

In2Care[®] Mosquito Station

Easy to use

User-friendly design, no power source needed, easy to assemble and maintain

Unique

A multi-impact mosquito control tool that uses mosquitoes to spread larvicides

Effective

Scientific field data shows effective kill of *Aedes* larvae & mosquitoes

A novel tool to combat *Aedes* and *Culex* that transmit Dengue, Chikungunya, Yellow Fever, West Nile and Zika virus

Dengue, Chikungunya, Yellow Fever, West Nile and Zika virus are rapidly spreading mosquito-borne viral diseases. They are difficult to diagnose and treat, and mosquito control is the only option to stop transmission.

Aedes mosquitoes are difficult to control as they lay their eggs in very small breeding sites and have become resistant to chemical insecticides. The In2Care[®] Mosquito Station attracts and kills *female mosquitoes* with novel green ingredients that target both mosquito larvae and adults. It is the first to exploit the concept of 'auto-dissemination', resulting in an effective kill of mosquito larvae in breeding sites surrounding the Station.

In2Care[®] Mosquito Stations can be placed outdoors at a recommended density of 1/400 m² (10 Stations per acre) and be maintained every 4 weeks using refill sachets. The product lends itself perfectly for use in vector control programs, particularly in hotspot areas, and by professional pest management companies for mosquito control services at resorts, hotels, and residential sites.



Unique larvicide auto-dissemination

Aedes aegypti can transmit Dengue, Chikungunya and Zika virus to humans. They are attracted to small man-made breeding sites and have a unique egg-laying behaviour; spreading eggs over several breeding sites to minimise risks for their offspring.

Culex mosquitoes can transmit West Nile virus to humans. They lay their eggs in stagnant water.

The In2Care[®] Mosquito Station exploits this behaviour by contaminating the female mosquito body and using her to spread larvicide to multiple breeding sites around the Station. Via this "auto-dissemination" the Station can kill virtually all mosquito larvae in its surroundings before these become biting adults. In this way small cryptic breeding can be effectively controlled.

How does it work?

The In2Care[®] Mosquito Station is made of durable plastic and uses water with an odour lure to attract egg-laying *Aedes* and *Culex* mosquitoes. Once inside, mosquitoes contact the specially treated gauze near the water surface and get contaminated with a larvicide and a fungus. We exploit the fact that *Aedes* and *Culex* like to divide their eggs over multiple sites; by letting them fly out of the Station whilst carrying larvicide on their legs. They transport the larvicide and contaminate several breeding sites around the Station. In this way, we can kill larvae in small and hard to find breeding sources. The mosquito also gets infected with an insect-specific fungus that kills her before she can spread disease.



A multi-impact tool:

- ✓ Kills all larvae inside the Station
- ✓ Kills larvae in surrounding breeding sites
- ✓ Kills exposed mosquitoes
- ✓ Stops virus development

An environmentally friendly solution

Insecticide resistance has become a major problem in countries infested by *Aedes* and *Culex* mosquitos. Area-wide insecticide fogging is still being used but is showing limited efficacy and major impacts on non-target organisms. This necessitates a switch to more sustainable, environmentally friendly vector control. The In2Care[®] Mosquito Station is the first Station that uses a biological control agent to kill mosquitoes. It deploys an US-EPA-approved fungus that kills the mosquito several days after infection and can prevent disease transmission. The Station larvicide is US-EPA-approved and WHO-recommended for mosquito control and use in drinking water. Both bioactives have short half-lives and pose very low risks for non-target organisms.

In2Care[®] Mosquito Stations deploy a small dose of bioactive mixture in an enclosed point-source environment that is specifically attractive to mosquitoes. Only tiny amounts of larvicide will get spread to other breeding sites (mostly small man-made containers), which is enough to kill mosquito larvae (as <10 ppb PPF works well) but not enough to cause risk for non-target organisms like fish or mammals. In this way, our Stations offer an effective mosquito control option without drastic use of chemicals in the entire environment.

Published & Field validated Results

In2Care[®] Mosquito Stations were initially developed and scientifically validated in our mosquito laboratory using wild-type *Aedes* colonies.

(www.parasitesandvectors.com/content/7/1/200).

The Station deploys a very special type of gauze developed by In2Care. It holds the bioactives via electrostatic binding forces, which enables a high dose transfer when mosquitoes make contact and causes high levels of mortality (see <http://www.pnas.org/content/112/39/12081.full.pdf>).

