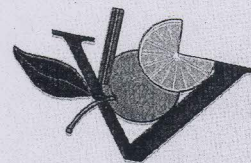
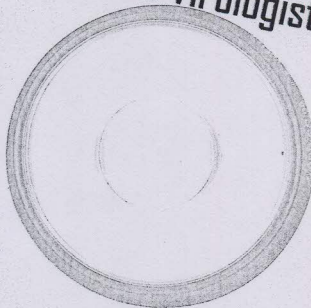
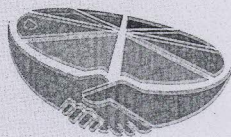


Proceedings of the XVIII Conference International Organization Citrus Virologists



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51. APPLICATION OF FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR) FOR EARLY DIAGNOSIS OF CITRUS GREENING DISEASE

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Several diseases have caused great damage to citrus production worldwide. Among them, Greening is the most feared for its aggressiveness, speed of spread, and a lack of resistant variety. Infected plants go through a long asymptomatic period (around 6 to 36 months), allowing the permanence of inoculum in the field. This study purpose to evaluate the capability of early diagnosis of spectroscopy at infrared with transformed Fourier (FTIR) for the Greening disease. For both, 60 citrus seedlings were inoculated with *Candidatus Liberibater asiaticus* (CLas) and 60 healthy seedlings (control) were kept in a greenhouse, which grown under controlled conditions of soil, irrigation and nutrients. Their leaves were measured monthly using FTIR spectroscopy during eight months. The evolution of the bacteria on inoculated plants was monitored by RT-qPCR (real-time quantitative PCR) amplification of CLas sequences. The spectra were analyzed using Principal Component Analysis (PCA). For all the months, it was shown separation between the asymptomatic and healthy leaves, emphasizing that significant chemical changes are occurring before symptomatic phase. Preliminary analyses showed that infected plants suffered a decreasing in concentrations of carbohydrate and chlorophyll. The results also showed that is possible to recognize a typical signature of sick leaf using FTIR spectroscopy, even in asymptomatic phase, which must be studied as a feasible tool to develop a methodology for early citrus greening detection.

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