

**Biogents**  
Mosquito Control

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**Mosquito Trap**

# BG - GAT

Instruction Manual

EN

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BG-GAT

The BG-GAT trap was developed by Dr. A.E. Eiras from the Universidade Federal de Minas Gerais, Belo Horizonte, Brazil and Prof. Scott Ritchie from the James Cook University, Cairns, Queensland 4870, Australia.

**Publications:**

Eiras, A.E., Buhagiar, T.S., and Ritchie, S.A. (2014): Development of the Gravid *Aedes* Trap for the capture of adult female container-exploiting mosquitoes (Diptera: Culicidae). *J. Med. Entomol.* 51(1): 200-209.

Ritchie, S.A., Buhagiar, T.S., Townsend, M., Hoffmann, A., Van den Hurk, A.F., McMahon, J., and Eiras, A.E. (2014): Field validation of the Gravid *Aedes* Trap (GAT) for collection of *Aedes aegypti* (Diptera: Culicidae). *J. Med. Entomol.* 51(1): 210-219.

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## Function

Female mosquitoes are attracted by water and oviposition cues and enter the transparent chamber through the funnel. Once in the chamber, mosquitoes try to escape through the translucent windows where they are exposed to a sticky surface, oil, or insecticides. The catch bag provides a barrier between mosquitoes and the infused water as well as retains dead mosquitoes.

We recommend three methods to kill the mosquitoes:

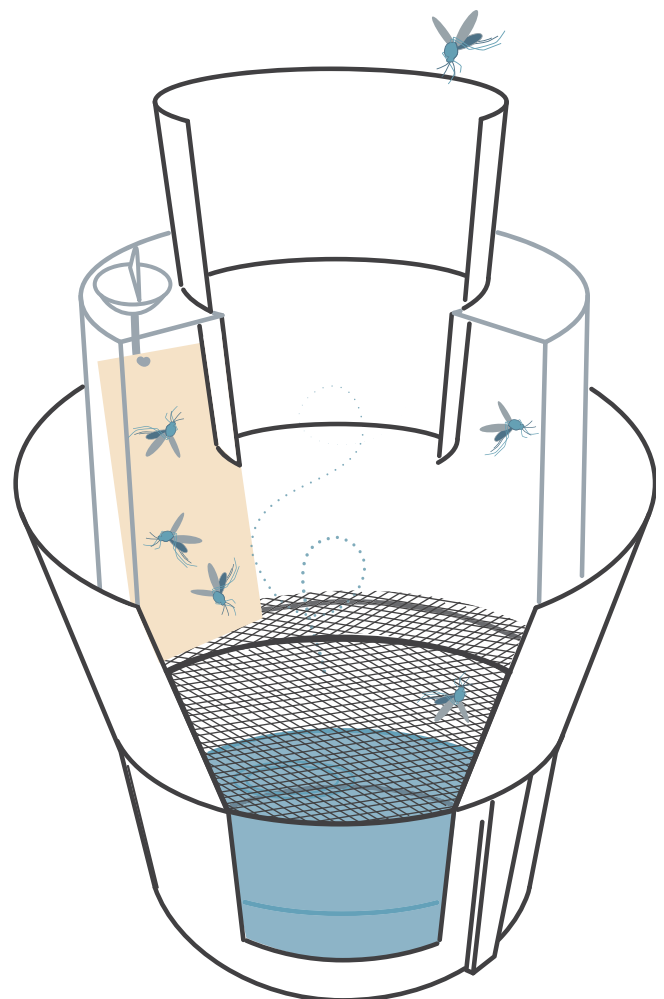
1) Place a sticky card into the transparent chamber<sup>1</sup>. The mosquitoes will stick to the card when flying around.

2) A thin film of cooking oil can be spread on the inside of the translucent chamber. The oil "wets" the wings of the mosquitoes, making flight impossible.

We recommend a neutral oil like **canola** and vegetable oil. You can also use the aerosolised versions of these oils. Avoid using light or flavored oils such as olive oil, sesame oil, and walnut oil as they may inhibit entry<sup>1</sup>.

3) Alternatively you can use residual surface spray insecticides that will kill mosquitoes through contact (for example Mortein Outdoor Barrier Surface Spray, imiprothrin 0.3 g/kg and 0.6 g/kg deltamethrin Reckitt Benschiser Pty. Ltd.). Do not spray the black bucket or entry funnel. This will repel mosquitoes!

