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DNA-based diagnostics for genetically modified maize events

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Genetically Modified (GM) maize has highest number of globally approved events, i.e., 141 GM events and its adoption would play a role in nutritional security and increasing crop productivity. In India, more than 35 percent of imports for research purposes are of GM maize, predominantly for insect resistance or/and herbicide tolerance. Several other GM maize events have been under field trials at Biosafety Research levels I and II since 2006. As maize is highly cross-pollinated crop, so there may be chances of introgression of transgenes into the wild or weedy relatives; efficient detection strategies would assist to check the unauthorized GM events and to address consumers' choice for opting GM or GM-free food. DNA-based methods are being employed for GM detection due to high specificity and sensitivity. In the present study, SYBR[®] Green 1 based multiplex real-time PCR-based assays were developed for rapid and simultaneous detection of three GM maize events, Bt11, Bt176 and MON89034. Visual and Real-time Loop-mediated Isothermal Amplification (LAMP) assays were developed for rapid/on-site detection of six GM maize events, viz., Bt11, GA21, MON810, MON89034, NK603 and TC1507. The developed methods would be efficiently utilized to check for GM maize events in food and supply chain.

Biography

Rajesh K Bhoge is presently working as a Senior Research Fellow at ICAR-National Bureau of Plant Genetic Resources; New Delhi in the Department of Biotechnology (DBT) funded Project "National Containment/Quarantine Facility for Imported Transgenic Planting Material". He is also pursuing his PhD from Bharathidasan University, India. He has more than 4 years research experience in the area of DNA-based GM detection employing multiplex, real-time PCR and LAMP assays. He has published research papers in reputed national and international journals.

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