

# Gene-engineered flies are pest solution

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For the first time, male flies of a serious agricultural pest, the medfly, have been bred to generate offspring that die whilst they are still embryos. Researchers writing in the open access journal BMC Biology describe the creation of the flies that, when released into a wild population, could out-compete the normal male flies and cause a generation of pests to be stillborn - protecting important crops.

Ernst A. Wimmer from the Georg-August-University in Göttingen, Germany, led an international team of researchers who developed the lethal Mediterranean fruit flies (*Ceratitidis capitata*), also known as medfly. He said, “Here, we present the first alternative, radiation-free, reproductive sterility system for medfly based on transgenic embryonic lethality”.

The medfly is a devastating and economically important pest. The currently used method of controlling it is the sterile insect technique (SIT), whereby male flies are irradiated to induce reproductive sterility and then released into the wild, where competition with fertile males reduces the overall insect population. This radioactive version of the SIT has the drawback that the irradiated males are often less competitive than their wild brethren and so an awkward balance must be struck between competitiveness and degree of sterility. According to Wimmer, “When transgenic males carrying our transgenic system mate with wild females, all progeny die during embryogenesis without the need for radiation. Due to the complete lethality, no fruit damage from developing larvae will occur and no transgenes can pass into the wild population. Moreover, males carrying this system are highly

competitive”.

In order to suppress the lethality system during rearing of the flies, supplements are added to their food that switch off the genetic self-destruct. The authors write that, “Use of our embryonic lethality system, without the need for radiation, can increase the safety of SIT programs, since accidental releases would not lead to infestations of the environment and possible risks coming from isotopic sources can be eliminated for workers and the environment”.

Paper: Conditional embryonic lethality to improve the Sterile Insect Technique in *Ceratitis capitata* (Diptera: Tephritidae), Marc F Schetelig, Carlos Caceres, Antigone Zacharopoulou, Gerald Franz and Ernst A. Wimmer, *BMC Biology* (in press)

Source: BioMed Central

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