Retreat the translucent chamber monthly.

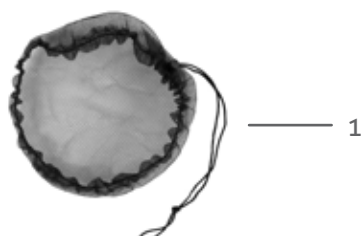


Cross-sectional view

<sup>1</sup> Heringer et al. (2016): Evaluation of alternative killing agents for *Aedes aegypti* in the Gravid Aedes Trap (GAT). *Journal of Medical Entomology*. 0 (0): 1-7.

## Product Components

1. Catch bag



2. Ring



3. Funnel



4. Transparent chamber



5. Black bucket with drainage holes



6. Sticky card holder



Following component may be purchased separately:

7. Sticky cards (20 sticky cards per package)



## Assembling the Trap

Please note:

The smell of the new plastic of the traps might have repellent effects on the mosquitoes. Therefore, we recommend to store the traps with some water outside for two weeks before using them in the field to get rid of the new smell.

1. Unpack all parts and check if everything is there.
2. Fill the black bucket with water up to the drainage holes (about 3 liters). Insert hay infusion (for example 10 g of dry hay<sup>2</sup>[F1]) or other organic materials (for example 1 g of rabbit chow per liter or 1 g of alfalfa pellets per liter) as oviposition attractants.
3. Mosquitoes will lay eggs through the mesh. Therefore, it is a good idea to prevent larval development, e.g. with Bti or an insect growth regulator such as methoprene pellets in the water.



F1

<sup>2</sup> Mackay A. J., Amador M., Barrera R. (2013): An improved autocidal gravid ovitrap for the control and surveillance of *Aedes aegypti*. *Parasites & Vectors*. 6:225.

- Put the catch bag over the open end of the transparent chamber [F2]. Tighten the top part of the catch bag by pulling the cord of the bag tightly [F3 - F4]. You should attach the catch bag with the seam facing outwards in order to avoid mosquitoes getting stuck in the seam.



F2



F3



F4

- After strong or frequent rain the catch bag might hang into the water due to its own weight making the identification of the captured mosquitoes even more difficult. If you cannot avoid placing the trap where it is subject to rain, we recommend fixing the catch bag in place with the mounting ring that is delivered with the trap:

Start by laying the ring over the net on one side [F5]. Then press the ring equally on all sides down over the chamber [F6] until the ring fits snugly over the edge of the transparent chamber [F7].



F5



F6



F7

6. Place the transparent chamber on the black, water-filled trap bucket [F8].



F8

7. Adding preferred killing methods

**Sticky cards:**

To kill the mosquitoes, you can use sticky cards that must be purchased separately. The mosquitoes will stick to the dry adhesive on the card when flying around in the transparent chamber.

- You can place the card in the transparent chamber with the help of the sticky card holder:
- Pop out the white Biogents disc from the hole in the transparent chamber [F9].



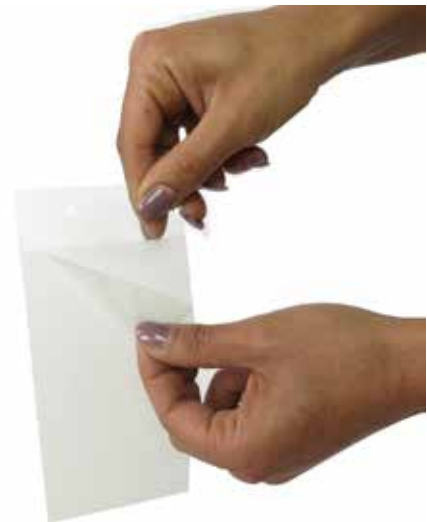
F9

- Place the sticky card holder into the hole [F10].



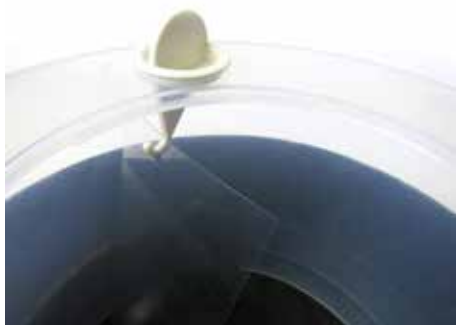
F10

- If you need to lay the card on a ground for identifying the mosquitoes afterwards, pull off only one side of the plastic film from the sticky card [F11]. Otherwise pull off both sides of the plastic film from the sticky card.

