



## GENETIC IMPROVEMENT OF MULBERRY IN INDIA: CHALLENGES AND PROSPECTS

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### ABSTRACT

Mulberry (*Morus* spp.), belonging to the order, Rosales and family, Moraceae, has received much attention because of its economic and medicinal value, as well as its role in ecological conservation. It is a perennial tree having high heterozygosity due to out breeding reproductive system. In India, mulberry is mainly cultivated for its leaf to rear the silk producing caterpillar, *Bombyx mori* L. Considerable efforts have been made to improve the yield and quality of mulberry leaf through both conventional breeding and modern biotechnological methods. A number of varieties were developed in India during the last 40 years through conventional breeding. Authorization of mulberry varieties through All India Coordinated Experiment is a relatively new concept in India and so far, 18 mulberry varieties have been authorized for commercial use under this system, based on their suitability to different agro-climatic conditions. The newly authorized mulberry varieties under ideal cultural and climatic conditions have leaf yield potential of 55-60 Mt/ha/yr. In addition to the above, several mulberry varieties have been developed for different agro-climatic regions with specific requirements. Conventional breeding method has contributed much to the sericulture industry, though it is tedious, labour intensive and time taking, as it takes more than 15-20 years to develop a variety. Nonetheless, need is felt to bring down the time required for developing a variety and also to develop varieties with specific traits, using modern biotechnological methods. Molecular marker technology has to be adopted at a faster pace for comprehensive characterization of the genetic resources, precise selection of parents and their offsprings. Transgenesis is another area which is being used for the genetic improvement of mulberry. Using genetic engineering, transgenic mulberry tolerant to drought has been developed. Tissue culture has also been used effectively for rapid and efficient screening of germplasm for stress tolerance. This paper enumerates the problems, challenges and constraints faced and achievements obtained in the field of mulberry breeding along with an account on recent advances made in the areas of biotechnology and molecular biology to enable mulberry breeders to tackle specific problems more systematically and effectively.

**Key words:** Breeding, mulberry, sericulture.