

## Relevant Published Articles

### Acceptability and suitability of *Tuta absoluta* eggs from irradiated parents to parasitism by *Trichogramma nerudai* and *Trichogramma pretiosum* (Hymenoptera: Trichogrammatidae)

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#### Abstract

1. *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) is one of the most devastating pests of tomato crops. We studied the acceptability and suitability of eggs laid by irradiated *T. absoluta* pairs to parasitism by the parasitoids *Trichogramma nerudai* and *Trichogramma pretiosum*.

2. *Trichogramma absoluta* pupae were irradiated with X-radiation (20834 R) and the emerged adults were separated into couples according to the crosses: ♂U × ♀U, ♂I × ♀U, ♂U × ♀I (where 'U' is untreated and 'I' is irradiated). In a no-choice experiment, 40 eggs from each cross were exposed to a female parasitoid for 24 h.

3. All *T. absoluta* eggs were accepted for oviposition by *T. nerudai* and were suitable for its development. However, eggs from irradiated females were significantly less parasitized than those from untreated females. *Trichogramma pretiosum* showed low parasitism on eggs from all crosses. In a choice experiment, both *T. nerudai* and *T. pretiosum* showed no differences in the parasitism of eggs from irradiated (n=40) and non-irradiated female moths (n=40).

4. These results indicate that eggs laid by irradiated parents were acceptable for oviposition and suitable for the development of these parasitoids, and also support the idea that the inherited sterility technique could be used in an integrated approach with egg parasitoids to control *T. absoluta*.

**Keywords:** Biological control, egg parasitoid, inherited sterility, natural enemies, tomato leafminer, X rays.

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### Sterilization of *Hulecoeteomyia japonica japonica* (= *Aedes japonicus japonicus*) (Theobald, 1901) by high-energy photon irradiation: implications for a sterile insect technique approach in Europe

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#### Abstract

*Hulecoeteomyia japonica japonica* (= *Aedes japonicus japonicus*) (Diptera: Culicidae) (Theobald 1901), a container-breeding invasive species in North America and Europe, is attracting particular attention for its high local abundances and possible roles in the transmission of human and animal pathogens. The preferential habitats of this species are forested and bushy areas, which renders control measures extremely inefficient.

Use of the sterile insect technique (SIT) may contribute to the implementation of area-wide integrated pestmanagement strategies, as has been successfully proven with other aedine mosquito species. The present study investigates the effects of irradiation at a dose of 40 Gy on fitness parameters in *H. j. japonica*. Irradiation was performed on 16–24-h-old pupae from a colonized strain (PA) using a True-Beam linear accelerator.

Males from the PA strain were crossed with females of the same colony or with field-collected females. Irradiation induced a slight increase in mortality in male pupae, but did not alter the survival and mating abilities of emerging adult males. Rates of blood feeding and fertility were lower when PA strain males were kept with field-collected females rather than PA females. Irradiated males induced reductions in fertility (residual fertility: 2.6%) and fecundity in mated females. The data indicate that the SIT is a suitable technique to enhance the control of this species.

**Keywords:** Colonization, fitness, genetic control, mating competitiveness, strain inbreeding, vector control.

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