



## A short review of the fruit germplasm resources of Turkey

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### Abstract

Turkey is one of the most significant and unique countries in the world from the point of view of plant genetic resources and plant diversity. Over 85 fruit species, including almost all the deciduous fruit species, most of the subtropical and some tropical fruit are grown. Matters regarding their distribution within the provinces, nomenclature, characteristics, ethnobotanical aspects and uses are discussed, as well as knowledge about the germplasm of those species of greater economic importance, namely *Malus* spp., *Pyrus* spp., *Cydonia* spp., *Crataegus* spp., *Sorbus* spp., *Amygdalus* spp., *Prunus* spp., *Castanea sativa* L., *Coryllus* spp., *Pistacia* spp., *Juglans regia* L., *Ribes* spp., *Ficus* spp., *Morus* spp., *Punica granatum* L., *Rubus* spp., *Rosa* spp., *Fragaria* spp., *Cornus mas* L. and *Olea* spp. Several tables and distribution maps of some fruit species in Turkey are included.

### Introduction

Its richness in genetic diversity lends Turkey a unique position. Vavilov (1951) described two important gene centers (Near East and Mediterranean) located in the country. Besides these two gene centers, Turkey also has genetic diversity centers of many wild, transitional and cultivated forms of annual and perennial, herbaceous and woody plants (Agaoglu et al. 1997). Turkey's natural environment is also very diverse, ranging from subtropical to cold temperate. This ecological diversity has contributed not only to a high genetic diversity, but has also allowed the successful introduction and cultivation of a great number of fruit tree taxa.

Fruit culture has played an important role in Turkey's history. Over 85 fruit species including almost all the deciduous, most of the subtropical and some tropical fruits are grown. Deciduous fruits are spread all over the country. However, the subtropical and tropical fruits are grown mainly in the south where the winter is warm and the summer is hot. In the north of Turkey, tea, some citrus, loquat, persimmon and kiwi can be grown (Agaoglu et al. 1997). Apricot, almond, walnut, chestnut, cornelian cherry, mulberry, plum, pomegranate, hawthorn and roses have been prop-

agated to a large extent from seed, resulting in a wide range of variability (Ozbek 1978). Accordingly, the selection of valuable individuals within seedling populations with great diversity in different areas or districts of Anatolia might contribute to breeding progress.

In addition, vegetatively propagated species, such as hazelnut, apples, figs, persimmon etc. variability exists in main cultivars vary from one district to another. This also provides an opportunity to select on the basis of quality.

In this paper, we report on the information about the species, their distribution, potentially useful characteristics and utilization of fruit genetic resources in Turkey.

### The geographical distribution of the fruit species, their useful characteristics and usage in Turkey

#### *Apples (Malus spp.)*

In Turkish, apple is called 'Elma'. Historically, the apple has been the principal fruit in Turkey and the country is one of the most important apple producers

