Commercial Eucalyptus and Poplar Plantations – New Approaches in Eastern UP

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Abstract— *The commercialization of Eucalyptus and Poplar plantations in western Uttar Pradesh attracted other parts of central and eastern UP in the past few years. In Eastern UP, plantation practices vary according to different agro-climatic conditions, land capability and socio-economic status of farmers. The status and pattern of these commercial practices across eastern region of UP reflect that traditional agriculture / farmers are transforming into multifunctional directions and are increasing in a progressive manner. With a view to study planting pattern, demand- supply gap and economic returns of these commercial species, the socio-economic studies in six districts viz. Raebareli, Barabanki, Gorakhpur, Bahraich, Sonbhadra and Prayagraj of the region was carried out . The planting pattern of trees showed that on an average, 23 % trees were scattered on farms, 36 % were in blocks/orchards, 24 % were on bunds and 17 % were around homesteads etc. Due to huge demand of these two species in plywood/veneer and other wood based industries, a wide demand supply gap persists. The results depicted that in districts, Gorakhpur, Bahraich and Raebareli where plywood/veneer industry exists; highest demand supply gap of 135450, 151410 and 75230 cft/yr respectively for Eucalyptus and 55741,111050 and 48100 cft/yr respectively for Poplar was recorded. The market value of Eucalyptus and Poplar trees are almost same with a gain of Rs. 2000 to 2500 per tree by 3.0 to 3.5 qt of wood after 6-7 years of planting. The results clearly show that there is a great scope of planting of these two species in the commercial manner in the region of Eastern UP as they are fast growing, exempted from felling and transit permit and availability of market places in wood industries. Thus, commercial approaches for developing profitable, ecologically and socio-economically viable plantation models of these species may further open a new path for economic strengthening of farmers and increasing green cover of the region.*

Keywords— Commercial agroforestry, demand-supply gap, economic strengthening, livelihood, planting pattern.

I. INTRODUCTION

Tree culture outside forests and specifically on farm land is immensely helping in increasing the tree and forest cover and also in over all rural development by generating employment in plantations and their growing, maintenance, harvesting, transportation; generating additional income to the growers from the sale of trees; and in establishing new wood based industry based on sustained availability of wood raw material from such tree resources. The main tree species planted by the farming community on their farmland are eucalypts, poplar semal, kadam, shisham etc which are fast grown and farmers are able to grow agriculture crops in their association. It is generating an employment of around 6 crore man-days in nursery and plantation culture and associated activities of harvesting, transportation and wood processing in wood based industry. Poplar is now a raw material for around three dozen products and has created a win-win situation for all that include government institutions which are earning appreciable revenue from taxation and licensing mechanisms (Dhiman, 2012). If Indian agriculture has to prosper, the situation in Uttar Pradesh has to improve in all sectors including crop diversification. Agroforestry can play a major role in bringing the desired level of diversification along with sustainability. The farm industry linkages have also helped the systems to be more sustainable than the traditional cropping systems (Kareemulla et al. 2005; Saxena, 2000).

The Eucalyptus and Poplar-based commercial agroforestry show that the technologies are widely adopted when their scientific principles are understood and socio-economic benefits are convincing. An examination of the impact of agroforestry technology generation and adoption in different parts of the country highlights the major role of smallholders as agroforestry producers of the future. It is crucial that progressive legal and institutional policies are created to eschew the historical dichotomy between agriculture and forestry and encourage integrated land-use systems. Government policies hold the key to agroforestry adoption (Puri and Nair, 2004).

Kumar et al. (2011) compared the status of agro forestry in eastern and western UP. Planting trees outside forests will be an additional source of raising forest cover. However, there is large disparity within the farmer communities for tree planting at their farm at regional scale. Economic motives in tree growing are evident in the share of commercial forest tree species in the farm forest tree content. The study concludes that social and economic environment within the households governs the

tree planting on both the regions besides external factors. The present study deals with existing status of Eucalyptus and Poplar based agro forestry, timber trade mechanism and prospects of cultivation of these species in commercial manner.

II. METHODOLOGY

The important commercial tree species – Eucalyptus and Poplar were selected for the study. The districts were selected from three agro-climatic zones lying under eastern UP - Gorakhpur, and Bahraich from tarai region , Raebareli and Barabanki from Eastern Gangetic plains and Prayagraj and Sonbhadra from Vindhyan region . The general information of villages, land holding pattern, demand supply gap of selected species and species type for assessing plantation under agroforestry were studied in selected districts through participatory rural appraisal technique and structured questionnaire. The existing timber traders for marketing mechanism, rates of wood, quantity of timber, role of middle men, market cost, profit margin of seller, rates of forest corporation, database of contractors, sawmills, wood markets, plywood/veneer industries and existing farmers involved in agro forestry were also studied through structured questionnaire.

