



## Effect of IBA Concentration, Cocopeat and Sphagnum Moss on Air Layering at Different Time Intervals in Guava (*Psidium guajava* L.) Cv. Sardar (L-49)

(\*Pooja Kakarwal Meena, Annjoe V Joseph, Saket Mishra and Rakesh Kumar)

Sam Higginbottom University of Agriculture Technology & Sciences, Naini, Prayagraj

\*Corresponding Author's email: [poojakakarwalmeena@gmail.com](mailto:poojakakarwalmeena@gmail.com)

Guava (*Psidium guajava* L.) a native of Tropical America (from Mexico to Peru), belongs to family Myrtaceae is quite popular fruit crops of India, due to its delightful taste, flavour and its availability for a longer period during the year with moderate price. Guava can be propagated by both seed as well as vegetative means. Among the vegetative methods of guava propagation, air layering with the help of growth substances is a successful method of propagation. Exogenous application of IBA accelerates the rate of rooting, increases final root percentage and number of roots. Besides hormonal influences, the climatic and environmental factors of different season also affect rooting, root initiation and survival of guava air layer. The differences in rooting percentage, better root character and survival of guava air layer may be also attributed to the varying in weather conditions such as temperature, relative humidity and rainfall.

### Air-Layering

Air-layering is the commercial method in practice for propagation of guava. The most ideal time for air layering in guava is between April and July in the warm and humid climate, when the average temperature varies between 29.3 and 30.5°C and relative humidity between 69.0 and 80.0 per cent. A shoot from previous year's growth of 1cm in diameter is selected for air-layering. A ring of bark about 3cm long is removed. This area is covered with wet sphagnum moss, cocopeat and tied with polyethylene film. The rooting takes place in about 30-40 days. Veneer grafting, T-budding, Forkert budding are some of the other methods of propagating guava.

**Effect of Time on Air Layering:** The climate of region plays a crucial and significant role in realizing better success rate on the guava air layering. Air layering is done in the beginning of monsoon i.e. June-July and may be continued till September. Observing that Good layer survival percentage (%) in the month of July treated with IBA 4000ppm, it might be due to favorable external environmental factors, good sun shine, aeration, optimum temperatures and relative humidity during root initiation, quality of roots, subsequent growth and development of layers. The roots are induced within 2-3 months depending upon the climatic conditions.

**Effect of Auxins on Air Layering:** Auxin particularly IBA, NAA and IAA have reported to induce rooting in many of the species with varied success. Auxin induced acceleration of cell elongation in individual root cell, Elongation of cell is caused by stimulation of the first phase. The second phase of cell elongation can only be retarded by auxin. If its concentration is so low that the acceleration of the first phase of growth is not completely marked by retardation of the second phase.

Air layering with the help of growth substances stimulating root primordial in air layers of fruit plants. IBA at higher concentration might be due to the activity of auxin at cambial may be adequate for callus formation and initiation of root primordia.

**Effect of rooting Media on air layering:** Better absorption of nutrients and moisture from the growing media created more favorable environment for root and shoot growth resulting in higher survival percentage of air layering in guava. Maximum survival percentage of air layers might be due to better water holding capacity of media as well as more number of primary and secondary roots, number of leaves etc. The increase in yield is attributed mainly to an improvement in root development, an increase in the rate of water and mineral uptake by roots. While, maximum number of leaves might be due to the availability of more mineral nutrients and water due to efficient absorption by vigorous root system. The rooting media such as sand, soil, saw dust, cocopeat, sphagnum moss, vermicompost and FYM.

**Effect of interaction between Rooting media × Time × IBA concentration:** The rooting media like sand, soil, saw dust, moss grass, Vermicompost and FYM etc., are being used to improve the scope of air layering in guava. Two different concentration of IBA viz., 4000 and 5000 ppm were used in four time of layering viz., 15th July, 30th July, 15th August and 30<sup>th</sup> August with two rooting media viz., sphagnum moss and cocopeat. Among the rooting media, moist sphagnum moss produced highest rooting percentage and root characters.

## Conclusion

Guava is one of the very important fruit crops of India because of its hardy nature, prolific bearing, high vitamin C i.e., high nutritive value, easy availability at moderate price with pleasant aroma and good flavor of fruits. IBA at higher concentration and rooting media individually and in combination is the best for higher rooting and survival percentage and can be used for mass multiplication of true-to type plants of Sardar Guava(L-49) through air layering under the sub-tropical region. Rooting media, Rainy season and IBA treatments seems to have influence the activation of root primordial and provide carbohydrates, cause considerable increase in the success in promoting roots and improved root characters like number of roots, root length and root weight.

## References

1. Albany, V., N.R. P. Vilchez, Z.J. J.A. Vilorio, C. Z.J. Castro and J.Gadea L. (2004). Effect of vegetative propagation of guava using air layering technique. *Agronomia Tropical (Maracay)*, 54: 1, 63-73. *Interacademia*, 5: 278-281.
2. Alloli, T.B., P.N. Reddy, S.A. Hussain and C.V. Patil (2001). Flyash new medium for induction of rooting in air layering of dry land fruits. *Karnataka Jour. of Agri. Sci.*, 14(2): 536-537. Amin, M.N. (1986). Micro propagation of a tropical fruit tree *Psidium guajava* L. *J. Indian Bot. Soc.*, 65: 43-44.
3. Amin, M.N. and V.S. Jaiswal (1988). Micropropagation as an aid to rapid cloning of guava cultivars. *Sci. Hort.*, 36: 89-95. Athani, S.I., G.S.K. Swamy and P.B. Patil (2001). Effect of different pre-treatments on rooting of air layers in guava cv. Sardar. *Karnataka J. Agri. Sci.*, 14(1): 199-200. B.
4. Manga\*, P. Jholgiker, G.S.K. Swamy, G. Prabhuling and N. Sandhyarani (2017). Studies on Effect of Month and IBA Concentration of Air Layering in Guava (*Psidium guajava* L.) cv. Sardar. *Int. J. Curr. Microbiol. App. Sci.*, 6(5): 2819-2825.