

Larval Feeding and Ovipositional Preference of *Sesamia Cretica* Led. On Certain Corn Hybrids

Ahmed. M. A. Salman¹, Abd El-Aleem S. S. Desoky¹, Saadia A. Abd-El-Samea², Mohamed A. M. Youssef²

¹Plant Protection Department, Faculty of Agriculture, Sohag University

²Field Crop Pests Department, Plant Protection Institute, Agriculture Research Center

***Corresponding Author:** Abd El-Aleem S. S. Desoky, Plant Protection Department, Faculty of Agriculture, Sohag University, Egypt

Abstract: The attractiveness of certain maize hybrids to *Sesamia cretica* larvae and the ovipositional preference of *S. cretica* adult to these hybrids were evaluated. S.C. Hi-Tech 2031 was the most attractive hybrid to *S. cretica* larvae. However, S.C. 131 hybrid was the least attractive hybrid to *S. cretica* larvae. The number of eggs deposited on each of the five corn hybrids in free choice test indicated a strong ovipositional preference for S.C. Watania-6 and S.C. 131 hybrids. However, S.C. Hi-Tech 2031 and S.C. 132 hybrids harbored the least numbers of eggs.

Keywords: Maize, hybrids, *S. cretica*, Feeding preference, Ovipositional preference.

1. INTRODUCTION

Maize (*Zea mays* L.) is one of the staple foods for the majority of Egyptian farmers. Maize foliage is also a major constituent in cattle feeds. It is cultivated in an area of about 1.7 million feddan annually (Anonymous 2001). Maize is one of the most important cereal crops in much of the developing world. It grows over wider geographical range and different ecological conditions than any other cereal crop, the maize considered to be the second most important cereal crops to wheat on global basis (CIMMYT & EARO, 1999). The annual cultivated area with maize covers about two million feddan. (Mesbah ET, al., 2002). The Pink Stem Borer, *Sesamia cretica* Led. (Lepidoptera: Noctuidae) is a serious pest threatening maize (*Zea mays* L.) plants in Egypt Metwally (2015).

The pink stem borer *S. cretica* is considered the most damaging corn borer in Egypt since it attacks young maize plants shortly after emergence devours the whorl leaves and may kill the growing point causing complete death of small maize plants and consequently reducing number of plants at harvest causing drastic yield losses (Semeada, 1985; EL-Naggar, 1991; Soliman, 1994). In nature, corn borers are active in maize and sorghum fields between late spring and late autumn. Then they hibernate as full grown larvae, in the stalks and crops and remain from late October or early November until April or early May. Adult moths emerge from the hibernating larvae and represent the source of new infestation on the next year's crop (Isa et al. 1969).

The aim of this work was to evaluate the attractiveness of certain maize hybrids to *Sesamia cretica* larvae. Also, it aims to evaluate the ovipositional preference of *S. cretica* adult to these hybrids.

2. MATERIALS AND METHODS

2.1. Larval Feeding

The five corn hybrids were arranged in a randomized blocks design, with 10 replicates. A Petri dish (19 cm diameter) containing five sections of 0.8 cm² of corn plant 15 days old per hybrid. Plant sections were equidistantly distributed within the plate, creating an arena free choice test. 10 larvae (2nd instars') of *Sesamia cretica* were released in the center of the arena. Evaluations were made twenty four hours from larvae release by recording the presence of larvae on the plant sections.

2.2. Ovipositional response

2.2.1. *Sesamia cretica*

The final instars' larvae which were about to pupate and pupae were collected from the maize stalks from the field. Pupae thus, collected were kept in glass jars (10 × 15 cm) for the emergence of adults.

The male and female moths after emergence were transferred in a proportion of 1:1 to the oviposition cages containing the maize plants of 15-20 day old.

2.2.2. Test plants

Five maize hybrids, namely, Single crosses of Hi-Tech-2066, Watania-6, 131, 132 and Hi-Tech 2031 were used for this study. To establish plant materials for conducting this experiment, seeds of each hybrid were sown in plastic pots one seed for pot. These plants were used for oviposition experiment.

2.2.3. Oviposition bioassay

In free-choice bioassay, plant in plastic pots 15-20 days old from each hybrid were placed inside the oviposition cage (45 x 50 x 50 cm). Five pairs of moths of *S. cretica* (5 female and 5 male), brought together in the mating cage previous night, were released in the oviposition cage. After two days moths were removed from the cage and number of eggs laid on the leaf-sheaths of each hybrid, was counted. Each female was used only once, and each test was replicated 20 times, having five pairs of insects.

