

## **Synergistic effect of *Glomus fasciculatum* and bioformulations for softwood grafting in jamun (*Syzygium cuminii* Skeels) under *in-situ* and *ex-situ* inorganic conditions**

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### **ABSTRACT**

An experiment was conducted at Horticulture Research Station, Bijapur (Tidagundi) to know the influence of *Glomus fasciculatum* and bioformulations on soft wood grafting in jamun. Rootstocks treated with *Glomus fasciculatum* had registered highest graft success (31.55% and 46.56% in both *in-situ* and *ex-situ*, respectively) and graft survival (30.93% and 89.1% in *in-situ* and *ex-situ*, respectively). Among different sub-treatments, stocks treated with microbial consortia had recorded significantly highest graft success (32.76% and 49.68% in both *in-situ* and *ex-situ*, respectively) and graft survival (31.55% and 46.56% in both *in-situ* and *ex-situ*, respectively).

**Key words :** *Syzygium cuminii*, *Glomus fasciculatum*, Bioformulations, Graft-success, Graft survival.

**J**amun is an indigenous, underexploited fruit of high commercial value, belongs to family Myrtaceae. It has recently attained utmost importance as an arid zone horticultural crop because of its hardy nature, high yielding potential, quality fruits and also for its nutritive and medicinal properties. Lack of recognised varieties, relatively long pre-bearing period, lack of standardised propagation techniques and availability of elite planting materials are major hurdles in the area expansion programme of this fruit crop. Although nucellar embryony is observed in this crop, large scale variation in its fruit morphology, fruit quality, maturity and productivity have been reported owing to its cross-pollination nature and seed propagation. Thus, the methods of vegetative propagation, such as grafting become immensely important to obtain plants of true to type of desired mother plants.

This shift in the scenario necessitates raising the seedlings/ rootstocks organically (from the nursery itself) to ensure better growth particularly more stem girth development which is of paramount importance for early grafting and higher graft-take. Early grafting would be able to meet ever increasing demand for elite planting materials. On the other hand, *in-situ* grafting is best method of propagation for better establishment in dry land and less damage to grafts with no question of transplanting to main field keeping this in view the study was taken on softwood grafting in jamun.

### **MATERIALS AND METHODS**

An investigation was carried out during 2005 to 2007 at Horticulture Research station, Bijapur (Tidagundi) to know the combined influence of *Glomus fasciculatum* and bioformulations on soft wood grafting of jamun under both *in-situ* and *ex-situ*. The experiment consisting of 10 treatment combinations consisting of two main plots (M<sub>1</sub>- with *Glomus fasciculatum*, M<sub>2</sub>- Un inoculated) and five sub plots (S<sub>1</sub>- Amrit pani, S<sub>2</sub>- Microbial consortia, S<sub>3</sub>- Panchagavya, S<sub>4</sub>- Inorganic fertilizer (60:30:90 gram N: P: K per plant per year), S<sub>5</sub>- Control) was laid out in split plot design with three replications.

The AM fungus (*Glomus fasciculatum*) was inoculated to rootstocks at the time of sowing. Mature scions were cured two weeks prior to grafting day by defoliating in order to activate the terminal buds. The AM fungus inoculated rootstocks were subjected to softwood grafting at six month after sowing. Parameters of the grafts, such as graft-take after three months of grafting, graft survival, sprout height were recorded at monthly intervals.

Bioformulations were prepared and applied as soil drenching immediately after irrigation from sowing up to three months after grafting at three per cent concentration. To prepare Amrit pani Ten kilograms of cow dung and 250g cow ghee were mixed properly. To this mixture, 500g of honey was added and mixed thoroughly. This mixture was kept for incubation for 24 hours (Pathak and Ram, 2004) before use. Microbial consortium consisted of 15 local isolates of bacteria, fungi and actinomycetes comprising of bioinoculants, PGPRs and biocontrol agents in cow dung slurry. Whereas