

# Biology And Population Density of Tobacco Cutworm *Spodoptera litura*- Pest of Soybean in Sagar (MP)

Dr. Sunita Singh

Professor of Zoology,

Govt. Autonomous Girls P.G College of Excellence, Sagar MP

## Abstract -

The biology and population density of *Spodoptera litura* was studied both under field and laboratory conditions. *S. litura* is serious pest of soybean their biology, population density and damage were studied in the field of village of Dhana Indian environment is favourable for all possible crops. A large number of insect species adapted to feed over a variety of plants and animals ruthlessly causing a severe damage to our economy and even to the livestock and public health India is the largest producer of pulses in the world both in quality and variety soybean is most important crop of India.

**Key words-** pest soybean, *Spodoptera litura*

## Introduction -

Tobacco caterpillar *Spodoptera litura* was reported for the first time in 1775 by lever (1943).<sup>4</sup> This pest is a serious pest of many crops including tobacco, potato, soybean, wheat gram lentil etc the caterpillars of the pest appear in large number and severely defoliated the crop. A part from feeding on the leaves the pest also attack their crops as cutworm in Madhya Pradesh the pest severely defoliated soybean in 1977-78 and reduced again yields by 20 To 30 percent. At Jabalpur M.P, the cutworm damage in gram was 61 % amounting to a loss of Rs 5100/- ha. Dubey (1986) the pest belong to order : lepidoptera family noctuidae, Dudgeon (1913). Dhariwal et al 2004 reported that insect pest have been a major constraint in agriculture production. In spite of all the advances made in crop protection technology losses caused by insect pest have increased with modernization of agriculture. There studies were under taken with the objective to study the life cycle, population density and nature of damage caused by s.

litura in Dhana, Sagar M.P. The present paper describes the biology and population density of *Spodoptera litura* when studied under field and laboratory conditions. Temperature and humidity were also taken into account.

#### **Material and Methods -**

The eggs and larvae were collected from experimental site of village Dhana in Sagar district. This site is situated 19 km east from Dr. H.S. Gour Central University Sagar (M.P). The larvae of *S. litura* were high during August 25th to September 8th when the temperature range between 22 to 29.20C and relative humidity was 83% . The damage by maggots was 40-60% eggs and larvae were kept in glass jars covered with muslin cloth and reared in the laboratory and larvae were fed on soyabean leaves and seeds. Adults were fed with glucose soaked in cotton.

#### **Result and Discussion -**

The present study was undertaken to investigate the population density and biology of pest of soybean *Spodoptera litura* from seedling stage up to harvesting. However data shown were from the appearance of the pest till their disappearance. The temperature and the humidity were also taken into account during the study period.

In 2012-2013 the pest was found on the crop from August 06 to September 25. Pest population ranged from 9 to 33 larvae/100 plants. Highest pest population was recorded from August 23 to September 08 when the average of maximum , Minimum temperature and relative humidity were 29.20C and 83 percent respectively. Tobacco caterpillar infested soybean crop right from preflowering stage by damaging the leaves its appearance was distinctly marked when it started feeding leaves flowers and pods. During 2013 the percentage of eggs larvae and adults was 59% ,37% and 4% respectively (fig1.2)

**Biology eggs-** Eggs were laid in branches of 50 to 400 eggs on soyabean leaves. The female moth covers the egg masses with brown hairs giving them a "Felt like" appearance. Incubation period was 3 to 5 days (fig.)

**Larva -** soon after hatching the newly hatched larvae were very active their length was about 01mm. The young caterpillars were very smooth skinned with patter red yellow and green liner and with a caterpillar feed gregariously on tender leaves by nibbing the

