



THE gatekeeper

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The Indian meal moth

Public Enemy #1 of Stored Foodstuffs

By Guilaine Pageau, *M. Env., Microbiologist*

There are many species of meal moths that prey on stored food (see box on p. 2). The most common variety is the Indian meal moth. Considered public enemy #1 of stored food, this insect feeds on a wide variety of foodstuffs—dried fruits, chocolate, nuts, peanuts, grains of all kinds, spices, powdered milk, animal feed, seeds, dried meats, and dried pasta, just to name a few.

The moth is an insect that undergoes a complete metamorphosis (egg, larva, pupa, adult). The larva looks nothing like the adult. The metamorphosis occurs in the pupa (cocoon) phase. Adults are easy to identify by their coloring. The front wingtips are reddish brown with a coppery hue. The whitish larvae can take on a green, pink, or brown tinge depending on what they eat.

The moths do the most damage to food items at the larval stage. Larvae contaminate food with their excrement and the silk webs they leave as they move across the product. They are voracious eaters and can even chew through packaging. Females lay 200 to 400 eggs, which are deposited all at once or in little groups in the food that will feed the larvae. Under ideal conditions, the life cycle (from egg to adult) takes one month, and there are generally six to eight generations per year.

The pheromone trap—an essential tool

By installing traps (sticky or funnel-shaped) laced with pheromones, we can detect these undesirable creatures in the early stages of an

infestation. This allows us to quickly take action where it is needed most, thereby reducing the need to use pesticides, when the number of captures reaches a critical level. This critical level varies depending on the type of establishment since there is no specific action threshold in urban pest management. Most often, a single insect is sign enough that pest control measures are needed! The key is an effective monitoring system.

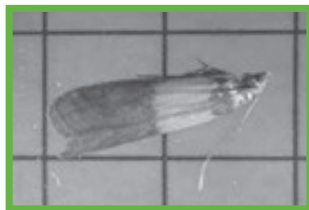
In urban pest management, pheromone traps are used mostly for identifying, rather than eradicating, pests. However, they can be used for mass-trapping in some cases when an insect population needs to be cut down quickly.

What is a pheromone?

A pheromone (from the Greek *pherin*, to transport, and *homan*, to stimulate) is a chemical messenger used by insects to communicate. In most cases it is specific, meaning the pheromone is unique to each species. There are several types of pheromones: trail, alarm, death, aggregation, sex, and others.

Over the years, researchers have isolated these chemical substances. Sex pheromones are the most powerful—and the most common choice in pest management. Females produce this pheromone to make it easier for males to find them. The sex pheromone is vital for species with a very short adult life, such as the Indian meal moth whose adult lifespan ranges from seven to ten days. For the species to survive, it is very important for the male and female to find each other quickly.

A few years ago a product was developed to attract both males and females by combining the sex pheromone with an attractant to induce females to lay eggs.



Indian meal moth



Mediterranean flour moth

There are no hard and fast rules about where to place pheromone traps or how many traps to use. A number of factors must be considered, such as the type of establishment, the area targeted, air circulation, the biology of the targeted pests, etc. In general, pheromones attract insects up to a distance of 18.3 m (60'). Placing traps every 16 m (50') therefore provides good coverage. This should be reduced to 10 m (30') if the warehouse is full or already infested. Pheromone traps for moths are set at a height of 1.8 m (6'). Traps should not be placed too close to doors to avoid attracting insects from outside. Traps can be also placed outdoors, at least 25 m (82') from the building, to capture critters before they have a chance to get in or if the suspected source of the infestation is outside the building. This approach allows you to evaluate pest pressure in the surroundings.

Traps must be checked regularly and results recorded in order to monitor any changes in the pest problem over time. An insect caught in a pheromone trap does not necessarily mean other steps need to be taken. However, a sudden increase in the number of insects captured in one or more traps indicates a thorough inspection is needed to identify the source as soon as possible. Extra traps may be used in complicated cases to help localize the infestation. Traps can also be placed in trucks carrying foodstuffs to determine whether insects were present in the load.

Here are some rules of thumb for preventing moth-related problems:

- Carefully inspect all materials upon delivery.
- Rotate stock using the “first in, first out” method.
- Keep materials separated—if a specific product is infested, this will make pest management easier.
- Set pheromone traps in order to detect infestations before they spread.
- Implement a regular and effective cleaning schedule; this will greatly reduce the risk of infestation.
- Store at-risk foods in refrigerators or colder areas of the building.
- Immediately isolate infested merchandise because mature larvae will leave the product to make their cocoons, and adults are skillful flyers.

