Short Communication

Cross-breeding Studies on the Cassava Green Spider Mite Mononychellus sp. (Acari:Tetranychidae) in East Africa

THOMAS N. MUREGA

International Centre of Insect Physiology and Ecology (ICIPE), Box 30772, Nairobi (Kenya)

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ABSTRACT


Cross-breeding experiments were carried out using six populations of the cassava green spider mite originating from different locations in Kenya and Uganda. In all cross-combinations made, an F1, F2 and F3 generation was obtained. A slight increase in the egg mortality in the F2 points to the fact that a partial hybrid sterility occurs in some of the cross-combinations. No indications for the existence of more severe reproductive barriers were found.

Since the populations hybridize and show free gene exchange it is concluded that all populations are conspecific and belong to Mononychellus progresivus Doreste.

INTRODUCTION

The taxonomic identity of the cassava green spider mite in Africa is shrouded in a lot of confusion, and has recently provoked discussion on the validity and usefulness of certain taxonomic characters (Gutierrez, 1987; Rogo et al., 1987). Both M. tanajoa (Bondar) and M. progresivus Doreste are reported to occur (Doreste, 1981; Flechtmann, 1982). Because of these uncertainties, it was felt that studies on genetic affinities between populations could be used to resolve this confusion. The present studies were aimed at establishing whether the populations of the cassava green spider mite from different parts of Kenya and Uganda can be hybridized and, if so, to what extent. For this purpose, Mononychellus populations from different parts of Kenya and Uganda were collected, reared and intercrossed, and the degree of reproductive isolation established by scoring egg mortality in offspring generations.
MATERIALS AND METHODS

Representative samples of *Mononychellus* were collected in the field from six different localities (Fig. 1) and transferred to the laboratory. Each sample (representing more than 1000 individual mites) was individually caged on isolated potted cassava plants in a screen house in order to build up a strain. A strain was propagated by reinfection of newly potted cassava plants as the need arose. The population size of each strain never dropped under an estimated 1000 individuals. The name of each strain is related to its geographic origin as shown in Fig. 1.

Samples of males of the strains were examined by L.M. Rogo in 1986. The aedeagi all corresponded to the type species described as *M. progresivus* by Doreste (1981) in Venezuela.

Inter-strain hybridization was carried out by pairing a number of females teleiochrysalids (usually five) with the same number of mature males. The mites were placed on cassava leaf disks placed upper side down on wet cotton wool in perforated plastic petri dishes; this is a modification of the method originally used by Helle (1962). Petri dishes were kept in a growth chamber where conditions varied between 26 and 28°C, 65 and 80% r.h. After ecdysis of the teleiochrysalids, mating took place. Mated females were removed after 48 h and the F₁ eggs deposited were counted. The number of unhatched eggs