

# Comparative analysis of microsatellite loci in four fruit fly species of the genus *Ceratitis* (Diptera: Tephritidae).

## Abstract:

The possibility to cross-species amplify microsatellites in fruit flies of the genus *Ceratitis* was tested with the polymerase chain reaction (PCR) by analysing 23 *Ceratitis capitata* (Wiedemann) microsatellite markers on the genomic DNA of three other economically important, congeneric species: *C. rosa* (Karsch), *C. fasciventris* (Bezzi) and *C. cosyra* (Walker). Twenty-two primer pairs produced amplification products in at least one of the three species tested. The majority of the products were similar, if not identical in size to those expected in *C. capitata*. The structures of the repeat motifs and their flanking sequences were examined for a total of 79 alleles from the three species. Sequence analysis revealed the same repeat type as the homologous *C. capitata* microsatellites in the majority of the loci, suggesting their utility for population analysis across the species range. A total of seven loci were differentially present/absent in *C. capitata*, *C. rosa*, *C. fasciventris* and *C. cosyra*, suggesting that it may be possible to differentiate these four species using a simple sequence repeat-based PCR assay. It is proposed that medfly-based microsatellite markers could be utilized in the identification and tracing of the geographical origins of colonist pest populations of the four tested species and in the assessment of their risk and invasive potentials; thereby assisting regulatory authorities in implementing quarantine restrictions and other pest control measures.