

**LEC. 20      AMLA - SOIL, CLIMATE, PLANTING, VARIETIES, NUTRIENT  
AND WATER MANAGEMENT, SPECIAL CULTURAL OPERATIONS,  
PHYSIOLOGICAL DISORDERS, PESTS AND DISEASES,  
MANAGEMENT PRACTICES**

**INDIAN GOOSE BEERY (OR) AONLA**

*Emblica officinalis*

(Syn : *Phyllanthus emblica*)

Family : Euphorbiaceae

Being a member of Euphorbiaceae to which most of the xerophytes, the cacti and succulents belong, aonla is a hardy drought resistant fruit tree. A rare combination of character is its ability to withstand water stagnation too. It is also known as amla, amali and nelli etc. The amla fruits are a rich source of Vitamin C. The special attribute is its capacity to retain Vitamin C even in a dried state which is not possible in other fruits. The vitamin C supplied by its fruits and dried powder is even superior to synthetic Vitamin C. One part or other is used in the cure of cough, bronchitis, jaundice, diabetes, dyspepsia, diarrhea and fever. Hundred grams of fruit pulp contains 14 g of carbohydrate, 0.5 g protein, 1.2 g iron, 0.3 mg vitamin B and 600 mg of Vitamin C. Because of the high content of iron (1.2mg/100g) and B vitamin C. Probably this fruit extract is used in a number of ayurvedic and homeopathic preparations which are said to prevent greying of hairs and falling of hairs. The probable centres of origin are the South and Central India, Sri Lanka, Malaysia and South China.

**Climatic and soil requirements :**

Though amla is a subtropical fruit, it thrives very well and comes to yield in tropical humid conditions also. If young plants are protected from both extremes of temperature, the mature trees can tolerate right from freezing (0°C) to as high as 46°C. Similarly if the young plants are protected from severe drought during summer and water stagnation during heavy rains, then the adult trees tolerate these two adverse conditions.

Though in a well-drained loamy soil the amla trees grow faster, they can grow in a heavy clay also provided slight drainage is arranged during heavy rains in their early crop growth phase of first 2 – 3 years. They also fairly tolerate alkalinity in soils (pH 8.5) and irrigation water.

## **CULTIVARS AND VARITIES**

### **Chakaiya :**

It is a prolific bearer. The fruits are flat, with smooth skin which is greenish in colour. Fruits are small to medium in size weighing 26 g having a TSS of 10.7<sup>0</sup> brix. The trees are spreading in nature.

### **Banarasi :**

The fruits are large in size flattened oblong with smooth skin, yellowish with characteristic three raised segments. On an average each fruit weighs 38g. It is a shy bearer. Trees are having upright growth habit.

### **Krishna : (NA – 4)**

A chance seedling of Banarasi developed at Narendra Deva Agrl. University, Faizabad with medium to large size (40 g) conical, angular, smooth yellowish fruits with red blush on the exposed surface. It has fibreless flesh which is semitransparent and hard. It is a moderate bearer.

### **Kanchan : (NA-5)**

It is supposed to be a chance seedling of Chakaiya. A profuse bearer with small to medium-sized fruits (32g) flattened oblong; skin is smooth, yellowish in colour. It was also developed at Narendra Deva Agrl. University, Faizabad.

### **Francis :**

Fruits are large (41.5g) with a TSS of 12.0<sup>0</sup> brix, flattened oval, greenish yellow in colour, soft and almost fibreless. The branches have dropping habit.

### **BSR-1 :**

It was developed at Agricultural Research Station, Bhavanisagar of Tamil Nadu Agricultural University, Tamil Nadu. The trees are medium in height and spreading and hence suited for accommodating more number of trees per unit area (can be planted at 6M x 6M spacing). Fruits are medium in size (27g) with flat stylar end and round calyx end. Each fruit has 6 segments, the juice has a TSS of 18.1<sup>0</sup> brix.

### **Propagation :**

Seed propagation which has been in practice has given lot of variation in the progenies. Hence vegetative propagation was resorted to. Budding using 1 year old rootstocks through “T” method (shield) or patch method is successful. *In-situ* budding will be better than budding in nursery and transplanting the budded plants. To raise rootstock seedlings, from the fully ripe mechanically or by drying in sun and the seeds are extracted. The seeds are hard and take long time to germinate. Hence the seeds should be treated with con. H<sub>2</sub>SO<sub>4</sub> for 3 minutes and then washed with water and soaked in 500 ppm of Gibberellic Acid for 24 hours. Such treated seeds can be sown in nursery bed or polybag filled with pot mixture.

### **Field preparation and planting :**

After deep and thorough ploughing, pits of 1 cubic metre size can be dug at a spacing of 9 Mx9M during May – June and filled up with 10-15 kg of well decomposed FYM. The budded plant or seedlings for *in-situ* budding (especially in dry areas) can be planted at the onset monsoon rains.

### **Training, pruning, intercultivation and irrigation :**

In training the trees, initially all the rootstock sprouts should be nipped off then and there. The growth of scion should be trained to develop a low headed one. At about 75 cm to 1 M height the first two main laterals are allowed to grow out. Five to six such laterals with wide angled crotches should be encouraged at fairly well spaced on the truck so as to have a modified leaser fashion.

When the crops started bearing early year after the harvest of fruits, dead, diseased, weak and criss-cross branches should be pruned. The water sprouts and rootstock growth should be

watched and periodically removed. During early stages of establishment, the plants should be watered periodically especially during summer. Fully mature trees are seldom watered. However, irrigation during April-June one in 15 days will help to encourage fruitset and prevent fruit drop. During early stages of crop growth an inter crops like cowpea, greengram can be grown upto 4 – 5 years.

Black polythene mulch is most effective in reducing the irrigation requirement in aonla cv. N.A7 (60.86%) with an annual water requirement of 777.6 litres per tree.

### **Manures and manuring :**

At the end of first year 20 kg FYM = 30 g N should be applied. An additional quantity of 30 g of N should be added early year as the tree grows. For a bearing tree, 800 g N, 640 gP<sub>2</sub>O<sub>5</sub>, 750 g K<sub>2</sub>O should be applied along with 30 – 40 kg of FYM every year during rainy season. If irrigation facilities are available, this dose can be split into two equal halves, one half applied during April – May (at fruit set) and irrigated. The other half can be given during September – October.

### **Common insect pests :**

Aphid	<i>Setaphis bougainisillia</i>
White fly	<i>Trialeurodes rara</i>
Bug	<i>Scutellera nobilis</i>
Leaf roller	<i>Caloptila acidula</i>

### **Plant protection :**

Bark borer makes tunnels along the bark. This can be controlled by injecting kerosene oil in the holes and plugging with cotton and clay during September – October and February – March and spraying with phosphomidon 0.03% Shoot gall maker can be controlled by pruning the affected shoots and spraying 0.1% monocrotophos. Amla rust can be controlled by spraying dithane Z.78 or M.45 at 0.2%. blue mould develops water soaked lesions on fruits which is ultimately covered by bluish green pustules. This can be checked by a weak solution of borax or sodium chloride.

**Harvest and yield :**

The trees will start yielding from 8 – 10 years after planting. Grafted or budded plants will yield from 5<sup>th</sup> year or 6<sup>th</sup> year. The average yield is about 150 kg/tree/year.