

Insecticide Sprays Keep Mexico Free of Medflies with Great Economic Benefits

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The Mediterranean fruit fly (Medfly) is considered to be one of the most destructive pests of fruits and vegetables worldwide. Currently, the host range of the Medfly covers more than 350 different fruit and vegetable crops [1]. It is believed that the Medfly originated in Africa and has since spread into southern Europe, western Australia, the Mediterranean, the Middle East, the Americas and Hawaii. In 1955, the Medfly was first introduced into Central America and by the mid-1970s reached Mexico.

The female Medfly attacks ripening fruit, piercing the soft skin and laying 1-10 eggs in the puncture. Other females may lay eggs in the same puncture. Several hundred eggs have been found in a single cavity. A single female may lay over 300 eggs during a lifetime. The eggs hatch into larvae (maggots) that feed inside the fruit pulp. Fruit that has been attacked by Medfly is unfit to eat because the larvae tunnel through the fleshy part of the fruit, damaging the fruit and subjecting it to decay from bacteria and fungi.

Based on the potential magnitude of damage caused by this pest if it spread throughout Mexico and into the U.S., the USDA Animal and Plant Health Inspection Service (APHIS) developed an extensive control program for the Medfly in Central America and Mexico. Known as the Moscamed (Spanish for Medfly) program, this cooperative program is designed to prevent the northern spread of the Medfly, thereby protecting US, Mexican, and Guatemalan fruit from damage. In addition, by keeping Mexican and Guatemalan fruit and vegetables free from the Medfly, the Moscamed Program has enabled these countries to continue exporting to countries such as the US, which maintains quarantine restrictions on imports from infected countries [1]. Since 1978, the program has successfully prevented the northern spread of Medfly. The program has been fully successful in maintaining a barrier to northern spread [2].

Eradication techniques used in the Moscamed program include the release of sterile males, as well as cultural, regulatory and chemical control tactics. An aerially applied malathion-bait was the initial insecticide used in the Moscamed program. Currently, spinosad, combined with ammonium acetate, an efficacious fruit fly attractant, has been used. Spinosad is highly efficacious in the control of fruit flies. In Guatemala, the main area of Medfly control with insecticide baits is in coffee producing areas where coffee serves as an excellent host for Medfly populations [1].

The benefits to Mexico of the Moscamed program include increased production and exports of fruits and vegetables. A recent evaluation of the Moscamed Program (1978-2008) estimates that Mexico gained US\$40 billion in value of production and US\$26 billion in exports over the 31 year period [3].

References

1. Edwards, C.R., C.K. Gerber and G.J. Hunt. 2003. A laboratory study to evaluate the toxicity of the Mediterranean fruit fly, *Ceratitis capitata*, bait, Success 0.02 CB, to the honey bee, *Apis mellifera*. *Apidologie*. 34:171-180.
2. Exotic Fruit Fly Strategic Plan. 2006. USDA. APHIS.
3. Salcedo-Baca, D., J. R. Lomeli-Flores and G.H. Terrazas-Gonzalez. 2009. Evaluación Económica del Programa Moscamed en México, 1978 - 2008. Oficina de Representación en México. Noviembre.



Medfly

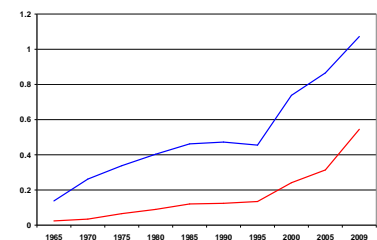


Medfly larvae



1979:
Farthest
northward
spread

1955:
Medfly
introduced



Mexican exports (million tonnes): Tomato in blue, watermelon in red