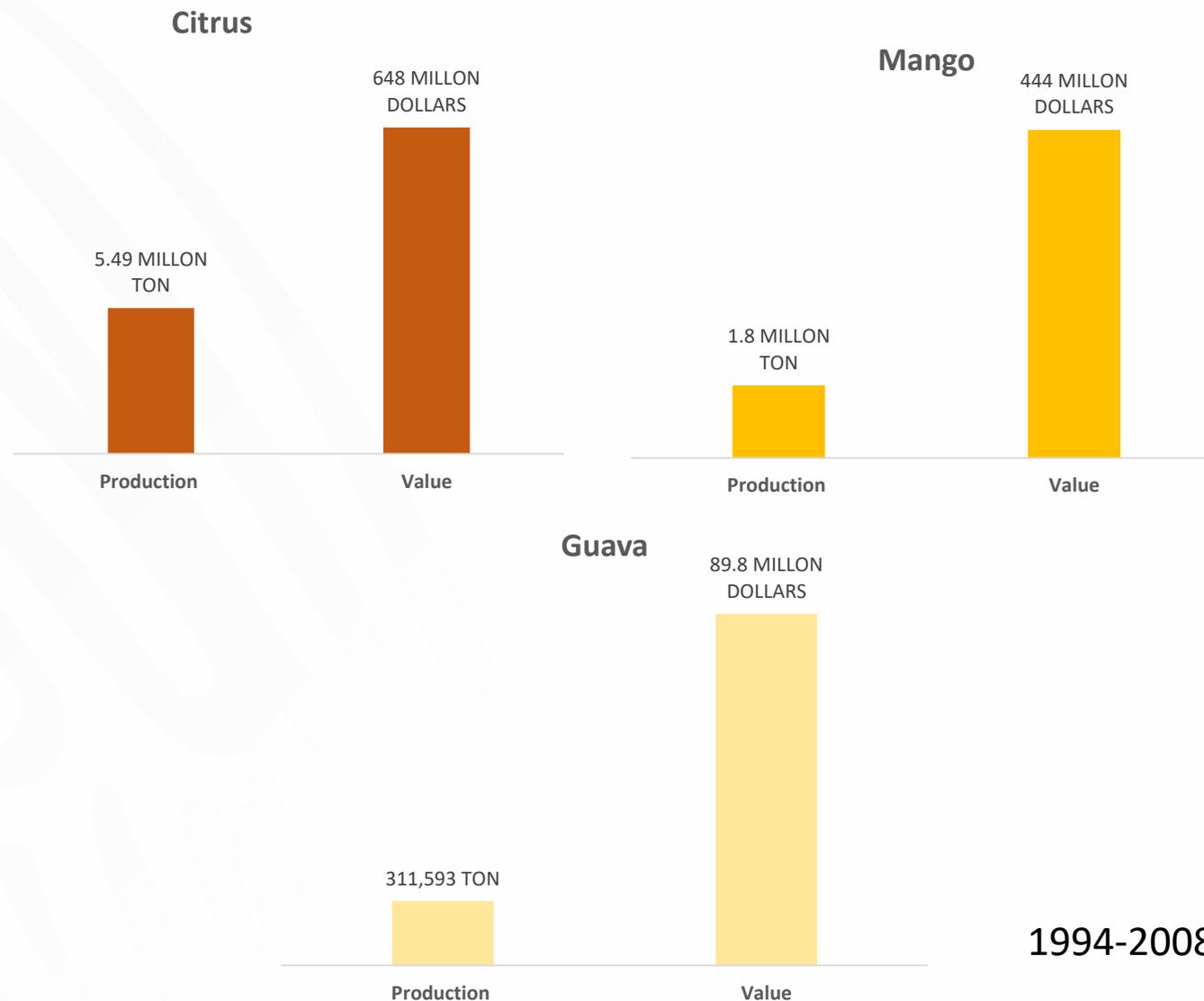
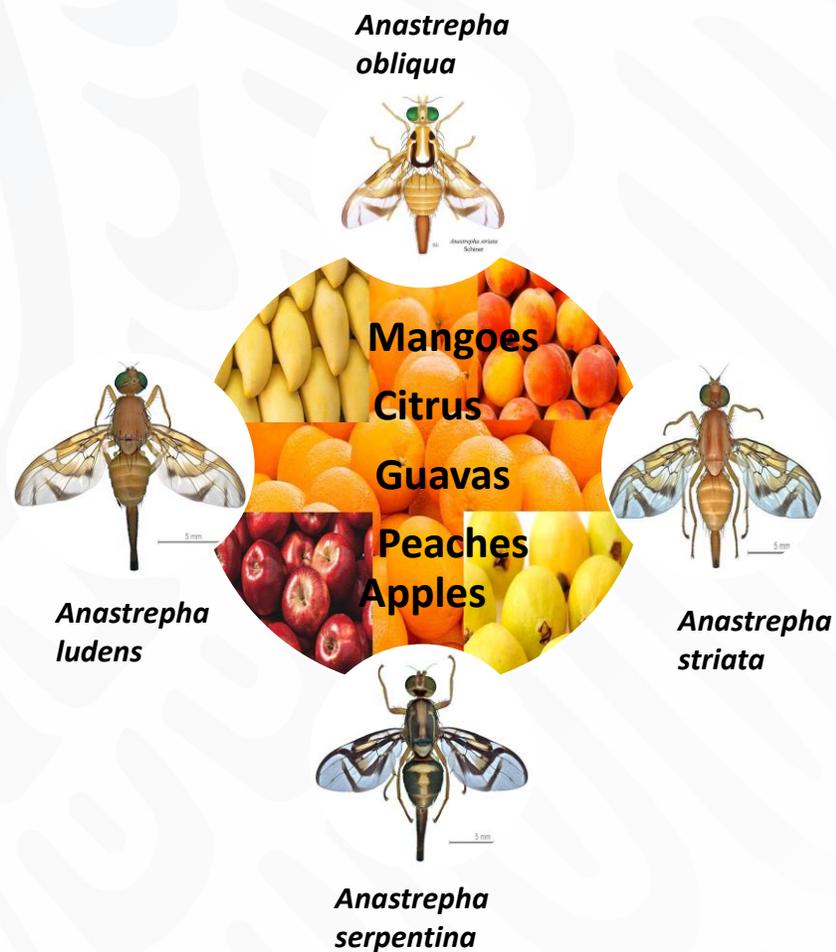




