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Host Suitability of Tobacco Leaf Eating Caterpillar (*Spodoptera litura* F.) under Laboratory Condition

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ABSTRACT

A study was conducted at the Bidi Tobacco Research Station, AAU, Anand laboratory during *kharif* (June-October 2021) to determine the most suitable host plant of *S. litura* among the groundnut, tobacco and castor. A statistically designed lab experiment using Completely Randomized Design (CRD) having twenty-five Repetitions and three treatments was laid out. Total life span of *S. litura* was longer on castor followed by groundnut and least duration was observed on tobacco. The egg hatching % was found more or less similar in each of host crop. Eggs were clustered and covered in tiny buff-colored hairs that resembled hairs on the gravid female's abdomen tip. The total larval period from the first to sixth instar was recorded longer on castor followed by on groundnut and tobacco. Last larval instar was very active and consuming prolifically on leaves, resulting in the whole leaf being fed with just the mid rib remaining. The pupal period was found similar on three different hosts. Pupa become shiny, greenish in color after that color change from greenish to brownish yellow to light brown to dark brown in color with shiny appearance. Adult longevity of both male and female was found to be longer on castor followed by groundnut and tobacco. Adult moths (both male and female) were yellowish brown in colour, with a prominent head and black compound eyes. The female was somewhat bigger and stouter than the male. Fecundity (egg masses female^{-1}) of adult female was noticed similarly in different host crops. Sex ratio of *S. litura* on groundnut was 1:1, on castor 1:1.09 and on tobacco 1:1.38.

KEYWORDS: Castor, groundnut, leaf defoliator, *Spodoptera litura*, tobacco

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1. INTRODUCTION

The *Spodoptera litura* Fab. (Lepidoptera: Noctuidae) is a destructive polyphagous pest that damages field crops around the world, including pulses, vegetables and oilseeds. A wide variety of crops, including oilseeds, grains, fodder, fibre crops, fruit trees, weeds and medicinal and ornamental plants, have been documented to have suffered considerable harm from this insect (Purohit, 2020). *S. litura*, a tobacco leaf-eating caterpillar, is a well-known leaf feeder with a high reproductive rate and considerable damage potential, as well as the ability to move over vast distances in the adult stage. Due to shifting cropping patterns in intensive agriculture, this insect has become a severe danger to the groundnut ecology (Shekhawat et al., 2018, Dodiya and Barad, 2022). The economic loss caused by *S. litura* can reach between 25.8 and 100% in crops (Li et al., 2023). It has a wide host range in Asia-Pacific, encompassing over 100 plant species from 25 genera and 14 families, including cultivated crops, weeds, vegetables, fruits, and decorative plants. Cotton, castor, cabbage, colocasia, trianthema, and sesbania were some of the most important host plants (Ahmad et al., 2013). Among the crop plants, maximum preference was observed on *Lycopersicon esculentum* Mill., *Spinacea oleracea* L., *Brassica oleracea* L. var. capitata and *Trifolium alexandrium* L. and on weed plants high feeding preference was observed on *Alternanthera philoxeroides* Mart., *Euphorbia hirta* L., *Eichhornia crassipes* Mart., *Trianthema portulacastrum* L., *Parthenium hysterophorus* L., *Cichorium intybus* L., *Rumex obtusifolius* L. *Chenopodium album* L., and *Ipomoea fistulosa* Mart. Also crop plants maize, wheat, mung bean, paddy, balonda, soybean, pigeon pea, linseed, lentil, gram, groundnut, cotton, castor, cabbage, cauliflower, marigold (Boparai, 2019, Jamal, 2021, Zhang et al., 2023) and weeds like sessile joyweed, para grass, kanteri, hiran chara, bagnatho, dubh, galmotha, pignut, lantana, *Medicago polymorpha,* wild gooseberry, water lettuce, common wire weed, phulani also Medicinal crops like brahmi, ornamental crops like marigold (Ray, 2018) and plantation crop like cocoa (Madhu et al., 2023). This pest was not cause any economic loss to farmers as it feeds mainly on leaves and the plant of pigeon pea has the capacity to compensate the vegetative loss (Sreekanth et al., 2020). The establishment, development, survival and the fertility of herbivorous insects are significantly influenced by the host plant. *S. litura* has been found on a large number of host plants, although not all of them act in the pest's favour in the same way (Xue et al., 2010). The total developmental time (egg–adult) decreased with increasing temperature on host plants and with an artificial diet (Maharjan et al., 2023). Numerous investigations on the biological characteristics of *S. litura* on various host plants in various environmental conditions have been conducted. Furthermore, the presence of the proper stage, quantity, and quality of insect is necessary for the effectiveness and efficiency of control technology evaluation (Abdullah et al., 2019, Mohammad et al., 2019). Therefore, to produce the insect described above, mass breeding technique using high-quality feed that is accessible and affordable is required. Although this pest feeds on a variety of crops, the morphological and chemical variations among the host plants may interfere with the biology and behaviour of the pest. Similar to this, knowledge of *S. litura* life history characteristics in relation to various host plant species can aid in the development of effective control measures for this destructive economic pest (Dodiya et al., 2023). The objective of this investigation was to find out the most suitable host plant that will promote *S. litura* development and allow for mass raising.

