Parkinsonia aculeata

L.

Fabaceae - Caesalpinioideae

Jerusalem thorn

LOCAL NAMES
Amharic (filfile,Ye eyerusalem eshoh); Arabic (sessaban,sesaban); Bengali (balati kikar); Bislama (shewina); Creole (madame naiz,madame yass); Dutch (boonchi strena); English (wonder tree,Mexican palo verde,blue palo verde,takataka tree,Barbados flower fence,Jerusalem thorn,horsebean,hardbean); French (epine de Jerusalem,arrête-bouef,genet epineux); German (Stacheliger Ginsterßaum); Gujarati (bawal,kikar,rombawal); Hindi (adanti,sima tumma,vilayati babul,vilayati kikar); Indonesian (adjao kase); Italian (Ginestra spinosa); Spanish (aroma extranjera,capinillio,capinillo,cina-cina,acacia de los masones,bayahonda blanca,palo de rayo,sulfato,sauce guajiro,retama,pinos japonés,pino japonés,junco marino,paloverde,espino,mataburro,lluvia de oro,acacia de agüijote,pauji); Swahili (mkeketa); Tigrigna (shewit hagai); Trade name (Jerusalem thorn); Yoruba (hanson sessabani)

P. aculeata, line plantings mixed with maize, Saotiago, Cape Verde Islands. (David Boshier)

P. aculeata habit: small branchy tree with heavy pod crop growing in semi-arid conditions, Manabi, Ecuador. (Colin E. Hughes)

Natural stand of P. aculeata growing on saline (with salt crust) deep black vertisols, Zacapa, Guatemala. (Colin E. Hughes)

BOTANIC DESCRIPTION
Parkinsonia aculeata is a small, spiny tree 4-10 m high, with a short and often crooked trunk up to 40 cm in diameter, often branching near the ground with a very open crown of spreading branches and very thin drooping foliage; green throughout the year, although appears leafless after leaflets fall; bark of trunk, branches and twigs smooth, yellow-green or blue-green and slightly bitter; twigs slender, slightly zigzag, finely hairy when young, often with spines, 3 or 1 remaining at nodes, including 2 short spines.

Leaves specialized, alternate, bipinnately compound, consisting of very short axis ending in spine 1-2 cm long, and 1 or 2 pairs of long, yellow-green drooping side axes, strips or streamers 20-30 cm long and 3 mm broad, flat and slightly thickened; each strip with 20-30 pairs of thin, oblong, green, small leaflets 3-5 mm long, which shed early; strips resembling a blade of grass continue functioning as leaves after leaflets fall.

Flower clusters 7.5-20 cm long at leaf bases, unbranched; flowers several on long, slender stalks, irregular and slightly pea shaped, fragrant, showy, golden yellow, 2 cm or more across; calyx a short tube with 5 narrow yellow-brown lobes turned back; corolla of 5 nearly round petals 10-13 mm long, yellow tinged with orange and hairy at base; upper petal slightly larger, red spotted and turning with withering; 10 green stamens with brown anthers; reddish tinged pistil with hairy, 1-celled ovary and slender style.

Pods nearly cylindrical, 5-10 cm long, 6 mm or more in diameter, narrowed between seeds, long pointed; seeds 1-5, beanlike, oblong, 1 cm long, dark brown; flowers and pods all year.

The genus name Parkinsonia honours John Parkinson (1567-1650), a British botanist. The specific name means ‘with spines or prickles’. ‘Jerusalem’ in this and other plant names does not refer to the city in Israel but is a corruption from Italian of ‘girasol’, meaning ‘turning towards the sun’.

BIOLOGY
The tree profusely produces seeds and grows easily from seed. The showy flowers appear in April-May and sporadically almost throughout the year. In India, seeds generally ripen in March-April.

Parkinsonia aculeata L.

Fabaceae - Caesalpinioideae

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ECOLOGY
Arid, semi-arid tropical and subtropical with a great temperature range from very hot to several degrees below freezing with frosts. Extremely drought resistant; the dry season can be up to 9 months per year during which P. aculeata drops all its tiny leaflets from the flattened rachis. P. aculeata is native to semi-desert vegetation, especially desert valleys and desert grassland zones. The tree is thorny and reproduces easily; at times it escapes from controlled cultivation and becomes a weed.

