

## FigOlivDiv

### Diversification processes in fig and olive varieties in Morocco: an interdisciplinary ethnobiological-genetic approach

#### ABSTRACT

This research project was focused mainly on gaining insight into and identifying the key biological and social factors that determine the variety diversification process in two emblematic fruit tree species with high socioeconomic potential—fig and olive. We investigated this issue essentially with respect to fig trees through an interdisciplinary ethnobiological-genetic approach.

The thesis research of H. Ahtak involved surveys and sampling of local fig varieties and spontaneous populations (seedling) in six eco-geographic zones in northern, central and southern Morocco where traditional agroecosystems prevail. These fig samples were analysed with microsatellite markers and a population genetics approach. The thesis research of Y. Hmimsa involved surveys in 189 villages in the Rif region of northern Morocco, which is a mountainous area inhabited by three distinct sociocultural groups (Jbala, Zenetes and Ghomara), in order to record fig variety names and their pomological characteristics. Semi-structured interviews and ethnobiological surveys were conducted in the village of Talandaoued to assess the classification of fig varieties in that region.

The ethnobiological analysis revealed that fig is a key element in traditional mountain agroecosystems such as those found in northern Morocco. The varietal diversity is the result of farmers' practices associated with the social organization, family choices and plant exchange conditions. Fig varieties are exchanged between neighbouring areas and seldom over long distances. We also examined the role of different types of management of spontaneous figs within cultivated areas and the classifications of these seedlings. We thus identified a social and technical varietal selection process that is under way in northern Morocco (thesis of Y. Hmimsa).

The genetic analysis revealed that domestication of spontaneous fig trees is a highly localised process (within geographical zones such as the Rif in northern Morocco and the oases in the south). There is high genetic proximity between spontaneous fig seedlings and local varieties within each region. These close genetic relationships could also be partly explained by gene flow between varieties and spontaneous figs, and also by farmers' practices that were highlighted by the ethnobiological studies, including caprification and management of seedlings and vegetatively propagated trees within cultivated fields (thesis of H. Ahtak).

In light of the interdisciplinary ethnobiological-genetic study findings in this project, we propose a scenario explaining the domestication and diversification processes under way, which would warrant further study, especially in relation to in situ conservation. In fig, varietal diversification is the result of farmers' selection of local spontaneous figs, while the combined effects of biological traits of the tree and socioeconomic factors are also involved. In olive, ongoing research (thesis of H. Haouane) has indicated that diversification may be the result of primary domestication and secondary diversification facilitated by the combined presence of vegetatively propagated trees and spontaneous figs within cultivated fields. This shows the dynamic role of farmers' practices in the varietal diversification process.

**Year :** 2007

**Project number :** 7042

**Type of funding :** AAP

**Project type :** AAP

**Research units in the network :**

**Start date :** 2008-01-02

**End date :** 2010-12-31

**Flagship project :** no

**Project leader :** Françoise Dosba

**Project leader's institution :** InstitutAgro

**Project leader's RU :** AGAP

**Budget allocated** : 75979.97 €

**Total budget allocated ( including co-financing )** : 75979.97 €

**Funding** : RTRA

## **PERSPECTIVES**

On the basis of several projects and collaborations (FruitMed 901-007, GDR Mosaique 3353, collaboration with ICARDA), we are pursuing our research by conducting an in-depth study on the role of clonally propagated trees and spontaneous figs in the diversification of Mediterranean fruit trees. In addition, we will assess the roles of public policies and new stakeholders such as nursery growers in the configuration of tree agrodiversity in the Mediterranean region. Following the discussions currently under way on the research organization in the Mediterranean Basin, we plan to develop a large-scale ANR project on diversification processes in relation to in situ conservation and the evolution of traditional agroecosystems.