

Jamun -Popular Indigenous Fruits of India

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Jamun is the one of the plant species which sustain biophysical constraints of arid regions. Jamun is a popular Indigenous fruits of India. It has got very valuable place in Ayurvedic medicines. It is believed to be a boon for diabetic patients.

Jamun is a healthy fruit with absolutely no trace of sucrose. It is therefore, the only fruit with minimum calories. Not only the fruit, but the seed and also the leaves and bark of the jamun tree are believed to have medicinal properties. Dried alcoholic extracts of the seeds of the fruit given to diabetic patients on a regular basis showed a reduction in the level of their blood sugar and glycosuria. Beneficial in the cure of diarrhoea and dysentery.

The leaves of the jamun tree possess anti-bacterial properties and is used for making medicines for the strengthening of the teeth and gums, tooth powders, mouth wash, mouth ulcerations. They are also used as fodder for cattle, sheep and goats. They also act as food for tasar silkworms. The essential oils are used in soap making and perfumes. Bark is used in tanning and dyeing industries. Wood is exceptionally strong and water resistant. Used to make bullock cart wheels and agricultural implements. It is also used in house building. Wood also used to make railway sleepers (wooden planks on which the steel rails are laid). The bark which contains 13-19 per cent tannins is astringent and is said to be a common medicine for industry. Flowers are rich in nectar and yield high quality honey when apiculture is done. Best honey used as medicine.

Botanical Name: *Syzygium cumini* (L.) Skeels, Syn. *Syzygium jambolanum* DC.; *Eugenia cumini* Druce



Common Name: English -Java plum, Black plum, Vernacular –Jamun, Tamil – Naval Pazham.

The jamun is an important indigenous minor fruit of commercial value. It is also known as black plum, Indian black cherry, Ram jamun *etc.* in different parts of India. The tree is tall and handsome, evergreen, generally grown for shade and windbreak on roads and avenues. The original home of jamun is India or the East Indies. It is also found in Thailand,

Philippines, Madagascar and some other countries. It is widely grown in the larger parts of India from the Indo-Gangetic plains in the North to Tamil Nadu in the South.



Uses and Composition: Jamun fruit possesses considerable nutritive value. Apart from minerals, sugars, and proteins, it is a good source of iron also.

Table 1: Nutritive value of Jamun fruit

S. No	Nutrient	Percentage
1	Moisture	28.2
2	Protein	0.7
3	Fat	0.1
4	Mineral	0.4
5	Fibre	0.9
6	Carbohydrate	19.7
7	Calcium	0.02
8	Phosphorus	0.01
9	Iron	1.0
10	Calorific value	83/100 g

The tasty and pleasantly flavoured fruit is mostly used for dessert purposes. The fruit is usually eaten with salt. The jamun fruit has sub-acid spicy flavour. Apart from eating fresh, it can be used for making delicious beverages, jellies, jam, squash wine, vinegar and pickles. Jamun squash is a very refreshing drink in summer season.

Soil and Climate: The jamun tree can be grown on a wide range of soils. However, for high yield potential and good plant growth, deep loam and a well drained soil are needed. Such soils also retain sufficient soil moisture which is beneficial for optimum growth and good fruiting.

Jamun prefers to grow under tropical and subtropical climate. It is also found growing in lower ranges of the Himalayas up to an altitude of 1300 meters. The jamun requires dry weather at the time of flowering and fruit setting.

Species and Varieties

Species: The genus *Eugenia* comprises of 1,000 species of evergreen trees and shrubs, most of them being tropical in origin. Some of the old-World *Eugenia* species are now placed in the genus *Syzygium*. It belongs to the family Myrtaceae. Many of these species yield edible fruits and some of these are of ornamental and medicinal value. A wild species *S. fruticosum* with small edible fruits is grown as windbreaks.

