

A STUDY OF THE BIOLOGY OF TWO COCCINELLID BEETLES

FOUND ON MAIZE AND EGG-PLANTS

INTRODUCTION

Tropical agriculture is largely characterized by plantation crops. It is under such conditions i.e. large areas of monoculture, that pest infestations build up at their fastest rate. Such infestations are further aided by the comparatively uniform climate of these regions. Since World War II, the use of insecticides in tropical countries has increased considerably. This is due partly to the more efficient salesmanship of the insecticidal firms, but also because of the increasing resistance of the insects to the various insecticides, and therefore the increasing necessity of applying more of the insecticide per acre, for control to be effective. No applied entomologists would say that chemicals are not effective over a short period, for the increase in crop yields that they produce is often staggering. They do however have harmful effects (e.g. killing beneficial insects, phytotoxicity, consumer toxicity, etc.), and they do not answer the long term control problem. This problem must be answered by either cultural or biological control, and it is with the latter in view that the present work has been conducted.

The Coccinellidae are a family of some 5,000 species (Imms 1957), most of which are predacious insects feeding on aphids, adelgids, scale insects, mites, etc., and are therefore of great significance in biological control problems. Tillyard (1926) considered that certain of the Coccinellidae are amongst the most beneficial of all insects. The species under examination in the present work, Cycloneda sanguinea (L.) and Ceratomegilla maculata (DeGeer) are undoubtedly beneficial. An attempt to ascertain the degree of their importance has been undertaken, but due to shortage of time (i.e. the study was only carried out from October 1958 to March 1959 inclusive) their economic importance could not be examined as fully as desired

and it is hoped that the present work will form a basis for further study on this point.

The two species in question have come under extensive consideration during the past. Their beneficial importance has been noted on various crops throughout the Neotropics. However little work has been done on the biology or morphology of either species. Yet from the point of view of biological control measures, it is essential to know something of the biology and morphology of the species in question. This work is therefore an attempt to cover the first of these two neglected aspects.

A section of the project is being devoted to a study of the life history of the two species, another section to a description of their four stages (egg, larva, pupa and imago). The larvae have not been previously described, and owing to the remarkable resemblance between the larval forms of the two species a considerable amount of space has been allocated to a detailed description of them. The quantities of aphids which the several stadia are capable of eating are given, and there is a discussion on the parasites and predators of the two species of ladybirds.