COLLECTION, CHARACTERIZATION, EVALUATION, CONSERVATION AND SUPPLY OF MULBERRY GENETIC RESOURCES- Continuous project- Phase VI, VII and VIII

Introduction:

Mulberry genotypes are available in different geographical regions of India both under natural and managed habitats that are potential sources of different adaptive traits, resistance / tolerance to different stresses etc. These are valuable assets and basic raw material for developing high yielding varieties tolerant to different abiotic and biotic stresses alongwith high nutritional value for different agro-climatic regions. CSGRC, Hosur is a nodal centre conserving a large number of diversified mulberry genetic resources in *ex situ* field gene bank which are collected through exploratory surveys. To make use of these resources, systematic characterization and evaluations are being carried out since 1994 in a phased manner to identify promising accessions for different traits.

Objectives:

- Survey, exploration and collection of new mulberry genetic resources
- Characterization of mulberry genetic resources
- Evaluation of mulberry genetic resources
- Conservation and supply of mulberry genetic resources
- To update national Mulberry Germplasm Information System (MGIS)

Outcome: Phase-VI (2009-12)

- 15 mulberry germplasm were collected from union territories i.e. Goa & Pondicherry from 2 explorative surveys. 23 mulberry genotypes were collected from KSSRDI, Thalagattapura.
- The evaluation results of 25 mulberry accessions indicate that branching nature are erected in nature. The young shoot colour varies from green and purple green. The Phyllotaxy grouped the accessions into 1/2 (9), 1/2, 1/3 (3) 1/3 (3), 1/3, 2/5 (2) and 2/5 (1 Accs.). The colour of the leaf was dark green.
- Key morphological characters were identified and important physiological parameters were documented. Survival percentage with above 90 % was recorded in 4 accessions viz. MI-0865 MI-0877, MI-0884 and MI-0939
- Sixteen accessions performed better than V-1 for leaf yield/plant, Six mulberry accessions found promising with multiple desired traits on leaf anatomical characters.
- Mean leaf yield/plant/crop among the check varieties was 684 g in V-1, among the test accessions, the leaf yield was in the range of 523 to 836g

Figure-1: Exploration and Collection site map

Recommendations /Utilization:

- ✓ Six mulberry germplasm accessions: MI-0872, MI-0879, MI-0867, MI-0870, MI-0868 and MI-0884 found better for anatomical characters and other multiple traits are recommended for development of drought tolerant mulberry varieties.

Outcome :Phase-VII (2012-15)

- ✓ One explorative survey was conducted in GOA, 10 mulberry genetic resources belonging to 3Morus species viz., *M.indica* (8), *M. alba* (1) and *M. laevigata* (1) were collected.
- ✓ Out of 44 indigenous accessions were evaluated for survivability, 3 accessions MI-0865, MI-0877 and MI-0884 showed >90% survivability.
- ✓ 31 new mulberry genetic resources comprising both indigenous and exotic were registered and assigned national accession numbers.
- ✓ 125 mulberry accessions were tested for amenability for cryopreservation. Eight accessions showed more than 70% survival after cryopreservation of the dormant buds.
- ✓ A total of 918 accessions viz. 696 indigenous and 222 exotic, were supplied to 16 indenters.




Recommendations /Utilization:

- ➢ Five accessions MI-0872, MI-0879, MI-0883, MI-0890, MI-0871 performed better for growth and yield traits and four accessions ME-165, ME-0024, ME-0108, ME-0139 showed better leaf yield than V-1 can be recommend for crop improvement programme.
- ➢ Accessions MI-0778, MI-0788, MI-0789, MI-0792, MI-0796, MI-0797, MI-0798 and MI-0828 can be utilized for long term preservation through cryopreservation.

Outcome: Phase-VIII (2015-18)

- ✓ Total of 55 mulberry genotypes were collected from three explorative surveys Ziro valley of Arunachal Pradesh (2), Alsigarh, Pai and Marli villages of Rajasthan (5), Bidar, Karnataka (3) and from donor Institutes KSSRDI, Thalagattapura (42), CSRTI, Pampore (1) and CSRTI, Mysore (2).
- ✓ 69 accessions were characterized and evaluated based on descriptors and identified top 14 promising accessions for multiple traits.
- ✓ Higher leaf yield/ plant from 532- 836 g/plant was recorded in 16 accessions and in two accessions viz., MI-0622 and MI-0633 the leaf yield was comparatively high over V-1 variety among 147 accessions evaluated during the period.
- ✓ Safety backup of 50 temperate mulberry accessions were raised at Manasbal located in Ganderbal District of Jammu and Kashmir under CSRTI, Pampore and 319 mulberry accessions (coreset) were planted at CSRTI, Mysore

MI-0657, MI-0458, MI-0665, MI-0670, MI-0827, MI-0246, MI-0568, , MI-0643, MI-0486, MI-0470, MI-0677, MI-0675, MI-0226, MI-0499, MI-0310, MI-0286, MI-0491, MI-0812, MI-0828, MI-0828, MI-0437, MI-0548, MI-0834, MI-0640, MI-0288, MI-0376, MI-0829, MI-0324, MI-0376, MI-0326, MI-0439

Recommendations /Utilization:

- ➢ Thirty one promising accessions were identified based on morphological, anatomical, growth, yield, biochemical and propagation parameters are recommended for utilization in crop improvement in tropical regions.