

## Carbon Sequestration Potential, Calorific Value and Biomass Productivity of Five *Casuarina* Species in Dry Land Ecosystem of Peninsular India

Raju L. Chavan<sup>1\*</sup>, H. Shivanna <sup>2</sup> and S. Viswanath<sup>3</sup>

<sup>1</sup>College of Forestry, UAS Dharwad 581 401, India

<sup>2</sup> College of Forestry, Sirsi 581 401, India

<sup>3</sup>Institute of Wood Science and Technology  
Mallechwaram, Bangalore 560 003, India

\*Email: rajuchavanuasr@gmail.com

### Abstract

The objective of this study was to investigate the carbon sequestration, growth performance, biomass production, calorific value and merchantable volume of five *Casuarina* species under rain fed conditions at Agricultural Research station in Gangavati, Karnataka State, India. The highest total biomass 395.04 ton ha<sup>-1</sup>, as well as merchantable stem volume 124.8 m<sup>3</sup> ha<sup>-1</sup> and calorific value of wood (4884.5 kcal kg<sup>-1</sup>) was recorded for *C. equisetifolia* followed by *C. glauca* (307.76 ton ha<sup>-1</sup>, 102.4 m<sup>3</sup> ha<sup>-1</sup> and 4562.0 kcal kg<sup>-1</sup>) than the *C. cunninghamiana* (274.78 ton ha<sup>-1</sup>, 88.0 m<sup>3</sup> ha<sup>-1</sup> and 4707.25 kcal kg<sup>-1</sup>), *C. cristata* (241.54 ton ha<sup>-1</sup>, 67.2 m<sup>3</sup> ha<sup>-1</sup> and 4286.30 kcal kg<sup>-1</sup>) and *C. obesa* (249.64 ton ha<sup>-1</sup>, 62.4 m<sup>3</sup> ha<sup>-1</sup> and 4650.25 kcal kg<sup>-1</sup>). *Casuarina* adoptability (Survival 66.5 % to 86.7 %) and its role in sequestering carbon that addresses the mitigation of climate change as stated among species was highly significant. The average total tree biomass obtained was 293.75 ton ha<sup>-1</sup> among species. Considering about 48 % of a biomass is carbon, the carbon sequestration and carbon dioxide sinks rate during year as obtained by *C. equisetifolia* (189.62 ton ha<sup>-1</sup> and 695.27 ton ha<sup>-1</sup> respectively) was higher followed by *C. glauca* (147.72 ton ha<sup>-1</sup> and 541.66 ton ha<sup>-1</sup> respectively), *C. cunninghamiana* (131.89 ton ha<sup>-1</sup> and 483.61 ton ha<sup>-1</sup> respectively) than *C. obesa* and *C. cristata*. Biomass and carbon accumulation were relatively higher in *C. equisetifolia* followed by *C. cunninghamiana* and *C. glauca*.