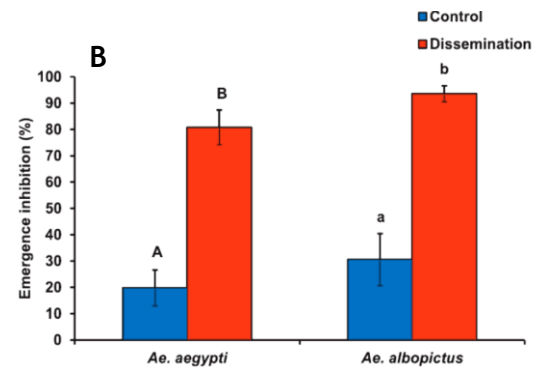
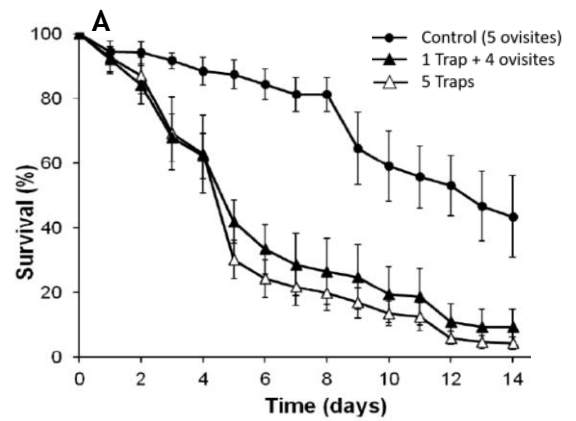
Field efficacy studies were performed in Trinidad, Cayman Islands, and Florida, USA. The Manatee County Mosquito Control District tests for US-EPA registration used local strains of *Aedes aegypti* and *albopictus*. Results confirmed that the fungus effectively kills mosquitoes several days after gauze exposure (graph A), which allows them to also disseminate larvicide to other sites before dying. There were massive reductions in adult mosquitoes produced in other sites near the Station; >80% were inhibited from emerging as adult mosquito (graph B). See all results at: <http://www.bioone.org/doi/full/10.2987/17-6642R.1>

Station Deployment

This novel tool can complement *Aedes* vector control efforts and be used to control mosquito hotspots and pockets of persistent breeding. Several Governments, including US Mosquito Abatement Districts and the Trinidad and Hong Kong MoH, are using In2Care[®] Stations in residential sites and problem areas such as schools & hospitals where insecticide fogging is restricted. The product is also used in community-based *Aedes* control

Pest Management Professionals deploy In2Care[®] Mosquito Stations in their Mosquito control services to reduce *Aedes* mosquito numbers and nuisance at client sites. Many hotels and resorts have been made mosquito free and recommend our product. We have marketing support material, stewardship Programs, Service Models, and Instruction Movies available to guide Station implementation.

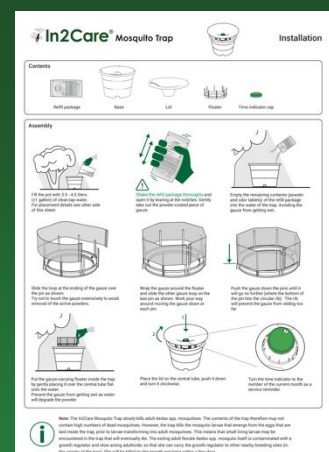
Please visit www.in2care.org/marketing to access this information.



How to use

We recommend placement where mosquitoes are likely to breed: in shaded, vegetated places near habitation. In high-risk areas we recommend 1 Station per 400m² (10 Stations per acre). Station maintenance (topping up with water) is recommended at regular intervals and reactivation with a fresh refill sachet is recommended every 4 weeks.

Mosquitoes are not trapped but are contaminated. Because of its slow-killing action, you will see live larvae in the Station water, but these will die before becoming adults. When deployed properly in a large enough area, In2Care[®] Stations will effectively reduce the numbers of *Aedes* mosquitoes and the risk of virus infections. For optimal impacts, we recommend an integrated approach with breeding source reduction and insecticide barrier treatments for non-isolated sites. Effects will become most



See User Manual and Instruction Movies: www.in2care.org

The In2Care® Mosquito Station includes:

- Durable 5L water reservoir
- Lid with click-on mechanism
- Floater (to carry the gauze strip)
- Green time indicator cap (servicing reminder)
- Optional securing tools
- Refill sachets (gauze, bioactives & attractant tablets) for reactivation every 4 weeks

We can provide:

- Customized deployment support
- Station servicing and monitoring support tools
- Field trial protocols
- Marketing support tools available



In2Care® Mosquito Stations have been registered and are being sold in >30 countries in the Americas. Our Stations have been **approved by the U.S. Environmental Protection Agency** for professional use in US states. In Asia and the Pacific, we have product sales approval in more than 10 countries including Singapore, Thailand, Hong Kong, Papua New Guinea and Fiji and our local distributors are currently registering the product in >15 additional countries.

For more information on and application options, please contact us via info@in2care.org

About In2Care

In2Care BV is a private limited company registered and based in the Netherlands. Our team of medical entomologists and product developers has its core expertise in developing science-based novel and user-friendly insect control products. In2Care has in-house R&D capacity including mosquito rearing and collaborates with renowned scientific institutes to validate the efficacy of our innovative products. We have field study protocols available and can be consulted for advice on scientific studies and operational implementation. We go beyond product development to deliver sustainable, affordable, and user-friendly solutions to combat mosquitoes that transmit some of the worst infectious diseases in the world.



Our values –
Sustainable,
Affordable,
User-friendly

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