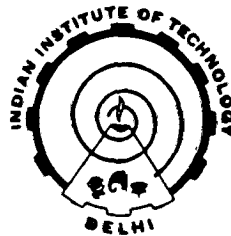


**STUDIES ON PROPAGATION OF  
*MORUS ALBA* LINN.**

*by*  
**SANDHYA GUPTA**

*Thesis submitted  
in fulfilment of the requirements  
for the award of the degree of*  
**DOCTOR OF PHILOSOPHY**



Centre for Rural Development and Technology  
**INDIAN INSTITUTE OF TECHNOLOGY, DELHI**

1994

*DEDICATED*

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*MY PARENTS*

CERTIFICATE

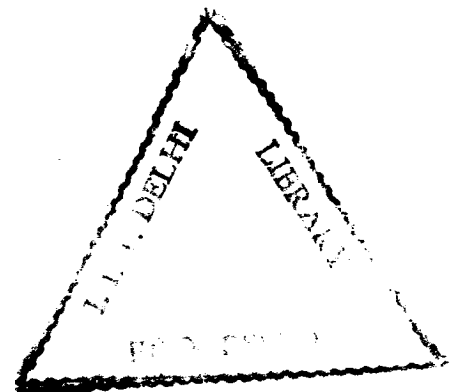
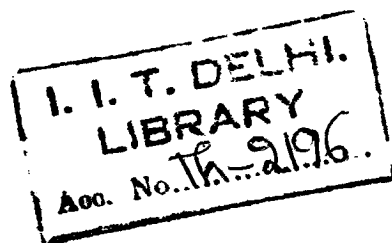
This is to certify that the thesis entitled "STUDIES ON PROPAGATION OF MORUS ALBA LINN.", submitted by Ms. SANDHYA GUPTA has been prepared under our supervision in conformity with the rules and regulations of Indian Institute of Technology, New Delhi. The research report and results presented in this thesis have not been submitted for any degree or diploma in any other University/Institutions.

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## ABSTRACT

In the developing world, great percentage of population is rural and depends much more than has been realised in the past on the goods and services of the forest for their very existence. The forests of developing world are being destroyed largely although not exclusively to meet the everyday basic need of food and fuel. The growing population requires an expansion of forests and agricultural production. The productivity of Indian forests is very low and there is considerable scope for its improvement. At present there are large targets in terms of area to be planted with suitable tree species having economic importance and which can provide raw material for rural cottage industries. Any tree species selected for this purpose should not be an exhaustive crop otherwise it will defeat the very purpose of social forestry. The sustainability of land must also be conserved.

In the past, seed orchards have been raised for some economically important tree species, but the availability of seeds from orchards are far too low to meet the demand for planting material. Availability of planting material of desired tree species is of paramount importance which envisage for large area planting of such species. Any error in identification of these species will reflect as multiple copies of inferior

selection in future. One of such superior species which can fulfil the basic need of conserving environment and providing raw material for economic development is Mulberry (*Morus alba* Linn). It is an important tree in the sericulture industry as it is valued for its foliage which constitute the chief feed for silkworm (*Bombyx mori*). Sericulture, being labour intensive is ideally suited to developing countries like India in generating employment and income especially in rural areas.

The present thesis embodies the outcome of studies undertaken to devise integrated method of propagation of *Morus alba* involving *in vivo* and *in vitro* techniques in order to provide planting material on large scale. Hardwood cuttings were found suitable for raising nursery. Soaking of cuttings for 6 h prior to planting in IBA proved optimum for inducing good root and shoot growth. In general leaf and root biomass increased in hormone treated cuttings than the untreated cuttings. Beside this, *M. alba* was found amenable to tissue culture and could be multiplied through forced axillary branching. Under optimum conditions, shoot multiplication was found to be 8-9 fold every 30 days. These shoots were rooted *in vitro* with 95% success. Actively growing shoots could also be regenerated from 1 mm shoot tips. The *in vitro* multiplied shoots stored at 4°C in dark, for 6 months exhibited 75% viability. *In vivo* and *In vitro* raised plants were successfully transplanted to field.

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