SPC Secretariat of the Pacific Community

Plant Health Team
Land Resources Division

Pest Alert

No. 51 ISSN 1727- 8473 September 2015

# An emerging biotype of Coconut Rhinoceros Beetle Discovered in the Pacific

The discovery of a new biotype of Coconut rhinoceros beetle (CRB), *Oryctes rhinoceros*, is an imminent threat to the livelihoods and economy of Pacific Islanders reliant on coconut, oil palm and other palms.

The new biotype, known as CRB-Guam was first discovered in Guam in 2007. Further invasions by the same biotype have been recorded on the Papua New Guinea (PNG) mainland (2009), Hawaii (2014), Palau (2014) and Solomon Islands (2015).

This is different from the CRB Pacific-biotype, which has been confirmed for Samoa (1909), New Britain (PNG; 1942), New Ireland (PNG; 1952), Fiji (1953).

While not yet confirmed the CRB-Pacific biotype is also likely present in American Samoa (1909), Keppel Island (Tonga; 1921), Vavau (Tonga; 1953), Tongatapu (Tonga; 1961), and Tokelau (year unknown). Palau has had CRB since 1942 but the biotype determination in 2014 showed both types currently coexist in Palau.

CRB-Guam biotype has invaded five Pacific Island countries and territories (PICTs) in the last 9 years compared to the CRB-Pacific biotype, which has had no further record of spreading since a biological control campaign using the Oryctes nudivirus was initiated in the 1960's.

The virus is established in the CRB-Pacific biotype. However, of greatest concern is that the CRB-Guam biotype is resistant to known isolates of Oryctes nudivirus (OrNV), which have proven to be effective against the CRB-Pacific biotype.

The presence of the CRB-Guam biotype has shown evidence of severe to catastrophic levels of damage (50 – 90 %) as compared to the CRB-Pacific biotype which, with virus biocontrol, only causes light to moderate damage (10 – 50%) in 'hot spots' with uncontrolled breeding sites.

A review of the potential pathways that CRB can use to spread between islands and nations in PICTs is important. Detection of first incursions usually results from evidence of physical damage symptoms on the palm leaves, which becomes evident up to 4 months after the beetle has caused the damage.

CRB has a long life cycle of about 180 days. The adult beetles can live up to 9 months and within that period cause damage by chewing into the growing shoot of the palms, which results in the V-shape notches on the leaves after they unfurl (this can be up to 4 months after the damage has been caused).

Intensive feeding damage can cause eventual death to the palms. The immature stages (i.e. grubs) of the beetle feed on compost materials.

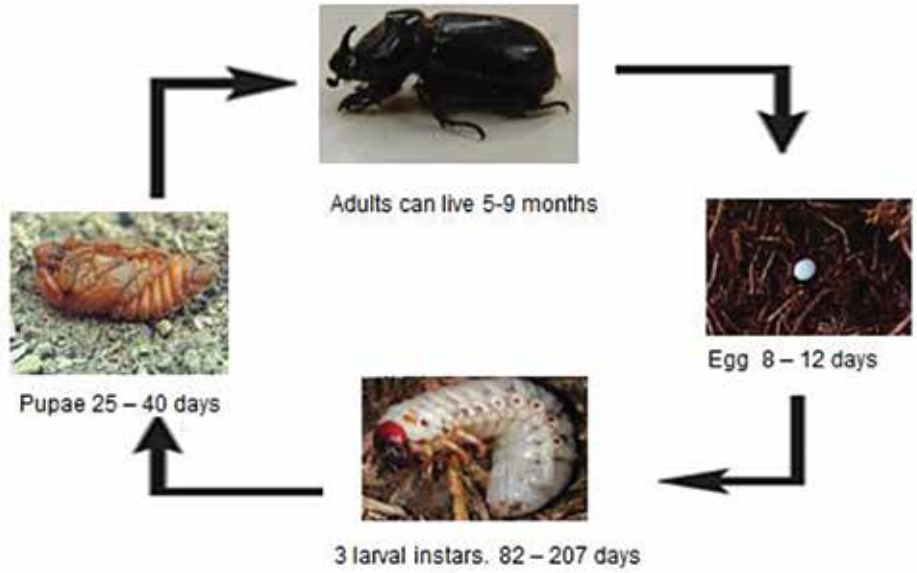
CRB can fly to spread throughout islands, but dispersal between islands depends on human mediated activities. Soil and plant materials can contain the immature life stages of the beetle. The beetles are attracted to light from boats and planes, which can then transport them to new locations.

The use of pheromone trap technology is common for CRB surveillance and National Biosecurity Authorities are encouraged to use them for early detection and monitoring programmes. The pheromones are expensive, but individual sachets last for about 3 months.

Implementing management initiatives to supress CRB populations in infested sites is important to limit damage at infested sites and lessen the chance of beetles spreading to new sites. Some of the management interventions that can be employed include: crop sanitation, pheromone trapping, biological control agents, cover-cropping, insecticide application, and physical killing of beetles (e.g. in damage holes and after they come to lights at night).

Addressing the threat of the CRB-Guam biotype in the PICTs will require a concerted effort in the Pacific Region to raise awareness through biosecurity networks of the potential threat of CRB-Guam biotype and provide information for early detection and eradication of limited outbreaks. Formation of an International Working Group to develop a strategy for control and containment and for coordinating activities is required.

Allocation of funds by PICTs to promote media awareness of CRB, and donor partners providing funds to key institutions in the region to enable biocontrol research and development initiatives (e.g. identification of a Oryctes nudivirus strain virulent against the CRB-Guam biotype) are critically important.

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