

## New record of *Holotrichia serrata* (Fabricius) (Coleoptera, Scarabaeidae, Melolonthinae) infestation on cassava

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**ABSTRACT:** *Holotrichia serrata* (Fabricius) (Coleoptera, Scarabaeidae, Melolonthinae), a polyphagous pest was noted for the first time infesting cassava in Kerala. Extensive feeding on the foliage was observed. The number of beetles per plant ranged from 25 to 85 during the infestation and defoliation ranged from 45 to 70 per cent. Stunted growth and yellowing of the plants were observed. After four months, grub population was observed in the root zone, which ranged from 4-12 numbers per plant. The occurrence of another species, *Anomala dussumieri* Blanchard (Coleoptera, Scarabaeidae, Rutelinae), was also noticed along with *H. serrata* in the infested field. But *A. dussumieri* strictly avoided cassava leaves for feeding and copulation in the field and in the lab. © 2026 Association for Advancement of Entomology

**KEY WORDS:** white grub beetles, infestation, massive occurrence

The white grubs (Coleoptera, Scarabaeidae) are polyphagous and pestiferous both in the grub and adult stages, attacking various fruit and forest trees, vegetables, cereals, millets, pulses, oilseeds, sugarcane, tobacco and lawns (Chandel *et al.*, 2021). White grubs belong to four major subfamilies, Melolonthinae, Sericinae, Rutelinae and partly Dynastinae of Scarabaeidae. In Melolonthinae, *Holotrichia* Hope, 1837, is the largest genus with several species and the most ubiquitous are *H. serrata* (F.) and *H. consanguinea* (Blanchard), infesting economically important crops in India (Sreedevi *et al.*, 2021). *Holotrichia serrata* was reported to be predominant pest in sugarcane in the western Uttar Pradesh (Sreedevi *et al.*, 2014, 2017).

In India, cassava (*Manihot esculenta* Crantz) is one of the most important tuber crops, cultivated extensively by small and marginal farmers due to their large scale and varied uses (Prakash *et al.*, 2020).

Cassava is infested by a complex of arthropod pests across the tropical regions of the world, including thrips, mites, whiteflies, mealybugs, scales, horn worms, cutworms, stem borers, white grubs and storage pests (Bellotti and Schoonhoven, 1978; Lal and Pillai, 1981; Palaniswami, 1999; Bellotti *et al.*, 2012; Palaniswami and Peter, 2008; Qing *et al.*, 2015; EPPO, 2024). A massive infestation of scarab beetle, *Holotrichia serrata* (F.) on cassava was observed in Michaelgiri, Marayoor panchayath, Idukki district, Kerala (10.23846°N; 77.16357°E)

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during the 2<sup>nd</sup> week of April 2023. The number of beetles per plant during the night hours (7.30 pm to 8.00 pm) was counted from 25 randomly selected cassava plants with the aid of torch light. The defoliation was also calculated from the infested pockets in the neighboring three cassava fields. For the damage assessment, ten plants were randomly selected from the infested pockets in each of the fields, and the number of leaves infested to the total number of leaves of the plant were counted. Symptoms of grub damage and grub population were noted during the subsequent field visit during second week of September, 2023. For confirming and assessing the grub damage in the root zone of cassava, five plants showing the visible symptoms of yellowing and stunting were selected from the adult infested pockets. The root zone of the plant was carefully searched with slight digging up to a depth of one foot and a diameter of three feet from the plant base with a small spade and recorded the number of grubs present.

At the sunset, around thousands of the beetles landed on the foliage of cassava plants and found feeding only on the cassava leaves. The beetles preferred younger leaves; feeding starts from the margin and defoliate completely leaving the midrib (Fig. 1). Severe defoliation of the cassava crop was observed next day (Fig. 2). Excretory pellets of beetles were seen more or less uniformly on the soil surface, like black broadcast seeds (Fig. 3). About 95% of the beetles were in copula (Fig. 4) within 15–30 minutes after alighting on cassava plants (between 6.45 pm to 7.30 pm). During copulation initially the male holds the female feeding on cassava leaves (Fig. 5); later, after the insertion of the aedeagus into the female genital chamber, the male hangs freely downward in an upside-down position (Fig. 6). The number of beetles per plant during the aggregation period ranged from 25 to 85. The defoliation by the adult beetles in the cassava fields was ranging from 45 to 70 per cent.

The beetles were identified as *Holotrichia serrata* (Fabricius) with the available keys (Frey, 1971). Along with the *H. serrata* beetles, shiny green-colored beetles were also collected from the cassava field, which were identified as *Anomala*

