Significance Of Farm Forestery: A Case Study Of Clonal Plantation

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ABSTRACT

Farm forestry plays a key role in developing pathways for additional resources in a sustainable and eco-friendly manner. With the increasing trend of raw material requirement by wood-based industries and its diversion to other usage, it is essential to plan, design and develop plantation with genetically improved pulp wood species. It has already been proved that farmers have got enough awareness about Eucalyptus Clonal plantation as a most preferred planting material to get maximum returns in shortest span. Farming community is being facilitated by pulp & paper industries by providing high quality clonal sapling, package of practice supported by backward-Forward linkage to reap the benefits. A case study is taken into consideration as significance of farm Forestry through Clonal Eucalyptus plantation, and details of the study / analysis was carried out by Raw Material Development, Orient paper mills, Amlai for the Progressive farmer Shri Keshav Pratap Singh, Village Pararia, Block Pawai, Dist Panna, (M.P). The results are highly encouraging by achieving the yield 26 MT/Ha /Year with minimum expenditure of Rs. 7500/-/ Ha/ Year supported by good silvicultural practice in span of 4 years.

Introduction

Indian Pulp and Paper Industries using various types of raw materials ranging wood / bamboo to agricultural residues and waste paper. During the initial days, Bamboo was main raw material for pulp and paper industry, which is changing now to the pulpwood with the environmental concerns and concept of sustainability and self-sufficiency have made industry to rely upon farm forestry (SFR-2008).

The biggest challenge faced by the wood based industries is the raw material shortage. A conservative forest policy (Anon.,1990) coupled with promotion of farmers / industries linked plantation activities on under-utilized cultivable and marginal agricultural lands is helping to mitigate the crisis, whereas gap between demand and supply is still wide. This necessitates a business model of farm forestry, in order to expand the area under farm and agro forestry plantations through people participation in larger way. At present Farm forestry is the only answer for pulp and paper industry to increase the resources base in the generation of the much needed (Kulkarni, 2008), while simultaneously ensuring the sustainable livelihood for farmers and thereby raising socio-economic status of the local populace and more importantly, improving the environment and maintaining the ecological balance (Sasidharan 2010).

Most of the pulpwood is eventually coming from farm forestry planted by small and marginal farmers especially for commercial purpose. Now it needs only to provide a base for increasing yield with supply of genetically proven planting material along with best package of practice (Kulkarni, 2001). Commercial plantation is also helping farmers now a days as there is acute shortage of labour force, which is essential part of agriculture. It is inevitable that smaller / marginal planted area will have to serve more people in the future. Now there is trend to go for larger commercial plantations (Anon., 2009) by all type of farmers including land lords. This case study is of a local land lord Raja Shri Keshaw Pratap Singh ji of Panna Estate, who is a pioneer farmer to grow commercial plantation on his land in M.P. under farm forestry.

Under the farm forestry programme the farming community is being facilitated by providing high quality clonal sapling, package of practice supported by backward-Forward linkage to reap the benefits.

Initiation of farm Forestry in Panna Region in M.P.:

After success of Farm Forestry in various part in India, Orient paper Mills

Brief Information of Plantations:

Name & Address of Farmer:	Raja Shri Keshav Pratap Singh ji, Village: Pararia, Block: Pawai, Panna M.P.
Area and soil type:	100 Ha. , Sandy Loam
Site quality:	Partial Irrigated
Year of planting:	Jul / Aug 2007
Species & Spacing:	Eucalyptus clones, 3mX1.5m
Harvesting Year & Area:	Jan.-Mar 2011, 60 Ha

Orient Paper Industries Ltd.,
P.O. Amlai Paper Mills - 484117
Dist - Shahdol (M.P.)

Brief Information of Package and Practice:

S.N.	Operations (First Year)	Informations
1.	Pre planting ploughing	By Tractor mounted MB Plough- one time
2.	Pitting alignment	30 cm X 30 cm X 30cm
3.	Anti termite treatment	Chloropyriphos 20EC, 2ml/l per plant
4.	Planting & Fertilizer application	Deep planting, 20g DAP
5.	Post plating fertigation	20 g Urea after 30 days of planting
6.	Inter cultivation	2 times harrowing by Cultivator in First year,
7	Irrigation	One time irrigation during Mar/Apr/May
Second year		
1.	Inter cultivation	1 time harrowing by cultivator
2.	Fertilizer application	40 g Urea during soil working
3.	Irrigation	One time irrigation during Mar, Apr & May
Third Year:		
1.	Inter cultivation	1 time harrowing by cultivator
2.	Fertilizer application	50 g Urea during soil working
3.	Irrigation	One time irrigation during Mar, Apr & May
Forth Year:		
1.	Inter cultivation	1 time harrowing by cultivator
2.	Irrigation	One time in Nov & Dec.
	Harvesting year & Area	Jan to Mar.2011, 60 Ha.

