

Field Parasitism of Sugarcane Top shoot borer and Stem borers eggs

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ABSTRACT

A survey was conducted on natural parasitisation of eggs of Top shoot borer and Stem borers of sugarcane. *Telenomus dignoides* Nixon and *Tetrastichus* sp. parasitised TSB eggs where *Telenomus* sp. alone parasitised SB eggs. Parasitisation in both the borers ranged from 0 to 100 percent. Mean rate of parasitisation was 43.83 percent in TSB and 47.84 percent in SB during the year 1984.

INTRODUCTION

Top shoot borer (TSB) and stem borers (SB) are serious pests of sugarcane in Bangladesh. Every year they (TSB and SB) cause considerable damage to sugarcane causing reduction in yield and sucrose content (Miah *et.al.* 1980).

Chemical sprays did not show any positive result in controlling TSB and SB (SRTI Annual Report, 1981). Moreover, chemicals sometimes work against natural enemies of insect pests and should never be used in such a way that their sum effect is disadvantageous (Long, 1969).

Biological control broadly includes the use of biological agents in lowering pest population at any stage of the latter. One of the effective group is egg parasites. These egg parasites may either be exotic which are to be released in the crop field or natural which are to be conserved in the crop field for control consideration.

The present studies are confined to survey of natural egg parasitism in the field which will enable to determine the need of insecticide sprays, parasite conservation or both through monitoring.

MATERIALS AND METHODS

Egg masses of TSB were collected from a specific plot of 1.64 hectare area twice a week throughout the cropping season when egg masses were available. Egg masses laid on the leaves were clipped off and put into test tubes in the laboratory for 15 days when the eggs hatched or parasites emerged from them. Later the hairs were cleaned and soaked in 5% KOH solution to soften the egg shells and studied under microscope to discriminate parasitised and unparasitised eggs.

In case of SB a field net cage (3.65m x 1.83m x 1.83m) was erected in the cane field where natural attack and breeding of SB was encouraged. Egg masses laid on leaves were clipped off twice a week during the SB infestation period. The process of dismantling the egg mass were similar to that of TSB.

RESULTS AND DISCUSSION

TSB egg masses were studied during their first (February -April), second (April-May) and overlapping generations (June- September). Table 1 furnishes rates of natural parasitism in 509 TSB eggs during different generations and mean parasitism. Hymenopteran parasites were found to be associated. *Telenomus dignoides* Nixon alone attacked 501 egg masses. *Tetrastichus* sp. alone attacked 7 egg masses and only one egg mass was attacked by both *Telenomus dignoides* and *Tetrastichus* sp.

Table 1. Rate of natural egg parasitism of Top shoot borer, SRTI, 1984.

TSB Generation	Parasite species associated	Number of egg masses studied	Number of eggs examined	Number of parasitised eggs	Rate of parasitism %
First (Feb- Apr)	i) <i>Telenomus dignoides</i> Nixon	102	1,188	205	17.26
Second (Apr-May)	i) <i>Telenomus dignoides</i> Nixon	137	1,964	266	13.54
Overlapping (June Sept)	i) <i>T. dignoides</i> Nixon	270	6,752	3,870	57.32
	ii) <i>Tetrastichus</i> sp.				
	iii) <i>T. dignoides</i> + <i>Tetrastichus</i> sp				
Total		509	9,904	4,341	43.83

Table 2. Rate of natural egg parasitism of Stem borers, SRTI, 1984.

Month	Parasite species associated	Number of egg masses studied	Number of eggs examined	Number of parasitised eggs	Rate of parasitism %
August	<i>Telenomus</i> sp.	11	551	167	30.31
September	<i>Telenomus</i> sp.	51	1,136	640	56.34
Total		62	1,687	807	47.84

SB egg masses were studied during August and September. Probably it included part of second and part of third generations. Table 2 furnishes rates of natural parasitism in SB egg during the season. One Hymenopteran parasite of the genus *Telenomus* was found to be associated in parasitising SB eggs.

Natural parasitisation of TSB and SB eggs by different parasites was above 43%. These parasites if conserved according to the booster technique (Miah *et.al.* 1984) as devised for TSB may control both the pest species. Further work may suggest some modification of the technique of booster for stem borer.

REFERENCES

- Long, W. H. 1969. Insecticidal control of moth borers of sugarcane. *In*. Pests of sugarcane. J. R. Williams, J. R. Metcalfe, R. W. Mungomery and R. Mathes (eds) Elsevier Publishing Company, Amsterdam, pp. 149-161.
- Miah, M. A. H.; Khuda, A. K. M. Q. Abu Zahangir Khan and Shahjahan, M. 1980. Assessment of loss caused by top shoot borer (*Scirpophaga excerptalis* Walk.) and Stem borer (*Chilo tumidicostalis* Hamp and *Chilo auricilius* Dugl.). *Bangladesh J. Sugarcane*, 2:13-18.
- Miah, M. A. H. Alam, M. A.; Mannan, M. A. and Shahjahan, M. 1984. Description and efficiencies of a parasite booster to control sugarcane top shoot borer. *Proc. "1984 British Crop Protection Conference -Pest and Diseases"* held in Brighton, England, pp. 267-270.
- SRTI Annual Report, 1981. Sugarcane Research and Training Institute, Ishurdi, Pabna, Bangladesh. Annual Report 1981, pp. 68-69.