Effect of Height of Grafting and Scion Length on Graft Union Formation and Subsequent Growth of Mandarin (*Citrus reticulata* L. Blanco) Saplings in Solukhumbu, Nepal

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Abstract

A field experiment was laid out in Factorial Randomized Block Design (FRBD) with two factors: height of grafting (H1 = 10 cm, H2 = 15 cm, H3 = 20 cm) and scion length (S1 = 5 cm, S2 = 10 cm, S3 = 15 cm), comprising nine treatment combinations, each replicated thrice. Two sample plants were randomly selected from each experimental plot, consisting of six grafted plants to assess different parameters: graft success, sprouted scion bud, scion mortality, diameter both below and above 2.5 cm of the graft union, internode length, shoot length, number of primary branches, leaf number, and leaf area. Graft success in saplings with scion length 5cm was found maximum (66.78 %), while success rate was minimum (26.11 %) in saplings with scion length 15 cm. Saplings with grafting height of 20 cm performed better in terms of shoot length (15.92 cm), diameter below and above 2.5 cm of the union (0.414 cm and 0.392 cm respectively), and leaf area (12.46 cm2) while saplings with grafting height 10 cm performed least. Graft combination with scion length 5 cm and grafting height 20 cm performed significantly higher in terms of graft success (67.00%), sprouted scion bud (75.00%), diameter above 2.5 cm of the union (0.440 cm), and mean leaf number (14.67). Hence, from the experiment, it is concluded that grafting operation with scion length 5 cm and grafting height 20 cm can be practiced with the highest graft success and better sapling growth in mandarin.

Keywords: Grafting height, graft success, graft combination, better saplings