Lawsonia inermis

L.

Lythraceae

mendhi, henna

LOCAL NAMES
Amharic (hina); Arabic (yoranna,hinná,hena,henna); Bengali (mendi,mehedi); Burmese (dan); Creole (flè jalouzi,ene); English (mignonette tree,henna tree,camphire,Egyptian privet,Zanzibar bark); Filipino (cinamomo); French (jalousie,fleurs,henné,réséda de France); Hindi (mehndi); Indonesian (inai,pakar kuku); Javanese (pacar kuku); Khmer (krâpéén); Lao (Sino-Tibetan) (kaaw); Malay (inai,pacar kuku,hinna); Sanskrit (mendika,ragangi,raktgarbha); Somali (erip); Spanish (resedá,henna); Swahili (mheni,mhina,mkokoa,mkokoa muhina,muina); Tamil (maruthani,marithondi); Thai (thian daeng,thian khaao,thian king); Tigrigna (hina,elam); Trade name (henna,mendhi); Vietnamese (nhuôm móng tay,lâ mòn)

fruits and foliage (Trade winds fruit)

BOTANIC DESCRIPTION
Lawsonia inermis is a much-branched glabrous shrub or small tree 2-6 m in height, which may be spiny. Bark greyish-brown, unarmed when young, older plants with spine-tipped branchlets. Young branches quadrangular, green but turn red with age.

Leaves opposite, entire, subsessile, elliptic to broadly lanceolate, 1.5-5 x 0.5-2 cm, glabrous, acuminate; veins on the upper surface depressed.

Flowers small, white, numerous; in large pyramidal terminal cymes, fragrant, 1 cm across, 4 petals crumpled in the bud. Calyx with 2-mm tube and 3-mm spread lobes; petals orbicular to obovate, white or red; stamens 8, inserted in pairs on the rim of the calyx tube; ovary 4 celled, style up to 5 mm long, erect. Fruits small, brown, globose capsules 4-8 mm in diameter, many-seeded, opening irregularly, split into 4 sections, with a persistent style. Seeds 3 mm across, angular, with thick seed coat.

The specific epithet means unarmed or without spines.

BIOLOGY
Birds feed on the fruits of L. inermis and probably disperse the seeds.

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ECOLOGY
L. inermis is widely distributed throughout the Sahel and into Central Africa; it also occurs in the Middle East. It grows mainly along watercourses and in semi-arid regions and is adapted to a wide range of conditions. It can withstand low air humidity and drought. Henna requires high temperatures for germination, growth and development.

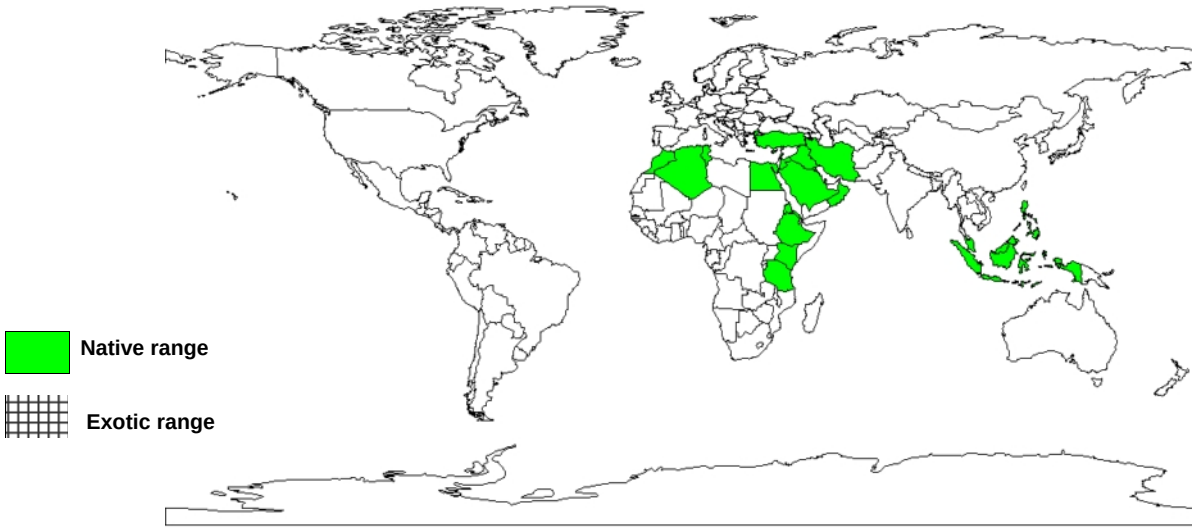
BIOPHYSICAL LIMITS
Mean annual temperature: 19-27 deg. C, Mean annual rainfall: 200-4200 mm

Soil type: Prefers sandy soils but can tolerate clays and poor, stony, sand soils; optimum soil pH is 4.3-8.