Flowering and Fruiting: The flowering in jamun starts in the first week of March and continues up to the middle of April. The trees are in full bloom in the second week of April. The inflorescence in jamun is generally borne in the axils of leaves on branchlet. The flowers are hermaphrodite, light yellow in colour. The maximum anthesis and dehiscence were recorded between 10 A.M. and 12 Noon. The pollen fertility was higher in the beginning of the season. The maximum receptivity of stigma was observed one day after anthesis. Jamun

is a cross-pollinated fruit. The pollination is done by honeybees, house flies and wind. The maximum fruit set i.e. 32.6 - 36.0% was obtained when pollination was done one day after anthesis. Thereafter, a sharp decline was observed in fruit set. Three distinct phases of fruit growth in jamun are recorded. During the first phase (15 - 52 days after fruit set), the rate of growth was slow. In the second phase (52 - 58 days after fruit set), the rate of development was quite rapid and the third and last phase (58 - 60 days after fruit set) comprised comparatively slow growth with little addition of the fruit weight. The length and diameter of fruit showed a continues increase with advancement of maturity. The colour of jamun fruit changed from dark green at fruit set to light reddish colour at partial ripening and dark or bright purple at full ripe stage. The fruit took 63 days for complete ripening from fruit set. The ripe jamun had 76 per cent edible portion and 3 : 1 : 1 pulp to seed ratio. TSS and sugars followed an increasing trend, while tannin content followed a decreasing trend during growth and development.

Flower and Fruit Drop: In jamun, the flower and fruit drop start just after opening of flowers and continue up to maturity. About 65 per cent flower and fruit drop in the first five weeks and since then a maximum of 19 - 21 per cent flowers and fruits drop off up to maturity. Only 12 - 15 per cent flowers reach maturity. The flower and fruit drop are found at 3 stages. The first drop takes place during bloom or shortly thereafter. This proves to be the heaviest drop as about 52% of the flowers drop off after 4 weeks from flowering. The second drop starts about 35 - 40 days of full bloom and apparently there is no difference between the developing and aborting fruits. The third drop takes place after 42 - 50 days of full bloom and continues till 15th July.

Control : The extent of flower and fruit drop in jamun may be reduced by two sprays of 60 ppm GA₃, one at full bloom and the other 15 days after initial setting of fruit.

Varieties

PKM-1 Jamun



Konkan Pahadoli: Selection from the village Pahadoli. High yielding 100 kg/tree, with bigger size fruits of 24 gm with high pulp percent. Keeping quality 4-5 days (13⁰C + 80 per cent relative humidity). The common variety grown under North Indian conditions is "Raja Jamun". It produces big sized, oblong fruits, deep purple or bluish-black in colour at full ripe stage. The pulp of the ripe fruit is purple pink and the fruit is juicy and sweet. The colour of the pulp is purple, less juicy, the weight and sweetness of pulp is also less in comparison to that of 'Raja jamun. The stone present in this variety is comparatively large in size. Fruits ripen in the month of August. A type having large sized fruits is known as 'Paras' in Gujarat. Another "Seedless Jamun" type found in Varanasi has no seed. A selection known as Narendra Jamun-6 has been identified with desirable traits at Faizabad (U.P).

Varieties				
Varieties	Place	Year	Breeding method	Characteristics
Konkan Bahadoli	Regional Fruit Research Station, Vengurla (BSSKV, Dapoli)	2004	It is a selection from local Jamun trees that grow in village Bahaduli.	Fruits are large (25 to 28 g), pulp content(83.3%). On average per kg weight has 40 to 50 fruits.
Goma Priyanka	CHES, Godra (Gujarat)	2012	Selection	It is semi-dwarf, spreading growth habit, dense foliage with drooping branches, early, fruit weight 19.86 g, pulp- 85.06 %, 16.8 Brix TSS.
Dhoopdal	-	-	Selection	Jamun variety from Belgaum district, selected for its large-sized sweet fruits.
CISH J-42	CISH, Lucknow	2011	Selection	Fruits are unique, said to be seedless with pulp content of 97 -98% and TSS 14-15 Brix.
CISH J-37	CISH, Lucknow	2011	Selection	It has bold fruits and high pulp quality(pulp content 90 to 92 %) and TSS 16 to 17 Brix.
Rajendra Jamun -1	Bihar Agricultural College, Bhagalpur, Bihar	-	Selection	Early, high yielding, TSS 18.200 Brix, acidity 0.31%, fruit weight 12.86 g with 88.40% pulp.
Narendra Jamun-6	NDAUT, Faizabad	-	selection	oblong type, higher fruit weight and higher pulp: seed ratio
Ra Jamun	-	-	Land race	Fruits big size ,oblong with deep purple or bluish black colour at full ripe stage. Fruit is juicy with small seed size and ripens in the month of June-July.

