Proceedings of the Joint Meeting AGI-SIBV-SIGA
Assisi, Italy – 19/22 September, 2011
ISBN **978-88-904570-2-9**

Poster Communication Abstract – 9.27

CHARACTERIZATION OF SOME *P. VULGARIS* AND *P. COCCINEUS* CULTIVARS FROM GARFAGNANA REGION IN TUSCANY BY TRAP MOLECULAR MARKERS

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Common bean, TRAP molecular markers, genetic variability analysis

There has been a long, widespread tradition of common bean cultivation in Italy since it was introduced from the Americas. Up to now, selection by farmers has led to the production of a number of cultivars adapted to the new and heterogeneous environments in several Italian regions. In particular, in Tuscany, the genus *Phaseolus* has acquired an important role in the traditional diets, so that Tuscany has become a region with a great variety of landraces. Moreover, some landraces are typical of sub-regional restricted growing areas, where several genotypes have been selected and maintained through the adaptation to the specific pedo-climatic conditions and the traditional agro-techniques. Such landraces have often acquired, highly desirable quality traits through man-driven selection for plant habit, seed color, seed pattern type and also disease and pest resistance, and are among some of the most appreciated Italian common bean cultivars. This is the case, for instance of the Garfagnana area, in Tuscany, where autochthonous cultivars, highly valuable, though with rather low productivity are grown mainly with traditional methods in kitchen-gardens, small-holders' family farms and in dwelling areas, either for personal consumption or for sale as specialties in farmer markets. Nowadays, apart from some traditional cultivars which have acquired national or European quality and origin marks, common bean is mostly cultivated in intensive agricultural systems aiming to assure a good production, in accordance with market demands.

As a matter of fact, old varieties are gradually being replaced by improved cultivars, and the remaining ones are confined to marginal areas, so that most of them are likely to be endangered due to the low amount of seed per plants and to the socio-cultural context where they are cultivated.

A way to safeguard this autochthonous germplasm is to deepen the knowledge of their genetic, morphological and agronomical characteristics. So, the aim of this study has been the molecular characterization of local cultivars of the genus *Phaseolus*, maintained in the germplasm bank collection of the "Comunità Montana della Garfagnana", where farmers have actually practiced the *on farm* maintenance of such genetic resources. Target region amplification polymorphism (TRAP) markers were used to assess genetic variability among 12 germplasm accessions of *Phaseolus vulgaris* and *Phaseolus coccineus* from the Garfagnana area. Commercial varieties of the genus *Phaseolus* were also examined as an out-group. TRAP markers were generated from four fluorescent labeled arbitrary primers in combination either with two fixed primers derived from the *Arabidopsis*-like telomere repeat sequence or with two fixed primers designed against exons 1 and 2 of *Phaseolus* CHS gene family. A relatively high level of polymorphism was found within accessions; similarity index and the following cluster analyses showed that all populations clustered into two groups corresponding to the *P. vulgaris* and *P. coccineus* and that the commercial varieties grouped separately from the landraces. Some

preliminary considerations about the correlation between TRAP dendrogram clustering and seed morphological aspects were drawn.