Insects and Flies Galore

Fly Control

Effective control of fly populations depends on prioritizing the control of larvae in breeding sites. This can lead to a reduction of over 80% in adult populations.

To achieve this control, you need to:

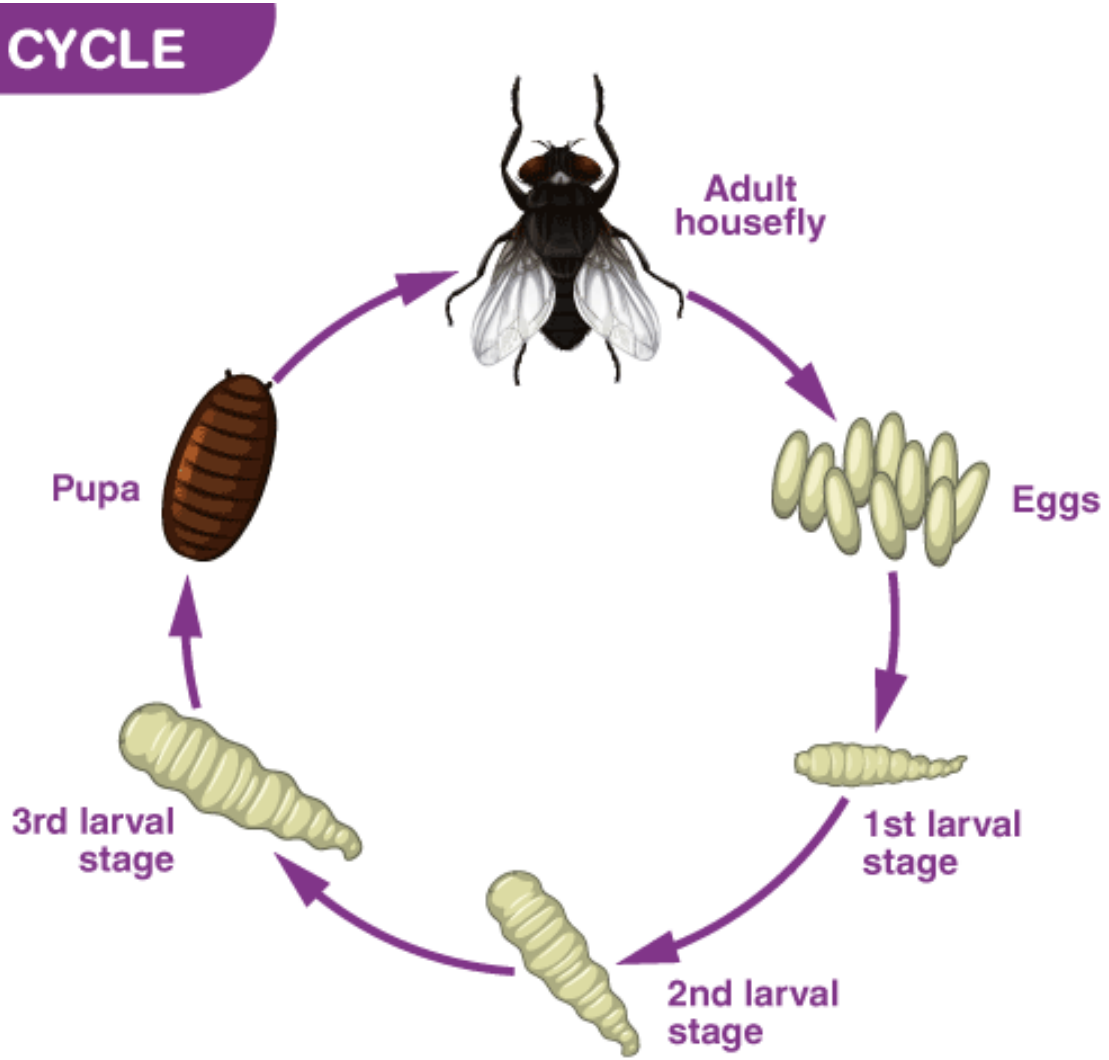
- Identify and understand the biology of the fly and its life cycle
- Improve and continue with good sanitation and hygiene practices
- Train staff accordingly
- Use correct application methods, equipment and nozzles

About Flies

- Lifespan: 28 days (Male, In High Temperature, Low activity, Adult)
- Scientific name: Musca domestica
- Class: Insecta
- Order: Diptera
- Domain: Eukaryota
- Family: Muscidae
- Kingdom: Animalia

Types of flies

Life Cycle of a Fly



Life Cycle of a Fly

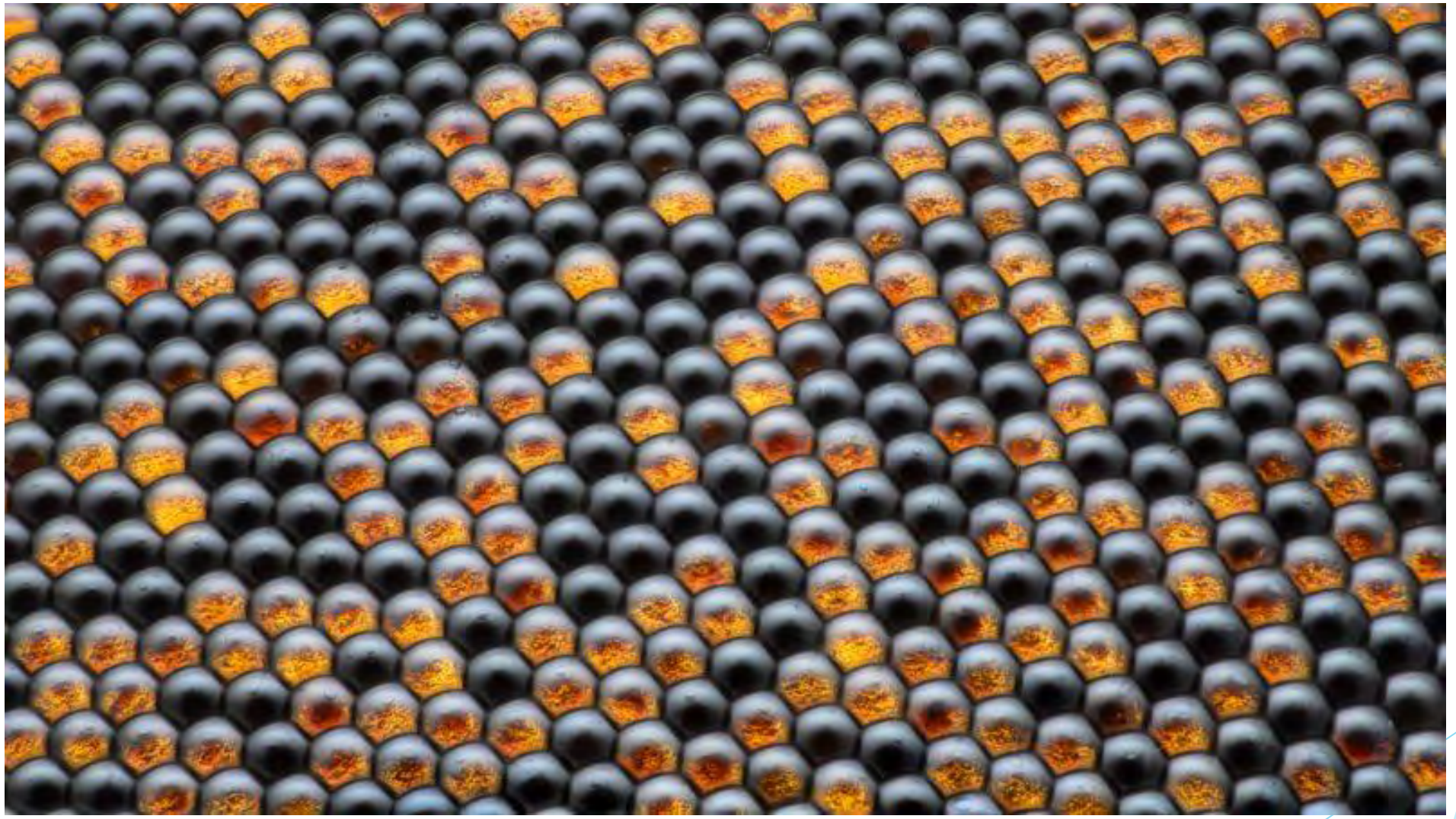
- Each female housefly can lay up to 500 eggs in her lifetime, in several batches of about 75 to 150.
- The eggs are white and are about 1.2 mm in length, and they are deposited by the fly in a suitable place, usually dead and decaying organic matter, such as food waste, carrion, or feces.
- Within a day, larvae (maggots) hatch from the eggs; they live and feed where they were laid.
- They are pale-whitish, 3 to 9 mm long, thinner at the mouth end, and legless.
- Larval development takes from two weeks to 30 days.
- The larvae avoid light; the interiors of heaps of animal manure provide nutrient-rich sites and ideal growing conditions, warm, moist, and dark.
- At the end of their third instar, the larvae crawl to a dry, cool place and transform into pupae.
- The pupal case is cylindrical with rounded ends, about 8 mm (5⁄16 in) long, and formed from the last shed larval skin.
- It is yellowish at first, darkening through red and brown to nearly black as it ages.

