



## Effect of IBA on Harwood Cutting of Pomegranate

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Pomegranate is one of the ancient and important table fruit in tropical countries. It is grown on large scale in the Mediterranean countries such as Iron, Spain, Morocco and Egypt etc. At present pomegranate is grown all over the world in the tropic and subtropic conditions and grown all over India and commercially in Maharashtra (more than 60 per cent) followed by Gujarat, Rajasthan, Uttar Pradesh, Andhra Pradesh, Karnataka, Tamil Nadu etc. The plant has high adaptability, under tropical conditions there are usually three flushes and each may also result in flowering. In the subtropics, tree flowers in spring along with a flush of vegetative growth. Fruits of this flush ripens late in summer, whereas the vegetative during same period flowers in the next spring. The tree is deciduous in temperate countries, while it is evergreen in tropical and subtropical regions. The fruits are borne terminally on short spurs, arising from mature shoots. It is hardy and bushy having a tendency of developing multi-stems. The edible part of pomegranate is a juicy outgrowth of the seed called the aril. It is liked for the cool refreshing juice and also valued for its medicinal properties. The juice is useful for patients suffering from leprosy. The bark & rind of the fruit are commonly used in dysentery and diarrhoea. The dried seeds of pomegranate give important condiment called "Anardana". Tannin is obtained from fruit rind, leaves, stem & root bark. The flowers, yield red dye, which is used for dyeing cloth. One pomegranate fruit supply about 40% of an adult's daily Vit-C requirement. It is also rich in Riboflavin, protein, fat, sugar, pectin, Ca & Iron content.

**Botanical Description of Pomegranate:** The pomegranate (*Punica granatum* L.), botanically known as 'belonging to the family Punicaceae and has only 2 species, viz., and. The species, is divided into 2 sub-species viz., chlorocarpa and porphyrocarpa. is wild in nature. Pomegranate (L.) has the somatic chromosomes 16 or 18. Fruit type is Balausta (fruit develops from the ovary and is a modified fleshy berry). The edible part of pomegranate is a juicy outgrowth of the seed called the aril.

**Origin:** Pomegranate is believed to be originated from Iran. Iran is considered as the 'Primary centre of origin' for pomegranate. Besides Iran, Pomegranate is available in Afghanistan, Pakistan and India. These countries are considered as the 'Secondary centres of origin'. In Indian- Maharashtra, Karnataka, Andhra Pradesh, Gujarat, Tamil Nadu, Rajasthan and Punjab are the states where cultivation has gained momentum. There are more than 25 pomegranate varieties grown in different parts of India. Bhagwa and Ganesh occupy the major area under cultivation in India.

**Economic Significance:** Today, in India, Maharashtra state is considered as "pomegranate basket of India" contributing more than 70% of the total area under pomegranate followed by Karnataka and Andhra Pradesh. Indian horticulture has made a rapid stride in last two decades maintaining the growth rate of 5-6 per cent. Contribution of horticulture to

agricultural GDP has increased to 29.5 per cent. The juice from pomegranate is one of the most powerful antioxidants which guard our body against free radicals, the harmful molecules that can cause heart disease, premature aging and even cancer. The juice is reaching source of vitamin C, Riboflavin, Iron, Phosphorus, Protein etc. It can be processed in to RTS, squash, anardana etc.

**Cultivation:** Presently, pomegranate is successfully propagated by hardwood stem cutting and air-layering. Though, air layering is successful in pomegranate but it is expensive, and it adversely affects the growth of the mother trees. Propagation of pomegranate by cuttings is the most convenient and cheapest method to obtain a fully developed and stronger tree in considerably less time. Cuttings are collected from high yielding plants one year old & fully matured shoots. About 25-40cm long cutting should be planted by removing leaves and treating the bottom end of cuttings with rooting hormone (IBA - 2000ppm) and inserted in the soil; Plants will be ready in 55-60 days.

**Effect of IBA on Harwood Cutting:** Indole Butyric Acid (IBA) is the synthetic plant hormone. It is active in inhibiting axillary bud break on developing shoots, and it stimulates the root initiation. It promotes cell elongation which helped to increase in root length. Apart from potential growth regulator, suitable medium for cutting establishment should have enough moisture and good aeration. Use of suitable rooting media and optimum concentration of IBA would help in rapid multiplication of pomegranate cuttings.

**Post-Harvest Handling:** In India, improper handling leads to spoilage loss (25-30%) of pomegranate fruits and thus, reduces the profit margin of growers. Generally, fruits are picked manually and assembled at grading platform for on-farm grading and packing. Then the fruits are sorted to eliminate those with severe defects like scuffing, cuts, bruises, splitting and decay. And the remaining fruits are separated according to the magnitude of the physical defect. The fruits after harvesting are graded according to their size, weight and colour and are packed in bamboo or wooden boxes or paper carton, using cushioning materials.

**Post-Harvest Treatment for Storage** In the last few years research on pomegranate post-harvest storage has been addressed to the search of new physical treatments to prolong the commercial life of pomegranates. These treatments must keep the original quality of the fruit, avoiding fungal development, and the loss of quality characteristics (colour, flavour, texture) and nutritional properties (vitamins, antioxidants, health promoting agents, etc.). These treatments modify the environmental conditions of pomegranate storage, and have an effect on the fruit physiology and biochemistry and on the development of micro-organisms that contaminate the fruit surface. In this way, the possible application of atmospheres with a gas composition different from the air (CO<sub>2</sub> enriched and/or reduced in O<sub>2</sub>) has been explored. In addition, the use of thermal treatments for fruit conditioning and curing, and intermittent warming during cold storage to avoid fungal development and the physiological disorders that can develop as a consequence of the storage in temperatures below 5°C, have also been studied.

**Physiological Disorder:** Fruit cracking is common in pomegranate and also serious. This disorder is due to the prevalence of high temperature and moisture stress followed by rains cause fruit cracking during fruit development. In the young fruits, it could be due to boron deficiency. The cracked fruits are also liable to be invaded by certain fungi and bacteria. The fruits lose their market value and become unfit for human consumption.

#### Control of Disease

- Planting of varieties tolerant to fruit cracking.
- Early harvesting of fruits immediately after maturity.

- Spray calcium hydroxide on foliage after fruit set.
- If boron deficiency- spray borax at 0.1 % to pl/20g/pl/year.
- Spray GA3 at 250ppm in June.

### References

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