

## THE RED SCALE, *CHRYSOMPHALUS AURANTII*, MASK., IN KENYA COLONY.

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The first record of red scale in Kenya Colony in the file of the Entomological Laboratory is for 1914, on citrus. It is known that the scale has been brought into the country in at least one consignment of citrus, which, being accompanied by a certificate from the country of origin that the plants were free from insect pests, was allowed to enter the country under the Plant Import Regulations then in force, without being inspected. It seems, therefore, likely that red scale is not indigenous to the country, but an introduced pest.

In this belief, an attempt at eradication was made, in the hope that the insect might be prevented from becoming established in the country, and the citrus crop thus saved from a costly enemy. This attempt was also undertaken because of the possibility that red scale might attack coffee, a very much more important crop in the country than citrus. This was recognised as a danger for two reasons: first, because red scale in other countries has a very wide range of food-plants; and secondly, because quite a number of scales in Kenya Colony attack both citrus and coffee. These are: *Icerya purchasi*, Mask., *Saissetia hemisphaerica*, Targ., *Saissetia nigra*, Niet., *Coccus hesperidum*, L., *Ceroplastes ceriferus*, And., and *Selenaspidus articulatus*, Morgan.

Accordingly, the importation of citrus into the country was prohibited. At the same time, owners of citrus attacked by red scale were advised to destroy such trees, which were replaced free from the Government Farm, Kabete. Compulsory powers were not sought, but whenever planters were asked to destroy infected trees under this scheme, they consented to do so.

Commencing in 1917, inspections of citrus orchards and nurseries in search of red scale were made by the staff of the Division of Entomology and by the late Mr. J. J. Adams. A circular letter was sent out to citrus owners, accompanied by a specimen of red scale, asking them to make a search for the insect on their trees and to report the result. Sometimes it was found that other insects, such as *Coccus hesperidum* or *Selenaspidus articulatus*, or the citrus Psyllid, *Trioza* sp., were mistaken for red scale, so owners who reported the presence of this insect were asked to send a specimen from their trees.

By these means it was found that red scale was widely distributed in the country and that large numbers of trees were attacked. In some cases, citrus not being a profitable crop, little care has been taken of the trees and the scale has been allowed to multiply unchecked, so that in some neglected orchards great damage has been done by it.

In addition to citrus the plants now known to be hosts of red scale in this country are roses, apple, plum and sisal.

Fortunately, the fears that red scale might attack coffee have not so far been realised, and the following evidence, obtained both in the field and in the laboratory, is encouraging:—

- (1) Red scale has never been observed or reported on coffee.
- (2) A field of coffee, adjacent to some citrus trees, very badly infested with red scale, has been kept under observation. The citrus is very close to the outside row of coffee, the branches of the two often being in contact. All that has been found on the coffee, are objects that appeared to be red scale larvae, which have secreted the white covering just after settling (this the larvae have also done when put on coffee in the laboratory) and older individuals that were dead and had in all probability been washed off the citrus on to the coffee.

- (3) In experiments in the laboratory many hundreds of red scale larvae have been placed on the leaves of coffee plants. Many of them secreted their white covering, but none made any further progress. Larvae similarly placed on citrus as controls lived and attained maturity and themselves produced offspring.

On the citrus plants, to which reference has been just made, the life-history of the red scale was worked out, the larvae having been placed on the plants in the middle of November 1917. The times when the various stages in the life-history were first reached were as follows :—

After the first day most of the larvae had secreted a covering.

After eight days the " pimple " was visible in the centre of the scale.

The first moult took place after 18 days.

The second moult of the female took place after 50 days.

The first male emerged on the 65th day.

The first larvae of the next generation were observed after 110 days.

The average daily temperatures during this life-cycle were : minimum, 54·5° F. ; maximum, 80·5° F.

Unfortunately the eradication of red scale has proved impracticable, but we may hope that coffee is immune.

Citrus is not at present an important crop in the country, though a great many people have a small number of trees. At local prices fumigation is impracticable, so that spraying is the control measure recommended.

The West Indian red scale, *Selenaspidus articulatus*, Morgan, has several times been mistaken for the common red scale by citrus owners. It occurs on both citrus and coffee, and has been found in widely separated parts of the country, but has not been known to do serious harm ; often only a single individual will be found on one leaf. In one citrus orchard in the Songhor district, a small number of trees could be described as badly infested. The fruit was attacked as well as the leaves, hundreds of individuals being found on a single orange, which was thus rendered quite unsightly.

A citrus plant was infected in the laboratory, at the same time as those on which the red scale life-history was worked out. Larvae of the next generation were first observed after 120 days.

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