

PREFACE

The present investigation has been carried out in Burdwan ($23^{\circ}16'N$, $87^{\circ}54'E$), a tropical humid zone of the gangetic plains of India, with six pronounced seasons and agricultural lands around. The coexistence of plantation and vegetable crops, and fair and luxuriant growth of wild weeds invite a number of polyphagous insect pests for attacks on standing crops. Sometimes the rotational croppings have been noticed to help build-up pest populations for major outbreaks in future. The caterpillars of the noctuid moth, Spodoptera litura Fabricius, are polyphagous pests ravaging a number of economically important crop plants and wild host plants in the field.

In keeping with the spirit of dealing with diverse facets of animal behaviour and energetics of a polyphagous and multi-voltine moth species, an attempt has been made here to have a comprehensive account on the bionomics and bioenergetics of S. litura, and to have an overall idea on its feeding capabilities and consequent pest status in the field.

Thus, the first part of this dissertation embodies certain basic information involving laboratory studies on its life history with four host plants, and natural performances (i.e., abundance and activity as measured by continuous light trappings over two years) of its adults in relation to some measurable

factors of the physical environment; and the second part of this dissertation incorporates the results of laboratory investigations on energy transformation, energy utilization and energy balance for growth and reproduction of this moth nourished by four host-plant leaves.

In addition, the explanation of figures, the summary of each part of the studies and a general list of references cited are included in the text.

Although the manuscripts have been reviewed, copy-edited, checked and rechecked for typographical and conceptual errors, some will slip through. In spite of my attempt to keep on the 'cutting edge' of bionomics and bioenergetics of an important insect pest, I am sure that I have overlooked some significant papers. Because of time constraints, I could not answer all suggestions personally, but all invaluable comments offered by known and anonymous reviewers are deeply appreciated.

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