# FRUIT FLY FREE AREAS IN MEXICO

# COMPLEX *Anastrepha spp* AND IMPORTANT FRUIT CROPS



# COMPLEX *Anastrepha spp.*

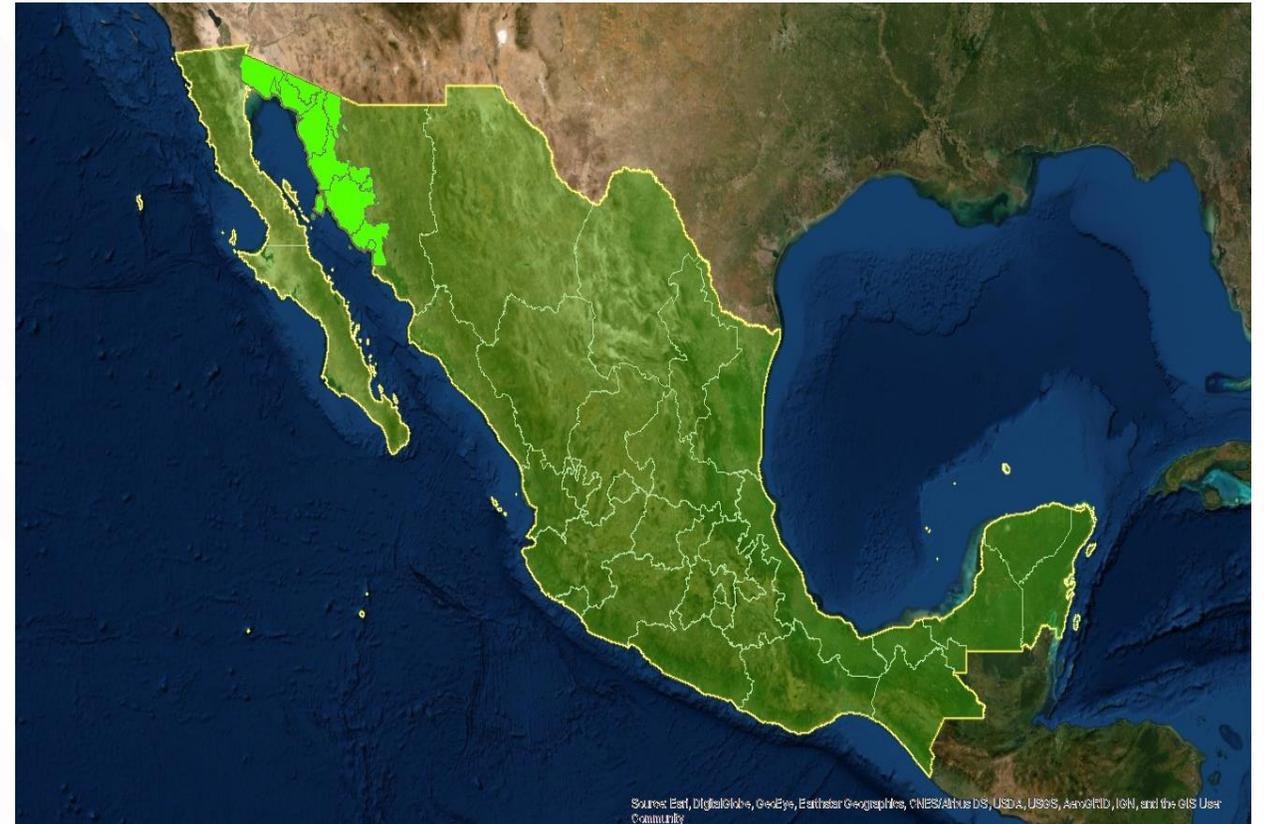


Mexican fruit flies *Anastrepha spp* are species of quarantine significance for USA (data from early year 1900)

USA is the main commercial market for Mexican fruits

To open and maintain this large market, the countries need export quality products

The Mexican government and producers' efforts from 1900 to 1988 gave "fruits": The first international fruit fly free area in Sonora, Mexico, recognized by USA



# NATIONAL CAMPAING AGAINST FRUIT FLIES

Since 1992 the producers and governments unit efforts to establish the National Campaing Against Fruit Flies to control and regulate native frui flies (*Anastrepha spp.*), which is based on integrated pest management having the Sterile Insect Technique (SIT) as the main strategy.

