Research Paper :

Response of Mango Seedlings to VA-Mycorrhizal Inoculation

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SUMMARY

A pot culture experiment using sterilized soil was conducted to study the effect of VA -mycorrhizal fungi *viz., Glomus epigaeum, Glomus mosseae* and G*igaspora calospora* and their combination on growth and root colonization of mango seedlings (var. local). The combined inoculation of three VA-mycorrhizal fungi was superior over all the inoculation treatments in recording the plant height, number of leaves, root length, fresh and dry weight of shoot and root. The VAM root colonization percentage in mango seedlings was increased from 58.82 to 73.89 per cent over non - mycorrhizal seedlings (0.00 %) indicating that VA mycorrhizal inoculation is necessary to increase the growth parameters and dry matter accumulation of mango seedlings.

Key words : VA-mycorrhizae, Mango, Root colonization

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Mango is one of the most popular fruit crops grown in tropical and subtropical countries. It is considered as 'National fruit of India' and is rightly called as 'king of fruits' due to unique taste, flavour and is popular within all sections of society. Mango is cultivated vegetatively by adopting several techniques like inarching, budding, stone grafting but veneer grafting is adopted in large scale for maximum growth and yield. Whatever method of grafting is followed, the seedling stocks have to be healthy and vigorous and should have desirable height and thickness. VA-mycorrhizal fungi improve uptake of phosphorus and other micronutrients. The mycorrhizal fungus is a specialized member of rhizosphere or root region microorganisms. Mycorrhizal plants contain higher concentration of P in their tissues than control (Harvey and Smith, 1982). Increase in uptake of other nutrient elements such as zinc, sulphur and copper have also been reported as influenced by VAM inoculation (Hayman, 1982). Hence, an experiment was conducted on mango seedling to observe the effect of inoculation of Vesicular arbuscular mycorrhizae (VAM) *viz.*, *Glomus epigaeum, Glomus mosseae* and *Gigaspora calospora* and their combinations on growth and root colonization of mango seedlings.

MATERIALS AND METHODS

A pot culture experiment was conducted during June 2006 to May 2007 in completely randomized design with three replications and eight treatments. The mango seedlings were inoculated with single and their mix VAM inoculum adjusting the dose finally to 150 g / pot. This inoculum of *Glomus epigaeum, Glomus mosseae and Gigaspora calospora* contained 680-800 spores / 50ml soil by volume. The mango stones were sown in pots with Soil + FYM (1:1) mixture containing 12.45 kg /ha phosphorus and 207.90 kg/ha nitrogen. The growth observations of mango seedlings like height, number of leaves, stem girth, root length, dry weight of shoot and root and mycorhhizal dependency percentage were recorded at 90 and 180 days after sowing.

RESULTS AND DISCUSSION

The results obtained from the present investigation are presented below :

Height and root length:

The height and root length (Table 1) of mango seedlings were significantly influenced due to different VAM inoculations both at 90 and 180 days, respectively. The plant height of mycorrhizal plant ranged from 13.46 to 21.71 cm and 29.08 to 36.00 cm at 90 and 180 days,