

Argania spinosa

(L.) Skeels
Sapotaceae

argan

LOCAL NAMES

English (Moroccan iron wood, iron wood, bois de fer, argan tree, araniér);
German (arganbaum); Spanish (argán); Trade name (argan)

BOTANIC DESCRIPTION

Argania spinosa is a medium-sized, thorny, evergreen tree, 8-10 m high, occasionally attaining 21 m with main trunk 1 m in diameter. Its knotty trunk can sometimes have several criss-crossed stems.

Leaves small, clustered, lanceolate, evergreen, tough, paler on the underside.

Inflorescence axillary; flower greenish-yellow, hermaphrodite.

Fruit green to bright yellow, round to oval, ovoid drupe; epicarp thick, bitter, gummy; mesocarp plus endocarp fleshy, containing an unpleasant milky latex. The fruit is beaten off the branches and, in the past, it was fed to goats then the nut recovered from the animal dung. Today, in many cases, the fruit is gathered and the nut extracted by machines.

There are 1-3 nuts per fruit; nuts oval, brown, about 2 cm long, with an extremely hard shell, containing 1-3 almond-shaped kernels

BIOLOGY

The flowering is in May-June. The species is drought resistant, shedding foliage and remaining in a state of dormancy for several years during prolonged drought. Production of fruits is at its maximum when the tree is 60 years old. The average yield of fruit per tree is estimated to be 8 kg per annum.

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ECOLOGY

The trees cling to the slopes of rough hills and seem to thrive between the rocks on poor soil. Growing up to an elevation of 1500 m, they only need annually from 100 to 200 mm of rain. Unable to withstand cold, the Argan tree is resistant to extreme heat and drought, making it ideal for the climate of the arid southeastern Moroccan coast. The associated species in the Argania woodlands includes *Periploca laevigata*, *Senecio anthephorbium*, *Launaea arborescens*, *Warionia saharae*, *Acacia gummifera*, *Balanites aegyptiaca*, *Maerua crassifolia*, *Rhus trpartitum*, *Withania frutescens*, *Euphorbia officinarum*, *Cytisus albidus*, *Ephedra altissima*, and *Tetraclinis articulata*.

BIOPHYSICAL LIMITS

Mean annual temperature: 18-20°C

Mean annual rainfall: 100-500 mm

Altitude: 0-1500 m

Soil type: It is well suited to calcareous soils, sandy deposits and relatively poor semi desert soils conditions but not drifting sands and water-logged soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Morocco

Exotic: Israel, Mexico



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.

argan

PRODUCTS

Food: It is an importance as a source of edible (cooking) oil, which is an excellent source of vitamin E. The white seeds contain up to 50% of light brown oil with oil production being between 1000 to 2000 tons per year. This oil has a high nutritional value in the human diet. The locals mix oil with almonds and honey to make an almond butter; it also mixed with wheat germ and honey to make gruel. The residue from the kernels after oil extraction is a thick chocolate-coloured paste called 'amlou' which is sweetened and served as a dip for bread at breakfast time in Berber households. Its flavour is similar to that of peanut butter.

Fodder: It is a major source of forage for sheep, goats and cattle. When goats eat the fruit, the fleshy part is digested but the nut, because of its hard shell, is excreted. Later, the nuts are collected by farmers to produce oil. The sun-dried cake residue is also fed to livestock although this reduces the milk quality.

Fuel: The hard, heavy and durable wood gives good charcoal and firewood. The nut-shells are also burned for cooking.

Timber: The wood of the argan, amazingly indestructible by insects, has been used for centuries in carpentry, charcoal, construction and utensils at local level.

Apiculture: Bees often nest in these trees, providing a treasured source of honey

Lipids: Oil is the most valuable product derived from the tree. In the Essaouira region alone, oil production is between 1000 to 2000 tons per year. The ratio of total unsaturated to total saturated fatty acids is around 4:5. Argan oil contains about 80% polyunsaturated fatty acids of which 30% is linoleic acid. The specific composition of the oil produced makes it a resource for nutritional, cosmetic and medical usage

Medicine: It has been scientifically proven that argan oil is rich in vitamin E and has properties which lower the cholesterol levels, stimulates circulation of the blood, facilitates digestion and strengthens the body's natural defences. Berbers of the south west of Morocco use the argan oil to cure chicken pox, juvenile acne and stretch marks on pregnant woman.

SERVICES

Erosion control: *Argania spinosa* shields thin soils from erosion especially in overgrazed lands. Its roots facilitate water infiltration and replenish ground water hence stabilisation of environmental conditions. The roots of the argan tree grow deep in search of water, helping to bind the soil and prevent erosion.

Shade or shelter: It provides valuable shade for humans and livestock as well as the shade protects pasture grasses from the extreme evapotranspiration that would result from direct exposure to sunlight. Pasture grasses grow in the tree's shade, away from the extreme conditions in direct sunlight.

Reclamation: The argan tree has a fundamental role in the ecological balance. It maintains soils with its roots, insures their fertility and protects them from the erosion which threatens a vast part of the land. Moreover, it facilitates water infiltration and aquifer replenishment. Argan woodlands form a green belt or functions as a buffer against desert advancement in southern Morocco.

Boundary or barrier or support: Argan brushwood is used for fencing and windbreaks.

Intercropping: It can be intercropped with other species hence an agroforestry species.

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TREE MANAGEMENT

The trees start to bear fruits when 5-6 years old with maximum production at 60 years and has a life span of 200-250 years. Trees coppice readily when cut. The tree also has the ability to retreat into a state of dormancy for a prolonged period in the advent of drought conditions and thus does not necessarily bear fruit every year.

The tree has been protected since 1925 by a law, which regulates its use by local people, the woodlands suffer from continued degradation from intense use such as fuelwood gathering and grazing.

FURTHER READING

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The Argan Tree - Species Profile
(http://www.panda.org/about_wwf/where_we_work/europe/where/morocco/argan_tree.cfm)

SUGGESTED CITATION

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