Eucalyptus Clonal Plantation at 2 years of age

Table 1: Expenditure incurred For Plantations Development/Ha:

S No.	Expenses Head	Unit	Rate	Qty.	Years				
					1	2	3	4	Total
1	Site cleaning & Ploughing	Ha.	1500	1	1500	1500	1500		**4500**
2	Alignment & Staking	MD	90	3	270				**270**
3	Digging Pits & Planting (2500 pits)	MD	90	25	2250				**2250**
4	Labour for appl. of Fertiliser & insecticides	MD	90	15	1350	500			**1850**
5	Weeding/Soil working	MD	90	21	1890	500	500		**2890**
6	Cost of Fertilizers	LS			1800				**1800**
7	Cost of Insecticides	LS			1000	1000			**2000**
8	Cost of Plants @ 2500 plants/Ha., @ Rs 4 per clonal plant.	Per plant	4	2500	10000				**10000**
9	Watch & Ward (Part-time)	LS		1	1110	1110	1110	1110	**4440**
	Total				**21171**	**4612**	**3113**	**1114**	**30000**

Total Expenditure: 30000/Ha is upto 4th year, so Per year Cost: 7500/Ha/yr

initiated farm forestry progarmme in Panna region and convinced Raja Shri Keshav Pratap Singh ji to start commercial plantations of high yielding Eucalyptus clones. Area for planting was jointly surveyed by our team and the land owner. After site preparation as per package of practice, ITC clones were supplied for plantation purpose and planted during July 2007. The Planting materials were properly taken care while planting along with minimum inputs application. The plantation has been taken proper care till harvested very economically. **This** case study is taken into consideration as significance of farm Forestry through Clonal Eucalyptus plantation, and details of the study was carried out by Raw Material Development, Orient paper mills, Amlai for a Progressive farmer. The calculated expenditure in raising the plantation which comes to be Rs. 7500/- / year / Ha. The details are in (Table 1).

The process adopted for the Success of plantation programme is more or less dependent upon the facilities, material / inputs and manpower / labours available in the locality. The above package of practices were implemented under our guidance to maximize the productivity.

Observations & Wood yield:

During the growth time of the plantation and in harvest time as well the details of the measurement and analysis have been made. Considering the Average 10 trees under the data & analysis it has been found out that at the end of 2nd year the expected yield is more than triple fold as compared to 1st year yield. The actual yield in the end the 4th year is about more that double as compared to 3rd year expected yield. The details are in (Table 2)

Sale proceeds of the Wood Produce:

1. Plantations were sold on the basis of Rs. 4500/MT at site for Pole standing crop.
2. Remaining fire wood @ Rs. 2500/MT at site

Local vendors are behind the plantations to purchase these type of plantations for Pole market for high returns.

Conclusion:

The quality as well as quantity of wood products achieved from the commercial plantation through clonal eucalyptus through scientific management is one

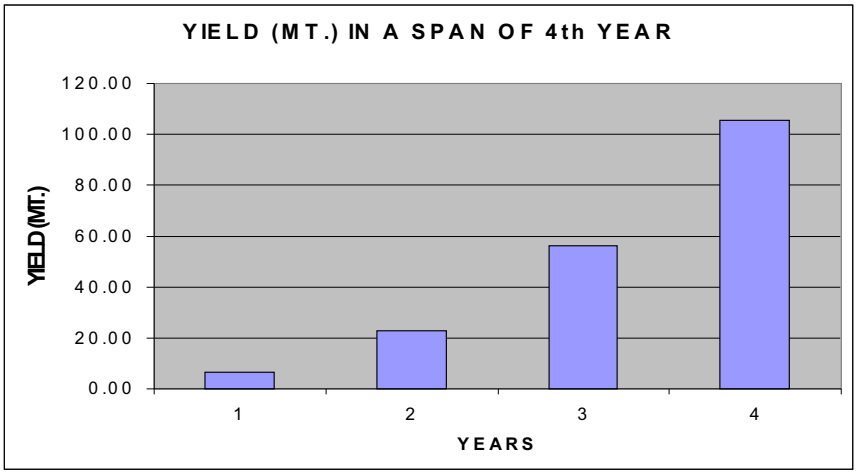
Eucalyptus Clonal Plantation at 3.5 year age

Table 2 : Avg. Yeild (MT / Ha.) of Eucalyptus Clonal Saplings for span of 4 years.