About Flies

Flies look at the world in quite a different way than we do.

- Their eyes are made up of thousands of individual visual receptors called ommatidia, each of which is a functioning eye in itself.
- Therefore, a fly's vision is comparable to a mosaic, with thousands of tiny images that converge together to represent one large visual image. The more ommatidia a compound eye contains, the clearer the image it creates.
- A fly's eyes are immobile, but their position and spherical shape give the fly an almost 360-degree view of its surroundings.

For Interest



2019 Photomicrography Competition
Housefly compound eye pattern - Dr. Razvan Cornel Constantin

About Flies

- Fly eyes have no pupils and cannot control how much light enters the eye or focus the images.
- Flies are also short-sighted — with a visible range of a few yards, and have limited color vision (for example, they don't discern between yellow and white).
- On the other hand, a fly's vision is especially good at picking up form and movement. Because a fly can easily see motion but not necessarily what the moving object is, they are quick to flee, even if it is harmless.

About Flies - House Flies

- House flies have great visual skills thanks to their five eyes. Two are compound eyes and three smaller eyes are used to detect movement.
- Since houseflies perceive time more slowly than humans, visual images appear in slow motion to them. This phenomenon makes them adept at avoiding extermination by humans with fly swatters or newspapers

Diseases

- FLIES CAN SPREAD DISEASE
- Since house flies regularly feed and lay eggs on feces, garbage, decaying animals, and other filthy places, they can transfer disease-ridden microbes when they land on humans, household surfaces, and food that has been left out. Because of this, many fly species are known to spread disease to humans. In fact, the common house fly is suspected of transmitting at least 65 diseases to people, including:
- Dysentery
- Diarrhea
- Cholera
- Typhoid fever
- Tuberculosis
- Salmonella

And more

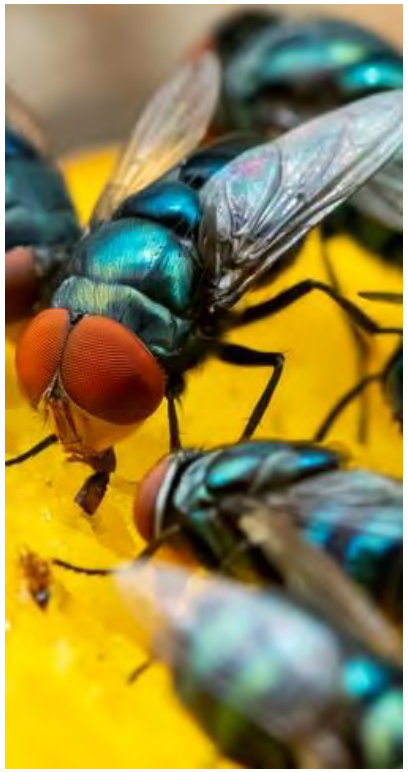
The most annoying pest!

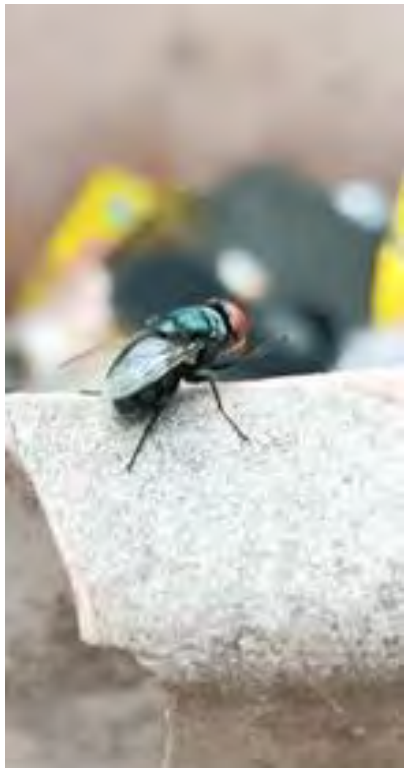
Fly Control

- Once acceptable levels of control have been achieved a maintenance cycle should be maintained.
- Larval control is critical
- Surface spraying coverage should be > 90%
- Baits – Strategically placed in and around problem areas
- Ensure insect resistance management – utilization of different classes of insecticides is important

A forensic entomologist examines insects at a crime scene to help determine the time of death.

How do we control flies?






Firstly, Hygiene

Control Measures for Flies

Hygiene

- Inside and Outside of establishment

Then introduce Integrated Pest Management Program

- Exclusion
- Insect Light Traps
- Insecticide Treatments
  - Surface Spraying
  - Baiting
  - Larvicide
  - Traps

Exclusion

- An integral part of any Integrated Pest Management (IPM) program, exclusion refers to techniques that include the repairing, sealing off and shutting down of any common entry points for pests around your facility. Exclusion is a great proactive step you can take to help keep pests out.

- Best practices in exclusion include:
  - An assessment of your property, followed by creating and implementing a plan to address potential places where pests can enter your facility.
  - Addressing possible pest entry points, including weather-resistant sealants, door sweeps, replacement parts and even air curtains.

What is the purpose of an Insect Light Trap?