**NOM-023-FITO-1995**



Public outreach



Legal control



SIT



Biological control

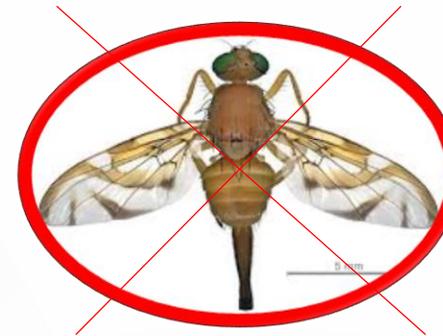


Mechanical control



Trapping and sampling

## Integrated Pest Management

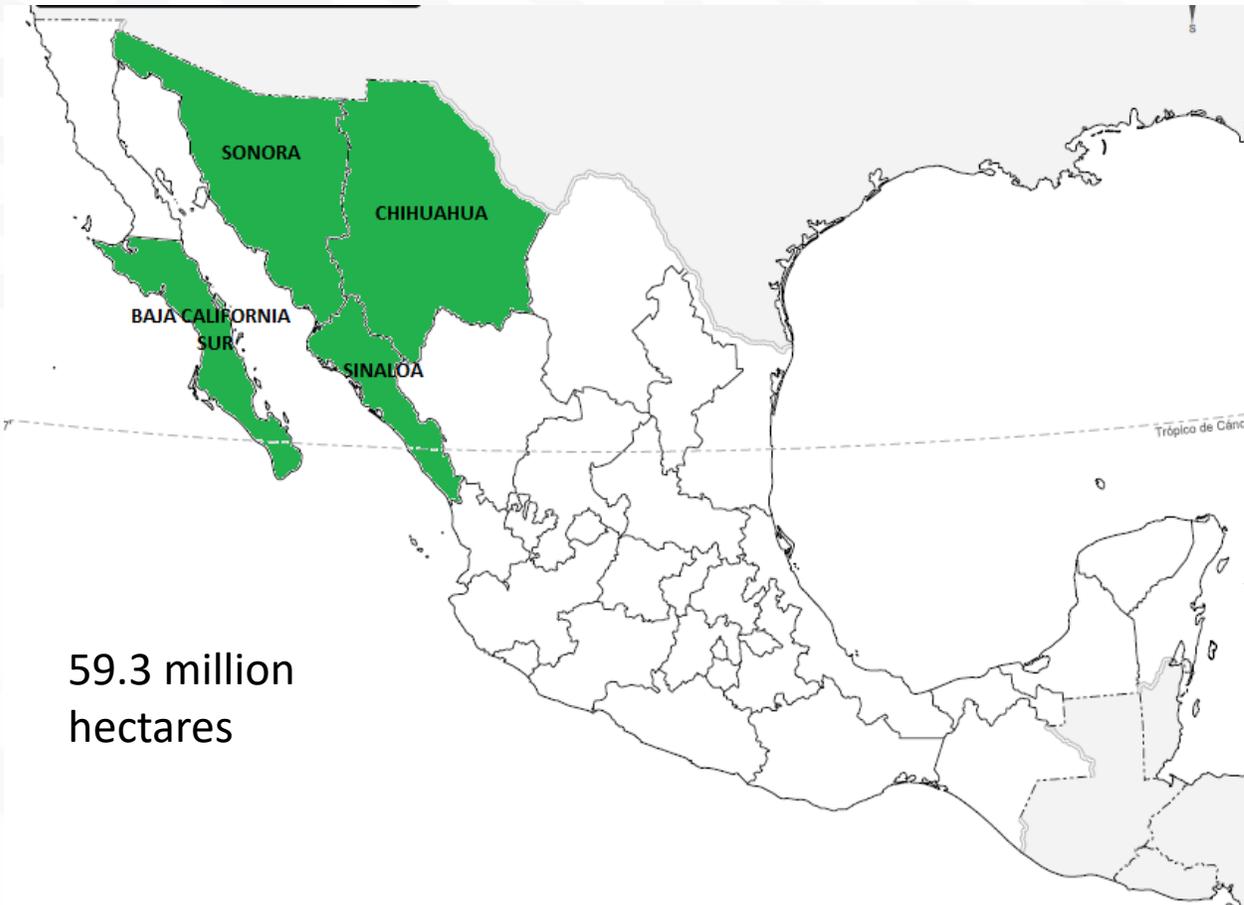


Aerial bait sprays



Ground control  
bait stations and bait sprays

# OTHER FRUIT FLY FREE AREAS RECOGNIZED INTERNATIONALLY



Country that recognized	Free area	Year
New Zeland	Baja California Sur Chihuahua Sonora	1996
USA	Baja California Sur Chihuahua Sinaloa (north)	1999
Europe Union	Baja California Sur Chihuahua Sonora	2002
Japan	Sinaloa (north)	2006
Australia	Baja California Sur Chihuahua Sonora Sinaloa (north)	2004

