



## Tilia cordata

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*Tilia cordata* (small-leaved lime, occasionally little-leaved linden or small-leaved linden) is a species of *Tilia* native to much of Europe. It is found from Britain through central Fennoscandia, to central Russia, and south to central Portugal, Spain, Italy, Greece, Bulgaria, Romania, Turkey, the Caucasus, and western Asia. In the south of its range it is restricted to high elevations.

### Description

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*Tilia cordata* is a deciduous tree growing to 20–40 m (66–131 ft) tall, diameter 1/3 to 1/2 the height, with a trunk up to 1 m diameter. The bark is smooth and grayish when young, firm with vertical ridges and horizontal fissures when older. The crown is rounded in a formal oval shape to pyramidal. Branching is upright and increases in density with age. The leaves are alternately arranged, rounded to triangular-ovate, 3–8 cm long and broad, mostly hairless (unlike the related *Tilia platyphyllos*) except for small tufts of brown hair in the leaf vein axils – the leaves are distinctively heart-shaped. The buds are alternate, pointed egg shaped and have red scales. It has no terminal bud. The small yellow-green hermaphrodite flowers are produced in clusters of five to eleven in early summer with a leafy yellow-green subtending bract, have a rich, heavy scent; the trees are much visited by bees to the erect flowers which are held above the bract; this flower arrangement is distinctly different from that of the Common Lime *Tilia × europaea* where the flowers are held beneath the bract. The fruit is a dry nut-like drupe 6–7 mm long by 4 mm broad containing one, or sometimes two, brown seeds (infertile fruits are globose), downy at first becoming smooth at maturity, and (unlike *T. platyphyllos* and also *T. × europaea*) not ribbed but very thin and easily cracked open.

### Ecology

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The trees favour good, loamy sites, but can also be found on sandy, infertile soils, and are not thought to be drought resistant. Dormant shoots of *T. cordata* can resist winter frost temperatures as low as  $-34\text{ }^{\circ}\text{C}$ .

In Britain *T. cordata* is considered an indicator of ancient woodland, and is becoming increasingly rare. Owing to its rarity, a number of woods have been given SSSI status. Cocklode Wood, part of the Bardney Limewoods, is the best surviving spread of medieval small leaved limes in England. Another site is Shrawley Wood in Worcestershire. Small-leaved lime was once regarded as holy and good for carving.

Trees in northern England were found to have established when the climate was warmer and have adapted to the cooling climate.

## Pests and diseases

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The tree is fairly disease-resistant, though a common problem is leaf scorch where planted on dry soils, however leaf scorch is not a long-term problem as the leaves are lost in the autumn. Pests include Japanese beetles, aphids, lace bugs and various species of moths.

## Cultivation and uses

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*Tilia cordata* is widely grown as an ornamental tree. It was much planted to form avenues in 17th and early 18th century landscape planning. A famous example is Unter den Linden in Berlin. It is also widely cultivated in North America as a substitute for the native *Tilia americana* (American linden or basswood) which has a larger leaf, coarser in texture; there it has been renamed "Little-leaf Linden". It is popular as both a shade tree with its dense canopy, an ornamental tree with its architectural shape and a street tree. In the USA, *Tilia cordata* has been planted in Wellesley, MA; Modesto, CA; Chicago, IL; Indianapolis, IN; and Atlanta, GA as street trees. In Europe, there are espaliered trees owing to the ability to survive heavy pruning. *Tilia cordata* is an easy tree to train for bonsai when the training is not done all at once. Letting the tree recoup in between sessions over a period of several months creates a healthy, good-looking miniature tree. Prior to the advent of firearms, it was also commonly used for making shields (as referenced in *Beowulf*).

*Tilia cordata* survives best in a soil pH range of 5.0 to 8.0. USDA Hardiness Zone 3-7. The tree prefers moist, well drained soil, but can survive flooding; it is not highly drought tolerant. It does not do well in soils with high salinity.

## Notable trees

The Najevnik linden tree (Slovene: *Najevska lipa*), about 700 years old *Tilia cordata*, is the thickest tree in Slovenia. It is a place of cultural events, and every June a national meeting of Slovene politicians takes place under it.

## Hybrids

- Common lime: *T. cordata* readily hybridises with *Tilia platyphyllos*; the hybrid is commonly known as common lime, *Tilia* × *europaea* (syn. *T.* × *vulgaris*).

## Cultivars

- '*Corinthian*' ('Corzam') – dense, uniform limb spacing creates a compact, pyramidal, formal shape; darker and smaller leaves; resistant to Japanese beetles.
- '*Greenspire*' – the most common, a cross between the cultivar 'Euclid' and a selection from the Boston Parks, broadly used as a street tree, survives better under difficult conditions, overall a good looking, quick growing tree.

## **Linden flower tea**

In the countries of Central, Southern and Western Europe, linden flowers are a traditional herbal remedy made into an herbal tea called Tilleul (linden flower tea).

## **Honey**

A monofloral honey is produced by bees using the trees and is widely used all over Europe. "Linden honey" is said to be nutritious and to have medicinal qualities. The young leaves can be eaten as a salad vegetable. Often cattle graze upon them.

## **Linden wood**

The white, finely-grained wood is not a structurally strong material but a classic choice for refined woodcarvings such as those by Grinling Gibbons for medieval altarpieces, such as the Altar of Veit Stoss. Linden wood was the prime choice for the carvings in St. Paul's Cathedral, Windsor Castle, and Chatsworth. It is also commonly used for lightweight projects such as carved spoons, light furniture, bee hives and honeycomb frames.

## **Cultural significance**

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*Tilia cordata* is the national tree of the Czech Republic and the Slovak Republic. The leaf of *Tilia cordata* is also considered a national symbol of Slovenia.