

**LEC .28            RAMBUTAN AND LONGAN - SOIL, CLIMATE, PLANTING,  
VARIETIES, NUTRIENT AND WATER MANAGEMENT, SPECIAL  
CULTURAL OPERATIONS, PHYSIOLOGICAL DISORDERS,  
PESTS AND DISEASES, MANAGEMENT PRACTICES**

**RAMBUTAN**

**[*Nephelium lappaceum*] Family : Sapindaceae**

Rambutan is called “hairy litchi” as the fruits have red soft spines on the surface. The white translucent, sub arid – seet flavoured aril is the edible flesh of the fruit. Its appearance differs from the litchi by having red and soft spines (hairs) covering the whole surface of the fruit.

**Origin :**

Malay archipelago, from there it has spread to South East Asia, Central America and Africa. RAMbutan growing countries are Thailand, Myammar, Sri Lanka, India.

100 g fruit contains    14.5 CHO  
                                  0.9 g protein  
                                  0.1 g fat  
                                  31 mg/100 g Vitamin C.

TSS : 14.9 – 21.2%

**Uses :**

Rambutan mainly serves as fresh fruit or a dessert mixed with other fruits or used for canning or made in to fruit syrup. The oil of seed is used for soap making. The root has medicinal uses while the tannin it contains is used for dyes. The whole tree with its beautiful leaves, flowers and colourful fruits also serves as an environmental tree in landscape.

Tree is large, round-topped, much branched every green tree reaching upto 15 m or more in height. Fruits are one-seeded, large, ovoid in shape, 10-12 fruits are borne in clusters. Fruits are 3.5 – 8 cm long, 2-3.5 cm wide, soft, with curved spines weighting 14.3-43.7 g.

The soft curved spines (hairs) covering all the pericarp may be red or yellow in colour. Inside the fruit, a big seed is surrounded by pearl-white aril/flush) which is fixing, subacid-sweet in flavour but the taste is rather flat or insipid as compared with the sweeter litchi.

### **Climate and soil**

It is a high-temperature bring plant. A warm humid tropical climate would be ideal. Mean minimum temperature 23°F. Mini temperature should not be below. 13-15°C, it comes well under humid condition. It requires 2000-2800 mm annual rainfall which should be evenly distributed over the year.

A rich sandy or clay loam with high organic matter and good drainage will be ideal for the growth and flowering. When reference is insufficient, the land should be irrigated in time to provide sufficient moisture to the soil.

Cultivars :

### **Rohug-Rian – Thailand cv.**

Oval bright red fruits spines are red which green tip. The aril is juicy, tough and sweet.

### **Seematjan**

Fruits deep red with soft curved spines.

### **BR.1 (Boting Rambutan No.7)**

Fruits are big (30g), ovate, red etc. spines are fine and dense. Aril is juicy, crisp and sweet.

New cv. Developed in China.

### **Propagation :**

#### **Seed :**

Dioecious tree, about 1/3<sup>rd</sup> of the total number of the progeny become male plants.

Seed propagation not recommended as seedlings are very variables and may produce low quality infirm fruits. Used only for raising seedling rootstock for grafting seeds are sown immediately when taken out from fleshy fruits because they loose viability within a few days, if left day.

#### **Vegetative propagation :**

Patch or forkert budding on 1-2 year old seeding rootstock is recommended.

Air-layering is another method.

#### **Planting :**

Spacing given for planting 10 m x 7 m

Planting of different cultivars is advised to encourage pollination. Temporary shading of young plants necessary.

### **Training and pruning :**

Modified leader system of training is practiced. Light unusual pruning of crossing branches, dead and diseased twigs and water shoots are suggested.

Manuring and interculture :

Fertilizer application done similar to litchi.

Mulching can be done to conserve soil moisture. Given manuring cover crops may be grown and twined into the soil to supply organic matter.

### **Flowering :**

Rambutan is androdioecious with separate male and hermaphrodite trees. The male is seldom found since now a days rambutan is planted from budded material. Hermaphrodite trees are often referred as female because it bears fruits. Flowers are apetalous, greenish white in colour, about 2 m in diameter.

Male flowers :

5-7 stamens, each stamen has a whitish to mentose filament with a yellowish bilobed anther. At the centre of the file is the abortive ovary which is highly pubescent.

Hermaphrodite flower :

6-7 stamens, but the anthers do not dehisce to release the well developed pollen grains inside. Functionally it serves as female flowers. Ovary is two or three-lobed and bears a bifid or trifid stigma.

