

## **PAPAYA**

### **(*Carica papaya* L.)**

Papaya is a common man's fruit, also known as melon tree or papita. It is excellent source of vitamin 'A' and has good amount of vitamin 'C', minerals (Fe, Ca and P) and carbohydrates. Unripe green papaya is used as vegetable. Papain prepared from the dried latex of immature fruits is used in many ways in pharmaceutical industry, tannin industry, cosmetics, tenderization of meat etc.



### **Cultivars**

Commercial cultivars grown in India as well as in northeastern states are Coorg Honey Dew, Washington, Pusa Delicious, Pusa Dwarf, Solo, Zinta, Surya etc.

### **Soil and Climate**

It is a shallow rooted plant, highly sensitive to water logging. A well-drained soil rich in organic matter is desirable. The pH of the soil should be within 6-7. Cultivation of papaya on steep slope is also not advisable.

It grows well in tropical to subtropical climate up to 1000 msl. Night temperature below 12°C during winter severely affects the growth of the plants. Papaya plant is highly susceptible to frost.

### **Propagation**

Papaya is commercially propagated through seeds. Seeds used for raising seedlings should be fresh as their viability is lost in about 45 days. Seed should be rubbed with wood ash to remove the mucilaginous coating to facilitate good germination. Germination may take 3 to 5 weeks. It is expedited to 2 to 3 weeks and percentage of germination increased by washing off the aril. Then the seeds need to be dried and dusted with fungicide to avoid damping-off, a common disease of seedlings. Dipping for 15 seconds in hot water at 70° C and then soaking for 24 hrs in distilled water after removal from storage will improve the germination rate.

The seeds should be sown in the second week of January to February to escape the frost damage at the time of fruiting. Generally 400g seed or 250 g hybrid seeds are sufficient to raise the seedling for one hectare.

### **Planting**

The best time for papaya planting is either July-September or February-March. Further, in frost prone areas of northeast, papaya must be planted in February- March in order to have the required growing season before frost. When the seedlings have attained a height of 15- 25 cm, transplant three seedlings per pit (10-15 cm apart). After flowering, which usually takes place within 5-6 months, only one female or bisexual plant per pit is retained, rest of the male plants are pulled out. However, one male plant for every 10-15 female plants may be retained for pollination purposes.

The varieties like Co-I, Co-2 and Solo at 1.8 x 1.8 m, Coorg Honey Dew and Washington at 2.4 x 2.4 m and Pusa N anha at 1.25 x 1.25 m distance can be planted. Under high density planting at a distance of 1.25 x 1.25m, a total of 6400 plant/hectare can be accommodated.

### **Protection against frost**

Papaya is very much susceptible to frost damage during winter. Older leaves should be removed and the crown should be covered with paddy straw or dry grass thatches.

### **Manure and Fertilizer**

Papaya is a heavy feeder and responds well to fertilizers. Application of 200g each of N, P and K per plant in addition to 25 kg FYM in split doses during the first, third, fifth and seventh month after planting resulted in higher fruit yield.

### **Irrigation**

Adequate watering is necessary, to ward off drought and frost, weekly in summer and biweekly in winter. The summer irrigation is followed by earthing up. Water logging in any case should not be allowed, in fact the plants must not come in contact with water by placing 20-30 cm of earth all round of young plants.

### **Insect/Pests**

**Red spider mites (*Tetranychusurticae*):** They suck sap from ventral surface of leaves under silken webs. The yellowish spots appear on the dorsal side of the infested leaves that fall finally when dried. Affected leaves may be clipped off and destroyed. Dusting with sulphur or spraying with lime sulphur or Dimethoate 30 EC @ 1.5ml/ L water may be used for control.

**Aphid (*Aphis gossypii* and *Myzuspersicae*):** Nymphs and adults suck sap from the leaves and transmit mosaic virus disease. Weeds should be removed which are additional host. Spraying of 250 ml Malathion 50EC in 250 litres of water controls the aphid.

**Root knot nematode (*Meloidogynesp.*):** Main symptoms are the yellowing and then shedding of leaves, premature fruit drop, root galling and finally death of the plants. Application of Nee m cake @ 2 tones/ha tends to reduce the incidence. Addition of Carbafulan3G @ 4kg/ha controls the nematode.

### **Diseases**

**Collar rot and stem rot:** Caused by fungus *Pythium aphanidermatum* or *Phytophthora palmivora*. Rotting of roots and the trunk of the plant, stunted growth leading to death of the plant are some of the symptoms of the disease. Prevent water stagnation. Uproot and destroy the affected plant immediately. Spraying of 1 % Bordeaux mixture or Copper ox chloride @ 2g/ L will check the further spread.

**Damping off:** It is caused due to *Pythium* sp., *Phytophthora* sp., or *Rhizoctonia solani*. The disease is common in nursery beds and cause mortality of seedlings. Soil sterilization with 2.5% Formaldehyde, seed treatment with Ceresan, Agrosan or Thiram provides good check.

**Papaya mosaic:** It is caused due to papaya mosaic virus. Leaves become small, curled, wrinkled and brittle. The disease is transmitted through sap, graft and aphids. Affected plant should be uprooted and destroyed immediately. Spraying of Malathion @ 1 ml/L water is applied to control aphid or white fly.

**Harvesting and yield**

Papaya trees set fruits within 8-10 months of their planting. In general, fruits ripen during spring and summer. In hills, it is restricted to three to four months from February to May, because it requires a warm climate during ripening. When fruit attain ripening, the colour changes from green to yellowish green. The fruit is considered ready for harvesting when the latex of the fruit becomes almost watery.

The yield of papaya varies considerably due to fertility of the soil, cultural practices and variety. The average yield ranges from 30-50 kg per plant. An average yield of about 30-40 t/ha in first year and about 15-20 t/ha in the second year is said to be optimum under northeast condition.