

**Peaceful Uses of Nuclear
Energy Technology in
Agriculture: the Sterile Insect
Technique applied against
the medfly *Ceratitis capitata*
in Spain**

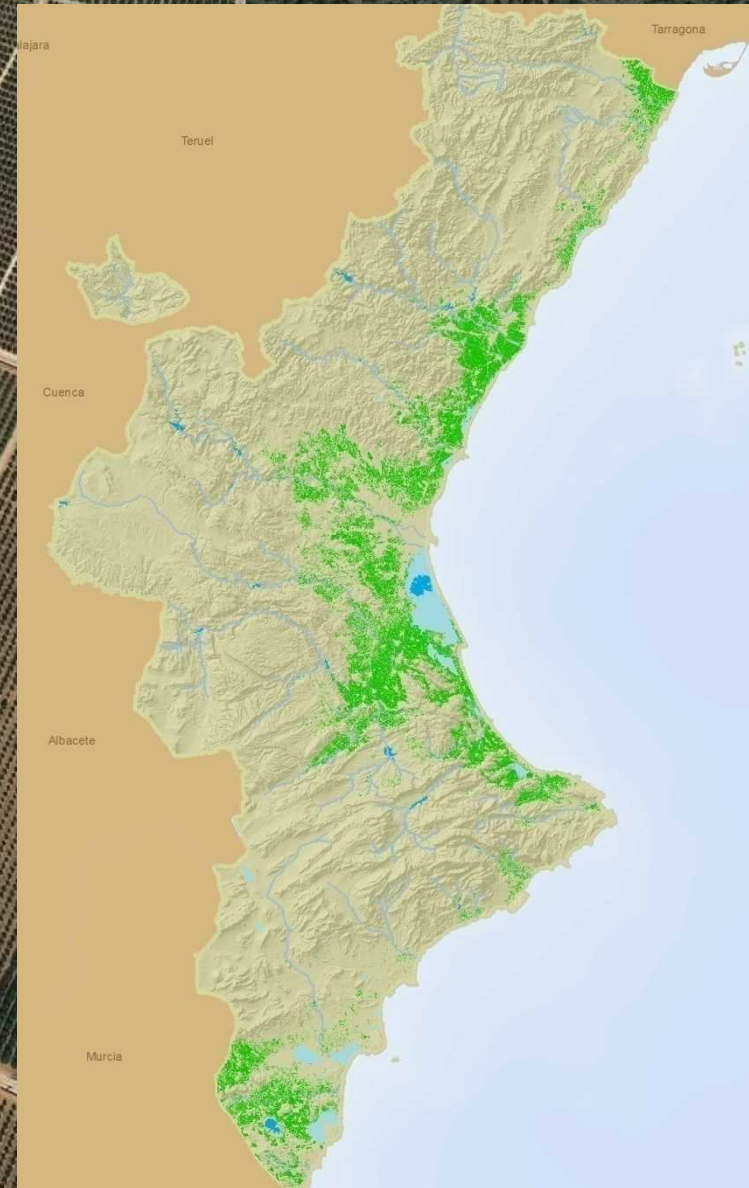


GOBIERNO
DE ESPAÑA

MINISTERIO
DE ASUNTOS EXTERIORES
Y DE COOPERACIÓN



- According to FAO, Spain is the largest fresh citrus exporting industry in the world, with more than 3 million tonnes exported every year mainly to Europe
- Valencia contributes to 60% of the total citrus production in Spain with more than 180.000 hectares of citrus orchards





Highly infested orchard of citrus variety **Fortune**



Damaged fruit



2005-05-05

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding is made between the International Atomic Energy Agency (hereinafter referred to as the "IAEA") whose address is Wagramerstrasse 5, P.O. Box 100, A-1400 Vienna, Austria, and the Government of Spain represented by TRAGSA, a Governmental Organization that provides public services to the Ministry of Agriculture (MA) and other Ministries and governmental organizations, whose address is 58, Maldonado St., 28006 Madrid, Spain.



Source: Joint FAO/IAEA Division of
Nuclear Techniques in Food and
Agriculture
Insect Pest Control Section

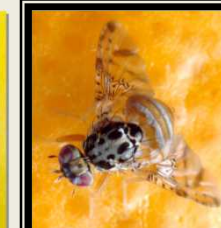


Sterile Insect Technique:

