عنوان مقاله:

Genetic variability and relationship of pod and seed traits in Pongamia Pinnata (L.) Pierre., a potential agroforestry tree

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خلاصه مقاله:

Screening of twenty-four candidate plus trees from naturally available Pongamia pinnata genetic resources was carried out to elucidate the genetic variation and relationship of pod and seed traits on germination capacity to select the best planting material for higher productivity. The experiment conducted at Forest Research Centre, Institute of Forest Productivity Mandar, Ranchi during 2005-2006. Variability studies reveled that, genotype CPT-19 recorded maximum values for six traits viz. pod length (65.64 mm), 100-pod weight (542.35 g), 2D surface area (351.18 mm2), seed length (27.93 mm), 100-seed weight (202.89 g) and total oil content (44.33%). However, maximum pod thickness (12.72 mm), seed length (17.49 mm), pod-seed ratio (2.89) germination capacity (94.67%) was recorded by the genotype CPT-6. The phenotypic and genotypic coefficients of variations were also close to each other for all traits, but 100-pod weight and 100-seed weight exhibited higher phenotypic coefficients of variation and genotypic coefficients of variation than the other traits. Estimates of broad sense heritability ranged from 0.82 (for seed length) to 0.98 (for 100-pod weight), genetic advance as percent of the mean ranged between 12.30% and 46.04% with seed length giving the lowest value and 100-pod weight giving the highest value. Germination capacity exhibited positive significant correlation with pod width, 100-pod weight, 2D surface area and seed width at both genotypic and phenotypic level. However, pod length, pod thickness and 100-seed weight expressed positive significant correlation only at genotypic level. Path analysis of pod and seed traits revealed that, the 100-pod weight (0.909) is the most pronounced character contributing directly to germination capacity followed by seed length (0.785) and pod length (0.324). In conclusion, the results revealed the existence of substantial genetic variation, which can be utilized for genetic resources conservation in gene bank and further tree improvement programmers of the species.

کلمات کلیدی:

correlation, Genetic advance, Heritability, Image analyzer, Pongamia pinnata, Path co-efficient, Variability