

Plant Biotechnology for Next Generation

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Abstract

Various technologies have so far been developed in the field of plant biotechnology and they have efficiently and successfully been employed for the breeding of various crops. In most crops, constant demands always exist for producing something new in the market. Therefore, it is important to broaden the genetic variability through the suitable and available breeding strategies for each target crop. In our laboratory, we have been trying to evaluate the usefulness of plant biotechnologies such as tissue culture, embryo rescue, protoplast fusion and genetic transformation as the means for broadening the genetic variability and for creating novel useful germplasm to the breeders of ornamental crops. So far, interspecific hybrids have been produced in the different groups of plants with the aid of embryo rescue technique. Some of the products of these interspecific hybridizations have successfully been utilized to produce commercially available cultivars. Somatic hybrids have also been produced in some crops based on our successful establishment of plant regeneration systems from protoplasts. In our laboratory, genetic transformation systems have been established in various ornamental crops, and by utilizing these transformation systems, transgenic plants of useful traits, such as disease and pest resistances, dwarfing, increased secondary metabolite production, and novel flower color have been produced successfully. Based on the results of these studies, future prospective on the application of plant biotechnology for the plant breeding will be discussed.

Keyword: tissue culture, embryo rescue, somatic hybridization, genetic transformation

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