III. RESULTS AND DISCUSSION

The results for all the six districts were summarized and comparisons were made for assessing a trend for the region. The plantation pattern of Eucalyptus and Poplar species in agro forestry was assessed under the study and found that 29 % plantation is covered by Eucalyptus itself followed by Poplar (08%) (Fig1). In agro forestry, block plantation was preferred by farmers (36%) followed by bunds plantation (24%) (Fig 2). The demand supply gap of timber for Eucalyptus and Poplar was also assessed and found that in studied districts, the demand supply gap for timber was more in Eucalyptus as compared to Poplar. For firewood, Poplar is more demanded as compared to Eucalyptus species (Fig 3).

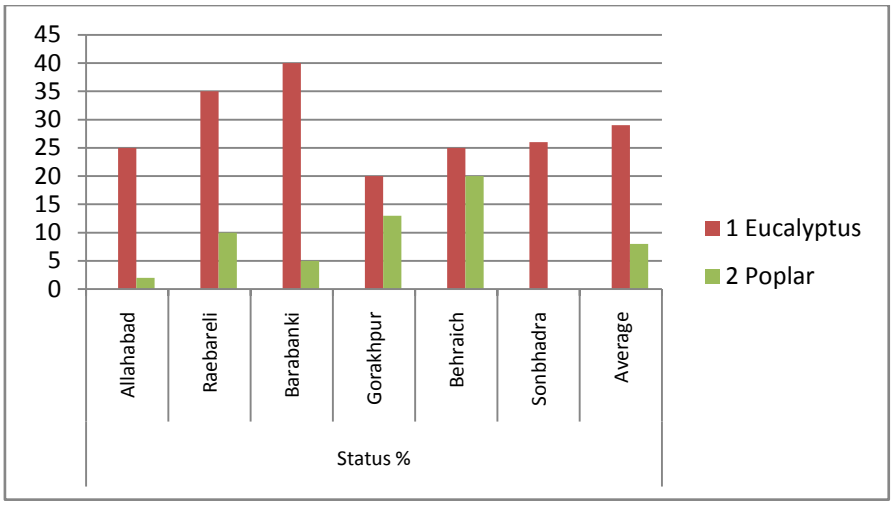

FIGURE 1: Status of species under plantation in study area

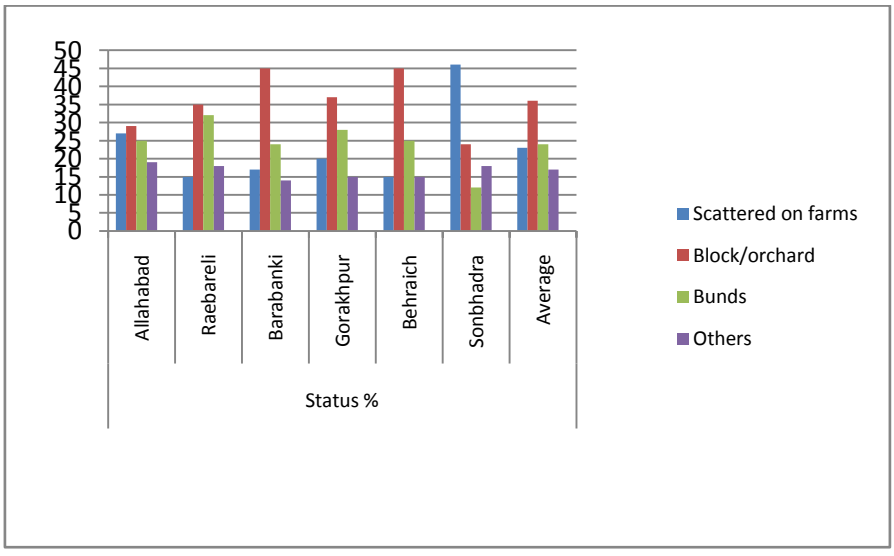

FIGURE 2: Planting Pattern under Agro forestry in study area

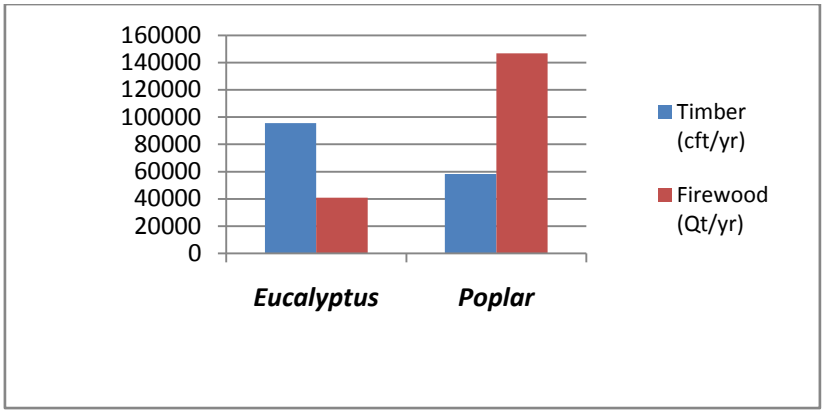

FIGURE 3: Demand supply gap of timber and firewood in Eastern UP

The timber trade mechanism in all six districts was compared and found that contractor is an important chain in the timber trade mechanism (Table 1). The majority of the farmers are trading their wood through contractor to avail all formalities/processing of the sale. The level of timber market uses was compared in all six districts and found that 37 % timber is used in door/window works, 30 % in furniture, 18 % in plywood/veneer, 05 % in packing boxes industry and rest 10 % in other uses as firewood etc (Table 2). The timber sources at sawmills was also analysed and the results depicted that only 14 % farmers are directly selling their timber at market. In the mechanism 53 % trade is through local contractor, 13 % wood is marketed by bordering districts/states, 17% through Forest Corporation especially in Gorakhpur and Sonbhadra (Table 3). In the market channel, contractors/middlemen are also involved at other market channels. The market rates of important timber species was also analysed and compared for selected districts.

The wood arrival at different market places was analysed and found that Eucalyptus consumption is best in Gorakhpur (275000 cft/yr) followed by Behraich, Raebareli and Prayagraj districts .The consumption of Poplar is best in Behraich district (1,04,550 cft/yr) followed by Barabanki (Fig 4).The Sawmills purchase timber from forest corporation through auction . The availability of Poplars is almost negligible in Sonbhadra district. Eucalyptus plantations are available in plenty at Prayagraj district but due to unavailability of markets and industries, most of the raw material is used in construction of houses, fencing etc. Timber is also supplied in bulk from Behraich and Gonda (Private trees of farmers and forest corporation auction) districts.

