RED PALM WEEVIL - A POTENTIAL PEST ON ARECANUT

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Introduction

Red Palm Weevil (RPW) *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Dryophthoridae) is an indigenous pest from South East Asia. It has recently become one of the most dangerous concealed borer pests of palms around the globe. Earlier, RPW was found to be infesting five palm species *viz.*, coconut (*Cocos nucifera*), date palm and Canary island palm (*Phoenix dactylifera P. canariensis*), true sago palm (*Metroxylon sagu*), and talipot palm (*Corypha umberaculifera*). Later, it has been noticed to attack 40 palm species including areca palm (*Areca catechu*). However, coconut, date palm and canary island palms remain as the most preferred hosts. RPW is distributed worldwide, including Middle East, North Africa and Southern Europe. In India, it is a fatal enemy and key pest of coconut palms of age group between 3- 20 years. Being a killer pest, 1 % incidence itself is considered as Economic Threshold Level (ETL), which demands curative insecticide treatment. Bud rot / leaf rot infections and infestation of rhinoceros beetle or any mechanical injury predispose RPW attack. Though it occurs round the year, becomes more prominent during monsoon season (Fig. 1).

Team of scientists from ICAR- CPCRI, Kasaragod has recently reported incidence of RPW in an arecanut garden at Chunda in Cherupuzha Grama Panchayat of Kannur District (Latitude 12° 2917085'' Longitude 75° 398674''). There was 6 % incidence of the pest in the arecanut garden and a total 60 palms were infested of which 10 palms were dead (Fig 1). The arecanut garden is planted with 'Swarnamangala' variety of arecanut. The palms are four years old under well management condition. The infestation occurred through the crown region. There was considerable

Fig. 1. Field visit- Red palm weevil infested garden at Chunda in Cherupuzha

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infestation of spindle bug in most of the palms which was evident as necrotic lesion on inner fronds. Injury due to spindle bug coupled with absence of coconut palms of preferred age group must be the possible reasons for the attack of RPW on arecanut. Though red palm weevil infestation was reported on arecanut in early occasions also crop loss was not that substantial. By regular monitoring and early detection of the pest incidence and timely adoption of curative insecticide treatment will help to manage the pest effectively.

Biology

The entire life cycle of RPW is concealed inside the palm trunk except the partially exposed adult stage. Adult weevils are highly sensitive to volatiles (Fig 2). Weevils locate the host plants by sensing the volatiles emanating from wounds. Female weevils lay eggs mostly

Fig. 2 : Red palm weevil adult

in wounds, cracks and crevices on the trunk, bole region or at leaf axil near the crown of young palm. Female beetles commence oviposition 1- 7 days after mating and its fecundity is about 276 eggs. Eggs are creamy white elongated, oval shaped that hatch in 3- 4 days (depending up on weather parameters and host). On hatching, apodous creamy larvae with well sclerotized head and mouth parts emerge. Number of larval instars unknown inside the palm trunk, in laboratory it varies from 7-16. Larval period ranges from 36 - 78 days (Fig 3). It pupates in fibrous cocoon of approximately 80 x 35mm size, made up of debris of chewed palm tissues. Pupal stage last for 22 to 25 days. Pupation occurs toward the outer periphery of the palm trunk which ensure easy emergence of adults. Adult weevils were found to live for 60 - 70 days and are ferrugineously brown with long curved and pointed snout having six black spots on the thorax. The duration of the life cycle (from egg to adult stage) was reported to vary from 45 days to 139 days based on the weather condition and type of the food.

Fig. 3 : Red palm weevil grubs

Nature of damage

Like most of the insect pests, larval stage is pestiferous. Infestation starts with the oviposition, emerging larvae bore the trunk and enter inside (Fig. 4). They feed on soft internal tissues by gnawing, makes tunnels and galleries extensively (If carefully perceived, gnawing sound will be audible from outside on palm trunk). As a result, internal tissues rots and emit typical fermenting odour. Conduction of water and nutrients affected which results in yellowing and wilting of fronds. It will take considerable

time to express the symptoms on leaves, by that time cabbage portion would have been eaten away. Later instar larvae are voracious feeder and move towards the periphery for pupation. Infestation on crown is more dangerous as it can easily affect the growing bud of the palm. Concealed nature of the pest upsurges the vulnerability.

Fig. 4: Boring by RPW grubs in trunk of arecanut palm

Diagnostic symptoms

- Presence of dried gums at the leaf axil / trunk which are the prospective entry points of the weevil (initial symptom)
- Oozing of reddish brown liquid from the bore hole on the trunk
- Presence of chewed fibers, larvae and cocoons, pupal case in leaf axil and inside the trunk if it split open.
- Hole at the bole region with gnawing sound
- Yellowing and wilting of the fronds followed by crown toppling (Later stage).

The following IPM measures suggested

- Regular monitoring for early detection of pest incidence (i.e., presence of gummy exudates on leaf axil / on the trunk which are potential egg laying sites)
- Prophylactic leaf axil filling of mixture of granular insecticide fipronil 0.3 G and sand (6 g + 250 g)
- Curative treatment with imidacloprid 200 SL @ 1 ml / litre by crown pouring / by trunk injection
- Cut and burn dead palms due to RPW or crown rot incidence which are the potential breeding sites for the weevil
- Management of spindle bug by leaf axil placement of thiamethoxam 25WG sachets of 2g @ 2 saches / palm on either side of spindle leaf during monsoon
- Control of crown rot / Mahali diseases by timely spraying of 1 % Bordeaux mixture

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