

Fall Army Worm- A Devastating Pest of Sorghum Crop

Guruprasad H

Assistant professor, University of Agricultural Sciences, Raichur (Karnataka)

*Corresponding Author: gurupra3@rediffmail.com

Sorghum (*Sorghum bicolor* L. Moench) is the fifth most important cereal crop after rice, wheat, maize and barley. It constitutes the main food grain for over 750 million people who live in the semi-arid tropics of Africa, Asia, and Latin America. India ranks fifth in total sorghum production with 4.23 million tonnes grown in area of 3.90 million hectares in 2021-22. (agricoop.nic). Sorghum grains are used for human consumption purposes (55%) and also for livestock feed (33%). Few cultivars of Sorghum are also employed in ethanol and fuel production (www.icrisat.org). This is the main source of income for the marginal farmer in many parts of the Indian country who cannot invest much in other commercial crop cultivation. During the year 2018 due to the invasion of alien destructive pest fall armyworm (FAW) *Spodoptera frugiperda* (J.E. Smith) (Order: Lepidoptera; Family: Noctuidae) in India, excessive loss has been reported in the country. It is considered to be a serious pest which feeds on more than 80 crop species. Next to maize, sorghum is the most affected crop by fall armyworm. It is a major pest of sorghum crops and can cause severe damage to the crop if not controlled in time. In this article, we will explore the different methods of integrated pest management that can be used to control sorghum fall army worms.

Most Affected States

The pest is found throughout the country, but the most affected states are Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu and Telangana

Life Cycle of Fall Army worm

The life cycle of a fall armyworm consists of four stages: egg, larva, pupa and adult. The larva or nymphal stage is the most damaging stage of the pest. The adult moth is able to move over 100 km per night. It lays its eggs on plants, from which larvae hatch and begin feeding. The female moth can lay up to a total of 1000 eggs in her lifetime. The eggs of FAW are white in color and later turn into brown. They hatch in 2-3 days. The larvae has six stages initially larvae are green in color, but as they grow, they become brown with longitudinal stripes. Inverted “Y” shaped

marking can be seen on the face of the mature larva. Pupation normally takes place in the soil, at a depth 2 to 8 cm. The larva constructs a loose cocoon, oval in shape by tying together particles of soil with silk. Cool, wet and spring weather favors the growth and development of fall armyworm.

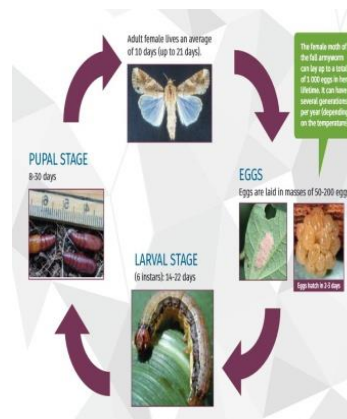


Fig 1: Life Cycle of Fall Army worm



Fig 2: Fall Army worm damage in Sorghum

Type of Infestation

Sorghum army worm infestation can be classified into two types: sporadic and epidemic. Sporadic infestations occur in isolated areas and are generally not widespread. Epidemic infestations, on the other hand, are widespread and can cause significant damage to the crop by feeding on all parts of the plant.

Symptoms of Sorghum Fall Army Worm

The damaging symptoms of Sorghum army worm infestation are as follows:

- **Elongated papery windows:** Initially larvae of sorghum fall armyworm feeds on leaf tissues, leaving only a thin translucent layer of tissue intact known as window feeding.
- **Ragged edged leaves:** As the larva grows, its feeding habits result in the development of ragged edged holes on the leaves that vary in shape from round to oblong.
- The larvae of sorghum FAW excrete a large amount of frass, which can accumulate on the leaves.

- Severe infestation of sorghum fall armyworm can result in defoliation.
- They can also damage the reproductive parts of the sorghum plant.

Control Measures

A combination of different control measures is often important to effectively manage fall armyworm infestation in sorghum plants. The following are some of the commonly used IPM practices for controlling fall armyworm,

Cultural Measures

- Deep summer ploughing of fields exposes larvae and pupa of sorghum fall armyworm, which are located in the soil, to birds and high temperatures.
- Crop rotation with non-host crops helps to reduce the fall armyworm population.
- Early planting can avoid peak populations of sorghum fall armyworm.
- Removing the weeds and other debris can reduce the incidence of armyworms.
- Harvesting early can avoid consistent damage.
- Proper nutrition management, including balanced fertilization and irrigation can also help to reduce the susceptibility of sorghum plants to fall armyworm attacks

Physical Measures

- Light Traps play a major role in trapping adult fall armyworm insects. Install light trap @ 1 number/ha at early stage of crop in the sorghum

Mechanical Measures

- Handpicking and destroying egg masses and larvae by crushing or immersing in kerosene water can reduce FAW damage.
- After the detection of FAW infestation in the field, the affected sorghum plants can be treated by applying dry sand to the affected whorl.
- Install FAW pheromone trap @ 5 numbers/ac can be used to attract and trap insects.

Biological Measures

- In situ protection of natural enemies by habitat management: Increase the plant diversity by intercropping with pulses, oil seeds and ornamental flowering plants which help in build-up of natural enemies
- Augmentative release of egg parasitoid *Trichogramma pretiosum* or *Telenomus remus* @ 50,000 per acre at weekly intervals or based on trap catch of 3 moths/trap.
- Spray Bio-pesticides like NPV 100 LE/acre or *Bacillus thuringiensis* var. *kurstaki* formulations @ 5g/l or *Nomuraea rileyi* 1g /lit of water in evening hours.
- Apply Azhadirachtin 1% EC @ 10,000 ppm or neem oil @ 5 mL/lit. as oviposition deterrent on one week after sowing.
- Erect bird perch @ 25-50 numbers/ha to attract predatory birds during early stage of the crop (up to 30 days) on feeding various larval stages of FAW

Chemical Measures

Chemical measures include the application of commercial insecticides to control sorghum fall armyworm.

- To manage 2nd and 3rd instars larvae having more than 10% foliar damage the following chemicals may be used up to early ear head stage: Emamectin Benzoate 5% SG 0.2 g or Chlorantraniliprole 18.5% SC 0.5 ml or Lambda cyhalothrin 5 EC 0.5ml per lit of water
- **Poison baiting:** Poison baiting is recommended for late instar larvae to prepare the bait, a mixture of 10 kg of rice bran or wheat bran and 2 kg of jaggery should be left to ferment in 2-3 litres of water for 24 hours. Half an hour before application in the field, 100 g of Thiodicarb or 250 ml of monocrotophos should be added to the mixture. The bait should then be applied to the whorl of the plants in the evening time.

* * * * *