

Effect of azotobacter on growth of jack (*Artocarpus heterophyllus* Lam.) Rootstocks and grafts

L.R. GOVINDARAJU AND K.R. MELANTA

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See end of the article for authors' affiliations

Correspondence to :

L.R. GOVINDARAJU
Division of Horticulture,
University of Agricultural
Sciences, G.K.V.K.,
BANGALORE
(KARNATAKA) INDIA

ABSTRACT

The present investigation on the effect of media on growth of jack rootstocks and grafts were undertaken at the Department of Horticulture, University of Agricultural Sciences, GKVK, Bangalore. The study conducted revealed that plants inoculated with *Azotobacter* (10^7) at 7ml per bag were found best for the maximum growth of jack seedlings and grafts. However the plants inoculated with *Azotobacter* (10^7) at 6ml per bag proved superior for graft union success.

Key words : Jack, Rootstocks, Grafts, *Azotobacter*

A *zotobacter* is asymbiotic Nitrogen fixing bacteria. This microorganism can secrete phytohormones and also helps to build up organic status of the soil leading to increase in the availability of nutrients. Increased demand of fertilizer and higher price has directed emphasis on the use of bio-fertilizers in Indian Agriculture. The container grown plants when raised in different media can produce better grafts if enriched with nutrients. The present study was undertaken to find out the effect of *Azotobacter* on the growth and success of jack seedlings or grafts raised in container inside the green house.

MATERIALS AND METHODS

The experiment was conducted in Department of Horticulture, UAS, GKVK, Bangalore by using green house facility. The common media used for all the treatments are soil, coirdust and sand in the ratio 1:1:1 (v/v). Six treatments were as indicated in treatment details (Table 1 and 2) were considered for this experiment. To each bag *Azotobacter*(10^7) in different levels was inoculated. This was done after filling the bags and before planting the seedlings. Nitrogen, phosphorous and potassium 2 g/bag was applied to all the treatments at later stage. These treatments were replicated four times in a complete randomized design. The rootstocks were maintained for four months for growth and later wedge grafted. The observations like plant height, number of leaves and stem girth were recorded for the rootstocks and also for grafts. Successful graft union rates were recorded at 120th day after grafting.

RESULTS AND DISCUSSION

The findings of the present study as well as relevant discussion have been summarized under following heads.

Growth responses of jack rootstocks:

The results obtained under different treatments are presented in Table 1. The highest plant height (30.82 cm) and stemgirth (2.06 cm) was recorded in plants inoculated with *Azotobacter*(10^7) at 7ml per bag and was significantly superior to all other levels of *Azotobacter*(10^7). Maximum number of leaves were observed in treatment T5 inoculated with 6 ml of *Azotobacter*(10^7). Minimum growth rate was noticed in plants inoculated with 3ml of *Azotobacter*(10^7) per bag. The highest growth rate might be attributed to the conducive effect of *Azotobacter*(10^7) on good physical and chemical properties of media and also for better

Table 1: Effect of *Azotobacter* on growth of jack rootstocks

Treatments	Plant height (cm)	No. of leaves	Stem girth (cm)
T ₁ (NPK 2g)	25.65	6.98	1.83
T ₂ (<i>Azotobacter</i> 3 ml + 2g NPK)	25.06	6.55	1.72
T ₃ (<i>Azotobacter</i> 4ml + 2g NPK)	26.37	6.76	1.79
T ₄ (<i>Azotobacter</i> 5ml + 2g NPK)	25.27	6.97	1.86
T ₅ (<i>Azotobacter</i> 6ml + 2g NPK)	28.84	7.57	1.89
T ₆ (<i>Azotobacter</i> 7ml + 2g NPK)	30.82	7.41	2.06
S.E. ±	0.792	0.064	0.039
C.D. (P=0.05)	2.355	0.192	0.116
C.V. (%)	5.870	1.839	4.229