

Morphological, anatomical and biochemical characterization of Syrian pear (*Pyrus syriaca* Boiss) genotypes

(Received: 20.05.2004; Accepted: 10.06.2004)

O. M. Elshihy *, A. N. Sharaf ** and B. M. Muzher ***

* Plant Biotechnology Researches Lab. Faculty of Agriculture- Cairo University.

** Department of Genetics. Faculty of Agriculture- Cairo University.

*** Agricultural Scientific Research Commission, Syria- Swaida.

ABSTRACT

Characterization of Syrian pear genotypes was achieved using morphological, anatomical and isozyme markers. Morphological studies discriminated between the six Syrian pear genotypes. Abu-Satel genotype was the most vigorous compared with other genotypes and produced fruits with high quality and quantity. Anatomical studies, depending on leaf thickness and midrib differentiated between the six pear genotypes, especially midrib and vascular bundle thickness. Abu- Satel revealed the highest midrib thickness, while Meskawi genotype revealed the highest vascular bundle thickness. Biochemical markers (isozymes) were used to discriminate between the six pear genotypes using peroxidase and esterase. Peroxidase showed high polymorphism among the six pear genotypes (90%), Abu- Satel revealed the highest number of bands (9 bands), three of which were unique bands, while esterase revealed two monomorphic bands.

Key words: Pear, *Pyrus syriaca*, morphological characters, anatomical characters, biochemical markers, isozymes, peroxidase, and esterase.

INTRODUCTION

The pear genus- *Pyrus*- probably originated during the tertiary period in the mountainous regions in Western and Southern China (Rubstov, 1944). The genus *Pyrus* belongs to the subfamily *Pomoideae*, in *Rosaceae* family. The basic chromosome number of *Pyrus* ($x=17$) (Chevereau *et al.*, 1989). Most of the pear cultivars are diploid ($2n=2x=34$). By natural mutation and artificial selection, a few of triploid and tetraploid cultivars emerged and vegetatively propagated by growers (Cao *et al.*, 2002). *Pyrus syriaca* (Boiss.) is one of the main pear species that widely distributed in Palestine, Lebanon, Turkey, Iraq, Jordan, and

Syria. Many genotypes of *P. syriaca* and related cultivars are distributed in different regions of Syria from semi arid to humid areas within different altitudes from 200 to 1800 m above the sea. Pear cultivars are planted in south and west of Syria, and occupy the third crop of deciduous tree fruits after apple and grape. The total number of trees, 1.809 million, produces 20000 tons of pear fruits. Morphological studies are necessary to build up an important role for breeding programs (morphological traits and adaptation to a wide range of environments). Biochemical markers such as isozymes have proved to be useful for cultivar identification in pear. The first study of pear isozyme was carried out in 1980 to identify 6 ornamental varieties of *P. calleryana*