



MASS TRAPPING OF RED PALM WEEVIL AND RHINOCEROS BEETLE IN COCONUT WITH AGGREGATION PHEROMONE

MARUTHADURAI R* AND R RAMESH

Crop Protection Section, ICAR- Central Coastal Agricultural Research Institute,
Ela, Old Goa, Goa 403402

*Email: duraiento@gmail.com (corresponding author)

ABSTRACT

Field studies and front line demonstrations were conducted during 2017-2019 to popularise the pheromone technology for wide area management of red palm weevil *Rhynchophorus ferrugineus* and rhinoceros beetle *Oryctes rhinoceros* in coconut plantations at Goa. Red palm weevil activity was observed throughout the experimental period, with maximum being during post monsoon period between October and November. Its' least activity was during pre and monsoon period during April to June. The maximum attraction of *O. rhinoceros* was observed during July and September. Captures in the pheromone traps were female dominated, with overall sex ratio (male: female) of red palm weevil and rhinoceros beetle being 1:2.97 and 1:1.56, respectively. About 64 and 50 % reduction of damage symptoms of red palm weevil and rhinoceros beetle was observed in pheromone implemented plantations. Thus, continuous mass trapping of red palm weevil and rhinoceros beetle through pheromone technology significantly reduces the infestation in coconut plantation.

Key words: *Rhynchophorus ferrugineus*, *Oryctes rhinoceros*, pheromone trap, seasonal variation, sex ratio, wide area management, coconut

Coconut (*Cocos nucifera* L.) is an important plantation crop and provides livelihood securities to millions of small and marginal farmers in India (Rethinam and Singh, 2007). The crop is cultivated in an area about 20.96 lakh ha with an annual production of 23798 million nuts and productivity of 11350 nuts/ ha (CDB, 2018-19). Various biotic and abiotic factors are responsible for limiting its production and productivity. The coconut palm is attacked by large number of insect pests of which the red palm weevil (RPW) *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae) and rhinoceros beetle (RB) *Oryctes rhinoceros* (Coleoptera: Scarabaeidae) are more serious. Red palm weevil alone damages about 12% of young coconut palms in the age group of 5 to 20 years (Faleiro, 2005). It is an internal tissue borer and very difficult to detect in the early stages of infestation. Rhinoceros beetle causes damage to unopened leaves, spathes and bud region in the crown reducing the yield up to 10% (Sujatha et al., 2010). The damage of RB paves the way for RPW infestation. Both the pests are serious threat to coconut plantations.

Implementing of mechanical/ physical/ chemical method of control is very difficult due to greater height of the palms (usually 10-20 m) and non-availability of skilled labourers to execute the pest

management practices in coconut plantations (Faleiro, 2006). Presently, the use of pheromone traps has been encouraged as an alternative (Maruthadurai and Ramesh, 2019). Large scale mass trapping of RPW in coconut in Kerala significantly reduced the population density (Jayanth et al., 2007). Mass trapping of red palm weevils and rhinoceros beetles help to capture and destroy a sizeable amount of floating weevils and beetles and thus, help in reducing the population (Sujatha et al., 2010). Farmer participatory and community based approach are essential for mass trapping and successful management of RPW and RB in coconut plantations. So far no attempt has been made on wide area management of these two insect pests in Goa. Hence, the present study was undertaken on wide area management of RPW and RB in coconut plantations of Goa.

MATERIALS AND METHODS

Front line demonstrations and field studies were conducted in coconut plantations of Goa on use of pheromone traps for the management of RPW and RB during 2017-2019. The pheromone bucket traps, ferrolures and rhinolures @ 350 mg were procured from Pest Control India Ltd. Kairomone releasing food baits viz., coconut petiole and sugarcane pieces (approximately 200 g) were added to inside the bucket