

LOCAL NAMES

English (tamarugo)

BOTANIC DESCRIPTION

*Prosopis tamarugo* is a deciduous open-crowned tree up to 18 m tall, the trunk to 80 cm in diameter; with a dense mat of lateral roots and deep taproot (to 6 m deep on tree 15 m tall). Crown globe-like and irregular in shape; fissured bark, dark grey.

Leaves unijugate, the pinnae 3-4 cm long or less, with 10-15 pairs of leaflets; leaflets linear obtuse or acutish, 4-8 mm long.

Flowers golden yellow, in long axillary cylindrical spikes. Stipules spiny, 5-38 mm long. Brown calyx 1.5 mm long; corolla 4-5 mm long; ovary villous.

Pod arcuate, turgid, brown or stramineous, 2-8 cm long, 2-3.5 cm in diameter with ca 6-8 seeds embedded in a brownish edible pulp, seeds ovate, 3-4.3 mm long.

BIOLOGY

Despite its anemophilous pollination, insect participation seems important to fructification. The solitary bee, *Centris mixta*, is the most important insect pollinator.

**ECOLOGY**

Found on salty-sandy or clay loam soils, occasionally with a 40 cm salt encrustation, ranging from warm temperate desert to thorn steppe through subtropical desert to subtropical thorn forest life zones. The climate is the normal desert climate; the most biologically significant factors are: high day-time temperatures, a great day-to-night temperature range, almost total lack of rainfall, occasional mist, relatively low humidity and intense sunlight. If introduced into more favourable climates elsewhere, this species might spread out of control and become a noxious weed.

**BIOPHYSICAL LIMITS**

Altitude: 1 000-1 500 m, Mean annual temperature: -12 to 36 deg. C, Mean annual rainfall: Less than 10 mm

Soil type: The tree is found on salty, salty-sandy or clay-loam soils, sometimes with a 40 cm salt encrustation at the surface. The soils are composed of deposits of fluvial origin from the cordillera of the Andes, and have a surface salt crust ranging in thickness from 10-60 cm or more.

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Chile  
Exotic: Argentina, India



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

**PRODUCTS**

**Fodder:** Tree produces abundant fodder, palatable to sheep, cattle and goats. It is said that older stands will support 26 sheep per hectare. Care must be taken that they do not destroy the lowest branches, which are important in the plant's water economy, because they shade the dense lateral root zone near the soil surface.

**Apiculture:** In its natural habitat, imported *Apis mellifera* has served as a good pollinator as well as honey producer from the foraging.

**Fuel:** It is used as fuelwood. In the part of the Atacama Desert in Northern Chile, the tamarugo stands are so over-exploited for firewood that they have been reduced to scattered stands.

**Timber:** The wood is used for furniture, although it is very heavy and difficult to work because it is very hard.

**SERVICES**

**Reclamation:** The potential value of the tamarugo was noted as early as 1918 when Maldonado, a forest inspector called for a tamarugo forest preserve, considering it most important for the Chilean desert. It has the promise for reforesting deserts, especially those with thick surface-salt encrustation. Man-made tamarugo plantations are being introduced in the Tamarugal Pampa which are transforming the absolute desert ecosystem into an agro-ecosystem. The result, is a noteworthy increase in overall productivity in one of the most inhospitable regions of the world.

**Nitrogen fixing:** *P. tamarugo* is an efficient atmospheric nitrogen- fixer, where it grows.

**TREE MANAGEMENT**

Plantation spacings in the Tamarugal Pampa (Chile) are at 10 x 10 m and 15 x 15 m, taking into consideration the tree's growth and its function as fodder. Two types of pruning are normally employed, the long pruning, to increase fruit yield and, secondarily, to increase foliage thickness. The other pruning method, short pruning is aimed at adding vigour to the tree. This enables the formation of great foliar mass and increase in fruit production. The tree coppices readily.

**GERMPLASM MANAGEMENT**

Seed storage behaviour is orthodox.

**PESTS AND DISEASES**

Insect pests of tamarugo include *Leptotes trigemmatum* (purple moth), *Tephrinopsis memor* (measuring worm), *Hemiberlesia rapax*, *Heteropysylla texana*, *Aphis* spp (tamarugo louse), Cecidomyids, *Eriophyes tamarugae*, *Ithome* spp (flower moth), *Leptotes trigemmatum*, *Tephrinopsis memor*, *Frankliniella rodeos* (tamarugo thrips), *Cryptophlebia carpophagoides* (fruit moth), and *Scutobruchus gastoi* (tamarugo worm). Marked increases in pod production are evident following insecticide treatment. Untreated tamarugo normally show considerable abortion of young pods, much pod stunting, disfiguration, and insect holes (bruchid emergence holes). Fungal infestations, transmitted through root grafting can result into hectares of dead tamarugo trees.

**FURTHER READING**

Arturo B. 1976. A monograph of the genus *Prosopis* (Leguminosae subfam. Mimosoideae). *Journal of the Arnold Arboretum*. 57:469-471.

Habit M (ed.). 1985. The current state of knowledge in *Prosopis tamarugo*: Papers presented at the International Round Table on *Prosopis tamarugo* Phil., Arica, Chile. FAO, Rome.

Hong TD, Linington S, Ellis RH. 1996. Seed storage behaviour: a compendium. *Handbooks for Genebanks*: No. 4. IPGRI.

Roderick WD (ed.). 1992. *Prosopis* species, aspects of their value, research and development: Proceedings of a Symposium held by Cord, University of Durham, UK.

**SUGGESTED CITATION**

Orwa C, A Mutua, Kindt R , Jamnadass R, S Anthony. 2009 *Agroforestry Database: a tree reference and selection guide* version 4.0 (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)