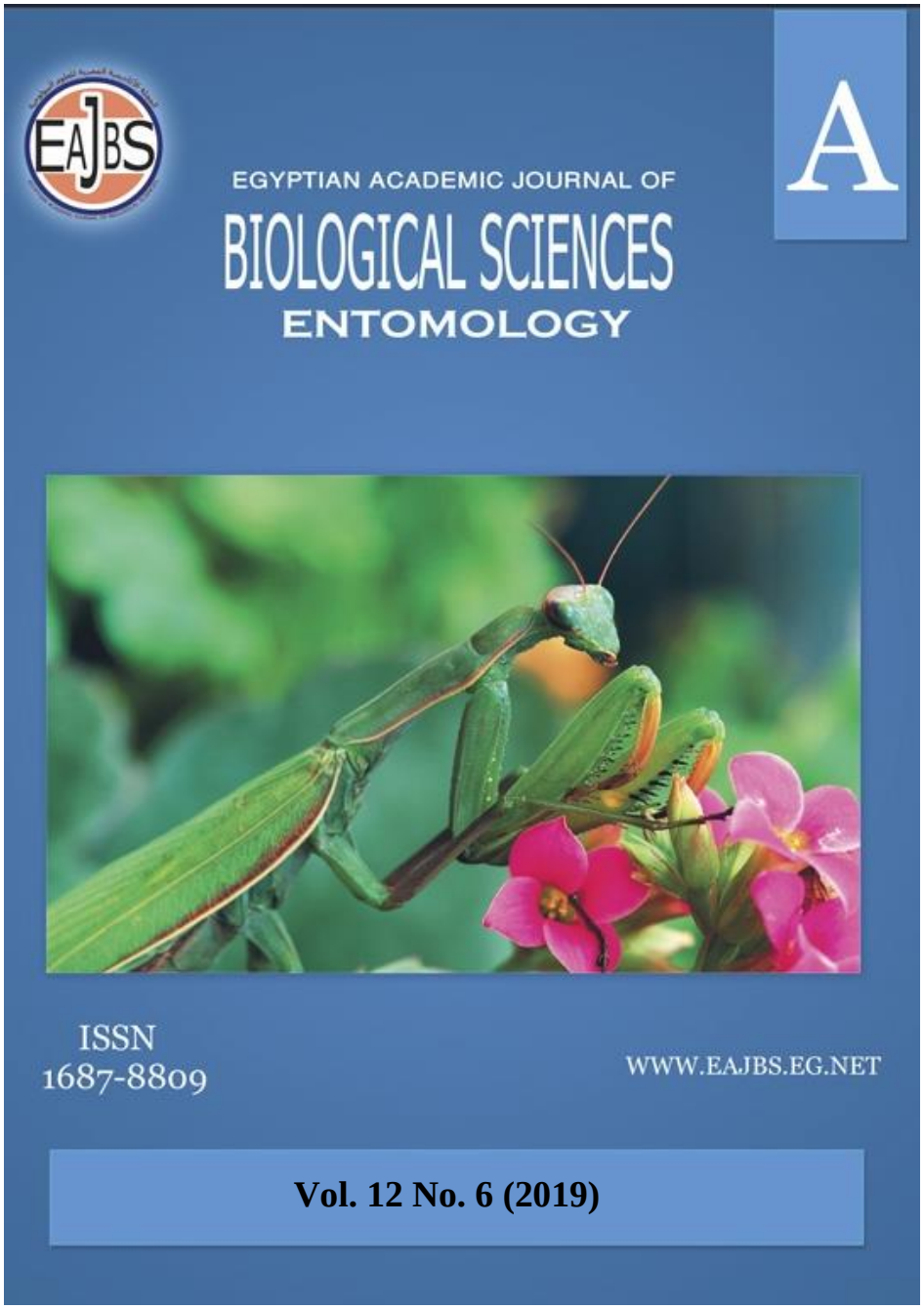

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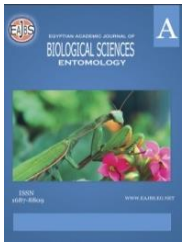

Effect of host plants on biology of *Spodoptera littoralis* (Boisd.)

