

IAEA

International Atomic Energy Agency

**International Atomic Energy Agency (IAEA)
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Training course on Packing, Shipping, Holding and Release of Sterile Flies in Area-wide Fruit Fly Control Programmes

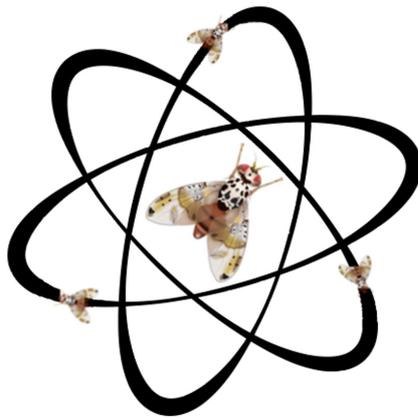


Joint FAO/IAEA Programme
Nuclear Techniques in Food and Agriculture

Training course on Packing, Shipping, Holding and Release of Sterile Flies in Area-wide Fruit Fly Control Programmes

COURSE OVERVIEW

Module 1

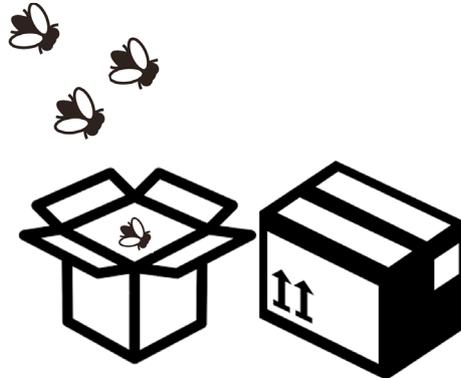


Atoms for Peace

- 1.1 Welcome Message
 - 1.1.1 Case Study: Area-wide Integrated pest Management from IAEA
 - 1.1.2 Case Study: Using Nuclear Science (SIT) to Control Pests from IAEA
 - 1.1.3 Case Study: Nuclear Technique Helps Dominican Republic Eradicate Insect Pest That Hurt Agricultural Sector from IAEA
 - 1.1.4 Case Study: Tiny pest, big problem: South Africa's citrus challenge from CNN
- 1.2 Course Instructions
- 1.3 Chapter 1 – Introduction



Module 2



Chapter 1 - Packing at Mass Rearing Facility

- 2.2.1 Plastic Bottles
- 2.2.2 Cardboard Boxes
- 2.2.3 Plastic Baskets
- 2.2.4 Labelling

Module 3



Chapter 1 - Transportation to Emergence and Release Centre (Pupae) and Rearing Facility (Eggs)

- 3.1.1 Pupae
 - 3.1.1.1 Process control
- 3.1.2 Egg Shipment for Medfly Genetic Sexing Strain (GSS-tsl)
 - 3.1.2.1 Handling, packing and transportation procedures
 - 3.1.2.1.2 Labeling
 - 3.1.2.2 Eggs processing after transportation
 - 3.1.2.3 Process control
- Chapter 1 – Summary
- Chapter 1 – References
- Quiz Module 3 Chapter 1



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Chapter 2 - Long Distance (Transboundary) Shipment

- 3.2.1 Operational Procedures (see also Sections 2.1 and 3.1 of this E-Learning Course)
- 3.2.2 Normative Procedures
 - 3.2.2.1 Responsibilities of the producer/shipper of the sterile insects
 - 3.2.2.2 Responsibilities of the authorities prior to export
 - 3.2.2.3 Responsibilities of the authorities upon import (final or transit)
 - 3.2.2.4 Responsibilities of the importer
 - 3.2.2.5 Shipping documents
 - 3.2.2.6 Traceability
 - 3.2.2.7 Action in case of non-compliance
 - 3.2.2.8 Emergency action
 - 3.2.2.9 Records
 - 3.2.2.10 Communication
- Chapter 2 Summary
- Chapter 2 References
- Quiz Module 3 Chapter 2



