Farmers' preferences for fodder trees in Agroforestry

Raghunandan Prasad Dwivedi[1]*, Sanjeev Kumar[2]
[1]ICAR-Central Agroforestry Research Institute, Jhansi, India
[2]BAIF, Bhagalpur, India
Corresponding author e-mail: raghudwivedi66@gmail.com

Keywords: Agroforestry, Farmers preferences, Fodder trees, Over grazing

Introduction

Agroforestry encompasses land use systems where woody perennials are intentionally grown on the same piece of land with agricultural crops and/or animals either in form of special arrangement of temporal sequence. A good deal of work has been done on the subject during last one and half decade. Agroforestry is an age-old land use that has been practiced for thousand of years by farmers the world over. Agroforestry is a land use that involves deliberate retention, introduction or mixture of trees or other woody perennials in crop/ animal production fields to benefit from the resultant ecological and economic interactions (Nair, 1985). Bundelkhand region of central India comprises seven district of Uttar Pradesh (Jhansi, Jalaun, Lalitpur, Banda, Hamirpur, Mahoba and Chitrakutdam Karvi) and six districts of Madhya Pradesh (Datia, Tikamgarth, Panna, Sagar and Damoh) including Lahar and Bhander subdivision of Bhind and Gwalior districts respectively. The total geographical area of Bundelkhand is 7.85 million hectares. The region is located between $25^0 26^' 23^{''}$ to $25^0 28^'$ $32^{''}$ N latitude and $78^0 52^' 39^{''}$ to $78^0 54^' 44^{''}$ E longitude and at 300 m above sea level (ASL). The climate of the region is semi arid. The region is characterized by extremely harsh and hostile climatic conditions. The mean annual temperature is 26.50C characterized with May and June being the hottest months, January being the coldest month. The annual rainfall varies from 800-1300 mm with an average 900 mm of which 90 percent is received during monsoon season. The distribution of rainfall is erratic and uncertain; Annual potential evaporation of 1400 to1700 mm is higher than the annual precipitation, leaving thereby a shortage of soil moisture for growing crops. Bundelkhand is predominantly mono cropped region. The crops are grown in monsoon (*Kharif*) season on red soil and *Rabi* season on black soil with conserved moisture. Land of Bundelkhand region is undulating, poor in fertility status, shallow depth with poor water holding capacity. Irrigation facilities are limited and are primarily through open wells having poor water discharge capacity on the basis of colour, texture, depth etc. The soil of this region can be classified in two major group *i.e.* red soil (includes rakkar and parwa) and black soil (includes mar and kabar), it has been reported that 56% areas of Bundelkhand region of U.P. is under red soil group. The dwindling forest cover in the region resulted in shortage of fodder and fuel wood and therefore, animal dung, the valuable source of well rotten farm yard manure, is diverted for making dung cakes for fuel purpose. The available trees are heavily lopped in proportion to their age and size resulting in the death of the trees. As a result of prevailing climatic condition, large area of the region is under rainfed agriculture the socio-economic status of the farming community is very poor in this region. One of the important areas of research in agroforestry extension is the manner in which farmers participate in management of natural resources. Farmers' choice of fodder trees is an important component in the process of tree plantation. Every agroforestry extension research activity should begin with a study of socio cultural environment to answer basic questions.

Materials and Methods

The present study was undertaken with the twin objectives (i) To study the preferences of the farmers about trees and (ii) to find out relationship, if any, of age and land holding size of the farmers with trees preferences.

Two villages namely Shekhar and Nayakhera in Babina block of Jhansi district of Bundelkhand region were selected purposefully for the present investigation. The distance of the study area is 38 km from district headquarter (Jhansi).

The sample for the present study comprised 189 farmers of two villages. The total respondents (N=189) were categorized according to holding size into three category *i.e.* marginal farmers (holding up to 2.5 acre), small

farmers (holding> 2.5 acre & = 5 acre) and medium and large farmers (holding > 5 acre). In this way, there were 63 farmers in each category. The data were collected by individual personal interviews with the farmers. This was done with the help of a specially constructed interview schedule.

Results and Discussion

The total numbers of trees available with the respondent farmers are 2950. Out of which 880 trees are planted. On an average every farmer has 46.83 trees. The average numbers of planted and natural trees are 4.67 and 35.08 respectively. Subabul (*Leucaena leucocephala*) is the first preference of the farmers. Babul (*Acacia nilotica*), Siris (*Albigia procera*), Neem (*Azadirachta indica*), Mahua (*Madhuca latifolia*) are the second third fourth and fifth choice respectively. It was thought worthwhile to see the relationship between age and preference of fodder trees. The preference was collected on the basis of ranking of weightage score (Sabarathnam, 1988). It was found that for the respondent of age group 21-40, Subabul was the first preference, while Babul, Neem and Siris were, second, third and fourth choice, respectively. For respondent between 41-60 age group, the Mahua was first, and Babul, Subabul and Neem were second, third and fourth choice respectively. The holding size of the farmers was developed into three-category up to 2.5 acre, between 2.5-5 acre and above 5 acre. There were 63 (33.33%) respondents in every category. The responses obtained for preference of trees were ranked and score was given. Those who have up to 2.5 acre land preferred MPTS in ascending order as Subabul (73), Babul (40), Siris (31) and Neem (24). However, those farmers with a holding size between 2.5-5 acre, expressed their willingness as first for Babul, second for Neem, third for Subabul, fourth for Mahua. The farmers having more than 5 acre land choose Subabul as first choice, Babul as second choice, Neem as third choice and Siris as fourth choice.

Conclusion

Subabul (*Leucaena leucocephala*) is the first preference the farmers. Babul (*Acacia nilotica*), Siris (*Albigia procera*), Neem (*Azadirachta indica*), Mahua (*Madhuca latifolia*) are the second, third, fourth and fifth choice respectively. The various problems reported are as: difficulties during ploughing due to roots and canopy of the trees effect of shade affecting the crop production. According to farmers there is reduction in crop yield due to less growth of under storey crops. Due to high wind velocity and typhoon the trees and their branches fall down which create hindrances in intercultural operations. *Anna Pratha (stray animals)* of animals does create obstacles during new plantation. Lack of interest by state government employees towards agroforestry. Socio-economic, psychological and personal characteristics of the farmers, to a certain extent, are responsible for the dissemination of agroforestry technologies. The manipulation of such factors may, therefore, help to increase the extent of dissemination. These findings suggest that future agroforestry efforts need to focus on managing and developing locally important trees, fully involving local people, both men and women, and incorporating their knowledge in this process. Extension management perspective in agroforestry in India (Dwivedi, 2002) needs to be considered in agroforestry dissemination. RAGHU (Redirecting Agroforestry for Global Human Upliftment) approach of agroforestry dissemination is required (Dwivedi, 2015).

References

Dwivedi, R. P. 2002. Status of extension management perspective in Agroforestry in India. *MANAGE Extension Research Review* 3 (1): 97-103.

Dwivedi, R. P. 2015. Pers. Commun.

Nair, P. K. R. 1985. Classification of Agroforestry system. *Agroforestry System*, **2(2)** 97-128.

Sabarathnam, V. E. 1988. *Manuals of field experience training for A.R.S. Scientists* NAARM, Hyderabad.

Acknowledgement