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ABSTRACT

An experiment was carried out to evaluate the effect of using different host plants Castor bean**,** Clover, Cabbage, Broad bean, Sugar beet, and Cotton as foods for Spodoptera *littoralis* (Boisd.) larvae on certain biological aspects of the insect. The study was achieved under laboratory conditions of (25 ± 1°C) and 75 ± 5 % R.H. for obtained results and statistical analysis cleared that the developmental stages, fecundity, and life parameters were affected by the different hosts whereas the shortest larval duration (18 ± 0 days) was recorded for larvae fed on clover and the longer (25.2 ± 0.37 days) resulted when larvae were offered sugar beet. The pupation percentages on sugar beet leaves were lowest (58.4 ± 2.38 %) and highest pupation percentages were (78.4 ± 1.08 %) when larvae fed on clover leaves. Moreover, adult emergence Percentage was (98 ± 0.45 %) in both clover and broad bean (95.58 ± 0.61 %) on sugar beet. The moths produced from larvae fed on broad bean laid the highest number of eggs (1915 and 1847 eggs per female) in both generations, respectively and the least numbers of eggs deposited were (1081 and 994 eggs/female) on cabbage in the two generations, respectively.

INTRODUCTION

The cotton leafworm *Spodoptera littoralis* (Boisd.) (Lepidoptera: Noctuidae) is a considerably critical pest. Its larvae can defoliate numerous economical important crops including 112 plants belonging to 44 families (Moussa *et al*., 1960; Hatem *et al*., 2009 and EPPO, 2008) distributed in Southern Spain, Middle East, and Northern and Central Africa (Carter, 1984; Gomez and Arroyo, 1994). It is a key pest of cotton and other crops in Egypt. Heavy infestations occur in cotton from May to July, via larvae that cause economic damage by feeding on leaves (Hosny *et al.,* 1986, Russell *et al*. 1993). In Egypt, it is considered as a destructive phytophagous lepidopterous pest causing various spoliation not only for cotton plants (Ahmad, 1988 ; Hatem *et al.*, 2009) but also for other field crops, vegetables (Hosny *et al.*, 1986), ornamentals and orchard trees (Dominguez, 1993 and Belda *et al*., 1994) all over the year in Egypt (Hamouda and Dahi, 2008).

The infestation larval caused by *S. littoralis* differs depending on the host plant (Kamel, 1965). This difference may be attributed to morphological features of a plant leaf or to the chemical contents of the leaves. Quantitative analysis of the host plant consumption by *S. littoralis* is an important factor used in studying and verifying food preference of the larvae (Scriber and Slansky 1981). Different host plants could play an important role in population increase and outbreaks of polyphagous insect pests (Singh and Parihar, 1988; Lu and Xu,

1998). From a nutritional point of view, utilization efficiency reflects the quality and the quantity of food consumed (Naseri *et al.*, 2010; Baghery *et al.*, 2013) which may increasingly affect insect development, survivorship, reproduction, and life table parameters (Scriber and Slansky, 1981; Tsai and Wang, 2001; Kim and Lee, 2002). In fact, low quality plants may reduce insect survival, size or weight, their longevity and reproduction viabilities or indirectly increase their exposure to the natural enemies as a result of prolonged developmental time (Ali and Gaylor, 1992; Greenberg *et al.*, 2001; Awmack and Leather 2002; Chen *et al.*, 2008). Therefore, the present study aims to evaluate the effect some host plants grown in Egypt namely castor, clover, cabbage, broad bean, Sugar beet, and cotton on biology of *S. littoralis* during two generations, consequently such knowledge may help better planning for the integrated pest management of the pest on both main and alternate host plants.

