

11. Quality control post-irradiation

PART OF STEPS IIIb, IIIc, and STEP V OF PROCESS IN FLOW CHART IN APPENDIX 2

Routine and periodic quality control tests are required to determine the effect of radiation, handling, shipment duration, holding and release, as well as to verify that the sterile insect received fulfil minimal requirements as specified in the Manual for Product Quality Control and Shipping Procedures for Sterile Mass-Reared Tephritid Fruit Flies, (FAO/IAEA/USDA 2003).

The following specific laboratory quality control tests should be conducted during different steps of the process at the emergence and release centre:

11.1 AFTER RECEPTION OF PUPAE

After unpacking, a sample of pupae should be taken to conduct quality control tests which should be done routinely (R), periodically (P) or occasionally (O). Tests include:

- Percent of emergence (R)
- Percent of flyers (R)
- Emergence peak (grids) (R)
- Stress test (longevity) (R)
- Sex ratio (R)
- Pupal weight (pupal density) (O)
- Irradiation verification (R)

11.2 PRIOR TO PREPARATION FOR RELEASE

Prior chilling of adults or bag release, a sample of adult specimens should be taken to conduct periodically the following quality control tests:

- Percent flyers (P)
- Stress test (longevity) (P)
- Fly weight (P)
- Mating competitiveness (O)
- Mating compatibility (O)
- Sterility test (% egg hatch) (O)

11.3 PRIOR TO RELEASE

After chilling of adults, or after packing and handling of bags for release, a sample of adult specimens should be taken to conduct periodically the following quality control tests:

- Percent flyers (P)
- Stress test (longevity) (P)
- Mating competitiveness (O)
- Mating compatibility (O)

11.4 AFTER RELEASE

After release, a sample of adult specimens (see Section 7.2.6) should be taken to conduct periodically the following quality control tests:

- Percent of flyers

11.5 FIELD AND FIELD CAGE QUALITY CONTROL TEST

A comprehensive list and description of this required test in a confined semi-natural environment in field cages to measure mating performance of the sterile males when competing against wild males for mating with wild females plus the methodology to perform open field dispersal and longevity test are described in the same quality control manual (FAO/IAEA/USDA 2003).

Test frequency should be determined in order to ensure that the sexual behaviour of the released sterile insect of a given fruit fly species is similar with that of the target wild population.

11.6 REFERENCES CITED

FAO/IAEA/USDA. 2003. Manual for product quality control and shipping procedures for sterile mass-reared tephritid fruit flies, Version 5.0. International Atomic Energy Agency. Vienna, Austria. 85 pp.