An insect light trap is a device that uses light to attract and trap flying insects, such as moths, flies, mosquitoes, and beetles. The trap typically consists of a light source & a glue board.

Insect light traps are commonly used in a variety of settings, including homes, businesses such as restaurants, kitchens and outdoor areas, such as parks and campgrounds. They are particularly effective in controlling populations of nuisance insects, such as mosquitoes and flies, and can be used as part of an integrated pest management program.

In addition to their practical uses, insect light traps are also used by researchers and entomologists to study insect populations and behavior. By collecting and analyzing the trapped insects, researchers can gain insights into the distribution and abundance of different insect species.

Why are insect light traps important?

- In addition to hygiene management, ILT's are another prevention and control measure to assist in integrated pest management program

Although not all insects carry diseases, the FLY is the biggest enemy

  - A single Fly carries up to 33 million highly dangerous microbes
  - Flies vomit every time they land

- The UV-A light attracts flying insects
- 80% of flies brain is used for sight

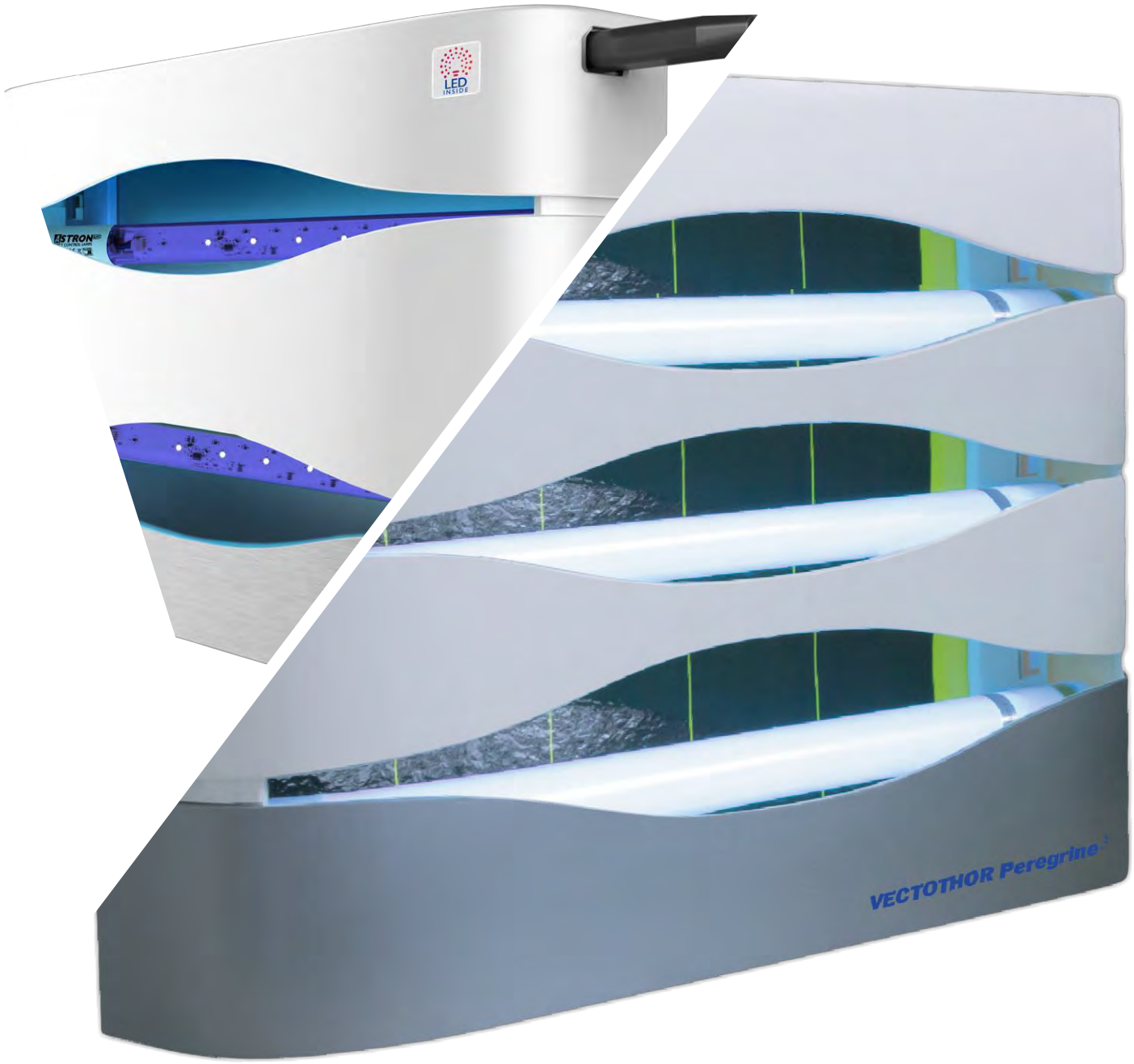
ILT's Available in the Market - ZAPPER

- Original a High-Tension Grid unit was used - ZAPPER
  - Kills the insect with a "Zap" of electricity

- Pros and Cons
  - Pro – Insect dies instantly
  - Cons – An abundance of bacteria becomes airborne at the time a fly is electrocuted. Ref. University of Wisconsin Report
  - Bacteria from exploding insects can travel up to 6 feet from the electric grid and even further on-air currents Ref. Kansas University

ILT’s Available in the Market – Florescent UV-A or LED UV-A

- Use Fluorescent UV-A / LED light to attract flying insects
- No contamination
- Pesticide free glue board



General Rules for Placing of ILT's

Identify the need. Is there a contamination risk? Is there open product or process which flying insects could contaminate?

Determine type and placement. In addition to the strategic points noted above, ILT placement should be determined by the specifics of the kitchen and insect sightings.

Monitor the kitchen. Once the ILT's are set, if a trap suddenly starts collecting a lot of insects, you know there is a problem in that area. You may need to incorporate other management tools, such as exclusion, sanitation or chemical control, to eliminate the source of the problem, then retain the ILT for continual management and monitoring.

Placement of ILT's – Step 1

- Identify insect invasion routes and sources of insect infestation.
- Identify from where insects are entering into your building.
  - For Example,
  - Employee entrances
  - Receiving/ Shipping Dock, etc.
- It is important to place insect light traps close to the entry routes of insects to prevent them from entering inner areas.
- By installing insect light traps near the entry points, they can immediately trap the invading insects.
- It is also recommended to install insect light traps around wet area or near garbage containers, where insects are often infested.

Placement of ILT's – Step 1

- Determine the specific installation place of the insect light traps.

Here are some notes on the installation of insect light traps.

Note 1

- Do not leak the light of the traps to the outside.

- The lamp emits ultraviolet rays (invisible to humans) to attract insects, If the light leaks outside, it will attract insects from the outside to the inside.

- Be careful when installing traps near doorways or windows.

- Do not place the traps near or under light - they must not compete against light

Placement of ILT's – Step 1

Note 2

- Place the insect light traps under 2 meters, we recommend around 1.6 to a maximum of 2 meters
- Flying insects (such as small fruit flies) cannot fly that high; they fly around at a height of 1.6 – 1.8 meters (know your insects)
- In addition, it is inconvenient to replace glue boards if they are installed too high

Placement of ILT's - Step 1

Note 3

- Do not install insect traps near production lines or other areas where there is a risk of insect contamination.
- The idea is to attract the insects away from food handling areas.

