

ISSN 2063-5346

Review on Distribution and Abundance of White Grubs



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Article History: Received: 10.05.2023

Revised: 19.06.2023

Accepted: 10.07.2023

Abstract

The white grubs are also called as Chaffer beetle or May- June beetle. They became a nefarious pest in India for the last few years. They are root feeders and their adult feeds on the leaves of host plants. Their infestation has been reported throughout the country and has been widespread over the past years. In most of the agricultural fields, control of these pests is not encouraging because of the lack of control over their damages. The present article flashes on various works done on the distribution and abundance of white grubs.

Keywords: White grubs, pests, host plants, damage.

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Introduction:

White grubs belong to the order Coleoptera of Class Insecta and are of economic importance. These beetles are serious pests of agricultural, stored and food crops. Scarabaeidae is the second largest family with 30,000 species worldwide (Gupta, 2012), with about 2,500 species reported from India (Krajcik, 2012), most of which are herbivorous (Melonthinae subfamilies, Rutelinae subfamilies, Dynastinae and Cetoninae subfamilies) (Chandra et al., 2012). The fully grown larvae are known worldwide as beetles or June beetles. Larvae are one of the most destructive soil insects, affecting agricultural land yields. Larvae live in common soils and are considered the most destructive soil pests for many crops in India. Engraved larvae feed on the roots of the host plant, while adults feed on the leaves of the plant. Affected plants turn pale, wilt, and eventually die. Although the damage they cause is partial, epidemics can deplete entire crops. Larval damage is severe in crops such as sugarcane, peanuts, cereals, millet, legumes, vegetables and orchards. White grubs are found in cereal crops such as maize, wheat, barley, jowar, bajra and oilseeds such as peanuts, sesame, sunflowers, soybeans. It causes severe damage to crops. Tobacco, etc. (Fujiya and Yoroyama). Knowledge on the abundance of species in a locality can provide an insight into how a community functions. The fauna of the Indian sub-region is abundant and diverse, but it is yet to be fully explored. Many researchers from India and abroad have studied about the diversity, distribution, abundance and host range of white grubs. In India work and awareness regarding the white grub attacks is not very encouraging and is restricted to certain geographical regions of the country. Due to the occurrence and important ecological role of scarabs, the structure and composition of scarabs play an important role in determining the nature of ecosystems. They have diverse ecological roles and can be broadly divided into herbivorous and non-herbivorous. This review article flashes on the distribution and abundance of white grubs in India.

Review on Distribution and Abundance of White Grubs:

In India, many entomologists have worked on distribution and abundance of white grubs. Naveena et al., (2022) conducted a study on distribution of white grubs in Dakshina Kannada and observed that species diversity was high during 2018. Theurkar et al., (2012) carried out

studies on Distribution and Abundance of White grubs (Coleoptera: Scarabaeidae) in Khed Taluka,

part of Northern Western Ghats and observed that *Holotrachia serrata* was most abundant species found in Khed Taluka. Khanal et al., (2012) conducted a study on distribution and abundance of white grubs in three ecological domains of Nepal and observed that *A. dimidiata* Hope and *A. varicolor* (Gyllenhal) were found to be the dominant species in high-hill and mid-hill of Nepal. Mishra and Singh (1999) observed that rainfall, temperature, atmospheric humidity and wind velocity largely govern the emergence, movement and distribution of adults. Anitha et al., (2006) conducted a study on distribution and abundance of white grubs (Coleoptera: Scarabaeidae) on groundnut in southern India and observed that *Holotrichia* species, especially *H. reynaudi* and *H. serrata* were the major species associated with groundnut. *H. reynaudi* predominated in the central Deccan area, while *H. serrata* was most abundant in the south and west.

It has also been observed that certain light intensities at dusk trigger the emergence of adult animals. Mating may occur in trees that they normally do not forage for, after which the beetles move to species suitable for foraging (Yadava and Sharma, 1995). Singh et al., (2003) studied the distribution of white grub fauna in Garhwal hills of western Himalaya. Mehta et al., (2010) Observed the most destructive species causing economic losses viz., *Brahmina coriacea* (Hope), *Holotrichia longipennis* Blanch, *Anomala dimidiata* Hope, *Phyllognathus dionysius* (Fabricius.), *Lepidiota stigma* (Fabricius.), *Holotrichia seticollis* Moser and *Melolontha* spp. The adults of white grubs come out generally during May-June from the soil and settle on the trees like neem, moringa, Prosopis, Acacia, apple and plants like wild rose, Polygonum, etc. for feeding and mating (Yadava and Sharma, 1995). Many researchers around the world have studied about diversity, distribution, host range and attack. From all the above studies, most studies found that *Holotrichia serrata* and *Holotrichia consanguinea* are the most common larval species in India.

Host Plants of White Grubs in India:

White grubs cause damage to various agricultural and horticultural crops which leads to declined yield. The damage due to white grubs is severe in commercial crops, cereal crops and horticultural crops. White grubs feed

on the roots of host plants, while the adult beetles feed on the foliage of plants. Many researchers have observed the predaceous behaviour of white grubs on variety of host plants.

Table 1: Major Host Plants of White grubs in various states of India.

State	Species	Host (Grub)	References
Andhra Pradesh	<i>Holotrichia serrata</i> F.	Jowar, Tobacco	Pal, 1977
Bihar	<i>H. serrata</i> F.	Gauva, Bean	Pal, 1977
Gujrat	<i>Holotrichia consanguinea</i> .	Groundnut	Pal, 1977
Haryana	<i>H. insularis</i> <i>Anomala</i> sp.	Bajra	Pal, 1977
Himachal Pradesh	<i>Brahmina coriacea</i>	Apple leaves, Potato, Peach, Palm	Singh, 1964 Pal, 1977
Karnataka	<i>H. serrata</i> F.	Coffee, Tobacco	Pal, 1977
Kerala	<i>Leucophilis concophora</i>	Coconut	Pal, 1977
Maharashtra	<i>H. serrata</i> F. <i>H. fissa</i>	Jowar, Sugarcane, Neem Ber, Babool	Joshi et al., 1969, Sharma & Shinde 1970 Theurkar et al., 2012
Uttar Pradesh	<i>H. serrata</i> F.	Groundnut, Sugarcane	Singh, 1964
Tamil Nadu	<i>H. serrata</i> F.	Sugarcane	Pal, 1977

Conclusion:

In this review article, we have tried to summarize all relevant information about distribution, abundance and predaceous behaviour of white grubs. White grubs are polyphagous pests that adversely affect the yield of agricultural and horticultural crops. Proper management is essential to reduce the larval attack. Several chemical and biological control methods can be utilized to reduce the severity of these attacks. Reducing attacks by these serious pests is necessary to increase crop yields in plantations, agriculture and horticulture.

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