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Effect of Different Concentration of IBA& Phloroglucinol and Media Composition on Phalsa Cutting (*Grewia asiatica*)

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Phalsa (*Grewia asiatica L.*) is a small berry fruit of tropical regions of South Asia including India and belongs to the Tiliaceae family. It is one of the most cherished small fruits in India cultivated on an area of less than 1000 hectares with 196 tonnes annual production (GOP, 2019). It is highly nutritious and contains several bioactive compounds like tannins, anthocyanins, phenols and flavonoids. Phalsa plant is usually propagated through seed; whereas, asexually it is propagated through hardwood cutting and layering. In woody plants, indole butyric acid is mostly used for inducing root formation in cuttings and those roots which are induced by IBA show increased number of vascular strands in relation to its concentration. IBA being a stable and non-toxic compound to plants and effective for root promotion has been used in a wide range of plant species. Phloroglucinol increase shoot formation and somatic embryogenesis in several horticultural crops. When added to rooting media together with auxin, phloroglucinol further stimulates rooting, most likely because phloroglucinol and its homologues act as auxin synergistic or auxin protectors. Synthetic hormones like IBA and NAA are commonly used to promote root development in asexual propagation. IBA is widely used as a root-initiation promoter in agriculture (waisel, 1991). IBA is a suitable auxin for this type of experiment because it shows a large amount of flexibility when dealing with the range of concentration that can be used on success of phalsa cutting.

Effect of IBA on phalsa cutting

Application of major growth regulators to induce rooting namely IBA, IAA, and NAA gained importance over time in propagation of phalsa plant through stem cuttings.observed that the roots from the phalsa cuttings initiated from cambium, secondary phloem and medullary rays in the xylum. reported that highest percent of rooting number of roots, length of rootin cuttings of Phalsa when middle part of shoots were taken and treated with 2500 ppm concentration of IBA.

The best results in rooting of Phalsa cuttings reated with 2000ppm IBA is the best performed in all aspects, as maximum rooting and survival percentage, length of shoot and root, diameter of root and sprouting in shoot. Growth regulators have been shown to regulate various aspects of plant growth and development including cell elongation, cell division and cell differentiation.

Effect of Rooting media

Establishing of phalsa stem cuttings and the consequent root development was seen as impacted by the establishing medium. Among the few establishing media, sand is broadly

utilized, as it is effectively accessible and the most affordable. Sand comprises of basically no mineral supplements and has no buffering limit. It is generally utilized as a solitary medium or in mix with natural materials. The highest survival percentage of cutting, number of primary roots, percentage of rooted cutting and length of root was observed under vermi compost & Cocopeat rooting media.

Effect of time of planting In phalsa cuttings

The time of planting play significant role in survival percentage. Planting time shows variation according to different places and their environmental condition. The planting of cutting in monsoon showed better survival due to higher humidity. The planting of phalsa cutting in mid June month gave highest value of rooting percentage, number of planting, length of longest root, diameter of thickest root, fresh weight of root per cutting and dry weight of root per cutting as compare to month of summer and winter season. Phalsa cutting planted in July month in mist chamber condition show maximum value of sprouting percentage, length of longest sprout per cutting, number of leaves and rooting percentage as compare to month of summer and winter season.

Conclusion

Among various concentration of IBA, 2000 ppm concentration of IBA treatment showed the best performance in terms of number of sprout per cutting, length of longest sprouts, diameter of thickest sprouts, average number of leaves on new sprout per cutting, fresh and dry weight of shoots per cutting, percentage of rooted cuttings, number of primary, length of longest roots, diameter of thickest roots, fresh and dry weight of roots and survival percentage of cutting while among the different growing condition, Mist chamber growing condition has shown best result in present study. Mid August was found to be the most appropriate time for planting in term of rooting of cuttings. It is suggested that hardwood cutting treated with 2000ppm concentration of IBA gives the overall best performance under Mist chamber growing condition to produce tallest plant of Phalsa within a short time and recommend for commercial vegetative multiplication.

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