice prefer to nest inside the house using anything that they can chew up as nesting material.
Raccoons	<i>Procyon lotor</i>	General	Raccoons notoriously find gaps around chimney flashing or in roof eaves to access attic space.

CALENDAR OF EVENTS:

Indy

May 16-18, 2012

"Pest Management Around the World"

*** **May 16-18, 2012**
10th Fumigants & Pheromones
Conference and Workshop, Indianapolis

** **October 15-19 2012**
(Controlled Atmosphere and Fumigation
International Conference)

Pete Swords Presenting on the new
F.A.S.T. Scrubber; Antalya, Turkey

- * attend
- ** present
- *** organize



“Quotable Quotes”

*“Life is hard; it’s harder
when you’re stupid”*

—John Wayne



**Top 20
Bed Bug
Cities**

- | | |
|----------------------|---------------------------|
| 1. Cincinnati | 11. Houston |
| 2. Chicago | 12. San Francisco/Oakland |
| 3. Detroit | 13. Cleveland |
| 4. Denver | 14. Boston |
| 5. Los Angeles | 15. Dayton |
| 6. Columbus, OH | 16. Las Vegas |
| 7. Dallas/Fort Worth | 17. Honolulu |
| 8. Washington, D.C. | 18. Baltimore |
| 9. New York | 19. Raleigh/Durham |
| 10. Richmond, VA | 20. Philadelphia |

Source: Orkin

NEWSLETTER

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.



© Copyright 2012 Insects Limited, Inc. All rights reserved. No part of this publication may be reproduced or transmitted by any means without permission of the editor.

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

Presorted Standard
U.S. Postage
PAID
Indianapolis, IN
Permit #9555

Attention Mailroom Personnel (or Addressee)—Please Reroute if Necessary