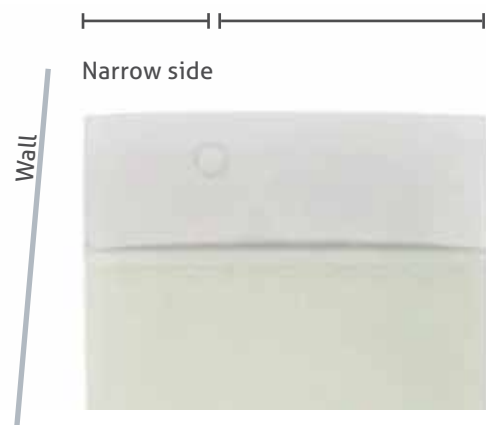


F11

- Hang the sticky card with the pre-cut hole on the hanger [F12]. Please hang the card with the narrow side facing towards the wall [F13].



F12



F13



- Alternatively, just place the sticky card vertically in the transparent chamber [F14] without hanging it on the holder.



F14



- Finally, insert the black funnel in the chamber [F15] and rotate the funnel clockwise to secure it [F16].



F15



F16



## Alternative killing methods

### Cooking oil<sup>3</sup>

A thin film of cooking oil can be wiped on the inside of the translucent chamber [17]. The oil "wets" the wings of the mosquitoes, making flight impossible.

We recommend a neutral oil like **canola** and vegetable oil. Alternatively you can use the aerosolised versions of these oils.

Avoid using light or flavored oils such as olive oil, sesame oil and walnut oil as they may inhibit entry.



F17

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### Residual surface insecticides

A killing agent (e.g., residual surface spray insecticide) can be applied to the inner wall of the translucent chamber [F18] to kill mosquitoes through contact (for example Mortein Outdoor Barrier Surface Spray, imiprothrin 0.3 g/kg and 0.6 g/kg deltamethrin Reckitt Bensckiser Pty. Ltd.). Do not spray the black bucket or entry funnel. This will repel mosquitoes!



F18

<sup>3</sup> Heringer et al. (2016): Evaluation of alternative killing agents for *Aedes aegypti* in the Gravid *Aedes* Trap (GAT). *Journal of Medical Entomology*. 0 (0): 1-7.

## Removal of the Mosquitoes

Identification is complicated if the insects stay in the trap for more than a week and dry out or if they get wet.

### Removal of the mosquitoes:

Remove the funnel.

Loosen the catch bag and remove it from the transparent chamber. Mosquitoes can then be either removed with forceps, poured into a white tray for sorting, or the catch bag can be closed by pulling the cord of the catch bag tightly shut [F19]. In this way, the caught mosquitoes can be returned to the lab and identified.

Put a new catch bag over the open end of the transparent chamber as described in F2 - F7.

When using sticky cards, remove the sticky card and replace it with a new one as described in F10 - F14.

When using oil or a residual surface spray, check also the inner wall of the transparent chamber for mosquitoes that might stick to it.

## Maintenance

Change the water (hay infusion or water with other attractants) once a month.

Remove any debris that falls into the trap or deters the mosquitoes from entering the trap.

If using sticky cards, replace the card at the latest when it is full.

If using oil or surface spray, retreat the translucent chamber monthly.



F19

## Positioning

The black color of the BG-GAT attracts mosquitoes from some distance. So, the trap needs to be placed, where it is readily visible but protected from rain. Please do not hide the BG-GAT in the bushes!

Even though rainfall does not damage the trap, there are some negative effects of rain:

- The mosquitoes can be damaged and difficult to identify.
- Mosquitoes avoid rain and prefer sheltered positions. In sheltered positions the catch rate can therefore be higher.

If you don't find a naturally sheltered position for the trap, it would be best to position the trap under a roofed area, or a self made shelter to keep it out of direct rainfall.

## Technical Data

Weight: 0.6 kg

Dimension: 27 x 38.5 cm

## Contact

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Further information about the BG-GAT can be found at our webpage [www.biogents.com](http://www.biogents.com)