

Did You Know?

Rift Valley fever (RVF) is a viral disease spread to livestock (cattle, sheep, goats, and camels) and humans via mosquitoes that transmit the virus.



This disease is a major human, agricultural, and economic threat in Africa and the Middle East. It has not reached the United States, but having a way to predict potential outbreaks allows the United States to

implement preventive measures. The rapid spread of West Nile virus—identified in Uganda's West Nile District in 1937, and first appearing in the United States in 1999—demonstrates the nature of disease threats, and the importance of being able to track and prevent insect-transmitted diseases.

ARS researchers partnered with the United Nations Food and Agriculture Organization (FAO), the World Health Organization (WHO), and Federal partners from the National Aeronautics and Space Administration (NASA), the Centers for Disease Control and Prevention (CDC), and the U.S. Department of Defense (DoD) to form the Rift Valley Fever Outbreak Early-Warning Team in a global effort to develop and transfer an early-warning system to detect and predict RVF.

The model is based on analyzing satellite images to detect elevated temperatures in the Pacific and Indian oceans and subsequent heavy rainfall, elevated temperatures, and increased moisture in Africa. These conditions flood mosquito-breeding habitats and lead to major increases in the number and longevity of infected mosquitoes that spread RVF. Similar models can also help predict outbreaks of other diseases of livestock and people such as malaria, cholera, and dengue.

A Rift Valley fever outbreak was successfully predicted several months in advance for the first time with a model developed by a team assembled by ARS scientists. In October 2006, when the model

predicted that RVF would flare up within 3 months in sub-Saharan Africa, a warning was sent to FAO and WHO, who then passed on the warning to countries such as Kenya, Ethiopia, Tanzania, Uganda, and Somalia. The early warning allowed countries most likely to be in harm's way to ramp up surveillance and insect control efforts. Subsequently, from 2007–2010, additional warnings were issued to Sudan, Southern Africa, and Madagascar months prior to detecting RVF in animals and people. An RVF outbreak was blamed for the deaths of hundreds of people in Kenya in 1997–1998, and in 1977–1978, an RVF epidemic in Egypt involved 600 fatalities.

ARS researchers work ardently on developing monitoring and surveillance strategies, along with eco-friendly repellents and traps to ensure this pest stays in check.

By Tara Weaver-Missick, ARS Information Staff.



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