Metroxylon sagu

Rottb.

Arecaceae

LOCAL NAMES

Burmese (thagu-bin); Dutch (sagopalm); English (sago palm,true sago palm); Filipino (lumbia); French (palmier a sagou,sagoutier); German (Sagopalmeu,Sagopalme); Indonesian (kersula,kirai,lapia,ambulung,pohon rumbia); Italian (palma da sago,palma a sagu); Malay (rumbia); Spanish (palma sagu); Thai (sa khu); Vietnamese (sa kuu)

Extracting the pith of trunk of the sago palm, M. sagu, in South East Sulawesi, Indonesia. Sago still is a staple food of the local population. (Robert Zwahlen)

(Chris Gardiner)

Sago thorns (French B)

BOTANIC DESCRIPTION

Metroxylon sagu is a palm tree, without leaf sheaths; boles have a diameter of 35-60 cm and reach a height of 6-16 m. Starch is stored in the central parenchyma of the bole. Under prolonged flooding conditions, it forms pneumatophores.

The true sago palm is a pinnate-leaved tree. Healthy palms carry about 24 leaves or fronds. Each month a new frond appears out of the growing point, and the oldest dies.

Sago palm is also hapaxanthic; each bole heralds the end of its life cycle by developing a huge branched terminal inflorescence with a large quantity of fruit. The trunk decays after the formation of the fruit and 1 or more suckers from the trunk take over.

The generic name is from the Greek ‘metro’ (the pith of the tree), and ‘xylon’ (wood), referring to the large amount of internal pith.

BIOLOGY

Sago palm is hapaxanthic, that is, it flowers only once during its life; after fruiting, the leaves senesce and the plant dies completely. There are hermaphroditic and male flowers. The palm can be classified as a nearly complete obligatory cross-breeder, with easy vegetative multiplication. The vegetative growth phase lasts for at least 8 years before the tree flowers.

ECOLOGY
Occurring in the hot humid tropics of Southeast Asia and Oceania, sago palm dominates mainly in permanent or seasonal lowland freshwater swamps, preferably on mineral soils with a pH higher than 4.5. Ideally, groundwater should be within 50 cm of the soil surface. Mixed with upland trees, it can also be found on dry soils, where it grows even taller.

BIOPHYSICAL LIMITS
Altitude: 0-700 m, Mean annual temperature: 17-35 deg. C, Mean annual rainfall: Over 2000 mm

Soil type: Clay soils with a high organic-matter content give best results.

DOCUMENTED SPECIES DISTRIBUTION

Native: Fiji, Indonesia, Malaysia, Papua New Guinea, Singapore, Solomon Islands, Thailand
Exotic: India, Samoa

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 boles of sago palm have always been used to obtain starch as a staple food for humans. Hot water is poured over the slightly sour wet starch and stirred. The resulting gluelike mass is eaten with fish and vegetable dishes, for example. The growing point and the young leaves around it may be used as a vegetable, the palm heart or cabbage. Grubs, especially of Rhynchosporus spp., may grow in decaying trunks, and sago growers consider them a delicacy.

Fodder: Ground pith is sometimes used as an animal feed, especially for pigs, and when dried, for horses and chickens.

Fuel: Dextrose sugar extract from sago palm starch can be processed to yield power ethanol. The cortex of the trunk is also used for firing in paper mills. The bark may be used as a domestic fuel after drying.

Fibre: Processing of the pith to yield starch produces a fibre. The leaves also yield a fibre, which may be used for mats.

Other products: The rice-straw mushroom (Volvaria volvacea) is cultivated on waste from sago extraction, the frond rachis is often used for fastening between horizontal posts in walls, and the bark may be used as a flooring material.

SERVICES
Reclamation: Sago palm has been planted in buffer zones as a method of rehabilitating degraded lands, for instance the coastal plains of Indonesia where thousands of hectares of land had been abandoned.

Soil improver: The waste from pith processing is used as a fertilizer.

TREE MANAGEMENT
Farmers plant relatively small and quick-maturing varieties on clay soils high in organic matter at 7 x 7 m, giving about 200 stumps/ha. In the 2nd year of trunk formation, about 100 suckers/ha (which developed in the 1st year) should be selected for starch production. Harvesting for maximum starch per trunk should be timed to coincide with the onset of fruit formation. Once the tree is planted, it produces a regular succession of suckers from the lowest part of the trunk, forming a cluster of various stages of development. Suckering is regulated by pruning, so that each cluster palm produces 1 bole every 18 months.

GERMPLASM MANAGEMENT
The species has been classified as recalcitrant. If suckers are not planted directly, they are kept for 2-3 months in a well-shaded nursery. This is also done if suckers are to be transported any distance.

PESTS AND DISEASES
Pests and diseases have not seriously affected sago palm, but with increasing intensity of cultivation they are likely to increase. Some pests recorded include the hispid beetle (Botronyopa grandis), whose larvae feed on young tissues of the unopened spear at the central base of the crown; termites, which may become a pest on peat soils containing undecomposed vegetative matter; and the red-striped palm weevil (Rhynchosporus spp.), whose eggs may be deposited on young plants with exposed injured tissues. The larvae burrow into these tissues.

FURTHER READNG

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SUGGESTED CITATION

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