English names	Latin names	French names
Indian Meal Moth	<i>Plodia interpunctella</i> (Hübner)	Pyrale indienne de la farine
Mediterranean Flour Moth	<i>Ephestia kuehniella</i> (Zeller)	Pyrale méditerranéenne de la farine
Almond Moth	<i>Ephestia cautella</i> (Walker)	Pyrale des amandes
Tobacco Moth (or Cocoa Moth)	<i>Ephestia elutella</i> (Hübner)	Pyrale du tabac (ou Pyrale du cacao)
Raisin Moth	<i>Ephestia figulella</i> (Gregson)	Pyrale du raisin
Meal Moth	<i>Pyralis farinalis</i> (Linnaeus)	Pyrale de la farine

Maheu&Maheu Unveils Its New Head Office

In October 2012, Maheu&Maheu officially unveiled its new facility on rue des Rocailles in Quebec City, accompanied by those who helped complete the building. The \$4 million project, which the builders hope will receive LEED certification, is a blend of wood and metal that puts its occupants' comfort first. The store's curtain wall is a first in Quebec and the company that created it, IC2 Technologies, was recognized for this innovation (<http://contech.qc.ca/trophees-laureats-2012>). It's a load-bearing wooden structure in which the glass is sealed directly in the wood to eliminate the thermal bridge. The building boasts a number of other features designed to boost its energy efficiency and even has a green roof.

As an industry leader in pest management, we felt it was only logical to build a head office in line with our values and policy of sustainable development.

More than 20 employees are based at the company's head office, which houses the main warehouse and the Québec-Chaudière-Appalaches regional office.

Maheu&Maheu Acquires Acadia Pest Control

In December 2012, Maheu&Maheu acquired Acadia Pest Control Inc. This is the culmination of a long process that will help Maheu&Maheu, the third largest pest management company in Canada, consolidate its operations in Atlantic Canada.

With 30 years' experience in the industry, our Atlantic region supervisor Marc Gagnon will play an active role in making the transition as smooth as possible.

Maheu&Maheu has been active in New Brunswick since the late 70s. Founded in Quebec City in 1933, the company employs 110 people and operates in Quebec, Ontario, and New Brunswick. With its solid network of subcontractors, the company serves customers across Canada and is part of the North American Food Protection Alliance.

Groupe Leclerc and Maheu&Maheu, Partners for Over 50 Years

Groupe Leclerc is a true food pioneer, and its products are distributed in over 20 countries, on four continents. Drawing on an innovative marketing strategy, Groupe Leclerc has become an unparalleled industry leader. This incredible achievement stems from the company's tremendous blend of determination, vision, and passion.



Groupe Leclerc Health and Wellness Center

The adventure begins

In the backroom of his family home on rue Arago in Quebec City in 1905, François Leclerc baked his first cookies. Every morning, customers would come to enjoy his fresh-baked treats. François Leclerc decided very early on to diversify his production, and the cookie shop grew to be a vibrant fixture in the community. In 1920 the young company bought its first delivery trucks to expand its territory into the Chaudière-Appalaches, Saguenay/Lac-Saint-Jean, Gaspésie, and Côte-Nord regions. In 1931 a fire destroyed the rue Arago building. Their heart still in it, the family decided to move the business to nearby rue Saint-Vallier, where some 20 employees would bake almost 40 different kinds of cookies for years to come. In the late 60s, Jean-Robert Leclerc took the helm, and the third generation wasted no time getting to work to turn a new page for the company. The wooden boxes formerly used to hold bulk cookies gave way to plastic and cardboard containers. With the cookies now available in supermarket chains, a time of rapid growth followed. The company then diversified its products to offer 70 varieties of products made by some 40 employees.

In the 80s, the fourth generation stepped in. At a new facility in Saint-Augustin-de-Desmaures, the wafer cookie and an entirely new product category—snack bars—were born. Groupe Leclerc invested in ultramodern facilities in Saint-Augustin-de-Desmaures, Quebec, and Hawkesbury, Ontario, which stood out as two of the most mechanized factories in the Canadian agrifood sector.

The taste of wellness

In the early 2000s, Leclerc began to shift toward healthier products. With studies showing a clear link between certain types of fat and heart disease, the company decided it was time to make a change. In a bold—and ultimately hugely successful—move, Leclerc created a line of healthy snacks that are certified trans fat-free and enriched with additives to improve consumers' health. While health had become a priority, great flavor was by no means forgotten.