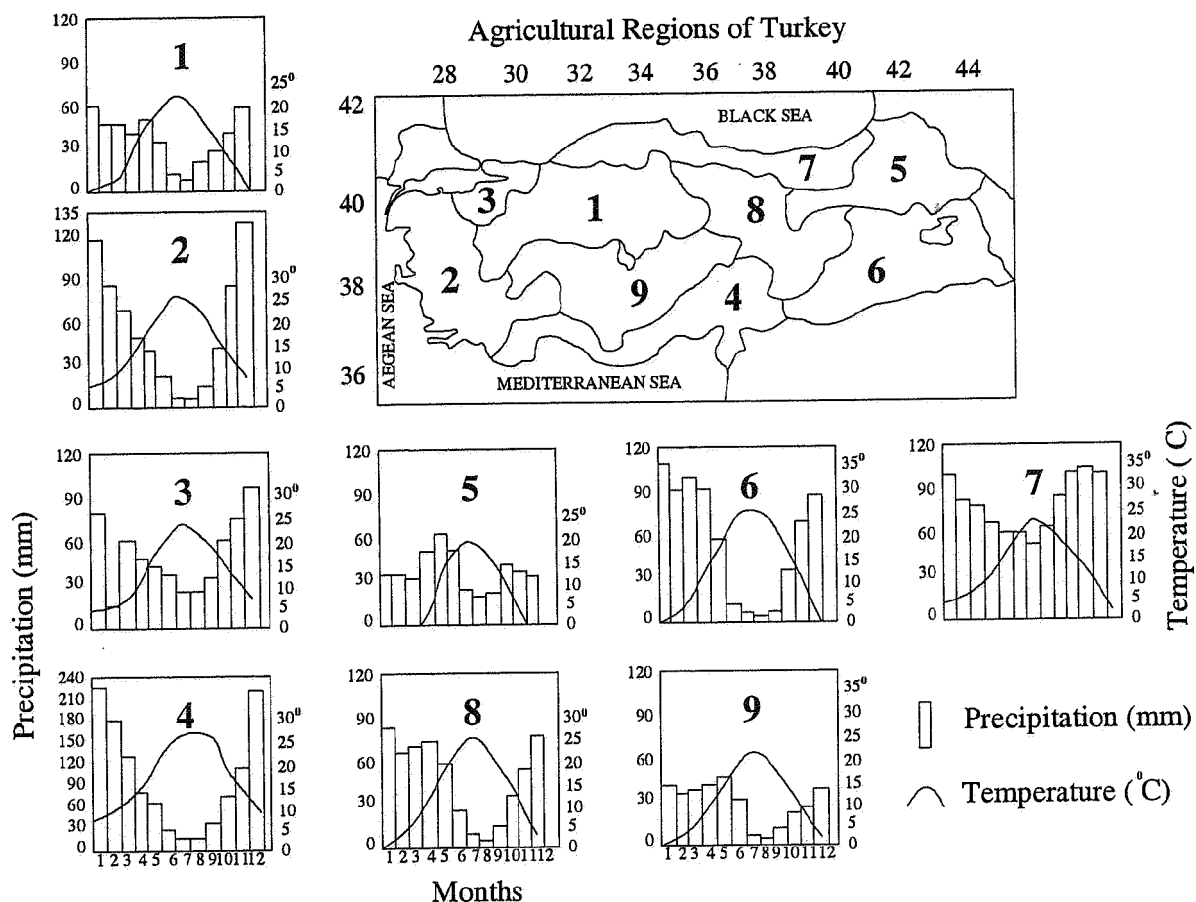


Figure 1. Agricultural zoning map of Turkey (Anonymous 1999).

in the world (FAO, 2000). The production is not merely confined to the temperate agricultural zones but extends to higher subtropical plains along the Mediterranean and Aegean Sea Coastlines. Wilcox (1962) stated that *Malus* originated in the regions of Asia Minor, the Caucasus and Soviet Central Asia. The domestication of the apple probably began from the large and rich gene pool of Middle Asia. Records in Jordan and Turkey date back to as early as 6.500 BC. Cultivation of the *M. orientalis* gene pool may have moved westward from Armenia and Transcaucasus into the area of the ancient Greek civilization (Büttner 2001a).

The world's most important commercially produced apple cultivars belong to the species, *Malus domestica*, which is widely cultivated in Turkey for its apples and possibly occasionally escapes and grows wild. Apples with good flavor, shape, color and consistence are mainly used for fresh consumption, while those of minor quality are prepared for canning.

*M. sylvestris* and *M. orientalis* are widespread in forests, mixed scrubs, rocky slopes by streams and field edges, between 150–2000 m a.s.l., throughout Turkey (Browicz 1972a). *M. orientalis* originated in North Anatolia, Armenia, a mountain belt in the Northern part of Iran, and the Caucasus (Büttner 2001a). In general, the quality of *Malus orientalis* fruits is not suitable for fresh consumption, the fruits tending to be small, roughly 2.5 cm in diameter, and very sour to astringent in taste (McCandless 1999). The apples are mainly used by the inhabitants for stewing, processing to juice and beverages, as syrup or jam, or dried. Seedlings are used as well-adapted rootstocks for apples. There is a rather wide distribution and correspondingly high variability of vegetative and fruit characters (Guleryuz 1988). *M. sylvestris* is distributed throughout Europe, except in the far north and eastwards to the Urals. The fruits, sweet/sour and astringent, are occasionally stewed or dried. The leaves can be dried for tea. The tea from