Placement of ILT's – Step 2 Areas

There are two main areas to consider here.

- Area 1: Near doorways

- Human and material (products and ingredients) entry/exit points.
- It is necessary to install the insect light traps to capture the invading insects immediately while preventing the light from leaking outside when the door is opened.
- In many cases, it is recommended to place insect light traps near the door with the light of the traps facing inward (toward the inside of the building), while preventing the light from leaking to the outside.
- If there is a window around the installation site, be careful because the light may also leak outside.

Placement of ILT's – Step 2 Areas

Area 2: Inner area beyond the entry point

- As mentioned, since insect light traps attract insects, they should not be installed close to areas that you want to protect from insects, such as near manufacturing or packaging lines.

- Ensure the trap covers the entire area, if more than one trap is required install according the traps square meterage distance
  e.g. a large oven is running in the middle of the floor, a light trap would need to be placed on both sides of the room

- Ensure there is a power source close to the placement of the insect light trap or you may need an electrician to set up a power source prior to installation.

Placement of ILT's - Step 3

- Select a suitable model of insect light traps.
- Effective for the area
- Depending on the insect light traps, there are different ranges that can attract flying insects.

Feature	Specification
Coverage	80 sq m (900 sq ft)
Attraction grid	Optimises landing rate by 30%
Light source	2 x 15w PHILIPS Long-life UV-A
Electronic Ballast	Yes
Case	Coated steel with ABS cover and grid
IP Rating	21 (Drip-proof)
Lamp-life	18,000 hrs
Dimensions	470 x 100 x 325mm (18.5 x 12.8 x 3.9in)
Mounting	Wall
Power Consumption	35w
Weight	4 Kg

Placement of ILT's – Step 4

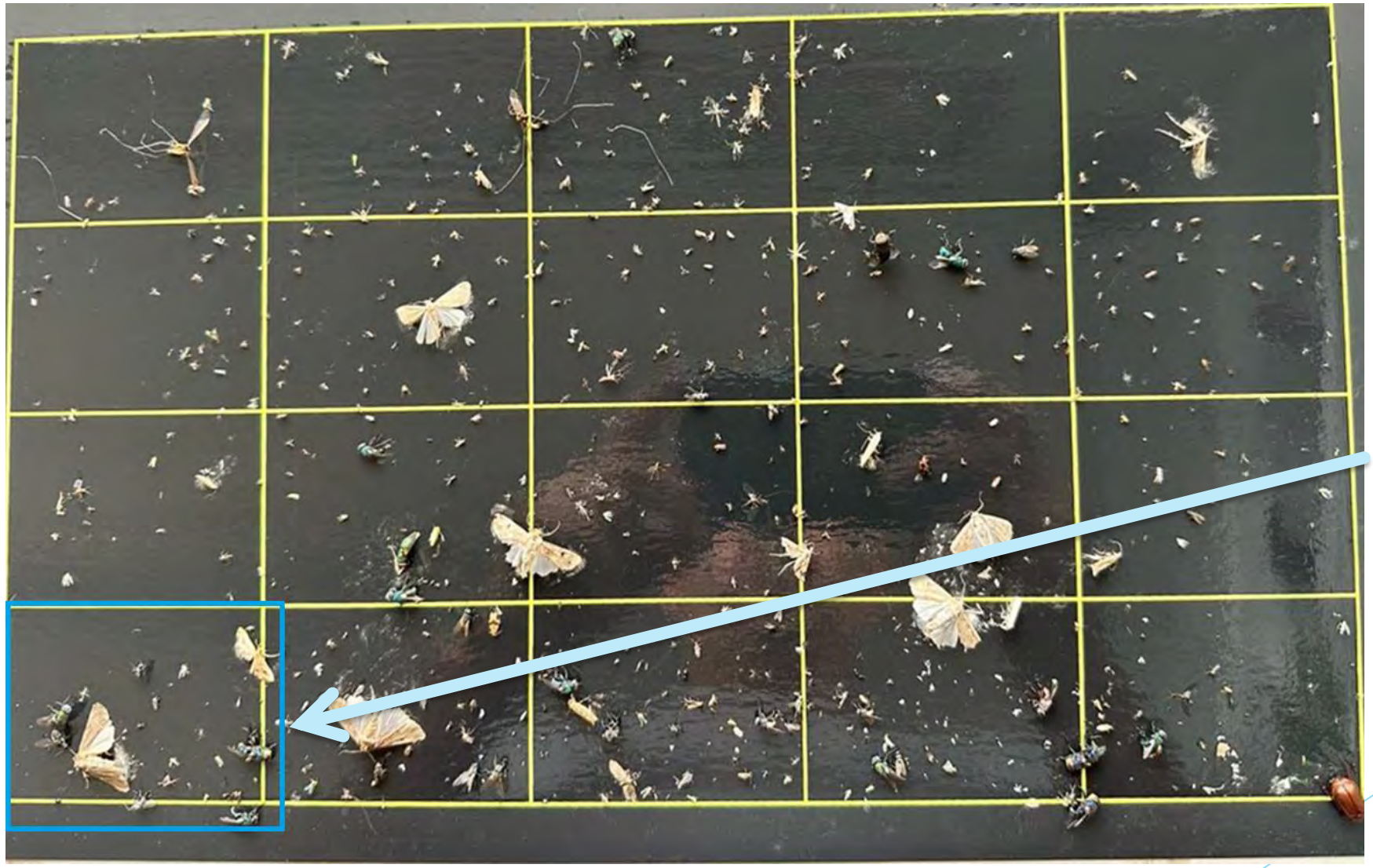
- Keep traps ON at night. (24 hours a day).
- Insect traps are more effective at night.

Maintenance of ILT’s

- ILT’s require regular maintenance
  - Glue boards need to be changed monthly or according to audit specifications during peak season.
  - They need to be cleaned as dust etc.will accumulate, this includes the tubes.
  - Catch Trays need to be cleaned and emptied out.

