

EVALUATION OF ETHYL METHANE SULFONATE (EMS) INDUCED MUTANTS OF *MORUS SPECIES* (GENOTYPE BC₂₋₅₉) FOR NUTRITIVE AND BIOMASS PRODUCTIVITY

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ABSTRACT

Mulberry is the primary forage for silkworm *Bombyx mori* L. (monophagous) and leaf protein is the base for synthesis of silk protein (sericin and fibroin). Nearly 70% of the leaf protein is biosynthesized into silk by silkworm. Thus the phenomenal increased biomass (leaves) and nutritive content in mulberry varieties is the principal determining factor for higher cocoon yield. Realising the biomass and nutritive significance of mulberry, the objective was prioritized for quantitative and qualitative improvement in crop. In the present investigation the active bud sprouts of mulberry genotype BC₂₋₅₉, in multiple sets were treated for twelve hours intermittently (every one hour) with three concentrations (0.1%, 0.3% & 0.5%) of EMS and evaluation of crop was carried out. EMS is a potent chemical mutagen and monofunctional ethylating teratogenic agent with formula CH₃SO₃C₂H₅, used extensively in genetic research. EMS is proved mutagenic in wide variety of genetic test systems from virus to mammal. The results revealed that the clones of M₁V₁ and M₁V₂ generation of 0.3% EMS treatment were significantly altered in their morpho-metric characters, biomass yield and phytochemical constituents. The significant variation in the morpho-metric characters such as height of the plant, number of branches, stem girth, number of leaves per plant and increased biomass were recorded among the M₁V₂ clones of 0.3% EMS treatment (p=0.0007). The leaf area and number per plant showed significant increase in M₁V₂ clones. The mean number of leaves (761.93) in the variants as against the control (459.60) was recorded. Nutritive parameters such as proteins, reducing sugars, minerals and chlorophyll content were also significantly altered. Moisture and moisture retention capacity(MRC) were found to be high in 0.3% EMS induced variants.

KEYWORDS: BC₂₋₅₉, EMS, Morpho-Metric Characters, Biomass, Nutritive, Phytochemical