

EFFECT OF NITROGEN FERTILIZER (UREA) ON *MORUS ALBA* LEAF YIELD

M. Iqbal Ahmad*

Summary

Trials conducted to find out the effect of urea on mulberry leaf yields revealed that after one year of planting 78.8%, 120% and 175% increase in annual leaf yield occurred in 100 kg N 200 kg N and 300 kg N respectively, per hectare as against check where no fertilizer were applied. After two years of planting the total annual increase in leaf yield was 55% 100% and 120% kg per hectare in 100 kgN 200 kgN and 300 kgN respectively as against check where no fertilizer were applied. It was found that application of Nitrogen (Urea) at the rate of 200 kg per hectare if applied 50% after sprouting in spring and 50% after 20 days of 1st leaf plucking increased 100% leaf yield than no fertilizer application.

Introduction

Mulberry tree *Morus alba* is perennial woody and leaf yielding plant. In order to achieve a good harvest of leaves and high yield of silk cocoon it is essential to create most favourable conditions required for the establishment of mulberry field. The leaves of mulberry which is source of growth are plucked frequently to silkworm feed. Application of artificial fertilizer and other cultural managements, therefore must be kept at high level to meet the needs of mulberry plant and silkworms.

Fertilizer is the food of the plant. Mulberry takes various nutrients from the soil for growth. As mulberry leaves are plucked several times a year, it is insufficient to rely upon the soil itself to provide all necessary food material. Therefore artificial fertilizer at proper time, to promote the soil fertility is an indispensable measure to obtain high yield and high quality of mulberry leaves for feeding silkworms.

Mulberry leaves contain 0.8 to 1.2% Nitrogen 0.19–0.24% Phosphorus 0.51 to 0.56% Potassium (Sericulture Manual mulberry cultivation FAO). These three major elements are taken by the plant directly from the soil, among these Nitrogen is the most important and usually becomes insufficient in the soil to meet the needs of mulberry plant. As far as other nutrient elements are concerned no deficiency occur if organic manure is used. Khattak, G.M., M.I. Sheikh and Bangash (1979) laid out experiment to find out effect of Micro and Macro nutrients on mulberry leaf yield and found that 30% fresh foliage increased with 20 grams urea per plant. The present studies were undertaken under UNDP/FAO assisted project to find out the effect of different quantities of Nitrogen on mulberry leaf yield at the Pakistan Forest Institute, Peshawar.

* The author is Coordinator/Director Sericulture Pakistan Forest Institute, Peshawar.

Material & Methods

The experiment was designed on complete randomized block. The planting of mulberry was done in February, 1983 with planting distance of 1 x 1 m. There were three doses of urea with three replications in each dose. The plot size was 90²m. A check where no fertilizer applied was kept with each replication. After one year of planting the fertilizer application was done 50% during March, 1984, after sprouting and the other 50% after first leaf plucking. The leaf yield was recorded twice once in spring rearing and again after summer.

Results and Discussion

All leaves were plucked twice a year once in spring in the month of April, and second time in the month of September. The leaves were weighed soon-after plucking alongwith petioles. The data is given below:

Leaf yield per hectare of mulberry in 1984

Fertilizer dose per/hac	No. of plants per/hac	Leaf yield in April (kg)	Index	Leaf yield in September 1984 (kg)	Index	Total (kg)	Annual increase in leaf yield	
No fertilizer	9333	3260	100	3160	100	6360	100	%
100 Kg N	9333	5600	192	5750	182	11350	178	178.8%
200 Kg N	9333	6066	186	7840	284	13960	219	119.5%
300 Kg N	9333	8400	258	9100	288	17500	275	175.0%

It was found that the annual increase in leaf yield per hectare was 78.8% and 120% and 175% in 100 kg N 200 kg N 300 kg N respectively, against check where no fertilizer was applied. The sprouting after dormancy of plants was started from 15 to 18 February, 1985. This experiment was continued during 1985.

During 1985 the pruning of all plots was done at the same time on 8th February, 15 cm above ground level. The first 50% dose was applied when the leave size became 3 to 5 cm in beginning of March. The second 50% dose was applied after 20 days of first plucking of leaves, in the month of May, 1985. The data regarding leaf yield during 1985 is given below:—

Leaf yield of *Morus alba* in 1985

Fertilizer dose per/hac	No. of plant hac	Spring leaf yield kg/ha	Summer yield kg/hac	Total leaf kg/hac	Index	% Annual increase increase leaf yield
No fertilizer	9333	5750	4650	10,400	100	Check
100 kg N	—do—	8070	8940	16,110	155	55%
200 kg N	—do—	9740	10900	20,801	200	100%
300 kg N	—do—	11100	11752	22,852	220	120%

The total annual increase in 1985 was 55%, 100% and 120% in 100 (kg N) and 200 (kg N) and 300 (kg N) respectively. The observations recorded revealed that after first year of planting increase in annual leaf yield was three times more with application of urea fertilizer.

After two years of planting 10,400 kg leaf yield per hectare was obtained where no fertilizer was applied. In case of the plots where 100 kg 200 kg and 300 kg urea was applied the yield was 16110 kg 20801 kg and 22850 kg, with annual increase in yield being 55% 100% and 120% in three respective doses. It may be concluded that application of Nitrogen at the rate of 200 kg if applied 50% after supporting in Spring and 50% after 20 days of leaf plucking increased the leaf yield by 100%.

REFERENCES

Anonymous (1976)

Mulberry cultivation, Sericulture Manual FAO Agriculture Service Bulletin 15/1.

Khattak, G. M. Sheikh M.I. and S.H. Bangash, (1979). Effect of macro and micro-nutrientts on foliage production of *Morus alba* (Japanese source) and its protein contents. Pak. J. For 29(2): 93-95,