DISTRIBUTION OF STALK BORER *ELDANA SACCHARINA* WALKER LARVAE IN THE PAPYRUS UMBELS IN EGYPT

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Abstract

The pyralid borer, *E.saccharina* W., (Lepidoptera-Pyralidae) is one of the economic pests of sugarcane and certain other graminaceous crops in South Africa. Due to the high infestation with this pest in papyrus fields in Egypt in recent few years, the present investigation was carried out to study the distribution of larvae in the umbels of different ages at harvest. The results could be summarized as follows:

The mature umbels of *Cyperus papyrus* with old reproductive structures (MO) received the highest infestation rate (60.7%) during the season followed by mature umbels with young reproductive structures (MF); (51.4%), the mature umbels with no reproductive structures (MN); (35.1) and young umbels (Y); (34.9%).

On the othe hand, MO and MF categories harboured the least number of larvae/infested umbel (1.3) compared with 1.5 and 1.4 for (Y) an (MN) categories, respectively. Regardless of the umbel age the fourth and fifth instars represented the majority of larvae (136) and (129) compared with second and third instars (69) and (78), respectively.

It is also noticed that the mature deformed umbels, with no chlorophyl, had no larvae.

INTRODUCTION

The stalk borer *E.saccharina* W., commonly occurs in certain African countries attacking sedges*, sugar-cane and maize as recorded by Bishop (1965), Breniere (1971), Moberly (1977), Atkinson (1980 and 1982) and Tantawi (1982). During the last decade, this pest started to change from an occasional insect pest to a "key pest" causing considerable damage to papyrus plants in Egypt.

The present research aimed to study the distribution of *E.saccharina* W. larvae in the infested umbels of different ages.

* Sedges are more than one species belonging to genus *Cyperus*, Fam.: Cyperacea

MATERIALS AND METHODS

This work was carried out during 1995 season at Harrania village, Giza governorate. At harvest (in November) one feddan was chosen and 5 replicates, each 6x2 m, were examined. The umbels of each replicate were classified under the following classes :

1- Young (Y); the rays had not completely opened.

2- Mature with no flowers (MN); the rays had completely opened but without any reproductive structures.

3- Mature with young flowers (MF); the rays opened and the reproductive structures were present.

4- Mature with old flowers (MO); the reproductive structures died and the seeds disappeared.

5- Mature umbels with old flowers (MD); no chlorophyl and deformed.

The numbers of total larvae and that of infested umbels were recorded in each class. F-test and L.S.D. values were used in the statistical analysis.

RESULTS AND DISCUSSION

Data in table 1 revealed that, the most infested class of umbels was that of the mature with old reproductive structures (MO); 60.7%. In this class 216 umbles harboured 175 Eldana larvae comprising 32, 30, 55 and 58 of 2nd, 3rd, 4th and 5th instar larvae, respectively.

The second degree of infestation was found in the mature umbels which had young reproductive structures (MF); 51.4%. The infested umbels in this case harboured 91 larvae distributed as 12 , 19, 31 and 29 of 2nd, 3rd, 4th an 5th instar larvae, respectively. The counted larvae in case of the young infested umbels (Y) reached 72 larvae, comprising 15 , 9, 26 and 22 larvae for the four corresponding instars, respectively.

As for the mature umbels with no reproductive structures (MN), the infestation percentage was nearly similar to that of (Y) category (35.1%). It was found that 148 umbels of this class harboured 74 larvae; 10,20, 17 and 27 for the same respective instars.

The data also showed that, the percentages of infestation increased with the age of umbels; 34.7, 35.1, 51.4 and 60.7% for Y, MN, MF and MO classes, respectively.

On the other hand, the mean number of larvae per infested umbel was relatively decreased in these corresponding categories, 1.56, 1.43, 1.26 and 1.33, respectively. Mature deformed umbels contained no larvae.

The latter result revealed that, the behaviour of this insect in C.papyrus umbels is in the opposite of that in sugarcane plants as reported by Girling (1978). Also the data showed that this insect preferred the young umbels for feeding than the older ones, may be, due to the higher nitrogen content as reported by Atkinson (1982). So, no eldana larvae were found in the mature deformed umbels, with no chlorophyl. It also appeared from the table that, in all categories, more than 60% of the larvae reached the fourth and fifth instars.

Table 1. Distribution of *E.saccharina* larvae in relation to *C.papyrus* umbel ages.

Age of umberls	No. of examined umbels	Infested umbels		No. of larvae (instars)					No.of larvae/ infested umbel
		No.	%	2nd	3rd	4th	5th	Total	
Y	132	46	34.9	15	9	26	22	72	1.5
MN	148	52	35,1	10	20	17	27	74	1.4
MF	140	72	51.4**	12	19	31	29	91**	1.26
MO	216	131	60.7**	32	30	55	58	175**	1.33
MD	120	72	60.0	0	0	0	0	0	0
Total	756			69	78	129	136	412	

** Highly significant

Y : Young umbels

MN : Mature umbel with no reproductive structures.

MF : " " " young " "

MO : " " " old " "

MD : " " " with old flowers, no chlorophyl and deformed

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توزيع يرقات ثاقبة الساق الدانا سكارينا فى نورات نبات البردى فى مصر

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تعتبر ثاقبة الساق *Eldana saccharina Walker* من أهم الافات الرئيسية التى تصيب محصول القصب وبعض المحاصيل النجيلية الاخرى فى الجزء الجنوبى من قارة أفريقيا. وقد أظهرت الدراسات فى الفترة الأخيرة أن تلك الآفة تصيب نبات البردى بدرجة عالية فى مصر. ولذا فان هذه الدراسة تهدف الى معرفة توزيع المحتوى اليرقى لهذه الحشرة فى نورات هذا النبات. جمعت نورات نبات كل مكرر على حده عند الحصاد وقسمت الى خمسة أقسام حسب درجة نضجها وتم فحصها ظاهريا وتشريحيا وكانت النتائج كما يلى :-

سجل أعلى معدل للاصابة نسبياً فى النبات كاملة النضج والإزهار (٦٠,٧ ٪)، أما النباتات مكتملة النمو ولكن محتواها الزهرى فى مراحلة الأولى فكانت نسبة الإصابة بها أقل من السابقة وبدرجة معنوية (٥١,٤ ٪). ومن حيث النباتات ذات النورات حديثة النمو والأخرى التى لم تبدأ بها أعضاء التكاثر فى الظهور فلم يوجد بينهما فرقا معنويا من حيث الإصابة وكانت ٣٤,٩ ، ٣٥,١٪ على التوالى. هذا وبصفة عامة فقد كانت النسبة المئوية لاصابة النورات بغض النظر عن درجة نضجها – عالية حيث بلغت ٤٥,٥ ٪.

كما أظهرت الدراسة كذلك ان متوسط المحتوى اليرقى / نورة مصابة كان أكبر فى النورات الأصغر عمراً (١,٤ – ١,٥ يرقه) مقارنة بالنورات الأكبر عمراً (٠,٣ يرقة). وبصرف النظر عن درجة نضج النباتات فقد كان أعلى عدد من اليرقات من العمر الخامس (١٣٦ يرقة) يليه العمر الرابع (١٢٩ يرقه) ثم الثالث (٧٨ يرقه) فالثانى (٦٩ يرقه)، هذا وقد لوحظ أن النباتات المسنة والمشوهة والتى انعدم فيها الكلوروفيل لم يتواجد بها أى عدد من اليرقات.