

## Effect of age of rootstock on the success of softwood grafting and growth of lime grafts

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### ABSTRACT

Rangpur lime seeds inoculated with AM fungi were sown in June 2005 to raise rootstocks for softwood grafting with seedless lime at different months. The highest graft success was recorded in *Glomus mosseae* inoculated rootstocks of four, five, six and eight months old, grafted during October, November, December and February months respectively i.e., 94.67%, 97.67%, 90.00% and 96.67% and also in *Acaulospora laevis* inoculated rootstocks of eight months old, grafted during February (90.00%). The highest increment in stem diameter was recorded in *Acaulospora laevis* inoculated stocks of nine months old, grafted during March. The highest sprout was observed in *Glomus mosseae* inoculated stocks of nine months old.

**Key words:** Rangpur lime, Seedless lime, *Acaulospora laevis*, *Glomus mosseae*.

Citrus is commercially propagated by budding or grafting. The consumer is conscious of the value of seedless fruits. Hence seedlessness, regular fruit bearing, tree size, disease resistance and limonin free cultivars are the targets of many citrus breeding programmes in the world (Jaskani *et al.*, 2005). There are a number of citrus cultivars with desirable horticultural characteristics which have attained commercial importance because of their seedlessness (Fatta Del Bosco *et al.*, 1992). For this purpose, seedless lime was used as the scion material. Rangpur lime is a well known rootstock, suited for dry areas of the world. AM fungi are known for boosting plant growth through their influence on root geometry with production of more roots (Adivappar *et al.*, 2004) leading to increased vegetative growth and advance the time for grafting. The age of rootstocks and month of grafting also influence the graft success and growth of scion. Keeping these points in view, an investigation was conducted to study the success of Rangpur lime as a rootstock for seedless lime as influenced by different AM fungi, when grafted on different ages of rootstocks in different months.

### MATERIALS AND METHODS

The present investigation was conducted at department of Pomology, Kittur Rani Channamma College of Horticulture, Arabhavi during 2005–2006. Rangpur lime seeds were collected from fully matured fruits harvested from healthy mother trees. Rootstocks were raised in polybags of 10 x 8 cm (300 gauge) filled with soil: sand:

FYM (1:1:1) (v/v). The inoculum of AM fungi consisted of a mixture of sand, soil and FYM in 1:1:1 (v/v) proportion and root segments of maize and ragi comprising of hyphae, arbuscles, vesicles and chlamydo spores of the AM fungi. The inoculation was done at five grams per polybag consisting of 80-88 infective propagules. The softwood grafting was performed every month on the soft portion of Rangpur lime rootstock of four month to nine month old by using seedless lime as the scion. The design of the experiment was factorial completely randomised block design with two factors i.e., different AM fungi and different age of rootstocks. Observations like graft success, graft survival, increment in stem diameter, sprout length etc. were recorded at monthly intervals.

### RESULTS AND DISCUSSION

The result revealed that AM fungi *Glomus mosseae* recorded highest graft success (89.28%) and graft survival (84.75%) compared to *Acaulospora laevis* and uninoculated control. Among the ages of rootstock used for grafting, five months old rootstocks, grafted during November recorded highest graft success (89.67%), which was at par with eight months old rootstocks, grafted during February (89.11%). The lowest graft success was recorded on seven month old rootstocks, grafted during January (Table 1). Similar result was obtained by Venkat (2004) by using Rangpur lime as the rootstock and Kagzi lime as the scion under Arabhavi condition. Ramesh (1997) working with cashew on bio-fertilizers had observed maximum graft success in the bio-fertilizer provided plants, when compared to uninoculated controls due to increase in vigour of the rootstocks and continued effect of bio-fertilizer available in the soil medium. Kulwal