

BERBERIDACEAE

Berberis spp. barberry
Mahonia spp. Oregon grape holly

The *Berberidaceae* contain many species with edible fruit, predominantly in two genera: *Berberis* and *Mahonia*. Taxonomists regularly move species between these two genera and at various times have combined the species in these two genera. Over 200 *Berberis* and 40 *Mahonia* species are found throughout the Americas and Eurasia.

In many areas of the world, barberries were largely exterminated because many species are alternate host for *Puccinia graminis* which causes stem rust of wheat. Apparently, farmers recognized the problem of growing small grains and barberries together long before the science of plant pathology could tell them why this was a problem. In France, a law was passed in 1660 to outlaw the growing of barberry, nearly 200 years before the scientist DeBary proved that the rust on barberry in the spring was caused by the same fungus that caused rust on grain crops later in the year. While laws against growing barberries in the Americas were passed as early as 1726 in Connecticut, these laws apparently were not enforced as wheat became less common in New England. However, after an epidemic on wheat grown on the Great Plains of North America in 1916, laws encouraging eradication were passed in wheat growing regions.

Botany

The tremendous diversity within barberry makes it difficult to characterize the genus. The species tend to be found in temperate climates but in a range of environments from very wet to very dry. In general, the plants range in size from short groundcovers to large shrubs or small multi-stemmed trees. They are perennial with woody stems that bear evergreen or deciduous leaves depending on the species. In general the *Berberis* species have spines on the stems whereas the *Mahonia* species have prickly, 'holly-like' leaves. While the barberries tend to have simple leaves, the *Mahonias* tend to have compound leaves with three to five leaflets. Many of the species have yellow inner bark and yellow roots and were used by native cultures as dyes. Flowers open early in the spring or in mild climates on some of the evergreen species from midwinter to spring. In general, the flowers are some shade of yellow ranging from inconspicuous in species such as *Berberis thunbergii* to species like *Berberis darwinii* Hook and *Mahonia* × *media* C.D. Brickell that have very showy golden flowers and are treasured ornamentals. The hermaphroditic, insect-pollinated flowers and fruit can be borne simply or in clusters. While the fruit colour ranges from reds to deep purples and blues, the most commonly eaten species have deep purple to

blue fleshy fruit. Very commonly, the fruit are covered with a waxy bloom. The fruit typically ripen in late summer although some of the species that flower in winter ripen their fruit in spring. The fruit have one to several seeds; many species have fruit that are predominantly seed. None of the species is known to produce poisonous fruit although the fruit ranges from unpalatable to tart and so the fruit is most commonly used in processed products such as jams and sauces.

While the above description has been by necessity vague due to the breadth and diversity of the genus, one of the best fruiting species in this genus is the Oregon grape (*Berberis aquifolium* Pursh or *Mahonia aquifolium* (Pursh) Nutt.). This evergreen shrub with compound, prickly leaves can produce tremendous quantities of fruit. The deep purple fruit has a waxy bloom, is round, and ranges in size from 0.6 to 1.2 cm in diameter and is borne in clusters of a few to many fruit. With gloves to protect your hands from the leaves, a large quantity of fruit can be hand-picked quickly. Birds do not seem to like to eat the fruit until after it is fully ripe and has begun to deteriorate. The fruit are used for dyes and to make processed fruit products. All parts of the plants were used by Native American cultures to cure diseases or disease symptoms (Moerman, 1998). The fruit was eaten fresh and processed into jam, preserves and jellies and dried individually or as cakes.

Chad E. Finn

Further reading

- Moerman, D.E. (1998) *Native American Ethnobotany*. Timber Press, Portland, Oregon.
Roelfs, A.P. (1982) Effects of barberry eradication on stem rust in the USA. *Plant Disease* 66, 177–181.

BETULACEAE

Corylus avellana hazelnut

The European hazelnut, *Corylus avellana* L. (*Betulaceae*), is native to Europe, Asia Minor, the Caucasus Mountains and adjacent areas. Among the temperate tree nuts, hazelnut is third in world production, following almond and walnut.

World production

World hazelnut production is about 730,000 t. The leading producers and the percentage produced by each are: Turkey (70.1%), Italy (15.6%), USA (4.0%) and Spain (2.7%). Azerbaijan, Georgia, Iran, France, Greece, Russia and China are also producers. Although *C. avellana* is distributed in areas with a wide range of climates, commercial production is limited to a few areas with similar climatic features. All are characterized by mild climates – not too hot in the summer or