LEC. 14 GUAVA – SOIL, CLIMATE, IRRIGATION AND NUTRIENT MANAGEMENT, NUTRIENT DEFICIENCIES, PHYSIOLOGICAL DISORDERS, PESTS AND DISEASES, MANAGEMENT PRACTICES

Guava *(Psidium guajava)* Family: Myrtaceae

It is the fourth most important fruit of India in respect of area and production. It is said to have been introduced from tropical America. It is grown in many parts of the world. It is also popularly called as apple of the tropics and poor man's apple. It occupies an area of 58,000 ha in India and half of this area is confined to U.P and other important states are Bihar, Madhya Pradesh, Maharashtra, Andhra Pradesh, Kerala and Tamil Nadu. In Tamil Nadu it is largely grown in Coimbatore, Ramnad and Kanyakumari districts. It is very rich and cheap source of vitamin C (100 to 260 mg per 100 gm of the pulp) and contains a *fair* amount of calcium. It makes an excellent jelly and does not lose the vitamin C in the preserved forms. Besides *P:guajava,* the related species are:

(l) P. *guineense,* called Brazilian or Guinea guava which bears small fruits of poor quality .

(2) P. *cattleianum,* known as strawberry or cattley guava - produces very small fruits of 2.5 cm in diameter with attractive purplish red colour.

(3) P. f*riedrichsthalianum* - (Costa Rican guava) or china guava) produces small fruits of globose in shape.

Soil and climate

It is a hardy fruit which can be grown in poor alkaline or poorly drained soils without any manuring or irrigation. It can grow in soils with pH ranging from 4.5 to 7.5 but the best soils are deep, friable and well drained. It is a subtropical and tropical fruit which requires a distinct winter for developing good quality. It can thrive in semi arid tracts of India and enjoys cooler climate upto an elevation of 1000 m but it cannot withstand frost.

Varieties – refer practicals

Guava varieties are generally named according to the shape, colour or smoothness of skin or from their place of origin. Varieties can be classified as seeded varieties (highly seeded to less seeded types-diploids and seedless varieties (triploids).

Propagation

In India, guava is commonly propagated from seed which germinates in about three weeks. Boiling the seeds for five minutes, soaking them in water for weeks prior to sowing or treating them in strong sulphuric acid for five minutes facilitates their germination. Propagation through this method is not desirable as the seedlings will take more time to come to bearing and seedling trees differ greatly from the mother plants. Vegetative propagation through layering is therefore recommended. Both air layering and simple layering have been found to be successful. In about 45 days, layers can be separated from the mother plants. These separate layers should be planted in full size pots and they are hardened by gradually exposing them to direct sunlight. Such hardened layers are ready for planting in about six months. Though it is hard to root semi hard wood cuttings, treating with IBA or NAA at 2000 to 5000 ppm root well under mist conditions. In some places, budding techniques using forkert, shield, patch, chip etc have been tried with different success.

Planting .

Pits of 0:5 m x 0.5 m x 0.5 m size are dug at a spacing of 5m x 5m. The layers with the ball of earth are planted in the centre of the pit.

Manures and fertilizers

It responds well to the application of inorganic fertilizers along with organic manures. Therefore for the bearing trees, 50 kg of FYM and one kg in each of N, P and K are applied per tree in two equal split doses, once during March and again during October. The manure and fertilizers are spread in the entire basin of the tree, 15 cm away from the trunk upto leaf drip and incorporated by shallow digging. It also responds to foliar spray of nutrients and spraying of urea 1 % + Zinc 0.5% twice a year during March and October increase the yield. Guava sometimes suffers from deficiency of micronutrients. Hence, a mixed spray containing ZnSO4, MgSO4. MnSO4 @ 0.5% and CUSO4 and FeSO4 @ 0.25% plus a wetting agent @ 1 ml per 5 litre of solution at various stages viz. new flush, I month after first spray at flowering and at fruit set are recommended.

Irrigation

Guava though can withstand drought, it responds to irrigation at interval of 10 days.

Training and pruning

Open centre systems or delayed open centre is generally recommended. Pruning consists of removal of suckers arising from the base of the trunk. Dried twigs and branches have to be removed and the cut ends may be applied with Bordeaux paste. The flowers are borne on the axils of current season shoots. Light annual pruning after harvesting promotes vegetative growth and flowering. In Tamil Nadu, it is recommended that the tips of 10-12 cm lengths of past seasons shoots are pruned during September and February every year to encourage more laterals. Pruned trees give large fruits and early ripening. When the trees become old, the branches are pollarded leaving 30 cm in length at their origin. The cut branches produce plenty of shoots and flowers and ultimately high

yields. In the trees having upright and tall growth habits, the straight growing branches are bent and tied on the pegs driven on the ground. In the bent branches, dormant buds are activated and induced to produce flowers and fruits heavily. In certain parts of Maharashtra, root pruning is practiced to produce heavy yield. In this method roots are exposed and minute roots are cut away and irrigation is withheld so as to allow the leaves to shed. Then, the basins are covered with the manures and soil and irrigated copiously.

Cropping

The fruit buds are borne on past season growth terminally or laterally. The flowers are borne on the current season growth in the axils of leaves. The flowers are solitary or in cymes of 2 to 3. The current season growth takes one or two months to bear flowers. The floral buds require 38-42 days for full development. Layers generally take 2-3 years for fruiting. Guava flowers twice a year, first in April-May for rainy season crop and then in August – September for wiriter season crop. In South India, there is a third crop with flowers appearing in October. As the rainy season fruits are insipid and watery and do not keep well. In certain parts of India, some practices are followed to avoid flowering and

fruiting during rainy season so as to get large sized fruits of better quality during

winter season. They consists of

1. Bahar treatment - consisting of root exposure and or root pruning before the

onset of monsoon.

2. Deblossoming of rainy season crop - spraying NAA 200-400 ppm and

3. Withholding of water and removing the soil from around the upper roots during

rainy season and covering it again with soil and manure mixture. Guava fruits should be picked immediately when it is mature and they should not be allowed to ripen in the trees lest the damage by birds and squirrels. Individual hand picking is preferable to shaking the tree. Mature or half ripe fruits are mostly prefered for consumption than ripe or over ripe fruits. Yield varies due to many factors. On an average 800 number of fruits weighing 20-25 kg may be obtained from guava.