Genetic Control of Plant Differentiation From Callus of Birdsfoot Trefoil

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Previous studies of differentiation of callus cultures of genotypes of several cultivars of birdsfoot trefoil indicated a large range of variability for cultivars and more specifically genotypes within cultivars. A majority of genotypes in every cultivar tested are capable of regeneration from callus cultures when callus is subcultured to a medium with low or no auxin and/or cytokinin. Our studies of the genotypic aspects of plant differentiation from callus are continuing.

From preliminary studies, five genotypes of Lotus corniculatus were selected as parents on the basis of their ability to regenerate from callus either a large number of shoots or a small number of shoots. Half sib progenies indicated parental genotype to be a major source of variability in the number of shoots and buds produced from callus. Heritability estimates for the number of buds and shoots produced per callus were 99% and 96% respectively. These results indicate that the characters responsible for differentiation in Lotus corniculatus callus should be responsive to selection for specific genetic or tissue culture studies.