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MATERIALS AND METHODS

The present study was carried out **at** in Department of Plant Protection, Faculty of Agricultural, Al-Azhar University Cairo, to evaluate the effect of different host plants on the biology of ***S. littoralis***. The experiment was performed at constant temperature 25 ± 1°C, 65 ± 5% RH, with a 16: 8 L: D photoperiod**.**

Host Plants:

Six host plants leaves were used in this study, including Castor bean **(***Ricinus communis*)**,** Clover (*Trifolium alexandrium***),** Cabbage (***Brassica oleracea***)**,** Broad bean (***Vicia faba***)**,** Sugar beet **(***Beta vulgaris*) and Cotton **(***Gossypium barbadense***)**, Selection of these plants was based on those plants are among the root ring of ***S. littoralis,*** in Egypt. Furthermore, this a lot of and causes considerable damage to those hosts plant.

Insects Rearing:

Spodoptera littoralis were obtained from the Plant Protection Research Institute, Douki, Geza, Egypt. Newly emerged adults were transferred into plastic jars for mating and egg-laying. Adults were fed on 10% **sucrose** solution impregnated onto cotton wool.

Experimental Procedures:

This experiment was planned and carried out to assess the effect of feeding of ***S. littoralis*** larvae by the above-mentioned host-plants on insect biology for two successive generations. One hundred newly hatched larvae of the laboratory third generation were set for each replicate and four replicated were set for each used host–plant. Survival pupae were counted, sexed, and weighed at 24 hr-old, and kept until adult emerged. Larval duration, **pre**pupal weight, and duration and pupal, emergence adult and survival percentages were determined. Freshly emerged moths of each host-plant were paired. Each pair (male and female) was placed in a glass jar and fed on 10% fresh sucrose solution. A folded sheet paper was placed in the jar to provide suitable sites for oviposition. The effects of various tested host plants on fecundity (total number of eggs/female) and the longevity of adults of both sexes were determined.

Statistical Analysis:

Data were subjected to analysis of variance (ANOVA) using "Costat" computer statistical program. Mean values were compared using Duncan’s multiple range test (**Duncan, 1955)**

RESULTS AND DISCUSSION

Duration of the Larval Stage:

It is obvious from the data presented in Tables (1 and 2) that the duration of the larval stage **of** *S. littoralis* is affected by the different host plants offered to the larvae. In the first generation, the shortest mean duration (18 ± 0, 18 ± 0.45, 19 ± 0 and 19.4 ± 0.24 days) were recorded for larvae fed on clover, broad bean, cabbage, and castor bean, respectively. On the contrary, development took significantly longer period for larval development (25.2 ± 0.37 and 22.6 ±0.24 days) resulted when larvae were offered sugar beet and cotton, respectively. The same trend was recorded in the second generation where, the shortest mean duration (21.2 ± 0.20, 21 ± 0.71, 21.8 ± 0.20 and 21± 0days) were recorded for the same host plants. Also, the longest mean duration was (25.8± 0.37 and 22.4± 0.40 days) for sugar beet and cotton respectively. (Table 2).

Duration of the Pupal Stage:

Subsequent effects of host plants have been manifested in pupal development. Data in Table (1) showed that pupal duration in the first generation. The longest mean duration was (15.2 ± 0.37 days) for pupae obtained from larvae fed on broad bean it was followed by feeding on sugar beet, clover, cabbage and cotton leaves which they were 14.4 ± 0.24, 14.4 ± 0.51, 14.2 ± 0.37 and 13.8 ± 0.37 days respectively. As compared to those reared on castor bean leaves (13.6 ± 0.51 days). In addition, the same results range were obtained in the second generation, Table (2). Where the longest mean duration was (15.6± 0.40 days) for pupae obtained from larvae fed on broad bean, followed by clover, sugar beet, cabbage, and cotton were (15.4 ± 0.51, 14.8 ± 0.37,14.8 ± 0.37 and 14.2 ± 0.37 days) respectively. As compared to those reared on castor bean leaves (14.2 ± 0.49 days). Insignificant different between broad bean and other host plants in first and second generations.

