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DISTRIBUTION OF LARVAL AND PUPAL INSTARS OF PLUSIA ARGENTIFERA GUEN. ON TOBACCO PLANTS

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SUMMARY

The occurrence of oviposition and early larval instars is greatest on the lower part of the tobacco plant in association with "lugs" and "cutters". The later and more damaging larval instars tend to move up into the commercially valuable "leaf" region.

Pupation occurs on the plant, with a small proportion in positions on or near the ground.

I. INTRODUCTION

During the 1966-67 tobacco season an area of unsprayed tobacco was maintained at the Parada Research Station in North Queensland. The more common pest at that time, the tobacco looper (*Plusia argentifera* Guen.), was thus permitted uninhibited infestation and hence natural distribution on the plants. On reaching the topping stage, the plants were carrying a heavy infestation. Detailed records were made of the occurrence of each of the developmental stages of the insect on the plants.

II. METHODS

On 50 random plants counts were made of each of the larval and pupal instars on each leaf of each plant. The numbers of each instar in each leaf position were expressed as percentages of the total numbers of that instar recorded.

III. RESULTS

The distribution of the percentages for each instar is given in Figure 1.

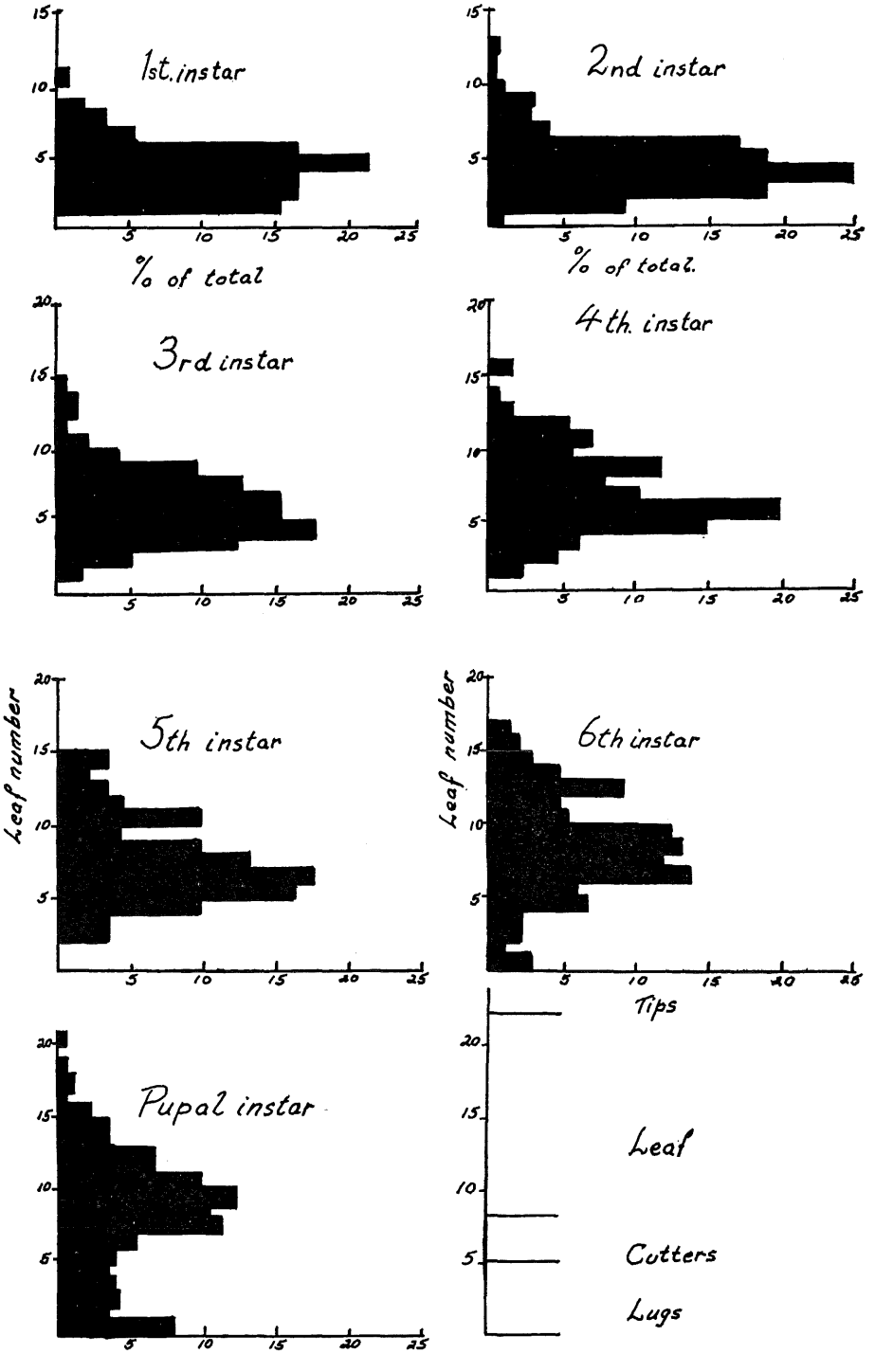

Fig. 1.—Distribution of larval and pupal instars of *Plusia argentifera* on tobacco plants.

IV. DISCUSSION

Within limits it is possible to attribute commercial leaf types to positions of leaves on the tobacco plant. These types, known as "lugs", "cutters", "leaf" and "tips", are shown in Figure 1, and thus greater significance is presented in respect of the pattern of the infestation shown in each of the diagrams for the various insect instars.

In unpublished studies on the tobacco looper, the author has recorded that female moths have a preferred oviposition site on the lower leaf surface, with the majority of the eggs being laid within $\frac{1}{4}$ in. of the leaf margin (Figure 2).

In Figure 1 it is shown that most of the 1st and 2nd instar larvae occurred on the lower leaves of the plants. These undoubtedly were in the vicinity of where they hatched. As this was mostly in the region of the "lugs", extending to the "cutters", it is shown that oviposition occurs mostly on the lower leaves.

Subsequent instars occurred in the greater numbers in higher positions. These older instars therefore must have voluntarily moved from the lower to the higher leaf positions and in doing so moved into the higher commercial "leaf" type position.

Pupation occurred mainly in sheltered places on leaves but a small percentage of larvae (7·7), foreshadowed in the 6th instar, descended to pupate under the lowest "lugs" or in trash on the ground.

Third and later instar larvae are gross feeders and are capable of destroying large quantities of leaf lamina in the commercially valuable leaves on the tobacco plant. This results from the upward movement of the more damaging instars and emphasizes the need to eliminate the pest while in its early larval instars by thoroughly spraying both surfaces of the leaves.

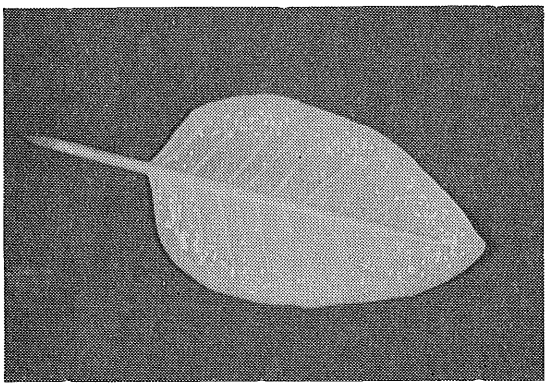

Fig. 2.—*Plusia argentifera* eggs on a tree tobacco leaf, showing oviposition site preference on the lower leaf surface.

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