

Effect of Mycorrhizal Fungi and *Frankia* on Growth of Casuarinas

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Abstract

Casuarinas are symbiotic plants associated with mycorrhizal fungi and *Frankia* which can help plants uptake nutrients to improve growth and increase tolerance under abiotic stress. This paper gives an account of research carried out from 1993 to 2012 in southern China with particular reference to the growth of *Casuarina equisetifolia*, *C. junghuhniana* and *Allocasurina littoralis* inoculated with a group of ectomycorrhizal, endomycorrhizal fungal isolates and *Frankia* strains in nursery, glasshouse and field conditions.

- There is a strong interaction between mycorrhizal fungi or *Frankia* and tree genotype (provenance, family or clone). Right combinations of mycorrhizal fungal or *Frankia* isolate and tree genotype were screened for *C. equisetifolia* and *C. junghuhniana*.
- Only some mycorrhizal species and isolates could improve the growth of casuarinas, thus selection of effective mycorrhizal fungi is necessary.
- Mycorrhizal or *Frankia* inoculation can improve nutrient uptake of seedlings, and increase tolerance to abiotic stress and survival.
- Inoculum application should follow the principle "suitable mycorrhizal fungal or *Frankia* isolates must match suitable site and tree species", based on more than 20 years of research experience.