Proc. Georgian Acad. Sci., Biol. Ser. B
Vol. 9, No. 1-4, 2011.

Botany

MORPHOLOGICAL RELATIONSHIPS BETWEEN WILD AND CULTIVATED PEARS IN GEORGIA

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(Received June 13, 2011)

Abstract

214 individuals of 26 local, 9 introduced pear cultivars and 3 wild progenitor species of cultivated pear: *Pyrus caucasica* Fed.; *P. balansae* Decne. and *P. pyraster* (L.) Burgsd. have been evaluated by 27 morphological characters. 6 quantitative and 6 qualitative leaf and young shoot and 14 qualitative fruit descriptors have been used in multivariate statistical analysis. Leaf blade form have been analysed using Fourier's outline shape analysis method measuring 20 harmonics per leaf and 10 leaves per individual. 6 Principal Components have been used in Hierarchical Cluster Analysis and revealed close Euclidean similarity distances between 15 Georgian aboriginal pear cultivars and two wild species: *P. caucasica* (endemic of the Caucasus) and *P. balansae* (wild species native for Georgia). European wild pear - *P. pyraster*, was clustered with 9 introduced and 11 Georgian pear cultivars. The results of this study have shown that some local pear cultivars of Georgia are directly domesticated from the native wild pear species - *P. caucasica* and *P. balansae*. The other local cultivars might be obtained due to selective works by breeding of local landraces with introduced cultivars from different countries in historically different periods.

Key words: Domestication, Georgia, Caucasus, morphometry, pear cultivars, *Pyrus*.

Introduction

Many pear cultivars occur in Georgia from pre-historic period [Javakhishvili, 1930] indicating the early domestication event of this cultivated fruit tree. In total, 11 species of wild pear occur in Georgia [Kutateladze, 1980]. They are distributed in different regions, what is caused by the variable geographical relief and habitat diversity of the country. *Pyrus caucasica* Fed., the endemic species of the Caucasus is most widespread among the wild pears of Georgia and is considered as main progenitor species of local pear cultivars [Khomizurashvili, 1973]. Moreover, *P. caucasica* and *P. pyraster* (L.) Burgsd. are regarded as the main wild progenitors, from which the cultivated European pear (*P. communis* L.) has probably evolved [Zohary and Hopf, 2000; Volk et al., 2006; Yamamoto and Chevreau, 2009]. In modern classification system of the genus *Pyrus*, *P. caucasica* and *P. pyraster* are demoted to rank of subspecies of European pear *P. communis* [Browicz, 1993]. However, Caucasian wild pear is considered as separate species by many authors [Grossheim, 1946; Ketskhoveli, 1960; Tuz, 1974; Brezhnev and Korovina, 1981; Bläsing, 2004] based on arguments that the differences are not only morphological features, but as well separate geographic areas of distribution.

According to the literature data [Khomizurashvili & Eristavi, 1939, 1941; Khomizurashvili, 1973; Likhonos et al., 1983] introduced cultivars of pear from Europe appeared in Georgia