Vivekanand College, Kolhapur
(Empowered Autonomous)

Department of Botany

B. Sc. II Plant- Protection

Topic- Sugarcane White Grub

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Sugarcane white grub

Classification

Kingdom: Animalia

Phylum: Arthropoda (invertebrate animal having an exoskeleton, a segmented body, and paired jointed appendages.)

Class: Insecta

Order: Coleoptera (hardened forewings (elytra) six legs and antennae)

Family: Scarabaeidae (beetles having lamellate antennae, where the segments near the tip (last 3-7) are flattened and form a moveable club, like fingers being spread and closed.)

Genus: *Holotrichia*

Species: *Holotrichia serrata*

Host Range

It also affect Moong, Tur, Chillies, Bajra, Jowar, Paddy, Sugarcane, Groundnut

Marks of identification

Egg: A female lays on an average of 30-50 eggs in the soil, which are whitish, pear like and enclosed in earthen cells.

Grub: Fleshy ‘C’ shaped, stout, whitish yellow in colour found close to the base of the clump. Full grown larva is about 47-50 mm in length.

Pupa: Pupae are tan to brown, and occur deeper in the soil in earthen chambers.

Adult: Adult beetles are a rusty-red colour just after emerging from the pupal stage, but turn nearly black.

Adult Beetle **White grub**

Life cycle

There are four stages in the life cycle of Sugarcane white grub

1) Female adult lays about 30 to 50 **eggs** in the soil. Eggs requires about 10 to 20 days of incubation period.
2) After completion of incubation period **larva** comes out from the egg. This larva/ grub feed and develop through three larval instars. First instar feed on organic matter. Second instar feed on roots for 4-6 weeks and finally third instar feed on roots for 6-7 months.
3) Grubs remain in the soil from March to August.
4) **Pupae** occur in the soil from August and the pupal phase lasts up to 30 days.
5) **Adult beetle** emerge from the papae in October to November in response to the start of rainy season or soil disturbance. They mate and feed on foliage of certain other choice plants.
6) The female beetle deposit about 30-50 eggs in the soil from October to December.

A typical white grub life cycle

Eggs

Gravid females deposit about 30-50 eggs in the soil from October to December

Hatching grubs, feed and develop through three larval instars. First instars feed on organic matter, second instars feed on roots for 4-6 weeks and finally third instars feed on roots for 6-7 months

Larva

Grubs remain in the soil from March to November feeding on sugarcane roots.

For 2, 3 or 4-year life cycles, the third instar grubs remain in the soil

Pupa

Pupae occur in the soil from August and the pupal phase lasts up to 30 days

Adult

Adults mass emerge from soil in October-November. They mate and feed in host plants.

Nature of Damage

1) The rainy season provides favourable conditions for grub attack.
2) In case of severe infestation the entire plant stand is destroyed and some-times the field needs resowing.
3) White grubs feed underground on the roots of host plants, while the adult beetles are observed feeding on the foliage of certain other choice plants.
4) Yellowing and wilting of leaves occur.
5) Drying of entire crown.
6) Affected canes come off easily when pulled.
7) Cause extensive damage to roots and base of shoot.
8) Damages can seen more in ratoon crop when compare to first crop.

Yellowing of Leaves

Infected root

Drying of entire crown

Affected canes

Management practices

1) Crop rotation is an effective method.
2) Provide adequate irrigation.
3) Deep ploughing immediately after harvesting.
4) Avoid ratoon cropping.
5) Stagnating water for 24hrs in the field then the grub will come out from the soil.
6) Collect and destroy grubs by dipping in water and kerosene solution.
7) Collect and destroy the adult beetles, harbouring in near by Neem, *Ailanthus*, and *Acacia* trees immediately after the summer shower.
8) Apply *Beauveria brongniortii* @ 2.5 kg/ha entopathogenic fungal formulation along with FYM at the time of planting in endemic regions.
9) Apply lindane 1.6 D @ 50 kg/ha near the root zone.

THANK YOU