

# Control of Olive Fruit Fly in Olives

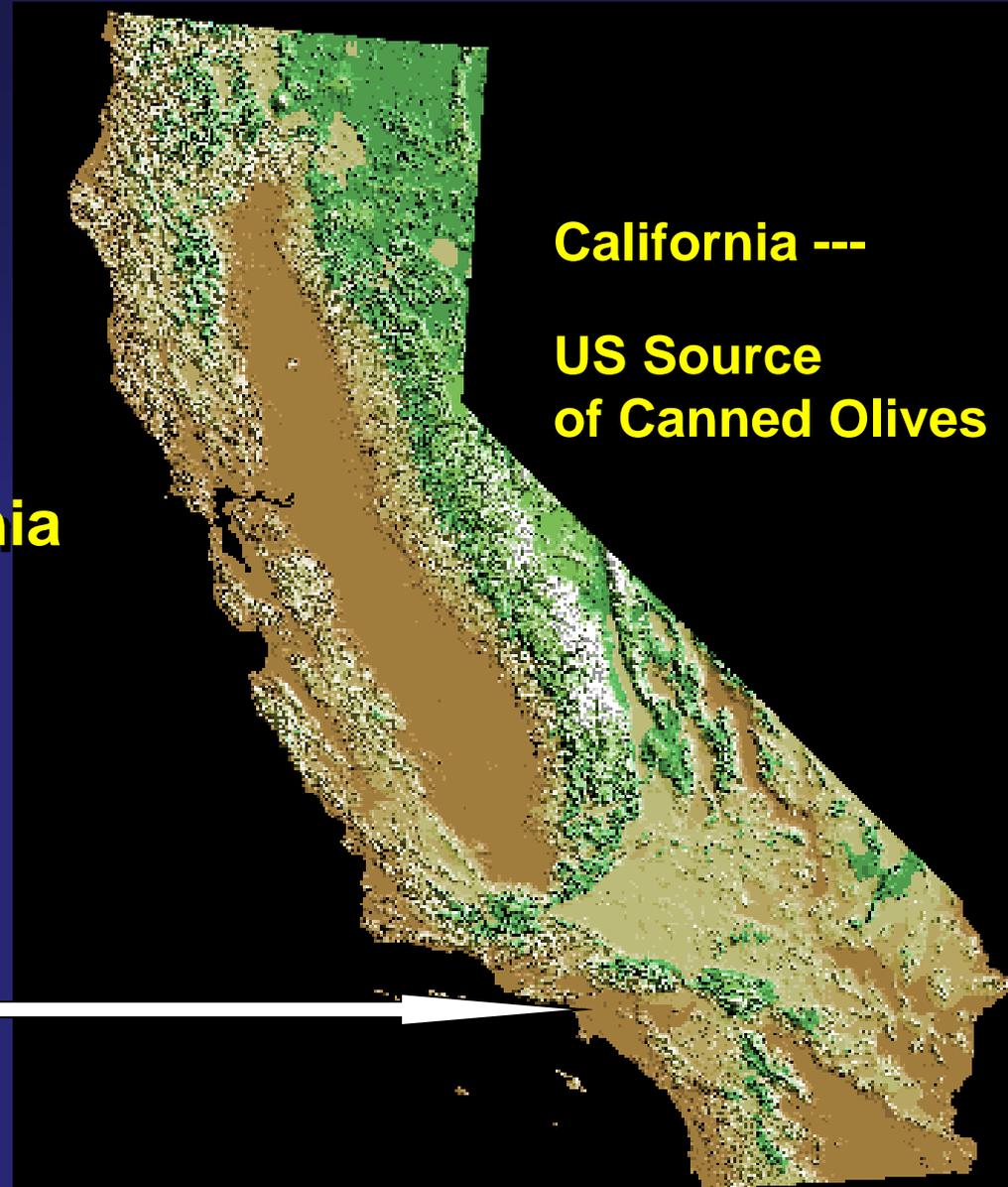


**Olive fruit fly**  
*Bactrocera oleae* (Rossi)  
**1998 First found in California**



**Mormon Temple, Los Angeles**

## CALIFORNIA OLIVE COMMITTEE



**California ---**  
**US Source of Canned Olives**

# TRAPPING AND CULTURAL CONTROL

## Attract & Kill Traps, June-Jan.

Adults in 3-4 wks: 40 with vs. 33 w/o

## Yellow Panel vs. ChamP Traps

Mean/d 12 YP vs. 9 ChamP, Mar.-Aug.

