

5 = Development of a Sicilian bean core collection using morphological descriptors

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Different species and varieties of bean, spread in Sicily, are representative of local agricultural practices, as result of a careful exploration (1). Many landraces have become obsolete due to the spread of commercial varieties, but are still cultivated in small areas of Nebrodi Mountains (ME-Italy) and are endangered.

The Sicilian bean landraces are often poorly known but represent a genetic heritage to be preserve and to enhance. The *ex situ* conservation of Sicilian bean landraces was carried out in “Living Plants Germplasm Bank” of Ucria (ME-Italy), founded by the Nebrodi Regional Park, and in “Sicilian Plant Germplasm Repository” of STEBICEF Department - University of Palermo. Within *ex situ* germplasm conservation the “core collection” represents the maximum genetic diversity without redundancy stored in a gene bank, providing an overall view of the properties to be found in a whole collection and increasing the efficiency of characterization and utilization of collection.

The aim of this study was to develop a core collection of representative Sicilian bean genotypes, by morphological characterization.

Flowers, pods and seeds of *Phaseolus vulgaris* L., *Phaseolus coccineus* L. and *Vigna unguiculata* L. cultivars were collected from plants grown under same pedo-climatic condition at “Living Plants Germplasm Bank” of Ucria (Fig.1) and used for morphological characterization according to the IPGRI descriptors (2, 3). The analysis of the seeds has allowed to identify 35 morphotypes within the collection, indicated by a number code (5 descriptors). The 68,4% of landraces showed seed coat with pattern and the 46% exhibited a cuboid shape. The main representative seed-morphotype was the 27513 code (6 landraces) characterized by striped pattern coat, seed bicolor (purple and pink) with lighter prevalent and cuboid shape. In general, multiallelic control and environmental factors contribute to color expression variation in flower, pod and seed coat of bean (4, 5). The results, observed in field collection, shows that the purple flowers are often linked to darker seed development, while white or lilac flowers are linked to lighter seeds.

In summary, the results showed a redundancy of some bean accessions supporting the hypothesis that same cultivar is named in different way by the local farmers. Further genetic investigation will be needed to confirm the suggesting cases of synonymies between Sicilian accessions.

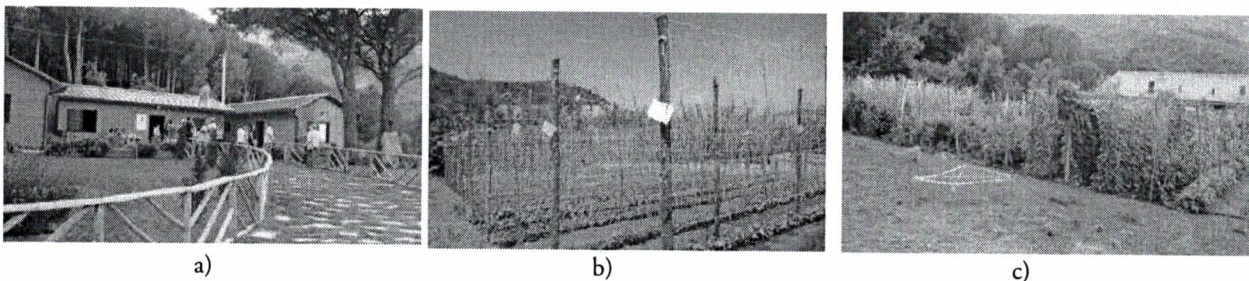


Fig. 1. *Ex situ* conservation field: a) “Living Plants Germplasm Bank”; b and c) different development stage of bean plant

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