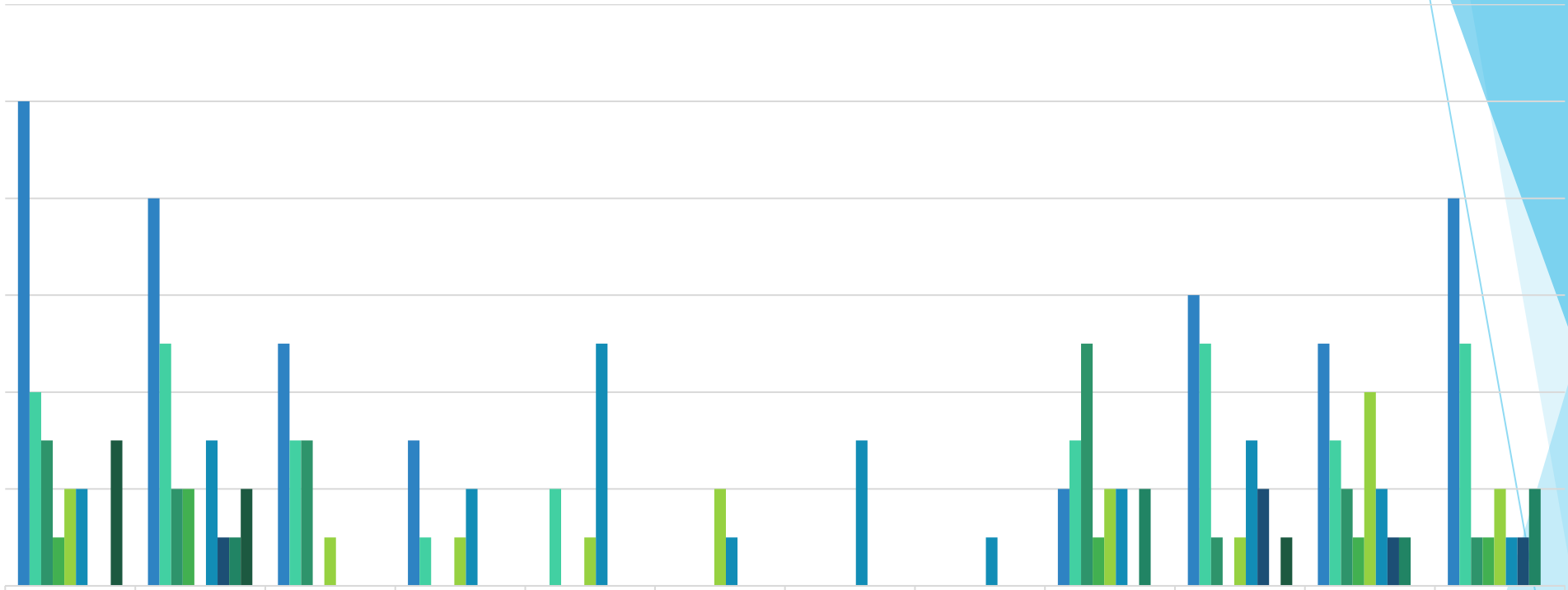
  - Fluorescent UV-A Tubes need to be replaced annually or
  - LED UV-A Tubes need to be replaced around 36 month

Glue board Maintenance & Records



Count the different species on the busiest block and divide by 30 to get %

Trend Report & Fly Count



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
House Fly	10	8	5	3	0	0	0	0	2	6	5	8
Fruit Fly	4	5	3	1	2	0	0	0	3	5	3	5
Blow Fly	3	2	3	0	0	0	0	0	5	1	2	1
Flesh Fly	1	2	0	0	0	0	0	0	1	0	1	1
Drain Fly	2	0	1	1	1	2	0	0	2	1	4	2
SPI	2	3	0	2	5	1	3	1	2	3	2	1
Butterfly	0	1	0	0	0	0	0	0	0	2	1	1
Bees	0	1	0	0	0	0	0	0	2	0	1	2
Other	3	2	0	0	0	0	0	0	0	1	0	0

Applications

- Traps
- Baits
- Larvicide
- Surface Spray

ENSYSTEX®
THE INNOVATORS

Traps

- Traps use a food based attractive to lure flies into the trap, from which there is no escape.

Our recommendation is

ECOTHOR ACTIVE NATURE FLY FREE TRAP AND GRANULES

ECOTHOR
ACTIVE NATURE®

FLY-FREE

✓ 100% NATURAL
✓ PESTICIDE-FREE

ECOTHOR
ACTIVE NATURE®

100% Natural – pesticide free

- Unique and highly attractive, food-based lure
- Draws the flies into the proprietary FLY-FREE Traps, from which there is no escape
- Control flies in any outdoor area... resorts, holiday parks around commercial food processing and food handling establishments
- Around livestock, municipal waste sites and more
- You can even enjoy the outdoor spaces around your home fly-free!

So where do we start

SITE PROCEDURE

- SITE SURVEY
- CHARGE TRAPS (GRANULES + WATER)
- POSITION AT CRITICAL POINTS (1.5 m high, 15 m intervals)
- CHECK WATER LEVELS & REFILL
- IF FULL - DISPOSE OF FLIES AND REPLENISH

Site Survey

- The aim is to form a protective perimeter all around the buildings to be protected by placing the Traps every
  - 10 – 15 metres

It's perfectly simple.

1

Drop the FLY-FREE GRANULE sachets into the trap

2

Add Water

Hang / Place in position

3

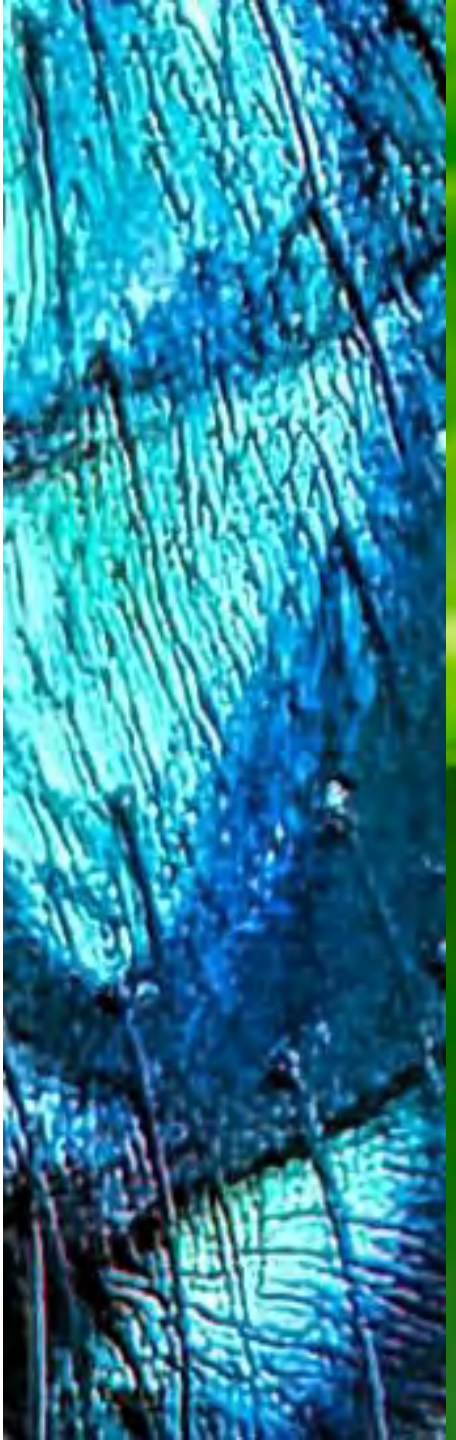
And it really works!

