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Current status of sugarcane transgenic: An overview

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Abstract

Sugarcane (*Saccharum* sps. hybrids) is one of the most important industrial crops for sugar and biofuel production of the world. Substantial resources are being invested worldwide for sugarcane improvement through conventional and molecular breeding. The recombinant DNA technology has potential, via genetic engineering, to incorporate a specific gene which controls a particular trait, without co-transfer of undesirable genes from donor species as occurs in conventional breeding. A remarkable development is creation of sugarcane transgenic plants with improved yield characteristic and high value products. Now a days, transgenic traits has an integral part of maize, soya been, rice, tomato, cotton and oilseed breeding. Production of sugarcane transgenic events is routine in various laboratories of the world. In recent year, the potential of transformation technology in sugarcane improvement has been demonstrated with commercialization of commercial cultivars with multiple resistances. The globally cultivated area of transgenic crops has increased more than 81 million hectares. However, there are several technical limitations that still remain for multi gene transformation and creation of economically viable transgenic events. The demerits of many cultivars are not easily removed by transformation, and tools and technologies for precised integration and controlled expression of transgene have yet to be demonstrated in sugarcane. Present article exploring the possibility of sugarcane transgenic development through different methodologies and discuss the opportunities and challenges of developing and evolving commercial transgenic sugarcane based on the information available globally.

Biography

Ram Kushal Singh, presently holding the position of Head, Center for Sugarcane Biotechnology at Sugarcane Research Institute, Shahjahanpur, India, has a distinguished record all throughout his long research career spanning over two and half decades begin 1984 when he enrolled for his Ph.D. program in Cytogenetics at Gorakhpur University, India. He holds the credit for guiding more than 14 students towards the accomplishment of their M.Sc. /Ph.D. degrees. He specializes in sugarcane molecular biology, transgenic sugarcane, Cytogenetics, and Plant Breeding. Dr. Singh has more than 32 publications to his credit in premier international journals and also developed 7 sugarcane varieties for general cultivation.