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The Côte d'Ivoire lethal yellowing phytoplasma: towards improving diagnosis and disease management

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The Côte d'Ivoire lethal yellowing (CILY) phytoplasma is rapidly spreading and severely affecting the livelihoods of smallholder farmers in Grand-Lahou. Symptoms resemble those associated with the Cape St. Paul Wilt Disease (CSPWD) in Ghana.

Eight severely CILY-affected villages were surveyed for the CILY phytoplasma. Leaves, inflorescences and trunk borings were collected from coconut palms. Leaves were surveyed from wild plants growing in the farms. Total DNA was extracted and tested by nested PCR/RFLP and sequencing with primers targeting the 16S ribosomal RNA and the translocation protein (secA) phytoplasma genes.



The CILY phytoplasma was detected in 81.2% of the symptomatic trees from all the villages surveyed, and showed a westward spread. Badadon showed the highest detection percentage (92.9%) followed by Braffedon (91.7%), then Palmindustrie V1 (90%), Adjadon (88.9%), Doudougbazou (83.3%), Yaokro (66.7%), Likplassié (66.7%), and Amanikro (57.1%)



Wild plants from five botanical families: Poaceae, Verbenaceae, Plantaginaceae, Phyllanthaceae and Cyperaceae were identified as first world records of phytoplasma hosts, and as potential alternative reservoirs for the CILY phytoplasma. These may have epidemiologic implications and pose a threat for the spread of CILY across the coconut farms. Their surveillance and removal combined with the use of resistant plant material may be highly effective for the CILY management as shown in other countries affected by lethal yellowing-like diseases.

CILY phytoplasma was distinguished from the CSPWD and the Mozambican LY phytoplasmas based on RFLP profiles and SNPs on their SecA and 16S ribosomal DNA sequences.



The use of the SecA PCR proved to be a useful diagnostic alternative to 16S rDNA for the detection of the CILY phytoplasma and its differentiation from other 16SrXXII West African phytoplasma strains. These findings set the basis to further implement new field culture practices and a new plan to more effectively manage CILY in Grand-Lahou.

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