Molecular diagnosis of root-knot nematodes (*Meloidogyne* species) from Jordan

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Three *Meloidogyne* spp. of the root-knot nematodes were recently surveyed in Jordan and identified as *M. javanica*, *M. incognita* (race 1 and 2), *M. arenaria* (race 2), based on a combination of several diagnostic methods. Several methods of genomic DNA extraction from nematode eggs, single or many 2nd stage juveniles and females were evaluated. For DNA fingerprinting, sequence characterized amplified regions (SCAR) and random amplified polymorphic DNA (RAPD) based polymerase chain reaction (PCR) assays were used. Among the tested DNA extraction methods, miniprep method was the most efficient, cost and time effective for SCAR-PCR. Methods used for DNA extraction from single juveniles or females were more suitable for RAPD than SCAR-PCR. Typical DNA products of 670, 420, or 1200 bp in size were specifically amplified by SCAR-PCR when DNA extracts of *M. javanica*, *M. arenaria* (race 2), or *M. incognita* (race 1 or 2), respectively, were used as template DNA. Accordingly, *Meloidogyne* species in Jordan could be most reliably identified using SCAR based PCR assay. The primer PA-01 produced RAPD patterns with clear bands that clearly distinguished one species from the others and so allowed the identification of the three *Meloidogyne* species. Molecular techniques for the identification of *Meloidogyne* spp. will be particularly useful in cases of mixed populations of the three species and for reliable quarantine tests.