2. MATERIALS AND METHODS

Laboratory experiment was conducted at Bidi Tobacco Research Station, Anand Agricultural University, Anand during *Kharif* (June–September, 2021). Groundnut, castor and tobacco plants were used as a different host. For this purpose, groundnut, castor and tobacco were sown in small plot at BTRS farm, AAU, Anand during *kharif*, 2021 and leaves of different host plant brought to the laboratory for food purpose.

2.1. Rearing techniques of test insect on natural diet

In order to develop the initial culture of *S. litura,* a large number of full-grown larvae was collected from infested fields of Anand Agricultural University campus, Anand. The field collected larvae were reared at Laboratory of Bidi Tobacco Research Station, AAU, Anand. The field-collected larvae brought to laboratory and reared in round galvanized cages (36×12 cm^2) containing soil. Fresh leaves of groundnut, castor and tobacco were provided as food for larvae and round galvanized cages were kept clean every day morning till pupation. Full grown larvae which being pre-pupated was not disturbed. Pupation occurs inside in galvanized cage filled with soil and immediately after emergence, male and female moth (1:1) were transferred in wooden cage (30×30×45 cm^3) and all sides of cage was covered with white muslin cloth with long sleeves on two lateral side. The bottom of the cage was covered with 1 cm thick wet urethane foam. Inside the cage five % honey solution was provided as food for the adults by dipping of absorbent sponge in it. Tender twig of host plant was inserted in conical flask containing fresh water to keep it fresh and turgid, facilitating resting and oviposition of adult. The leaves were observed daily for egg masses. As soon as the egg masses were observed on the leaves. The twigs on which eggs laid were kept into the galvanized round cage containing fresh leaves as food for neonates. For the study of

the most suitable host of the pest, twenty-five newly hatched larvae of *S. litura* were transferred individually with the help of fine camel hairbrush in plastic vial (5.5×4.5 cm^2) having fresh leaves of each host and food was changed every-day in the morning. The culture was maintained under laboratory conditions *i.e.* average minimum temperature, maximum temperature and relative humidity were recorded as 26.65°C, 33.15°C and 77%, respectively.

2.2. Experimental details

A statistically designed lab experiment using Completely Randomized Design (CRD) having twenty-five Repetitions and three treatments was laid out at Laboratory of Bidi Tobacco Research Station, AAU, Anand to study most suitable host plants of *S. litura* under laboratory condition. For the analysis of data, we use equal and unequal CRD analysis.

2.3. Biological parameters

Different parameters such as egg hatching (%), incubation period, larval period, pre-pupal period, pupal period, pre-oviposition period, oviposition period, post-oviposition period, fecundity (Number of egg masses $female^{-1}$), sex ratio (Male: Female), total life cycle of adult, total life span was recorded.

3. RESULTS AND DISCUSSION

3.1. Egg

Egg masses of *S. litura* were found on the underside surface of tender leaves of castor. The eggs were clustered and covered in tiny buff-colored hairs that resembled hairs on the gravid female's abdomen tip. The eggs were arranged in groups of two to three layers each. The eggs were spherical in shape and pale white in color, and the covering (scales) of the eggs were removed prior to hatching, revealing the embryonic head capsule of the first instar. When a larva hatches, the head wriggles out first, followed by the rest of the body (Figure 1).

3.1.1. Egg hatching (%)

Total number of larvae hatched out from egg mass is considered as egg hatching. Egg hatching % found more or less similar in each of host crop with highest % was observed on tobacco with 94.00±2.0% which does not significantly different with 93.33±2.49% on castor and it was also at par with egg hatching% on groundnut with 92.00±1.63% (Table 1).

3.1.2. Incubation period

Duration between egg lay to the emergence of larvae from egg was considered as egg incubation period. The egg incubation period was not much varied considerably on different host plants, the minimum egg incubation period

