

Agronomy – Kharif Crops

Jatropha

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JATROPHA

Botanical name: *Jatropha curcas*

Family: *Euphorbiaceae*

Chromosome number: $2n=2x=22$

Jatropha is also called as purging nut (English), Ratanjyot (Hindi) and kampma ramda (Sanskrit). It is a perennial deciduous shrub growing up to 3-5 metres height, shedding leaves during the dry season.

Jatropha is grown for its seeds that are rich in non-edible oil (27-30%). The oil can be combusted as fuel without refining. The oil can be blended up to 20% with diesel to run diesel engines. The deoiled cake serves as organic manure. Besides oil, other plant parts have immense medicinal and insecticidal roles. The leaves are used for cure of cough, dyspepsia, leprosy and gynaec diseases. The seed paste is used for diseases like snake bite, paralysis, piles, joint pains etc. The flowers are effective against diabetics. The tender twigs provide relief to rheumatism. The root and bark have insecticidal properties. The green leaf manuring provides not only nutrients to crops but also provide effective control of *Meloidogyne javonica* nematode. In Philippines, thread ropes are preferred from the bark.

The deep root system enables it to serve as a soil binder, and thus helps in stabilization of sand dunes in deserts. The dried leaves can be used in storing food grains, as they deter various storage pests similar to neem leaves. It also grown as live fence/hedge for protection of farmer's field against damage by stray animals and blue bulls.

Origin

Jatropha is native to Mexico and central America, but is widely distributed in wild and semi-cultivated forms in Latin America, Africa, India, South-east Asia. In India, it was introduced in the 16th century by Portuguese navigators.

Botany

The plant is monoecious and flowers are unisexual. Fruit is known as capsule. Seeds resemble to castor seeds.



(*Jatropha integerrima*)



Jatropha multifida

Climate

Jatropha is grown under wide range of climates from tropics to sub-tropics and temperate regions. It can tolerate extreme temperatures from 0 to 5°C. It grows well from sea level to an altitude of 1200 m in areas receiving 300-2500 mm of rainfall. However, it grows well in

areas with higher rainfall. It is tolerant to drought and moderate frost. Its flowering is not sensitive to day length. At present, it is widely distributed in Australia, Florida, Hawaii, India, Malaysia, Oceania, Philippines, and Schyhellus.

Soil

It can grow in all types of soil, but performs best in well drained soils. It can thrive well on degraded, gravelly rocky, sandy, calcareous and saline soils with low nutrient content.

Seeds and sowing

Jatropha is propagated both vegetatively (root and stem cuttings) as well as from seeds. Use of fresh seeds is desirable for planting as old seeds lose their viability. Further, freshly harvested seeds show dormancy.

The seeds can be planted directly in main field, however, management becomes costly. Hence seeds are planted in nursery, and plants are transplanted into 0.3 m³ pits after 9-12 months. Under favourable moisture, seed take 10 days to germinate. For establishment of Jatropha as hedge or for erosion control, cuttings are best. For commercial oil extraction purposes, establishment by seeds is better. The spacing varies from 25 cm x 25 cm for hedge rows and soil conservation purposes. For commercial plantations the spacings vary from 2 m x 2 m to 3 m x 3 m accommodating 2500 to 1111 plants/ha.

Irrigation

It is a drought tolerant crop and survives with the available rainfall. However, for commercial cultivation, irrigations during post-monsoon and summer seasons would help in realizing higher yields throughout the year.

After planting the seedlings, if rains are not received, then irrigation is must. In general, Jatropha requires less water, but during the first year of plantation, irrigation is required depending on the soil type and agro-climatic conditions of the site.

Weeding

The removal of weeds in tree basins, 3-4 times a year is required for higher yields. Manual weeding would be costly. In well grown trees, various general weed killers like glyphosate and paraquat would effectively take care of weeds. In initial years of plantation, intercropping and ploughing is feasible and would provide satisfactory weed control.

Manures and Fertilizers

In pits, addition of FYM @ 1 kg along with 0.1 kg neem waste for every seedling is recommended. Annual fertilization of 20-120-16 g/plant of urea-single superphosphate-muriate of potash annually is recommended. The recycling of leaf fall from jatropha plantation and deoiled cake needs consideration. Besides chemical fertilizers, the biofertilizers like *Azotobacter* and vesicular arbuscular mycorrhiza should be applied at the time of planting.

Pruning

For ease of harvesting, the tree height should be maintained at lower than 2 meters. For this purpose the plant should be detopped to produce 8-12 branches.

Yield

The per plant yield varies from 5-10 kg, and seed yield/ha ranges from 1-10 t/ha.



Jatropha podagrica



Source: [Nic_kanpurdchat_jatropha.jpg](#)



Jatropha podagrica