

## Qualitative and quantitative faunal complex of cotton and their natural enemies in semi arid eastern plain of Rajasthan

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**ABSTRACT :** Investigation on qualitative and quantitative faunal complex of cotton and their natural enemies in semi arid eastern plain of Rajasthan was carried out. Fourteen insect pests were recorded on cotton in the zone. Of which, jassid, whitefly, spotted bollworms, pink bollworm, and American bollworm were found as important one. The survey revealed 11 natural enemies of insect pests of cotton. Of which, spider, chrysopa and coccinellids were found important. The incidence of both jassid and whitefly started from second and third week of June, population increased gradually and reached to its peak in the month of August and first week of October, respectively. Low population of thrips, aphid and mite was recorded for short duration. The infestation of spotted bollworms started in the second fortnight of June, increased gradually and reached to its peak in first week of August and first week of October. The infestation of pink bollworm started in second fortnight of July, increased gradually and reached to its maximum in the last week of September and first week of October. The incidence of American bollworm was recorded from middle of August. The larval population and infestation gradually increased and reached to its peak in the middle of October.

**Key Words :** Agriculture, Cotton, Insect pests, Natural enemies

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Cotton, the White Gold is the most important commercial fibre crop in India as well as in many countries of the world influencing their economic development. In India, it is grown in 9.25 million hectare and ranks first in world in area and third in production with 16.88 million bales. About five per cent of the gross cropped area of our country is under cotton cultivation, of which 30 and 70 per cent is irrigated and rainfed, respectively. It is grown in Maharastra, Punjab, Andhra Pradesh, Karnataka, Haryana, Rajasthan, Madhya Pradesh and Tamil Nadu. Nevertheless, the productivity and average yield is only 310 kg and 170 kg ha<sup>-1</sup>, respectively, whereas, the average world productivity of cotton is 583 kg ha<sup>-1</sup> (Anonymous, 1999a). In Rajasthan, cotton is grown in 0.44 million hectare with 175 kg ha<sup>-1</sup> production (Anonymous, 2004).

One of the several factors responsible for low productivity and quality deterioration of cotton, is the attack of various insect pests right from the time of planting till harvesting of the crop. Hargreaves (1984) listed 1326 insect pests on cotton throughout the world, but in India, the crop is attacked by 162 insects, of which nine are considered as key

pests in different zones causing 50-60 per cent losses of seed cotton yield (Dhawan, 2004). The sucking insect pests viz., jassid, *Amrasca biguttula biguttula* Ishida, whitefly, *Bemisia tabaci* Gennadius and the bollworm complex viz., spotted bollworm, *Earias* spp., pink bollworm, *Pectinophora gossypiella* Saunders and American bollworm, *Helicoverpa armigera* Hubner are the major pests posing a serious threat to cotton production in our country.

Most cotton agro-ecosystems besides predators and parasites have a rich complex of naturally occurring entomophagous arthropods and entomopathogenic micro-organisms. The conservation of native natural enemies may be a promising factor in combating cotton insect pests problem in India. *Chelonus blackburni* Cameron, *Trichogramma achaeae* Nagraja, *T. brasiliensis* Ashmead, *Bracon* spp., *Chrysoperla carnea* Stephens, *Coccinella septempunctata* Linnaeus, *Menochilus sexmaculatus* Fabricius and spiders have been observed as potential parasitoids of key pests of cotton and play an important role in the cotton ecosystem.

A thorough knowledge of seasonal activity of different