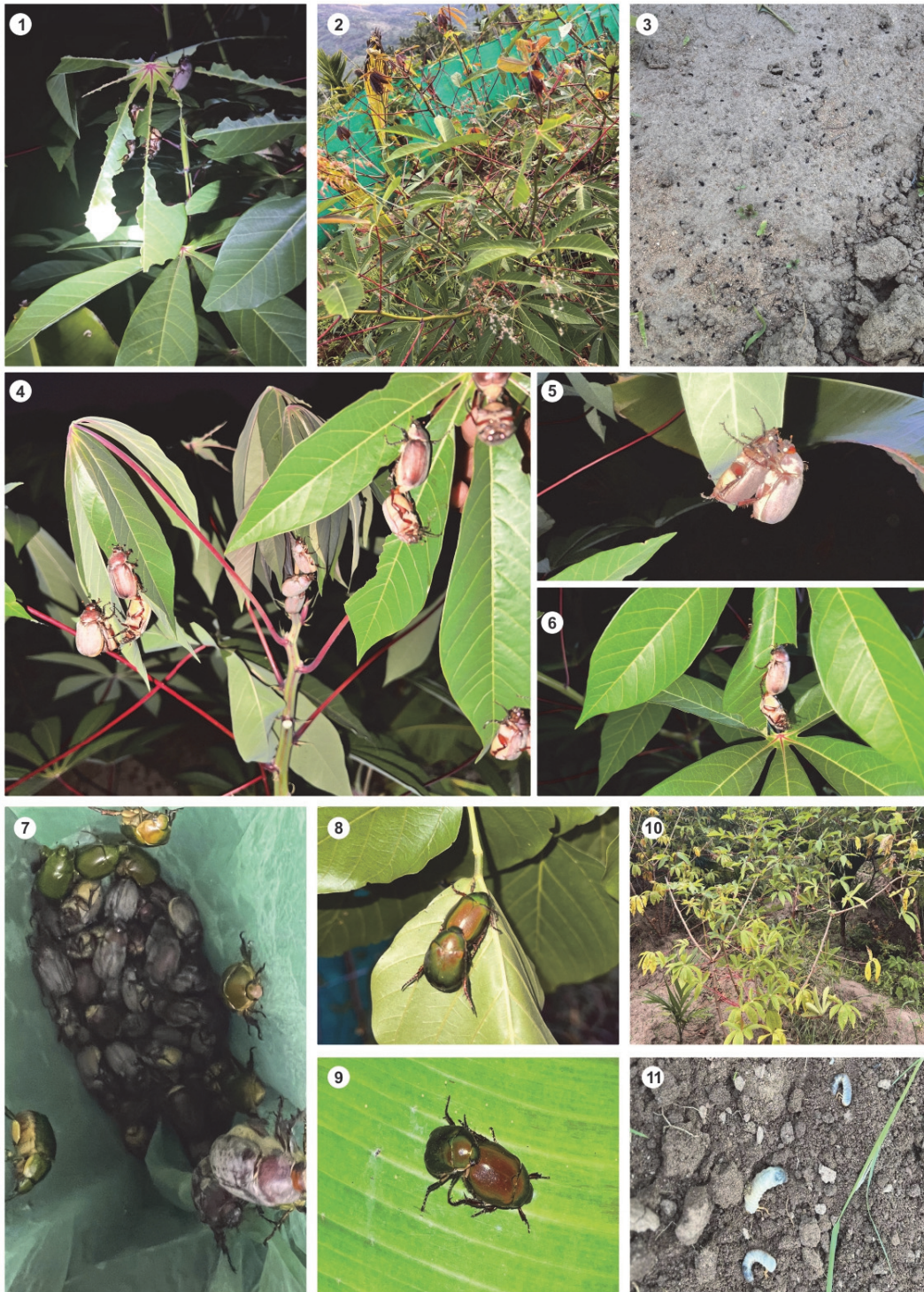
*dussumieri* Blanchard (Fig. 7). Around 5 per cent of the total beetle population was found to be *A. dussumieri*. These beetles observed to avoid cassava leaves for feeding and copulation in the field and in the lab. Landing and copulation of *A. dussumieri* was observed on *Erythrina* (Fig. 8), banana (Fig. 9) and on some weed plants in the field. Symptoms of root grub damage like yellowing and stunted growth (Fig. 10) of cassava plants were observed in the field during second week of September, 2023. A number of white C-shaped grubs (Fig. 11) were observed in the root zone portion, and root damage was noticed. Grub population in the root zone ranged from 4–12 per plant in the infested area.

The adult beetles of scarabs cause damage to the foliage by feeding on the leaves of neem, guava, jackfruit, ber, babul, khair, khezri, arjun, laurel tree, jamun, West Indian elm, rosewood, flame of the forest, apple, walnut, mango, drumstick, cherry, strawberry, mulberry, maize, French bean, etc. (Veeresh, 1978; Yadava and Sharma, 1995; Bajad *et al.*, 2017; Sreedevi *et al.*, 2019, 2021; Kumar and Pandey, 2022; Gautam *et al.*, 2023).

This is a new host record for *H. serrata*. More than twelve scarabaeid species were reported as pests of cassava, where the immature stages feeding on roots, *Leucopholis rorida* and *Phyllophaga* spp. were predominant (Bellotti and Schoonhoven, 1978; Lal and Pillai, 1981; Bellotti *et al.*, 2000; Palaniswami and Peter, 2008; Palaniswami, 1999; Qing *et al.*, 2015; EPPO, 2024). This is the first report of the *H. serrata* adult infestation on cassava crop.

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**Figs. 1 - 11.** Massive occurrence and infestation of *Holotrichia serrata* on cassava. 1. Feeding of *Holotrichia serrata* adults, 2. Defoliation symptom, 3. Excretory pellets in the soil, 4. Aggregation and copulation of *H. serrata* in cassava leaves, 5. Copulation – initial stage, 6. later stage 7. *Anomala dussumueri* in the collection chamber, 8. Copulation of *A. dussumueri* in *Erythrina*, 9. Copulation of *A. dussumueri* in banana leaves in the cassava field, 10. Stunted growth and yellowing of the grubs infested plant, 11. Grubs in the root zone

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