3. RESULTS AND DISCUSSIONS

3.1. Larval Feeding Responses/Preference

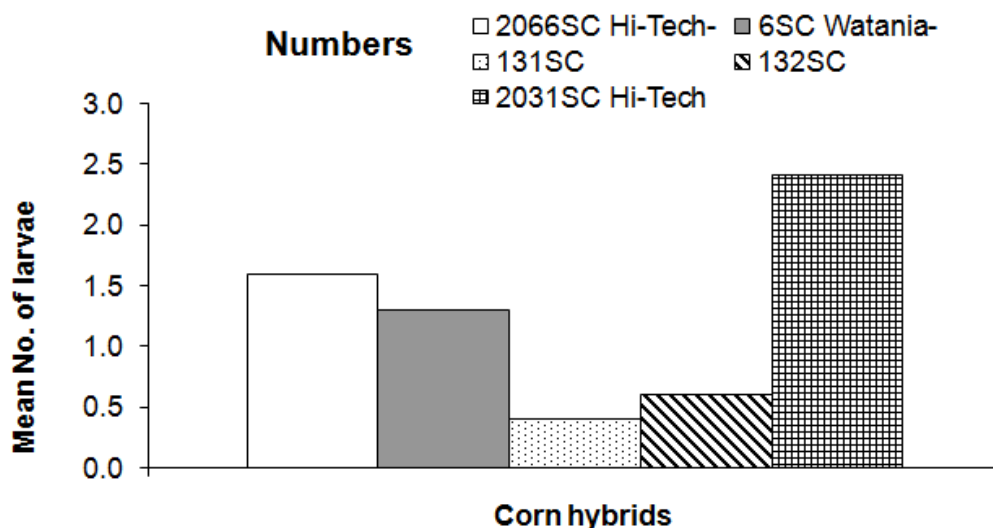
Table (1) and illustrated in Fig. (1) Represent the numbers and percent of *S. cretica* larvae attracted to each corn hybrid of the five hybrids studied in free choice test.

The attractiveness of *S. cretica* (2nd instars⁷) to the various hybrids of corn varied significantly. S.C. Hi-Tech 2031 was the most attractive hybrid with average number of (2.40)/larvae/plant and 38.62 percent. Next in attractiveness were S.C. Hi-Tech-2066 and S.C. Watania-6 hybrids with average numbers of (1.60 and 1.30) larvae/plant and (25.73 and 19.68) percent respectively, after that in attractiveness were S.C. 132 and S.C. 131 hybrids with average numbers of (0.60 and 0.40) larvae/plant and (8.87 and 7.10) percent respectively. Ismail et al. (2012) investigated influence of transgenic and commercial corn hybrids on the behavior and feeding activity of the pink corn borer (*S. cretica* Led.). They found that food consumption was different according to feeding period and hybrids. The feeding ratio of *S. cretica* on maize hybrids was significantly different between transgenic and commercial hybrids.

Table1: Larval feeding responses/preference of *Sesamia cretica* to certain corn hybrids under laboratory conditions in free choice test.

Observations	Corn hybrids					Total	F value	LSD0 5%
	S.C. Hi-Tech-2066	S.C. Watania-6	S.C. 131	1 S.C. 32	S.C. Hi-Tech 2031			
No.	1.60 B	1.30 BC	0.40 D	0.60 CD	2.40 A	6.30	9.20*	0.77
%	25.73 B	19.68 BC	7.10 D	8.87 CD	38.62 A	100.00	10.72*	11.42

Means within a row sharing the same letter are not significantly different at 5% probability



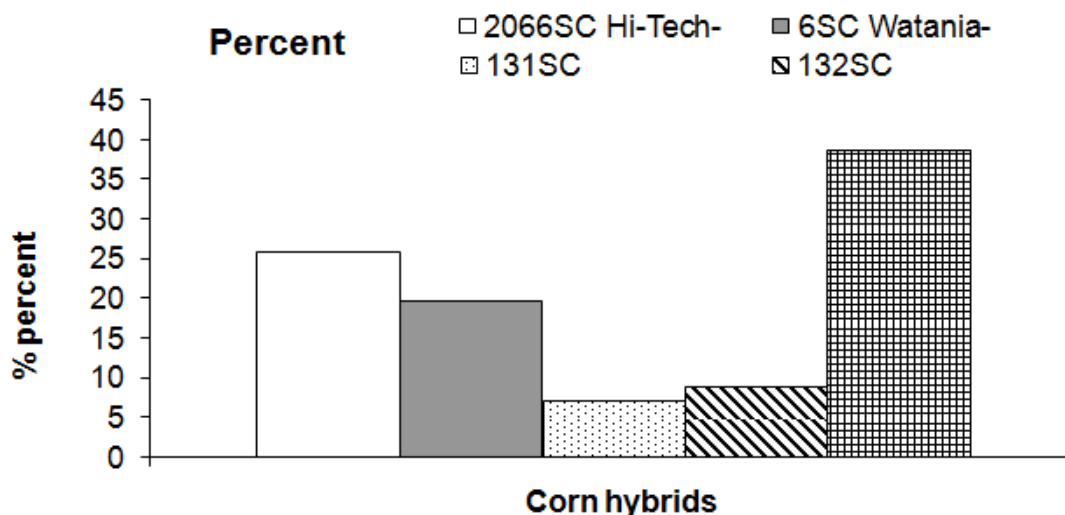


Fig1: Larval feeding responses/preference of *Sesamia cretica* to certain corn hybrids under laboratory conditions in free choice test.

