“Amla”

Commercial Cultivation

Versatile Fruit

CLICK-N-GROW
Agroventures Pvt Ltd
Farmer's e-Buddy

INTRODUCTION

Amla is a fruit tree of commercial importance. Amla fruit is full of medicinal properties and nutrients and is an unprecedented gift of nature. Its botanical name is Emblica Officinalis. It contains vitamin 'C' (500 to 700 mg per 100 grams), calcium, phosphorus, and potassium are found in abundance in amla fruits. Amla is generally known for its abundance of Vitamin 'C'. According to Ayurveda, Haritaki (Harada) and Amla are the two best medicines. Amla is the more significant of the two. According to the opinion of Charak, amla is the most prominent among the state-establishing substances that prevent physical degeneration. Ancient writers have called it Shiva (welfare), Vayastha (maintainer of condition), and Dhatri (protector like mother).

Commercial cultivation of amla is done in abundance in Pratapgarh, Sultanpur, Rae Bareli, Jaunpur, Varanasi, and Mirzapur districts of Uttar Pradesh. Amla is cultivated almost all over India, but due to its tolerant nature, its cultivation is also possible in barren and wasteland. For this reason, its area is increasing rapidly in other states like Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, and Andhra Pradesh.

100 grams of amla pulp contains 500 milligrams of vitamin C, 0.2 milligrams of nicotinic acid, and 1.2 milligrams of iron. Apart from this, 0.5% protein, 0.1% fat, 0.7% minerals, 2.0-3.4% fiber, 1.4-2.8% carbohydrate, 0.05% calcium and 0.02% phosphorus are also found in Amla fruits. Amla is utilized for making medications like Triphala powder and Chyawanprash, because of its therapeutic qualities. Its fruits are abundant in Vitamin C which is beneficial for scurvy disease, teeth and gums, bones, eyes, and stomach.

MEDICINAL PROPERTIES

Amla fruit cures all diseases of the digestive system. Due to good digestion, a person attains a centenary. Amla fruit, being urine, blood purifying, and palatable, relieves diarrhea, gonorrhea, biliousness, acidity, diarrhea, indigestion, anorexia, and respiratory diseases, sharpens vision. It is a fruit that strengthens the heart and eliminates tridoshas. It is used to treat cancer, pitta dosha, mandagni, coagulation, purgation, arthritis, swelling, and other fevers in addition to digestive disorders.

BOTANICAL DESCRIPTION

The botanical name of Amla is Emblica officinalis which is a member of the Euphorbiaceae family. Its tree is of medium height. Seedling plants are taller than grafted plants whereas fruiting starts early in grafted plants. In northern India, the leaves of Amla fall in winter and along with the leaves, flowers appear in March-April. Although male and female flowers appear on the same branch, fruiting is less due to self-infertility. For good results, proper pollination has to be arranged. In South India, Amla trees flower in June-July. The ratio of the number of male and female flowers is different in different varieties. The male flowers are light yellow in color and are located downwards on the subbranch. The female flowers are light green and occur in the upper part of the branch. After pollination and fertilization, the embryos go into dormancy in summer and start growing after getting moisture in the environment in July-August. The fruits become mature from November to January.

CLIMATE

Amla is a plant of arid subtropical (where winter and summer are distinct) regions. But it can also be successfully cultivated in hot climates. In India, it can be successfully cultivated from coastal areas to 1800 meters altitude. In winter, frost has a harmful effect on young gooseberry orchards.

But a full-grown gooseberry tree can tolerate temperature ranging from 0 to 46 degrees centigrade. A warm environment is helpful for the production of flower buds. Whereas in the months of July to August, the environment of high humidity is helpful for the growth of dormant small fruits. Dropping of small fruits in excess during dry period of the rainy season and there is a delay in the release of new small fruits.

LAND SELECTION

Amla is a tolerant fruit and can be grown successfully in sandy soil to clayey soil. Deep fertile sandy loam soil has been found best for its cultivation. Its cultivation is possible even in barren, less acidic and infertile land (pH value 6.5 to 9.5, exchangeable sodium 30 to 35 percent and electrical conductivity up to 9.0 mS/cm). Heavy soils and soils with high water level have been found unsuitable for its cultivation.

IMPROVED VARIETIES

In the past, there were three main varieties of Amla namely Banarasi, Francis and Chakiya. These varieties have their own merits and demerits. Fall of fruits in Banarasi variety and less production capacity of fruits despite of large sized fruits in Francis variety, but it is more prone to tuberculosis. Planting of these varieties should not be encouraged due to the problem of excessive fiber and alternate fruiting in the fruits of Chakiya.

