

Extension Fact Sheet 19: Cassava Shoot Dieback



Common name: Cassava shoot dieback and Coconut premature nut fall

Scientific name: *Amblypelta cocophaga* and other species.

Hosts: Coconut, causing premature nut fall; shoot-tip dieback of *Eucalyptus deglupta* and cassava, and cocoa pod distortion.

Damage

As *Amblypelta* feeds it injects a poison. In coconuts, the young fruit (buttons or nuts) fall; in *Eucalyptus* and cassava, the shoot wilts and dies, and cankers form on the stems (photo, left); in cocoa, sunken black spots occur and young pods become distorted as they grow.

Early or premature nut fall of coconuts in Solomon Islands has been a major problem in some parts of the country, and has been investigated since the 1930s by a number of entomologists. The islands of Guadalcanal, Malaita and Nggela are those most affected. Loss of coconuts was estimated to be between 10 and 20%, but that on individual farms on Malaita and Nggela losses were devastating. It is difficult to be accurate as nut fall is patchy, depending on the distribution of various ant species and their interaction with *Amblypelta*. Also, coconut has a natural fruit drop of over 60%.

Another problem occurred in the 1980s. *Amblypelta* dieback was seen on *Eucalyptus*, threatening the success of forest replanting schemes on Kolombangara, in particular. *Amblypelta* caused death of the leading shoot. After a while, other shoots developed, but these, too, were attacked and the trees became hedge-like.

Biology and Life Cycle

The body is about 20 mm long, the legs are pale green, while the wings are pale-brown (photo, above right). Females lay eggs on or near the host plant. Nymphs hatch a few days later. They are dark brown with long legs and antennae; they look like adults without wings. Nymphs feed in the same way as adults, and on the same plants using needle-like mouthparts. It is not known if nymphs inject poison, but it is likely. Wings develop when nymphs become adult, 3-4 weeks after emerging from the egg.

Management

Natural enemies

In 1937, four egg parasites were collected in Indonesia and released in Solomon Islands against *A cocophaga*. However, these did not control the pest. Later, a Tachnid fly was introduced from Queensland, but this, too, was unsuccessful. A Braconid wasp was found on Kolombangara infecting late stage nymphs.

Amblypelta is found at low numbers on coconuts and probably other hosts. The damage caused by one adult is significant, so it is unlikely that parasites could reduce numbers enough to prevent economic losses.

Manipulation of ant species

Attempts over many years to control premature nut fall have tried to encourage some species of ant whilst removing others. Mostly, this means removing *Pheidole megacephala* and *Iridomyrmex cordatus* and encouraging *Oecophylla smaragdina*. The idea is to have ant species that discourage *Amblypelta* from feeding on the young coconuts. *Oecophylla* invades the palm in search of food and at the same time chases *Amblypelta* away.

Removal of *P megacephala* using herbicide and insecticide applied to the base of the trunk is possible. Once removed, soursop trees are planted among the coconuts, the fruits of which readily become colonised by mealybugs, which are 'farmed' by *Oecophylla* for their honeydew. The success of this strategy was patchy, however, as the ant populations keep changing. Also, removal of *I cordatus* is difficult as it makes its home in the crown of the palm, not in the ground.

In more recent years, a fire ant, *Wasmannia auropunctata*, has become established throughout Solomon Islands. This ant is capable of protecting palms against *Amblypelta* as well as displacing *I cordatus* and probably *P megacephala*.

Chemical control

A number of insecticides applied as sprays or as trunk injections from different chemical groups have been tested against premature nut fall. Some are effective; however, the height of coconut palms prohibits easy application, and it is unlikely that such treatments are economic. To be effective, they would need to be applied frequently, perhaps 8-10 times a year.