

Plague control methods used in agriculture could help in the fight against malaria

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The fact that the global death toll from malaria has dropped by 25 percent over the last ten years would suggest that efforts to control the malaria mosquito are succeeding. But control methods are still largely based on chemical insecticides. A risky business, according to entomologists and experts in biological pesticides from America and Wageningen. There are already indications that the malaria mosquito is becoming resistant to these insecticides.

In the Policy Forum in the July edition of the scientific journal [PLoS Medicine](#), the researchers describe this as an alarming development. Having seen the effects of disease control methods in agriculture, they are now calling for different strategies to control malaria, based on the multiple methods and resources and carrying far fewer risks. The fight against malaria is some fifty years behind the [agricultural sector](#).

In 2011, the [World Health Organization](#) (WHO) announced that the number of cases of malaria world-wide had dropped by 17 percent, and the number of fatalities by a staggering 25 percent. This was put down to the widespread use of [chemical insecticides](#) (pyrethroids) against the malaria mosquito, particularly in Africa. The insecticides were used in impregnated mosquito nets or as an ingredient in household sprays.

However, over the last few years a number of [African countries](#) have reported that the mosquitoes are becoming increasingly resistant to these chemicals. The authors of the article suggest that alternative strategies must be found to slow down and ultimately reverse this trend.

1950

The researchers think that a lot could be learned from studying plague control strategies in the agricultural sector. Current methods for controlling the malaria mosquito are still at the level of the methods used to control [plagues](#) in agriculture in 1950. It has long been known that a strategy relying almost exclusively on [chemical pesticides](#) will only exacerbate the problem of resistance to disease and plagues.

The best strategy in the agricultural sector is the simultaneous and coordinated use of a range of different methods, such as monitoring and predicting disease and plagues, the deployment of natural control methods and the cultivation of resistant crops. Pesticides should only be used as a last resort, in situations where there is no other option. This strategy has become known as ‘integrated pest management’ (IPM) within the sector and has substantially curbed the risk of resistance to insecticides. In their article, the researchers claim that although it should not be seen as a universal remedy, the approach has laid the cornerstone for many agricultural production systems in both developed and third-world countries.

The authors would like to see a similar approach used in the fight against malaria, whereby several different instruments are used to combat the insects that transmit diseases: ‘integrated vector management’ (IVM). This is the key to the effective and sustainable control of plague insects.

Not a ‘quick fix’

In order to develop effective IVM, thorough knowledge of the various control strategies must first be gathered. Surprisingly little research has been carried out into this field, say the authors, who are now arguing the case for substantial research efforts and funding. They also state that it is

essential for local populations to be involved when developing control programmes.

The researchers warn that there is no ready-made solution (or ‘quick fix’) for eradicating the [malaria mosquito](#).

More information: Thomas MB, Godfray HCJ, Read AF, van den Berg H, Tabashnik BE, et al. (2012) Lessons from Agriculture for the Sustainable Management of Malaria Vectors. PLoS Med 9(7): e1001262. [doi:10.1371/journal.pmed.1001262](https://doi.org/10.1371/journal.pmed.1001262)

Provided by Wageningen University

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