Table 1: effect of different host plants on development periods of *Spodoptera littoralis* during the first generation.

Host plant leaves	Total of Larval duration (d) ± S. E.	Pre-pupae duration (d) ± S. E.	Pupal duration (d)± S. E.	Longevity (days) ± S. E.		Developmental period (d) ± S. E.	
				Male	Female	Male	Female
Castor	19.4± 0.24 c	1±0	13.6± 0.51 b	7.6± 0.51 a	9.8± 0.37 ab	41.6 ± 0.98 b	43.8 ± 0.73 c
Clover	18± 0 d	1±0	14.4± 0.51 ab	7.8± 0.37 a	10.6± 0.37 a	41.2 ± 0.80 bc	43.6 ± 0.68 c
Cabbage	19± 0 c	1±0	14.2± 0.37ab	5.2± 0.37 b	8.4 ± 0.51 bc	39.4 ± 0.51 c	42.6 ± 0.75 c
broad bean	18± 0.45 d	1±0	15.2± 0.37 a	7.2± 0.49 a	10.2± 0.68 a	41.4 ± 0.75 bc	44.8 ± 1.07 bc
Sugar beet	25.2± 0.37 a	1±0	14.4± 0.24ab	5.8± 0.37 b	7.6± 0.24 c	46.4 ± 0.51 a	48.2 ± 0.37 a
Cotton	22.6±0.24 b	1±0	13.8± 0.37 b	7.4±0.51 a	9.2± 0.49 ab	44.8 ± 0.49 a	46.6 ± 0.40 ab
LSD 0.05	0.80		1.19	1.29	1.35	2.03	2.06

Means followed by the same letter in the same column are not significantly different according to Duncan's multiple range test at 5 % level.

The Longevity of Adults:

The results presented in Table (1) indicated that the moth longevity was affected by larval food. In the first generation, males emerging from larvae fed on clover leaves had the longest life span (7.8 ± 0.37 days), followed by cotton, broad bean, sugar beet and cabbage which were 7.4 ± 0.51, 7.2 ± 0.49, 5.8 ± 0.37 and 5.2 ± 0.37 days respectively, as compared to those reared on castor bean leaves (7.6 ± 0.51 days). In respect to female's longevity the longest life span was (10.6 ± 0.37 days) on clover, followed by that broad bean, cotton, cabbage and sugar beet were (10.2 ± 0.68, 9.2 ± 0.49, 8.4 ± 0.51 and 7.6 ± 0.24 days) respectively, as compared to those reared on castor bean leaves (9.8 ± 0.37 days). Also, same results were obtained in the second generation Table (2), where was longest life span of

males (6.8 ± 0.51 days) on clover, followed by cotton, broad bean, cabbage and sugar beet (6.2 ± 0.37, 5.8 ± 0.49, 5.4 ± 0.24 and 5.2 ± 0.37 days) respectively, as compared to those reared on castor bean leaves (6.6± 0.49 days). The female's longevity was the longest (9.6± 0.40 days) on clover, followed by that cotton, broad bean, sugar beet and cabbage were (9.4 ± 0.60, 8.8 ± 0.37, 7.8 ± 0.49 and 7.6 ± 0.51 days) respectively, as compared to those reared on castor bean leaves (8.8 ± 0.37 days). The results clear that longevity of moths in general; females lived 2-3 days longer than males. In the first generation longevity of males on clover was significant different from both sugar beet and cabbage, and non-significant different from the remaining host plants. While in females longevity of moths on clover non-significant different from broad bean and significantly different from remaining host plants. While in second generation was longevity of males and females on clover significant different from other host plants. In the first generation longest developmental period in males from larvae fed on sugar beet leaves (46.4 ± 0.51 days), followed by cotton, broad bean, clover and cabbage(44.8 ± 0.49, 41.4 ± 0.75, 41.2 ± 0.80 and 39.4 ± 0.51 days) respectively. As compared to those reared on castor bean leaves (41.6 ± 0.98 days). In addition, the same results were obtained in females longest developmental period was (48.2 ± 0.37 days), followed by that (46.6 ± 0.40, 44.8 ± 1.07, 43.6 ± 0.68 and 42.6 ± 0.75 days) were recorded for the same host plants. As compared to those reared on castor bean leaves (43.8 ± 0.73 days) (Table 1). There were significant differences between longevities obtained on both cabbage and sugar beet and those obtained on the other host plants

