Red Palm Weevils and Their Management

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Introduction

The red palm weevil (RPW), *Rhynchophorus ferrugineus*, also known as the Asian palm weevil or sago palm weevil is a major economic pest of coconut palm, date palm, oil palm and sago palm. It also attacks a wide range of ornamental palms. The weevil was native in South Asia and Melanesia, first reported on coconut palm and it has now has become the most important pest of the date palm in the world. The cause of the high rate of spread of this pest is human intervention, by transporting infested young or adult date palm trees and offshoots from contaminated to uninfected areas.

Status in Malaysia

According to Encik Moktarruddin of Pest Management Unit of the Crop Protection and Plant Quarantine Division, the pest is indigenous in the country. Yunus & Ho (1980) recorded that *R. ferrugineus* attacks *Cocos nucifera* in Malaysia. Department of Agriculture Malaysia received infested 'Matag' coconut samples from Sultan Ismail Petra Airport, Kelantan on October 2005 and the pest was identified as *R. ferrugineus.*

The infestation in Terengganu was first detected in 2006. Since then, the weevil has spread to all the seven districts in Terengganu. An estimated of 1,000 hectares of coconut areas were affected in 2011. It is now a serious pest in Terengganu and it was suspected that this pest could have entered the country via date palm planting materials from the Arab countries. The planting of the date palms could have triggered its population to build-up and over the years, it spread to other palms. The date palms could be the most preferred host but there is a possible risk of it attacking the oil palm.

A collaborative project with the Departments of Agriculture Sarawak and Semenanjung Malaysia was carried out to detect this quarantine species, using lure trapping. The detection survey, targeting at the adults, was carried out in Miri, Mukah, Asajaya, Kuching and Lundu districts in August 2011. The survey did not detect any quarantine species, only the local indigenous species, *Rhynchophorus schach* were caught.

Coconut tree infested by red palm weevil in Terengganu

Lure trapping of red palm weevil

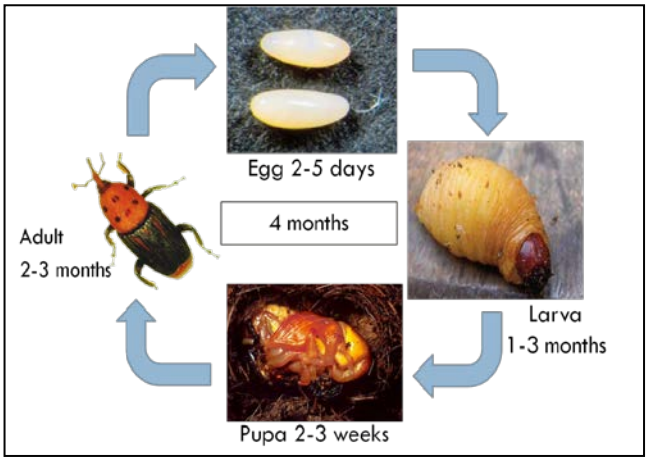
Pest biology and life cycle

Adults are large beetles about 3 cm long, with long curved rostrum. They are reddish brown in colour with variable dark markings on the thorax. They are morphologically similar to our local indigenous species, *Rhynchophorus schach*, except that *R. schach* have one orange stripe on the thorax.

Red palm weevils with variable markings on the thorax

Local species, R. schach with one orange stripe on the thorax

Each female adult deposits between 200 to 300 eggs at the base of the young leaves or in wounds created by harvesting and pruning and off-shoots removal. Eggs can also be laid in wounds caused by the rhinoceros beetle *Oryctes rhinoceros*. Eggs hatch in two to five days, and grubs bore into the interior of the palms to feed. Larval period varies from one to three months. Pupation occurs within a cocoon. Adult weevils emerge two to three weeks after pupation. The complete life cycle takes about four months.



Life cycle of red palm weevil

Damage symptoms

Damage to palms is produced mainly by the larvae, starting from the top of the palm and moving inside the palm making tunnels. Usually the damage is only visible long after infection, when the palm is already severely damaged.

The damage symptoms include:

- Oozing out of thick brown fluid from the tunnels
- Clipped end of fronds
- Lines of feeding holes on spears
- Presence of tunnels on the trunk and base of frond petiole
- Appearance of frass with a typical fermented odour
- Appearance of chewed plant tissues in and around openings of tunnels
- Fallen empty pupal cases and dead adults
- Gnawing sound due to feeding by larvae
- Drooping and yellowing fronds
- Toppling crown

Oozing out of thick brown fluid from the tunnels.

Clipped end of fronds.

Lines of feeding holes on spears.

Tunnel at base of frond petiole

Tunnels on the trunk

Drooping and yellowing of fronds

Toppling crown

Infected trunk is hollowed out.

Integrated Pest Management (IPM) strategy for Red Palm Weevils

1. Quarantine
   Since spreading of the pest is mainly through transport of planting materials, strict quarantine at international and national level should be applied.

2. Cultural control
   - Always avoid cuts and injuries to palms.
   - All infested palms must be cut into small pieces and burned.

3. Trapping
   Mass trapping using RPW lure mixed with insecticide to kill the adults, reducing the adult population.

4. Biocontrol
   There is a possibility that the pest is present in Sarawak and like the *R. schach*, it could be under control as the larvae locally known as 'ulat mulong' are the food for the locals. The collection of these larvae naturally keeps the pest population low.

5. Chemical control
   - Trunk injection with recommended chemicals (monocrotophos or methamidophos) and the injected part covered with mud or plasticine.
   - As a precautionary measure, systemic or contact insecticides such as diazinon, imidacloprid, vetimec, carbaryl, chlorpyrifos, fipronil or malathion can be sprayed onto the plants.
   - Cover wounds on plants with mixture of 10% carbaryl/ trichlorfon and mud at 1:1 ratio.

Note: Images/photos in the article had been taken: from the Department of Entomology, University of California, Riverside, USA; from Jabatan Pertanian Malaysia and from Google.