Casuarina Research, Development and Utilization in India

N. Krishna Kumar,* A. Nicodemus and B. Gurudev Singh
Institute of Forest Genetics and Tree Breeding
Coimbatore 641 002, India
**Email: krishforbio@hotmail.com*

Abstract

India has a rich history of cultivation and improvement of casuarina since its introduction during second half of nineteenth century. Originally introduced in the coastal areas for fuelwood needs, its cultivation has steadily extended to all areas in the Peninsular region making India the largest casuarina-growing country with around half a million hectares of plantations. The major species planted is *Casuarina equisetifolia* and *C. junghuhniana* is grown only for the past 10 years and rapidly increasing in area of cultivation. The principal end use of casuarina is papermaking although the traditional uses like fuel wood, poles for construction purposes and props for agricultural crops are still popular. Planting for environmental services include shelterbelts, windbreaks and reclamation of mined and salt-affected areas. A long-term breeding programme with a broad genetic base is being implemented for over 15 years and is moving from second to third generation. Seeds from seed orchards and clones tested in multilocations have been deployed in plantations yielding genetic gains from 15 to 112% for wood production over unimproved seed sources in different soil types and cultural regimes. Site and end use specific hybrid clones are under various stages of field testing. Biotechnological research to identify genes responsible for wood traits, disease resistance and to develop transgenics with tolerance to salinity and drought is in progress. Efficient seed handling and clonal propagation techniques, agroforestry models, management strategies for pests in nursery and plantations, development of germplasm free from pests, identification of growth-promoting strains of Frankia and biofertilizers and models for yield prediction have been developed. The priorities for the future include sustaining the genetic gain obtained from breeding programme through infusion of new genetic material, developing clones with high pulp yield for paper industries, developing pest-resistance clones particularly against the blister bark disease and to develop techniques and strategies to promote casuarina cultivation in semi-arid and salt-affected areas.