PLANT BIOTECHNOLOGY AND SUNFLOWER IMPROVEMENT

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Plant biotechnology has given new hopes for crop improvement with the major advances in tissue culture and recombinant DNA technology. Sunflower appears to be very responsive to micropropagation, which could be commercially exploited for the multiplication of rare hybrids and male sterile lines. Culturing of immature embryos helps in transferring desirable genes from wild species where post-fertilization incompatibility otherwise leads to embryo/endosperm degeneration. Regeneration of whole plants from somatic cell cultures of sunflower seems rewarding for the induction and selection of mutants at cellular level. High frequency shoot regeneration from cultured immature cotyledons could be hopefully exploited in Agrobacterium tumefaciens mediated transformation studies. In vitro production of haploids, using anther/pollen culture helps in developing homozygous true breeding lines in a very short period but has not been accomplished in sunflower. Transfer of phaseolin gene from bean to sunflower via recombinant DNA technology, demonstrates its suitability for transferring cloned genes imparting resistance to diseases, insect pests and herbicides.