Also, in the second generation longest developmental period in males was (46.8 ± 0.37 days) from larvae fed on sugar beet leaves, next to that clover, cotton, broad bean and cabbage were (44.2 ± 0.80, 43.8 ± 0.58, 43.4± 0.68 and 43 ± 0.45 days) respectively. As compared to those reared on castor bean leaves (43 ± 0.84 days). Also, the same results were obtained in females longest developmental period was (49.4± 0.81 days), followed by that (47.2± 0.58, 47± 1.14, 46.4± 0.75 and 45.2± 0.58 days) were recorded for the same host plants. As compared to those reared on castor bean leaves (45± 0.84 days) (Table 2). Similar results were obtained by Basu (1943) who found that the larval duration was shorter in the cabbage than in the cotton one, while Moufied *et al.* (1960) mentioned that the shortest period of larval stage was obtained from larvae fed upon leaves of castor oil plant and clover. Also, Badr (1967) found that sweet potato and castor oil tended to shorten the duration of the larval stage. Salama *et al.* (1971) investigate the effect of host plants on the biology of S. littoralis. Host plants showed variable effects on the duration of different developmental stages, weight of the pupae, as well as the reproductive capacity and fertility of eggs. Castor oil leaves shortened the larval and pupal duration, while sweet potato prolonged it. Duodu and Biney (1981) showed that development of S. littoralis was fastest on cabbage and slowest on cotton and Urena. Bae (1999) studied the larval development of tobacco cutworm, S. litura which was reared on leaves of 11 different leguminous plant cultivars. The larval duration ranged from 11.5 to 15.7 days depending on the kind of food. The shortest larval duration occurred on soya bean cultivars and the longest on groundnut cultivars. Xue *et al.* (2010) showed that all of the biological parameters of S. litura were affected by the host plants. Where larvae developed differently on the host plants, from shortest to longest in the following order: Chinese cabbage, cowpea, sweet potato, and tobacco. Pupal development was shorter on cowpea than on the other three host plants, and males generally developed longer than females. More females than males were found among emerged adults, and male adults lived 1-2 d longer than females. Al-Shannaf (2011) found that larvae that fed on turnip leaves had the shortest larval duration 12.64 and 13.0 days in two generations. Abdullah *et al.* (2019) mentioned that the pupal development of S. litura was minimum with respect to days on maize than others. The adults lived 11 days more on cabbage compared to other diets.

Table 2: effect of different host plants on development periods of *Spodoptera littoralis* during the second generation.

Host plant leaves	Total of Larval duration (d) ± S. E.	Pre-pupae duration (d))± S. E	Pupal duration (d)± S. E.	Longevity (days)± S. E.		Developmental period (d) ± S. E.	
				Male	Female	Male	Female
Castor	21 ± 0.00 c	1±0	14.2 ± 0.49 b	6.6± 0.49ab	8.8 ± 0.37ab	43 ± 0.84 b	45 ± 0.84 b
Clover	21.2 ± 0.20 c	1±0	15.4 ± 0.51ab	6.8± 0.51 a	9.6 ± 0.40 a	44.2 ± 0.80 b	47.2 ± 0.58 ab
Cabbage	21.8 ± 0.20 bc	1±0	14.8 ± 0.37ab	5.4± 0.24 bc	7.6 ± 0.51 b	43 ± 0.45 b	45.2 ± 0.58 b
broad bean	21 ± 0.71 c	1±0	15.6 ± 0.40 a	5.8± 0.49abc	8.8 ± 0.37ab	43.4 ± 0.68 b	46.4 ± 0.75 b
Sugar beet	25.8 ± 0.37 a	1±0	14.8 ± 0.37ab	5.2± 0.37 c	7.8 ± 0.49 b	46.8 ± 0.37 a	49.4 ± 0.81 a
Cotton	22.4 ± 0.40 b	1±0	14.2 ± 0.37 b	6.2± 0.37abc	9.4 ± 0.60 a	43.8 ± 0.58 b	47± 1.14 ab
LSD 0.05	1.11		1.23	1.23	1.35	1.87	2.35