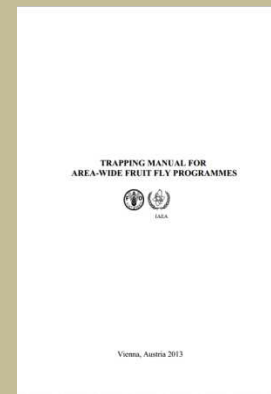
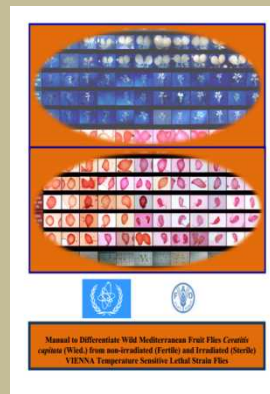
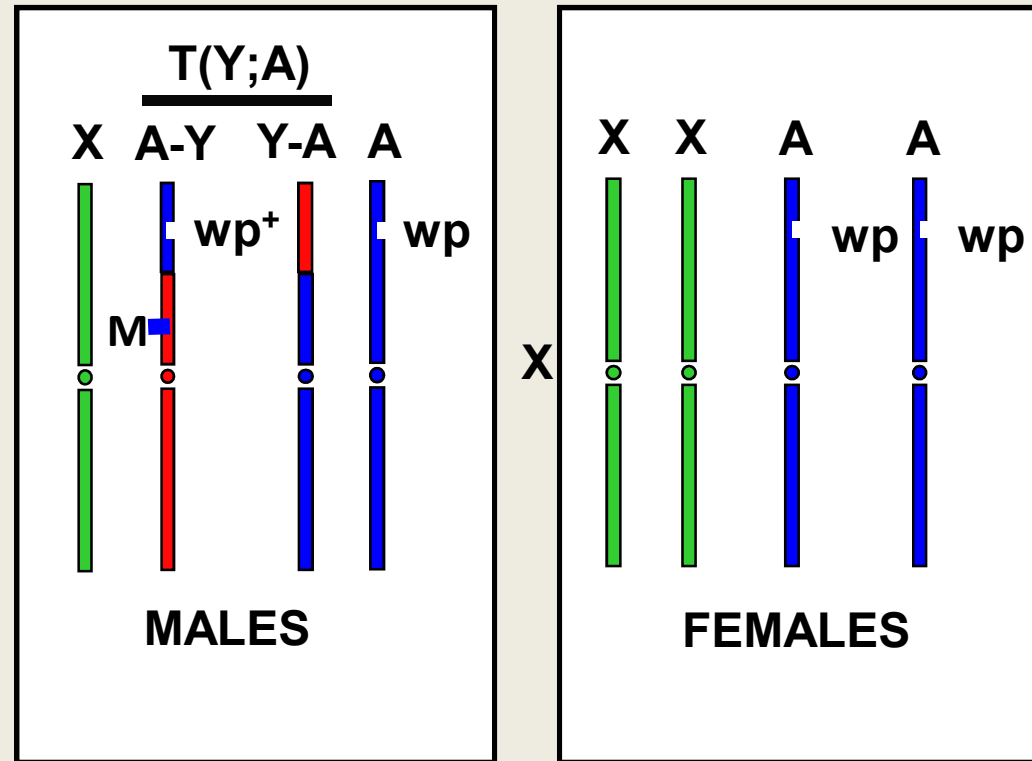
The sterile insect technique SIT is a method of biological control, whereby overwhelming numbers of insects of the target pest are mass-reared in an insectary, sterilised and released in the fields. The released sterile insects seek and mate with the wild ones. These mates result in no offspring, thus reducing the next generation's population.

Characteristics of SIT:

- Preventive approach
- Ecological and species specific
- Wide area
- Integrated pest management



Genetic sexing strain Vienna 8: WP + TSL





Building of the facility: 2006



Opening ceremony

25 april 2007

Secondary outputs



Sterile pupae of *Ceratitis capitata* to be exported



Aedes albopictus

- More than 100 jobs created in the SIT programme: mass rearing of fruit flies, sterilization and release of males and field activities
- Exports of more than 1050 million sterile male pupae (1 billion pupae) during 2013-15 to SIT programmes in Croatia and Morocco (0.5 million of euro)
- The project has received scientific visits and hosted trainings of fellows from other countries: Tunisia, Jordan, Israel, Mauritius, Sudan, Morocco, Croatia
- Participation in Coordinated Research Projects: together with other research institutes like IVIA (Instituto Valenciano de Investigaciones Agrarias), Tragsa has participated in the following CRP:
 - [Development and Evaluation of Improved Strains of Insect Pests for Sterile Insect Technique \(SIT\) Applications](#)
 - [Improving Sterile Male Performance in Fruit Fly SIT programmes](#)
 - [Exploring Genetic, Molecular, Mechanical and Behavioural Methods of Sex Separation in Mosquitoes](#)
 - [Use of Symbiotic Bacteria to Reduce Mass-Rearing Costs and Increase Mating Success in Selected Fruit Pests in Support of SIT Application](#)
- Expertise provided to other SIT projects: Morocco and Croatia
- New Agreement between Tragsa and IAEA to continue the collaboration and support the incipient SIT project on Tiger Mosquito (*Aedes albopictus*) and participation in a Regional Europe TC Project for the cycle 2016-17