

Chapter 13

Revolutionizing Sericulture: From Mulberry to Market with Technology

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Abstract

Mulberry, a deciduous woody perennial tree, is native to the northern and southern hemispheres. It is found at altitudes ranging from sea level to 4000 meters. However, mulberry is facing challenges as a result of global warming, industrialization, and urbanization. To carry on cultivating and provide income for rural people, contemporary biotechnological methods must be exploited to generate novel varieties with increased productivity and adaptability. This chapter discusses mulberry origins, distribution, taxonomic position, genetic resource characterization, growing strategies, biotechnology advancements, and molecular biology applications. Mulberry, a plant with numerous sustainable attributes, is cultivated for its economic value and sustainability. It is primarily used in the sericulture industry for silkworm feeding, enhancing the manufacturing of raw silk for commercial use. To ensure environmental safety, mulberry is also used in the food, beverage, cosmetic, and pharmaceutical industries. Mulberry continues to be a crucial crop plant for economic growth and a sustainable future despite its many advantages, making it an essential resource for rural economies. Silk reeling machines are used throughout Africa, Europe, Central Asia, and the Near East to manufacture raw silk and handcrafted goods. These machines include standard wheel machines, enhanced two-end reeling machines, direct multi-end reeling machines, and multi-end reeling machines with compact reels. Some primitive machines need a lot of effort and may be replaced with contemporary ones that are specifically built for the cottage industry without a large expenditure. This study investigates the feasibility of vertical farming techniques such as hydroponic, aero-ponic, and aqua-ponic systems for mulberry propagation in controlled conditions. These techniques can boost protein content in meals and extract physiologically beneficial components for phyto-therapy. However, these approaches need the availability of space and irrigation, both of which vertical farming systems can readily provide. The objective of this article is to assess their application to sustainable and safer agriculture methods.

Keywords

Mulberry, Commercial Raw Silk, Genetic Engineering, Soil-Mulberry-Silkworm System, Medicinal Plant, Black Mulberry, White Mulberry Fruit

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