The market value is Rs. 2000-2500 per tree for 6-7 yr old matured tree of Eucalyptus. Approx. 3.5 – 4.0 qt wood comes out from this tree. In Prayagraj, Eucalyptus is mainly used in Balli and Phanti for construction purposes and packing boxes industries. In Raebareli, farmers are planting Eucalyptus on tree bunds of usar land. In district Raebareli, 22 veneer /plywood industries are existing. In these industries only 60-65 % raw material is available as per demand. In Lalganj range, despite of presence of plenty of eucalyptus trees, growers are not aware about their industrial uses. Thus, knowledge about source of market places may strengthen market channels of this area. Likewise, in district Prayagraj, eucalyptus trees are sold at very low rates in building construction work for phanti and balli etc. As this species is free for permit, it can be easily transported to adjacent Raebareli district for industrial consumption, but only some middlemen are involved in this practice. The common farmers are unable to get the benefit. In Bahraich, poor land holding is a major constraint for tree growers as their awareness is comparatively better than other sites. The availability of seedlings in forest department nursery is also very less as per their requirements. In some villages, poor knowledge about plantation techniques is also a hurdle in the way to success. The villages adjacent to forest fulfill their tree based needs by forest produce for wood as well as NWFPs. The lack of sufficient support to farmers by gram pradhans/forest officials is another constraint for tree growers. The farmers are not fully aware of tree felling and transit rules of trees and are harassed by police and forest department.

Muthoo (2004) examined the status of demand and supply of timber of the Indian market and the market opportunities for the tropical timber sectors. Demand for tropical timber is expected to continue to grow and could approach 10 million m 3 by the end of the decade. According to him the increasing demand for timber in India is due to the resurgence of the domestic economy which is poised to grow at over 6 % per annum and the rapid expansion of middle and upper income groups. Gangadharapp *et al* (2004) investigated that 37 percent of the agroforestry growers cut the tree in the age group of 20-30 years followed by 25 percent between 30-40 years and only 17 percent of farmers harvested above 40 years old trees. Further they revealed that 62 percent of the farmers sold their products through forest contractors, 27 percent through saw-mill

owners and 11 percent directly to consumers. Finally they explored that 58 percent of the farmers were not aware of the market price of their products.