SL	Ht (Mt)	GBH (Cm)	DBH (M)	Volume (Cum) / Ha.	Yield (Mt / Ha.) UB	Ht (Mt)	GBH (Cm)	DBH (M)	Volume (Cum) / Ha.	Yield (Mt / Ha.) UB
	1 Year					2 year				
1	5.2	13.15	0.04	7.16	5.73	7.5	20.5	0.07	25.01	20.01
2	5.1	12.81	0.04	6.66	5.33	7.0	19.9	0.06	22.10	17.68
3	5.4	13.85	0.04	8.25	6.60	8.0	21.6	0.07	29.85	23.88
4	5.5	14.55	0.05	9.27	7.41	8.0	22.8	0.07	33.13	26.50
5	5.1	12.81	0.04	6.66	5.33	7.0	19.9	0.06	22.10	17.68
6	5.9	15.59	0.05	11.42	9.14	8.5	24.5	0.08	40.75	32.60
7	5.1	12.81	0.04	6.66	5.33	7.0	19.9	0.06	22.10	17.68
8	4.7	11.41	0.04	4.87	3.90	6.5	17.6	0.06	16.04	12.83
9	4.9	12.11	0.04	5.72	4.58	7.0	18.8	0.06	19.52	15.61
10	6.3	16.99	0.05	14.48	11.58	9.5	26.9	0.09	54.53	43.62
Avg.	**5.32**	**13.61**	**0.04**	**8.12**	**6.49**	**7.59**	**21.24**	**0.07**	**28.51**	**22.81**

SL	Ht (Mt)	GBH (Cm)	DBH (M)	Volume (Cum) / Plant	Yield (Mt / Ha.) UB	Ht (Mt)	GBH (Cm)	DBH (M)	Volume (Cum) / Ha.	Yield (Mt / Ha.) UB
	3 year					4 year				
1	10.5	26.5	0.08	58.71	46.97	13.0	34.5	0.11	123.19	98.56
2	11.0	27.9	0.09	68.37	54.70	12.0	32.5	0.10	100.92	80.73
3	11.5	29.4	0.09	79.05	63.24	14.0	36.5	0.12	148.50	118.80
4	9.5	23.6	0.08	42.19	33.75	14.0	38.5	0.12	165.22	132.18
5	12.0	30.8	0.10	90.77	72.62	13.0	32.0	0.10	105.99	84.79
6	12.0	30.8	0.10	90.77	72.62	14.5	36.0	0.11	149.62	119.69
7	9.0	22.2	0.07	35.24	28.19	12.5	33.5	0.11	111.69	89.35
8	9.5	23.6	0.08	42.19	33.75	12.5	31.0	0.10	95.64	76.51
9	12.0	30.8	0.10	90.77	72.62	13.0	33.0	0.11	112.71	90.17
10	12.5	32.3	0.10	103.60	82.88	15.0	41.5	0.13	205.68	164.55
Avg.	**10.95**	**27.80**	**0.09**	**70.17**	**56.13**	**13.35**	**34.90**	**0.11**	**131.92**	**105.53**

Yield calculation:
Volume UB (M^3): 3.14 X (DBH/2)^2 X Ht X FF X 0.8 X No. of plants
Weight MT: Volume UB X 0.8



of the major achievement. Farmers, who do not follow the scientific method of plantation results are not encouraging, whereas farmer like Raja Shri Keshav Pratap Singh of Satna, M.P adopted and followed the right and scientific package of practices has got excellent returns in quantity and quality and achieved 26 MT / yr. / Ha. with minimum expenditure i.e Rs. 7500/- / yr. / Ha. This shows the eye opening to the farming communities and local inhabitants for large scale take over of Eucalyptus clonal plantation which may directly and indirectly benefits to the pulp and paper industries in the years to come.

Acknowledgement:
The authors are thankful to Raja Shri Keshav Pratap Singh ji for providing all information of his plantations.

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