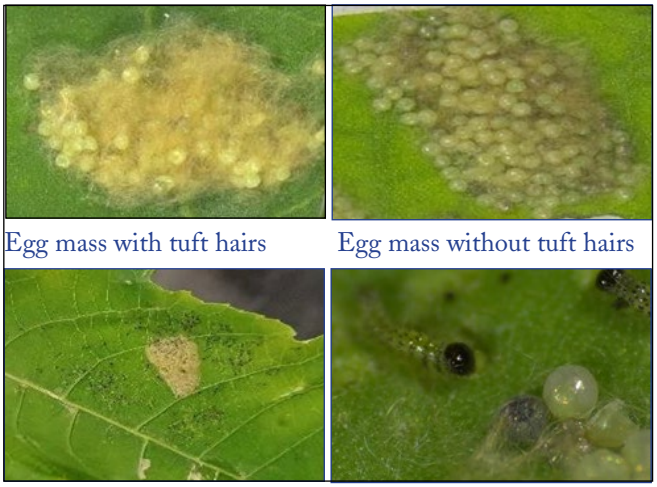


Figure 1: Egg masses of *S. litura*

was observed 6.63±0.50 days on tobacco which does not significantly different with 7.00±0.64 days on castor and it was also at par with 6.91±0.68 days on groundnut (Table 1). Latha et al. (2014) reported egg incubation period was of 4.10±0.32 days on tobacco.

3.2. Larval instars

There were six different larval instars of *S. litura* recorded in laboratory condition on different host plant. Changes in larval instars were confirmed by head capsule or exuviae.

3.2.1. First instar

At the end of incubation period larva comes out from egg by cutting the eggshell. The newly born larva had a noticeable shining black head and rest of body become translucent. After feeding on leaf surface by scrapping it become appear greyish to dirty white in color. The head was disproportionately large in comparison to the rest of the body. The body was cylindrical in form and tapered towards the back. The mouthparts were discovered to be fully developed; however, the abdominal segments were not clearly distinct. The entire body of larva covered with short hairs arising from a black spot on the body. These short hairs were shed down during moulting to second instar (Figure 2). Development period of first instar was observed to be longer on castor *i.e.,* 6.32±0.63 days followed by 4.52±0.77 days on groundnut (Table 1). The least duration was recorded on tobacco with 3.32±0.48 days.

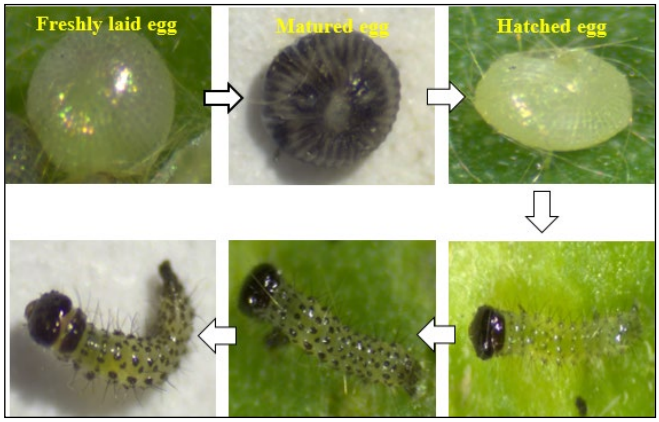
3.2.2. Second instar

The second instar larva was very different from that of the first instar in term of size and appearance. Second instar larva feed on leaves by making small uneven hole. Larva became more elongate than first instar. The prominent triangular mark seen on head and head turned pale brown from black color. The color of the body was light green.

Table 1: Incubation period, egg hatching (%), period of different larval stages, pre pupal period and pupal period of tobacco leaf eating caterpillar, *S. litura* on different host plants

Host Plants	EH (%)	IP (days)	Sample size	Mean larval instar (days)						Total larval period (days)	PrP (days)	PP (days)	
				Mean±SD						Mean ± SD			
	Mean ±SD	Mean ±SD		I	II	III	IV	V	VI		Mean ±SD	Sample size	Mean ±SD
Ground-nut	92.00 ±1.63 (73.62)	6.91± 0.68	25	4.52 ±0.77	3.32 ±0.75	1.32± 0.56	1.04± 0.20	1.24± 0.44	1.04± 0.20	12.48± 1.39	0.82± 0.25	23	7.30± 0.64
Castor	93.33± 2.49 (75.25)	7.00± 0.64	25	6.32 ±0.63	3.52 ±0.51	1.44± 0.51	1.56± 0.51	1.56± 0.51	1.44± 0.51	15.84± 0.47	1.24± 0.44	23	7.22± 0.74
Tobacco	94.00± 2.00 (75.92)	6.63± 0.50	25	3.32 ±0.48	3.04 ±0.20	1.40± 0.50	1.04± 0.20	1.04± 0.2	1.08± 0.19	10.92± 0.28	0.52± 0.10	19	7.42± 0.61
SEm±	1.59	0.18	-	0.13	0.11	0.10	0.07	0.08	0.07	0.11	0.06	-	0.14
CD (p=0.05)	NS	NS	-	0.36	0.30	0.29	0.19	0.23	0.20	0.31	0.17	-	NS
CV (%)	3.66	8.87	-	13.47	16.26	37.63	27.61	31.47	29.73	4.17	34.23	-	9.10

