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**WHITE GRUBS ON TEA LANDS AND THEIR CONTROL**

(This replaces Circular I-9, Serial No. 6/89)

**1. Introduction:**

The root feeding larvae of scarabaeid beetles (chafers or cockchafers) are commonly known as "white grubs". About 90% of the reported damage in tea is in new clearings. Damage is also seen in tea nurseries, new clearings, infilling blocks, mana or guatemala clearings and occasionally in fuel wood clearings. The damage in new clearings is significant in the following areas, arranged in the order of decreasing frequency: Udapussellawa, Dimbula, Maturata, Pundaluoya, Pussellawa, Kotmale, Madulsima, Dickoya, Welimada, Nuwara Eliya, Haputale, Dolosbage, Hewaheta and Passara. It is recommended that the plantations in the Udapussellawa, Dimbula and Maturata districts should protect their new clearings from white grub damage, as a routine practice (prophylactic treatment).

**2. Cyclic pattern of white grub development**

The adult beetles deposit their eggs in the soil from about March to June. Large numbers of these beetles are often attracted to lights in March/April. The ovipositing beetles can be encountered underneath thatch covers or in the surface soil. The larvae start emerging from eggs from about June until about the August. The feeding grubs, which assume a "C" shape when exposed, are found in the soil from June to November. Pupation commences generally in October, reaching a peak in January of the following year. The chronological pattern of life cycle of cockchafers is the same in both south-west and north-east monsoon zones.

**3. Damage symptoms**

Of the different species of white grubs found in tea lands *Holotrichia disparilis* and *Microtrichia costata* cause economically significant injury to young plants in new clearings. The grubs can move from plant to plant. *H. disparilis* often chew the roots off completely, leaving a callused stump from which the plant may attempt to regenerate new roots. The grubs can also, ring-bark the young plants at the collar. *M. costata* generally attacks plants that are predisposed to collar rot, feeding on moribund and dead bark. *M. costata* may also, attack shade trees such as *Acacia decurrens*.

*Anomala superflua* is a low country species attacking mainly timber species like Teak and also, nursery plant and occasionally tea roots. *Leucopholis pinguis* attacks grasses, at times completely devouring the roots like in Mana and not allowing the grasses to recover. Damage to Guatemala does not generally kill the grass as adventitious develop from nodes above the damaged section.

#### 4. Attraction to organic matter

All attacks have been encountered in soils rich in organic matter and nearly always the grubs are found in the area of the field having high organic matter content and hardly any in sandy and gravelly areas. The addition of natural manure, compost to the planting hole could attract white grub adults.

#### 5. Chemical control

The grubs have an extended feeding period of about 8 months. Tea plants can succumb to grub damage during the first 2-3 years. First, any prophylactic treatment given at planting must remain effective for 2-3 years.

##### 5.1 Recommendations on application of chemicals at planting of tea

- a. Carbosulfan 10% CR (controlled release) formulation marketed as "Suscon Fore" or "Marshal Suscon" @ 1.5 – 2 g per plant. Timber tree species should be treated with 10 g of the product per tree.
- b. Cadusaphos ("Rugby 10% G") @ 2 – 2.5 g per plant and repeated as soon as grub damage is noticed again.
- c. Metham Sodium @ 5 – 10 ml per plant. The application should be repeated if and when symptoms are noticed. The dosage at the higher end of the range is appropriate wherever grub damage is recurrent and severe. The chemical could also be applied through a drip-irrigation system.

Chlorpyrifos should not be encouraged in tea plantations. It is a persistent chemical that gets into ground water.

##### 5.2 Method of application

- a. **Granular formulations:** the granules are mixed into the soil in the planting hole giving an envelope coverage to the root system. Cadusaphos when repeated, should be applied by dibbling in the granules at a radius of 15 cm from the base of the plant.
- b. **Metham Sodium:** this should not be mixed with water. The liquid is applied at about six points round the plant either with an injector or in "alavangoe-holes" made in the direction of the roots to a depth of 15 - 30 cm.

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