3.2. Ovipositional Responses/Preference of *S. Cretica*

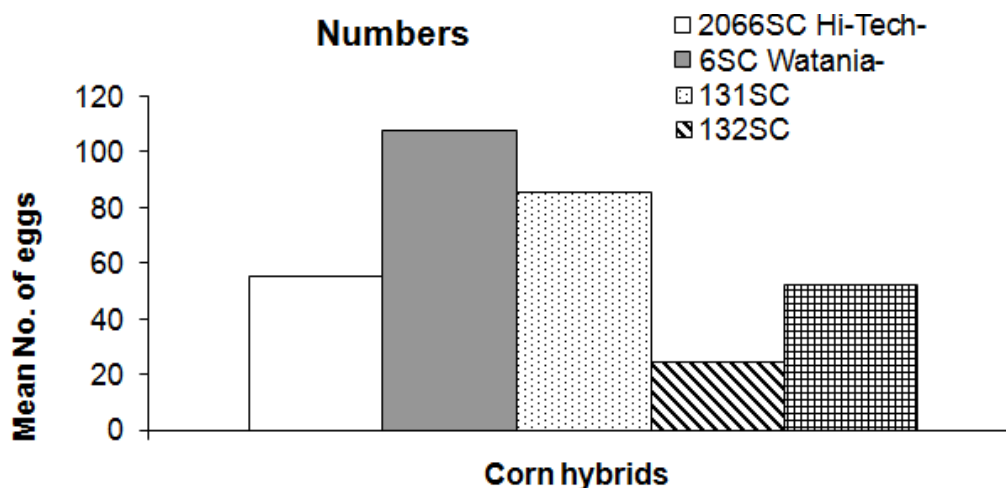
The number of eggs deposited on each of the five corn hybrids in free choice test indicated a strong ovipositional preference for S.C. Watania-6 and S.C. 131 hybrids with average numbers of (107.90 and 84.85) eggs/plant (33.82 and 26.68) percent respectively. Followed by S.C. Hi-Tech-2066 hybrid this showed a moderate oviposition preference with average number of (55.25) eggs/plant and 15.55 percent. However, S.C. Hi-Tech 2031 and S.C. 132 hybrids harbored the lowest numbers of eggs with average of (51.65 and 23.90) eggs/plant and (16.14 and 7.81) percent respectively.

Statistical analysis proved significant differences between S.C. Watania-6 and each of (S.C. Hi-Tech-2066, S.C. Hi-Tech 2031 and S.C. 132), while no significant difference were found between S.C. Watania-6 and S.C. 131 in the average numbers of deposited eggs/plant. In case of percent of deposit eggs/hybrid there were significant differences between each of (S.C. Watania-6 and S.C. 131 hybrids) in a side and all other hybrids in the other side. Many authors reported that oviposition of *Sesamia* affected by host plant, Konstantopoulou et al (2002), Sekhar et al.(2009) and Dimotsiou et al. (2013).

Table2: Ovipositional responses/preference of *Sesamia cretica* to certain corn hybrids under laboratory conditions in free choice test.

Observations	Corn hybrids					Total	F value	LSD05 %
	S.C. Hi-Tech-2066	S.C.Watania-6	S.C.131	1 S.C.32	S.C.Hi-Tech 2031			
No.	55.25 BC	107.90 A	84.85 AB	23.90 C	51.65 C	323.55	8.77*	31.59
%	15.55 B	33.82 A	26.68 A	7.81 B	16.14 B	100.00	8.82*	9.95

Means within a column sharing the same letter are not significantly different at 5% probability



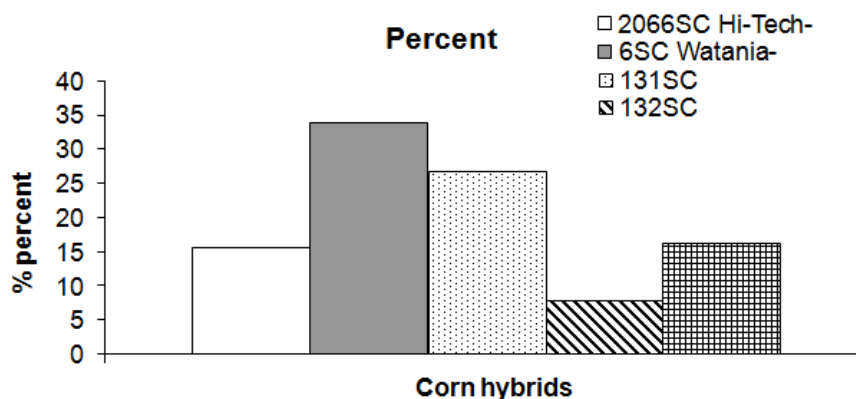


Fig2: Ovipositional responses/preference of *Sesamia cretica* to certain corn hybrids under laboratory conditions in free choice test.

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