

# Pheromone trap: Rhinoceros Beetle



## M2i technology

- Bottle with ceramic wick: homogeneous diffusion of active substances
- Constant and extended rate of pheromone release for greater efficiency
- Easy storage, at room temperature
- Extended shelf life: 2,5 years

## User guide

**M2i recommends:** Oryctes Pro Classic® bottle + Pitfall trap.

**Trap setup:** bury the lower part of the trap (yellow) and fill it with water (or paraffin oil of vegetable origin) until it is half-way to the top. Remove the cap of the bottle and screw it onto the wheel. Place the wheel horizontally in the lower part of the trap, with the ceramic wick facing up. Twist into place the upper part of the trap (black) on the previously-buried lower part. Male and females beetles are attracted by the aggregation pheromone, enter the trap and drown in the liquid.

### Characteristics of Oryctes Pro Classic®

Type of product	Pheromone dispenser
Use	Monitoring
Active substance	4-methyl ethyl octanoate
Volume of formulation	28 mL
Indicative diffusion*	3 months
Targeted insect life-stage	Adult (beetle)
Estimated radius of diffusion	Beetles attracted on a radius of 10-15m

\*for an average temperature of 30°C and in the absence of strong winds.

### Monitoring setup

**Detection period:** throughout the year (adapt and renew the pheromone dispenser according to the recommended diffusion time).

**Trap location:** at least 10-15m from the tree or the edge of the crop.

**Recommended density:** 1 trap for 2 hectares.



## Pest surveillance and recommendations

<b>Trap follow-up frequency</b>	Weekly. Empty the trap and renew the water/liquid – without replacing the bottle – when the number of catches becomes too high.
<b>Recommended intervention threshold</b>	As soon as a first beetle is caught
<b>Pest control methods</b>	During the season and depending on trapping levels: insecticide treatments and/or biocontrol treatments according to the insect stage. Refer to recommendations of registered products for plant protection ( <a href="http://ephy.anses.fr">ephy.anses.fr</a> ) and/or to your technical consultant.
<b>Possible preventive measures</b>	Destroy or burn the stumps, the logs and the waste that could be used as reproduction sites.

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## The Rhinoceros Beetle (*Oryctes Rhinoceros*)

**Damaging stage:** adult beetle      **Order:** Coleoptera

This beetle, native from Asia (between India and Indonesia), dark brown or black, measures between 3 and 5 cm. It can live 6 months or more. Males possess a characteristic cephalic horn. Adult females lay eggs inside rotting vegetative matter. The eggs hatch 8 to 12 days later. The larvae are white with a greyish posterior end and a red head. They measure 4 to 6 cm, grow for 11 to 15 weeks and feed on the surrounding organic material. The pupal stage takes about 4 to 6 weeks. Upon emerging, adults fly to a new tree, feed on fresh leaves, and mate.

Damages are caused by the adult beetles feeding by boring (with the help of their horns) into the ramification of palms and on unopened fronds, inducing damages to inflorescences and reduction of photosynthesis. The wounds produced by the beetle provide entry points for diseases and other insects. Prolonged attacks can kill palmtrees by defoliation.

In some areas, the absence of cold season and a short dry season allow this pest to be active all year long. 1 to 2 generations per year are reported.

### Recommendations / Security

Keep out of reach of children. Keep away from domestic animals.  
Store away from food and drink. Do not freeze.  
Do not eat, drink or smoke during use.  
Wash hands after use.  
Store in original packaging. Comply with doses, conditions, instructions and precautions for use mentioned in the user's guide.  
Dispose of the empty and clean packaging in the household trash.

### First aid

If eye contact occurs, rinse with water for several minutes.  
In case of skin contact, wash with plenty of water.  
If swallowed, do not induce vomiting, rinse mouth and see a doctor.  
In case of faintness, see a doctor and show him the product label.

Product approved for organic agriculture.

## Host plants

Primarily found attacking coconut and oil palmtrees, *O. rhinoceros* has also occasionally been recorded on many other palmtrees (date palm, areca, sago palm) and other plant species such as banana, sugarcane, papaya and pineapple.

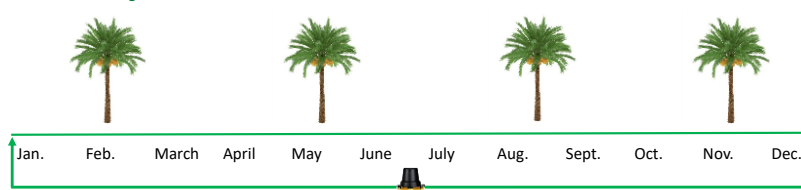
## Detection strategy: pheromone monitoring

Pheromones are substances produced by insects operating as a signal between individuals of a same species. There are different types of pheromones: alarm, aggregation, sexual, etc. Monitoring with aggregation pheromones is based on a lure placed inside a trap which mimics the substance produced by the male or the female. Lures attract equally males and females that try to gather and are captured. This enables the detection of the pest's onset and the follow-up of its infestation level. Monitoring also helps decision-making (to launch a curative intervention) and/or measuring the efficiency of a treatment.

## Benefits

This method is efficient, selective and harmless for fauna, flora, operators and local residents. It does not generate residues, inputs or resistance mechanisms.

## Detection period for *O. rhinoceros*



Indicative period for South Asia and for countries with a favourable climate (Mayotte, New Caledonia, etc.)