

# Invasive insects on palms

## Ecofriendly control methods

The growing trade between continents is increasing the introduction of insects, some of which are prone to sudden, damaging outbreaks once they become established in the absence of their range of natural enemies. For instance, palm monocultures—oil palm, coconut, date palm—induce strong parasite pressure. Meeting the immediate needs of farmers when faced with the damage caused by pests is a priority. Learning about such pests calls for an IPM approach.



Whitefly (*Aleurotrachelus atratus*) infestation in a coconut nursery in the Comoro Islands. © L. Ollivier

## Innovating for more effective control of invasive insects

CIRAD experts are available for:

- Assessing damage in the field.
- Identifying the pest.
- Observing the existence of any natural enemies.
- Proposing a control method.

Field entomologists can call upon the CIRAD faunistic laboratory and tropical insect reference collection facilities. They propose multidisciplinary research projects associating agronomists and biometricians, draw up intervention strategies and are committed to assessing the impact of the innovations they propose.

## New pests and biovigilance

CIRAD advises stakeholders in the supply chains on the appropriate measures to adopt:

- Setting up a biovigilance network for accidental pest introductions.
- Adoption of good plant importing practices.
- Early detection of any change in the ecosystem (modification of cultural practices or products used).
- Helping to train staff from plant protection services.



**For more information**

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## Limiting insecticide use and making the most of natural enemies

Although it is impossible in some cases to avoid using phytosanitary products for immediate intervention or over short periods, CIRAD proposes more ecofriendly application methods: choice of less polluting insecticides, more precise treatment method (stem injection, root uptake).

CIRAD is keen for biological control to be envisaged wherever possible. This involves using viruses, bacteria, fungi, entomopathogenic nematodes, parasitoids or predators which offer the extreme advantage of being specific to the pest in question. Once perfected, this tool can be applied as a priority in rural zones, but also in estates.

On the islands of Reunion and Mayotte, a Microhymenoptera of the genus *Eretmocerus* is effectively able to parasitize the populations of the whitefly *Aleurotrachelus atratus*. It is to be introduced into the Comoro Islands, where the pest is not controlled on coconut. In Indonesia, a predatory ladybird, *Chilocorus politus*, feeds off *Aspidiotus destructor* and is currently used in Timor Leste as a biological control method. A virus identified on *Oryctes rhinoceros* larvae in the oil palm plantations of Indonesia is currently being assessed in the field and in the laboratory.



Leaf-eating caterpillar damage on oil palm in Indonesia. © L. Ollivier

*Oryctes rhinoceros* adult responsible for damage on oil palm and coconut. © L. Ollivier

## More effectively protecting immature palm groves

CIRAD is endeavouring to learn more about the plot colonization mechanisms of *Oryctes rhinoceros*, the main pest in immature oil palm plantations in Southeast Asia. A tool such as trapping with synthetic attractants is intended to prevent massive establishment of insects. Trials are being drawn up to study a sustainable trapping strategy with a view to reducing the population levels of that Coleoptera. The spatio-temporal scale concept is essential for understanding pest dispersal phenomena. In all cases, CIRAD adapts the trapping strategy to local situations: monoculture, smallholding. Studies are tending to combine trapping and biological control, which has a slower but more durable impact in reducing pest populations.



Manual removal of *Oryctes rhinoceros* from oil palm seedlings. © L. Ollivier



Parasitoid rearing under controlled conditions. © L. Ollivier

## Creating an ecosystem adapted to ecological contexts

Farming conditions are adapted to protect biodiversity:

- Removal of dead wood, which acts as a larva site and is propitious to an increase in *O. rhinoceros* populations.
- Identification of intercrops with a view to providing the habitat of natural enemies, and thereby improving pest control.
- Adoption of conditions conducive to the multiplication of parasitoids using nectar-bearing plants.

### Partners...

- INRA (Institut national de la recherche agronomique), France
- INRAPE (Institut national de recherche pour l'agriculture, la pêche et l'environnement), Comoro Islands
- PRPV (Regional Crop Protection Programme), Mauritius
- Socfin Group: Socfindo, Indonesia



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