Means followed by the same letter in the same column are not significantly different according to Duncan's multiple range test at 5 % level

Pupation Percentages and Adult Emergence Percentages:

The data indicated in Table (3) that the pupation percentages in first-generation were significantly affected by the feeding of larvae on different host plants. Highest pupation percentage was (78.4± 1.08 %) when larvae fed on clover leaves, followed by that obtained on broad bean, cotton, cabbage, and sugar beet such pupation percentage values were (74.8 ± 2.03,68.4 ± 2.56, 59.2 ± 2.84 and 58.4 ± 2.38%) respectively, As compared to those reared on castor bean leaves (62.8 ± 1.66 %). However the highest adult emergence percentages from pupae were (98 ± 0.45 and 98 ± 0.45 %) upon clover and broad bean respectively, followed by cabbage, cotton and sugar beet were (96.8 ± 0.37, 96.22 ± 0.25 and 95.58 ± 0.61 %) respectively. As compared to those reared on castor bean leaves (96 ± 0.45 %). In the second generation, the pupation percentages were significantly affected by the host plant (Table 4). The highest pupation percentages were (73.4 ± 1.66 %) on broad bean, followed by clover, cotton, cabbage, and sugar beet were (71 ± 2.53, 61.8± 1.96, 55.2 ± 1.99 and 53.6 ± 2.06 %) respectively. As compared to those reared on castor bean leaves (63.2± 1.99 %).While the highest adult emergence percentages from pupae were (98.08 ± 0.24%) on cotton, followed by broad bean, sugar beet, clover, and cabbage were (96.44 ± 0.34, 95.88 ± 0.32, 94.08± 0.12 and 93.48 ± 0.62%) respectively. As compared to those reared on castor bean leaves (93.96 ± 0.29 %). Data indicate that pupation percentage and adult emergence percentages, upon clover was non-significant different from broad bean, but were significantly different from the remaining host plants, in first generation. Also, the same results were obtained in pupation percentages, and in adult emergence percentages cotton was significantly different from the other host plants, in the second generation.

The Survival Rates:

In the first generation the survival rates varied on the six host plants the highest rate was observed on clover (76.8 ± 1.07 %), followed by that on broad bean (73.2 ± 1.85 %), cotton (65.8 ± 2.35%), cabbage (57.4 ± 2.79 %) and sugar beet (55.8 ± 2.22 %), as compared to those reared on castor bean leaves (60.2 ± 1.56 %) (Table 3). In the second generation the highest survival rates on broad bean was (70.8 ± 1.69 %), followed by clover (66.8 ± 2.35 %), cotton (60.6 ± 1.81%), cabbage (51.6 ± 1.81 %) and sugar beet (51.4 ± 1.99 %), as compared to those reared on castor bean leaves (59.4 ± 1.89 %) (Table 4). Data showed that survival rates on clover was non-significant different from broad bean, and were significantly different from the remaining host plants, in the two generations.