IP: Incubation period; EH: Egg hatching; PrP: Pre pupal period; PP: Pupal period; Figures in parentheses indicate retransformed values of arcsine transformation



Changes from egg to 1st larval instar

Figure 2: Morphological changes from egg to 1st instar larva

The appearance of conspicuous black dots on either side of the dorsum of the first and eighth abdominal segments was a distinguishing trait. The first abdominal segment was likewise larger than the others, with all the spiracles clearly visible. On the larval body, there were five longitudinal pale yellow color lines, three on the dorsal side and the other two on lateral side. On the head, a faint inverted 'Y' shape ecdysial line can be seen and completion of second instar confirmed by head capsule and exuviae (Figure 3 and 4). Second instar development period was found to be similar on different hosts **(**Table 1**)** *i.e.,* on groundnut 3.32±0.75 days, on castor 3.52±0.51 and 3.04±0.20 days on tobacco.

3.2.3. Third instar

The third instar larva become voracious feeder with fully developed mouth parts. Larvae feed on leaves and uneven hole seen on leaves. Body color changed from light green to dark green. There were prominent black dots seen on first and eighth abdominal segments. The black dorsal spots on the second and third thorax segments have a yellow to white dot at the end of the third instar, and the middorsal line becomes noticeable, typically turning bright yellow or orange. Whitish color inverted 'Y' shape ecdysial line seen on head and completion of third instar confirmed by head capsule and exuviae (Figure 3 and 4). The duration of third instar larvae were noticed longer on castor 1.44±0.51 days and it was at par with host plant tobacco 1.40±0.50 days, while it was least on groundnut (1.32±0.56 days) (Table 1).

3.2.4. Fourth instar

The fourth instar larvae increase in size, feed vigorously on leaves and grow faster as compared to third instar larvae. Prominent yellowish or orange color stripes were seen on larval body. Body color changes to light brownish from dark green. On second to seventh abdominal segment black patches may or may not see on dorsal side, all these patches

Figure 3: Head capsule and exuviae of larval instar of *S. litura*

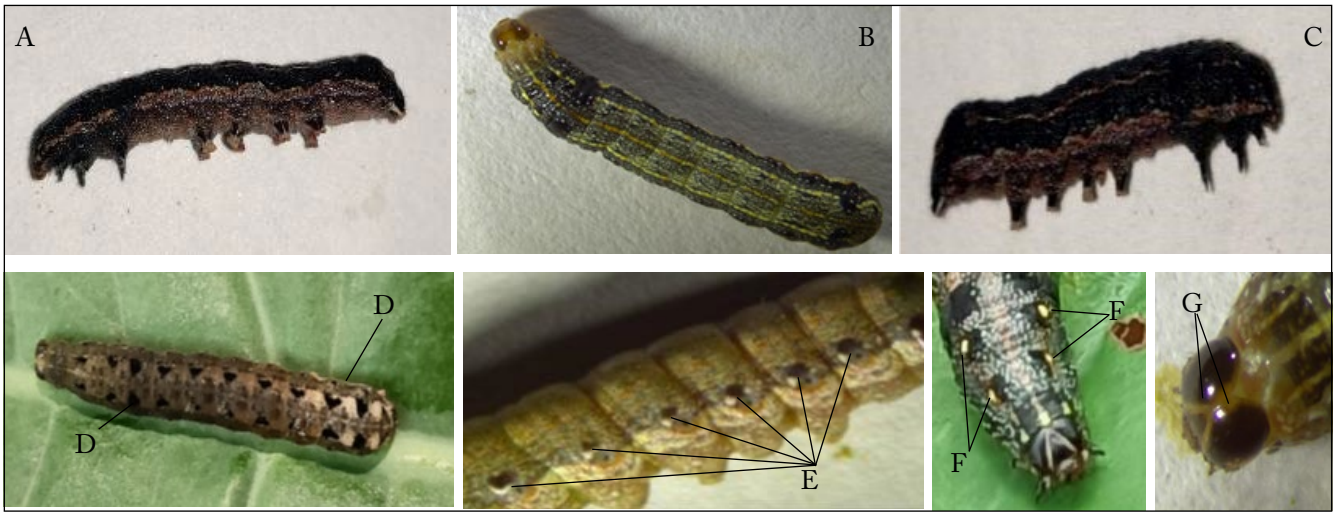


Figure 4: Morphological characteristics of *S. litura* larva (A and C Lateral sides of larva; B: Dorsal side of larva; Five bright orange or yellowish stripes on larval body; among them three on dorsal side (B) and one on each lateral side (A and C); D: Two dark patch on dorsum of each abdominal segment; more prominent on first and eight abdominal segment; E: Abdominal spiracles; F: Yellow dot on 2nd and 3rd thoracic segment; G: Whitish Y Shape mark on head/prothorax (Ecdysial line))

were more or less equal in size but smaller than black patches present on first and eighth abdominal segment. Inverted 'Y' shape ecdysial line seen on head and completion of instar confirmed by head capsule and exuviae (Figure 3 and 4). The fourth instar larval period was observed to be longer on castor *i.e.*, 1.56±0.51 days while it was 1.04±0.20 days on groundnut which was at par with on tobacco 1.04±0.20 days (Table 1).