## W/O Orchard Sanitation

March 6.4 pupae/10 g to  
May 1.4 pupae/10 g fruit

## Irrigation

Adult greenhouse survival:  
>200 d w/H<sub>2</sub>O vs. ≤10 d w/o H<sub>2</sub>O

## Fruit Size

Adults from fruit ≥1.0 cm



# Petapa Quarantine Lab, Guatemala

**USDA-ARS  
Parlier, CA**



**Alicia Aldana**

**2008-2009**

**20 Shipments  
> 0.25 Million  
*Psytalia humilis***



**Dr. Pedro Rendón  
Dr. Carlos Cáceres  
USDA-APHIS-PPQ  
Guatemala**



**Miami, Florida, USA  
2-Day Air Freight**



**Irradiation of Medfly Larvae**



***P. humilis* Lab Colony**

**Mass Production of *Psytalia humilis***

**2006 = 10,000  
2008 = 239,000  
2009 = 37,000**



**Parasitism of Medfly Larvae**



**Parasitized Larvae in Pupation Media**



**Adult Parasitoids Emerged from Medfly Pupae & Placed in Cups**

## Parasitoid Shipping Containers



- Waxed cups with pleated paper
- Water on sponge, honey on cloth lid
- 2 Days in transit
- $\approx 1\%$  Mortality



## Parasitoid Holding Conditions

- Transfer to screened cages
- Isolated and contained
- 23°C for 1-3 days to mate & inspect



# 2008 - 2009 Parasitoid Research Sites

## N. Calif.

Orland  
Oroville

## Central Calif.

Napa  
Lodi

## Coastal

San Jose  
Cayucos  
Paso Robles  
Solvang

## S. Calif.

Rancho Bernardo

## San Joaquin Valley

Lemon Cove  
Strathmore  
Porterville  
Bakersfield  
Grapevine

Traps with  
Baits & Lures



Data Loggers

**Requirements for Psyttalia cf. concolor :**

- **3<sup>rd</sup> Instars**  
1<sup>st</sup> - 2<sup>nd</sup>, 56% Kill
- **Food and Water**

**Lab Longevity: 75 d**



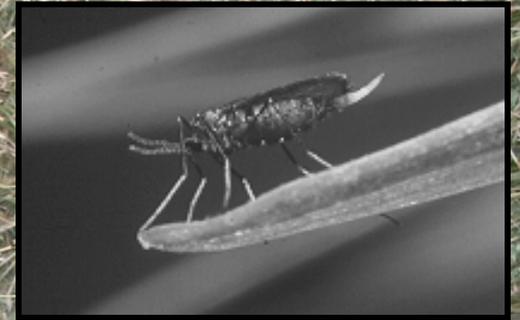
**2008 Strategies:**

**Release late for max OLF  
Attain establishment**

**2009 Strategies:**

**Release early to suppress OLF  
Focus on perimeter of valley  
Attain establishment**

# HESSIAN FLY IN EXPORTED HAY



## THE NATIONAL HAY ASSOCIATION

- EXPORTS TO PACIFIC RIM \$660 MILLION
- FREIGHT CONTAINERS \$120 MILLION

# Response to Export Markets

## Pacific Rim countries

“They're a big market for Western US hay growers”

- Japan
- South Korea
- Taiwan

“Emerging markets”

- Hong Kong
- Vietnam
- PR China



# Response of Research to Emerging Pests



## CEREAL LEAF BEETLE

### Combination Treatments:

- Compression
- Storage
- $\text{PH}_3$  Fumigation



# Response of Research to a Changing Technology

- **Early Baling Techniques**
- **Transitional Period**
- **Modern Equipment**



# DEVELOPMENT OF A CERTIFIED TREATMENT

Bale Compression: 32 kg/cm<sup>2</sup> Large-bale

Phosphine Fumigation: 61 g/28.2m<sup>3</sup>

Hessian Fly Puparia: >30,000 in 3 Replicates



**REARING  
FUMIGATION**



**COMPRESSION**



**RECOVERY**



**LOADING**



**EVALUATION**



# Products Approved for Certified Quarantine Treatment

- **Compressed Bales**  
1996



- **Film-Wrapped Bales** 1997



- **Large-size Bales**  
May 20, 2005  
Implementation