For solving all these problems of traditional varieties, agricultural institutions have selected some new varieties. These are as follows- **Krishna (NA-4), Narendra-9 (NA-9), Kanchan (NA-5), NA- 6, Narendra-7 (NA-7), and Narendra - 10 (NA-10), BSR-1 (Bhavanisagar),** etc. are prominent.

(Important Note: Plant at least 3 varieties of gooseberry in the ratio of 2:2:1 for the purpose of pollination and maximum yield. eg. In one acre, apply 40 grafts of NA-7, 40 grafts of Krishna, and 20 grafts of Kanchan for best result.)

Land Preparation

For the cultivation of Amla, pits are excavated at 10 ft x 10 ft, 10 ft x 15 ft, or 15 ft x 15 ft and pits of 1 cubic meter size should be dug for planting in the Usar land. Pits should be left in sunlight for 15-20 days. If there is a hard layer or a layer of pebbles, then it should be dug out and pebbles should be separated, otherwise later on the growth of the plants will be adversely affected. If there is a shortage of water, water should be filled in these pits during the rainy season. In May, 20 kg of organic manure (vermicompost or compost), 5 kg of sand, 3 kg of gypsum, 3 kg of neem cake, and 500 g of Trichoderma powder should be mixed in each pit. Planting should be done only after 15 to 20 days of pit filling. The pit should be filled up to a height of 10 to 15 cm from the ground surface, and the saplings should be planted 15 to 20 days after filling the pit.

MANURE AND FERTILIZER

More use of organic matter and nutrients is necessary in barren lands. One year old plants are given 10 kg. Cow dung manure, 100 grams organic nitrogen, 50 grams organic phosphorus and 75 grams organic potash should be given. The above quantity should be increased in the same proportion every year for the next ten years. Thus, the amount of manure and fertilizer given in the tenth year will be 1.0 quintal cow dung, manure, 1000 grams organic nitrogen, 500 grams organic phosphorus and 750 grams organic potash per tree. In the coming years also, the same fixed quantity should be used every year during the month of February.

IRRIGATION

The first irrigation should be done immediately after planting. After that, the plants should be irrigated at an interval of 10-12 days in summer as per requirement. Irrigation should not be done in dormancy (December-January) after fruit set and in March after flowering.

WEEDING

To keep the plants healthy and to avoid the misuse of manure and fertilizers, weeds should be removed from time to time and light weeding of the basin should be done.

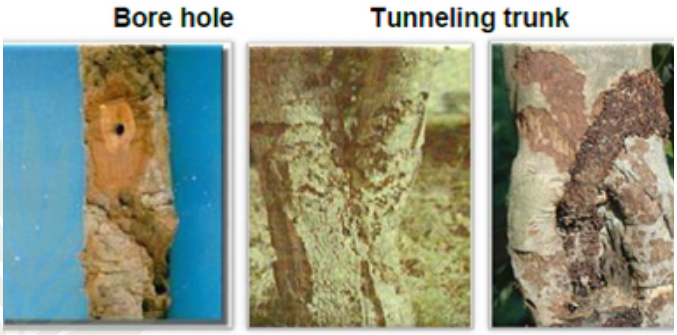
MAJOR PESTS AND INSECTS

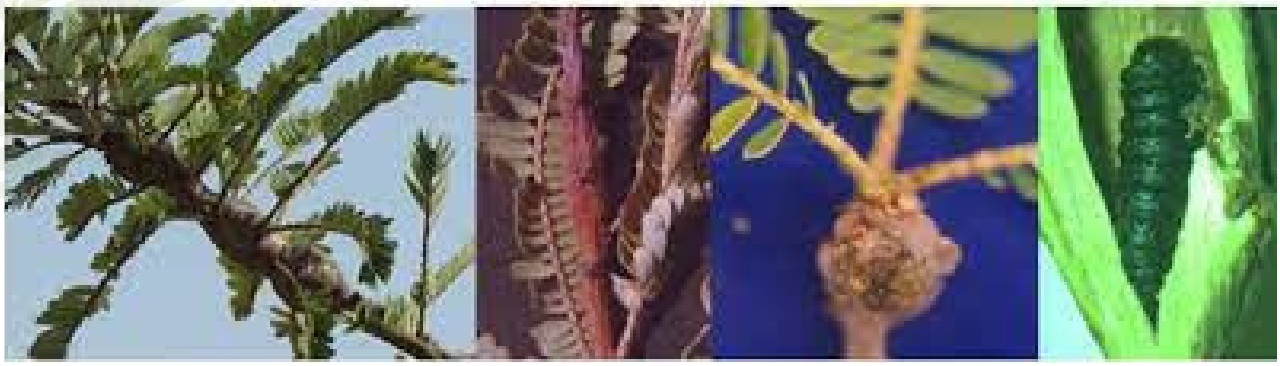
1. Bark-eating insect: The larvae of this insect make a hole on the branches, eat the tissue inside and take out the remains, which remains like sawdust near the hole. To prevent this, the hole should be cleaned with a bicycle stick and cotton soaked in petrol or kerosene should be filled in the hole or the hole should be filled with wet soil.

