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Growth Characteristics, Biomass and Chlorophyll Fluorescence Variation of Garhwal Himalaya ' s Fodder and Fuel Wood Tree Species at the Nursery Stage

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Author(s)

Azamal Husen

ABSTRACT

Fodder and fuel wood deficiency in the Himalayan region is well recognized. Rural inhabitants are exploiting these forest resources for their livelihood for generations which leads to severe deforestation. The aim of this study was to identify the fast growing fodder and fuel wood tree species of Garhwal Himalayas at nursery stage with wider relevance and great potential for extensive afforestation programmes. Seed of *Bauhinia purpurea* L., *Bauhinia retusa* Roxb., *Bauhinia variegate* L., *Celtis australis* L., *Ficus nemoralis* Wall., *Ficus roxburghii* Wall., *Grewia optiva* Drummond, *Leucaena leucocephala* (Lam.) de Wit, *Melia azedarach* L., *Ougeinia oojeinensis* (Roxb.) Hochr., *Quercus leucotrichophora* A. Camus, *Terminalia alata* Heyne ex Roth. and *Toona ciliate* M. Roem. were collected from the superior trees and seedlings were raised. After one year and one month of establishment at the nursery, the growth characteristics, biomass and chlorophyll fluorescence (dark-adopted F_v/F_m) of each species were also recorded. *G. optiva* had shown the highest growth in terms of height, basal diameter increment and number of branches, while production of leaves was more on *O. oojeinensis*. Biomass and chlorophyll fluorescence (maximum quantum yield or photochemical efficiency of PSII) was found highest in *Q. leucotrichophora* which indicates photosynthetically this species was most active among the studied fodder and fuel wood tree species. The information in this communication could be utilized for developing various conservation and sustainable strategies in the Garhwal Himalayas to mitigate the

KEYWORDS

Scarcity; Fodder and Fuel Wood Species; Screening; Growth; Biomass; Chlorophyll

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