



Plants For A Future

*Edible, medicinal and useful plants
for a healthier world*

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Database Name:

Morus alba - L.

Keyword:

White Mulberry

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| | | | |
|------------------|---|----------------------|--|
| Author | L. | Botanical references | 11, 200, 266 |
| Family | Moraceae | Genus | Morus |
| Synonyms | | | |
| Known Hazards |  <p>One report suggests that the raw fruit contains hallucinogens[62]. This fruit is frequently eaten in various parts of the world, there are even some named varieties, and no such effects have been mentioned elsewhere, nor observed by the writer when he has eaten the fruit. Possibly the unripe fruit was being referred to in the report, though even this would be surprising[K].</p> | | |
| Range | E. Asia - central and northern China. | | |
| Habitat | Not known in a truly wild situation. | | |
| Edibility Rating |  4 (1-5) | Medicinal Rating |  3 (1-5) |

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A deciduous Tree growing to 18m by 10m at a medium rate.

It is hardy to zone 4. It is in flower in May, and the seeds ripen from July to August. The flowers are monoecious (individual flowers are either male or female, but both sexes can be found on the same plant) The plant is self-fertile.

The plant prefers light (sandy), medium (loamy) and heavy (clay) soils and requires well-drained soil. The plant prefers acid, neutral

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and basic (alkaline) soils. It can grow in semi-shade (light woodland) or no shade. It requires moist soil and can tolerate drought. The plant can tolerate strong winds but not maritime exposure.

Habitats

Woodland Garden; Secondary; Sunny Edge; Dappled Shade;

Cultivars: (as above except)

'Beautiful Day'

'Downing'

'Fegyvernekiana'

'Pendulum'

'Russian'

Edible Uses

Edible Parts: [Fruit](#); [Inner bark](#); [Leaves](#); [Manna](#).

Edible Uses: [Tea](#).

Fruit - raw[2, 7, 158]. A sweet taste, but the fruit is usually insipid[3, 11]. It contains about 1.5% protein, 0.5% fat, 8% carbohydrate, 0.7% malic acid[179]. Fruits of the cultivar 'Pendulum' tried at Kew in July 1994 had a pleasant flavour[K]. A richer flavour develops if the fruit is dried, it can then be used as a raisin substitute. The fruit is up to 25mm long[200]. Some caution is advised, see the notes above on toxicity. Per 100 g, the fruit is reported to contain 87.5 g water, 1.5 g protein, 0.49 g fat, 8.3 g carbohydrates, 1.4 g fiber, 0.9 g ash, 80 mg Ca, 40 mg P, 1.9 mg Fe, 174 IU vit. A, 9 ?g thiamine, 184 µg riboflavin, 0.8 mg nicotinic acid, and 13 mg ascorbic acid. Young leaves and shoots - cooked[105, 183]. A famine food, used when all else fails[177]. The leaf makes a good vegetable, it is rich in carotene and calcium[179]. Protein preparations from young mulberry leaves form an excellent supplement to protein-deficient diets[269]. The dry leaves contain 18 - 28.8% protein, 0.2 - 0.7% Magnesium, 0.8 - 13.6% soluble sugars, 0.6 - 1.4% phosphorus, 2 - 3.9% potassium, 1.4 - 2.4% calcium, 0.8 - 1.8% aluminium, 0.05 - 0.26% iron, 1.8 - 2.6% silica, and 0.3 - 0.56% sulphur[269]. The leaf also contains 10% tannin[179]. Inner bark - roasted and ground into a meal then used as a thickener in soups etc or mixed with cereals when making bread. A famine food, used when all else fails[179]. The tree is said to be a source of an edible manna[183]. Young shoots can be used as a tea substitute[183].

Composition

Figures in grams (g) or milligrams (mg) per 100g of food.

