Prunus cerasifera in Europe: distribution, habitat, usage and threats

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Prunus cerasifera **Ehrh., known as cherry plum, is a small shrubby tree with intricate and occasionally spiny branches, which produces plum-like edible fruits. This plant is native to Balkans extending its range to Black Sea and Asia Minor. It is a frugal species, easily adaptable to a large variety of sites. It grows in the forest edges, open woodlands and disturbed sites. It is principally cultivated as an ornamental plant with several different varieties in foliage and bud colour, and secondly for fruit production. This species is resistant to several plum diseases and some varieties are used as rootstock in grafting other fruit species and cultivars of genus *Prunus*. For the same reason it can become a potential reservoir of diseases, such as Sharka or plum pox virus, affecting the production of stone fruits of more economic importance (apricots, plums, peaches).**

The cherry plum (*Prunus cerasifera*) is a deciduous shrub or small tree reaching 8-10 m tall. It has an erect and bushy habit, with numerous intricate, fine, and occasionally spiny branches. Young twigs are hairless and glossy. The bark is purple brown, with thin scales, with horizontal orange lenticels, fissured with age. The leaves are alternate, elliptical, ovate or **obovate**, 3-7 × 2-3.5 cm, with crenate saw-toothed margins, hairless and glossy above, hairy on the veins beneath. The flowers are **hermaphrodite** and appear in March-May slightly before the leaves, usually solitary, 2-2.5 cm wide, on about 1.5 cm long pedicels. The **sepals** are 2.5-5 mm long with finely glandular saw-toothed margins. The petals are white, occasionally slightly reddish. The fruits are 2-3 cm wide, plum-like **drupes**, globose, ripening to red or yellow with a smooth **endocarp**[1-4].

Distribution

This plum tree is native to south-eastern Europe (Balkan Peninsula, Crimea), western and middle Asia (Caucasus, Iran, Iraq). It has been widely cultivated for its fruits in Asia Minor and the Caucasus for millennia, spreading in the Mediterranean area and Balkans since 200 BC and later in the rest of Europe. More recently, it is present on all continents, naturalised widely outside its native range throughout temperate areas[1-7]. In Australia and in New Zealand it is considered a weed species[8-10]. Due to its high variability and easy hybridisation with other *Prunus* species, different geographical subspecies have been described and its taxonomic subdivision is rather confusing and still under revision[7, 11].

Habitat and Ecology

This species has a broad area inside the temperate zone. Natural populations are characterised by high variability in respect of vigour, temperature tolerance, ripening time and disease resistance, which makes it easily adaptable to a variety of sites[12]. The cherry plum is very hardy, with modest demands, except for light. It can be found in open areas, such as forest margins, open woodlands, riversides and disturbed sites[1-3, 6]. This tough plant is also frost and drought tolerant, and wind resistant. It thrives on a wide range of soil types, including those that are gravelly and sandy or poor in nutrients, but not compacted soils[7, 13].

Reddish fleshy cherries can be used for a variety of culinary purposes.
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Importance and Usage

It is considered, probably together with the blackthorn (*Prunus spinosa*), to be one of the ancestral lineages leading to the cultivated European plum (*Prunus domestica*)[5, 14]. Unripe fruits are used in sour soups, ripe fruits are eaten fresh or used to make non-alcoholic or fermented and distilled alcoholic beverages[3]. Anthocyanin composition, phenolic content and antioxidant activities of wild red and purple varieties of the cherry plum were tested and show potential for being developed into a source of healthy fruit drinks due to their high antioxidant activity. The fruit peel could be used as a resource to extract natural pigments[15]. This species is of great genetic importance for horticultural breeding[7]. Genetic studies identified cherry plum **genotypes** that are highly resistant to all root-knot nematodes of the genus *Meloidogyne*[16]. Furthermore, these genotypes are resistant to the expression of root crown gall consecutive infection by *Agrobacterium tumefaciens*[17]. For this reason, some varieties are used as rootstock in grafting other fruit species and cultivars of genus *Prunus*, such as plums, apricots and peaches[3, 5, 6]. It is commonly cultivated as an ornamental tree for its colourful leaves and numerous and delicate flowers. There are several hybrids or varieties mainly with purple foliage: e.g. 'Pissardii' with pink flower buds, white flowers and purple leaves, 'Nigra' smaller plants with pink flowers and deep red-purple leaves[18].