Module 4



Chapter 1 - Handling Emergence and Holding at Release Centre

- 4.1.1. Reception and Unpacking of Pupae
- 4.1.2 Procedures for Chilled Adults
 - 4.1.2.1 Setting up for fly emergence
 - 4.1.2.2 Food preparation and feeding
 - 4.1.2.3 Emergence and holding
- 4.1.3 Procedures for Adults Packed in Paper Bags
 - 4.1.3.1 Bagging procedures
 - 4.1.3.2 Setting up for emergence
 - 4.1.3.3 Food preparation and feeding in paper bags
- 4.1.4 Enhancing Performance of Release Sterile Males
 - 4.1.4.1 Nutritional supplements
 - 4.1.4.2 Semiochemicals supplements
 - 4.1.4.3 Hormonal supplements
- Chapter 1 - Summary
- Chapter 1 - References
- Quiz Module 4 Chapter 1



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Chapter 2 - Preparation of Adults for Release

4.2 Preparation of Adults for release

4.2.1 Chilling of Adult Flies in PARC Boxes

4.2.2 Chilling of Adult flies in Sleeve Cages

4.2.3 Chilling of Adult Flies in Worley Towers

4.2.4 Chilling of Adult Flies in Mexico Towers

4.2.5 Chilling of Adult Flies in Guatemala Towers

4.2.6 Loading and Transportation of Release Boxes with Chilled Adults for Aerial Release

4.2.7 Loading and Transportation of Paper Bags for Aerial Release

Chapter 2 - Summary

Chapter 2 - References

Quiz Module 4 Chapter 2



Module 5



Chapter 1 - Aerial Sterile Fly Release

- 5.1 Aerial Sterile Fly Release
 - 5.1.1 Aerial paper bag release
 - 5.1.1.1 Spacing and altitude of paper bag release
 - 5.1.1.2 Calibration of paper bag release rates
 - 5.1.2 Chilled Adult Release
 - 5.1.2.1 Evolution of chilled adult release machines
 - 5.1.2.2 Aircrafts and chilled fly release machines
 - 5.1.2.3 Quality control of chilled adult release process
 - 5.1.2.4 Spacing and altitude of chilled release
 - 5.1.2.5 Calibration of chilled adult release rates
 - 5.1.2.6 Release system used in Spain
 - 5.1.2.7 Pre-and post-release control of fly quality
- Chapter 1 – Summary
- Chapter 1 - References
- Quiz Module 5 Chapter 1



Chapter 2 - Ground Sterile Fly Release

- 5.2 Ground Sterile Fly Release
 - 5.2.1 Adult Ground Release
 - 5.2.1.1 Containers used for ground release
 - 5.2.1.1.1 Cylindrical bins
 - 5.2.1.1.2 PARC boxes
 - 5.2.1.1.3 Paper bags
 - 5.2.1.1.4 Other types of release containers
 - 5.2.1.2 Description of adult ground releases procedures
 - 5.2.1.3 Situations under which to conduct ground releases
 - 5.2.2 Pupal Ground Release
 - 5.2.2.1 General concepts
 - 5.2.2.2 Covered pupal releases
 - 5.2.2.2.1 Sawdust
 - 5.2.2.2.2 Sand
 - 5.2.2.2.3 Vermiculite
 - 5.2.3 Pupal Release Methods
- Chapter 2 - Summary
- Chapter 2 - References
- Quiz Module 5 Chapter 2



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Chapter 3 - Sterile Fly Release Densities