Fruit (Fresh weight)

- 0 Calories per 100g
- Water: 87.5%
- Protein: 1.5g; Fat: 0.49g; Carbohydrate: 8.3g;

- Fibre: 1.4g; Ash: 0.9g;
- Minerals - Calcium: 80mg; Phosphorus: 40mg; Iron: 1.9mg; Magnesium: 0mg; Sodium: 0mg; Potassium: 0mg; Zinc: 0mg;
- Vitamins - A: 174mg; Thiamine (B1): 0mg; Riboflavin (B2): 0mg; Niacin: 0.8mg; B6: 0mg; C: 13mg;
- Reference: [218]
- Notes:

Leaves (Dry weight)

- 0 Calories per 100g
- Water: 0%
- Protein: 23.5g; Fat: 0g; Carbohydrate: 0g; Fibre: 0g; Ash: 0g;
- Minerals - Calcium: 0mg; Phosphorus: 0mg; Iron: 0mg; Magnesium: 0mg; Sodium: 0mg; Potassium: 0mg; Zinc: 0mg;
- Vitamins - A: 0mg; Thiamine (B1): 0mg; Riboflavin (B2): 0mg; Niacin: 0mg; B6: 0mg; C: 0mg;
- Reference: [218, 269]
- Notes: The analysis also gives figures for various salts found in the leaves, but does not give figures for the pure minerals.

Medicinal Uses

[Analgesic](#); [Anthelmintic](#); [Antiasthmatic](#); [Antibacterial](#); [Antirheumatic](#); [Antitussive](#); [Astringent](#); [Diaphoretic](#); [Diuretic](#); [Emollient](#); [Expectorant](#); [Hypoglycaemic](#); [Hypotensive](#); [Odontalgic](#); [Ophthalmic](#); [Pectoral](#); [Purgative](#); [Sedative](#); [Tonic](#).

The white mulberry has a long history of medicinal use in Chinese medicine, almost all parts of the plant are used in one way or another [238]. Recent research has shown improvements in elephantiasis when treated with leaf extract injections and in tetanus following oral doses of the sap mixed with sugar[238]. The leaves are antibacterial, astringent, diaphoretic, hypoglycaemic, odontalgic and ophthalmic [176, 218, 238]. They are taken internally in the treatment of colds, influenza, eye infections and nosebleeds[176, 238]. An injected extract of the leaves can be used in the treatment of elephantiasis and purulent fistulae[176]. The leaves are collected after the first frosts of autumn and can be used fresh but are generally dried[238]. The stems are antirheumatic, antispasmodic, diuretic, hypotensive and pectoral[176, 218, 238]. They are used in the treatment of rheumatic pains and spasms, especially of the upper half of the body, high blood pressure[176]. A tincture of the bark is used to relieve toothache[7]. The branches are harvested in late spring or early summer and are dried for later use[238]. The fruit has a tonic effect on kidney energy[218, 238]. It is used in the treatment of urinary incontinence, dizziness, tinnitus, insomnia due to anaemia,

neurasthenia, hypertension, diabetes, premature greying of the hair and constipation in the elderly[176, 238]. The root bark is antiasthmatic, antitussive, diuretic, expectorant, hypotensive and sedative[176, 238]. It is used internally in the treatment of asthma, coughs, bronchitis, oedema, hypertension and diabetes[176, 238]. The roots are harvested in the winter and dried for later use[238]. The bark is anthelmintic and purgative, it is used to expel tape worms [240]. Extracts of the plant have antibacterial and fungicidal activity [218].

Other Uses

Biomass; Dye; Fibre; Shelterbelt; Tannin; Wood.

A fibre is obtained from the bark of one-year old stems, it is used in weaving clothes etc[7, 74, 266]. The stem bark is fibrous and is used in China and Europe for paper making[266, 269]. The twigs are used as binding material and for making baskets[269]. A brown dye is obtained from the trunk[178]. The leaves contain 10% tannin[179]. This tree can be grown as a part of a shelterbelt. The cultivar 'Tartarica' has been especially mentioned[200], it is very suitable for northern latitudes and is much used as a shelterbelt in Russia[269]. The wood of the mulberry is a potentially excellent source of ethanol, with yields of up to 6% from sawdust treated with acid and then given four days incubation[269]. Wood - light to moderately heavy, hard, durable, fine and close-grained, though it shows a tendency to warp. Due to its elasticity and flexibility when steamed, it is valued for making sports equipment such as tennis rackets and cricket bats, being considered as good as ash (*Fraxinus excelsior*)[238, 269]. It is also used for boat building, furniture, agricultural implements etc [145, 149, 158, 269]. It furnishes a medium grade fuel wood[269].

