

CHALLENGES IN DETECTION RED PALM WEEVIL INFESTATION

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In recent years invasive palm borers and especially *Rhynchophorus ferrugineus*, (Coleoptera, Curculionidae) (RPW) spread nearly without interference over the world causing tremendous environmental damages in general and to agriculture sector and urban landscaping in particular. In some cases even taking human lives. Insufficient quarantine regulations and management practices are usually blamed for this situation. From analyzing the spread of RPW along the Mediterranean coast, it appears that authorities are in shortage of practical tools for timely detection and management efficacy evaluation of this pest.

Early detection of borers in general and RPW in particular is a great challenge as the borer's long development is concealed from inspectors' eyes, inside the tree stem. Early detection of RPW infestation is crucial because at an early infestation stage, palms can be treated more efficiently and saved, while determination of treatment efficacy is extremely vital to optimize palm rescue efforts. Detection is often particularly problematic since not all palms can be accessed and inspected directly. This can be a problem of physical accessibility or cost of actions.

The presentation will summarize several approaches and techniques undertaken to detect infested palms: (1) chemical detection of infested trees by dogs or electronic nose; (2) acoustic detection, which identifies gnawing sounds of RPW larvae, produced as they chew and move within the infested palms; (3) detection by thermal imaging based on physiological changes in infested palms that can be sensed through inspection of the thermal spectrum of the irradiation emitted from the tree canopy; (4) monitoring of RPW populations, which is often based on weevil captures in surveillance traps with a specific lure based on a mixture of RPW aggregation pheromone and plant kairomone. Advances in each of these detection techniques, their advantages, pitfalls, and potential implementation in area wide detection as well as future directions in development of detection methods will be discussed.