3.2.5. Fifth instar

Larvae increase in size, feed vigorously and only mid ribs of leaves remain and changes into next instar very faster compared to rest of instar. Larva become dark brownish in color and most prominently black dots were clearly seen on first and eighth abdominal segment. The black dorsal spots on the second and third thorax segments have a yellow to

white dot were clearly seen. Yellowish or orange color stripes were seen on dorsal surface of larval body while stripes on lateral side were become faded. Ecdysial line were seen on head capsule and moulting confirmed by exuviae (Figure 3 and 4). The longer fifth instar development period was observed on castor *i.e.,* 1.56±0.51 days followed by 1.24±0.44 days on groundnut. The least duration was recorded on tobacco with 1.04±0.2 days (Table 1).

3.2.6. Sixth instar

Larvae were very active and consuming prolifically on leaves, resulting in the whole leaf being fed with just the mid rib remaining. The larva was large and eruciform, with a robust, smooth, cylindrical body. Much of the body was velvety black or blackish green in colour. In comparison to the rest of the instars, the head was larger. A yellow to white dots visible on the black dorsal markings on the second and third thoracic segments. The spiracles were large, elongated, and dark-colored. On the dorsal side of the second to seventh abdominal segments, black patches may or may not be visible; all of these patches were roughly the same size but smaller than the black patches found on the first and eighth abdominal segments. At completion of this instar, larva became sluggish and fed less and started to convert in pupa. Completion of change in instar confirmed by exuviae and head capsule (Figure 3 and 4). The duration of sixth instar was observed to be longer on castor *i.e.,* 1.44±0.51 days followed by 1.08±0.19 days on tobacco. The least duration was recorded on groundnut with 1.04±0.20 days (Table 1).

3.2.7. Total larval period

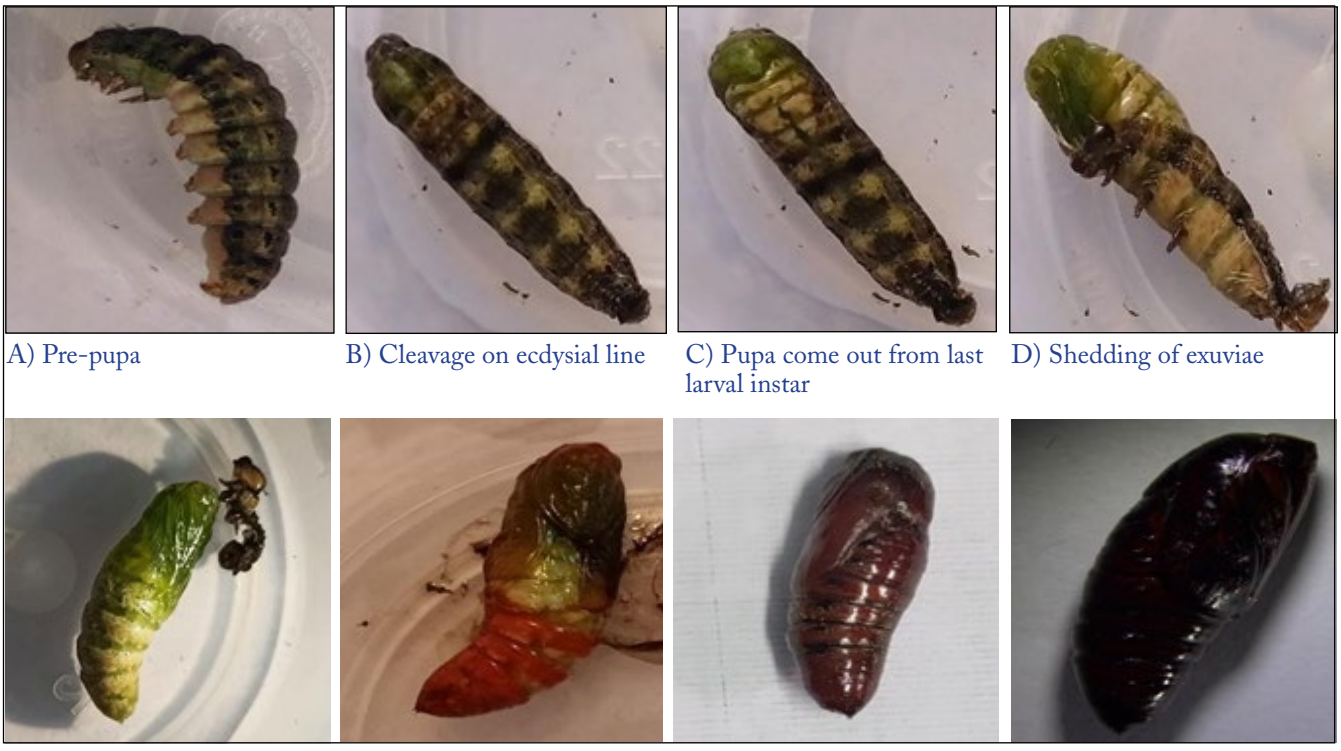
The total larval period (1st to 6th instar) was recorded longer on castor 15.84±0.47 days followed by on groundnut 12.48±1.39 days (Table 1) while, least duration was noticed on tobacco with 10.92±0.28 days.

