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Introduction to Sesame Leaf Webber and Capsule Borer (*Antigastra catalaunalis*, Dup.) and Its Management

(*Sheeren Parveen[1], Dwarka[1] and Babli[2])
[1]PhD Research Scholar, Department of Entomology, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, Madhya Pradesh- 482004
[2]PhD Research Scholar, Department of Plant Pathology, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior, Madhya Pradesh- 474002
*Corresponding Author's email: sheerenparveen077@gmail.com

Sesame (*Sesamum indicum* L.), is commonly known as gingelly, til *etc.* India is one of the largest producers of oilseeds and of these the sesame, *Sesamum indicum L.* is an important one. However, in India its yield potential has not been fully realized due to insect pests causing yield losses (Ahirwar *et al.*, 2010). Sesame leaf webber and capsule borer *Antigastra catalaunalis* (Duponchel) is a serious pest as this attacks the crop in all the growth stages. If infestation occurs at very early stage, the plant dies and at later stage, infested shoot remains without further growth (Karuppaiah, 2014). It feeds on tender foliage by webbing the top leaves, bores into the pods and shoots. It causes 10 to 70% infestation of leaves, 34 to 62% of flower buds/ flowers and 10 to 44% infestation of pods resulting in up to 72% loss in yield (Ahirwar *et al.*, 2010).

Host plant: Sesame and murex is an alternate host for *A. catalaunalis.*

Damage symptoms

- The young larvae roll together a few top leaves and feed them.
- Later, some more leaves are affected.
- In the early stage of infestation, the plant dies without producing any branch or shoot.
- In later stage of attack, infested shoots stop growing.
- At flowering, larvae feed inside the flowers and on capsule formation, larvae bore into capsule and feed on developing seeds.

Damage symptoms

Biology (Athya and Panday, 2020)

Egg: Eggs are laid singly on the under surface of leaves, on capsules and branches. Eggs are minute and conical in shape. Freshly laid eggs are white in colour, which later change to dark white before hatching.

Larva: It is a cylindrical caterpillar, which is referred as the neonate larva just after hatching and passes through five larval instars before going in to pupation.
First instar: The newly hatched caterpillar (first instar) was a tiny, cylindrical, semi translucent, cream coloured caterpillar with reddish brown head capsule. Caterpillar had four pairs of prolegs and one pair of anal proleg besides three pairs of thoracic legs.
Second instar: The second instar caterpillar was slightly larger than the first instar. Body colour slightly turned into whitish yellow, whereas colour of head capsule was brown.
Third instar: The third instar caterpillar slightly increased in size and the colour changed to pale green. Colour of the head capsule turned into black and brownish black hairs on black dots (setae and tubercles) were found on the abdomen of the caterpillar.
Fourth instar caterpillar (including all the prolegs) was pale green in the beginning and became green at the end with black head capsule. Setae and tubercles turned dark black and became prominent. Seta on each tubercle became clearly visible and there were three tubercles on each side of the mid dorsal line of each segment.
Fifth instar: Fifth instar caterpillar which fed on leaves and other vegetative parts was dark green, whereas caterpillar which fed on flowers and capsules was slightly pink in colour. Colour of prolegs was same as that of the body colour. Prominent mid dorsal line was noticed from thorax to the end of abdomen. Setae and tubercles were similar with that of fourth instar caterpillar.
Pupa: The pupa is slender, long necked and greenish-reddish-brown in colour. A pair of eyes is present on anterior end. The body is light reddish brown, greenish white at first. It changes gradually to pale reddish white, dark reddish, reddish brown and pale whitish later on.
Adult: The adult is medium sized moth with reddish yellow forewings
Males: Male adults were small in size as compare to female. The abdomens of adults were small and slender.
Female moths: Female moths were larger in size as compare to male. Abdomen was larger and broad in size as compare to male.
Total life cycle: The total life cycle of *A. catalaunalis* varied from 18- 40 days. The total life cycle of *A. catalaunalis* varied from 22-33 days and 21- 39 days (with an average of 27.93 ± 3.50 days) Ahirwar *et al.*, (2010)

Natural enemies of leaf webber or roller and capsule borer

Parasitoids: *Trichogrmma spp., Bracon hebator, B. brevicornis, Phanerotoma handecasisella, Campoplex sp, Erioborus sp*, and *Apanteles spp. etc.*
Predators: *Eocantheconia furcellata, Cicindella spp*., lacewing, ladybird beetle, spiders, red ant *etc.*

		
Eggs	**Second instar**	**Second instar**
		
Third instar	**Fourth instar**	**Fifth instar**

Management Strategies

1. Cultural control:

- Sowing the crop during June and July will escape from leaf webber damage (Patra, 2001). Pest load found to be less in Kharif crop as compared to late sown.
- Intercropping with pigeon pea (Nath et al., 2002) and black gram, green gram, cluster bean, sorghum and pearl millet (Ahirwar et al., 2009; Ahuja et al., 2009) found to be significantly reduced the leaf webber damage.

2. Mechanical control:

- Collection and destruction of infested parts of plants further minimize the damage of caterpillar. If possible manual collection and destruction of larvae will reduce the population build up.

3. Biological control:

- Conservation of existing natural enemies (spiders, coccinellid beetles, predatory stink bugs, preying mantids, black ant) and parasitoids (Braconids and Ichneumonids) through ETL based (2 webbed leaves/sq. m or 10% damage).
- Application of botanical insecticides and safer chemicals. Augmented release of parasitoids viz., *Trathala flavoorbitalis* (Behera, 2011) and *Apanteles sp* and the predators like *Chrysoperla carnea* also would reduce the population build up Application of bio-pesticides Spray of neem oil 1% or Neem Seed Kernel Extract 5% at the early stage of infestation.
- Application of bio-inoculants (Azospirillum) induces the insect resistance among the treated plants and recorded the minimum leaf damage (Anandh et al., 2010) by increasing levels of phosphorus and potassium level in the plants (Selvanarayanan, 2013).

4. Chemical control:

- Spray neem seed kernels extract (NSKE) 5% or neem oil @ 5 ml/l or spinosad 45SC @ 0.2 ml/l or flubendiamide 480SC @ 0.3 ml/l or chlorantraniliprole 18.5SC @ 0.4 ml/l.

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