

INTEGRATED PEST MANAGEMENT OF SUGARCANE PEST *PYRILLA PERPUSILLA* WALKER (HEMIPTERA)

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ABSTRACT

Sugarcane belongs to the grass family and is classified in the tribe Andropogonae under Graminae. The genus *Saccharum*, is very sensitive and reacts sharply to any stress, it may be any environmental factor, insect-pests or cultural practices. It is grown exclusively for its sugar and an important by product Molasses in sugar industry. One of the main reasons for this low sugar recovery has been attributed to the heavy infestation caused by large number of insect pests, right from the date of planting to the harvesting of the crop. Important pest of sugarcane are stem borer, shoot borer, top borer, *Pyrrilla*, scale insect, mealy bugs, termites. The integrated pest control (IPM), utilizes all suitable techniques and methods in a compatible manner as possible and maintains the pest population at levels below those causing economic injury. So for the control of sugarcane pest (*Pyrrilla perpusilla*) IPM is being applied. In the present study we recommend *Tetrastacus pyriillae* (egg parasite) with chemical (endosulfan) as a control measure.

Key words : Sugarcane, Integrated pest Management, *Pyrrilla perpusilla*, Endosulfan, *Tetrastacus pyriillae*.

INTRODUCTION

Sugarcane, an important cash crop next to cotton, is the main source of sugar production in India. Sugarcane is grown in tropical and subtropical regions, The total area under sugarcane in the world was 19.90 million ha. during 1998 with the production of 1,254.94 million tonnes of sugarcane (Anonymous, 1998). India ranks first among all the countries which is 9.98% of the total world's production. Leafhopper, *Pyrrilla perpusilla* walker (Fig.-1) is important Sugarcane pest that belongs to family Fulgoridae of the order Hemiptera. This is the serious pest and is recorded from all the sugarcane growing tracts of India.

Integrated Pest Management is a system that in the context of associated environment and the population dynamics of the pest species, utilises all suitable techniques and methods in a compatible manner and maintains the pest population levels below those causing economic injury. There are many definitions of IPM but the main feature has always been the minimal use of synthetic pesticides and maximum reliance on natural regulatory mechanisms to maintain pests below the levels at which they cause economic

loss. The present study aims at the arsenals of pest management tools that should be available in the year 2000 and beyond and how we can integrate these in a cost effective, environment friendly and sustainable manner. The over riding challenge will not be the creation of additional pest management options but the application of their already available in a sound political, social and economic context. (Anonymous 1975, Butani 1964, Dubey *et. al.*, 1981, Fletcher and Ghosh 1919, Garg and Seth 1983, Gupta and Avasthy 1954, Haidar and Dutta 2004, Hameed and Razmi 1970, Hussain 1924, Jotwani *et al.*, 1969, Murthy 1953, Rachappa and Naik 2004 and Srivastava 1957).

MATERIALS AND METHODS

All investigations viz., dispersion of *T. Pyrrillae* in sugarcane and efficacy of the weekly mean temperature during the period of experiment was ranged between 16°C (minimum) to 38°C (maximum) and relative humidity ranged between 95% to 29%. Live cocoons of *T.pyrrillae* were cultured in laboratory and released on sugarcane plant in an experiment laid in randomised block design with a replication and plot size, 120m². The levels of parasitized cocoon supplementation were natural parasitization 5000 cocoon with 0.07% endosulfan/ ha was sprayed with the help of Knapoack sprayer in each year. 0.07% endosulfan/ ha is also safe against parasite like *Tetrasticus pyrrillae*. Detailed methodology is given in Table-1.

RESULTS & DISCUSSION

Results (Table-2) indicate effect module and chemical control on incidence of *P. perpusilla* with reference to *T. Pyrrillae*, Less percent incidence of *P. Perpusilla* in module I is indicate at 90 DASP is 4.20 and more percent incidence of *P. Perpusilla* indicate at 30 DASP is 8.12. In module I cane yield t/ha is 77.70 and cane equivalent t/ha is 88.48. Less percent incidence of *P. perpusilla* in module II is indicate at 90 DASP is 3.98 and more percent incidence of *P. Perpusilla* indicate at 90 DASP is 8.84. In module II cane yield t/ha is 84.84 and cane equivalent t/ha is 92.63. Less percent incidence of *P. perpusilla* in module III (Chemical) is indicate 90 DASP is 4.35 and more percent incidence of *P. perpusilla* indicate at 30 DASP is 8.89. In module III (Chemical) cane yield t/ha is 82.42 and cane equivalent t/ha is 91.16.

Table-2 show less percent incidence of *P. perpusilla* in module II which indicate at 90

Table – 1 Treatment details and the time of application followed in different modules with reference to *T.pyrillae*

Days after Cane planting	Module – I (Chemicals + bio-agent)	Module-II (Bio-Intensive)	Module-III (Chemical)
30	Endosulfan 0.07% spray + <i>T Pyrillae</i> 5000 cocoons ha ⁻¹	<i>T. Pyrillae</i> 5000 cocoons ha ⁻¹	Endosulfan 0.07% spray ha ⁻¹
45	Endosulfan 0.07% spray + <i>T Pyrillae</i> 5000 cocoons ha ⁻¹	<i>T. Pyrillae</i> 5000 cocoons ha ⁻¹	Endosulfan 0.07% spray ha ⁻¹
60	Endosulfan 0.07% spray + <i>T Pyrillae</i> 5000 cocoons ha ⁻¹	<i>T. Pyrillae</i> 5000 cocoons ha ⁻¹	Endosulfan 0.07% spray ha ⁻¹
75	Endosulfan 0.07% spray + <i>T Pyrillae</i> 5000 cocoons ha ⁻¹	<i>T. Pyrillae</i> 5000 cocoons ha ⁻¹	Endosulfan 0.07% spray ha ⁻¹
90	Endosulfan 0.07% spray + <i>T Pyrillae</i> 5000 cocoons ha ⁻¹	<i>T. Pyrillae</i> 5000 cocoons ha ⁻¹	Endosulfan 0.07% spray ha ⁻¹

Table – 2 – Effect of IPM modules and chemical control on incidence of *P. perpusilla* with reference to *T.Pyrillae*.

Treatment	Percentage incidence of <i>Pyrilla perpusilla</i> at					Cane yield (t/ha ¹)	Cane equivalent yield (t/ha ⁻¹)
	30 DASP	45 DASP	60 DASP	75 DASP	90 DASP		
Module I	8.12	7.74	6.15	5.10	4.20	77.20	88.48
Module II	8.84	7.15	5.59	4.90	3.98	84.84	92.63
Module III	8.89	8.12	7.33	7.15	4.35	82.42	91.16

DASP is 3.98 and more percent incidence of *P. Perpusilla* indicate at 30 DASP is 8.89 in module III. Maximum cane yield t/ha is 84.84 in module II and cane equivalent t/ha is 92.63.

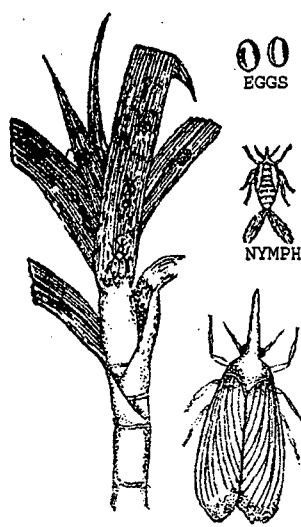


Fig. 1 Life Cycle of *P. perpusilla*

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