Applying LAST CALL™ F.F.

The product is applied by hand using a dispenser pre-calibrated to deliver a 50 micro-litre droplet. The disposable dispenser includes the trigger device and the disposable cartridge containing the ready-to-use Last Call™ F.F. formulation. Prepare the dispenser using the following steps:

- Connect the trigger mechanism and the product containing cylinder. Push the 2 parts together to break the seal. The 2 parts are now permanently coupled.
- With the thumb, push the plunger until a drop of grease appears at the tip of the nozzle. The applicator is now ready for use.
- One drop of 5 micro-litres will appear for each squeeze of the trigger.
- Apply droplet in the TOP THIRD of the tree for maximum biological activity.
- Use the Insect Science™ extension pole to apply the product to older trees.
- Distribute droplets evenly throughout the area to be treated.
- Droplets should have a spherical shape for optimum biological activity.

Precautions

- Wear suitable protective clothing during handling (overalls and impermeable gloves).
- Avoid contact with skin, eyes or clothing. In case of accidental contamination, stains are to be washed from the skin using a mild detergent.
- Do not eat, drink or smoke while working with the product and wash hands and face thoroughly afterwards.
- Change contaminated clothing immediately and wash exposed skin with soap and water.
- After work, change clothing and protective clothing and wash before re-use.
- After application clean the application device thoroughly.
- Dispose of empty containers in a land/fill site or incinerate. If incinerated, avoid inhalation of the smoke.
- Do not re-use empty containers for any other purpose.
- Do not contaminate drinking water, food or animal feed.

Active ingredients

- Permethrin (Sintetiese Pyrethoid) – 60 g/Kg
- Fruit Fly Attractant (EGO) - 100 g/Kg

Timing and intervals

- For best results Last Call™ F.F. must be applied at the beginning of the first generation of F.F. or at first observation and with the use of Insect Science™ McPhail Trap and E.G.O. Pherolure.
- For best results Last Call™ F.F. should be applied 16-20 weeks before harvesting and re-applied every 28 days with a maximum of 5 applications in a season.

No. of trees per hectare No. of droplets per tree
1 000 3
600 5
400 7

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Introduction

Fruit fly (F.F.) has become known as a pest to citrus since the beginning of the century. The fly has now established itself in many other crops and has become a serious problem to many growers.

Last Call™ F.F. is an innovative blend of a sex pheromone and insecticide that calls the male Fruit fly to its doom.

Last Call™ F.F. is a clear-like droplet that contains the sex pheromone of the female F.F. that lures and attracts the male F.F. mixed with a dose of permethrin insecticide which kills them after they have ‘mated’ with the alluring substance.

Performance

F.F. males are attracted to the female sex pheromone. Insect Science™ McPhail Traps and E.G.O. PheroLures are used to monitor the insect population. From the number of insects caught weekly one can determine the timing of application. The graph below indicates the reduction of fruit damage after Last Call™ F.F. applications.

Summary of field performance

The effect of the treatment is not immediate, as there is a carry- over of females fertilized by many males before the Last Call™ F.F. treatment instituted. The same can be said for fruit that is already infected, where eggs were deposited after treatment commenced, there will still be a certain amount of fruit drop. This period can last up to six weeks after treatment has started due to the carry-over effect.

During the period of the application of Last Call™ F.F. the carry-over ended with excellent results in all our trials. The full effect of Last Call™ F.F. can be well observed after the second application, when the F.F. trap counts noticeably decline while in the control block the numbers continue to escalate.

Fruit fly life cycle

**Ceratitis capitata**

Total development period required for the Fruit fly to complete its life cycle under tropical conditions is approximately 21-30 days.

**Egg**

Eggs are very slender, curved and shiny white. They are deposited under the skin of fruit that is just beginning to ripen. Each female will deposit 2 to 10 eggs on a single fruit. Eggs hatch in 1.5 - 3 days in warm weather.

**Larva**

Larvae pass through three larval instars. They are elongate, cream colored, cylindrical maggot-shaped. Exact size of larva depends on diet. The larval stages may last as short as 6 - 26 days depending on temperature and host.

**Pupa**

Pupae are cylindrical, about 3 mm long and dark reddish brown. The minimum duration of the pupal stage is 6 - 13 days when the average temperatures ranged from 24 - 26 °C. Pupae develop normally in the soil an inch or two below the surface.

**Adult**

The general color of the body is yellowish with a tinge of brown, especially the abdomen, legs, and some of the markings on the wings. The adult is 4 - 5 mm long which is about two thirds the size of a house fly.

How does Last Call™ F.F. work?

Insect sex pheromones are selective and valuable pest management tools in techniques ranging from monitoring of populations to disruption of the pheromones mediated mating sequence. Recently, an attract-and-kill system combining the sex pheromones of insects with the insecticide permethrin has been developed.

The technology of attract and kill works on the basis of suppression of the male fly population. After emerging, male flies are inevitably attracted to the small droplet, with which they attempt to mate; any contact with the product is fatal. The droplet is a combination of a small amount of insecticide with a synthetic insect pheromone in a patented UV resistant carrier.

The carrier provides a slow, uniform release of the powerful pheromone. By the elimination of males, and a resulting reduction in the number of mated females, one can reduce the egg lay, the build up of pest populations and a resulting reduction in the number of mated females. The product provides an environmentally sound and effective solution for growers, consumers and the environment.

The graph below shows how effective Last Call™ F.F. is when applied at the right time with the correct dosage.

**Effect of Last Call™ F.F. application on Fruit fly populations**

- Last Call™ F.F.
- Standard Control

**Summary of field performance**

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