**POMOLOGICAL, MORPHOLOGICAL DIVERSITY AND BIOCHEMICAL CHARACTERIZATION OF 14 ALMOND CULTIVARS FROM MOROCCO**

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**INTRODUCTION**

The cultivated almond, which is one of the oldest nut crops (Prunus dulcis (Mill.) D.A.Webb; syn. P. amygdalina Batsch), is thought to have originated in the arid mountainous regions of Central Asia (Graselly, 1976) and is grown commercially worldwide. World almond production is concentrated in three regions; Asia, Mediterranean basin and California, with limited amounts in Australia, South Africa, Chile, and Argentina. Morocco ranks fifth among the nations of the world in almond (Prunus dulcis L) production, and contains many zones where climatic conditions are ideal for this species. They are grown mainly in mountainous regions with poor soil (Kodad et al. 2006). The variability in the environment and climate has led to an extensive diversity of almond genotypes in each productive region (Lansari et al. 1994). As a consequence, the genetic variability of the local Moroccan almond populations is very large. In previous works phonomological and productive traits in some Moroccan almond cultivars have been already reported (Lansari et al. 1994). However, the extent of diversity that exist within the Moroccan almond collection have not sufficiently described, so there is a need to identify the best cultivars for almond cultivation development (Lansari et al. 1994). To maintain and exploit crop germplasm efficiently, analysis of phenological and pomological traits is required.

The main objective of this study was the identification and analysis of morphological and pomological special characteristics of 14 almond genotypes from the experimental Ain Taoujadate collection to reach to the promising genotypes with special features of performance, pomological and phenological, for almond breeding programs.

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**RESULTS AND DISCUSSION**

- Commercial and local (Prunus Dulsus L) cultivars vary considerably in their fruit and kernel characteristics.
- The Moroccan cultivars such as Rhizlane-1 and Rhizlane-2 had a higher phenolic content (59 and 54 mg/g -1 DW), had a polyphenol content in kernel skin than all imported cultivars (Fig 2). 
- Total flavonoids levels were significantly affected by cultivar (p<0.001). Rizlane-2 and Ferragnès exhibited the highest contents of these compounds (25.7 and 22.1 mg/g), while Fournat de Breznaud, Toundout and Amechkouh/31 showed the lowest concentrations (between 14.1 and 16.3 mg/g) (Fig 3).
- The oil content show that the Oil content varying between 35 to 57 % for all genotypes studied (Fig 4). The lower values are enregistrered by Rizlane2 and FOURNAT of Brezenaud, Toundout and Amekchoud/3J showed the lowest concentrations.
- The morphological dendrogram (Fig 5) clustered the genotypes into two main groups. The first group consists only of local accessions, the second group includes, in addition to local genotypes, a mixture of foreign genotypes.
- The biochemical markers was able to differentiate varieties in two groups (Fig 6.). The first group contained 9 genotypes, a mixture of local and foreign genotypes while the...