PERSIMMON CULTIVATION AND GENETIC RESOURCES IN TURKEY

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Persimmon Cultivation and Genetic Resources in Turkey

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Abstract

Fruit culture has played an important role of Turkey's history and currently the country is considered to be one of the most significant countries in the world from the point of fruit diversity. Turkey grows around 100 fruit species and this number is increasing year by year with new introduction. The country is represented by 3 persimmon species, *Diospyros kaki*, *Diospyros lotus* and *Diospyros oleifera*. Among them, *Diospyros oleifera* can be seen only in the Mediterranean region in Turkey. Northern Anatolia is the center of wild grown *Diospyros lotus* which is used as dried fruits in this region. Persimmon production, mainly in the subtropical region in Turkey, has expanded rapidly in the past 10 years and reached around 20,000 tonnes.

PERSIMMON CULTIVATION IN TURKEY

The cultivation of persimmon in a commercial scale in Turkey is newly developed. The persimmon trees are found as scattered population mostly in the Mediterranean, the Black Sea and the Northeastern Anatolia region (Onur, 1990). The production is based mainly on seedlings materials of local astringent types as isolated trees or mixed with other fruit trees for local consumption. More recently several commercial orchards with introduced PCNA cultivars in the southern part have established and after that persimmon production is increased in Turkey, particularly in subtropical areas. The increased amount gave good export opportunities. Domestic consumption in Turkey is also increased. The main factors for this increase are the introduction of new non-astringent cultivars such as 'Fuyu', 'Jiro', 'Izu', increasing awareness on post-harvest storage life of this fruit and advertisement on nutritional properties, particularly high vitamin A, antioxidant phenolic compounds, etc. of persimmon fruits (Celik and Ercisli, 2007; Ercisli et al., 2008).

In Turkey, major persimmon producing areas are the Mediterranean, the Black Sea and the Aegean regions, respectively. Turkey is producing around 20,000 tons of persimmons annually and 80% of the total production is obtained from the Mediterranean region. In the Mediterranean region, Hatay province supplies approximately 30% of the total production of Turkey (Anon., 2006). This province also has one of the old persimmon cultivation areas in Turkey (Yildiz, 2005). In Turkey most of the local cultivars have PVNA and PCA characteristics (Onur, 1990; Tuzcu and Seker, 1997). The introduction of cultivars that are higher yielding, early season, PCNA, edible when it is firm, seedless, easily shipped and storaged and red skin colored increased the demand of both domestic consumption and export quantity. The introduction of new cultivars ('Fuyu', 'Jiro', 'Izu', 'Amankaki', 'Hachiya', 'Hana', 'Kaki Tipo', 'O'Gosho', 'Vainiglia') started in the 1990s (Onur, 1985; Tuzcu and Seker, 1997) and several adaptation studies were completed in different regions. The aim of above studies was to determine more appropriate persimmon cultivars and to extend the persimmon industry along the Mediterranean and the other persimmon growing regions of Turkey (Tuzcu and Yildirim, 2000; Tangu et al., 2004; Yesiloglu et al., 2004). In addition several selection studies aimed to find promising high yielding-PCNA types among native populations in Turkey have been carried out in different regions of Turkey (Onur and Onur, 1995; Akbulut et al., 2004; Yildiz, 2005). Currently the persimmon production is steadily

increasing in Turkey.

PERSIMMON GENETIC RESOURCES IN TURKEY

It is believed that the country is one of the origin centers of *Diospyros lotus* (Onur, 1985) The other species (*Diospyros kaki* and *Diospyros oleifera*) have been introduced from other countries at least 200 years ago. *Diospyros oleifera* is more common in the subtropical region (Mediterranean), *Diospyros kaki* in the subtropical (Mediterranean) and warmer temperate region (Black Sea region), however *Diospyros lotus* is more common in the warm temperate region (Northeastern Anatolia).

During the 200 years growing period, continuous seed propagation resulted with different *Disopyros kaki* trees. Particularly, in the northeastern part of Turkey, each persimmon tree differs from another in terms of productivity, fruit shape, size, astringency, tree growth, habit, etc. These seedling materials provide important genetic resources of *Diospyros kaki* for plant breeders. Productivity of trees and fruit characteristics (particularly non-astringent types) both in quantitative and qualitative aspects are the long-term goal for persimmon breeders in Turkey. As well known, the genetic improvement of any fruit species depends on the availability of genetic variability in germplasm. Selection of suitable genotypes from a gene pool requires a thorough knowledge on fruit characters of different genotypes for utilizing them in hybridization studies. In fact the persimmon breeding programme on a sound scientific base has just started in the early 1990s in Turkey, the scientist could be able to identify a lot of promising clones in different part of Turkey (Akbulut et al., 2004; Yesiloglu et al., 2004; Yildiz, 2005). A germplasm collection in the Black Sea region in Turkey with selected promising genotypes is established. There is no registered persimmon cultivar in Turkey but each region had own local genotypes which propagated by grafting more recently (Yildiz, 2005). Some important local varieties are 'Eylul', 'Harbiye' (*Diospyros kaki*) and 'Yesil Hurma' (*Diospyros oleifera*). It seems that there were differences between *Diospyros oleifera* genotypes as well. The grafting of *Diospyros kaki* is also recently applied in Turkey. The proportion of persimmon trees in Turkey is 75-80% of trees belonging to *Diospyros kaki*, 10-15% of trees belonging to *Diospyros lotus* and the rest of the limited number of trees belongs to *Diospyros oleifera*.

This germplasm has been described by morphological and agronomical characteristics. In addition, more recently these germplasms have been characterized by morphological (Akbulut et al., 2004), molecular such as RAPD (Akbulut et al., 2008) and biochemical (Akbulut et al., 2008) markers. A significant amount of genetic diversity was observed among the germplasm for morpho-biochemical as well as DNA markers.

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