Sex Ratio:

The sex ratio was significantly affected by the host plant. The data recorded in Tables (3 and 4) showed that sex ratios in the first generation were biased, and more female adults emerged than male adults when their larvae were fed with the broad bean, clover, castor

bean, cotton, and sugar beet were (52.2 ± 0.12,51 ± 0.16, 50.8 ± 0.37, 50.8 ± 0.22 and 50.6 ± 0.23 %) respectively. Male ratios were higher on cabbage than on the other host plants were (50.9 ± 0.04 %). And the second generation more female adults emerged than male adults when their larvae were fed with the castor bean, cotton and cabbage were (51.2 ± 0.34, 51.1 ± 0.18 and 50.8 ± 0.36%) respectively. Male ratios were higher on clover, sugar beet and broad bean were (50.9 ± 0.29, 50.6 ± 0.41 and 50.3 ± 0.29 %), respectively.

Table 3: Effect of host plants on some of biological aspects of *Spodoptera littoralis* during the first generation.

Host plant leaves	Initial neonate numbers	Pupation % ± S. E.	Adult emergence % ± S. E.	Survival % ± S. E.	Sex ratio ± S. E.		Mean No. of eggs ± S. E.
					Male	Female	
Castor	100	62.8± 1.66 bc	96± 0.45 b	60.2± 1.56 bc	49.2± 0.37b	50.8± 0.37 b	1326± 22.99 c
Clover	100	78.4± 1.08 a	98± 0.45 a	76.8± 1.07 a	49± 0.16 b	51± 0.16 b	1642± 29.98 b
Cabbage	100	59.2± 2.84 c	96.8± 0.37ab	57.4± 2.79 c	50.9± 0.04 a	49.1± 0.04 c	1081± 33.74 e
broad bean	100	74.8± 2.03 a	98± 0.45 a	73.2± 1.85 a	47.8± 0.12c	52.2± 0.12 a	1915± 59.83 a
Sugar beet	100	58.4± 2.38 c	95.58± 0.61 b	55.8± 2.22 c	49.4± 0.23 b	50.6± 0.23 b	1185± 42.81 de
Cotton	100	68.4± 2.56 b	96.22± 0.25 b	65.8± 2.35 b	49.2± 0.22 b	50.8± 0.22 b	1260± 54.43 cd
LSD 0.05		6.33	1.28	5.98	0.63	0.63	124.6

Means followed by the same letter in the same column are not significantly different according to Duncan's multiple range test at 5 % level.

Effect of Host Plants on Reproductive Capacity:

Data in Tables (3 and 4) showed that larval food has a marked effect on a number of eggs laid by moths. Moths produced from larvae fed on broad bean laid the highest number of eggs 1915 and 1847 eggs per female in the 1st and 2nd generations, respectively. Moreover, less on clover (1642 and 1372 eggs per female) in the two generations, respectively. Moreover 1260 and 1310 eggs per female on cotton in the two generations, respectively, and numbers of eggs (1185 and 1061 eggs/female) upon sugar beet in the two generations respectively, 1081and 994 eggs/female in the two generations respectively were laid by females fed as larvae on cabbage. As compared to those reared on castor bean leaves were 1326 and 1216 eggs per female in the two generations, respectively. Results showed that sex ratio on broad bean was significantly different on the other host plants, in the first generation. While in the second generation, the sex ratio was insignificantly differences between castor bean, cotton and cabbage, and significantly different between castor bean and remaining host plants. Moreover, mean number of eggs laid by moths on broad bean was significantly different from the other host plants, in the two generations. Azidah and Azirun (2006) obtained similar results when they stated that the survival of *S. exigua* was affected by the host plant at the larval stage. Long bean was found to be the most suitable host plant and provide the best food quality for *S. exigua* compared to the other host plants, as it allowed faster development, fewer larval instars and a higher survival rate. Xue *et al.* (2010) cleared that pupal survival of *S. litura* rates was relatively high (91.4 - 95.9%) in all four host plant treatments, although that on sweet potato was lower than those on the other three host plants. Numbers of eggs oviposited by *S. litura* females were highest on sweet potato, followed by those on cowpea, Chinese cabbage, and lowest on tobacco. Hatem *et al.* (2015) stated that numbers of eggs oviposited by female *S. littoralis* were highest on wild beets, followed by those on red radish and clover respectively. The percentages of viability by female *S. littoralis* were highest on wild beets, followed by those on red radish and clover without significant differences. Abdullah *et al.* (2019) observed that adult emergence rate of *S. litura* was high on cabbage (93.11%), followed by alfalfa (87.5%), sesbania (81.33%), and maize (68.44%). Fecundity was higher when larvae fed on leaves of cabbage, alfalfa, and sesbania as compared to maize and artificial diet. The number of eggs oviposited was the highest on cabbage (2455.5 eggs) followed by those alfalfa (1750.0 eggs) and lowest on maize (1055.6

