

Sustainable Grafting Practices: Eco-Friendly Approaches for the Future of Farming

ARTICLE ID: 0140

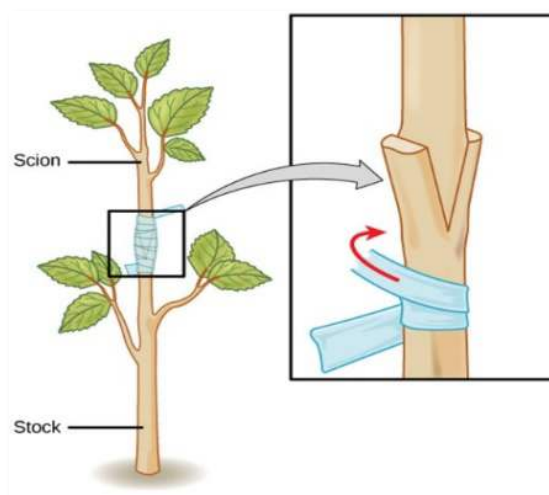
Dharmendra Kumar Ram¹, Abhay Singh², Preety Kumari¹, Rohit Kumar³¹Assistant Professor, Sai Nath University, Ranchi (Jharkhand)²Ph.D. Scholar, Department of Horticulture, Hemvati Nandan Bahuguna Garhwal University, Srinagar (Uttarakhand)⁴Research Scholar, Banda University of Agriculture and Technology, Banda (Uttar Pradesh)

Grafting is a horticultural technique used to join parts from two different plants so they grow as a single plant. Grafted horticultural plant farming began in Korea and Japan in the late 1920s, with watermelon plants being grafted on squash rootstocks. Initially, the cultivation of grafted plants was intended to diminish damage by soil pathogens, primarily fungus (*Fusarium oxysporum*). However, the adoption of this approach increased. It is commonly used in India to propagate a variety of fruit trees, vegetables, and decorative plants. Inoculation is the natural equivalent of this

technique. The technique is most typically employed for asexual multiplication of commercially developed plants in the horticulture and agricultural industries. Grafting is an effective substitute for other crop management methods in certain countries, where it has been incorporated into agricultural work schemes.

Since it has gained acceptance across many agricultural domains, it can be considered a more environmentally conscious method of producing horticulture.

This method is particularly valuable in horticulture for several reasons:



Disease Resistance: Grafting can help plants resist diseases that might affect them if they were grown from seed.

Improved Fruit Quality: It allows for the combination of a hardy rootstock with a high-quality scion (the part of the plant that grows above ground) to produce better fruit.

Increased Yield: Some grafted plants produce more fruit or grow more vigorously than non-grafted plants.

Faster Maturity: Grafted plants often mature more quickly than those grown from seeds, which can be advantageous for farmers and growers.

Commonly Grafted Horticultural Crops in India

In India, grafting is commonly used for a variety of horticultural crops to enhance quality, improve yield, and ensure disease resistance. Here is some commonly grafted crops in India:

Fruit Crops: In India, grafting is widely used for fruit crops to improve growth, yield, and disease resistance. Here are some commonly grafted fruit crops:

Mango: Grafting is used to propagate desirable mango varieties with better fruit quality and uniformity. It also helps in overcoming issues related to seedling variability.

Guava: Grafting guava onto rootstocks can enhance disease resistance, improve fruit quality, and accelerate fruit-bearing.

Citrus Fruits: Citrus trees are often grafted to improve disease resistance, especially to root diseases, and to ensure consistent fruit quality.

Pomegranate: Grafting pomegranate varieties can help in improving fruit quality and increasing resistance to diseases and pests.

Apple: In regions like Himachal Pradesh and Jammu & Kashmir, grafting is used to propagate apple varieties that are adapted to local conditions and improve fruit quality.

Pear: Similar to apples, pears are grafted to ensure better fruit quality and to adapt varieties to local growing conditions.

Plum: Grafting plums helps in propagating desirable varieties and improving overall fruit production and quality.

Peach: Grafting peaches onto suitable rootstocks helps in improving fruit quality, disease resistance, and overall growth.

Apricot: Grafting apricots is used to enhance fruit quality and adapt varieties to local conditions.

Vegetables Crops

In India, grafting is a popular technique used to enhance the yield and resilience of various vegetable crops. Here are some commonly grafted vegetable crops in India:

Tomato: Grafting tomatoes onto robust rootstocks can help improve resistance to soil-borne diseases and enhance overall plant vigor.

Chili: Grafting chili plants onto resistant rootstocks can improve disease resistance and increase productivity.

Brinjal: Similar to tomatoes, grafting brinjal onto disease-resistant rootstocks can boost plant health and yield.

Cucumber: Cucumber plants are often grafted to reduce the impact of soil-borne diseases and improve overall growth.

Pumpkin: Grafting pumpkins can help improve resistance to various diseases and pests, as well as enhance growth and fruit quality.

Watermelon: Watermelon is commonly grafted to overcome soil-borne diseases and improve yield and fruit quality.

Squash: Grafting squash varieties helps improve resistance to diseases and pests, enhancing productivity.

Melon: Melons are grafted to enhance disease resistance and improve plant vigor and fruit quality.

Advantage of Grafting in Horticultural Crops

Grafting in horticultural crops offers a range of advantages that enhance plant health, productivity, and quality. Here are some key benefits:

Disease Resistance: Grafting onto disease-resistant rootstocks can protect plants from soil-borne diseases and pests, reducing the need for chemical treatments. Rootstocks can be selected for their resistance to specific pathogens, extending the productive life of the plant.

Improved Growth and Yield: Certain rootstocks can improve the overall vigor and growth of the plant, leading to healthier plants and higher yields. Enhanced root systems and better nutrient uptake can lead to increased fruit and vegetables production.

Rapid Production

Grafting can speed up the production process compared to seed propagation, allowing for quicker establishment of new plants and faster time to market.

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Controlled environment: The controlled conditions contributed the ability to manipulate production arrangement and survival rate.

Conclusion

Grafting is a versatile and essential technique in Indian horticulture that helps in optimizing the performance of various crops. By selecting appropriate rootstocks and scions, farmers can significantly enhance the quality, yield, and disease resistance of their crops. Each crop has its specific grafting techniques and requirements, which need to be followed for successful outcomes.