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SHORT NOTE

Occurrence of rhinoceros beetle, *Oryctes rhinoceros* (L.), on banana cultivars in Kerala

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The coconut rhinoceros beetle, *Oryctes rhinoceros* (L.) (Coleoptera:Scarabaeidae) is one of the most damaging pests of coconut and African oil palm in south and south-east Asia and the Western Pacific islands. Adults of *O. rhinoceros* are 30-50 mm long and 14-21mm breadth, black or reddish black in colour, stout and possesses a characteristic cephalic horn which is larger in males. The pygedium is densely clothed with reddish brown hairs on the ventral surface in the female (Nirula *et al.,* 1952), a feature which helps in distinguishing it from the male. The adults are the destructive stage, they bore into the crown of the palm resulting in wedge shaped or "V" cuts in the fronds that unfurl. The beetle feeds on tissue juices. Some of the crushed fibre is pushed outside the entrance hole, where it indicates the insect's presence. Orian (1959) reported one third of seedling palms destruction by rhinoceros beetle in Chagos Islands. Ramachandran *et al.* (1963) has reported a loss in yield of 5.5 to 9.1 per cent in coconut due to beetle attack. In India, damage of inflorescence is also reported in severely infested areas which cause reduction in yield up to 5.7% (Nair *et al*., 2002). Attack by adults reduce yield and destroy seedlings. They provide entry points for lethal secondary attacks by the palm weevil, *Rhyncophorus* or by other pathogens (Bedford, 1980). Apart from coconut and African oil palm, other host plants of *O. rhinoceros* include the date palm, arecanut palm (Nair, 2002) and a variety of palms grown for ornamental purpose, including *Roystonea regia*, *Livistona chinensis*, *Corypha umbraculifera* and *Raphia ruffia* (Gressitt, 1953; Bedford, 1980) *Arenga*, *Borassus*, *Corypha*, *Elaeis, Metroxylon*, *Nypa*, *Oncosperma* and *Phoenix* (Lever, 1969). Fletcher (1914) listed out aloes and sugarcane apart from palms as host and Sadakathulla and Ramachandran (1990) recorded sugarcane as host of the pest. The damage caused by this pest on non palm hosts was not causing serious concern so far.

Regular pest surveillance was being carried out to identify any new pest outbreak, pest status change etc. by a team of subject experts in farmers' plots throughout the year by Krishi Vigyan Kendra - Alleppey, Kerala. Special field surveys were undertaken during 2007-2009 in various locations, in Southern State, Kerala, following frequent field reports from farmers on occurrence of 'big beetles' in banana (*Musa* sp.). Subsequent field observations on banana planted as an intercrop as well as monocrop in coconut gardens revealed infestation by rhinoceros beetle, *O. rhinoceros* which was not noticed in any of the field surveys conducted during the last ten years.

The adult beetles of *O. rhinoceros* were found attacking banana plants of various ages from four to six months after planting. It was first noticed in Nooranadu village of Alleppey District, Kerala, India and later at different locations of the district *viz*., Chenganoor, Kayamkulam and Ambalappuzha during 2007-2009. Subsequent observations during 2010-2012 revealed *O. rhinoceros* damage on banana from different parts of South India.

The infestation was first noticed in south part of Kerala, India. More than ten thousand plants were observed at random from different locations from June 2008 to January 2012. External symptoms of beetle attack appeared as a cut/chewed wound on the banana pseudostem (Fig.1) very similar to symptoms caused by *Scapanes australis*. On close examination, the damaged pseudostem revealed tunnels made by the pest resembling the damage by the pest on coconut spindle leaf, and the beetles were found feeding inside the tunnel (Fig.2). In coconut, beetle cut and chews the spindle leaf and occasionally inflorescence. Tunnels had an average depth of 2.0cm with a horizontal diameter of 1.7cm and vertical diameter of 4.3 cm (Fig. 3). The tunnelling and chewing symptoms were noticed on the pseudostem at different heights i.e., 15, 83, 90, 95,110,134,155cms, above the ground level. Percentage infestation in different plots varied from 2.5 to 4.7%. Repeated attack on the same

Fig.1. Initial damage symptoms of *O. Rhinoceros* on banana

Fig. 2. Rhinoceros beetle damage on banana pseudostem

Fig. 3. Entry hole on pseudostem

plant was not observed, but recurrence of infestation was recorded in the same plot. Infestation was noticed only in 'Nendran' (genome group AAB) and 'Njalipoovan' (Genome group AB) varieties of banana indicating the varietal preference by the pest (Table 1). Other varieties such as 'Palayankodan (AAB)', 'Robusta (AAA)' and 'Red banana (AAA)' cultivated near to the infested plots were free from infestation. The major banana pest of the region, pseudostem weevil, *Odoiporus longicollis* (Coleoptera: Curculionidae) also showed maximum preference to 'Nendran' variety as reported by Visalakshi *et al.* (1989).

Severely damaged plants toppled down and found more prone to wind damage. In infested banana plants where entry of the pest was near the leaf axil, leaves were found drooping down. Symptoms of infestation and damage by *O. rhinoceros* to the tune of 4-20% were noticed in coconut palms adjacent to the infested banana plots. The pest attack on banana was noticed both in monocropping as well as intercropping under coconut. This is the first field report of *O. rhinoceros* infestation on banana plants as a pest. The sole report of rhinoceros beetle's occurrence on banana dates back to fifties (Nirula *et al* ., 1952). Since then there have been no records on banana being attacked by *O. rhinoceros*. Padmanabhan and Sudararaj (1999) and Padmanabhan *et al*. (2001) reported several coleopteran pests on banana but there was no mention of rhinoceros beetle. Melanesian rhinoceros beetle, *Scapanes australis* was recorded as a main pest of juvenile coconut palms in Solomon Islands (Bedford, 1976). The adult beetles were found boring into the stems of banana plants in different parts of Papua New Guinea (Szent-Ivany and Barrett, 1956; Mararuai, 2010). But *Scapanes* was not reported from India. This is the first detailed report on the occurrence, extent of damage and varietal preference of *O. rhinoceros* on banana in India. It warrants a constant vigil on the movement of rhinoceros beetle to banana plantations wherever they are cultivated near coconut plantations.

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Table 1. Infestation of *O. rhinoceros* on banana cultivars at different locations

Cultivar	Infestation (%) of *O.rhinoceros* on banana plants			
	Nooranadu	Chenganoor	Kayamkulam	Ambalappuzha
'Nendran' (AAB)	3.5	4.7	2.6	2.5
'Njalipoovan' (AB)	3.0	3.8	2.5	3.2
'Red banana' (AAA)	0.0	0.0	0.0	0.0
'Palayankodan' (AAB)	0.0	0.0	0.0	0.0
'Robusta' (AAA)	0.0	0.0	0.0	0.0

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