

5th International Conference and Exhibition on

LASERS, OPTICS AND PHOTONICS

November 28-30, 2016 Atlanta, USA

Detection of diseases in citrus plants using fluorescence spectroscopy

Luis Gustavo Marcassa

University of São Paulo, Brazil

In recent years, there has been an increasing interest of early detection of citrus diseases to prevent great economic losses due to contamination of new plants. There are two major citrus diseases: Citrus canker (*Xanthomonas axonopodis* pv. citri) and Huanglongbing (HLB, *Candidatus Liberibacter asiaticus*). Both are a serious threat to citrus production worldwide including regions in Brazil and USA. The whole process to confirm the diseases is time consuming and expensive. So, there is a demand for a fast, sensible, and selective method for the rapid detection of citrus diseases. One of these techniques, fluorescence spectroscopy has been investigated as a tool in plant studies, because it has the potential to discriminate different diseases in citrus crops and besides it is nondestructive and nonintrusive to the plant physiology. In the last decade, our group has applied laser induced fluorescence spectroscopy and fluorescence imaging spectroscopy to discriminate diseased samples with similar visual symptoms. Different computational methods were successfully used for the different citrus disease classification. In this work, we will present a review in our work on detection and classification of infected trees with citrus canker, citrus scab, HLB and zinc deficiency. Our recent results show that we obtain a high accuracy when compared either samples with citrus canker and citrus scab (100%), or samples with HLB and zinc deficiency (95%). Furthermore, the sensitivity and specificity obtained for each group is also high. Therefore, we believe that such technique can be applied in the field to detect diseases that have similar symptoms.

Biography

Luis Gustavo Marcassa has completed his PhD from University of São Paulo and Post-doctoral studies from MIT. He is a Professor at the University of São Paulo. He has published more than 105 papers in reputed journals and has been serving as an Editorial Board Member of *Journal of Physics B*.

marcassa@ifsc.usp.br

Notes: