

Genetically engineered mosquitoes - further repercussions

Oxitec hiding behind questionable statements

26 September 2019 / Oxitec is casting doubt on a recently published scientific paper reporting the uncontrolled spread of genetically engineered mosquitoes in Brazil. The company is saying that only about five percent of the insects would have survived, and there are no indications that they would spread in future. In addition, they say there is no evidence to show that the transgenes have actually spread with the mosquitoes which survived the trials. However, the claims made by Oxitec are scientifically unconvincing.

The paper reports that numerous offspring of the genetically engineered mosquitoes did indeed survive and are spreading further. According to the researchers, between 10-60 percent of the mosquitoes in the affected region carry parts of the genome of the mosquitoes released in the trials. Parts of their genome have even spread to neighbouring regions where no such trials were conducted.

Testbiotech took a closer look at the claims made by Oxitec calling the research results into question, and concluded that they are scientifically questionable. Testbiotech recommends to handle genetically engineered organisms that can spread and propagate in the environment with much more precaution and accuracy:

(1) It is problematic that Oxitec cannot provide any data to prove that the transgenic gene constructs have not spread into the environment. This is a failure of the company not implementing its responsibilities. It is, in fact, indisputable that the mosquitoes used in the trials have spread. This makes it very likely that the transgenic constructs in these mosquitoes have also spread. As long as there is no reliable data proving otherwise, it must be assumed that this is the most credible assumption.

(2) The claims made by Oxitec saying that the surviving mosquitoes had a mortality rate of 95% assume that the additional gene constructs in the genome of the mosquitoes are actually present and functional. However, Oxitec does not consider that in case there is a transfer to subsequent generations, the structure and the function of the inserted genes can also change.

(3) The claims made by Oxitec regarding the expected survival rate of up to 5% of the genetically engineered mosquitoes and the safety of their technology are not convincing. 5% of over 50 million mosquitoes that were, according to the published paper, released in Jacobina, is not negligible. It is not unlikely that some progeny of these mosquitoes can persist in the environment for longer periods of time and thereby show unexpected traits.

(4) Contrary to the statement of Oxitec denying that hybrid vigor (or enhanced fitness) can be expected in the offspring, it is, from the perspective of evolutionary biology, more likely that such effects do occur. It is indisputable that a hybridisation of the Brazilian mosquitoes with mosquito species originating from Mexico and Cuba used in the genetic engineering trials, has occurred. There are reasons for concern that at least some of the offspring will show higher fitness than native mosquitoes. Biological traits of the hybrid offspring are often broader compared to those of the original populations. How this will affect the mosquito populations in the long-term is difficult to predict. The fact that Oxitec does not mention these risks is misleading.

A recently finished pilot project carried out with the involvement of Testbiotech (GeneTip) shows: offspring of genetically engineered organisms that are able to spread and propagate in the environment, may have other, unpredictable traits than those originally bred in the laboratory. Therefore, GE organisms should never be released if no effective measures are in place for a reliable control of their spatio-temporal distribution. Without such limitations and restrictions the risks associated with such releases cannot be reliably assessed.

This problem is particularly relevant for new trials planned by Oxitec: in future releases, the male offspring of genetically engineered mosquitoes are intended to survive and mate in wild populations. The risk that these trials may get out of control cannot be denied. Some years ago, Oxitec filed applications for field trials in Spain of genetically engineered olive flies with similar genetic characteristics. They withdrew the applications after critical reports. It is a matter of concern that similar insects are intended to be released in other regions.

Testbiotech believes that Oxitec is under great pressure from investors of the US parent company, Intrexon. In the face of a narrow profit margin, there appears to be the willingness to take risks which might otherwise be avoided.

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Further information: [The publication on genetically engineered mosquitoes in Brazil](#) [2]

[Oxitec comment regarding the publication](#) [3]

[GeneTip project: Final report \(chapter 9, in German\)](#) [4]

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