

Annex 10 A

TENTATIVE INSTRUCTIONS FOR DETERMINING THE SUSCEPTIBILITY OR RESISTANCE OF BLACKFLY LARVAE TO INSECTICIDES

1. Introduction

(a) This method measures the susceptibility levels of a population of blackfly larvae to a given insecticide. The technique is designed to detect the emergence of an insecticide-resistant strain if and when it appears. For this purpose, it is necessary (i) to establish the susceptibility levels of normal blackflies of the population concerned, and (ii) to make subsequent routine checks of the susceptibility levels at periodic intervals. This test is devised specifically to detect physiological resistance. It is stressed that this test is not designed to evaluate the effectiveness of deposits of insecticides in the field; this must be ascertained by the use of other entomological techniques.

(b) *Establishing the base-line.* Batches of blackfly larvae are exposed to different concentrations of insecticide to determine the kills obtained at each level. It is suggested that a preliminary test be made at each concentration in the complete range provided. This will indicate the general levels of susceptibility; further tests should then be made on this basis. A series of five concentrations should be chosen, some of which give partial mortalities (i.e., at least one of them should give a complete kill and one less than 50% mortality); tests at these concentrations should be repeated four times with samples from the same population of blackfly larvae.

(c) *Subsequent routine checks.* The concentration double the lowest concentration that has consistently given complete kills in the four successive tests is chosen for the routine checks. These should be made periodically with 2-5 replicates. The occasional appearance of survivors in such checks may be due to normal variation. However, the regular occurrence of survivors (e.g., on three successive occasions) constitutes an alert signal calling for further investigations. Such investigations will include four tests at each of the concentrations used in establishing the original base-line. This would indicate the presence of physiological resistance and the approximate proportion of resistant blackfly larvae in the population.

(d) *Condition of blackfly larvae.* Last-stage larvae should be used as they can be identified from pupal respiratory filaments.

(e) *Conditions of test.* Tests should be done in a place free from insecticidal contamination. The larvae are exposed at a temperature between 20° and 30°C.