

HYMENOPTEROUS PARASITIDS ATTACKING THE SUGAR CANE STEM BORER LARVAE, IN MAIZE FIALD AT KAFR EI-SHEIKH REGION.

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ABSTRACT

A survey of the hymenopterus parasitoids, associated with, the larvae of sugar cane corn borer, *Sesamia cretica* Led., in Sakha Agricultural Research Station Farm at Kafr El-Sheikh Governorate during the two successive seasons 2004 and 2005. Four parasitoids species belonging to the Order and Family (Hymenoptera: Braconidae), were recorded. These parasitoids namely: *Meterous sp.*, *Apanteles sp.*, *Cotesia sp.* and *Gleptoapantelas africanus* Haliday., as internal larval parasitoids of *S. cretica*.

The highest percentages of parasitism by *Meterous sp.*, was recorded on the first week of July (23.6%) during 2004 season, while in the second season 2005 was recorded in the third week of July (24.8%) with an average percentage of parasitism 11.54 and 14.37% during the two successive seasons, respectively.

The highest percentages of parasitism by *Apanteles sp.*, was recorded on the second week of August (33.3%) in the first season and the first week of July (28.8%) in the second season. On the other hand the average percentage of parasitism was 13.79 and 19.16% during the two seasons 2004 and 2005, respectively.

The highest percentages of parasitism by *Cotesia sp.* was recorded in the first week of August which reached 30.0 and 31.1% in season 2004 and 2005, respectively. While the average percentage of parasitism were 19.13 and 13.9% in the two seasons, respectively.

Regarding to the parasitoid, *G. africanus* which considers as first record in Egypt as larvae parasitoid on *S. cretica*, The highest percentages of parasitism were recorded in the second and third week on July (17.7 and 18.0%) during 2004 and 2005 seasons, respectively. On the other hand, the average percentages of parasitism were 4.31 and 4.69% respectively.

INTRODUCTION

Maize, *Zea mize* L. is one of important germanous crops for the human and the domestic animals in Egypt. Many insects attack this crop in the field during the different stages of the plant, causing serious injury in both yield and quality of the grain (Ba-Angood and Stewart, 1980). The large sugar can borer, *S. cretica* consider a major pest of maize in Delta and Middle Egypt several trials were made to study the seasonal abundance of some maize pests and their natural enemies; Metwally (1967), Ismail (1968), Mostafa (1981) and Ahmed (2000). The braconid wasps, *Meterous sp.*, *Apanteles sp.*, *Cotesia sp.*, are known in the world as larval endoparasitoids of a wide range of lepidopterous pests (mainly noctuids). These parasitoids were intensively surveyed allover cultivated areas of maize in Egypt, (Abul-Nasr *et al.* 1969, Mostafa 1981, Abbas 1992, Abd El-Gayed 1995, Metwally 2002).

There for the aim of the present investigation is to survey an estimating the role of the hymenopterus parasitoids attacking the suger can stem borer larvae, in maize crop under condition at Kafr El-Sheikh region.

MATEREAL AND METHODS

The present study was carried out in the Entomology Laboratory, Sakha Agriculatural Research Station, Kafr El-Sheikh, Governorate during the two successive seasons 2004 and 2005. Samples of *S. cretica* larvae were collected from maize plants. Then, the samples were transferred to the laboratory for examination and counting the number of *S. cretica* larvae or its parasitoids. Obtained larvae were kept in the laboratory at ($30.0 \pm 1^{\circ}\text{C}$ and 60.0 - 70% R.H.) in chimney glasses of 14 x 9 cm, provided with pieces of maize plants for insect feeding and covered with muslin held in position by rubber bands. Daily inspections were carried out for about one week in order to calculate the newly emerged parasitoid's adults that also identified. Collected parasitoids were counted and identified. The average percentages of parasitism by the parasitoids were calculated during the two successive seasons 2004 and 2005.

RESULTS AND DISCUSSION

Results revealed that the presence of four hymenopterus parasitoids species attacking *S. cretica* larvae belonging to Order Hymenoptera Family Braconidae in maize field were recorded during the two successive seasons 2004 and 2005.

1- The larval parasitoid *Meterous sp.*:

Data presented in Table (1) showed that *Meterous sp.* attacked larvae between early July and late of August through both seasons. In 2004 season the percentage of parasitism were recorded 23.6% on the first week of July and decreased to reach to 13.1% in the fourth week of July. While, in August the percentages of parasitism increase from 20.0% in the first week to 22.2% in the end week of the same month. In 2005 season the percentage of parasitism began least in the first week of July and increased to 24.8% in the third week, and decreased again to 11.1% in the fourth and fifth weeks of July. While in August the percentages of parasitism increased from 18.8% to 20.0%. The average percentages of parasitism were about 11.54 and 14.37%, during the two successive seasons 2004 and 2005, respectively. These results are in agreement with those of El-Heneidy and Hassanein (1992), El-Mandarawy *et al.*(2000) and Abd El-Ghany 2004. They reported that, the parasitoid attacked the larvae of *S. cretica* in Egypt.