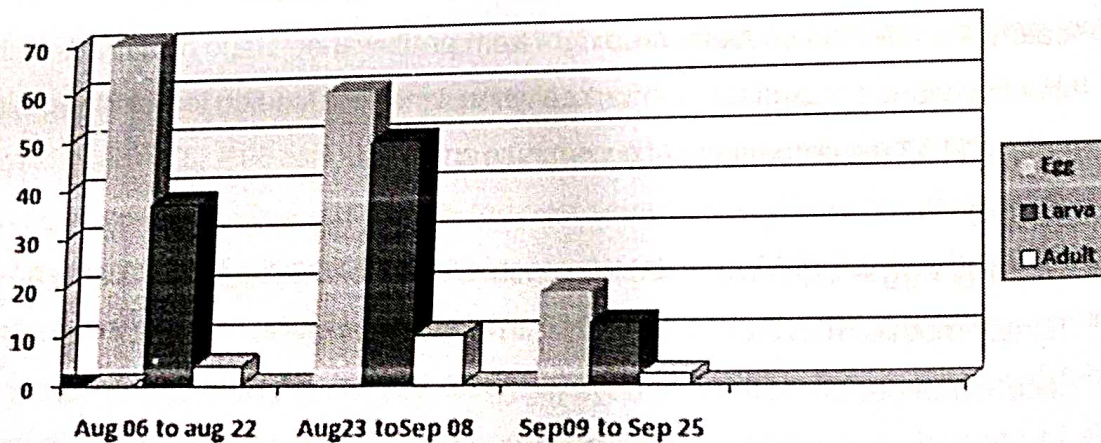


green matter. The larva measure about 35 to 40mm. Larval period lasts for 14 to 20 days  
**Pupa-** pupation takes place inside the folded leaves and a silky cocoon is formed. Pupal period ranged from 8 to 12 days.

**Adult-** The life span of adults ranged from 30 to 35 days. Adults female is generally bigger in size than the male.

Thus the present study of population density and biology of *Spodoptera litura* pests of soyabean in Sagar M.P was identified and noticed that it was a major foliage feeder of soyabean . In confirmation with the present findings Basu(1954) Gangrade (1974) Bhattacharya and Rathore (1977) David et al (1988) , Babu (2015) and Claude (2019) have also reported that female moth laid eggs in a mass on the surface of the leaves, however the incubation period is variable and it is directly related to environmental conditions, usually it ranged from 02 to 13 days . While in the present findings the incubation period ranged from 03 to 05 days. Eggs to adult life cycle was completed in 30 to 35 days while other authors showed that the life cycle was completed in 30 to 37 days. The present data indicates very helpful in controlling the population of the pest without the use of hazardous pesticides .

**Fig.01 Histogram showing population density of eggs, larvae and adults of *spodopteralitura* on Soyabean Population per 100 Plants**



**Fig.3: Photograph showing eggs of *Spodoptera litura* on soyabean**



leaves

FIG. 2 Pie diadram showing percentage of eggs,larvae and adults of *spodoptera litura*

■ Egg 59% ■ Larvae 37% ■ Adults 4%

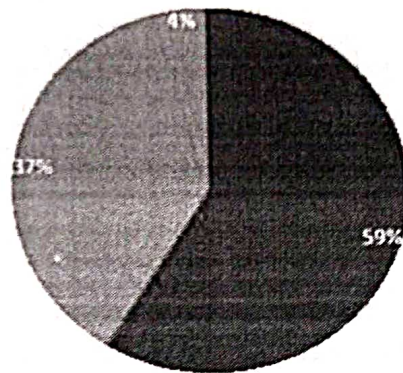


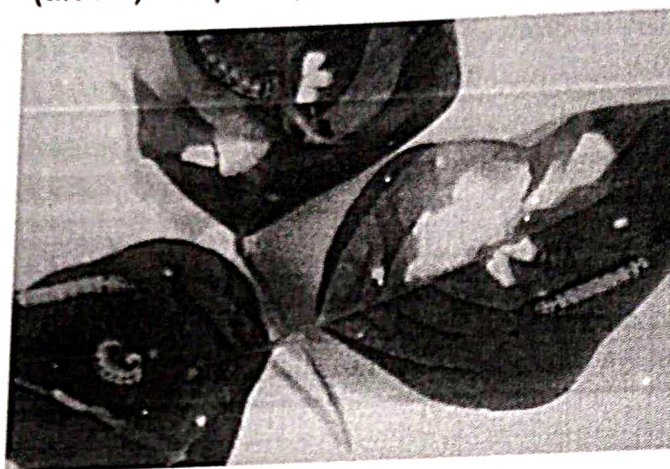
Fig.4: Photograph showing different larval instars of Spodoteralitura on soyabea



Fig.5: Photograph showing adult male (arrow1) and adult female



(arrow) of *Spodoptera litura* on soyabean



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