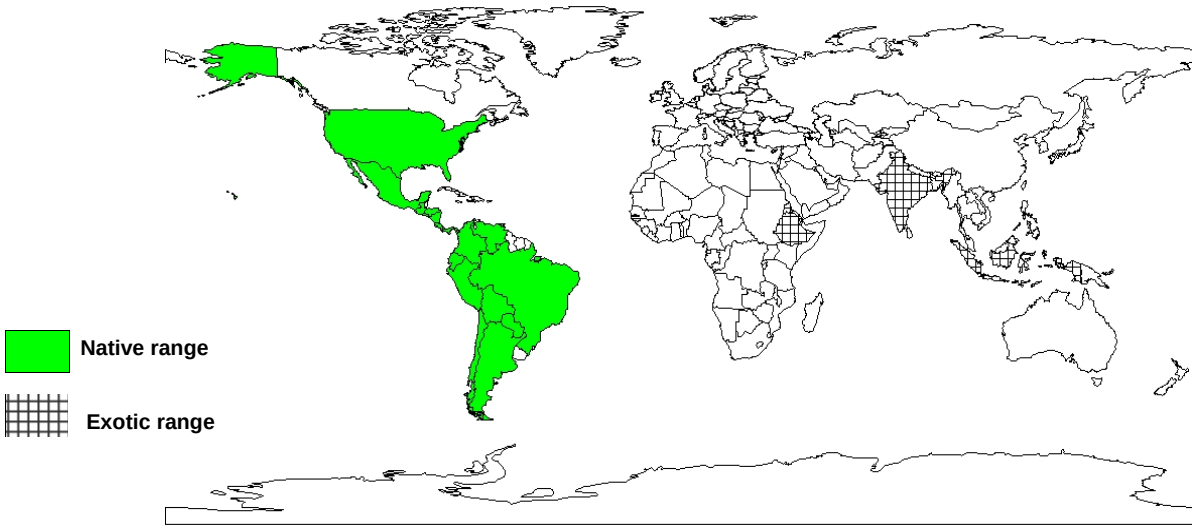
BIOPHYSICAL LIMITS
Altitude: 0-1300 m, Mean annual temperature: To 36 deg. C, Mean annual rainfall: 200-1000 mm

Soil type: Various types, especially desert gravel and sands along valleys and canyons; also saline.

DOCUMENTED SPECIES DISTRIBUTION

Native: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, US, Venezuela

Exotic: Cuba, Cyprus, Dominican Republic, Eritrea, Ethiopia, Guadeloupe, Haiti, India, Indonesia, Israel, Jamaica, Kenya, Martinique, Mozambique, Netherlands Antilles, Nigeria, Puerto Rico, Senegal, South Africa, Sudan, Tanzania, Uganda, Uruguay, 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
Food: The edible fruit pulp is sweet (up to 60% sugar). Its seeds have in the past been used in Mexico for food.

Fodder: Foliage and pods are browsed by livestock. Young branches are lopped to feed goats and sheep.

Apiculture: The large, fragrant, golden yellow flowers easily attract bees.

Fuel: Sapwood yellowish and thick, and heartwood light or reddish-brown; wood moderately hard and heavy (specific gravity 0.6), fine textured, brittle; burns well and is used for firewood and charcoal.

Timber: The heavy timber (833 kg/m^3) is generally too small for sawn applications but finds use as light poles and posts.

Poison: Leaves have been reported in Paraguay as toxic, at times containing hydrocyanic acid.

Medicine: Leaf, fruit and stem decoctions are taken orally to treat fever, malaria and as an abortifacient. Flower and leaf extractions in alcohol are applied as a poultice to treat rheumatism.

SERVICES
Erosion control: As it grows in arid areas and in sandy soils, P. aculeata can be used to afforest eroding and sandy soils.

Shade or shelter: The heavy branching of P. aculeata makes it a suitable windbreak.

Reclamation: Useful for reclamation of wastelands, gullied areas and mining spoil.

Nitrogen fixing: Although this species is a legume, its nitrogen-fixing ability is not known. However, young plants respond to fertilizer.

Soil improver: Provides a large amount of leaf litter that is applied as mulch to the soil.

Ornamental: Attractive ornamental with unusual foliage, vivid flowers and a smooth, green bark.

Boundary or barrier or support: Its browse resistance and stout thorns make it valuable as a live fence for protecting arable fields in arid and semi-arid areas.

TREE MANAGEMENT
The tree is noted for fast growth; young plants when fertilized will grow up to 1 m annually. The trees regrow vigorously even after drastic pruning. For best growth it requires full sun, and plant will lean towards the sun; in shaded sites its growth is retarded.

GERMPLASM MANAGEMENT
Storage behaviour is orthodox; viability can be maintained following 3 years of hermetic storage at room temperature with 13% ± 2% mc. Seeds store well for long periods in cool, dry, airtight containers. Pretreatment for germination is not essential. However, if the seeds are soaked in water for 3-4 days or scarified and then soaked in warm water for 1 day, germination will be faster. The germination rate is 30-70% or more in 2-10 days. There are about 11 000-15 000 seeds/kg.

PESTS AND DISEASES
The tree is generally free of disease and insects but can be attacked by snow scale; new growth is subject to fungal die-back in winter months in humid climates. Termites damage young plants.

FURTHER READNG

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SUGGESTED CITATION

Orwa C, Mutua A , Kindt R , Jamnadass R, Simons A. 2009. Agroforestree Database:a tree reference and selection guide version 4.0 (http://www.worldagroforestry.org/af/treedb/)