

Mate (*Ilex paraguariensis*)



Mate is a small, evergreen, dioecious (separate male and female trees) broadleaved tree from the Chaco region of central South America. Dried leaves are used in an infusion or decoction to make mate tea, a drink widely regarded, almost venerated, in southern Brazil, Paraguay, Uruguay and Argentina. The cultural importance of mate preparation has been compared to the Japanese tea ceremony.

Main values

Mate is a tonic and stimulant containing caffeine (in the form of mateine), theobromine, theophylline and trigonelline. Vitamin C is said to be an important component along with other mineral nutrients. It is very highly regarded as a stimulating, refreshing drink, and is considered by its followers to be far superior to coffee and tea. Mate extracts have also been incorporated into popular tonic fizzy drinks.

It is used against headaches and migraines, and as a digestive aid. It is also said to have anthelmintic, diuretic, mild laxative and cardiotoxic qualities.

Characteristics

In recent decades, demand for mate (also called mate tea and yerba mate) has spread to the Middle East, Germany and the United States. In New Zealand, the retail

price of broken leaves rose from NZ\$45/kg in 1993 to NZ\$52 in 1998. This compares to around \$10/kg for common tea. At present, demand is such that over half of the world production is harvested from the wild; plantations are insufficient. As wild reserves diminish, new plantations are required to meet demand.

Environment

Mate occurs on slightly acid tropical oxisol type soils, which are high in iron. These are often poorly drained and may have a hardpan. The pH is usually acid, down to 4.5. Mate thrives in a climate that is hot and very wet in summer (>1000 mm precipitation), but dry and cool in winter. Despite its tropical origins, mate has adapted to southern New Zealand. This is because in its native South America mate climbs into montane areas with mean annual

temperatures of 17°C or less and where frosts are not uncommon in winter. At Invermay (near Dunedin), plants have been grown since 1993 and have produced healthy foliage each year, flowering since 1997. Some plants grew well up to the flowering stage at Riwaka (Nelson) and plants are also growing on the Otago Peninsula.

Management

Plants are either female or male and are propagated from cuttings. These flower as soon as they are established. Seed establishment is possible but slow and unreliable.

Mate requires a lengthy hardening period in Otago. Plants grown in greenhouses are soft and may take up to two years to become tolerant to heavy frosts. At Invermay, young plants hardened for a few months have tolerated -4°C without damage. Blackening of leaves and apical death occurs at temperatures below this. However, the lowest temperature it will tolerate is yet to be defined. It is possible that nutrient status and vigour of plants will influence frost tolerance. At this stage there is no production information in New Zealand.

Plants grow well in full sunlight or partial shade. Shelter is believed to be beneficial. Plants are drought hardy to some extent but maximum leaf production will be achieved by supplying water if plants are likely to suffer from water stress during the growing season.

The ground must be prepared for planting if possible at least two weeks in advance by removing weeds in a 1 m wide strip. Suggested planting distance within rows is 3 m. Distance between rows should be 3 m or more, depending on the harvesting techniques (manual or mechanical) planned. Hedge type plantations (as in tea) may use distances of less than 2x2 m. Mulch reduces evaporative losses of water. Plants should be watered during the establishment phase.

In New Zealand, plants grown in the greenhouse have had scale insects, but no pests have been recorded outdoors.

Harvest and processing

Leaves are harvested from the tree and after a delicate and precise drying technique, are processed mostly into broken dried leaf material and twigs. The processing techniques are responsible to a large degree for the quality and price. Extracts are incorporated into health products.

Research needed

Future research should focus on agronomy, cropping times and methods, drying, extraction and concentration techniques, and new added value products. The quality of New Zealand grown product should also be assessed. Given the elaborate drying techniques required, cooperative processing may be beneficial. Different provenances must also be evaluated.

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Disclaimer

The above notes are intended to provide growers who have no information with a basic understanding of growth requirements. They are written in good faith using information available to the author at the date of writing. The plants are as yet little-known in New Zealand and experimental results will help us understand their requirements better. No liability is implied in writing these notes for losses or damages from their application or for statements made about the potential of the crop.