



Research Article

Carbon sequestration potential of tree borne oilseeds for dryland areas of Karnataka

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Abstract : A field experiment was carried out at Regional Agricultural Research Station, Bijapur (Karnataka) during 2004 to 2010 to evaluate the carbon sequestration potentials of different tree borne oil (TBO's) seed tree species in drylands of northern dry zone of Karnataka. Results of the study indicated that, among six TBO's, the total biomass production was highest in *Azadirachta indica* (18.43 t ha⁻¹, 43.63 t ha⁻¹, 57.52 t ha⁻¹, 58.06 t ha⁻¹, respectively during these years) with a carbon sequestration potential of 9.22 t ha⁻¹, 21.82 t ha⁻¹, 28.76 t ha⁻¹ and 29.03 t ha⁻¹, respectively during 4th, 5th, 6th and 7th year of planting followed by *Simarouba glauca* and *Pongamia pinnata*. Hence, considering all these parameters, it may be inferred that TBO's viz., *Pongamia pinnata*, *Simarouba glauca*, and *Azadirachta indica* species are the most promising to fast growing nature which are suitable to grow in shallow black soils of northern dry zone of Karnataka under rain fed situation (annual rainfall 594 mm) with higher potentials of carbon trading.

Key Words : Carbon sequestration, TBO's, Dryland, Biomass

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INTRODUCTION

In context of fossil fuel crises and its high price in India, option of using tree borne oil seeds (TBO's) gained importance looking to their renewable, biodegradable and environmentally safety nature (Parthiban *et al.*, 2009). The country has vast potential of more than 50 lakh tones of tree borne oilseeds

(TBO's). However, only 8-10 lakh tones is being collected resulting in 1.5 to 2.0 lakh tones of oil from tree origin resources. The diverse agro-climatic conditions of the country are favourable for growing all the tree borne oilseeds. There are ten agro-climatic zones in Karnataka, out of which five are classified as dry zones. Northern dry zone is the largest of all the zones in the state of Karnataka and second largest zone in the country which occupies an area of 4.19 million hectares (m ha) and out of which only 6.6 per cent is under forests and rest of the area is under arable crops or fallow. The dryland ecosystems of north Karnataka lie in typical semi arid environment with an annual rainfall of 594 mm occurring in 39 rainy days which is highly erratic and ill distributed resulting in frequent droughts. The track consists of vertisols to the tune of 80 per cent which are further classified as deep soils, medium deep and shallow soils. The unscientific management of soil resources and uneven nature of the terrain have lead to conversion of the shallow soils in to denuded soils which have become either unproductive or under productive. The dryland ecosystems are devoid of required cover of perennial vegetation

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