

Effect of endomycorrhizal species for germination, growth vigour and graft-take in mango

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ABSTRACT

An experiment was conducted to know the effect of AM fungi on germination, growth and graft-take in mango. The inoculation of *Gigaspora margarita* and *Glomus fasciculatum* had resulted in highest germination (51.01 and 49.20%, respectively). The vegetative parameters, viz., rootstock height, stock diameter and number of leaves and root parameters, viz., primary root length, number of secondary roots and vigour of the stock were found to be highest in the rootstocks treated with *Gigaspora margarita* followed by *Glomus fasciculatum*. Spore count, per cent root colonisation were higher in the AM fungi treated rootstocks. Significantly maximum graft success was recorded by *Glomus fasciculatum* and *Gigaspora margarita* (80.30 and 83.22%, respectively). Whereas survival of grafts was recorded maximum in *Gigaspora margarita* (95.36%) followed by *Glomus fasciculatum* (88.33%).

Key words : Mango, *Gigaspora margarita*, *Glomus fasciculatum*, Spore count, Root colonisation, Graft success.

In the present organic era, much emphasis is laid on organic approaches in agriculture and horticulture. Microorganisms' being the major components of organic farming, their role in plant propagation is of importance. AM fungi are known for boosting/increasing plant growth and yield mainly through their influence on root geometry with production of roots having more volume aided by increase in uptake of major nutrients (Adivappar *et al.*, 2004) leading to increased photosynthetic activity. Nutrient absorption by fungal symbionts is due to the extramatricular hyphae of the fungus proliferating beyond the root nutrient depletion zone. The growth activity of the scion and rootstock at the time of grafting plays an important role in the union of the two components for successful grafting scion and rootstock should be in an active growth stage. Further, temperature and humidity are two important factors, which influence the grafting to some extent (Singh and Srivasthava, 1979).

Efficient fungi thus selected can be used for inoculation in mango nurseries and have some beneficial effect on early germination, growth and graft-take (Santosh, 2004, Bassanagouda, 2005, Shantagouda, 2006 in mango and Pranath, 2004 in citrus. Keeping this view under consideration, the present study has been taken out to assess the effect of AM fungi on germination, growth and graft-take in mango.

MATERIALS AND METHODS

The present investigation was conducted at Department of Pomology, Kittur Rani Channamma College

of Horticulture, Arabhavi, during 2006–2007. A completely randomized design with seven replications and three treatments were employed viz. Control, *Gigaspora margarita* and *Glomus fasciculatum*. The inoculation of AM fungi to mango stones was done in the polybags at five grams per polybag consisting of 81.5 to 88.00 infective propagules per five grams of inoculum. The stones were sowed in the polybags of 8 x 6 " size containing potting mixture of soil, sand and FYM in the ratio of 1: 1: 1. The polyethylene bags of respective treatments were labelled and kept apart from each other to avoid contamination. Extrametrical chlamydo-spores produced by AM fungi were determined by wet sieving and decanting method as given by Gerdemann and Nicolson (1963). The per cent root colonisation was calculated by using the formula, at two times, i.e., at the initiation of the experiment and at the end of the experiment.

$$\text{Per cent root colonization} = \frac{\text{No. of root bits positive for colonization}}{\text{Total No. of root bits observed}} \times 100$$

Germination percentage was computed using the formula

$$\text{Germination per cent} = \frac{\text{Number of stoned germinated}}{\text{Number of stone sown}} \times 100$$

Vigour of the rootstocks was calculated using the formula. (Bewly and Black, 1982).

Vigour of the root stocks = Dry weight of root stock x germination percentage