3.3. Pre pupal period

At the end of sixth instar larva were fully grown and stopped feeding, migrate to soil for pupation and contracted their body. During pre-pupal stage larval skin (outer cuticle) was faded out and became very thin and started to separate from newer cuticle (Figure 5). The pre pupal period was observed to be longer on castor *i.e.,* 1.24±0.44 days followed by 0.82±0.25 days on groundnut. The least duration was recorded on tobacco with 0.52±0.10 days (Table 1).

3.4. Pupal period

After completion of pre-pupal period inside the soil newer cuticle separate from older last larval cuticle and pupa come out from older cuticle from ecdysial cleavage on head, during pupal stage it became sluggish but it come out by the movement and force of last abdominal segment on right and left side. Fresh pupa became shiny, greenish in color after that color change from greenish to brownish yellow to light brown to dark brown in color with shiny appearance. All the spiracles were prominent, clearly visible by naked eyes, wing formation were also seen on dorso-lateral side of pupa. Difference between male and female were also occurred in pupal stage.



A) Pre-pupa B) Cleavage on ecdysial line C) Pupa come out from last larval instar D) Shedding of exuviae

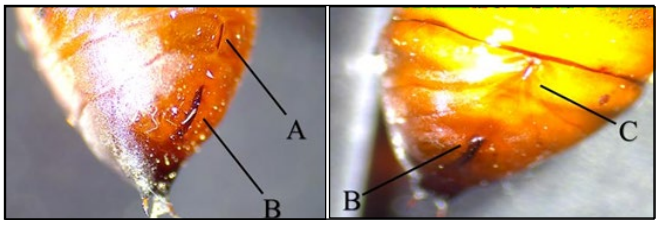
E) Shiny greenish pupa F) Shiny brownish pupa G) Light brownish pupa H) Dark brownish pupa

Figure 5: Continue...

I) Pupal case J)Adult emergence K) Adult come out L) Adult

Figure 5: Pre-pupa to adult emergence of *S. litura*

In male pupa, a slit like slightly elevated opening on 9th abdominal segment was visible while in case of female slit like genital opening on 8th abdominal segment were seen. Anal opening on 10th abdominal segment of both male and female pupa were seen. At the abdominal end of both male and female pupa had two short, stout spines known as Cremaster were seen (Figure 5 and 6). The data presented in table 1indicated that the pupal period was found to be similar on three different hosts *i.e.,* on groundnut 7.30±0.64 days, on castor 7.22±0.74 and 7.42±0.61 days on tobacco. There was no any difference in periods as result was non-significant. Duration of pre pupal and pupal stage was 1.10±0.32 and 13.00±0.82 days, respectively observed by Latha et al. (2014) on tobacco.



Female Pupae Male Pupae

Figure 6: Morphological characteristics of pupa of *S. litura*; A: Slit like genital opening on 8th abdominal segment of female pupae; B: Anal opening on 10th abdominal segment of both male and female pupa; C: Slit like slightly elevated opening on 9th abdominal segment of male pupae

3.5. Adult period

Making a small slit along the middorsal line of the pupa enable the imago of *S. litura* to emerge. The wings were noticed folded just after emerging, and they did not cover the entire abdomen. After a while, the moth began to move its body and the wings fully extended to their usual size. *S. litura* adult moths (both male and female) were yellowish brown in colour, with a prominent head and black compound eyes. Furthermore, the thorax and abdomen were found to be covered with thick brownish scales. The female was somewhat bigger and stouter than the male. Both sexes' forewings were observed to be narrower than their hind wings. The orbicular spot on the adult forewing should be elongate, thin, oblique, light brown, and edged with a white margin. While, this patch is more solid in the male's forewing. There was also a brown reniform spot with a white margined light brown region at the apex and a row of dark brown or black hour-glass markings along the outer borders, which was outlined in white and then black. A white fork seen in the forewing's middle region. On the middle region adjacent to the inner margin, there was a big yellowish or light brown patch. The female forewing lacks this patch (Figure 7 and 8). It was evident from table 2 that longer adult longevity found on castor with 9.00±0.45 days for male and 10.58±0.79 days for female, while on groundnut it was 7.90±0.45 days for male and 8.55±0.52 days for female and least duration was found on tobacco with 7.00±0.53 days for male and 8.18±0.40 days for female. The average longevity of *S. litura* male and female was 6.67±1.37 and 9.17±1.47 days when fed on tobacco observed by Latha et al. (2014).