# CURRENT FRUIT FLY STATUS

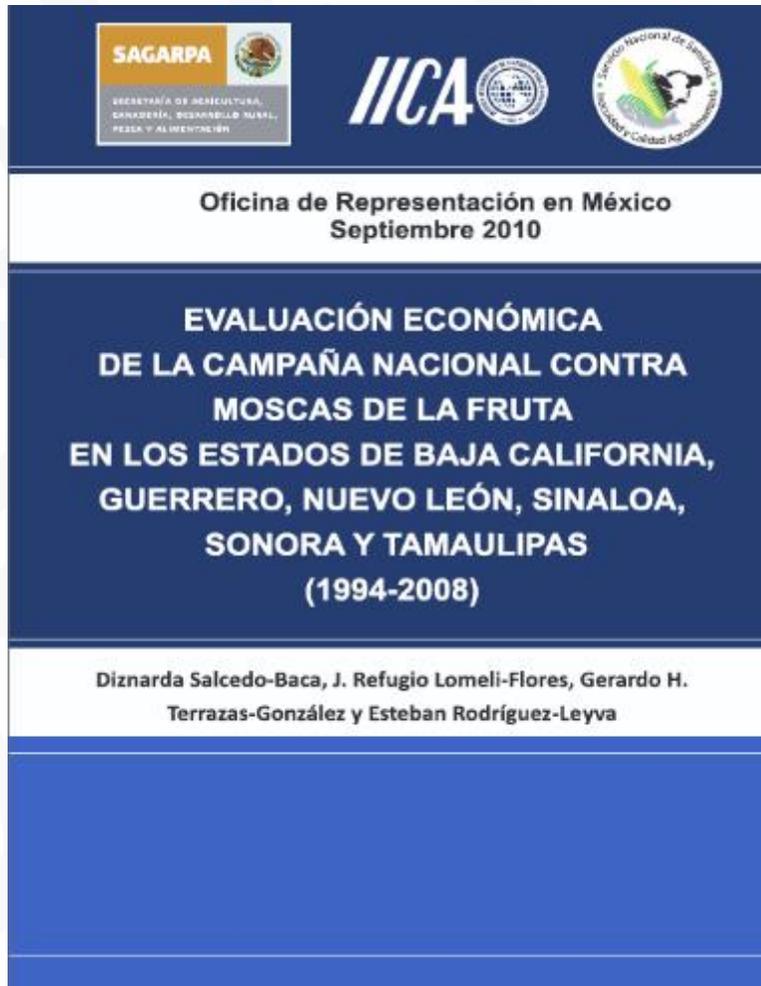


<b>FREE AREA</b>	<b>LOW PREVALENCE</b>	<b>UNDER CONTROL (SUPPRESSION)</b>
52.18 %	9.03%	0.3 %
1'022,319 km <sup>2</sup>	177,039 km <sup>2</sup>	5,911 km <sup>2</sup>



**NO ACTIVITIES**  
38.49 %  
753, 979 km<sup>2</sup>





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PECUARIO Y ALIMENTACIÓN

**IICA**

Oficina de Representación en México  
Septiembre 2010

**EVALUACIÓN ECONÓMICA  
DE LA CAMPAÑA NACIONAL CONTRA  
MOSCAS DE LA FRUTA  
EN LOS ESTADOS DE BAJA CALIFORNIA,  
GUERRERO, NUEVO LEÓN, SINALOA,  
SONORA Y TAMAULIPAS  
(1994-2008)**

Diznarda Salcedo-Baca, J. Refugio Lomeli-Flores, Gerardo H.  
Terrazas-González y Esteban Rodríguez-Leyva