Some important points

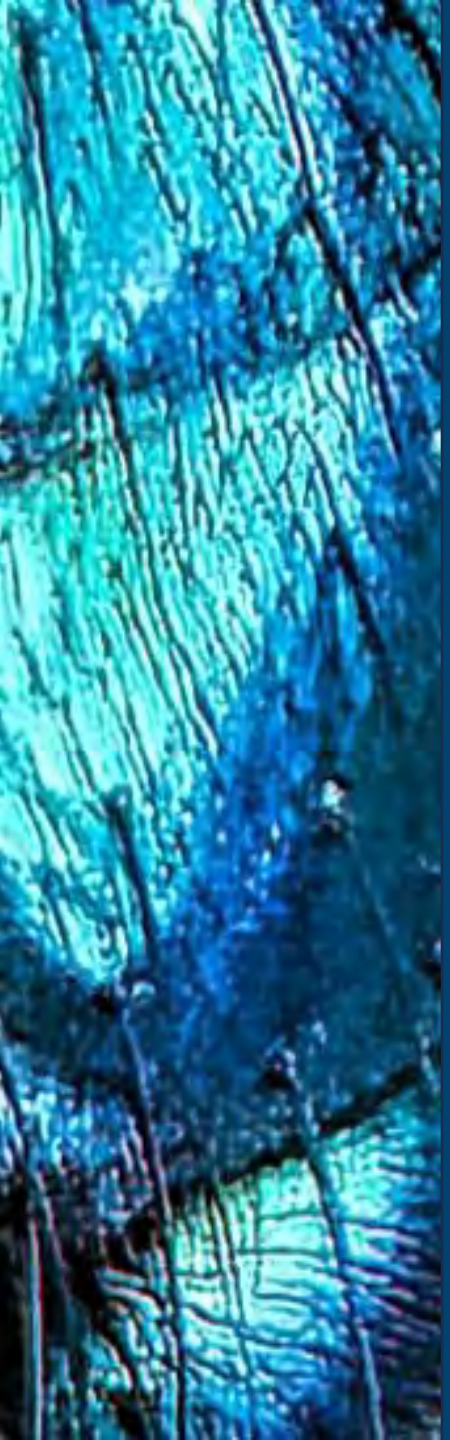
- We recommend you keep Traps away from strong competing odour sources such as manure heaps, sewage and fermented organic materials
- Whilst the flies adore the smell of FLY-FREE, it is not so pleasant for people, so keep your Traps away from your living areas
- Do not let the liquid inside the FLY-FREE Trap evaporate completely
  - Add water from time to time and top up to the initial level
- After 30 – 60 days, safely dispose of the contents and reactivate with fresh FLY-FREE GRANULES and fresh water

ENSYSTEX®

THE INNOVATORS



Bait



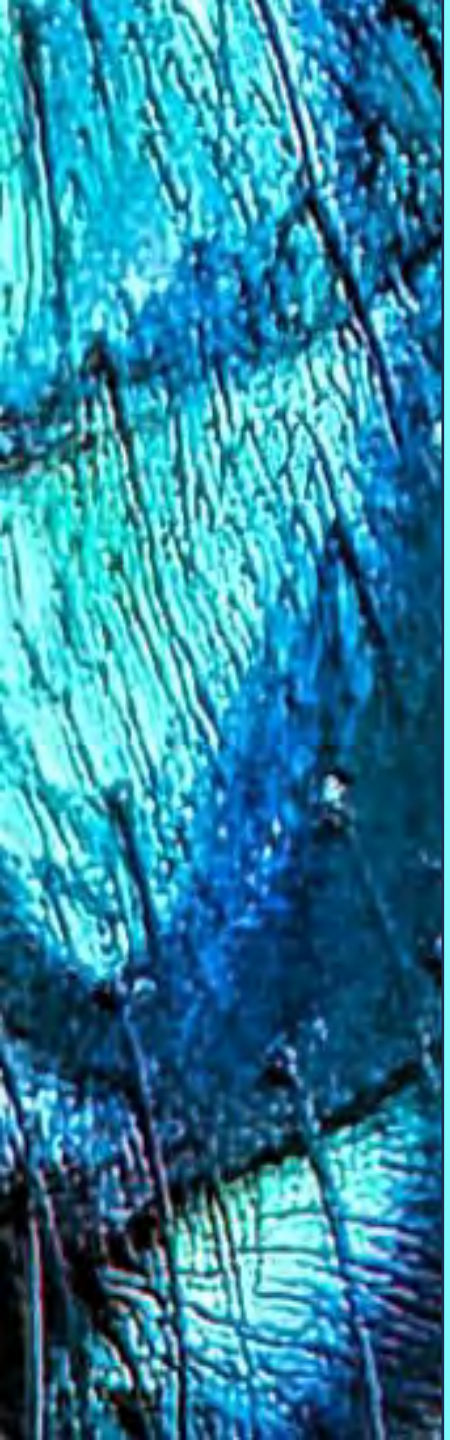
Bait

- Baits “attract and kill” to specially target a insect in a specific area
- Reducing Environmental Contamination and destruction of beneficial insects.

Our recommendation is

VECTOTHOR™

FLY BAIT




READ SAFETY DIRECTIONS BEFORE OPENING OR USING
VECTOTHOR™
FLY BAIT
ACTIVE CONSTITUENTS:
5 g/kg IMIDACLOPRID
1 g/kg (Z)-9-TRICOSENE
GROUP 4A INSECTICIDE
Ready-to-use fly bait granules for the control of adult houseflies and other houseflies (including organophosphate resistant strains) in commercial, industrial and domestic areas, as per the DIRECTIONS FOR USE
Contents:
500 g
DIRECTIONS FOR USE
NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.
ENSYSTEX

VECTOTHOR™
FLY BAIT

DEADLY
FOR FLIES!

EASY FOR YOU...

Applications

VECTOTHOR FLY BAIT™ has various applications.

- **Scatter Application**
  - Scatter onto dry level surfaces e.g. pathways, window ledges or shallow dishes (do not put in piles, must be scattered.
  - Recommended dosage 2 g/m²
- **Bait Station Application**
  - Sprinkle into shallow tins, lids or similar containers
  - Place where flies congregate
  - Recommended dosage 2 g/m²

Applications

- **Paint on Application**
  - To prepare a paste for painting
    - Mix 50 g of **VECTOTHOR™ Fly Bait** with 38 mL of water.
    - Wait 15 minutes before using the paste
    - Paste can be applied with a brush to spots where flies rest (e.g. walls, window ledges, stable fixtures)
    - Additionally, it can be painted onto hessian bags, fabric etc. and hung where flies congregate

Applications

- **Spray on Application**
  - To prepare a paste for spraying mix 10 g of **VECTOTHOR™ Fly Bait** with 40 mL water and spray as a course spray on to surfaces where flies land at a rate of 1 L per 10 m².
  - The bait will lure the flies to the treated surface
  - For areas of 100 m² apply 2 L of spray in bands covering about a third of the total space
- Re-baiting is only necessary in 3 – 5 days depending on the exposure, weather and population density