3.5.1. Pre-oviposition, oviposition and post-oviposition period

The pre-oviposition, oviposition and post-oviposition period was observed to be longer on castor *i.e.,* 1.41±0.52, 7.26±0.75 and 2.08±0.99 days and 1.18±0.41, 6.18±0.60 and 1.27±0.47 days, respectively on groundnut and on tobacco 1.27±0.47, 5.55±0.52 and 1.36±0.50 days, respectively (Table 2). Latha et al. (2014) observed that the average pre-oviposition, oviposition and post-oviposition periods of *S. litura* were of 1.42±0.49, 5.50±1.38 and 1.50±0.55 days, respectively when fed on tobacco.

3.5.2. Total life span

Total life span of *S. litura* that fed on castor was longer 34.00±0.43 days for male and 41.25±1.16 days for female followed by 28.14±0.61 days for male and 35.19±3.25 for female on groundnut and least duration was observed on tobacco with 26.50±0.50 days for male and 33.37±0.74 for female (Table 2). The total life cycle completed in 45.50±1.58 days in case of male and 48.20±2.10 days in female when fed on tobacco observed by Latha et al. (2014).

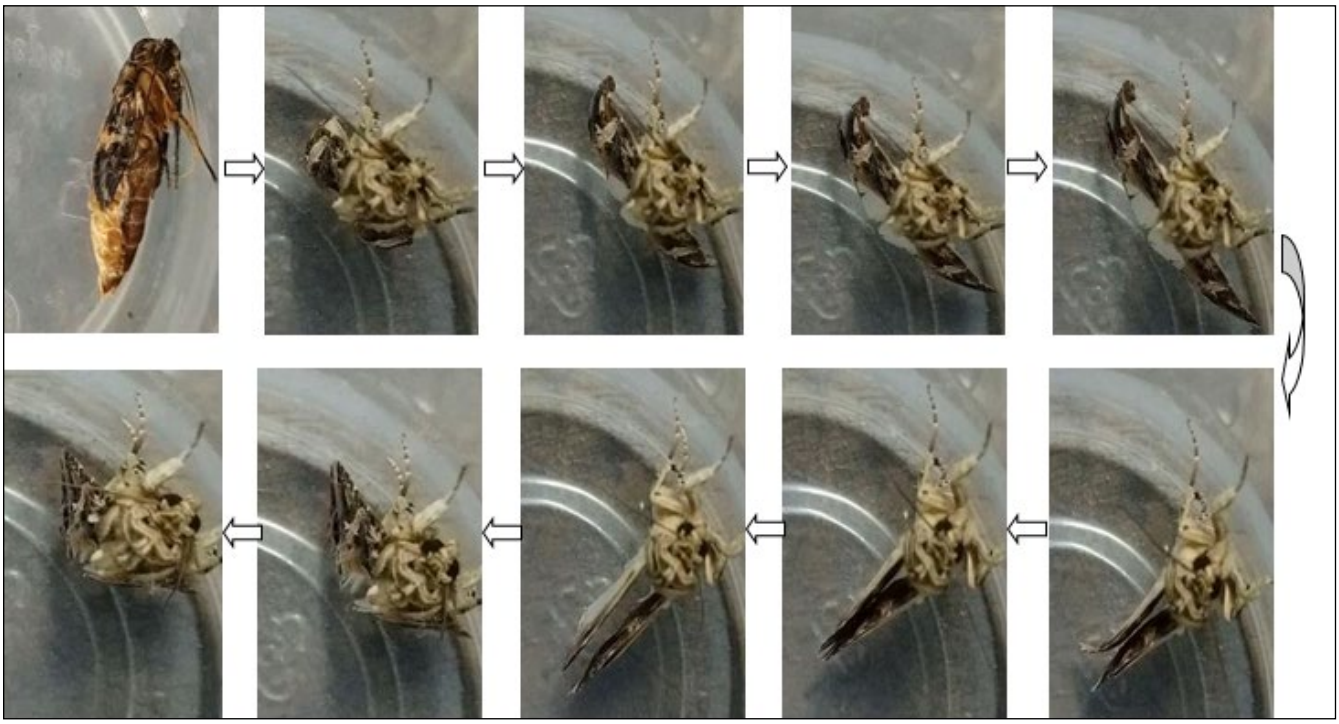


Figure 7: Progressive wing development of *S. litura* adult

Table 2: Pre-oviposition period, oviposition period, post oviposition period, adult longetivity and total life span of tobacco leaf eating caterpillar, *S. litura* on different host plants

