Fruit Flies

Fruit flies continue to be among the most notorious fruit pests worldwide. Producing areas need to implement robust integrated crop control systems in order to meet market quality requirements and residue limits, and to overcome the severe quarantine restrictions imposed by the majority of importing countries.

Suterra® Magnet™ MED

The use of traps with food lures that attract flies to enter, and then to die inside is becoming widespread. The traps vary from simple bottle-based models to more sophisticated designs. Using these traps is a relatively effective method, but is costly, complex, and time-consuming to manage. Therefore, Suterra's **Magnet™ MED** attract-and-kill system is becoming the preferred choice for much of this sector, and is considered the best product within its category.

Through the development of the **Magnet™ MED** attract-and-kill system, Suterra has differentiated itself from alternative mass-trapping products. The patented design consists of an envelope that contains a highly effective lure, while the outside is coated with deltamethrin. **Magnet™ MED**'s operating principle is simple: fruit flies are attracted to the device by the bait, they land on the trap and die moments later.

The configuration of the device itself influences the effectiveness of the system in killing insects that approach it. Studies recently published by Navarro-Llopis et al. at the Polytechnic University of Valencia suggest that systems in which flies must enter a receptacle (fly-trap or bottle) in order to come into contact with a killing agent, can be less effective than those in which insects immediately make direct contact with the killing agent, upon interacting with the device (sheet-type device).

Another factor is the method by which death occurs. This can impact the system's net effectiveness in killing the flies that approach it. The use of fast-acting toxic substances such as insecticides should minimise the ability of insects to escape the action of the device, while physical means increase the likelihood of this occurring.

According to the most recent study published on the subject (Navarro-Llopis et al., Levante Agricola, No 445, 2019) the effectiveness of devices in killing lured flies can differ. We can deduce, from the results obtained, that under tested conditions the **Magnet™ MED** can be significantly more effective than bottle-based traps or mass-trapping devices when killing flies that interact with the device.

These demonstrated results are in contrast with the view of some farmers who prefer observable captures in a trap, as opposed to devices that do not capture flies, despite the latter being more effective. In the study, **Magnet™ MED** killed 2.5 times more flies than the trapping device used, and 3.3 times more than the bottle system (Table 1).

This study performed on *Ceratitis capitata* as a model species, concludes that traps that do not require the target insect to enter a confined container in order to get in contact with the toxic agent, can be more effective. After the same exposure time, the **Magnet™ MED** sheet-type device affects a greater number of flies than trapping-type devices with solid or liquid lures.

The placement of the toxic agents on the surface increases the likelihood that a greater proportion of lured flies will be killed. The results concur with other studies that attribute greater efficacy to the **Magnet™ MED** device in comparison to other systems, both in terms of fruit protection in the short-term, as there is competition between the device and the receptive fruit and reducing populations in the long-term after continuous operation in the field.

The **Magnet™ MED** is much easier to manage and quicker to install than any mass-trapping product on the market. It offers a great advantage over mass-trapping in terms of transport and logistics efficiency. The device reduces the risk of operator exposure to insecticides by removing the need to handle different parts during installation. Additional advantages include the fact that one application per season is sufficient; there is no need for device maintenance and it remains active for at least six months. This provides crop protection beyond the sensitive harvest period and thus contributing to a reduction in pest populations in the area.

The efficacy of Suterra's **Magnet™ MED** is substantiated by product registrations in 10 countries around the world (Morocco, Spain, Portugal, France, Italy, Greece, Tunisia, Israel, South Africa and Australia) for the control of Mediterranean fruit fly, *Ceratitis capitata* (and also for *C. cosyra*, *C. rosa* and *C. quilicii* in the case for South Africa).

The continued growth of its commercial use, mainly in citrus, stone and pome fruit trees as well as table grapes, is the best proof of the product's value to the industry for Suterra.

Table 1. Average (± SE) number of dead flies with each device, after exposure to each of the devices in a wind tunnel.

	Number of dead flies
Magnet™ MED	28,2 ± 8,8 (a)
Trapping device	12,0 ± 3,5 (b)
Bottle system	8,6 ± 3,6 (b)

* Values followed by the same letter do not differ significantly (P > 0.05, ANOVA and LSD)