## Benefits by free areas

POSITIVE BENEFIT-COST		
Area	Benefit/Cost	Direct benefits (Million Dollars )
Sinaloa	14.2:01	618
Sonora	24:01	380
Nuevo León	11.6:01	208
<b>Total</b>	<b>16.6</b>	<b>1,206</b>

## Benefits by crops

### POSITIVE BENEFIT-COST

	Mango	Citrus
<b>Benefit/Cost</b>	22:01	19:01
<b>Direct benefits</b> (Million Dollars )	960	1,067
<b>The investment in the National Campaign by government has been the right decision.</b>		
<b>Public resources</b>		





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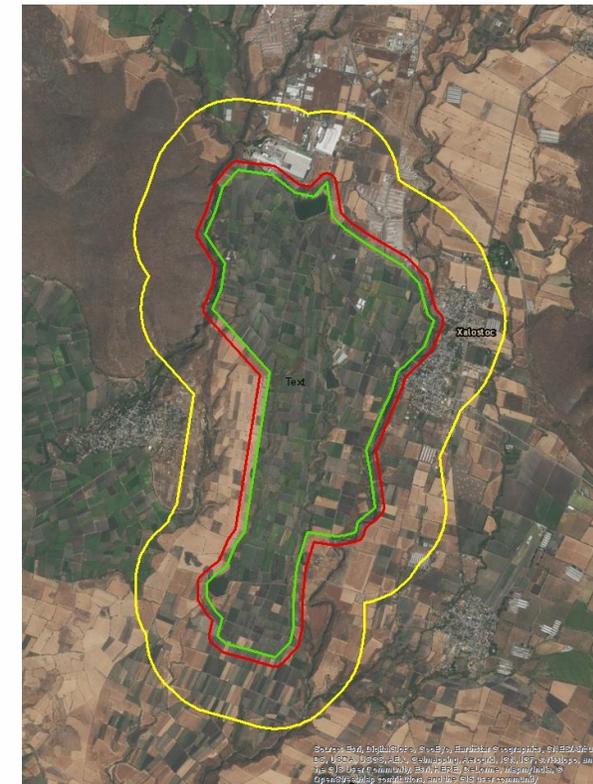
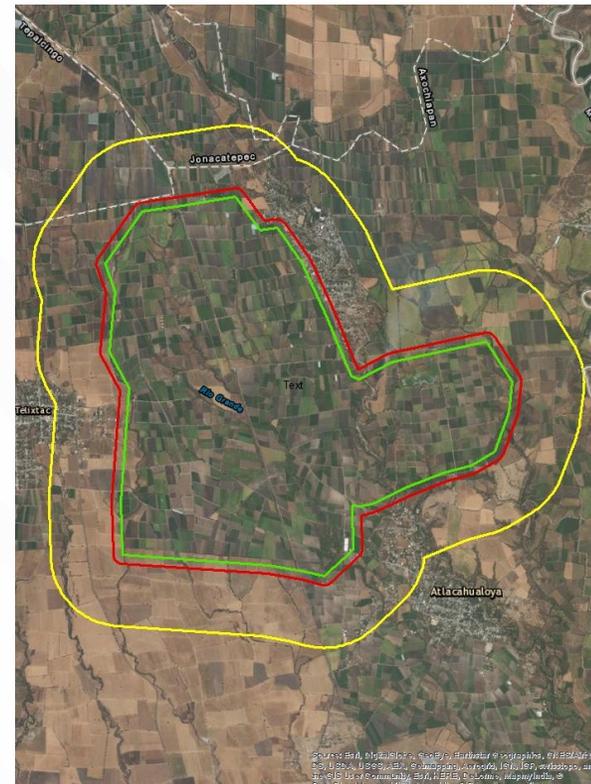
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# PRESENT AND MID TERM FUTURE