Host plants	Sample size	PrOP (days)	OP (days)	POP (days)	Adult longevity (days)				Total life span (days)			
					Male		Female		Male		Female	
		Mean± SD	Mean± SD	Mean± SD	Sample size	Mean± SD	Sample size	Mean± SD	Sample size	Mean ±SD	Sample size	Mean± SD
Ground-nut	22	1.18± 0.41	6.18± 0.60	1.27± 0.47	11	7.90± 0.45	11	8.55± 0.52	11	28.14 ±0.61	11	35.19± 3.25
Castor	23	1.41± 0.52	7.26± 0.75	2.08± 0.99	11	9.00± 0.45	12	10.58± 0.79	11	34.00 ±0.43	12	41.25± 1.16
Tobacco	19	1.27± 0.47	5.55± 0.52	1.36± 0.50	8	7.00± 0.53	11	8.18± 0.40	8	26.50 ±0.50	11	33.37± 0.74
SEm±	-	0.14	0.19	0.21	-	0.14	-	0.18	-	0.17	-	0.63
CD (p=0.05)	-	NS	0.55	0.61	-	0.40	-	0.52	-	Sig.	-	Sig.
CV (%)	-	36.02	10.04	44.73	-	5.29	-	6.59	-	1.83	-	5.75

Note: PrOP: Pre-oviposition period; OP: Oviposition period; POP: Post-oviposition period

3.5.3. Fecundity

Number of egg mass laid by single female of *S. litura* during its life span as known as fecundity. The number of egg mass laid by female was recorded on groundnut 4.18±0.41, on castor 4.66±0.49 and 4.63±0.67 on tobacco (Table 3). Thus, results found non-significant. In a choice test, *S. litura* females oviposited least on tobacco as compared to chinese cabbage, cowpea and sweet potato and also numbers of eggs oviposited was lowest reported by Xue et al. (2010).

3.5.4. Sex ratio

Number of females emerged compare to male from pupa is known as sex ratio. Sex ratio of *S. litura* that fed on groundnut was 1:1, on castor 1:1.09 and on tobacco 1:1.38 (Table 3).

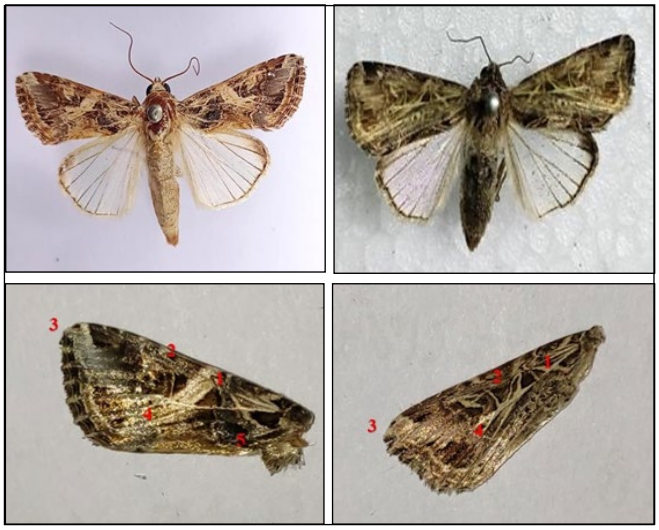


Figure 8: Differentiation of male and female adult based on morphological characters wing; 1: Orbicular spot elongate, narrow, oblique, light brown and outlined with a white margin, This spot more solid in the male; 2: Reniform spot brown, outlined in white, followed by black, with a white margined light brown area at apex; 3: A row of dark brown or black hour-glass markings along outer margins; 4: A white fork in the median area of the wing. The fork is made of portions of veins M3, CuA1, and CuA2; 5: A large yellowish or light brown patch on the median area adjacent to inner margin. This patch is not present in females

Table 3: Fecundity and sex ratio of tobacco leaf eating caterpillar, *S. litura* on different host plants

Host plants	Fecundity (No. of egg masses female^{-1})		Sex ratio (M:F)
	Sample size	Mean±SD	
Groundnut	22	4.18±0.41	1:1.00
Castor	23	4.66±0.49	1:1.09
Tobacco	19	4.63±0.67	1:1.38
SEm±	-	0.16	-
CD (p=0.05)	-	NS	-
CV (%)	-	11.87	-

3. CONCLUSION

Tobacco leaf eating caterpillar, *S. litura* have six larval instars and longer incubation, larval, pre-pupal, ovipositional period and adult longevity were recorded on castor followed by groundnut and tobacco. While pupal period and egg hatching % was found similar in groundnut, castor and tobacco. However, pre and post-oviposition period and fecundity were found longer in castor followed by tobacco and groundnut. The most preferable host crop for the *S. litura* is castor followed by tobacco and groundnut.

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