

Extension notes

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Management of insect pests in maize and sorghum**Ramesh Arora**Faculty of Agriculture, Shri Guru Granth Sahib World University, Fatehgarh Sahib-140407,
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Maize stem borer, *Chilo partellus* is the most important pest of maize during the Kharif season. The damage is caused by creamy pink to yellowish-brown coloured caterpillars which have four rows of dotted stripes and a reddish-brown head along their backs. Initially, the newly hatched larvae crawl inside the leaf whorls and scrape the leaves. When the rolled leaves unfurl, a series of pinholes and papery windows are visible. After about a week, the larvae moves out of the whorl and bores upwards in the developing stalk resulting in a 'dead heart'. The main shoot usually dies, and the plant often gives rise to tillers.

The following measures are suggested for its management.

Trap cropping: Planting of paired border rows of Napier-bajra (pearl millet) all around the maize or sorghum field is recommended. Most of the stem borer females lay eggs on these border rows. The larvae hatching from these eggs feed on the Napier-bajra leaves and die in 2-5 days. The Napier-bajra thus acts as a dead-end trap crop for the stem borer. The maize and sorghum crops are thus saved from

the attack of stem borer. An additional advantage is that the Napier-bajra plants may be harvested about 50 days after planting to serve as green fodder for the animals.

Mechanical control: At the time of hoeing, the plants attacked by the stem borer may be uprooted and destroyed.

Biological control: Two releases of *Trichogramma chilonis* (as Tricho cards)-60,000 parasitized host eggs/acre at 7 and 15-days after germination of the crop serve to control the early attack of the pest is highly recommended. The parasitized host eggs are pasted on the Tricho cards with glue. These cards should be cut into small pieces each with about 1000 eggs each. These tricho-card pieces are stapled on the lower side of leaves of the central whorl of uniformly spread maize plants in the evening. The parasitoids emerging from these cards search and parasitize the eggs of maize borer. The release of tricho-cards should be avoided on rainy days as the emerging parasites are quite delicate.

Chemical control: In case of a serious attack, spray the crop with 30 ml of chlorantraniliprole

18.5 SL in 60 liters of water with the help of a manually operated Knapsack sprayer. In fodder crops of maize and sorghum, a waiting period of 15 days must be observed after spray for harvesting fodder from the sprayed field.

Fall armyworm (FAW), *Spodoptera frugiperda*: This pest has recently invaded India and is causing serious damage to maize crop in various parts of the country. The female moths lay eggs in masses of 50-150 eggs covered with tan-coloured scales. FAW attacks all stages of the maize crop from seedling emergence to ear development. The young larvae feed in and around the whorl leaves by scraping and skeletonizing the upper epidermis leaving a silvery transparent membrane resulting in papery spots. The larvae are distinguished by a reddish-brown head with a prominent white, inverted Y-shaped suture between the eyes. The older larvae feed inside the whorls. The damage by late instars results in extensive defoliation and the presence of large amounts of faecal pellets in the whorls. Following measures may be undertaken for its management.

Pre-planting practices:

Deep plough the fields to expose the pupae to sunlight and predatory birds.

Add neem cake @ 200kg/acre to the fields.

Maintain field bunds clean and plant flowering plants such as marigold, sesame,

niger, sunflower, coriander, fennel, etc. to attract natural enemies.

Seed treatment with cyantraniliprole 19.8% and Thiamethoxam 19.8 FS @ 6ml/kg seed.

Early-crop stage:

Plant 2-3 rows of Napier-bajra as trap crop around maize fields.

Erect bird perches @ 10/acre to encourage natural predation by birds.

Install pheromone traps @ 4/acre after sowing and monitor moth catches regularly.

Adopt clean cultivation to eliminate possible alternate hosts of FAW.

The first spray should be with 5% neem seed kernel extract (NSKE) or azadirachtin 1500ppm @ 5ml/litre when trap catch of 1 moth/trap/day or 5% infestation of the pest is recorded on the main or trap crop.

