MULTIPLE LAND USE: POPLAR PLANTATION WITH POPLAR NURSERY

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ABSTRACT

It is concluded from the study that 19% of the expenditure was saved by raising poplar nursery and poplar plantation together instead of growing them separately. This amount was saved because some operations do not need repetition when these two activities are combined. The combination of one-year-old poplar plantation with second stage poplar nursery gave net return of Rs. 13098 per ha. While, poplar plantation raised without nursery proved to be uneconomical with net loss of Rs. 10881 per ha. As far as the growth is concerned, poplar plantation raised with nursery gave more than 6 times higher volume than the pure plantation. Moreover, the land spared after intermixing poplar plantation with poplar nursery could be used for raising any other crop (s) in addition.

INTRODUCTION

Pakistan being thickly populated country has urgent need for rational use of its natural resources. Land use resource demands more attention because of the increasing population pressure per unit area. Widening gap between supply and demand of wood suggests multiple use of a piece of land for the production of more than one activity. Mathur and Joshi (1975) highlighted the importance of multiple land use through growing Dalbergia with Chrysopogon for fuel cum fodder production. Moreover, tree plantation improves and causes significant changes in soil characteristics contributing towards soil fertility (Tahir and Ali, 1974; Jalal-ud-Din and Farooq, 1975).

Poplar (*Populus deltoides*) due to its manifold use has excellent market in Pakistan. It is extensively used as raw material for match industry, chipboard factories, veneer formation, packing material, etc.

The present study was conducted to acquaint the farmers with the economics of raising poplar plantation in combination with poplar nursery.

MATERIALS AND METHODS

Data were collected during 1992 from one-year-old poplar (*Populus deltoides*) in Daphar plantation where second stage poplar nursery was raised with poplar plantation. Data were collected through the following plan of work:

i) **Factors:**

F_1 = (Poplar plantation + Poplar nursery)
F_2 = (Poplar plantation)

ii) **Spacing:**

i. Poplar plantation = 4.57m x 4.57m
ii. Poplar nursery = 0.61m x 0.61m

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iii. Plot size = 15.24m x15.24m
iv. Replications = 4

Heights and Dias of all the Poplar plants in each plot were recorded and average figures were calculated.

Expenditure incurred per acre on raising one-year-old poplar plantations plus second stage poplar nursery and poplar plantation alone was calculated. Revenue realized from the sale of nursery plants alongwith the estimated revenue from the sale of juvenile poplar wood with and without nursery was also computed.

Finally, the economics of each option was calculated from the present values of revenue and expenditure in each type of activity.