Optimal climate and hosts conditions that made eradication a harder work

In 2018, the Mexican government recognized as free area **52.18%** of the national territory.



**Free places and sites of production (ISPM 10)**

# MEDFLY (*Ceratitis capitata* Wied.)-INVASIVE SPECIES



- Costa Rica 1955.
- Nicaragua 1960.
- Panama
- Honduras and El Salvador 1975.
- Guatemala 1976.
- **Mexico 1977 (Chiapas).**

Another important fruit fly for Mexico is the Mediterranean fruit fly or medfly, (*Ceratitis capitata* Wiedemann), which was detected in 1977 near the Guatemala border. The following year, the Moscamed Program was established to prevent the pest introduction inside Mexican territory from Central American infested areas.



# MEDFLY PROGRAM (MOSCAMED PROGRAM)

**In 1978, the Moscamed Program was established to prevent the pest introduction inside Mexican territory from Central American infested areas.**

**The Mexican government bets for área-wide SIT, then mass-rearing facility was built with a production capacity of 500 millions sterile medfly males per week.**

**Eradication strategies during the first four years were massive aerial bait sprays to reduce the pest population levels followed by sterile medfly releases.**



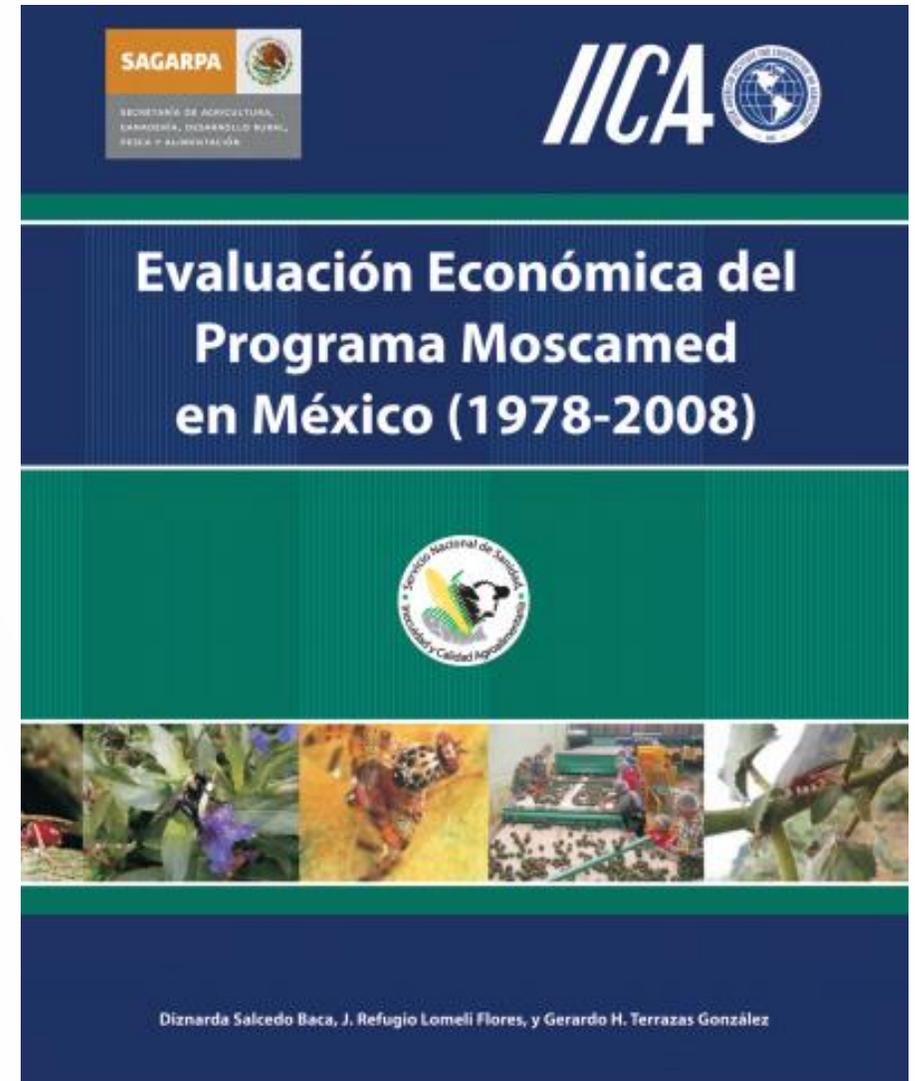
# BENEFIT-COST- MOSCAMED PROGRAM

POSITIVE BENEFIT-COST			
Free area	Government invest (Million Dollars )	Direct benefits (Million Dollars )	Benefit/Cost
<b>Total</b>	<b>459</b>	<b>40,555</b>	<b>112:01</b>

Medfly free status in Mexico has opened international markets to other products:

		
16,909	16,570	1,498

\*Million US dollars 2008-2018



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PECUARIO Y ALIMENTACIÓN

**IICA**

**Evaluación Económica del  
Programa Moscamed  
en México (1978-2008)**

Servicio Nacional de Sanidad,  
Inocuidad y Calidad Agroalimentaria