At 5-10% infestation, whorl application of *B. thuringiensis* var. *kurstaki* @ 400gm/acre should be done.

If infestation exceeds 10%, whorl application of any one of these insecticides should be done: chlorantraniliprole 18.5 SL @ 80ml/acre or Spinetoram 11.7 SC @ 100ml/acre or emamectin benzoate 5 SG @ 80g/acre.



Fig. 1. Damage by the maize borer a. A leaf showing scarring by the neonates and young larvae b. Entry holes of maize borer larvae. The larvae enter inside the whorl making holes.

Fig. 2. When the rolled leaves unfurl, they show small holes in rows. c. A dead heart formed by feeding of the larva inside the central whorl (pictures courtesy: Dr Surinder K Sandhu)

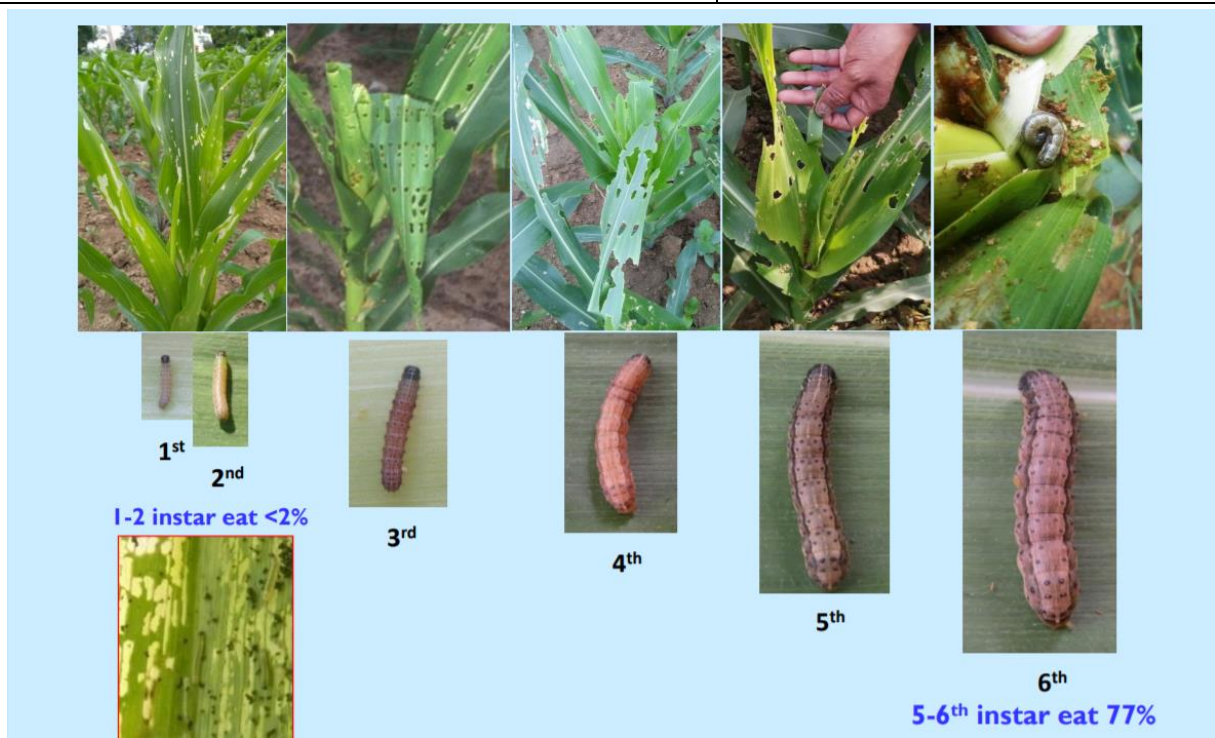


Fig. 3. Damage by the fall armyworm caterpillars. The young instars scarp and skeletonize the leaves, while the grown-up caterpillars devour much of the foliage and feed inside the whorl (Pictures courtesy: Dr Surinder K Sandhu)

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