eggs) and all of the biological parameters of *S. litura* included in the study were affected by the host plants.

Table 4: Effect of host plants on some of biological aspects of *Spodoptera littoralis* during the second generation.

Host plant leaves	Initial neonate numbers	Pupation % ± S. E.	Adult emergence % ± S. E.	Survival % ± S. E.	Sex ratio ± S. E.		Mean No. of eggs ± S. E.
					Male	Female	
Castor	100	63.2± 1.99 b	93.96± 0.29 c	59.4± 1.89 b	48.8± 0.34 b	51.2± 0.34 a	1216± 24.57 c
Clover	100	71± 2.53 a	94.08± 0.12 c	66.8± 2.35 a	50.9± 0.29 a	49.1± 0.29 b	1372± 27.41 b
Cabbage	100	55.2± 1.99 c	93.48± 0.62 c	51.6± 1.81 c	49.2± 0.36 b	50.8± 0.36 a	994± 19 d
broad bean	100	73.4± 1.66 a	96.44± 0.34 b	70.8± 1.69 a	50.3± 0.29 a	49.7± 0.29 b	1847± 20.16 a
Sugar beet	100	53.6± 2.06 c	95.88± 0.32 b	51.4± 1.99 c	50.6± 0.41 a	49.4± 0.41 b	1061± 31.08 d
Cotton	100	61.8± 1.96 b	98.08± 0.24 a	60.6± 1.81 b	48.9± 0.18 b	51.1± 0.18 a	1310± 33.28 b
LSD 0.05		5.97	1.040.25	5.64	0.93	0.93	77.18

Means followed by the same letter in the same column are not significantly different according to Duncan's multiple range test at 5 % level.

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ARABIC SUMMARY

تأثير العوائل النباتية على النواحي الحياتية لدودة ورق القطن *S. littoralis*

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أجريت هذه التجربة بغرض دراسة تأثير تغذية دودة ورق القطن *S. littoralis* على ستة عوائل نباتيه مختلفه وهي الخروع – البرسيم – الكرنب – الفول البلدي – بنجر السكر – القطن على النواحي الحياتيه لهذه الحشرة تحت الظروف المعملية في درجة حراره 1±25 م ورطوبة نسبية 5±75 ٪ وأظهرت النتائج أن مدة التطور والخصوبه قد تأثرت باختلاف العائل حيث كانت أقصر مدّة تطور استغرقها الطور اليرقي فى حالة اليرقات التى تغذت على أوراق البرسيم وكانت (18 ± 0 يوم) ، في حين كانت أطول مدة للعمر اليرقى تم تسجيلها لليرقات التى تغذت على أوراق بنجر السكر حيث كانت 25.2 ± 0.37 يوم. أما النسبة المئويه الأعلى للتعذير (78.4 ± 1.08 ٪) تم رصدها فى حالة اليرقات التى تغذت على أوراق البرسيم والنسبة المئوية الأعلى لخروج الفراشات من العذارى كَانتْ (98 ± 0.45 ٪) في حالة التغذية على كلا من البرسيم والفول البلدي. ووضعت الفراشات التي تغذت يرقاتها على الفول البلدي العدد الأكبر للبيضِ وكانت 1915 و 1847 بيضة / أنثى في الجيلين، على التوالي. وأقلّ أعداد للبيضِ (1081 و 994 بيضة / أنثى) فى حالة التغذية على الكرنب في الجيلين على التوالي.