Propagation: The jamun is propagated both by seed and vegetative methods. Due to existence of polyembryony, it comes true to parent through seed. Better rooting through cutting is obtained in Jamun under intermittent mist. Semi-hardwood cuttings of both *S. jambos* and *S. javanica*, 20-25 cm long, taken from the spring flush and planted in July treated with 2000 ppm IBA (Indole Butyric Acid) give better results.

Planting: Jamun is an evergreen tree and can be planted both in spring *i.e.* February -March and the monsoon season *i.e.* July-August. The latter season is considered better as the trees planted in February- March have to pass through a very hot and dry period in May and June soon after planting and generally suffer from mortalities from the unfavourable weather conditions. Prior to planting, the field is properly cleared and ploughed.

Fertilizer Application: TNAU recommendation for jamun is FYM: 20 kg, N : 100 g, P : 100 g and K : 100 g/tree. Normally, seedling jamun trees start bearing at the age of 8 to 10 years while grafted or budded trees come into bearing in 6 to 7 years. On very rich soils, the trees have a tendency to put on more vegetative growth with the result that fruiting is delayed.

Irrigation: In early stages, the jamun tree requires frequent irrigations but after the trees gets established, the interval between irrigations can be greatly decreased. Young trees require 8 to 10 irrigations in a year. The mature trees require only about half the number, which should be applied during May and June when the fruit is ripening.

Intercropping : In the initial years of planting, when a lot of interspaces is available in the orchard, appropriate intercrop especially leguminous crops and vegetables can be taken during rainy season.

Training and Pruning : Regular pruning in jamun is not required. However, in later years the dry twigs and crossed branches are removed. While training the plants, the framework of branches is allowed to develop above 60 to 100 cm from the ground level.

Flowering and Fruiting: Flowers are borne in the axils of leaves on branchlets. In North Indian conditions, flowering starts in the first week of March and continues up to the end of April. The pollen fertility is higher in the beginning of the season. The maximum receptivity of stigma is one day after anthesis.

The jamun is a cross-pollinated and the pollination is done by honey bees, houseflies and wind. The maximum fruit set can be obtained by hand pollination when it is done after one day of anthesis. Thereafter, a sharp decline is observed in fruit set.

Harvesting and Yield: The seedling Jamun plants start bearing after 8 to 10 years of planting, while grafted ones bear after 6 to 7 years. However, commercial bearing starts after 8 to 10 years of planting and continues till the tree becomes 50 to 60 years old. The ripe fruits are handpicked singly by climbing the tree with bags slung on the shoulder. Care should be taken to avoid all possible damage to fruits.

The average yield of fruits from a full-grown seedling tree is about 80 to 100 kg and from a grafted one 60 to 70 kg per year.

Storage and Marketing: The fruits are highly perishable in nature. They cannot be stored for more than 3 to 4 days under ordinary conditions. However, pre cooled fruits packed in polythene bags can be stored well up to three weeks at low temperatures of 8 to 10°C and 85 to 90% relative humidity.

Pests and diseases: Among the pests, white fly and leaf eating caterpillar cause great damage to the tree. Among the diseases, the fungal disease anthracnose is notable.

Medicinal Benefits of Jamun: One of the best medicinal benefits of Jamun is its anti-diabetic properties. The black plum works against diabetes and convert sugar into energy. The Jamun fruit is good for digestive system because of its coolant features. Jamun has astringent properties, helps to prevents acne, blemishes, wrinkles and pimples. Jamun is having many bio-chemical compounds, which includes flavonoids, essential oils, gallic acid, oxalic acid, malic acid *etc.*, which are beneficial in managing and treating of many diseases.