

Study on the Biology of Pigeon Peas Pest *Exelastis atomosa*

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Abstract :

*India is the largest producer of pulses in world, both in quantity and variety. Once a net exporter it is presently one of the largest importer of pulses. Pulses are primary sources of protein for the vegetarians who constitute the majority of Indian population. The losses of the crops from pest attack have been the subject of very limited economic studies. Such losses were already very high pigeon pea commonly known as 'tur' 'arhar' is an important pulse crop of India. Many insects feed upon the seed and other parts of pigeon pea plants. They are heavily attacked before the flowering stage which can harm large portion of harvest. Many new types of pests such as plume moth (*Exelastis atomosa*) on pigeon pea crops were observed during harvesting. Biology of *Exelastis atomosa* was studied both in field and laboratory conditions to observe the damage and life cycle in pigeon peas, in the field of village Dhana, Sagar (M.P.).*

Keywords : Pests, *Exelastis atomosa*, Pigeon pea.

Pigeonpea being a leguminous plant and thereby restore lot of nitrogen in the soil, it also provides very attractive and nutritious food, not only for human feed upon the seeds and other parts of the plants, with over 200 species having been recorded in India alone. This crop is infested several insect pests, which find tremendous amount of foliage for food and nutrition. "Pest" is used very broadly for insect that cause damage to the crops (Tembhare 1997). The losses of the crops from pests attack have been the subject of very limited economic studies such losses were already very high. It had been conventionally estimated that about 10-20% of the crops produced in India is lost due to pests and disease.

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.

The previous records of pigeonpea made it quite popular due to the various food products used by man, but the literature available is very scarce regarding the pests of pigeonpea in India (Davies and Lateef (1975,1978) Kashyap et al (1985, 1991) reported that insect constraint in agriculture in production in spite of all the advances made in crop protection technology losses have been increased.

About 100 species of insects are found on pigeonpea plants and many of them are beneficial, for they feed upon the pests, either as predators or parasitoids. Insects are found chewing or sucking plants from seedling to harvest and no part of the plant is immune to attack. Biology of *Exelastis atomosa* was studied both in field and laboratory conditions to observe the damage and life cycle in pigeon peas, in the field of village Dhana, Sagar (M.P.) .

Material & Method

Experimental site

♦ The study was conducted during kharif season in the year 2012 at Sagar (M.P.) in village of Dhana.

Climate

♦ Sagar is situated in the central tract of M.P. at 512.92 m above the sea level. The climate is sub tropical subarid.

Method of Observation

♦ Biology of *Exelastis atomosa* was studied both in field and laboratory conditions to observe the damage and life cycle in pigeon peas, in the field of village Dhana, Sagar (M.P.) .The experimental plot size was chosen for the present investigation was 3m×1m.the appearance of the different stages of life cycle of the *Exelastis atomosa* was noted.

Rearing & Maintenance

♦ The eggs, adult, nymphs and larvae were collected from their host plant in the field. The different stages of the pests was reared in the laboratory to study the detail of their life cycle.

Result & Discussion

The present study was undertaken to investigate the biology of *exelastis atomosa* from seedling stage up to harvesting. The temperature and humidity where also taken into account during the study period.

Eggs - the moth laid eggs singly on the tender pods of the pigeon pea crops. The eggs were minute yellowish red in colour. Incubation period varied from 2-5 days. (Fig.1)

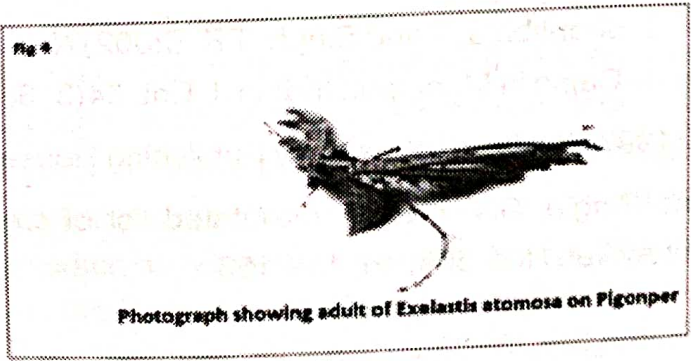
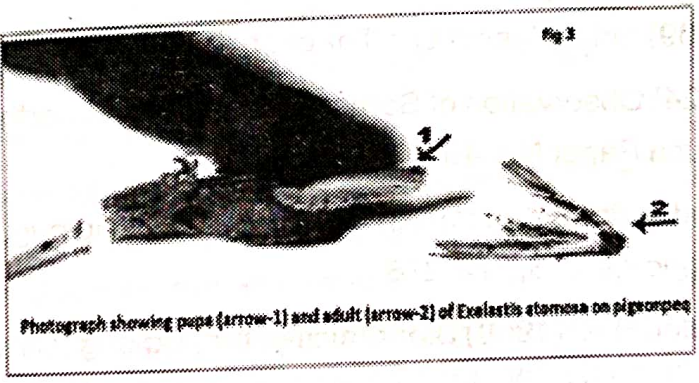
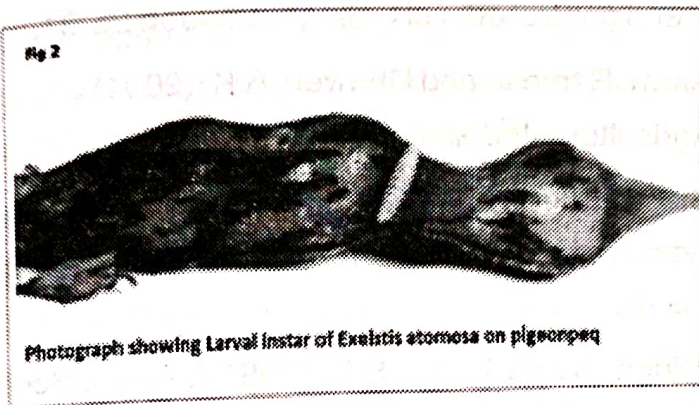
Larva - within few days eggs hatched into tiny larvae measuring 1mm. larval period lasts for 15-25 days. Full growth larva were greenish brown in colour with numerous rossets of capitated spines and hairs. The young larva first scraps the pod surface and then gradually cuts a hole to thrust its head to feed on the seeds from outside. (Fig.2)

Pupa - pupation occurs outside the pods. Pupa were covered with hairs and looks like a larva. Pupal period lasts for 20-3- days. (Fig.3)

Adult - moth were slender, 7mm long. They were greenish brown plume like moth. The wing margin was fringed and looks like plumes. The life cycle was completed in 37-60 days. (Fig.4)

Thus the present study of population density and life cycle of exelastisatomosapests of pigeonpea (arhar) in Sagar M.P. was identified and noticed that it was a major foliage feeder of pigeonpea crop. Eggs are dark brown in color and female laid eggs in 2-8 groups. Before hatching the color of egg changed from brown to deep brown. Incubation period for 10-15 days. Total nymphal period for 18-20 days. Eggs to adult life cycle was completed in 35-40 days. Similar finding have been reported earlier by Lefroy (1909, Mishra(1924), Ayyar (1940) Trehaan And Pingle (1946) Bindra (1965) Singh And Patel (1968) Nawale And Jadhav (1978).

The observation indicated that pest caused losses, so adequate pest management could greatly increase production and profits from the existing crop. The natural enemies of pests like predator and parasite were also found on the crops. These can be very helpful in controlling the population of the pest without the use of hazardous pesticides.



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