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## **RECENT ADVANCES IN THE STUDY OF COCONUT LETHAL YELLOWING DISEASE IN THE AMERICAS**

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### **ABSTRACT**

Within a project supported by the Common Fund for Commodities, studies involving different countries in the Americas, have been carried out on lethal yellowing (LY), a phytoplasma disease that has killed millions of coconut palms (*Cocos nucifera* L.) in Latin America and the Caribbean region. They have included screening of coconut for LY resistance with the identification of cultivars and hybrids that are withstanding the disease; development of novel methods for the detection and quantification of phytoplasma DNA in host tissues based on real time-PCR and TaqMan assay techniques that target various phytoplasma genes; analysis of phytoplasma diversity with the identification of 16SrIV subgroup A and D phytoplasmas in different geographic locations and palm species; a reassessment of the geographic distribution of LY in project participating countries and neighboring regions; analysis of potential alternative host plants of LY with the finding of several palm and non palm species harboring group 16SrIV phytoplasmas with or without symptom development; vector transmission studies that have provided a description of Mexican homopteran entomofauna, while revealing evidence of several planthopper species containing LY phytoplasmas; transmission of LY phytoplasmas by *Haplaxius crudus* to coconut plantlets propagated under *in vitro* conditions, although so far transmission trials of LY disease with this insect to older coconuts in the field have failed; and seed transmission studies that have provided evidence that some embryos rescued and germinated from fruit of diseased palms contain detectable phytoplasma concentrations at both the shoot and plantlet stage, even though transmission of the disease itself has not

been proved. Collectively, these results in conjunction with previous findings have provided new insights for an integrated management program to control LY disease that is currently being implemented at the farm level in Jamaica.