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Ganoderma orbiforme

Ganoderma orbiforme – most commonly known as ***G. boninense*** or just ***Ganoderma*** in oil palm pathology – is a species of polypore fungus that is widespread across southeast Asia. It is a plant pathogen that causes **basal stem rot**, a disease of the African oil palm (*Elaeis guineensis*). The fungus was first described scientifically in 1838 by Elias Magnus Fries from collections made in Guinea.[1] Leif Ryvarden transferred it to the genus *Ganoderma* in 2000.[2] In addition to its type locality, the fungus has also been collected from the Bonin Islands in the Pacific, and from Venezuela and Puerto Rico.[2]

Transmission

G. orbiforme is not a soil borne pathogen, meaning it does not grow in soil and does not infiltrate from soil and into the root system.[3]:417 It is however also not killed by soil, and will reside in dead, buried palm trunk material.[3]:417 This has especially been observed when *Oryctes rhinoceros*-infested material was buried.[3]:417

Infection

G. orbiforme has a hemibiotrophic lifestyle in *E. guineensis*.[4] During an invasion, *E. guineensis* roots stockpile salicylic acid, which is a signal to downregulate its own expression of ascorbate oxidase and ascorbate peroxidase.[5] AO and AP are reactive oxygen species scavengers, and so the total effect is to increase ROS production.[5] This entire pathway was found by Ho *et al.*, 2016.[5] Increased ROS is effective against hemibiotrophs but counterproductive against necrotrophs.[5]

Genetics

Microsatellite markers have been developed to help identify the fungus and study the genetic diversity of *G. orbiforme*.[6]

Ganoderma orbiforme

Scientific classification

Kingdom:	Fungi
Division:	Basidiomycota
Class:	Agaricomycetes
Order:	Polyporales
Family:	Ganodermataceae
Genus:	*Ganoderma*
Species:	***G. orbiforme***

Binomial name

Ganoderma orbiforme
(Fr.) Ryvarden (2000)

Synonyms

- *Polyporus orbiformis* Fr. (1838)
- *Fomes orbiformis* (Fr.) Cooke (1885)
- *Fomes lucidus* f. *boninensis* Pat. (1888)
- *Fomes lucidus* f. *noukahivensis* Pat. (1888)
- *Ganoderma boninense* Pat. (1889)
- *Ganoderma noukahivense* Pat. (1889)
- *Scindalma orbiforme* (Fr.) Kuntze (1898)

- *Ganoderma lucidum* var. *orbiformis* (Fr.) Rick (1960)

Research

Water agar is usable for isolation of this fungus, and is the simplest and cheapest.[7]:21 CABI provides research and technique information for lab work with this pathogen.[7]

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External links

- "*Ganoderma orbiforme*" (http://www.cabi.org/isc/datasheet/118699). *CABI (Centre for Agriculture and Bioscience International)*. 2019-12-10. Retrieved 2020-11-12.
- "*Ganoderma orbiforme*" (http://iucn.ekoo.se/iucn/species_view/464692/). *The Global Fungal Red List Initiative (IUCN)*. 2020-06-30. Retrieved 2020-11-12.