TABLE 1
METHOD OF TIMBER TRADE (PURCHASE OR SALE) MECHANISM

✓	Farmer → Contractor → Commission agent →Timber Trader → End user
✓	Farmer→ Timber trader → End user
✓	Farmer → Consumer
✓	Farmer → Contractor → Timber Trader
✓	Farmer → Contractor → End user
✓	Farmer → Timber trader/ carpenter → End user
✓	Farmer → Contractor → Commission agent → End user
✓	Farmer → Commission agent → End user
✓	Van Nigam→ Contractor →Timber trader →End user
✓	Van Nigam→ Timber trader →End user
✓	Farmer→ Contractor →Timber trader →End user

TABLE 2
LEVEL OF TIMBER MARKET USES

S. No.	Market Particulars	Level in %						
		Prayagraj	Raebareli	Barabanki	Gorakhpur	Behraich	Sonbhadra	Average
1	Door / window	45	30	35	25	30	50	37
2	Furniture	35	10	40	40	25	30	30
3	Packing Industry	10	5	5	0	10	0	5
5	Plywood/veneer	0	40	10	25	30	0	18
6	Others	10	15	5	10	5	15	10

TABLE 3
SOURCE OF TIMBER AT SAWMILLS IN STUDY AREA

	Quantity (%) in selected districts						
	Prayagraj	Raebareli	Barabanki	Gorakhpur	Behraich	Sonbhadra	Average
Directly by farmers	20	12	18	12	12	12	14
Through contractors	60	70	60	42	50	35	53
Bordering district/ state	10	08	12	10	21	15	13
Forest corporation	05	08	06	35	15	35	17
Any other	05	02	04	01	02	03	3

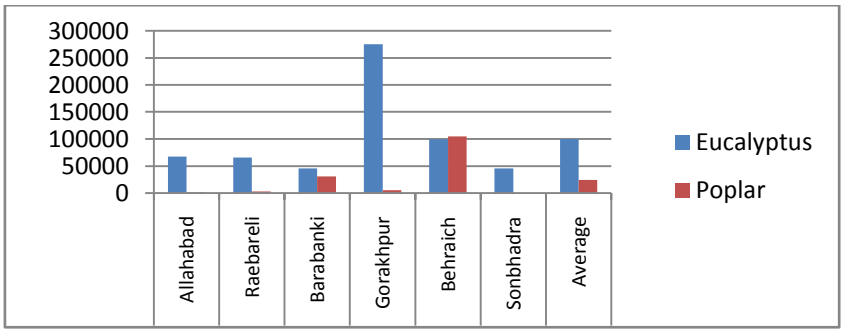

FIGURE 4: Approx. Quantity of Wood Per Annum Arrived at Saw Mills/ Wood Consuming Units

3.1 Constraints of traders/ growers in market channel of timber in Eastern U.P

Complexity of the system for tree growers to sell the produce directly to traders as getting felling and transit permit, contractor/ middlemen, felling loading/unloading, transportation etc are major hurdles in the way to success. Logs of wood

are rejected many times due to poor quality and these are sold in the market at very low rates compared to their actual cost. Brokerage / Arhat/ commission agent and Kat charges are major constraints in market channels. Interference of police is a major constraint for tree growers. There is less availability of industries for consumption of raw material, thus, lowering the rates of timber. In wood mandis, market is dominated by buyers as for sellers there is no provision of storage of wood. The commission agent and buyer get united during auction of wood. Poor availability of planting material and land availability are important reasons for tree growers for not adopting agro forestry.

3.2 Constraints for farmers in direct sale to forest corporation :

- Interference of police for felling and transportation
- Poor technical know-how for planting and marketing
- Problems by sales tax personnel
- Tree ownership certification by tree grower along with khasra/khatauni of land
- Limitation for minimum number of trees to forest corporation.
- Unrevised rates of corporation
- Long time in processing of sale
- Less publicity of the process of sale through forest corporation

IV. CONCLUSION

The most preferred and prospecting commercial species of agro forestry in the region are Eucalyptus and Poplar. The plantation of these species of the region should be taken on priority basis so as maintain the sustainability and fulfilling the requirement of wood based industries. The decentralized wood mandis should be organized and registered. The awareness of people should be regularly increased through extension and training programmes. The model demonstration of agro forestry species should be established in the villages for promoting plantation of species in the region. The existing market information should be disseminated well among tree growers/farmers and new avenues for market places as wood based industries should be initiated at planned level by the government. The species like Eucalyptus and Poplar which are exempted from felling/transit permit are not much known to the farmers of the region. So, increasing awareness of people is a must task for promotion of these species in the region.

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