

Constraints in Casuarina Cultivation in Southern Coastal Regions of China

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Abstract

Casuarinas have been cultivated in southern coastal provinces of China for more than a century. Large-scale shelterbelt planting commenced in the 1950s with a specific objective to stabilize the moving sands, provide windbreaks for protection of agricultural lands and water resources, and as a source of fuel wood and timber. Casuarinas are very important to the coastal ecosystems and livelihood of the coastal communities. *Casuarina equisetifolia* is most extensively planted whereas *C. cunninghamiana* and *C. glauca* are planted in the cooler regions. The planted area reached one million hectares by late 1970s but has declined to about 300,000 hectares at present due to infrastructure development and economic expansion. Many government agencies in China have been conducting research to support the establishment and management of casuarinas. These include genetic improvement, plantation silviculture, biotechnology, *Frankia* and mycorrhizal fungus association, and pests and diseases. However, current casuarina planting is facing many constraints.

1. Decline in plantation productivity. Plantations established during the past 20 years are clonal that too by using only a few clones. New plantations have shown considerable decline in the growth probably due to degradation in the productivity of clones.
2. Decline in ecological function, particularly wind protection efficiency. Many shelterbelt plantations are over mature and have been observed to be less resistant to typhoon winds. In addition, most shelterbelt plantations are pure stand and

even age. These factors may also have contributed to low wind protection efficiency.

3. Excessive and uncontrolled exploitation. Large areas of casuarina shelterbelt plantations are seriously damaged by fish and shrimp farms, mining operations and development of tourist resorts. There continues to be a contradiction between coastal environment protection and economic development.
4. Bacterial wilt *Ralstonia solanacearum*. This disease continues to cause serious problem. The mortality appears to be associated with frequent typhoon winds uprooting the trees.

Measures and recommendations to address the above constraints are discussed in this paper.