

ABSTRACT

An Evaluation of Factors Influencing Grafting Breadfruit, *Artocarpus altilis*
(Parkinson) Fosberg, on Chataigne, *Artocarpus camansi* (Blanco)

Frankie K. Solomon Jr.

Commercialization constraints of breadfruit as a crop can be overcome by grafting the species onto chataigne. Experiments conducted test parameters that lead to successful interspecific grafting. Parameters included efficacy of plant growth regulators - IBA (Indole butyric acid) and BAP (6-benzylaminopurine); scion cultivars (two breadfruit cultivars from Trinidad - 'Yellow' and 'White', a Jamaican accession - 'Macca', and chataigne as the control); season graft is done; anatomy of scion, rootstock and resulting graft union; and juvenility. Also, preliminary observations on early growth and development of grafted trees under field conditions were done. IBA treatments (100 mg.L⁻¹ and 200 mg.L⁻¹) and BAP treatment (200 mg.L⁻¹) negatively affected ($p < 0.05$) length of grafted scion survival on six-weeks-old chataigne rootstock compared with the control (0 mg.L⁻¹). Six weeks after grafting in wet season plants had survival percentages of 80%, 97%, 83% and 80% for 'Yellow', 'White' and 'Macca', and chataigne cultivars, whereas in dry season, survivals were 15%, 15%, 5% and 20%, respectively. Primary growth, juvenility of both stock and scion, and post grafting environmental conditions of 24°C to 29°C and RH above 90% were influential on grafting success. Epicotyl top wedge grafting using Stage III tissue culture 'Yellow' breadfruit micro-cuttings and 1, 2, 3 or 4-weeks-old chataigne seedlings attained 100% success. Grafted epicotyl plants had no significant ($p > 0.05$) difference in scion height, overall height and scion leaf number among rootstock of various ages 26-weeks post-graft. Chataigne rootstock was observed to tolerate less than ideal environmental conditions while supporting growth and development of grafted plants. Five years after grafting, chataigne, 'Macca', 'White' and 'Yellow' grafted trees survival was 100, 80, 80 and 60%, respectively, under good field conditions. Interspecific grafting between three breadfruit cultivars and chataigne was achieved, and the development of a new grafting technique, with clear guidelines established.

Keywords: Graft union; epicotyl grafting; anatomy; tissue culture; breadnut; tree establishment; tree dieback.