EFFECT OF NPK FERTILIZERS ON FOLIAGE YIELD AND NUTRITIVE VALUE OF MULBERRY (JAPANESE SOURCE)

by

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Summary: *In a study to find out the effect of NPK ertilizers alone or in combination on the foliage yield and nutritive value of Japanese mulberry, it has been found that 200 kg N per hectare increased the foliage yield by 85% as compared to control, significant at 1% level. However, none of the fertilizers affected the crude protein content of the leaves*

Introduction. In 1978, a study was conducted to determine the effect of N,P,K, Mg, Be, Fe and Zn on the fresh weight of foliage produced by Japanese mulberry and its crude protein contents with a view to increasing the quantity and quality of feed for silk-worm. It was found that whereas micro-nutrients did not have any significiant effect on the production of foliage, the application of 20 gm N per tree increased the yield of foliage significantly.

In 1979, another study was started on the same specie to find out the effect of NPK fertilizers alone and in different combinations on the foliage yield and its nutritive value on plot basis instead of application on individual plants.

Materials and Methods. One year old plants of Japanese mulberry planted at 2 x 2m spacing in 1978 were selected in the sericulture garden, PFI, Peshawar. The crop was pruned in January, 1979 at 30 cm from ground level leaving 15 cm long three stubs at the top of each plant. The experimental area was thoroughly ploughed, weeded and divided into 32 plots of equal size (16 x 8m) with 32 plants in each plot. Each of the eight treatments was replicated 4-times consisting of 4-plants per treatment in a factorial design. Urea (46% N), single superphosphate (20% P_2O_5) and potassium sulphate (50% K_2O) alone as well as in different combinations were broadcast at the rate of 200 kg N, 250 kg P and 50 kg K/hectare on March 17th, 1979. Fertilizers were thoroughly mixed with soil with cultivator and the crop was immediately irrigated with tube well water. 9-irrigations were given to the crop during the investigation period delivering a total depth of 90 cm. In addition, 330 mm rain was received.

To assess the foliage yield and nutritive value, 4-plants were taken at random from each plot of 32 plants. These selected plants were defoliated from top to bottom on August 17th discarding the yellow leaves which were about 10% of the total foliage. The petioles were nipped and the weight of fresh leaves was taken. Later, the leaves were air

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dried, crushed and sieved for estimations of crude protein. Nitrogen content was estimated using kjeldahl method (A.O.A.C; 1970) and the crude protein content was calaculated by multiplying percentage nitrogen content by a factor of 6.25

Results and Discussion: Average yield data of fresh foliage, kg per tree (Table-1) indicates highly significant response to the application of 200 kg N per hectare. The increase in foliage yield was 3.5 kg per tree as compared to 1.9 kg for control which corresponds to an average increase of 85%. The difference was significant at 1% level. No other fertilizer treatments affected the foliage yield. Regarding effect on crude protein content, the data indicated no effect of the fertilizers. The study confirms the results of the previous study reported by Khattak, Sheikh and Bangash (1979).

Table 1

Effect of NPK Fertilizers on foliage yield and protein content

Treatement	Foliage yield (kg per tree)	% crude protein
$N_0P_0K_0$	1.9	21.6
$N_1P_0K_0$	3.5	18.6
$N_0P_1K_0$	1.7	18.5
$N_0P_0K_1$	2.1	20.8
$N_1P_1K_0$	2.9	21.8
$N_1P_0K_1$	3.4	19.5
$N_0P_1K_1$	2.1	14.5
$N_1P_1K_1$	2.7	17.2

On the basis of the studies conducted for two years, it is recommended that in the Japanese mulberry plantation being raised for sericulture, nitrogenous fertilizer may be applied at the rate of 200 kg N per hectare corresponding to 952 kg as ammonium sulphate (21% N) or 435 kg Urea (46% N) per hectare.

References

1. Association of Official Analytical Chemists. Official Methods of Analysis. A.O.A.C., Washington, U.S.A. 1970.

2. KHATTAK, G.M., SHEIKH, M.I., and BANGESH, S.H. Effect of macro-and micro-nutrients on foliage production of *Morus alba* (Japanese source) and its protein content. Pak. J. For. 29: 93-95.