Fine Scale Analysis of Genetic Structure in an Argentine Population of *Anastrepha fraterculus* (Wied.) with SSR markers.

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**Introduction**

The South American fruit fly *Anastrepha fraterculus* causes significant damage to fruit and vegetable crops. Information about dispersal and oviposition behavior in the wild is relevant to integrated pest management programs. These questions may be approached by population structure analysis using molecular markers. Our objective was analyzing the adaptive strategy and population structure of this species in a natural population from Argentina using microsatellite (SSR) markers.

**Methods**

**Sampling**

More than 200 individuals were recovered from about 150 infested fruits from 10 guava trees in an orchard near Horco Molle, Tucumán, Argentina. In order to conduct hierarchical structure analysis the sample was restricted to get several fruits per tree yielding several individuals each. The final number of genotyped individuals was 65 (18 fruits from 9 trees).

**DNA Extraction**

It was performed according to the protocol specified by Bandi et al. 1995 (Heredity 74: 425-437)

**SSR**

Six SSR loci where amplified in PCR conditions: One cycle at 95°C (2 min), 30 cycles at 95°C (30 s), 58°C (30 s) and 72°C (30 s). Final elongation at 72°C (10 min). Performed in a Veriti Thermal Cycler, Applied Biosystem.

**PCR Analysis**

Fragments were run in an automatic sequencer 3500x Genetic Analyzer, Applied Biosystems, and processed by Gene Marker v2.4.

**Statistical Analysis**

Genetic variability was estimated by several indices (Tables 1 and 2). Population structure was studied by Wright’s *F*-statistics and analysis of molecular variance (AMOVA) considering three different hierarchical levels (trees/fruit/individuals). Reynold’s genetic distances were estimated for UPGMA tree and cluster analysis.

**Conclusions**

The SSR markers used allowed a fine scale genetic population structure and diversity analysis. All the performed analyses suggest that ovipositing females are able to disperse significantly among trees throughout the orchard.

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**Results and Discussion**

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