Status of Some Natural Enemies on Sugarcane Borer Pests in Relation to Weather Parameters

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ABSTRACT

The major natural enemies on sugarcane borers in the Cuddalore region of Tamil Nadu (India) were recorded from 2002 to 2005. During 2002, the overall mean parasitisation observed on internode borer eggs was 10.72% by Trichogramma chilonis and 23.49% by Telenomus beneficiens, while the top borer parasitisation by Isotima javensis was 7.43%. The mean predators population observed was 3.04/10 plants. During 2003, the overall mean parasitisation observed on internode borer eggs was 10.53% by Trichogramma chilonis and 22.47% by Telenomus beneficiens, while the top borer larval parasitisation by Isotima javensis was 7.66%. The mean predators population observed was 4.29/10 plants. During 2004, the overall mean parasitisation observed on internode borer eggs for 2004 was 6.57% by Trichogramma chilonis and 11.13% by Telenomus beneficiens, while the top borer larval parasitisation by Isotima javensis was 4.29%. The mean predators population observed was 2.95/10 plants. During 2005, the overall mean parasitisation observed on internode borer eggs was 4.58% by Trichogramma chilonis and 21.38% by Telenomus beneficiens, while the top borer larval parasitisation by Isotima javensis was 7.48%. The mean predators population observed was 2.45/10 plants. From the correlation studies on the relationship of parasitoids and weather parameters, it was inferred that but for the relative humidity other parameters like maximum and minimum temperature, rainfall did not influence much to the parasitization by natural enemies on sugarcane internode borer and top borer.

Key words: Sugarcane, borers, natural enemies, prevalence, weather parameters.

INTRODUCTION

Among the borers of sugarcane, next to shoot borer, internode borer, Chilo sacchariphagus indicus (Kapur) and top borer, Scirpophaga excerptalis Walker are considered as pests of economic importance. In Tamil Nadu, the prevalence of these two borers is reported widespread in recent times in all the cane growing areas. Even decades back, around 10% of shoot damage was reported by top borer in Tamil Nadu (Doss, 1954) and internode borer loss to sugar recovery is well known. Chemical control for these two borers is reported widespread in recent times in all the cane growing areas. Even decades back, around 10% of shoot damage was reported by top borer in Tamil Nadu (Doss, 1954) and internode borer loss to sugar recovery is well known. Chemical control for these two borers is considered as remotely successful because of the crop growth stature and economic non-feasibility in addition to the ecological disturbance induced by insecticides. Hence, biological control is advocated for the management of these borers. To gather knowledge on the incidence, natural parasitoids on internode borer and top borer affecting the egg and larval stages of these pests and the relationship with weather factors, a study was undertaken during 2002 to 2005 at Sugarcane Research Station, Cuddalore and the results are presented in this paper.

MATERIALS AND METHODS

The observations on natural incidence of parasitization on internode borer and top borer eggs and larvae were taken up at fortnightly intervals from January to December of 2002 to 2005 respectively at Sugarcane Research Station, Cuddalore. The parasitization was observed on the egg mass and larvae collected from field and reared for emergence of parasitoids and percentage worked out. Predator population was also recorded at fortnightly intervals at the rate of number per 10 plants. The mean per cent of parasitization was then arrived. The data collected on the rainfall (mm), maximum, minimum temperature (°C), relative humidity (%) were correlated to find out the relationship of weather parameters as existed had any influence on natural parasitization.
RESULTS AND DISCUSSION

The internode borer was predominantly observed in the farm from July 2002 onwards. The egg parasitization on internode borer ranged from the lowest during summer months and slowly increased to higher levels in the later part of the year. The dominant egg parasitoid under natural field conditions was *Telenomus beneficen* to the extent of 41.66% during the second fortnight of August 2002 (Fig. 1). The top borer larval parasitoid *Isotima javensis* was the highest of 30% during the second fortnight of 2002. Coccinellid predators like *Menochilus, Coccinella, Brumus* etc., were noticed on sugarcane crop throughout the year ranging from 1 to 6/10 plants. The overall mean parasitisation observed on internode borer eggs for 2002 was 10.72% by *Trichogramma chilonis* and 23.49% by *Telenomus beneficen*, while the top borer parasitisation by *Isotima javensis* was 7.43%.

During 2003, especially the summer months of April and May did not record any egg parasitoid on internode borer eggs in the farm perhaps because of the non availability of suitable crop stage for the attack of internode borer. The major egg parasitoids observed on internode borer eggs were *Telenomus beneficen* to the highest of 42.85% during the second fortnight of July and February first fortnight of 2003 and *Trichogramma chilonis* to the highest of 33.33% during June 2003 (Fig. 2). On top borer larvae, the main natural enemy was *Isotima javensis* to the extent of 23.07% during second fortnight of January 2003 Fig. 2. Coccinellid predators like *Menochilus, Coccinella, Brumus* etc., were also noticed on sugarcane crop from 2 to 6/10 plants during the various months of the year. The overall mean parasitisation observed on internode borer eggs for 2003 was 10.53% by *Trichogramma chilonis* and 22.47% by *Telenomus beneficen*, while the top borer larval parasitisation by *Isotima javensis* was 7.66%. The mean predators population observed was 4.29 /10 plants.

During the period of 2004 summer especially from March to July first fortnight, egg parasitization by *Trichogramma* was not evident. *Telenomus* egg parasitoid on internode borer eggs though not observed during April and May months was observed during the other parts of the year in the farm. The major egg parasitoids observed on internode borer eggs were *Telenomus beneficen* to the highest of 33.33% during the months of June, August, September and *Trichogramma chilonis* to the highest of 33.33% during the second fortnight of August 2004 (Fig. 3). On top borer larvae, the main natural enemy was *Isotima javensis* to the extent of 28.57% during first fortnight of December 2004. Coccinellid predators like *Menochilus, Coccinella, Brumus* etc., were also noticed on sugarcane crop from 2 to 6/10 plants during the various months of the year. The overall mean parasitisation observed on internode borer eggs for 2004 was 6.57% by *Trichogramma chilonis* and 11.13% by *Telenomus beneficen*, while the top borer larval parasitisation by *Isotima javensis* was 4.29%. The mean predators population observed was 2.95 /10 plants.

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