



## RESEARCH NOTE

### First report of red palm weevil, *Rhynchophorus ferrugineus* on banana cultivar 'Asomiya Malbhog' in Assam, India

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**ABSTRACT:** Red palm weevil, *Rhynchophorus ferrugineus* is a key pest of many palm species such as the oil palm, coconut, sago, and date palm. In various parts of India, yield losses of 10-25% have been recorded in palm plantations and damage to an extent of 34% from the coconut groves. Recently, this weevil has occurred as a pest of the banana cultivar "Asomiya Malbhog" in Assam with infestation ranging from 4-8 per cent. This is an indication of expanding host range and needs vigil to contain further spread. This article outlines the first report of red palm weevil on banana from Assam, India.

**Keywords:** *Rhynchophorus ferrugineus*, red palm weevil, first report, alternate host, banana

The banana cultivar 'Asomiya Malbhog' is a locally grown popular variety of Assam, which is cultivated in traditional *bari* system of farming along with other horticultural crops. An expedition to the Lower Brahmaputra Valley Zone of Assam was initiated in search for pest complex of banana during the months of September and October, 2021. During the visit to the banana plantations of Gossainga on area (26.4371° N, 89.9767° E) of the Kokrajhar district, the incidence of Red Palm Weevil (RPW), *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae) was noticed on the banana cultivar 'Asomiya Malbhog'. After observing it for the first time in the Lower Brahmaputra Valley Zone of Assam, extensive surveys were carried out from June to October, 2022 in the traditional banana growing hotspot areas of the Jorhat and Golaghat districts of Upper Brahmaputra Valley Zone, Darrang and Udalguri districts of North Bank Plain Zone, Naga on district of Central Brahmaputra Valley Zone and Kamrup Rural and Kokrajhar districts of Lower Brahmaputra Valley Zone. In all these areas, the cultivar 'Asomiya Malbhog' was found to be infested by this weevil.

Both the adults and larvae of RPW were collected by cleaving the pseudostem leaf sheaths and carving up the tunnels created by the larvae from heavily infested plants and the specimens were identified following the taxonomic key of Zhang *et al.*, 2003. By visual scoring, the infestation percentage of the RPW in a single banana plant on an average can be categorised between 60-80%. After examining all the locations of each zone, the RPW infestation in these areas can be estimated between 4-8% (Table 1).

The first signs of RPW infested banana plants are presence of medium sized holes and jelly like excretions on the external opening of the feeding tunnel of the pseudostem, which are viscous and the oozed out substances are yellowish in colour. The pseudostem becomes gradually hollow from inside because of the large holes made by the insatiable feeding of the larvae and the adults stay inside the tunnel. The inner contents of the infested pseudostem changes to somewhat reddish in colour compared to the healthy one, which is greenish. The infested plant releases characteristic fermented odour. The plants damaged by the weevil collapse at distal end and breaks down.

Larvae of different instars present inside the pseudostem were collected from the infested plants and brought to the Laboratory for further rearing and generating additional information. It was reared on natural diet using pseudostem of 50 cm height of the same banana cultivar as its feed. Females laid eggs by making hole in the pseudostem, which hatched in about 5-8 days. Larvae were cream coloured with a dark brown head with no legs and their sizes varies from 2.3-2.7 cm in length. Larvae fed inside the tissue and bore their way in form of zigzag tunnels in centre of the pseudostem. The tunnels were filled with chewed fibres and frass and emanate a characteristic smell from the plant sap. Mature larvae build a pupal case from the pseudostem fibres, and stay inside it for 20-25 days while they pupate. The pupal stage varied from 9-21 days. The adults range from 3.4-3.6 cm in length including the rostrum, 1.2-1.4 cm in width and weighed 1.10-1.41 g.

**Table 1. Extent of infestation of *R. ferrugineus* on banana in Assam**

Agroclimatic zones of Assam	Survey area	GPS Coordinates	District	Infested plants observed	Number of plants surveyed	Per cent infestation
Lower Brahmaputra Valley Zone	Gossaingaon	26.4371° N, 89.9767° E	Kokrajhar	46	580	8.0%
	Kukurmara	26.0729° N, 91.4169° E	Kamrup Rural	32	431	7.4%
Upper Brahmaputra Valley Zone	Jamuguri	26.3876° N, 93.9630° E	Golaghat	25	490	5.1%
	Charaibahi	26.6628° N, 94.1488° E	Jorhat	10	252	4.0%
Central Brahmaputra Valley Zone	Kaliabor	26.5344° N, 93.0923° E	Nagaon	17	380	4.4%
North Bank Plain Zone	Patharighat	26.4512° N, 92.1058° E	Darrang	29	465	6.2%
	Kahibari	26.7600° N, 92.1475° E	Udalguri	37	530	7.0%

**Fig. 1. Heavy infestation on banana cultivar 'Asomiya Malbhog' by *R. ferrugineus*****Fig. 2. *R. ferrugineus* weevil feeding on banana pseudostem**

Red palm weevil is a native of Southern Asia and Melanesia (Malumphy and Moran, 2007) and is locally called as Asian Palm Weevil. The weevil was found attacking the palms in the Arabian peninsula and was first reported from the UAE in 1986 (Gush, 1997; Abraham *et al.*, 1998). It feeds on a variety of palm species including coconut, sago, date, and oil palms. In 1891, Indian museum notes provided the earliest information on the red palm weevil (Faleiro, 2006). Lefroy (1906) identified the weevil as a destructive insect pest of coconut palm throughout India. The first record from India on the occurrence of RPW on arecanut was reported by (Dutta

*et al.*, 2010) from Meghalaya state. From Assam, the first record of infestation of RPW on arecanut was made by Rabha *et al.* (2013).

RPW on banana has not been documented previously from any state. This is the first record of RPW on banana from Northeast India. Early detection of the infested banana plant is crucial for the success of RPW management programme, and at this moment, it is necessary to stop the pest cycle by finding an infested pseudostem before the emergence of adults. Pheromone trapping is another potential method of surveillance.

Hence, pheromone traps loaded with effective lures and pseudostem baited kairomone traps are recommended for monitoring and mass trapping programmes in the field.

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