2. Aphid: The outbreak of this pest is more when the weather is moist or cloudy. They make plants weak by sucking the juice from soft parts and small fruits. For its prevention, 2 liters of neem oil should be dissolved in 100 liters of water and sprinkled twice at an interval of 15 days.

3. Shoot gall maker (knot-making insect): The spores of this pest stop the growth by entering the tip of new shoots. To prevent this, cut the affected branches at 5-7 cm. Cut it out from the bottom and burn it by putting it in a pit somewhere.

4. Scale insect: Due to the outbreak of this insect, all the branches, fruits, etc. are affected due to which the whole plant dries up. To prevent this, a solution cow urine or neem oil mixture in water along with 100 g Trichoderma powder should be sprayed.





MAJOR DISAESES

1. Amla Rust: It is a fungal disease. Red-colored round and oval spots are formed on the leaves, which later affect the fruits as well. Due to this disease, the price of fruits decreases. For its biological control, 1 liter of cow urine and neem oil in 10 liters of water should be sprayed at an interval of 15 days from mid-September to October.

2. Tissue Tuberculosis: Its outbreak is mainly more on the Francis variety, due to which sometimes 60-80 percent of fruits fall black from inside. To prevent this, two spraying of 0.6 percent borax should be done in the months of April and July.

PLANTING MATERIAL

Amla saplings/plants of 1.5 to 2 feet in height are transplanted at a fixed distance in the month of July to August or February. Transplanting of plants is done by the square method. In which the distance of plants to plants and row to row is kept equal. Another plant can also be planted in the middle of each group of plants. This method is also called the complementary method or quincunx. Apart from this, the farmer can make proper use of the vacant area in addition to more profit.

TRAINING AND PRUNING

To grow Amla plants to medium height, they should be trained and pruned. Young plants should be allowed to grow about 75 cm to one meter above the ground level. After that, the branches should be allowed to emerge so that the structure of the plants can be developed well. Grow the plant in a circular shape.

MULCHING

Good results have been obtained by mulching with organic residues in Amla orchard. Success has been achieved by mulching with different types of materials like straw, banana leaves, and farm yard manure. Weeds are controlled by mulching with organic residues for many years, the temperature of the roots is controlled as the organic matter decomposes and increases the soil's fertility and water-holding capacity. Apart from this, it also prevents harmful salts from coming on the ground surface. Thus, it reduces the effect of harmful salts in the soil, as well as mulching also increases the number of earthworms and beneficial micro-organisms near the roots of the plants.

INTERCROPS

Fruit trees require a period of 2-3 years to bear fruit, this is a major problem due to which farmers do not plant fruits in more areas. Amla is a deciduous tree with deep roots and spreading leaves. There are no leaves on the tree for three to four months of the year and due to scattered leaves in the rest of the month, a sufficient amount of sunlight is available on the land. As a result, there are many possibilities for intercropping of fruits like guava, drumstick, and plum, in vegetable gourd, okra, cauliflower, coriander, in flowers gladiolus and marigold, etc. Medicinal and aromatic plants have been found suitable for intercropping with Amla. Some of the crops of intercropping farming are as follows-

- **Amla + Drumstick + Safed Musali / Tulsi**
- **Amla + Drumstick + Black Turmeric**
- **Amla + Drumstick + Stevia**
- **Amla + Drumstick + Aloevera / Shatavari**
- **Amla + Drumstick + Tulsi/ Ashwagandha/ Chia seeds**

FLOWERING AND FRUIT DEVELOPMENT

In Amla flower bearing starts in spring. The flowering starts in the last week of March and lasts for three weeks. In seedling grown plants, flowering starts earlier, while in advanced varieties, flowering occurs later. Flowering occurs twice a year in South India. The first time is from February to March and the second time is from June to July. The flowers of the first time give good yield, but the flowers of the second time give less fruit. Amla is a cross-pollinated plant, so bees and other pollinating agents play an important role in pollination.

FRUIT MATURITY

The maturity of amla fruits depends on many factors like location, climate, soil type, moisture, etc. Varieties Banarasi and Krishna reach maturity in 17 to 18 weeks after fruiting, while Kanchan and Francis take 20 weeks. Chakiya variety, fruits mature in 23 weeks after fruit setting.