The Leclerc Laboratory of Health and Wellness opened in April 2012. This 24,000 sq. ft. building houses an R&D lab, a test kitchen, and a

physical fitness center. This large-scale project is a point of pride for the company—as well as a concrete way to thank employees and contribute to their growth. Staff members' response to this value-added initiative show just how big an impact it has had and how much it contributes to the sense of belonging.

Quality, whatever the cost

Sébastien Beaulieu, Vice President, Quality at Groupe Leclerc, played an active role in implementing the company's quality systems. "The quality of our products is our top priority, no matter what the cost. The systems and programs we develop support this commitment to quality. It's part of our culture at Leclerc," explained Beaulieu. "Our suppliers are evaluated, carefully audited, and ranked by risk," he added.

The importance of a quality system is paramount for the company both in terms of ensuring food safety and marketing its products at the global level. Regulatory agencies and auditing firms work side-by-side to continually improve the systems in place.

At Maheu&Maheu, we stand out for our cutting edge pest management programs. Specifically developed for the agrifood industry, they integrate seamlessly with existing Groupe Leclerc food safety systems. Geysar®, an electronic documentation system, gives quality coordinators online access to complete information on all the services we provide out at the company's facilities. From inspection results to corrective action request follow-ups and trend analysis, all the information can be found in one place. Sébastien Beaulieu paved the way for paperless audits by insisting that auditors stop asking to see printed forms filed in a binder. The industry is gradually moving towards this direction because of innovators like Sébastien.

Beyond these programs, Groupe Leclerc appreciates the rigor and experience of our technicians, the support of our technical department, and the fact that we offer a single point of contact to ensure the same high level of pest management services at each of the locations we serve.

Global growth

Groupe Leclerc has great ambitions about developing its market in the United States. Energy costs and market diversification make geographic expansion attractive. Groupe Leclerc currently operates two factories in the U.S., located in Tennessee and Pennsylvania. Production is at full capacity, and the company now manufactures between 500 and 600 national and private brand products.



Sébastien Beaulieu, Vice President, Quality at Groupe Leclerc
Jean-Philippe Tremblay, Director of Corporate Development at Maheu&Maheu

Recent Appointments

Valérie Gagnon



An employee with Maheu&Maheu for over 15 years, Valérie Gagnon began as a technical advisor at the Quebec City store in the summer of 1995. She then worked at the Rimouski office before returning permanently to Quebec City in 2000. She supervised retail sales and provided professional development for technical advisors from 2000 to 2012. Valérie has been involved with numerous technical and IT projects over

the years. When we created the project coordinator position, we immediately thought of her, and Valérie enthusiastically accepted our challenge. She started her new duties in January 2013 by putting our customers' service programs and monitoring network maps on the extranet.

We wish you great success in your new position, Valérie!

Marc Gagnon



Before joining Maheu&Maheu in 2002, Marc Gagnon worked for 20 years on behalf of Acadia Pest Control. After 10 years with us, he was ready for a new challenge and was promoted to supervisor of the Atlantic region. Maheu&Maheu was constantly expanding in the area and needed an experienced person in the busy hub of Moncton. Marc will focus most of his energy in New Brunswick where he will

provide new technicians with support and training in the field. He will also be in charge of integrating customers recently acquired from Acadia Pest Control, which, coincidentally, was where he began his career in the industry. Marc's return to the Moncton area puts Maheu&Maheu in a strategic position to expand and develop its presence in Atlantic Canada.

Good luck Marc!

Milène L. Fillion



Milène L. Fillion cut her teeth at Maheu&Maheu as a technical advisor at the Quebec City store in 2009. Rapidly gaining confidence, she was asked to temporarily fill in as director of the Quebec City store, a challenge she tackled admirably. When Valérie Gagnon was appointed project coordinator, we also needed a retail sales supervisor. So we altered the position to customer service supervisor as the duties go

beyond operations of the rue des Rocailles head office in Quebec City. Since Milène had already mastered the bulk of the required tasks beforehand, she has settled nicely into her new position.

All the best, Milène!

Steeve Brassard



With 15 years' experience as a pest management technician under his belt, Steeve stands out for his mastery of quality systems and his ability to promote our programs in his work sector. When he decided to look for new challenges, it was only natural for us to offer him a position on the sales team. Steeve is now a technical consultant for the Québec-Chaudière-Appalaches regional office and will be a tremendous

asset for business development.

Great success in your endeavors, Steeve!