Release of sterile mosquitoes a "publicity stunt"

Although the long-term underlying intention is reduce malaria in Africa, the release of genetically modified (GM) "male-sterile" mosquitoes in Burkina Faso this year by the Target Malaria research consortium has no real benefit. It also presents a number of risks and raises ethical questions.

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The project is set to apply for a permit to make an open release of 10,000 GM Anopheles gambiae mosquitoes: most likely in the village of Bana, west of Bobo Dioulasso. The GM mosquitoes were exported from Imperial College in London to Burkina Faso in November 2016 and are currently in “contained use” facilities.

The open release is intended to test the infrastructure and systems for future release for, as yet, experimental technologies, notably “gene drive” mosquitoes. Target Malaria’s ultimate aim is to make open releases of gene drive mosquitoes, with the aim of reducing the population of Anopheles gambiae mosquitoes, which can transmit the parasite that causes malaria. The hope is that reducing the mosquito population will reduce the risk of malaria transmission and hence disease incidence.

Africa carries a disproportionately high share of the global malaria burden, although since 2000, the malaria death rates in Africa have decreased by 66% among all age groups, and by 71% among children. The declines in malaria incidence and deaths are attributable to extensive and effective use of insecticide treated bed-nets. The search for solutions, particularly for vector control, nevertheless continues, due to resistance to the insecticide used in bed-nets.

However, the proposed release of GM male-sterile mosquitoes in 2018, meant to only be for experimental purposes, is not expected to deliver any benefits for malaria control in Burkina Faso. This is because repeated large releases would be needed to seek to suppress the wild population of mosquitoes, which, even if successful, would be prohibitively expensive.

Unethical

“Conducting experiments with no potential benefit may be regarded as a waste of time and money,” said Lim Li Ching, senior researcher from the Third World Network. “Furthermore, medical research that poses risks but brings no benefits is unethical."

Some of the likely risks of releasing GM male-sterile mosquitoes into the open include the inadvertent release of biting female mosquitoes, as a result of imperfect sex sorting of mosquitoes; or the possible failure of the sterility mechanism.

Although Target Malaria claims to be engaging local populations and obtaining their consent, consent must be fully informed to meet ethical requirements. This cannot be the case until a comprehensive risk assessment has been published and been subject to open and transparent public consultation. Any decision on open releases of GM mosquitoes requires public consultation, as mandated by the Cartagena Protocol on Biosafety, to which Burkina Faso is a party.

“Releasing risky GM mosquitoes into the environment, for absolutely no benefit whatsoever, is completely unacceptable”, said Mariam Mayet, Executive Director of the African Centre for Biodiversity. “We call for the application to be immediately withdrawn, or rejected by the authorities in Burkina Faso”.

The main challenges to malaria control are a lack of sustainable and predictable funding, conflict in malaria-endemic areas, and changes in climate patterns. What is needed is a more holistic approach to significantly and sustainably decrease the burden of malaria – one that integrates interventions and research on health, climate, agriculture (and eventually economics and housing) – in tackling the main factors contributing to the disease and its transmission.

"The proposed release of GM mosquitoes in Burkina Faso is an expensive PR stunt which will do nothing to help to reduce malaria", said Dr Helen Wallace, director of GeneWatch UK. "This is a distraction, a false solution, and a major opportunity cost."