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**Enriched ginger oil, a powerful sexual attractant for trapping the males of some ceratitis spp.**

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**Background.** Since the 60's, trimedlure has been the main para-pheromone used to attract the males of a series of *Ceratitis* spp. of economic importance, such as the Mediterranean Fruit Fly *C. capitata* or the Natal fruit fly, *C. rosa*, for monitoring or detection purposes. In recent years, within a FAO-IAEA coordinated programme, research has been conducted on the possible use of some natural essential oils to improve the sexual competitiveness of the males of such species, in the framework of SIT (Sterile Insect Technique) programmes. Within these programmes the strong attractiveness of Ginger Root Oil (GRO) for the males of some *Ceratitis* spp. has been confirmed. Based on these results, it appeared useful to compare the attractiveness of a recently available commercial dispenser of Enriched Ginger Oil (Insect Science SA, Tzaneen, South Africa) with that of a standard trimedlure dispenser, in field trapping experiments. More recently, field-cage tests were carried out to determine the factors (age, food status, mating...) influencing the male response in both species.

**Methods.** Four field experiments were conducted in 2009-2010 on different crops. The first one was carried out in a Citrus orchard situated in Bassin Martin, in the south of the island, at an altitude of 290 m a.s.l.. The second trial was carried out in another Citrus orchard, in Petite Ile in the south (alt.: 300m) and the third one in Etang-Salé, in the south-west, in a chilli plot (alt.: 10m). Finally a fourth trial, set up in Piton Armand on the East in a Chinese guava plot (alt.: 450m), is still in progress. For each trial, two types of attractants were compared in Tephri-traps (Sorygar, Spain): Enriched Ginger Oil (EGO) ("Pherolure", Insect Science SA, Tzaneen, South Africa) and trimedlure (Agrisense BCS Ltd, Pontypridd, UK). The attractant dispensers were placed in a small plastic basket at the top of the trap, while a strip of DDVP was placed at the bottom of the Tephri-trap to kill the adult flies. From four to six replicates were carried out depending on the trial. Traps were monitored weekly for recording the number of caught males, then rotated. For each species, results were analysed with a GLM (Poisson family, logit link) on the number of flies caught per trap, using the software R.2.8.1.

**Results.** In trials 1, 2 and 4, the populations of *Ceratitis capitata* were lower than those of *C. rosa*, while in trial 3, in the dry south-west of the island, the medfly dominated. In all trials (except trial 4, still in progress), for both species, EGO attracted highly significantly more males than did trimedlure (glm, 1 d.f.,  $p < 0.001$ ). Indeed, depending on the trial, EGO attracted between 2.7 and 4 times more males of *C. capitata* and between 6.1 and 16 times more males of *C. rosa*. In all trials, the factors 'date' and 'replicate' also significantly influenced the number of caught males.

#### Conclusion.

In the different field trials, the EGO dispenser proved much more attractive for the males of *Ceratitis* spp. than the trimedlure dispenser. This difference was particularly striking in the case of *C. rosa*. The strong para-pheromonal attractiveness of this essential oil, might be linked with the presence of  $\alpha$ -copaene, a compound naturally occurring in the essential oils of various plants. Because of its strong attractiveness for the males of these two *Ceratitis* spp., EGO could be strongly recommended for use in detection programmes, and even tested for Male Annihilation experiments. It would also be interesting to evaluate its attractiveness for the males of other African *Ceratitis* spp.

Key words: *Ceratitis* spp., Enriched Ginger Oil, trimedlure, para-pheromone, Reunion Island