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Studies on Variability, Correlation and Path Analysis Using Important Seed Traits in *Bixa orellana* (L).

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ABSTRACT

Screening of 34 candidate plus trees was carried out to utilize the genetic variation to identify best CPT (Candidate Plus Tree) on seed bixin content. Significant genetic variability, correlation and association were obtained among 34 CPTs using economic seed traits. Variability studies revealed that, CPT-KLBi 3 recorded maximum value for five seed traits *viz.*, 2D surface area, perimeter seed length, seed width, 100 seed weight, seed dye content and seed bixin content. However, CPT- TNBi 1 was recorded maximum seed bixin content (3.13%) followed by KLBi 3,TNBi 4, KLBi 1 and KLBi 5. In general phenotypic coefficient of variation was higher than genotypic coefficient of variation indicating the predominant role of environment. High heritability broadsense and genetic gain observed for 100 seed weight (99.70%, 32.98 %), seed dye content (93.82 %, 29.05%) and seed bixin content (90.58%, 34.32 %) respectively indicate the additive gene actions. Seed dye content, seed width and 100 seed weight showed positive significant correlation with seed bixin content at phenotypic and genotypic level. Path analysis of seed traits indicated, the seed dye content (0.871) is most pronounced character contributing directly to seed bixin content followed by seed width (0.295) and 100 seed weight (0.068). Hence these seed parameters could be considered as selection criteria for early and positive exploitation of higher bixin yielding genotypes. Study confirmed that the existence of substantial genetic variation which can be utilized for genetic resource conservation in gene bank and further tree improvement programmes of this species.

Key words:

Bixa orellana, Bixin, variability, heritability, correlation, Path analysis