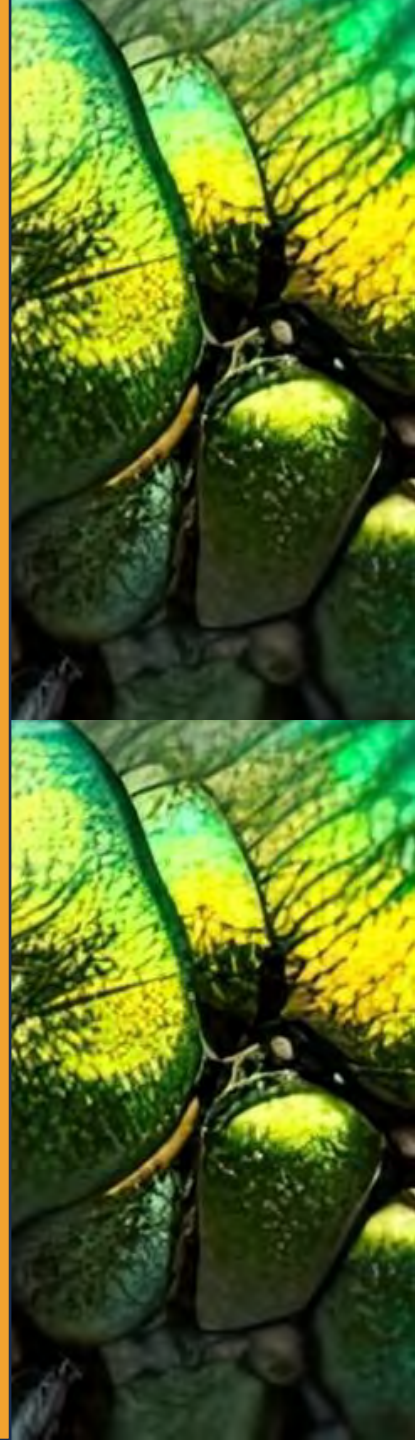
Larvicide

ENSYSTEX®

THE INNOVATORS

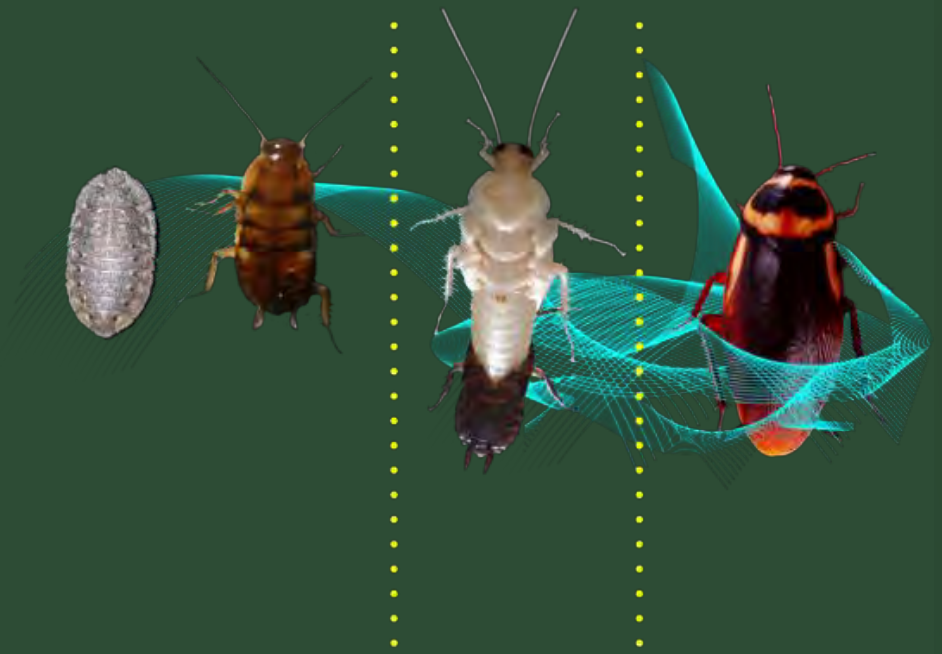
Larvacide

- Larvicide is an effective method of controlling fly populations by applying insecticides to breeding sites.
- It reduces adult fly emergence, preventing the population from reaching nuisance or health hazard levels.