Diznarda Salcedo Baca, J. Refugio Lomeli Flores, y Gerardo H. Terrazas González

-  Diznarda, S. B., Lomeli F. J.R., Terrazas G. G. H. 2009. Evaluación Económica del Programa Moscamed en México (1978-2008). Instituto Interamericano de Cooperación para la Agricultura (IICA). 144 p.
-  Enkerlin W., Ruelas, G, J. M., Villaseñor C. A., Cotoc R. R., Midgarden D., Lira E., Zavala L. J. L., Liedo P., Trujillo A. F. J. 2015. Area freedom in Mexico from Mediterranean Fruit Fly (Diptera: Tephritidae): a review of over 30 years of a successful containment program using an integrated area-wide SIT approach. Florida Entomologist, 98(2):665-668.
-  Ruelas, G, J. M., Santiago M. G, Villaseñor C. A., Enkerlin H. W. R. y Hernandez L. F. 2013. Los programas de moscas de la fruta en México. Instituto Interamericano de Cooperación para la Agricultura (IICA). 94 p.
-  Salcedo, D. S. B., Lomeli F. J.R., Terrazas G. G. H. y Rodriguez L. E. 2010. Evaluación de la Campaña Nacional contra Moscas de la Fruta en los estados de Baja California, Guerrero, Nuevo León, Sinaloa, Sonora y Tamaulipas. Instituto Interamericano de Cooperación para la Agricultura (IICA). 204 p.

**AGRICULTURA**

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**SENASICA**

SERVICIO NACIONAL DE SANIDAD,  
INOCUIDAD Y CALIDAD AGROALIMENTARIA

# THANK YOU - GRACIAS - ありがとう

*Jesús Chavero-Jaramillo<sup>1</sup>, Francisco Ramírez-y Ramírez<sup>2</sup>, José Manuel Gutierrez-Ruelas<sup>2</sup> and Jose Luis Quintero-Fong<sup>1</sup>*

<sup>1</sup>MEDFLY PROGRAM AT GUATEMALA, Mexico Representation on the Directors Board, Street 16, 3-38, Zone 10, Guatemala City. Email: [jesus.chavero.mx@gmail.com](mailto:jesus.chavero.mx@gmail.com); <sup>2</sup>National Service for Agricultural and Food Health, Safety and Quality, Mexico City.



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MÉXICO**

