

THE INSECT PEST COMPLEX OF COWPIA
IN MAHAWELI SYSTEM C IN SRI LANKA

By

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Thesis

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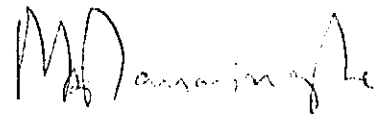
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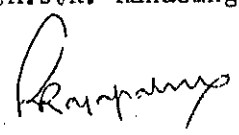
SRI LANKA

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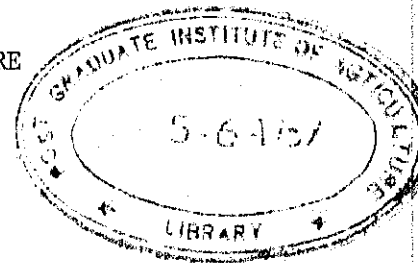

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ABSTRACT

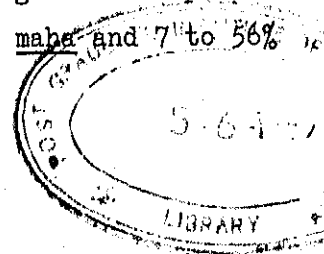
During maha 1986/87 (September 1986 to January 1987) and yala 1987 (March to August), insects damaging cowpea, Vigna unguiculata (L.) Walp. pod-boring caterpillars in particular were studied at the Regional Agricultural Research Station, Girandurukotte, to document their seasonal occurrence according to crop growth stage.

Absolute insect populations were estimated weekly by using fumigation cages while the relative estimates were obtained by sweep-net. An ultra-violet light trap was used to sample the moths. The pod-boring caterpillar populations and their damage was estimated by sampling flowers and pods every five days beginning with the onset of flowering.

Twenty insect species infesting cowpea (variety MI 35) were recorded. Pericallia ricini [Fabricius] complex, Monolepta signata Olivier and a tortricid shoot-borer were recorded for the first time damaging cowpea grown in Sri Lanka. Except for two species (Maruca testulalis (Geyer) and Spodoptera littoralis [Boisduval]) the other insect species were more abundant during yala.

The bean fly, Ophiomyia phaseoli (Tryon) was the only species that damaged the seedlings of cowpea. During the pre-flowering stage [two to five weeks after planting (WAP)], low populations of a tortricid shoot-borer species, a leaf miner species and the leaf folder, Hedylepta indicata (Fabricius), infested the crop. The foliage thrips (Sericothrips occipitalis Hood), leaf hoppers (Empoasca sp.), aphids (Aphis craccivora Koch), foliage beetles (Luperodes sp., Monolepta signata Olivier and Epilachna sp.) and leaf-feeding caterpillars (Spodoptera littoralis [Boisduval] and Pericallia ricini [Fabricius] complex) damaged the leaves of cowpea during more than one growth stage.

During flowering and pod maturation (5 - 12 WAP), a leaf feeding caterpillar species, flower thrips (Megalurothrips usitatus [Bagnall]), pod sucking bugs (Riptortus sp. and Nezara viridula) and five species of pod-boring caterpillars (Maruca testulalis [Geyer], Leguminivora ptychora Meyrick, Spodoptera littoralis [Boisduval], Lampides boeticus Linnaeus and Eublemma dimidialis [Fabricius]) damaged the crop. The pod-borers damaged 11 to 50% of green pods during maha and 7 to 56% during



during yala. During maha, M. testulalis caused most (56%) of the pod-borer damage. Early during maha, M. testulalis damaged young leaves and shoots; in both seasons its population reached a peak at eight weeks after planting. During yala, Leguminivora ptychora caused most (58.1%) of the pod-borer damage, and reached a peak population at 11 weeks.

To highlight the relative importance of pod-borer damage to cowpea production in Mahaweli system C, a life table of the cowpea pods was constructed by observing every week the fate of 100 flower buds (up to harvest).

During maha, 11.5% of the flower buds, 14.4% of the open flowers and 14.9% of the young pods abscised due to pod-borer damage. During yala, 10.7% of flower buds, 5.1% of open flowers and 13.5% of young pods abscised due to pod-borer damage. Only about 20% of the flower buds contributed to final yield of cowpea pods during both seasons.

A survey was conducted to determine the intensity of pod-borer damage and their distribution in cowpea grown in Mahaweli system C. In nine farmers' fields surveyed, pod-borer damage was 25.3% (maha) and 44.7% (yala). M. testulalis, S. littoralis and Heliothis armigera were the common pod-borer species while M. testulalis was the most abundant species. H. armigera occurred in five farmers' fields during yala only, and caused pod-borer damage comparable with that of M. testulalis.