

2nd Experts Meeting on Plant, Cellular and Molecular Biology

Cell & Developmental Biology Volume: 10

August 23-24,2021 | Webinar

Morpho-Anatomical Variability, Principal Component Analysis and Euclidean Clustering of Tossa Jute (*Corchorus olitorius* L.)

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Abstract

Jute, the second most important natural fibre crop after cotton in the world. Bangladesh occupied the first position for jute fibre production and exportation after India among south-east Asian countries. Tossa jute is cultivated more (80-85%) here among the commercial cultivation of jute and allied fibre crops. It produces quality fibre but yield is low due to stress susceptibility compared to capsularis jute. The self-pollination nature and sexual incompatibility between two jute species (*C. capsularis* and *C. olitorius*) cause narrower genetic base and restrict genetic exchange. So, intra specific hybridization using diversified jute germplasms or genetic change will be the best option to the jute breeders for genetic improvement of existing cultivars. Hence, 20 tossa jute genotypes were investigated through field based morphological study (RCBD) and laboratory oriented anatomical study (CRD) for yield and yield attributing morpho-anatomical variability at BJRI during March, 2019 to July, 2020. Among 20 tossa jute genotypes, Acc. 1318, O-043-7-9(G), Acc. 4311, Acc. 1306, O-0411-10-4, O-049-1-3, O-0512-6-2, Acc. 4160 showed good results for yield and yield related morphological traits at 120 days after sowing and stem anatomical traits at 100 days after sowing. Higher significant genotypic correlation coefficient values were recorded than phenotypic associations among all the morphological traits. Plant height, fresh weight, fibre yield content gave high heritability (>80%) in broad sense along with possibility of more genetic advance in percentage. The average inter-cluster distances were higher than the average intra-cluster distances, which shows the presence of wide genetic diversity among the genotypes of different clusters than those of the same cluster. The first three principal components, whose Eigenvalues are greater than one, accounted for 99.96% of the total variation among the studied characters. The information obtained from this investigation is useful in planning further breeding programme for tossa jute improvement.

Biography

MM Mukul has completed his B.Sc.(Hons.) in Agriculture at the age of 21 years from Bangladesh Agricultural University, Mymensingh-2202 and Master of Science (MS) in Genetics and Plant Breeding at the age of 23 years from the same university. He was a Scientific Officer (Rice Breeding) in Bangladesh Rice Research Institute at the onset of his career life in 2016, and now he is working as Scientific Officer in the Breeding Division of Bangladesh Jute Research Institute since 2017. He has published more than 20 papers in reputed journals and has been serving as a reviewer of some reputed journals.

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