# Pacific Pests, Pathogens, Weeds & Pesticides - Online edition

## Cocoa black pod (006)

### Summary


- Worldwide distribution. In the tropics. On cocoa, breadfruit, coconut, papaya, and many other crops. An important disease.
- A water mould, an oomycete, not a fungus. Infects pods of all sizes and colours. Pods are at first brown then black; they rot but stay on the tree. Pods are destroyed in 10 days or less, depending on size.
- Spread by spores rain-splashed between pods, or from soil onto lower pods on trunks. Spread by flying insects. Ants place soil with spores on pods over mealybugs. Rots on pods grow back causing branch and trunk cankers; spread also on pruning tools, and possibly by rats and bats.
- Cultural control: light shade; at least 3 m spacing; good drainage; open canopy, *chupon* (water shoots) removal; rat control; 2-4-week harvest of ripe and black pods; remove empty pods from plantation; use tolerant varieties (e.g., Amelonado); breeders' lines developed in Papua New Guinea.
- Chemical control: copper sprays; trunk injections - phosphorous acid.


### Common Name

Black pod

### Scientific Name

*Phytophthora palmivora*. It is not a fungus, but an oomycete or a water mould, related to algae.

Photo 1. Black pod infection, *Phytophthora palmivora*, on the lowest pod on the trunk. It is likely that rain has splashed soil containing spores onto the pod where they germinate and infect.

Photo 2. The water mould, *Phytophthora palmivora*, infects the young leaves, especially along the veins.

Photo 3. The water mould, *Phytophthora palmivora*, has infected the pod and then grown from the pod into the branch. The light brown margin of the red area is where the water mould is still active. The red colour is caused by fungi.

Photo 4. Soil on cocoa pods brought by ants to cover colonies of mealybugs.

Photo 5. *Oecophylla* ants tending colonies of insects feeding on cocoa pods. It is possible that ants carry spores of *Phytophthora palmivora* from infected to healthy pods.

Photo 6. After infection by *Phytophthora* the pods turn brown; later, they are infected by fungi, and become black.

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Information from End MJ, et al. (Eds.) 2017. Technical guidelines for the safe movement of cacao germplasm. Revised from the FAO/IPGRI Technical Guidelines No. 20 (Third Update, October 2017). Global Cacao Genetic Resources Network (CacaoNet), Bioversity International, Rome, Italy. (https://www.cacaonet.org/fileadmin/templates/CacaoNet/Uploads/publications/Safe_Movement_Guidelines_2017_En.pdf).; and Vanegtern B, *et al.* (2015) Black pod rot of cocoa caused by *Phytophthora palmivora*. College of Tropical Agriculture and Human Resources, University of Hawai'i at Manoa. (https://www.ctahr.hawaii.edu/oc/freepubs/pdf/PD-108.pdf); and from CABI (2019) Phytophthora palmivora (cocoa black pod). Crop Protection Compendium). (https://www.cabi.org/cpc/datasheet/40986).

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