

PS9: 34

New method of diagnosis of Pineapple fusariosis by MALDI-TOF MS technique

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Matrix-Assisted Laser Desorption/Ionisation Time-Of-Flight Intact Cell Mass Spectrometry (MALDI-TOF ICMS) is a spectral technique that analyses the chemical cellular composition of microorganisms providing rapid and discriminatory fingerprints for identification. The remarkable reproducibility of this technique is based on the measurement of constantly expressed and highly abundant proteins (Santos *et al.* 2010). The usually observable molecular mass range is between 2000 and 20000 Da, where important ribosomal proteins appear, which is an advantage because these can be easily used as biomarkers. MALDI-TOF ICMS offers advantages over PCR. The method is now used in taxonomic assessments (e.g. bacteria, filamentous fungi, yeast, phages, virus, etc.) once it is capable to identify microorganisms up to level species and, in some cases, up to strain level. The procedure is rapid and in some cases the sample preparation does not need pre-treatment. Time required for the pathogen inactivation is an important determinant of infection-related mortality rates in contaminated crops. Costs associated with pathogen infections in crops could be significantly reduced by employing new rapid identification techniques such as MALDI-TOF ICMS (Santos 2011). In this work one susceptible and another one resistant to *Fusarium guttiforme* pineapple cultivars were infected with strains of this fungal species. Aqueous suspensions of *F. guttiforme* spores were inoculated into both resistant and susceptible pineapple stems and incubated at 25 °C during 5 days. For the case of the susceptible cultivar, after the MALDI-TOF ICMS analyses of the infected pineapple tissue it was possible identify the presence of the fungal mycelium proteins inside the pineapple stems. Additionally, based on the MALDI-TOF ICMS analyses of the pineapple health tissue, the proteins of the pineapple tissue were decreasing in concentration while the fungal proteins were increasing. For the case of the resistant pineapple cultivar, no fungal mycelium proteins were found inside the infected tissue.

Santos *et al.* (2010) *J. App. Microbiol.* 108, 375–385, Santos *et al.* (2011) *Tropical Plant Pathology* 36 (Supplement), August 2011