THE BIOLOGY AND CONTROL OF ASPIDIOTUS DESTRUCTOR SIGNORET, ON COCONUT IN SRI LANKA

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Studies on some aspects of the biology of the coconut scale, *Aspidiotus destructor* Sign. (Homoptera : Coccidae) were done in the field and laboratory. The coconut scale generally causes considerable damage to coconut in the North Western, Western, Southern and rarely in the North Central Provinces of Sri Lanka. Available literature on coconut scale and its control by biological, chemical and cultural methods is reviewed. The host range of the pest in Sri Lanka and in other countries is mentioned. The pest position in Sri Lanka and the control measures adopted so far are discussed. The natural factors like climate, preponderance of male scales and scarcity of feeding material for scale insects contribute to the pest decline.

Several indigenous natural enemies were recorded in coconut scale infestations. Out of these, an aphelinid parasite, *Aphytis chrysomphali* Mercet and two coccinellid predators *Pullus xerampelinus* Muls. and *Chilocorus nigritus* Fabr. are found to be important; the first two being recorded for the first time in Sri Lanka. Other two predators recorded for the first time are two coccinellids, *Chilocorus circumdatus* Sch., *Pullus* sp. ? *coccidivora* Ayyar and a nitidulid *Cebocephalus* sp. *P. xerampelinus* was attacked by a hymenopteron parasite *Aminellus indicus* Kerrich.

Heavy infestation of coconut scale by a fungus *Fusarium equiseti* (Corda) Sacc. was observed during the months of November and December when the rainfall and humidity were high.

A study on some aspects of the biology of A. destructor, P.xerampelinus and C. nigritus was made. Studies on the degree of parasitisation effected by A. chrysomphali indicated a superproportional relationship only at three occasions from the field collected samples. In the majority of cases the parasite did not respond to changes in the host density. Studies on monthly fluctuation of scale populations and the accompanying changes in the density of natural enemies with climatic factors carried-out at two sampling sites, show that a monthly rainfall of over 200 mm, an average temperature of below 27°C and the humidity of above 80 % r.h are not suitable for the development and dispersal of A. chrysomphali. P. xerampelinus appears to be more active at higher densities of scale infestations whereas C. nigritus is more active at low densities. The changes in the population density of these predators are mainly due to changes in the host density.

The coccinellids introduced in Sri Lanka for the control of coconut scale are Azya trinitatis Mshl., Cryptognatha nodiceps Mshl., Lindorus lophanthae Blaisd. and Chilocorus cacti L. The former one was released soon after importation and the rest were mass multiplied on coconut scale infestations on the fruits of Cucurbita maxima and released in the field. The mass multiplication techniques of these beetles are explained. In spite of a large number released they were unable to establish.

The experiments indicated a heavy mortality of predators by the use of kerosene oil/soap emulsion. In view of this, the risk of using kerosene oil/soap emulsion in scale infestations is evaluated.

Suggested control measures are:

(a) To cut and burn the infested leaflets or the frond if detected in its initial stage of infestation and

(b)By collection and re-distribution of P. xerampelinus and C. nigritus beetles or multiplying them in the laboratory if infestation is detected in its advanced stage.

No control measures are necessary if there is a preponderance of male scales or heavy parasitisation by the fungus.

Under Appendix 1, the description of the adult of A. indicus, the parasite of P. xerampelinus is given. Homalotylus flaminius Dalmn. and Syntomosphyrum sp. nr. obscuriceps Ferr., the parasites of C. nigritus and a hyperparasite, Lygocerus sp. on H. flaminius were also recorded for the first time and their abundance in the field and their laboratory behaviour are mentioned under Appendix 2.

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