Cultivation details

Succeeds in a variety of soils[269], though it prefers a warm well-drained loamy soil in a sunny position[1, 11]. Plants are fairly wind-resistant[200], though the branches are often killed back when growing in strong maritime exposure[K]. At least some cultivars are drought resistant, the form 'Tatarica' has been especially mentioned [183]. The white mulberry is occasionally cultivated for its edible fruit, there are a number of varieties[183] and sub-species varying greatly in the quality of their fruit. The form *M. alba multicaulis*. (Perretot.)Loud. [synonym *M. multicaulis*. Perretot.] has been specially mentioned for its fruit[105]. The cultivars 'Nana' and 'Fegyvernekiana' are dwarf forms only making shrub size[182]. The cultivar 'Pendulum' was seen growing at Kew in July 1994 with a heavy crop of tasty fruits, the first of which were just ripening[K]. Mulberries have brittle roots and so need to be handled with care when planting them out[238]. Any pruning should only be carried out in the winter when the plant is fully dormant because mulberries bleed badly when cut[238]. Ideally prune only badly placed branches and dead wood[238]. This is a good tree for growing grapes into[20].

The grapes are difficult to pick but always seem to be healthier and free from fungal diseases[201]. Plants in this genus are notably resistant to honey fungus[200].

Propagation

The seed germinates best if given 2 - 3 months cold stratification[80, 98]. Sow the seed as soon as it is ripe if possible, otherwise in February in a cold frame. The seed usually germinates in the first spring, though it sometimes takes another 12 months. Prick out the seedlings into individual pots when they are large enough to handle and grow them on in the cold frame for their first winter. Plant them out in late spring or early summer after the last expected frosts. Cuttings of half-ripe wood, 7 - 10cm with a heel, July/August in a frame. Plant out in spring. A good percentage take, though they sometimes fail to thrive[78, 113]. Cuttings of mature wood of the current season's growth, 25 - 30cm with a heel of 2 year old wood, autumn or early spring in a cold frame or a shady bed outside[78, 113, 200]. Bury the cuttings to threequarters of their depth. Layering in autumn[200].

Cultivars

'Beautiful Day'

The medium to large fruit is pure white in colour, the flesh is sweet, very good for eating fresh and excellent dried[183]. A medium-size, spreading, very productive tree, it requires little care and no spraying[183].

'Downing'

The medium-size fruit is about 30mm long and 15mm in diameter, it is pink with a sweet flavour and no tartness[183]. A wide-spreading, hardy and productive tree[183].

'Fegyvernekiana'

A dwarf form that only makes shrub size[182].

'Hunza Seedless'

The fruits are medium-sized, pure white and seedless[183]. They are usually dried and stored by the people of Hunza, who use the fruit as a staple part of their diet[183].

'Nana'

A dwarf form that only makes shrub size[182].

'New American'

Developed in N. America, it is considered to be the best cultivar for producing good quality fruit in northern latitudes[269].

'Pendulum'

This cultivar was seen growing at Kew in July 1994 with a heavy crop of tasty fruits, the first of which were just ripening [K].

'Russian'

The reddish-black fruit is of good quality when fully ripe[183]. A very hardy and drought-resistant bushy tree, growing to 10 metres tall[183]. It is often used as a shelterbelt tree and wildlife food, the wood is hard and durable[183].

'Thorburn'

Developed in N. America, it is considered to be one of the best cultivars for producing good quality fruit in northern latitudes [269].

'Trowbridge'

Developed in N. America, it is considered to be one of the best cultivars for producing good quality fruit in northern latitudes [269].

