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(54) **ENDOGLUCANASE GENE PROMOTER UPREGULATED BY NEMATODES**

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(56) **References Cited**

U.S. PATENT DOCUMENTS

5,459,252 A 10/1995 Conkling et al.
5,589,622 A 12/1996 Gurr et al.
5,750,386 A 5/1998 Conkling et al.
5,837,876 A 11/1998 Conkling et al.

OTHER PUBLICATIONS

Keller et al. *The Plant Cell*, vol. 3, pp. 1051–1061, 1991.*
Kim et al. *Plant Molecular Biology*, vol. 24, pp. 105–117, 1994.*

* cited by examiner

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(57) **ABSTRACT**

The present invention provides a nucleic acid construct comprising a cyst and root knot nematode responsive promoter, preferably the *Nicotiana* Ntcel17 promoter or promoters that hybridize thereto, operatively associated with a heterologous nucleic acid segment that encodes a product disruptive of nematode attack. Plants and plant cells using the same and methods of use thereof are also disclosed.

23 Claims, 6 Drawing Sheets