White flowers blossoming in spring.
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Threats and Diseases

Together with other *Prunus* species, Cherry plum is an overwintering host species for the damson hop aphid *Phoradon humuli*, an important pest of hops *Humulus lupulus*[19]. This plum tree is also a natural host of plum pox virus, the causal agent of Sharka disease, a serious economic threat for the production of temperate stone fruits, such as apricots, plums and peaches. Planted as an ornamental tree, it becomes a potential reservoir of this virus[20, 21].

Cherry plum in the countryside near Rhine river (Hockenheim, Germany).
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References

[1] D. A. Webb, *Flora Europea. Volume 2. Rosaceae to Umbelliferae*, T. G. Tutin, *et al.*, eds. (Cambridge University Press, 1968), pp. 77–80.

[2] O. Polunin, *Flowers of Europe: A Field Guide* (Oxford University Press, 1969).

[3] T. Săvulescu, ed., *Flora Republicii Populare Romînă, vol 4* (Editura Academiei Române, Bucureşti, 1956).

[4] O. Johnson, D. More, *Collins tree guide* (Collins, 2006).

[5] A. Horvath, H. Christmann, F. Laigret, *Botany* **86**, 1311 (2008).

[6] B. G. Sutherland, R. Cerovič, T. P. Robbins, K. R. Tobutt, *Euphytica* **166**, 385 (2009).

[7] P. Hanelt, ed., *Mansfeld's Encyclopedia of Agricultural and Horticultural Crops* (Springer, 2001).

[8] C. J. Webb, W. R. Sykes, P. J. Garnock-Jones, *Flora of New Zealand Vol. 4. Naturalised Pteridophytes, gymnosperms, dicotyledons* (D.S.I.R., Christchurch, 1988).

[9] J. M. B. Smith, *Telopea* **3**, 145 (1988).

[10] D. R. Given, *New Zealand Journal of Botany* **20**, 221 (1982).

[11] A. Horvath, H. Christmann, F. Laigret, *Botany* **86**, 1311 (2008).

[12] D. Nikolic, V. Rakonjac, *Genetika* **39**, 333 (2007).

[13] P. Duchovskis, V. Stanys, A. Sasnauskas, C. Bobinas, *Acta Horticulturae* **734**, 299 (2007).

[14] B.-E. van Wyk, *Food Plants of the World: An Illustrated Guide* (Timber Press, 2005).

[15] Y. Wang, X. Chen, Y. Zhang, X. Chen, *Journal of Food Science* **77**, C388 (2012).

[16] A. C. Lecouls, *et al.*, *Theoretical and Applied Genetics* **99**, 328 (1999).

[17] M.-J. Rubio-Cabetas, J.-C. Minot, R. Voisin, D. Esmenjaud, *European Journal of Plant Pathology* **107**, 433 (2001).

[18] G. Szekely, D. Vişoiu, *Journal of Horticulture, Forestry and Biotechnology* **15**, 169 (2011).

[19] S. P. Worner, G. M. Tatchell, I. P. Woiwod, *Journal of Applied Ecology* **32**, 17 (1995).

[20] Elibuyuk, *Phytoparasitica* **34**, 347 (2006).

[21] J. Sochor, P. Babula, V. Adam, B. Krska, R. Kizek, *Viruses* **4**, 2853 (2012).

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Please, cite as:

Popescu, I., Caudullo, G., 2016. ***Prunus cerasifera* in Europe: distribution, habitat, usage and threats**. In: San-Miguel-Ayanz, J., de Rigo, D., Caudullo, G., Houston Durrant, T., Mauri, A. (Eds.), *European Atlas of Forest Tree Species*. Publ. Off. EU, Luxembourg, pp. e01dfbb+