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Biology of *Spodoptera litura* (Fabricius) As a Pest of Castor in Gujarat*

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Spodoptera litura (Fabricius) is a polyphagous pest and its outbreak was reported earlier on tobacco, cauliflower and maize in India and in recent years on castor in South Saurashtra (Gujarat). Its comparative development of different host plants was studied by Rattan Lal and Nayak (1963), Thomas *et al.* (1969), Singh and Byas (1975) and Bhalani and Talati (1984), and they have reported the castor as the most preferable host. However, little information on its biology particularly on castor is available from Gujarat. Hence, a laboratory study on its biology on castor was done during September-October, 1993 when maximum and minimum temperatures ranged from 32.9 to 35.5 and 22.4 to 23.7°C. respectively and relative humidity from 38 to 94 per cent.

Spodoptera larvae were collected from castor field and reared on castor leaves in

TABLE 1

Biology of *Spodoptera litura* when reared on castor.

Stage	No. Studied	Duration in days	
		Range	Average
Egg	303	2-3	2.99
Larva	25	8-11	9.04
First instar	25	3-4	3.12
Second instar	25	1-2	1.56
Third instar	25	2-3	2.20
Fourth instar	25	1-2	1.08
Fifth instar	25	1-2	1.00
Sixth instar	25	1-2	1.33

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Pre-pupa	25	1-3	1.76
Pupa	25	6-8	6.68
Pre-oviposition	10	1-4	2.67
Oviposition	10	1-4	2.16
Post-oviposition	10	1-2	1.17
Fecundity	10	415-2294	1205.90
Adult			
Female	10	3-6	4.22
Male	10	3-5	3.75
Sex ratio	28	1.55:1 (Field)	
(Female : Male)	25	1.01 : 1 (Laboratory)	

glass jars (15 x 20 cm) till the pupation and adult emergence. Newly emerged moths were paired and confined in glass jars (15 x 20 cm) containing castor leaves for oviposition and five per cent honey solution as food for them. Castor leaves were replaced daily by fresh ones and number of eggs laid by a female was recorded. Newly hatched larvae were reared individually in petridishes (9.5 x 1.5 cm). Larval instar was determined by presence of exuviae casted off or head capsules. The observation on different development stages are summarised in Table 1.

Incubation period averaged 2.99 days and egg viability was 92.08 per cent. Narayanan (1959) reported the egg period of 3-5 days. The larva passed through six instars and duration of each instar was 3.12, 1.56, 2.20, 10.8, 1.00 and 1.33 days. Total larval period lasted for 8 to 11 days. Larval period was reported to be 18 days (Rattan Lal and Nayak, 1963, Singh and Byas, 1975) and 12.05 days (Bhalani and Talati, 1984). Pre-pupal and pupal period lasted for 1 to 3 and 6 to 8 days, respectively. Narayanan (1959), Thomas *et al.* (1969) and Bhalani and Talati (1984) reported pupal stage to be 7-14, 9-11 and 6.06 days, respectively.

Females laid eggs in 2-9 egg masses. Pre-oviposition, oviposition and post-oviposition periods averaged 2.67, 2.16 and 1.17 days, respectively. A female laid an average of 1205.90 eggs with a range of 415 to 2294 eggs. Rattan Lal and Nayak (1963) and Thomas *et al.* (1969) reported the fecundity to be 580 and 808.50 eggs per female, respectively.

Female and male moths survived for 4.22 and 3.75 days, respectively. Female to male

ratio was 1.55 : 1 in field collected samples and 1.01 : 1 in laboratory reared pest.

The study concluded that *Spodoptera litura* completed ots life cycle on castor within 24.70 days, accounting high fecundity (mean 1206) in 1-4 days of oviposition period.

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