

# DIVERSITY OF FARMER-NAMED FABA BEAN (*VICIA FABA* L.) VARIETIES IN MOROCCO: A SCIENTIFIC BASIS FOR *IN SITU* CONSERVATION ON-FARM IN LOCAL ECOSYSTEMS

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*Vicia faba* L., commonly known as faba bean, is the most important grain legume in Morocco. The crop is ancient in Morocco and local populations have adapted to various environmental and social cultural conditions revealing wide genetic variability for many important traits. At present, almost all cultivars (97%) currently used by farmers are local varieties or landraces. *In situ* conservation on-farm has been advocated as an approach to maintain the genetic diversity of this crop in the ecosystems where it has been generated. On-farm conservation of landraces raises issues of quantifying and assessing genetic diversity in relation to geographic distribution and to farmers' named and managed varieties (units of diversity or units of management). The objective of this study was to describe the farmers' named varieties of faba bean and to analyse the genetic differences among these names or units of management. A precise definition of farmers' units of diversity management is required for understanding the farmers' criteria for distinguishing and naming the varieties, and therefore the bases for understanding farmers' concepts in managing the diversity through cultural strategies. On-farms surveys were conducted on 185 farms distributed on 15 villages belonging to 5 communities of 2 provinces and 254 seed lots were collected along with information about the local farms, sites, and growing conditions. A list of names given by farmers for each management unit was established from this survey. The consistency of the names among farmers was verified in further investigation in a participatory way using seed characteristics and plant morphological traits. Hence samples of seed from each type were prepared and shown to different farmers across the region. Furthermore, samples from the different types were grown together in the same comparative trial on-farm and a group of farmers from different villages were asked to recognize and name the different types. The final confirmed list comprised of 24 different named varieties or types distinguished by farmers. These named varieties and/or types are differentiated by farmers based on seed characteristics, plant morphology, as well as cooking ability and taste. However, farmers also assert that within each type they were variations among seed lots grown by different farmers. Results showed only partial consistency as not all names were consistent across farmers, while other times more than one name corresponded to the same types. In addition, some generic names such as "local" were used by farmers to indicate the origin of the variety, whereas specific names usually relate to morphology, uses, adaptation, and yield components. To identify the genetic structure of these names, morphological characterization was conducted in a controlled on station experiment and in on-farm trials. The phenotypic variability was analysed within the types and between types. The study concerned 10 of the 24 described types. Seven seed lots per type were included. Large amount of phenotypic diversity was shown among these variety types with regard to most analysed characteristics. Hierarchical Cluster Analysis and Multivariate Discriminant Analysis revealed that morphological characterisation of farmers' populations of 6 among the 10 named faba bean local varieties clearly clustered together as types. These results agree with the farmers' description of the varieties types based on

phenotypic characteristics indicating that for these populations, farmers' named units are clearly distinct based on the agromorphological traits analysed in controlled experiments.