Flowers at all the time of the day, but peaks at 6.30 am. Fruits can be harvested 13 weeks after fruitset.

Some rambutan trees may set a few parthenocarpic fruits which are smaller and somewhat flattened in form but the aril maintains normal flavour as the one-seeded fruits.

### **Harvest and yield :**

Average yield 25-35 kg/tree/year fruit colour is often used as guide for harvesting.

**Storage :**

Non-climateric fruit. Fruits can be kept for 4 days at 25-30°C.

Desiccation, loss of red colour, browning and drying of spintern fleshy pliable spines) are the principal causes of deterioration.

Storage of fruit in sealed polyethylene bags at 12°C retarded skin colour loss and extended shelf life (18 days).

### **Plant protection**

- Litchi stink bug, bark borer, fruit weevil, leaf roller are major pests.
- Downy mildew, anthracnose are the diseases.
- Both can be controlled by application of pesticides and fungicides whenever necessary.

## **LONGAN**

Longan is a close relative of lychee having similar growth and fruiting habit, but somewhat hardier than lychee. The fruits are smaller, smooth surfaced with yellow tan to brown colour. It originated in subtropical region of China or in between Myanmar and India. Fruits contain 25.2% carbohydrate, 1% protein, 0.5% fat, vitamin A (28 IU/100G) and vitamin C.

### **Climatic and soil requirements:**

Longan requires a warm subtropical climate with high rainfall. The winter should be short and frost free. The summer should be long, hot, humid and wet. The best temperature for flowering and fruitset is 20 to 25°C. Temperature above 40°C will cause damage to fruit resulting in fruit drop. A deep well drained fertile soil with pH 5.5 to 6.0 with low salinity will be ideal for its growth.

### **CULTIVARS:**

#### **Fu yan: (Lucky Eye)**

It is the major cultivar of fujian province of China. Fruits are large (18g), thin skin, crisp flesh and small seed. It is the best variety for canning.

#### **Wu long line: (Black Dragon peak)**

Medium sized fruits (15g) with thick skin, good flesh having sweet flavour.

#### **Wu yuan: (Black Round)**

Fruits are medium in size (15g), seed large, flesh soft and juicy.

**Daw:**

It is the popular cultivar of Thailand. Fruit is large with big seed, thin skin and crisp sweet flesh.

**Propagation and plantings**

Longan cultivars have to be propagated by air layering or marcotting the most recently flushed growth with maximum maturity at about 45-60 cm from the tip. Land preparation has to be done 3 to 6 months ahead of planting. Water ways (grassed) to carry run off water, and formation of terraces especially in slopes and mounds of 0.5 M to help drainage have to be formed. A planting distance of 6 M x 6 M can be allowed in hdp system. Plants should be planted in pits of 1 M x 1 M x 1 M size.

**Training, pruning, irrigation and manuring:**

Early growth is to be encouraged so as to get a good tree size and canopy within 3-4 years. Frequent irrigation and regular application of nutrients will help this. Organic manures like poultry manure should be supplemented with fertilizers like Urea. The trees can be trained to height of 2M and 3-4 vigorous young growth with wide clothes are allowed to form main frame work. Each lateral can be allowed to have w secondaries. The trees should be trained to get food light penetration through the canopy. Each tree should be earthed up to make mound (a height of 0.8 – 1.0M). Irrigation is given to encourage bud burst. Before flower emergence it should be withheld. Again irrigation is to be continued from panicle emergence, flowering, fruit set, harvest and post harvest flushing. Aagin when the tree undergoes a rest period, irrigation ahuld be stopped. Just like irrigation, the fetilizer appliation should also be done 3 –4 times during the different growth periods in a year. For a five year old tree 625gN, 150g P and 800 g K have to be applied and increased by 20% every year till 10<sup>th</sup> year.

**Interculture:**

Alternate bearing is a common phenomenon. In an 'on' year, 40% of the flower spikes and 30% of young fruits can be thinned. In an 'off' year, a portion of th eshoots produced is spring should be thinned to reduce the competition between shoots and fruits.

Plant protections:

Fruitfly (*Bactrocera dorsalis*) is a serious pest, which can be controlled by any safe insecticide like malathion. (Refer Mango section for details).

**Harvest and yield:**

Longan fruits are harvested after full maturity and ripening. A fully matured tree yields 100 – 120 kg /year. The fruits can be stored for 4-6 weeks at 5°C.