DOCUMENTED SPECIES DISTRIBUTION

Native: Algeria, Cyprus, Egypt, Eritrea, Ethiopia, Indonesia, Iran, Iraq, Jordan, Kenya, Kuwait, Lebanon, Libyan Arab Jamahiriya, Malaysia, Morocco, Oman, Philippines, Qatar, Saudi Arabia, Syrian Arab Republic, Tanzania, Tunisia, Turkey, Western Sahara, Yemen, Republic of

Exotic: Australia, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, China, Congo, Cote d'Ivoire, Democratic Republic of Congo, Gabon, Gambia, Ghana, Guinea, India, Liberia, Mali, Mauritania, Niger, Nigeria, Pakistan, Senegal, Sierra Leone, Spain, Sudan, Togo, Zanzibar



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: Leaves of L. inermis are browsed by livestock.

Fuel: Henna is a suitable source of firewood.

Timber: The wood of henna is fine grained, hard, and is used to make tent pegs and tool handles in India.

Fibre: In Turkana, Kenya, the stems are used for making fishing baskets.

Tannin or dyestuff: An orange-red dye is made by crushing the leaves and younger shoots to a grey-green powder. The powder is soaked in a mixture of strong tea and lemon juice and is used in Sudan, Middle Eastern countries and many Muslim communities in Africa for decorating hands, nails and feet with patterns. Henna is also used as a hair dye and conditioner as well as a colouring agent for leather and cloth. It may also be used to stain wood.

Medicine: Roots are regarded as a potent medicine for gonorrhoea and to enhance fertility in women; a decoction of them is considered to be diuretic or for treating blenorrhoea and pectoral for bronchitis. A reported constituent of the leaves is an oxynaphthoquinone called lawsone, which has antibiotic properties. Flower oil contains alpha- and beta-ionone, the latter being the main component. Leaf and flower infusions are applied externally for ulcers and rheumatism or are taken orally for tetanus, epilepsy and stomach pains; leaves are used in treatment of leprosy, jaundice and scurvy. Astringent roots are ground and rubbed on the heads of children to treat boils and eye diseases.

In Malaysia, fresh bruised leaves are used as poultices to relieve a burning sensation of the feet; to treat beriberi, skin diseases, boils, circumcision wounds and distension of the stomach; a decoction can also be gargled to treat gum boils, or prescribed to relieve abdominal pains after childbirth. It is an emmenagogue and an abortifacient. In Indonesia, a paste of the leaves is applied for diseases of the fingernails and for herpes infection; tea made from the leaves is said to be taken to prevent obesity, and an ointment made from very young fruits treats itches. In the Philippines, flowers are reported to be soporific.

Other products: The fragrant flowers are used as perfume, while small twigs are used as toothbrushes in Indonesia.

SERVICES
Erosion control: Trees are employed in soil conservation.

Shade/shelter: L. inermis can be grown as a live fence.

Ornamental: An attractive small tree that can be successfully grown in gardens.

TREE MANAGEMENT
Young plants must be protected from browsing animals and can be watered to increase growth rate. Fields are hoed once or twice in a year and weeded when required. Trees should be spaced at 15 cm within a row, with distance between the rows varying according to the production area; a dense spacing that gives up to 200 000 plants/ha can be employed. Under intensive commercial production, as in North Africa, the crop is irrigated during the dry season and heavily fertilized. In India, it is grown on a larger scale but less intensively, often without irrigation, and rarely fertilized.

The first harvest is taken 12 months after field planting by cutting the plant about 10-15 cm above ground level. Subsequently, 2 harvests are taken a year under rainfed conditions and 3 harvests may be possible with irrigation. Under rainfed conditions, dried-leaf yield in the 1st year may be about 200 kg/ha, while over the 2nd, 3rd and 4th years, yields normally range from 1000 to 1500 kg/ha. With irrigation, heavy fertilizer treatment and 3 croppings a year, peak yields in excess of 2000 kg/ha can be obtained. Maximum yields occur during the 1st 4-8 years after planting, but plants are often left in the field for 12-25 (max. 40) years.

Henna removes a large quantity of nutrients from the soil: a yield of 1000 kg dry leaves removes 180-190 kg nitrogen, 100-150 kg potassium and 10-30 kg phosphates.

For rainfed cultivation, the rainfall should be well distributed but with 2 dry periods a year to facilitate postharvest leaf drying. Leaves are dried in the shade to retain the green colour.

GERMPLASM MANAGEMENT
Seed storage behaviour is orthodox; long-term storage is feasible. On average, there are about 700 000 seeds/kg.

PESTS AND DISEASES
Very few pests and diseases attack L. inermis. A black root rot caused by Corticium koleroga and a bacterial leaf spot caused by Xanthomonas lawsoniae have been reported from India.

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SUGGESTED CITATION

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