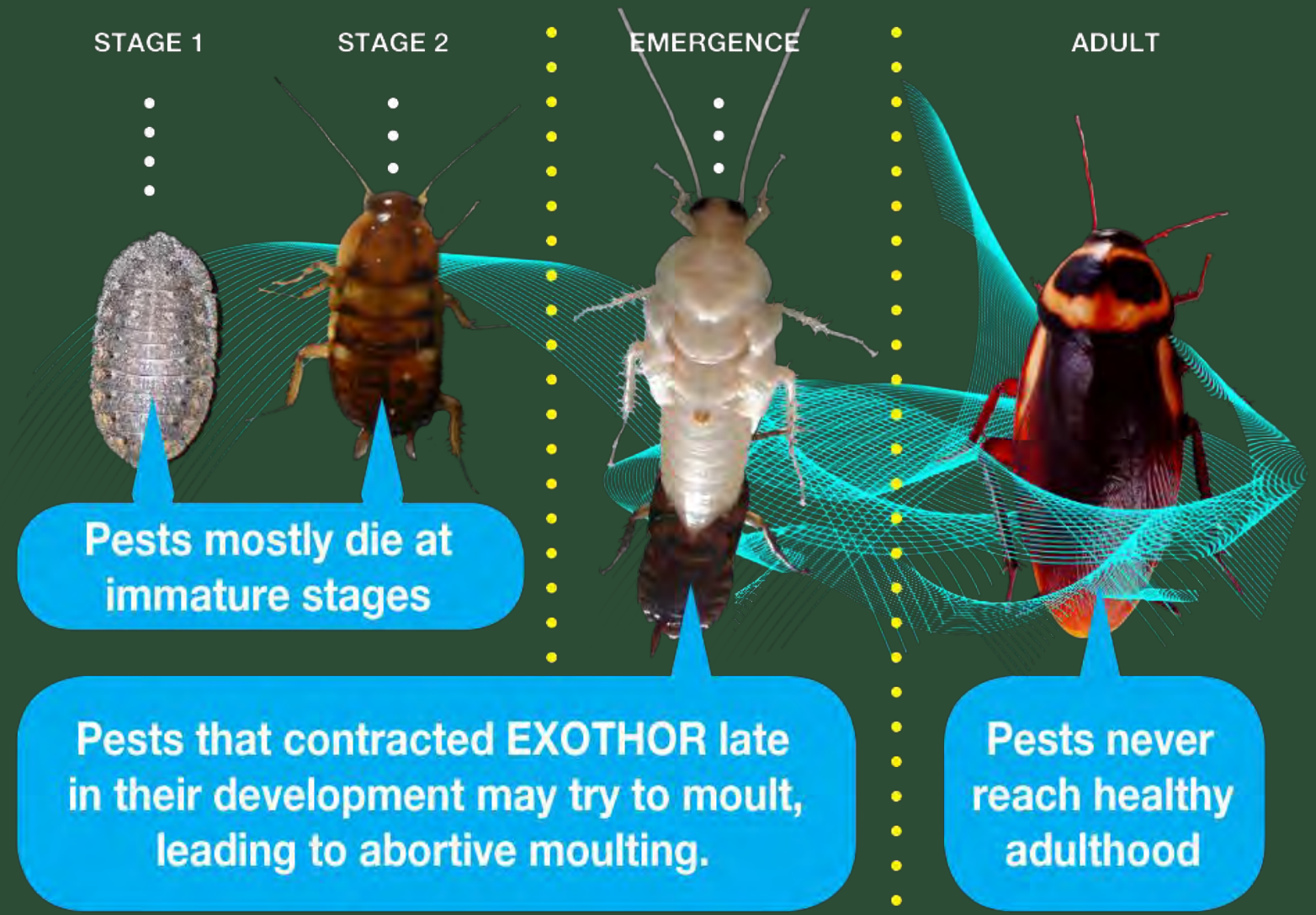
EXOTHOR™

INSECT GROWTH REGULATOR



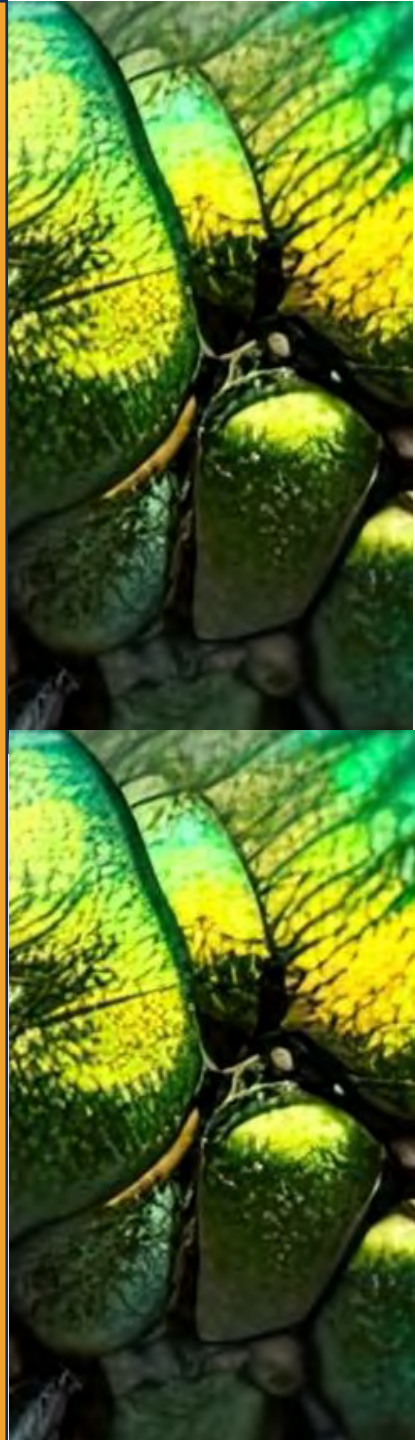
Prevents adult emergence by stopping embryonic development.

- Ensure elimination of pests
- Easy-to-measure granules
- Water-dispersible
- High mammalian safety
- No odour
- Compatible with most adulticides


STAGE 1
STAGE 2
EMERGENCE
ADULT
Pests mostly die at immature stages
Pests that contracted EXOTHOR late in their development may try to moult, leading to abortive moulting.
Pests never reach healthy adulthood

INEVITABLE POPULATION DECLINE

- Highly targeted insecticide
- Very high level of mammalian safety
- Long-lasting residual activity against juvenile insect stages
- Non-repellent, no odour
- Compatible with most Ensystex adulticides, including ATTRATHOR™, MAXXTHOR™ and BITHOR™



Applications

Fly breeding areas, e.g. manure and rubbish dumps, at domestic. Commercial, industrial and public buildings and facilities. Always read the label.

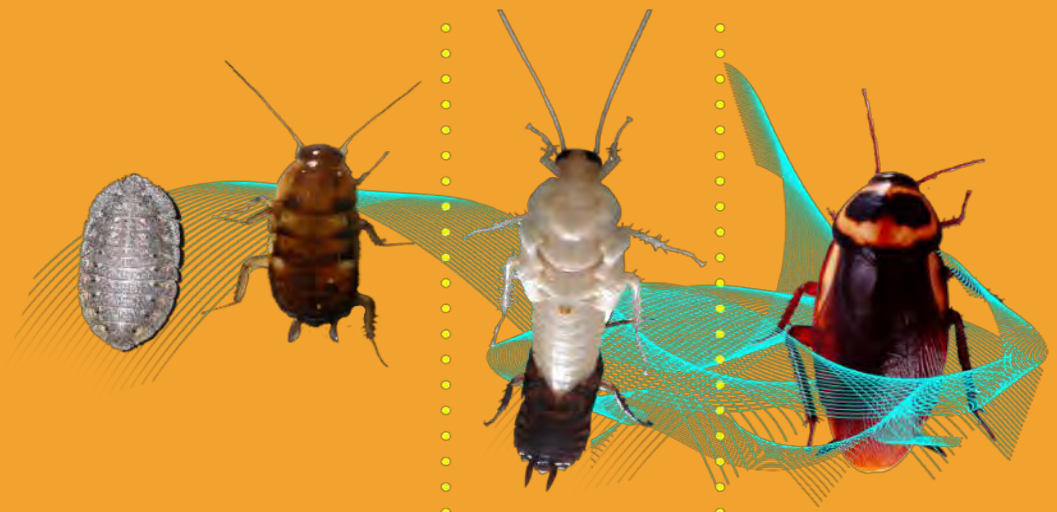
Dosage Rate for flies

- **75 g / 10 L of water / 20 m^2**
- **37.5 g / 10 L of water / 20 m^2**

- Apply to fly breeding areas at a rate of 500 mL per m^2.
- Use the higher rate for best results or where fly populations are larger.
- Use the lower rate for maintenance treatments or when fly populations are smaller.

- Other applications are available on the label for cockroaches, Fleas and mosquito larvae – Refer to the label.

BREAK THE LIFE-CYCLE



EXOTHOR™

INSECT GROWTH REGULATOR


ENSYSTEX®
THE INNOVATORS
Surface Spraying

Areas of Spraying

- Internal walls of all buildings
- Undersides of open roofs
- Sheds and overhangs
- Support timbers and beams
- Ceilings and Verandas
- Door and window frames

BITHOR®

DUAL ACTION INSECTICIDE

THE SILENT ASSASSINS

TWO DIFFERENT MODES OF ACTION COMBINE INTO THE UNSTOPPABLE INSECTICIDE

- Dual mode of action
- Non-repellent
- Competitive
- Long term

TWO DIFFERENT MODES OF ACTION CREATE AN UNSTOPPABLE INSECTICIDE

Application

- Apply diluted insecticide by means of a knapsack sprayer equipment capable of delivering a course spray directly onto exposed surfaces frequented by pests.
- Spray to the point of run-off ensuring thorough coverage of all treated surfaces.

HOW THE DUAL ACTION EFFECT WORKS

Bifenthrin is combined with the non-repellent imidacloprid,
to create a combination product
that is effectively non-repellent.

Non-repellent acetylcholine impersonator **Gisojutsu**

def: *art of hidden weopons*

Pyrethroid power from the well-trusted and proven bifenthrin **Kakushi geri**

def: *power of an assassin*

Ingredients are milled together to create an even distribution

Actives meld into one unique product

Creating a product stronger than it's individual actives

No Resistance by insects due to to the DUAL ACTION effect

Our Product Recommendation

1

Traps
Attract & Kill
Coverage Outdoors

2

Baiting
Attract & Kill
Indoor & Outdoor

3

Larviciding
Insect Growth
Regulator

4

Surface Spray
Final Control

Our Product Recommendation

Insect Light Traps

5