

A Lignified Star-Shape Cavity at Root-Bole Interface: An Appropriate Culture Chamber for *Ganoderma boninense* and Stromatic-Like Structure Development



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Lignified scar prelude the formation of the future lignified star-shape cavity on mature palms at root-bole interface.

Common to all palms whatever their sanitary conditions (physical phenomena related to the natural oil palm growth).



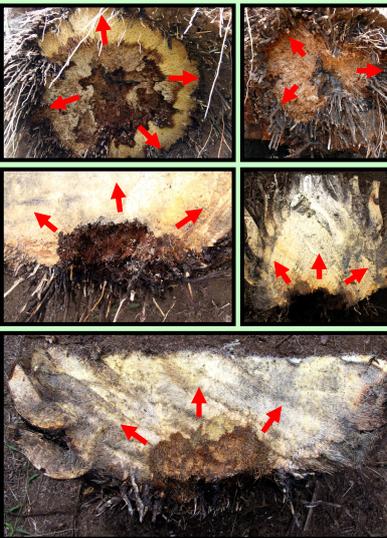
Presence

Suitable culture chamber for *Ganoderma* development and penetration within bole:

- dark
- lower than ambient temperature
- high humidity
- dense substrate
- less antagonists than in the open soil

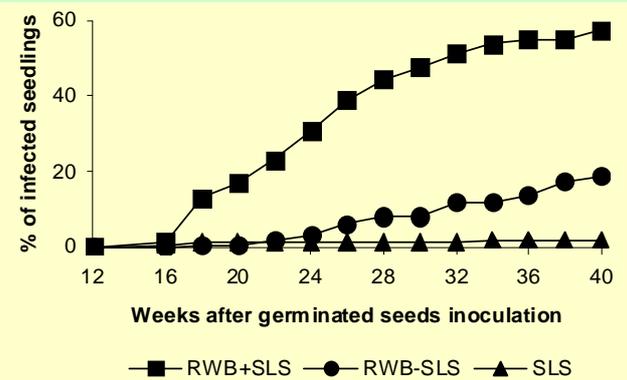


Melanised stromatic-like structure (SLS) or pseudo sclerotium at the surface of lignified cavity (compact mass of hardened mycelium)

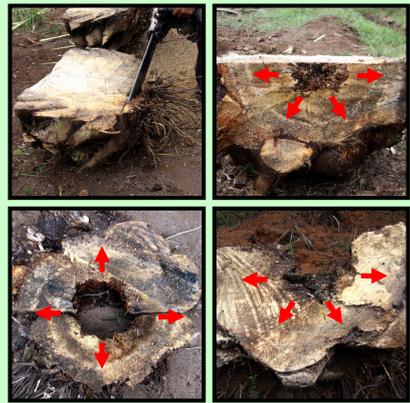


Transverse and longitudinal sections of the root-bole interface from recently infected young palm confirmed a centrifugal and radial initial invasion of the bole from this lignified cavity.

Melanised SLS development was necessary for successful and homogeneous infection of seedlings (Breton *et al.*, PIPOC 2005)



No initial *Ganoderma* penetration points were observed beyond the periphery of this star-shape cavity, but multiple penetration points were found from this cavity which probably involved more than one isolate.



The SLS envelop the roots (arrows) prior the induction of external and internal disease symptoms. This close contact root-SLS is the preliminary step of the internal invasion. (Breton *et al.*, PIPOC 2005)



Rhizotron method

CONCLUSION: Melanised SLS or pseudo-sclerotium produced by *Ganoderma* seems to be an essential physiological stage prior the invasion of the oil palm bole. For mature palms, the presence of a lignified star-shape cavity at root-bole interface permits the development of SLS prior colonization of the basal stem. In artificial inoculation, RWB as substrate source (dense substrate) simulate the role of the lignified cavity at root-bole interface. The presence of this cavity which plays the role of *Ganoderma* culture chamber for SLS development appears to be the major location for the initial invasion of the fungus inside the bole.