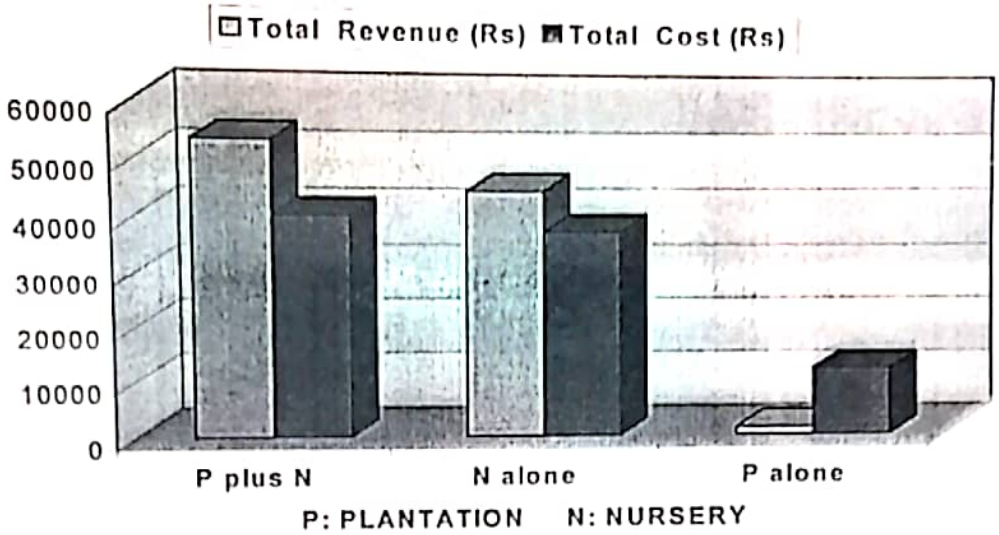
RESULTS AND DISCUSSION

The results indicated that the combination of one-year-old poplar plantation with second stage poplar nursery gave maximum net return of Rs. 13098/ha with the cost-benefit ratio of 1.32. Poplar nursery alone gave net return of Rs.7200/ha with cost-benefit ratio of 1.19. Poplar plantation raised without nursery was quite uneconomical with the net loss of Rs.10881/ha and cost-benefit ratio of 0.11 (Table-1) (Fig. 1).

Table 1: PER HECTARE REVENUE/COST FROM ONE-YEAR-OLD POPLAR PLANTATION WITH AND WITHOUT POPLAR NURSERY

Activity	Total Revenue (Rs.)	Total Cost (Rs.)	Net Revenue (Rs.)	Cost-Benefit ratio
Plantation plus Nursery (P plus N)	53796.50	40698.82	13097.68	1.32
Nursery alone (N alone)	44928.88	37728.57	7200.31	1.19
Plantation alone (P alone)	1398.06	12278.83	-10880.77	0.11

Fig.1 FINANCIAL COMPARISON OF POPLAR PLANTATION/HA

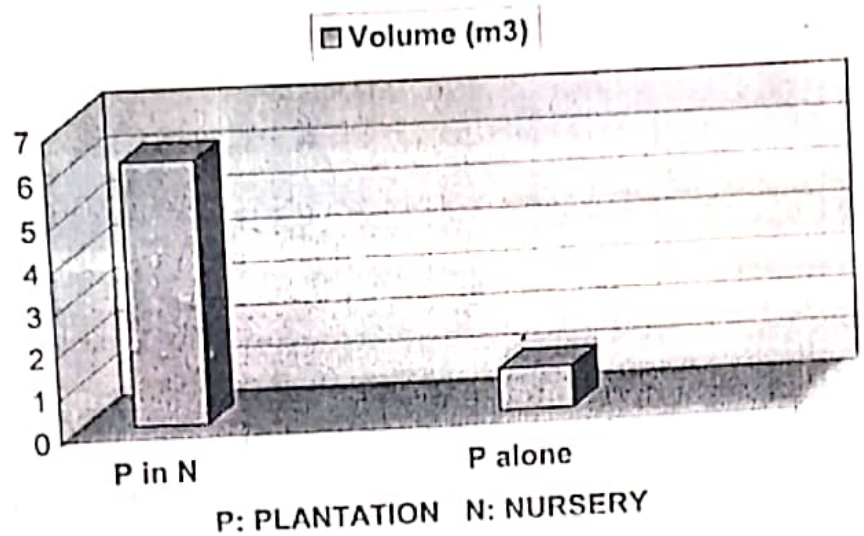


As far as the growth is concerned, one-year-old poplar plantation mixed with second stage nursery gave 6.14 m^3 volume per ha while monoculture poplar plantation gave only 0.97 m^3 volume per ha (Table-2) (Fig.2).

TABLE 2: GROWTH OF ONE YEAR OLD POPLAR PLANTATION WITH AND WITHOUT POPLAR NURSERY

Replications	Plantation in Nursery (P in N)		Plantation alone (P alone)	
	Height (m)	Dia (cm)	Height (m)	Dia (cm)
R_1	6.49	5.99	4.81	4.19
R_2	6.57	6.22	3.72	2.34
R_3	6.19	5.49	3.47	2.56
R_4	5.85	5.38	3.41	2.54
Average	6.27	5.76	3.85	2.92
Volume/ha (m3)	6.14		0.97	

Fig.2 GROWTH COMPARISON OF POPLAR PLANTATION/HA



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