Workshop on “Boosting Agricultural Resilience: Advancing Knowledge Sharing in the IPPC Technical Panel on Diagnostic Protocols (TPDP) and New Plant Pest Diagnostic Techniques with MAFF Japan”

# MOLECULAR DIAGNOSTICS TO IDENTIFY PEST INSECTS IN JAPANESE PLANT QUARANTINE

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Molecular diagnostics of pest insects is one of the tools to support morphological identification in Japanese plant quarantine. It is mainly applicable when we don’t have suitable samples or time for morphological identification. The discrimination among *Bactrocera* species based on PCR-RFLP of mitochondrial COII is presented as an example. 12 species can be identified by this PCR-RFLP method, including *B. dorsalis*, *B. cucurbitae* (*Zeugodacus cucurbitae*), *B. latifrons* and 9 local species. New primers were designed to amplify COII region of mitochondrial DNA. PCR products amplified by the new primers were digested by three restriction enzymes: Taq I, Hinf I and Dra I. Simply banding patterns useful for discrimination were detected. Based on the results, a scheme to identify the 12 *Bactrocera* species was proposed. This is a rapid and accurate identification method and is used in the invasive survey when fruit flies are detected in Japan.