Tehama'

The very large plump fruit is 7cm long and 12mm wide[183]. It is very sweet and has a succulent, melting flesh[183]. An attractive, large-leaved tree, its hardiness is undetermined but it is probably adapted to zones 7 - 9[183].

Links

References

[K] Ken Fern

Notes from observations, tasting etc at Plants For A Future and on field trips.

[1] **F. Chittendon.** *RHS Dictionary of Plants plus Supplement.* 1956 Oxford University Press 1951

Comprehensive listing of species and how to grow them. Somewhat outdated, it has been replaced in 1992 by a new dictionary (see [200]).

[2] **Hedrick. U. P.** *Sturtevant's Edible Plants of the World.* Dover Publications 1972 ISBN 0-486-20459-6

Lots of entries, quite a lot of information in most entries and references.

[3] **Simmons. A. E.** *Growing Unusual Fruit.* David and Charles 1972 ISBN 0-7153-5531-7

A very readable book with information on about 100 species that can be grown in Britain (some in greenhouses) and details on how to grow and use them.

[7] **Chiej. R.** *Encyclopaedia of Medicinal Plants.* MacDonald 1984 ISBN 0-356-10541-5

Covers plants growing in Europe. Also gives other interesting information on the plants. Good photographs.

[11] **Bean. W.** *Trees and Shrubs Hardy in Great Britain. Vol 1 - 4 and Supplement.* Murray 1981

A classic with a wealth of information on the plants, but poor on pictures.

[20] **Riotte. L.** *Companion Planting for Successful Gardening*. Garden Way, Vermont, USA. 1978 ISBN 0-88266-064-0
Fairly good.

[62] **Elias. T. and Dykeman. P.** *A Field Guide to N. American Edible Wild Plants*. Van Nostrand Reinhold 1982 ISBN 0442222009
Very readable.

[74] **Komarov. V. L.** *Flora of the USSR*. Israel Program for Scientific Translation 1968

An immense (25 or more large volumes) and not yet completed translation of the Russian flora. Full of information on plant uses and habitats but heavy going for casual readers.

[78] **Sheat. W. G.** *Propagation of Trees, Shrubs and Conifers*. MacMillan and Co 1948

A bit dated but a good book on propagation techniques with specific details for a wide range of plants.

[80] **McMillan-Browse. P.** *Hardy Woody Plants from Seed*. Grower Books 1985 ISBN 0-901361-21-6

Does not deal with many species but it is very comprehensive on those that it does cover. Not for casual reading.

[98] **Gordon. A. G. and Rowe. D. C. f.** *Seed Manual for Ornamental Trees and Shrubs*. 0

Very comprehensive guide to growing trees and shrubs from seed. Not for the casual reader.

[105] **Tanaka. T.** *Tanaka's Cyclopaedia of Edible Plants of the World*. Keigaku Publishing 1976

The most comprehensive guide to edible plants I've come across. Only the briefest entry for each species, though, and some of the entries are more than a little dubious. Not for the casual reader.

[113] **Dirr. M. A. and Heuser. M. W.** *The Reference Manual of Woody Plant Propagation*. Athens Ga. Varsity Press 1987 ISBN 0942375009

A very detailed book on propagating trees. Not for the casual reader.

[145] **Singh. Dr. G. and Kachroo. Prof. Dr. P.** *Forest Flora of Srinagar*. Bishen Singh Mahendra Pal Singh 1976

A good flora of the western Himalayas but poorly illustrated. Some information on plant uses.

[149] **Vines. R. A.** *Trees of Central Texas*. University of Texas Press 1987 ISBN 0-292-78958-3

Fairly readable, it gives details of habitats and some of the uses of trees growing in Texas.

[158] **Gupta. B. L.** *Forest Flora of Chakrata, Dehra Dun and Saharanpur*. Forest Research Institute Press 1945

A good flora for the middle Himalayan forests, sparsely illustrated. Not really for the casual reader.