Table (1): Seasonal activity of the larval parasitoid *Meteorus sp.* and percentage of parasitism on *S. cretica* larvae on maize field during the two seasons 2004 and 2005.

Data Sampling	2004			2005			
	No. of full grown larvae	No. of parasitized larvae	% Parasitism	No. of full grown larvae	No. of parasitized larvae	% Parasitism	
July	3	72	17	23.6	66	11	16.6
	10	130	16	12.3	44	6.0	13.6
	17	110	14	12.7	113	28	24.8
	24	38	5.0	13.1	90	10	11.1
	31	11	0.0	0.0	81	9.0	11.1
Aug	7	10	2.0	20.0	16	3.0	18.8
	14	6.0	0.0	0.0	7.0	0.0	0.0
	21	0.0	0.0	0.0	10	2.0	20.0
	28	9.0	2.0	22.2	15	2.0	13.3
Average	-----	-----	11.54	-----	-----	14.37	

2- The larval parasitoid *Apanteles sp.*:

In the first season 2004, the rate of parasitism was started with 13.9% in July, and increase rapidly to reach a maximum ratio in August 14th 33.3% , while in the season 2005, it began relatively higher during first week of July 28.8%, and then decreased gradually to reach its minimum rate during 3rd week of August 10.0% as seen in (Table 2). On the other hand the percentage of parasitism by *Apanteles sp.*, through 2004 was lower than season 2005 with average 13.80 and 19.16%, during the two successive seasons respectively. These results are in agreement with those of Saleh (1986), Ahmed (2000) and Abd El-Ghany (2004).

Table (2): Seasonal activity of the larval parasitoid *Apanteles sp.* and percentage of parasitism on *S. cretica* larvae on maize field during the two seasons 2004 and 2005.

Data Sampling	2004			2005		
	No. of full grown larvae	No. of parasitized larvae	% Parasitism	No. of full grown larvae	No. of parasitized larvae	% Parasitism

July	3	72	10	13.9	66	19	28.8
	10	130	11	8.5	44	11	25.0
	17	110	10	9.1	113	31	27.4
	24	38	8.0	21.0	90	17	18.8
	31	11	3.0	27.3	81	13	16.0
Aug	7	10	0.0	0.0	16	3.0	18.8
	14	6.0	2.0	33.3	7.0	1.0	14.3
	21	0.0	0.0	0.0	10	1.0	10.0
	28	9.0	1.0	11.1	15	2.0	13.3
Average	-----	-----	13.80	-----	-----	19.16	

3- The larval parasitoid *Cotesia sp.*:

As shown in Table (3) the percentage of parasitism by *Cotesia sp.* was ranged between 0.0 and 28.2% with an average rate of parasitism 19.13% during the first season 2004. While in the second season the percentage of parasitism ranged between 0.0 and 21.0% with an average rate of parasitism 13.98%. Mia and Iwahashi (1999) in Okinawa Island recorded *Cotesia flavipes* on parasitized larvae of *Sesamia inferens* during August with the rate of parasitism ranged between 61.2 and 80.1%.

Table (3): Seasonal activity of the larval parasitoid *Cotesia sp.* and percentage of parasitism on *S. cretica* larvae on maize field during the two seasons 2004 and 2005.

Data Sampling	2004			2005		
	No. of full grown larvae	No. of parasitized larvae	% Parasitism	No. of full grown larvae	No. of parasitized larvae	% Parasitism
July 3	72	15	20.8	66	8.0	12.1
10	130	23	17.8	44	9.0	20.4
17	110	31	28.2	113	17	15.0
24	38	7.0	18.4	90	21	23.3
31	11	2.0	18.2	81	14	17.3
Aug 7	10	3.0	30.0	16	5.0	31.1
14	6.0	1.0	16.6	7.0	0.0	0.0
21	0.0	0.0	0.0	10	0.0	0.0
28	9.0	2.0	22.2	15	1.0	6.6
Average	-----	-----	19.13	-----	-----	13.98

4- The larval parasitoid *Gleptoapanteles africanus* Haliday.:

Results obtained in this study indicated that *S. cretica* larvae were attacked under field condition by the Braconids parasitoid, *G. africanus*. This considers as first record in Egypt on this insect larvae.