HARVESTING

Amla fruits are harvested by hand, but this is not possible in big trees. Harvesting is done by climbing on ladders made of bamboo. The fruits should be picked up early in the morning and kept in plastic crates. Fruits should not be allowed to fall on the ground while plucking, otherwise, the injured fruits rot at the time of packing and storage and harm other fruits as well.

YIELD

The grafted plant of Amla starts bearing fruit from the third year after planting and the seeded plants after 6 to 8 years. The grafted plant starts bearing full fruit after 10 to 12 years and continues to bear fruit for 60 to 75 years with proper maintenance. There is variation in the yield of different varieties of Amla. Banarasi is low yielding, Francis and Narendra Amla - 6 medium yielding varieties, and Kanchan and Narendra Amla - 7 are high yielding varieties. A full-grown gooseberry tree gives one to three quintals of fruit. In this way 15 to 20 tonnes per hectare yield can be obtained.

GRADING

Amla fruits can be divided into three categories based on their size, weight, color, and ripening time. Large-sized fruits (more than 4 cm in diameter) are used for making murabba, marmalade, medium-sized fruits for making other preserves, and small- sized fruits for making medicinal products like Chyawanprash, Triphala, etc. Immature, injured, and diseased fruits should be discarded.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QUALITY

To increase the storage time of fruits, two spraying of 1% calcium nitrate solution should be done 20 and 10 days before harvesting. In addition to this, spraying 0.5% zinc sulfate and 0.1% thiourea twice (mid-May and mid-June) increases the yield and quality of fruits.

TOTAL COST PER ACRE

PARTICULARS	QUANTITY	EXPENSES
Planting material/ saplings	100 saplings @ Rs.150/- per plant	15,000/-
Organic fertilizers	Organic fertilizers, organic insecticides & pesticides, growth boosters, etc.	40,000/-
Other expenses	Transportation, disease and pest management, other care and maintenance costs	75,000/-
Total expenditure	**Rs.130,000/-**	

TOTAL INCOME PER ACRE (Production from 100 plants)

YEAR	PRODUCTION FROM 100 PLANTS	BUY BACK PRICE	TOTAL INCOME
Third	3000 kg	Rs. 15/- per kg	Rs. 45,000/-
Fourth	4000 kg	Rs. 15/- per kg	Rs. 60,000/-
Fifth	6000 kg	Rs. 15/- per kg	Rs. 90,000/-
Sixth	7000 kg	Rs. 15/- per kg	Rs. 105,000/-
Seventh	9000 kg	Rs. 15/- per kg	Rs. 135,000/-
8 to 20 years	per year10000 kg	Rs. 15/- per kg	Rs. 150,000/- per year (upto 40 years)

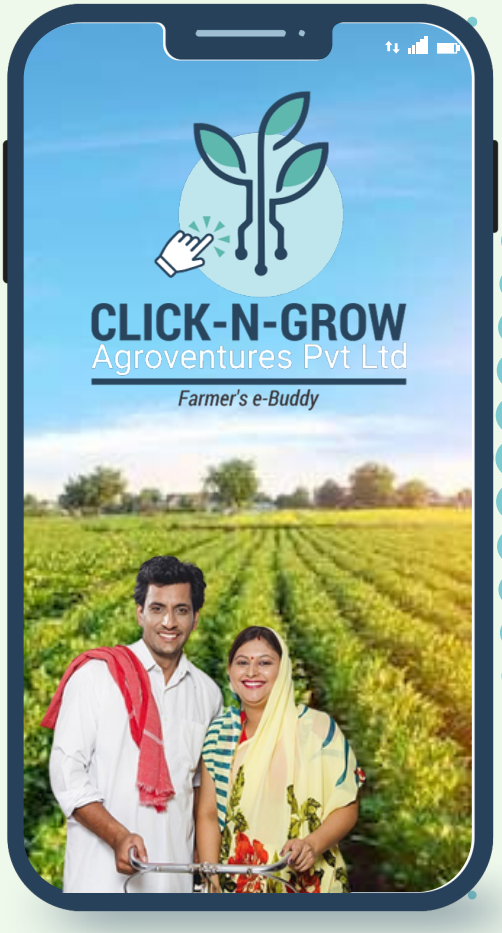
Income from 1 Acre of Amla cultivation

- Net income for first 7 years- 435,000/-
- 8th to 20th year (150,000/- per year) = 3,000,000/-

Net income (20 years) = 3,435,000/-

COMPANY PROFILE

Click-N-Grow Agroventures Pvt. Ltd.



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INTERLINKED FARM SOLUTIONS AT ONE PLACE

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