

Identification, Economic Importance and Their Management of White Grub

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SUMMARY

White grubs (Coleoptera: Scarabaeidae) are polyphagous pests with a wide host range including several commercially important crops. The occurrence of white grubs on major fruit crops like mango, grapes, pomegranate, guava, apple, peach and plum in considerable proportions. The white grub adults and larvae are known to be pests of fruit crops, they were considered as minor pests. However, white grubs are causing considerable damage ranging from 15-40% in different fruit crops and diversity of species occurring also has widened. While young plantations of guava and pomegranate suffered root damage resulting in death of 10–25% plants, other crops were defoliated by adult beetles. White grubs are mainly belonged to 11 species under six genera viz., *Holotrichia*, *Anomola*, *Maladera*, *Schizonycha*, *Adoretus* and *Popillia*. Emergence of white grubs, once considered to be minor or sporadic pests of fruit crops, necessitates regular surveillance and documentation to implement timely management practices.

INTRODUCTION

White grubs, also known as June beetles or chafer beetles or root grubs, belong to two subfamilies viz., Melolonthinae and Rutelinae under family Scarabaeidae of Coleoptera. They are serious pests of several crops such as sugarcane, groundnut, millets, potato, maize, wheat, sunflower, cotton, tobacco, soybean, vegetables, and also turf, meadows, lawns etc. They also attack plantation crops such as arecanut, cashew nut, coconut, tea, coffee, etc. and fruit crops with varying damage levels (Khan and Ghai, 1974; Veeresh, 1974). Yadava and Sharma (1995) reported 70 per cent damage in several commercial crops due to white grubs infestation. In India, white grub is one of the five pests of national importance (Yadava and Vijayavergia, 1994). Most of the species are annuals, while some species are biannuals and biennials (Ritcher, 1958). The adults are predominantly leaf feeders whereas the grubs are subterranean feeders on roots, rootlets and underground stems of living plants. The larval feeding on roots of the plants slowly leads to drying, wilting and subsequent death of the plants.

White Grub:

- *Holotrichia serrata* F, *Holotrichia consanguinea* Bl.
- *Leucopholis lepidophora* Burm.
- Scarabaeidae: Coleoptera

Economic Importance:

- It is a cosmopolitan and polyphagous species having been reported from most of the States of the country.
- Since last 10 to 15 years grub is posing a great threat to the cultivation in some pockets of Maharashtra State.
- It is in endemic form in some pockets of Ahmednagar, Buldhana, Dhule, Jalgaon, Kolhapur, Osmanabad, Parbhani, Sangli, Satara and Wardha districts.

Marks of Identification:

Adult: Beetle is stoutly built, reddish brown 22-25 mm in length and head is oblique

Eggs: Creamy white, oval/spherical, 2mm diameter.

Grub: About 47 mm long, white in colour with dark brown head having powerful mandibles and 3 pairs of prominent thoracic legs.

Host Plants: White grubs are polyphagous.

Larval Hosts: Attack number of crops like sugarcane, groundnut, jowar, maize, paddy, tobacco, vegetables etc. and grasses. Perennial trees like guava, citrus, peach etc. are also reported to be attacked by the grub.

Adult Host: The adult beetles feed on leaves of neem, shevaga, ber (Drumstick), tamarind, bel, acacia (Babul), gulmohor.

Nature of Damage:

- The grubs feed on roots and rootlets of plant and infested plants become yellowish and dried up.
- The attacked plant can be easily pulled out from the soil.
- The adults feed on leaves of ber, neem, drumstick. etc.

Carry Over:

- Through the adult beetle.
- Newly formed beetle remains in quiescent stage in soil and emerges when cloudy weather and light showers prevail in the month of May/June.

Life History:

- The emergence of beetle begins after first pre-monsoon showers (May/June), emergence confined to early evening, after the sunset, mating takes place on neem and babhul trees.
- Beetles return to soil before sunrise and female start laying the eggs singly in earthen cells at the depth of 7-10 cm. soil.
- A female lays 50-70 eggs.
- Incubation period 9-24 days.

Grub: Grub moult twice and become full grown in 5-9 months.

Pupal stage: Pupation in soil. Pupal stage last for about 14-29 days.

Adult:

- Though adult are formed during November and December they don't emerge until the first pre-monsoon shower in May or June.
- The longevity of adult after emergence is 47-97 days.
- Only one generation in a year.

Seasonal Occurrence: The pest is active in *Kharif* season.

Management Practices:

- Collection of beetles by shaking host trees (neem/babhul/ ber) at night hours and their destruction in kerosinized water.
- Collection and destruction of grubs from the field at the time of weeding and interculturing.
- Flooding of the fields.
- spray the host trees like neem, babhul and ber with 0.1 % carbaryl in monsoon on community basis. The emergence of beetles is observed immediately after the first pre-monsoon showers. (Mau/June)
- **Note:** Leaves of treated host trees should not be fed to animals upto 10 days after treatment.
- Soil application with quinalphos 5G/phorate10G/ carbofuran3G @ 25 kg/ha. at the time of land preparation or application of FYM.
- In case *L. lepidophorta* around kumbhi river in Kolhapur Dist. use rotavator in May, in white grub affected area for the destruction of different stages of white grub.

CONCLUSION

This study has revealed the emergence of white grubs as pests of economic importance in fruit crops and serves to strengthen the preparedness for their management. A strict monitoring and vigil in fruit crop orchards, especially young plantations, during monsoon time for the occurrence of white grub adults in the night helps in minimizing losses. Similar way, in case of plant wilting due to root damage by larvae of white grubs in crops like guava and pomegranate, it is possible that farmers may mistake it for fungal wilt. An awareness on the damage

caused by root grubs facilitates suitable management practices. Since white grub larvae are subterranean and have a long duration, early interventions especially targeting adult stages are essential to prevent economic losses.

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