

MSU plan would control deadly tsetse fly

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The tsetse fly kills people and livestock in Africa. A containment plan by Michigan State University researchers would be more effective and cheaper than current control methods. Credit: Michigan State University

For the first time, scientists have created a satellite-guided plan to effectively control the tsetse fly – an African killer that spreads "sleeping sickness" disease among humans and animals and wipes out \$4.5 billion in livestock every year.

Michigan State University researchers developed the plan using a decade's worth of NASA satellite images of Kenyan landscape and by monitoring [tsetse](#) movement. With unprecedented precision, the plan can tell where and when to direct eradication efforts.

Current control efforts in Kenya are ineffective and waste money by targeting tsetse-free areas, said Joseph Messina, associate professor of

geography. Messina is lead researcher on the project, funded by the National Institutes of Health, to attack the tsetse fly.

"Our model dramatically reduces the cost of controlling the tsetse, and it's more effective," Messina said.



This is a tsetse fly target in Kenya. The sheets of dark cloth are coated with the scent of livestock to attract the tsetse and insecticide to kill it. Credit: Michigan State University

If applied, the plan would be effective in all of East Africa and other areas of the continent consisting of savannah, Messina said. The tsetse, which feeds on the blood of vertebrate animals, lives in 37 sub-Saharan countries and infects thousands of people and millions of cattle every year, affecting primarily the rural poor.

Funding for large-scale tsetse control has dropped significantly in the past 25 years, as has optimism that sleeping sickness – technically known as African trypanosomiasis – can be contained.

The Kenyan government would need an estimated \$100 million to run

tsetse control efforts in its targeted containment areas. The problem: It doesn't have nearly that much money and the government containment area is highly imprecise, Messina said.

The MSU plan would cost as little as \$14.2 million. The plan relies on the use of targets – which are sheets of dark-colored cloth sprayed with insecticide – in more strategic areas. Targets are highly effective and the most environmentally friendly control method, said MSU researcher Paul McCord.

Current government strategy includes using targets and aerial spraying, but the spraying kills off beneficial species such as honey bees.

"They've been trying to [control](#) the tsetse for more than 100 years," Messina said, "but nothing has worked on a large-scale basis."

The MSU plan is based on a simulation that uses satellite readings every two weeks dating back to 2002. The plan takes into account a host of factors – including temperature, amount of vegetation, tsetse lifespan and location of cattle and other animals – to predict where the fly will be and when it will be there, McCord said.

More information: The plan is highlighted in the May issue of the research journal *Applied Geography*.

Provided by Michigan State University

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