5.3 Sterile Fly Release Densities

5.3.1.1 Pest aggregation

5.3.1.2 Sterile male longevity

5.3.1.3 Topography and other conditions of target area

Chapter 3 - Summary

Chapter 3 - References

Quiz Module 5 Chapter 3

Chapter 4 - GPS-GIS Support to Sterile Release Programmes

5.4 GPS-GIS Support to Sterile Release Programmes

5.4.1 Mapping of Release Areas

5.4.2 Common Requirements for GPS-GIS in Aerial Releases

5.4.3 Common Requirements for GPS-GIS for Ground Releases

5.4.4 Post-processing

Chapter 4 - Summary

Chapter 4 - References

Quiz Module 5 Chapter 4



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Module 6



Chapter 1 - Interpretation of Sterile Fly Recapture

6.1 - Interpretation of Sterile Fly Recapture

6.1.1 Background

6.1.2 Recapture Indices and Evaluation Parameters

6.1.2.1 Description of recapture indices

6.1.2.2 Description of evaluation parameters

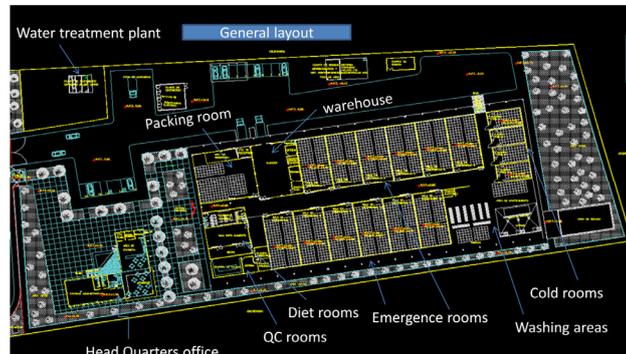
Chapter 1 - Summary

Chapter 1 - References

Quiz Module 6 Chapter 1



Module 7



Chapter 1 - Design of a Fruit Fly Packing, Holding, Chilling and Release Centre

- 7.1 Design of a Fruit Fly Packing, Holding, Chilling and Release Centre
 - 7.1.1 Background
 - 7.1.2 Emergence and Holding Rooms
 - 7.1.3 Chilling Rooms
 - 7.1.4 Reception, Packing and Quality Control Rooms
 - 7.1.5 Supporting Areas
- Chapter 1 - Summary
- Chapter 1 - References
- Quiz Module 7 Chapter 1

Student Feedback





List of Appendices



- Appendix 1 - Data Sheets for Shipment of Sterile Pupae
- Appendix 2 - History of Transboundary Shipments of Sterile Tephritid Fruit
- Appendix 3 - Transboundary Shipment of Sterile Insects
- Appendix 4 - Glossary of Relevant Terms
- Appendix 4.1 - References
- Appendix 5 - Glossary of Acronyms
- Appendix 6 - All References
- Appendix 7 - Other Relevant Literature
- Appendix 8 - List of Suppliers for Aerial Release Service
- Appendix 9 - List of Contributors

Training course on Packing, Shipping, Holding and Release of Sterile Flies in Area-wide Fruit Fly Control Programmes - Overview

Overview Report

Course Participant: Silvije Filipović

Course name	Grade
<u>Training course on Packing, Shipping, Holding and Release of Sterile Flies in Area-wide Fruit Fly Control Programmes</u>	100.00



Training course on Packing, Shipping, Holding and Release of Sterile Flies in Area-wide Fruit Fly Control Programmes: View: Silvije Filipović User report

Grade item	Calculated weight	Grade	Range	Percentage	Rank	Feedback	Contribution to course total
QUIZ <input checked="" type="checkbox"/> Quiz Module 3 Chapter 1	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 3 Chapter 2	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 4 Chapter 1	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 4 Chapter 2	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 5 Chapter 1	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 5 Chapter 2	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 5 Chapter 3	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 5 Chapter 4	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 6 Chapter 1	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 7 Chapter 1	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
QUIZ <input checked="" type="checkbox"/> Quiz Module 2 Chapter 1	9.09 %	✓ 10.00	0-10	100.00 %	1/201		9.09 %
AGGREGATION							
\bar{x} Course total Simple weighted mean of grades.	-	100.00	0-100	100.00 %	1/201	-	

Certificate of Completion

This is to certify that

Silvije Filipović

has participated in and successfully completed the

Training course on Packing, Shipping, Holding and Release of Sterile Flies in Area-wide Fruit Fly Control Programmes

Date: May 8, 2025



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