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SPECIES RELATIONSHIPS IN THE LOTUS CORNICULATUS GROUP AS DETERMINED BY KARYOTYPE AND CYTOPHOTOMETRIC ANALYSES

An analysis was made of chromosome morphology and, by Feulgen cytophotometric measurements, of the nuclear deoxyribonucleic acid (DNA) content of L. corniculatus and related diploid species of the L. corniculatus group (L. alpinus, L. borbasii, L. corniculatus var. brachyodon, L. filicaulis, L. japonicus, L. krylovii, L. pedunculatus, L. schoelleri, L. tenuis) and L. coimbrensis of the L. aegeus group. The idiogram of L. coimbrensis differed markedly from those for the species of the L. corniculatus group, which were considerably more uniform. Lotus pedunculatus was the only species with chromosomes bearing satellites. Since L. corniculatus has a somatic chromosome number of 24, compared to L. corniculatus var. brachyodon with 12, the latter represents a new diploid taxon which should receive further taxonomic study. DNA values differed between the species, and in general, total complement lengths were correlated with DNA values. It is suggested that classical karyotype analysis may not be a suitable method to investigate the parentage of the tetraploid, L. corniculatus, because of chromosomal repatterning which has occurred during the evolutionary development of the closely related diploid species.