[176] **Yeung. Him-Che.** *Handbook of Chinese Herbs and Formulas.* Institute of Chinese Medicine, Los Angeles 1985

An excellent Chinese herbal giving information on over 500 species. Rather technical and probably best suited to the more accomplished user of herbs.

[177] **Kunkel. G.** *Plants for Human Consumption.* Koeltz Scientific Books 1984 ISBN 3874292169

An excellent book for the dedicated. A comprehensive listing of latin names with a brief list of edible parts.

[178] **Stuart. Rev. G. A.** *Chinese Materia Medica.* Taipei. Southern Materials Centre 0

A translation of an ancient Chinese herbal. Fascinating.

[179] **Reid. B. E.** *Famine Foods of the Chiu-Huang Pen-ts'ao.* Taipei. Southern Materials Centre 1977

A translation of an ancient Chinese book on edible wild foods. Fascinating.

[182] **Thomas. G. S.** *Ornamental Shrubs, Climbers and Bamboos.* Murray 1992 ISBN 0-7195-5043-2

Contains a wide range of plants with a brief description, mainly of their ornamental value but also usually of cultivation details and varieties.

[183] **Facciola. S.** *Cornucopia - A Source Book of Edible Plants.* Kampong Publications 1990 ISBN 0-9628087-0-9

Excellent. Contains a very wide range of conventional and unconventional food plants (including tropical) and where they can be obtained (mainly N. American nurseries but also research institutes and a lot of other nurseries from around the world.

[200] **Huxley. A.** *The New RHS Dictionary of Gardening. 1992.* MacMillan Press 1992 ISBN 0-333-47494-5

Excellent and very comprehensive, though it contains a number of silly mistakes. Readable yet also very detailed.

[201] **Allardice.P.** *A - Z of Companion Planting.* Cassell Publishers Ltd. 1993 ISBN 0-304-34324-2

A well produced and very readable book.

[218] **Duke. J. A. and Ayensu. E. S.** *Medicinal Plants of China* Reference Publications, Inc. 1985 ISBN 0-917256-20-4

Details of over 1,200 medicinal plants of China and brief details of their uses. Often includes an analysis, or at least a list of constituents. Heavy going if you are not into the subject.

[238] **Bown. D.** *Encyclopaedia of Herbs and their Uses.* Dorling Kindersley, London. 1995 ISBN 0-7513-020-31

A very well presented and informative book on herbs from around the globe. Plenty in it for both the casual reader and the serious student.

Just one main quibble is the silly way of having two separate entries for each plant.

[240] **Chopra. R. N., Nayar. S. L. and Chopra. I. C.** *Glossary of Indian Medicinal Plants (Including the Supplement)*. Council of Scientific and Industrial Research, New Delhi. 1986

Very terse details of medicinal uses of plants with a wide range of references and details of research into the plants chemistry. Not for the casual reader.

[266] [Flora of China](#) 1994

On-line version of the Flora - an excellent resource giving basic info on habitat and some uses.

[269] **Duke. J.** *Handbook of Energy Crops* - 1983

Published only on the Internet, excellent information on a wide range of plants.

Readers Comments

Morus alba

Michel H. Porcher Wed Jun 16 00:57:53 2004

Latin and Worldwide Common Names From Porcher Michel H. et al. 1995 - 2020, Sorting Morus Names. Multilingual Multiscript Plant Name Database - A Work in Progress. Institute for Land & Food Resources. The University of Melbourne. Australia. <http://gmr.landfood.unimelb.edu.au/Plantnames/Sorting/Morus.html> (2004).

Link: [Multilingual Multiscript Plant Name Database](#) for Morus alba, Morus australis, Morus bombycis, Morus cathayana, Morus mongolica, Morus nigra, Morus rubra, Morus tiliaefolia

Morus alba

Dee Van Beek Sun Mar 20 20:06:47 2005

We live in NW Washington State and are wondering where we might find either the Tahama white mulberry or the Hunza seedless or the Beautiful Day varieties. Can you help us with this matter. Thank you and I await your response. Howdee3@juno.com.

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