Management of Leafhoppers in Cotton

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Abstract

Cotton is the most important cash crop producing natural fibre which has been under commercial cultivation for domestic consumption and export needs of about 111 countries in the world and hence called ‘King of Fibres’ or ‘White Gold’. India is the largest producer of cotton in the World. India is also leading consumer of cotton. Cotton is damaged by an array of insect pests, viz., bollworms, defoliators, sucking pests and non-insect pests from sowing to harvest. Among the sucking pests, leafhopper, Amrasca devastans Dist. is of major importance in cotton crop. The simplest and most potent way to overcome the problem is to treat the seeds or thiamethoxam reduces the leafhopper population.

Introduction

Cotton is the most important cash crop producing natural fibre which has been under commercial cultivation for domestic consumption and export needs of about 111 countries in the world and hence called ‘King of Fibres’ or ‘White Gold’. India is the largest producer of cotton in the World. In India, majority of the cotton production comes from nine major cotton growing states, viz., Punjab, Haryana, Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, Telangana, Andhra Pradesh and Karnataka. Besides, cotton is also grown in the states of Tamil Nadu and Odisha. India is also leading consumer of cotton. Cotton is a freely exportable commodity from India. India exports cotton mainly to Bangladesh, China, Indonesia, Pakistan, Taiwan, Thailand, Vietnam, etc. Cotton is damaged by an array of insect pests viz., bollworms, defoliators, sucking pests and non-insect pests from sowing to harvest. Among the sucking pests, leafhopper, Amrasca devastans Dist. (Cicadellidae: Hemiptera) is the most important pest species on cotton in India. Leafhopper is also referred as jassid. The pest appears with the onset of cloudy weather and their population is adversely affected after heavy monsoon showers. Leafhoppers were known as early season pests but now they occur throughout the cotton growing season. It is widely distributed in Afghanistan, Bangladesh, Hong Kong, India, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Australia, Pacific islands and Papau New
Guinea.

**Host range**: cotton, okra, brinjal, castor, sunflower, potato and many other malvaceous plants.

**Nature and Symptoms of Damage**

Both nymphs and adults suck the sap from the leaves and also inject salivary toxins into plant tissues. The affected leaves turn yellowish (Figure 1), curl downwards (Figure 2), then brownish before shedding. In case of heavy infestation, the leaves turn dark brick red, become brittle and crumble. Severe incidence leads to stunting of young plants and results in heavy infestation. Leafhopper infestation significantly reduces chlorophyll and relative water content in plants. The fruiting capacity of the infested plant is significantly affected and in many cases, heavy infestation on young plants cause death of plants. It causes yield loss up to 30 percent.

**Life History**

Eggs are curved, elongated and yellowish white in colour and inserted about 15 eggs in the midribs of large veins on the undersurface of the leaves. The incubation period ranges from 4-11 days. Nymphs are flattened, pale yellowish green (Figure 3), wingless with characteristic way of moving diagonally in relation to their body and remain confined to the lower surface of leaves during daytime. The nymphal period occupies 7-21 days depending upon weather conditions. Adults are elongate and wedge shaped, 2-3 mm long, pale green body with two distinct black spots on forewings and vertex, readily identified by their characteristic diagonal movement on the leaves hence referred as ‘leafhoppers’. Females live slightly longer than males. Adult longevity is 5-8
weeks. A total of eleven generations have been estimated to occur in a year.

**Economic Threshold Level**: 50 nymphs or 50 adults / 50 leaves

**Management**

- Seed treatment with imidacloprid 70WS at 7g / kg or thiamethoxam 30 FS at 10g/kg of seeds protect the crop from leafhoppers upto 8 weeks.
- Spray any one of the insecticides: Imidacloprid 200 SL 100 ml/ha (or) thiamethoxam 17.8 SL 100-125 ml/ha (or) acetamiprid 20 SP 50 g/ha (or) profenophos 50 EC 1000 ml/ha (or) thiamethoxam 25 WG 100 g/ha (or) buprofezin 25 SC 1000 ml/ha.
- Discourage the indiscriminate use of insecticides, particularly synthetic pyrethroids.
- Use of proper insecticides which are comparatively safer to natural enemies at the correct dosage and alternating different group of insecticides for each round of spray.
- Avoid combination of insecticides as tank mix.

**Conclusion**

Leafhopper is a major problem on cotton in India. The simplest and most potent way to overcome the problem is to treat the seeds or thiamethoxam and reduces the leafhopper population.

**References**

