PIE-3443: SCREENING OF MULBERRY GERMPLASM ACCESSIONS FOR TOLERANCE TO ABIOTIC STRESS (ALKALINITY AND SALINITY) CONDITIONS

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Introduction:

Saline and alkaline soils are of widespread occurrence in arid and semi-arid regions. High concentration of salts in the root zone soil reduces the productivity of nearly 6.73 Mha of otherwise productive lands in India. Similarly, 25% of the ground water resources in the country are saline and brackish. Continuous use of such water for irrigation to agricultural crops is bound to increase the problem of salinity and sodicity in India. The projections indicate that the country will have 11.7 m ha area affected by salinity and sodicity by 2025. The present study was an attempt to investigate the whole plant responses by imposing salinity stress and to identify tolerant accessions, as first step to future breeding efforts.

Objectives:

- Screening of short-listed mulberry accessions along with the promising cultivated checks by imposition of salinity and alkalinity stress to identify tolerant accessions.
- Identification of suitable screening technique and physio-biochemical traits for stress tolerance

Outcome:

- 102 mulberry accessions were screened for salinity tolerance and identified 20 mulberry accessions showed better performance at EC 8ads/m than check S-776.
- A total of 100 mulberry accessions were screened for alkalinity in micro plots. 18 accessions were identified as alkaline tolerant at pH 9.0. These accessions showed better performance than check AR-12.

Salinity tolerant mulberry accessions	Alkalinity tolerant mulberry accessions
MI-0437, MI-0376, MI-0327, MI-0670, MI-0657, MI-0012, MI-0476, MI-0242, MI-0129, MI-0245, MI-0161, MI-0763, MI-0716, MI-0310, MI-0145, MI-0497, MI-0499, MI-0027, MI-0139 & MI-0764	**MI-0226, MI-0670, MI-0836, MI-0652, MI-0762, MI-0449, MI-0764, MI-0437, MI-0716, MI-0822, MI-0310, MI-0248, MI-0702, MI-0190, MI-0643, MI-0499, MI-0788 & MI-0466**

Recommendations/ Utilization:

- ✓ The identified tolerant mulberry accessions to salinity and alkalinity can be used as parents for developing salt tolerant mulberry varieties.
- ✓ Micro plot technique was most suitable for evaluation of salt stress tolerance.

- ✓ Genotypic score (Response index x Tolerance index) along with leaf necrosis, low leaf Na and Na+/K+ ratio can be used as parameters for salinity tolerance whereas Genotypic score and leaf chlorophyll stability can be used for screening for alkalinity tolerance.
- ✓ Molecular analysis of these tolerant accessions gives more information about differences among these accessions for their tolerance (osmotic stress tolerance, ion exclusion, tolerance to accumulation of ions etc.) and also for development of markers.