

**LEC. 27 DURIAN AND CARAMBOLA - SOIL, CLIMATE, PLANTING,
VARIETIES, NUTRIENT AND WATER MANAGEMENT, SPECIAL
CULTURAL OPERATIONS, PHYSIOLOGICAL DISORDERS,
PESTS AND DISEASES, MANAGEMENT PRACTICES**

DURIAN
[*Durio zibethinus* Bombacaceae]

Native to Borneo, an Island in the Malaysian region. It is tall evergreen tree of humid tropics with ovoid oblong fruits, each weighing 2-5 kg characterized by tough fibrous rind covered with greenish, coarse, sharp, pointed, short spines. The edible portion inside the fruit is buttery with yellowish white pulp with very strong odour. People have strong like or dislike for this fruit. Many like it, because of its sweet, delicious and filling taste, while others dislike it for its highly objectionable odour. The penetrating odour is comparable to that of rotten onion and is unacceptable to many. The chemicals that are responsible for the flavour are hydrogen sulphide, ethyl hydrosulphide and dialkyl polysulphide.

100 g of edible portion	→	28.8 g CHO
		2.5 g protein
		2.5 g fat
		20 mg Ca
		63 mg P
		37 mg Vitamin C

Indonesia, Philippines, India, Thailand, Myanmar and South China.

The fruits are believed to have aphrodisiacal qualities. Root decoction is used to cure fever and leaves for curing jaundice.

Cultivars :

Frog, Gibbon, Longstem, Deception. Cha-Nee, Golden Pillow are important varieties of durian.

Climate and soil requirements :

Perform well in areas with high humidity and high temperature, frequent showers and low wind velocity Annual Rainfall 200 cm, but heavy rains prior to flower initiation affect normal flowering. The trees cannot tolerate temperature below 8°C. Deep fertile soil or clay loam heavy good drainage and organic matter are the best suited. Salt in soil or water will result in fruit drop.

Propagation and planting :

Vegetative propagation by patch budding on seedling rootstock is recommended.

Seeds should be sown immediately after extraction from fruit as they lose viability very rapidly. Though propagation through cuttings is easy, not recommended as the adventitious root system will be insufficient to bear such tall stem. Plants of at least 2 cultivars have to be planted for effect pollination. Spacing is 10-12 m.

Pruning :

The tree usually takes pyramidal shape by itself. However, after harvesting the tree can be cleared off dried and old twigs.

Manuring :

It needs manuring at early stages of crop growth. Upto 7 years absorption of nutrients and retention on the vegetative part is more –

20 kg Nitrogen, 5 kg Phosphorus and 10 kg K/ha Potassium can be applied during 3rd year and can be increased to 40 kg, 10 kg and 20 kg of NPK during 7th year. Beyond 7 years.

Only very little quantity can be applied.

Plant protection :

Hawk moth is serious problem, larvae feed on leaves, soil incorporation of Lindane 1.3 D and creation of light traps recommendation, harvest, yield and post harvest management.

Grafts produce crop in 4-5 years, seedlings take 10 years. Fruiting available 2 times / year. Durian has cauliflorous flowering in older branches. Self incompatibility noticed in Durian. Yield – 100 fruits/year. Harvesting done when the fruits are smooth, flat with far – apart spines.

Ripe fruits last for 4 days under refrigeration, while mature fruits can be stored upto 14 days at 10-15°C.

CARAMBOLA

Carambola is a warm tropical and subtropical fruit with five star shaped projections and having juice with characteristic acidic taste. It is also known as five corner fruit or five edge fruit. The juice content is about 60 – 70%. The acidity is mainly due to oxalic acid and malic acid. One hundred gram of fruit contains 3.5 – 11.0 g sugar, 0.75 g protein, 560 IU of vitamin A. The probable origin of carambols is Malaysia or Indonesia. Besides consumed as dessert fruit, carambola can also be served as juice, jam, jelly and pickle. The star shaped cross section slices of fruit can be used in fruit-salad and to decorate cakes. A close relative of carambola is Bilimbi (*Averrhoa bilimbi*) which produces more acidic fruits.

Climatic and soil requirements:

Carambola loves a warm, humid condition with long hours of sunshine. Though it can be grown in a wider range of soils viz., right from sand to heavy clay loam, it will be at its best on well drained deep clay loam with a pH of 5.2 to 6.2.

CULTIVARS:

Golden Star:

Developed by Florida, Queensland, Singapore, Taiwan and Japan. The wing edges are slightly rounded. Fruits are golden yellow, crisp each weighting 90m- 200 g.

B1:

Developed at Malaysia having lemon yellow fruit which are crisp each weighing 100-300 g. The edges are rounded.

B6:

Another variety developed at Malaysia with orange fruits. The edges are slightly rounded.

Maha:

Commonly grown in Florida. Fruits pale lemon yellow each weighing 100-200g. Besides this a number of varieties like Thai knight, wheeler F wang Tung are grown in **Florida**.

In Australia a number of local selections like Jungle Gold. Chujuba, Giant Siam are being cultivated.

Propagation and Planting:

Approach grafting, wedge grafting and air layering of one year old terminal shoots (treated with IBNA 10,000 ppm at the time of layering) are the common methods of vegetative propagation recommended. The plants can be planted in pits of size 1 M x 1 M x 1 M dug at a spacing of 8 M x 6 M.

Irrigation, pruning and manuring:

Carambola is very sensitive to water stress. It demands very high quantity of water (2000 lit / week/tree/in maximum demanding months). Mulching the tree basin will help to prevent moisture stress. In young trees 4-6 wide – crotch angled branches are allowed. Low hanging criss – cross branches should be pruned one year after planting. Each tree is applied 40 g N, 10g P and 70 g K in 4 equal splits during April, June, September and January. Every year it can be increased in the same ratio to reach 600 g N, 120 g P and 1000 g K/ tree at 8th year.

Plant protections:

Fruit borer can be controlled by spraying chlorpyrifos 1 ml/lit. To control fruit sucking moth, enclosing the fruits with mesh less than 10 mm is recommended. Cercospora leaf spot can be controlled by Indofil M. 45@ 2g/lit.

Flowering, harvest and yield:

In India flowering is seen in three flushes April – May, July – August and September – October and fruits are harvested in July – September, November – December and January – February. Grafted trees start bearing 3 year after planting. The yield ranges from 200 – 300 kg / tree from 7-8 years onwards. Even at 21°C, carambola fruits can be stored for two weeks.