Data in Table (4) revealed that, in 2004, *G. africanus* began to attacked the larvae and reached its highest rate of parasitism during the second week of July (17.7%), while in 2005 season the recorded parasitoid attacked larvae around mid-July and recording a maximum parasitism of (18.0%). The represented data in Table (4) revealed that, the average rate of parasitism by *G. africanus* on *S. cretica* larvae were 8.38 and 8.44% during the two successive seasons 2004 and 2005, respectively. Men and Thakre (1998a) in India study parasitoids of (*Apanteles ruficrus* [*Cotesia ruficrus*], *A. africanus* [*Glyptapanteles africanus*] and in (1998b) finds that the *Glyptapanteles africanus* overall parasitization was 19.99% over the 3 years, and Chari et al. (1997).

Table (4): Seasonal activity of the larval parasitoid *Glyptoapanteles africanus* (Haliday) and percentage of parasitism on *S. cretica* larvae on maize field during the two seasons 2004 and 2005.

Data Sampling	2004			2005		
	No. of full grown larvae	No. of parasitized larvae	% Parasitism	No. of full grown larvae	No. of parasitized eggs	% Parasitism
July 3	72	0.0	0.0	66	0.0	0.0
10	130	23	17.7	44	0.0	0.0
17	110	12	11.0	113	20	18.0
24	38	5.0	13.2	90	13	14.4
31	11	0.0	0.0	81	8.0	9.8
Average	-----	-----	8.38	-----	-----	8.44

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طفيليات غشائية الأجنحة التي تهاجم يرقات دودة القصب الكبيرة في حقول الذرة بمنطقة كفر الشيخ.

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تأملت الدراسة حصر لأنواع طفيليات من عائلة براكوندى والتي تتطفل على دودة القصب الكبيرة على محصول الذرة بمنطقة كفر الشيخ. وقد تم جمع عينات من اليرقات من الحقل خلال (يوليو وأغسطس ٢٠٠٤، ٢٠٠٥) وتم تسجيل ثلاثة أنواع من الطفيليات والتي تتبع عائلة براكونيىدى وهي جميعها من النوع داخلية التطفل الجماعى وهي:

Meterous sp, Apanteles sp and Cotesia sp. وقد وجد الآتى :-

أعلى نسبة مئوية للتطفل بالطفيل *Meterous sp*، قد حدثت في الإسيوع الأول من يوليو هي ٢٣,٦ % أثناء موسم ٢٠٠٤، بينما في الموسم الثاني ٢٠٠٥ فقد سجل في الإسيوع الثالث من يوليو وكانت النسبة المئوية هي ٢٤,٨ % . وكانت نسبة التطفل خلال العامين لهذا الطفيل هي ١١,٥٤ و ١٤,٣٧ % على التوالي.

أما الطفيل *Apanteles sp*، فقد سجل أعلى نسبة مئوية للتطفل في الإسيوع الثاني من أغسطس هي ٣٣,٣ % وذلك في موسم ٢٠٠٤ وإيضا في الإسيوع الأول من يوليو ٢٠٠٥ كانت ٢٨,٨ % أما نسبة التطفل خلال العامين فكانت ١٣,٧٩ و ١٩,١٦ % .

وكان طفيل *Cotesia sp* . أعلى نسبة تطفل لة كانت في الإسيوع الأول من أغسطس حيث وصلت الي ٣٠,٠ و ٣١,١ % خلال العامين ٢٠٠٤ و ٢٠٠٥ على التوالي. بينما كانت نسبة التطفل خلال العامين هي ١٩,١٣ و ١٣,٩ % على التوالي.

أما بخصوص الطفيل *G. africanus* فقد تم تسجيله لأول مرة في مصر على يرقات دودة القصب الكبيرة وقد كانت نسبة التطفل مرتفعة بهذا الطفيل خلال الإسيوع الثاني والثالث من يوليو وهي ١٧,٧ و ١٨,٠ %، على التوالي. والنسبة المئوية لهذا الطفيل لعامى الدراسة ٢٠٠٤ و ٢٠٠٥ كانت ٨,٣٨ و ٨,٤٤ % على التوالي.

July	3	72	10	13.9	66	19	28.8
		130	11	8.5	44	11	25.0
	10	110	10	9.1	113	31	27.4
	17	38	8.0	21.0	90	17	18.8
	24	11	3.0	27.3	81	13	16.0
31							
Aug	7	10	0.0	0.0	16	3.0	18.8
		6.0	2.0	33.3	7.0	1.0	14.3
	14	0.0	0.0	0.0	10	1.0	10.0
	21	9.0	1.0	11.1	15	2.0	13.3
	28						