



Routine Surveillance Prevents Disease, Saves Agricultural Resources

Eastern Equine Encephalitis (EEE) is a viral disease that occurs in the eastern half of the United States where it causes disease in humans, horses, and some bird species. Because of its high mortality rate, EEE is regarded as one of the most serious mosquito-borne diseases in the United States. People can become infected with EEE when they are bitten by infected mosquitoes. In people who become sick from EEE, symptoms range from mild flu-like illness to inflammation of the brain, coma and death. In 2006, routine surveillance of mosquitoes and birds in Massachusetts showed the presence of EEE in mosquitoes in agricultural lands in the southeastern part of the state. The state acted quickly and declared a public health emergency.

In response to the discovery of EEE, the Massachusetts Department of Public Health (MDPH), an ATSDR-funded partner, and the Massachusetts Department of Agricultural Resources began to apply the pesticide Anvil 10+10 over the agricultural lands. Anvil is not labeled for use in the air column over agricultural lands. However, due to EEE's high risk to human health, the aerial application was warranted. A special permit allowing emergency spraying with Anvil was obtained from the U.S. Environmental Protection Agency (EPA).



Photo from the University of Maine Cooperative Extension Program

Aerial application of Anvil began to reduce the level of adult mosquitoes in the affected area immediately. However, the use of Anvil is not without risk. Anvil contains sumithrin. Although among the least toxic insecticides, sumithrin is a suspected gastrointestinal or liver toxicant.

The MDPH Center for Environmental Health developed a sampling and analysis plan with the Cape Cod Cranberry Growers Association and tested samples of cranberries both before and after the aerial applications of Anvil 10+10. ATSDR provided a health consultation to validate the test cranberries before and after the aerial application of pesticides over southeastern Massachusetts to ensure the sumithrin posed no risk to humans.

ATSDR's support and technical assistance ensured that Massachusetts was able to safely reduce the risk to humans for contracting EEE — and helped save the state's 1.97 million-barrel cranberry crop, valued at \$63 million. This coordinated action validated the method to detect sumithrin. This detection will be invaluable in future situations when public health officials must protect populations from disease while maintaining important agricultural resources.

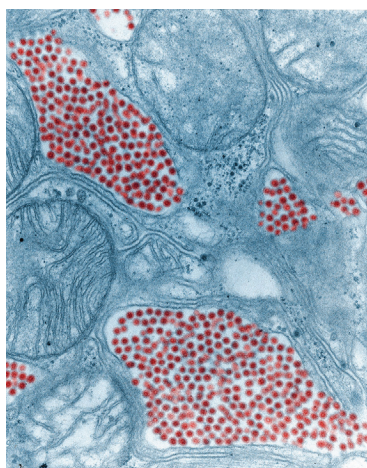


Figure 1. Transmission electron micrograph (TEM) depicts a salivary gland extracted from a mosquito which was infected by the Eastern equine encephalitis (EEE) virus (colored red; magnified 83,900x).

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