Juglans regia in Europe: distribution, habitat, usage and threats

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Juglans regia L., commonly known as common, English or Persian walnut, is an economically very important tree species, prized both for its nuts and for its attractive high-quality timber. It is the most widespread nut tree worldwide.

The common walnut (Juglans regia L.) is a large, deciduous tree, reaching a height up to 25–35 m and exceptionally a maximum trunk diameter up to 2 m. It is long-lived: normally 100–200 years, but some specimens may reach 1000 years old. It has a deep root system, with a substantial tap root starting from the juvenile stage.4 The bark is silver-grey and smooth between deep, wide fissures.5 The leaves are 20–45 cm long, with 5 to 9 leaflets, the ones from the apex being larger compared with those from the base of the leaf.4 Crushed leaves have a scent like shoe-polish.4 The crown diameter of the common walnut is larger in relation to its stem diameter than any other broadleaf tree species used in Europe.6 The fruit ripens during hot summers and is a large rounded nut of 4–5 cm and weighing up to 18 g.6 It may be propagated both by seeds and also vegetatively. It can hybridise and it has been prized both for its nuts and for its attractive high-quality timber. It is the most widespread nut tree worldwide.

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The common walnut (Juglans regia L.) is only 1,3 shows that in some putative areas of origin in Central Asia such as Xinjiang, the type specimen of the J. regia species is derived from J. regia occurrences within the field observations as reported by the National Forest Inventories. The chorology of the actual spatial range for J. regia is derived after Fornari et al. and the Botanical Society of Britain & Ireland.12

Habitat and Ecology

The common walnut is a demanding species and requires special site conditions. Usually grown in pure stands or as individual trees, rather than within mixed woodland, it needs a warm and sheltered site and a long growing season. It also prefers deep and rich soils, with pH values between 6 and 7.5. It is light-demanding, highly susceptible to competition and sensitive to pests and diseases. It prefers deep and rich soils, with pH values between 6 and 7.5. Although widespread in its range, the size of its natural range is derived after Fornari et al. and the Botanical Society of Britain & Ireland.12

Importance and Usage

Walnut is very appreciated for its nuts, which are a highly nutritious food source. They are rich in oil composed of unsaturated fatty acids, proteins, vitamins and minerals. The kernels contain a wide variety of flavonoids, phenolic acids and related polyphenols, which have good antioxidant, anti-inflammatory and anti-mutagenic properties.14 A diet rich in walnuts is also thought to have a cardiovascular protective effect.15 Bark or leaf extracts are used worldwide in traditional medicine to treat a variety of conditions including fungal infections such as Candida, to inhibit the growth of bacteria responsible for dental plaques and oral hygiene problems, or to increase the insulin level in diabetic patients.27 The wood of the walnut is highly prized, being strong, attractive and easy to work. Good quality logs are sold for veneer and can command high prices.30 It is also used in agroforestry.58, 62

Threats and Diseases

The common walnut is sensitive to a number of fungal, bacterial, parasitic and viral diseases. The main fungal agents Armillaria mellea, Phythophthora cinnamomi and P. cambivora which affect the root system, and aphanomyces (Gnomonia leptostyla) which causes summer leaf fall.8 Walnut blight (Xanthomonas campestris pv. juglandis) is also a serious disease, sometimes causing mortality in young trees.14, 15 A number of pests target walnuts, reducing the value of the crop, these include the walnut weevil (Curculio pomerus) and navel orangeworm (Amyelois transella) which cause feeding damage.11, 27 Although widespread in its range, the size of its natural range is derived after Fornari et al. and the Botanical Society of Britain & Ireland.12

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