Arthropod Mass Rearing & Quality Control working group

FIELD EVALUATION OF THE GENETIC CONTROL OF *AEDES ALBOPICTUS*

CENTRO agricoltura&ambiente "Giorgio Nicoli"

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RATIONALE

The Sterile Insect Technique suppression strategy is based on the mass rearing, sterilization and release into the natural habitat of large numbers of males of the target vector species.
The released sterile males must be able to fly, to disperse enough from the release station to cover the target area, to survive and be sexually active long enough to cover the time between successive releases, to locate the virgin wild females and successfully compete for mating with the wild males.
Currently the CAA laboratory has the capacity to produce 100,000 sterile males per week.
Aged male pupae are exposed to Gamma rays in order to obtain a pre-determined sterility level in the adult males. Following irradiation, sterile pupae are released using simple plastic containers with water.

Male pupae obtained from the sieving

Pupae in Petri dishes for radiation

Cs 137 irradiator

FIELD EXPERIMENT

An isolated village (11 hectares of urban area) and a closeby control area (16 hectares) were chosen to carry out release trials for two consecutive years (2008-2009).
From April to September, male pupae were irradiated with Gamma rays and released in fixed stations.
15 ovitraps were placed in the release area and 10 in the control area to weekly collect the eggs and check for their hatching rate.

10 release stations were utilized in the 2008, reduced to 5 stations in the 2009, when a new special release device was introduced to supply the males with an energetic source.
The device was a green polyurethane sponge for flowers, soaked with a sucrose solution, holed and placed on top of the release station.

Ovitrap

Release station

RESULTS

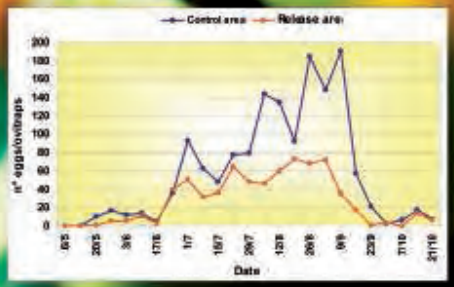
A significant reduction in the eggs fertility level and in the eggs density was obtained in the release area when compared with the control area, showing the efficacy of the released males in competing with wild males, and supporting the possibility of scaling up the system.

2008

29 releases, for a total amount of 530,000 sterile male pupae, performed.
10 release stations fixed at about 100m from each other.
Releases conducted every 5 days.

Seasonal average egg fertility of 82% registered in the control area against the 34% fertility in the release area.

Reduction of 53% in the number of eggs laid also observed in the treated area compared with the control area.



2009

18 releases, for a total amount of 310,000 sterile male pupae, performed.
5 release stations fixed at about 100m from each other.
Releases conducted every 7 days.

Seasonal average egg fertility of 78% registered in the control area against the 24% fertility in the release area.

Reduction of 72% in the number of eggs laid also observed in the treated area compared with the control area.

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