ECONOMICS OF GROWING VARIOUS FOREST TREES IN AZAD JAMMU AND KASHMIR

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INTRODUCTION

As little as 4.8 percent of Pakistan's total area (including Azad Jammu and Kashmir) is under forests. Both environmental and economic considerations suggest that a desirable range of 20 to 25 percent of a country's land area has to be under forest (Government of Pakistan, 1988).

Over the years the farming community of the State of Azad Jammu and Kashmir has realized the significance and economic benefits of investment in commercial forestry. Many farmers now grow forest tree with a commercial orientation. At the same time, however, forestry producers are affected by changes in the price received and paid and by technological and marketing developments. In order to enable farmers to achieve maximum economic benefit, knowledge about cost of production and returns from forest products is needed to make appropriate production decisions. Unfortunately, such information is totally missing about various forest trees in the Azad Jammu and Kashmir, where forests occupies about 27.1 percent of total area of 1.33 million hectares (Forestry Sector Master Plan).

METHODOLOGY

In view of the importance of forest tree in the local economy of the farmers, a study was planned and conducted to work out the economics of various forest trees. From among the large number of farms, only those farms were selected where farm forestry was clearly distinguishable as an enterprise and the respondents were also willing to cooperate. This in fact is a pilot study conducted mainly to bring forth the benefits of forest raising at the farm level. Since around 93 percent o the cultivated area of 171 thousand hectares is rained, (Government of Azad Jammu and Kashmir, 1988) therefore, only the unirrigated farms were considered while drawing the study sample. A purposive sampling technique was used to select respondents. In total, a sample of thirty two farmers, 18 from Poonch, 13 from Muzaffarabad and one from Bagh were selected keeping in view the variety of forest trees grown by the farmers. Data were collected by using a well designed and pretested questionnaire through personal interviews with the farmers.

In the case of forest trees, first few years involve only costs, while the flow of benefits starts after a certain period of time. Because of long gestation period, the economics of forest trees is estimated in terms of present worth of costs and benefits by discounting both future costs and returns at the prevalent opportunity cost of capital. However, in order to apprise the reader of the undiscounted current values, undiscounted costs and returns have also been worked out. Net income per tree and annual net income per hectare has been estimated in order to see the level of annual profitability.

RESULTS

Undiscounted and discounted cost per hectare amounted to Rs.2,65,682 and Rs.31,624

for 'Kail', Rs.2,33,855 and Rs.27,835 for 'Chir', Rs.36,261 and Rs.20,583 for 'poplar', Rs.39,301 and Rs.22,309 for 'Kiker' and Rs.35,248 and Rs.19,995 for 'daravi', over their respective life spans (Table-1). The life of 'Kail' and 'Chir' was assumed to be 70 years as against general notion 120-150 years. This was purposely done, as the present worth of future returns and costs received after fifty years reduces almost to zero. For example, the present worth of a rupee received after 70 years is Rs.0.00026 assuming an interest rate of 12.5 percent. The life of 'Poplar', 'Kikar' and 'Daravi' each was assumed to be 10 years.

Like the costs, there was wide variation in both undiscounted and discounted gross income per hectare among various forest trees.

Undiscounted gross income per hectare over the life of various tree species was quite high. It ranged from Rs.274,757 to Rs.52,79,441 i.e. lowest for 'Daravi', and highest for 'Kail'. However, the discounted gross income per hectare ranged from Rs.1,417 to Rs.4,68,971 for various tree species; lowest for 'Chir' and highest for Poplar. Undiscounted net income per hectare also showed wide variation among various tree species. It was the highest (i.e. Rs.50,13,759) in the case of 'Kail' and lowest (i.e. Rs.2,39,509) in the case of 'Daravi'. Undiscounted net income per hectare per year was the highest, (i.e. Rs.71,625) in the case of 'Kail' and lowest (Rs.23,951) in the case of 'Daravi'. The discounted net income per hectare per year was negative in case of 'kail' and 'Chir'. However, it was positive and quite high in case of 'Poplar', 'Kikar' and 'Daravi'.

Benefit cost ratio worked out on the basis of undiscounted figures was quite favourable for all the tree species. This ratio was also quite high for the relatively short duration trees like Poplar, Kikar and Daravi, when calculated on the basis of discounted values. However, this ratio was very low for the long duration tree species like 'Kail' and 'Chir'. Discounted benefit cost ratio estimated from Khan's (1989) was 2.5:1 for Poplar. High discounted benefit cost ratio in the present study has perhaps resulted due to substantial increase in the price of fire wood and timber. For example, whole sale price of fire wood and timber increased by 129.3 percent and 113.6 percent over the period 1980-81 to 1991-92 (Government of Pakistan 1992-93).

Some major factors that have had an adverse effect on forest production in the area were also identified. These included deterioration in soil fertility due to soil erosion, inadequate irrigation, poor quality of planting stock, low survival rate of new seedlings, low stocking, over grazing etc.

Table 1: Economics of Different Forest Trees in AJ&K

(Rs Per Hectare)

Items		Kail		Chir		Poplar		Kikar		Daravi	
		Un-discounted	Discounted	Un-discounted	Discounted	Un-discounted	Discounted	Un-discounted	Discounted	Un-discounted	Discounted
Cost	Stumps	-	-	-	-	443	319	-	-	-	-
	Pitting, Planting, hoeing and harvesting etc	-	-	-	-	2018	826	1742L[1]	713L[1]	1642L[1]	672L[1]
Land Rent		265682	31624	233855	27835	33800	19438	37559	21596	33606	19323
Total		265682	31624	233855	27835	36261	20583	39301	22309	35248	19995
Income											
Pruning		-	-	-	-	574	413	800	577	725	523
Grazing		-	-	-	-	1250	901	1550	1118	1400	1009
Value of Trees		5279441	3168	2361193	1417	1142857	467657	421348	172416	272632	111561
Total		5279441	3168	2361193	1417	1142857	467657	421348	172416	272632	113093
Net income		5013759	-28456	2127338	-26418	1108420	448388	384397	151802	239509	93098
Net income/Trees		3821	-22	2875	-35	875	354	676	267	474	184
Net income/Year		71625	-407	30391	-377	110842	44839	38440	15180	23951	9310
Benefit Cost Ratio		19.9:1	0.1:1	10.1:1	0.1:1	4.0:1	22.7:1	10.8:1	7.8:1	7.8:1	5.7:1

L^1 = Pitting, Planting was done free by Integrated Hill Farming Development Project.

SUGGESTIONS

Following measures are suggested to overcome various constraints and problems identified in the study area.

1. Integration of tree planting and simple civil works in the form of loose stone check dams for soil conservation may be strengthened in revegetating eroding hillslopes.

2. More emphasis should be placed on the adoption of soil and water conservation operations and practices in order to trap maximum amount of rainfall water.

3. Emphasis may be placed on the introduction of exotic fast growing coniferous species from Canada, U.S.A. & Europe.

4. Existing programmes of artificial regeneration of suitable fast growing and some multipurpose species of local and exotic origin may further be strengthened.

5. The results of this study indicated that discounted net income per hectare per year is substantially higher for poplar, 'Kikar' and 'daravi' than for 'Kail' and 'Chir'. Therefore, in future plantations, more emphasis may be placed on these

fast growing non-coniferous tree species.

6. The proportion of mature trees in forests should be reduced and the proportion of seedling and young trees should be substantially increased. This practice can greatly help in increasing the rotation of forests. Emphasis should also be given on production of medium size timber rather than large size timber trees with a view to quicken the pace of turn-over from investment in forest trees involving long gestation periods.

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