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(54) **HIGH EFFICIENCY GENE TARGETING IN PLANTS**

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(58) **Field of Classification Search** 435/468, 435/469, 440, 410; 536/23.1, 24.2
See application file for complete search history.

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(57) **ABSTRACT**

The present invention provides a method for the targeted insertion of a nucleotide of interest into a specific chromosomal site within a plant cell. The method comprises the steps of: (a) providing a plant cell, the plant cell optionally but preferably having a heterologous target site on a chromosome thereof, wherein said target site is flanked by at least one recombination site; and then (b) transforming said plant cell with a transformation vector (e.g., with an *Agrobacterium* transformation vector) carrying a nucleotide sequence of interest, wherein said nucleotide sequence of interest is flanked by at least one recombination site that corresponds to the recombination sites of said target site, so that said nucleotide of interest is inserted into said chromosome at said target site (when a target site is employed).

7 Claims, 9 Drawing Sheets