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EFFECT OF NPK ON THE GROWTH OF *DALBERGIA SISSOO* (STUMPS)

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NPK fertilizers were applied to *Dalbergir sissoo* stumps alone and in various combinations k. e. T1 (Control) T2 (N)- T3 (NP), T4 (NPK), T5 (P) T6 (PK). NPK were applied at the rate of 62 kg ha each. Maximum height, girth and dry weight were observed with the application of NPK (T4). However, no effect of fertilizers was seen on leaves and branches.

INTRODUCTION

Forest area in Pakistan is 4.2% of which only 2.2% is the productive forest (Qureshi and Khan, (1979). Due to this situation there is great shortage of different forest products.

Soils of Pakistan are generally deficient in nitrogen. Uptill now fertilizer research in the country has primarily been focused on field crops. Some work on orchards has also been reported, but the forest trees have been ignored so for.

Shisham beeing a legumineous tree plays an important role in the maintenance of soil fertility in terms of nitrogen (Sheikh and Aleem 1978). It is easy to grow, is comparatively fast growing and the maintenance cost is also low. By growing shisham trees we can overcome the problems of shortage of wood, and deficiency of nitrogen in the forest soils (Sheikh and Aleem, 1978).

The present study was conducted to find out the effect of NPK on the growth of *Dalbergia sissoo* stumps to improve its growth and yield.

MATERIALS AND METHODS

Effect of NPK fertilizer on the growth of *Dalbergia sissoo* stumps was studied at the experimental area Department of Forestry, Range Management and Wildlife, University of Agriculture, Faisalabad during summer 1985. The experiment was started on 28 July 1985 by planting one year old shisham stumps

of the same size in plastic buckets each containing 8 kg soil. The experiment was laid out in Completely Randomized Design. NPK fertilizers were applied at 62 kg ha^{-1} each, the details of various treatments were as follows :-

	N	P_2O_5	K_2O
		Kg ha^{-1}	
T_1	0	0	0
T_2	62	0	0
T_3	62	62	0
T_4	62	62	62
T_5	0	62	0
T_6	0	62	62

There were six treatments and each of the treatment consists of sixteen observations. Nitrogen, Phosphorus and Potach fertilizers were applied in the form of urea, SSP and K_2SO_4, respectively at the time of transplanting. Analysis of the soil used in the experiment is given below :

Soil Analysis

Determination	Quantity
EC_e (dsm^{-1})	2.4
Total Nitrogen (%)	0.062
Available Phosphorus (ppm) (P_2O_5)	7.8
Availabe Potassium (ppm) (K_2O)	190

The pots were irrigated as and when required. The observations on the following characteristics were recored during the month of November :

i. Height of the plant.
ii. Diameter of the stem
iii. Number of branches.
iv. Number of leaves.
v. Dry weight.

Plants were harveated after 90 days of growth. The data obtained were analysed statistically using completely Randomized Design (Steel and Torrie 1980).

RESULTS AND DISCUSSION

The effect of various fertilizer treatments on growth of *D. Sisso* is shown in Table 1.

Table 1 : *Effect of NPK treatments on growth parameters of Dalbergia sissoo*

	T_1 Cont.	T_2 N	T_3 NP	T_4 NPK	T_5 P	T_6 PK
Height of the plant (cm)	11.5 c	18.0 ab	15.0 bc	20.3 a	15.7 bc	12.7 c
Girth (cm)	33.4 b	51.9 b	43.4 b	78.4 a	48.6 b	42.7 b
Dry weight (g)	31.50 f	39.6 b	37.1 c	43.9 a	36.0 d	34.8 e
Increase in No. of leaves	20.0	24.0	25.0	28.0	25.0	24.0
Increase in No. of branches	21.0	23.0	28.0	26.0	21.0	32.0

(Means followed by the same letter (s) are statistically alike at 5% probability level)

Analysis of variance showed that the fertilizers had a highly significant effect on height, girth and dry weight yield of *Dalbergia sissoo*. The height was maximum with the application of NPK followed by N treaiment. This was probably became addition of nitrogen alone resulted in more vegetative growth as compared to the application of phosphorus alone. The results are similar to those of Fine and White (1966) and Ward *et al* (1985).

All the treatments increase the girth of the plants and the maximum Diameter was observed in the case of NPK treatment. The minimum diameter were recorded in control. The results are in line with those of Walter (1982). Nitrogen, phosphorus and potash alone and in various combinations produced statistically equal number of leaves and branches. The results are in accordance with Sheikh and Alleem (1978).

All these treatments had a highly significant effect on the dry matter weight of the shisham. The maximum dry matter weight was observed in T_4 (NPK) while the minimum weight was recorded in T_1 (control). The increase in dry weight with the use of fertilizers was due to better nutrition which resulted in more and rapid vegetative growth. These finding are in accordance with Tusda (1959).

From the data it is obvious that 62 kg each of NPK ha^{-1} was the best combination for optimum growth of *Dalbergia sissoo* Stums.

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