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(54) Title: PLANT TREATMENT METHODS AND MEANS THEREFOR

(57) Abstract: A transgenic plant having a gene construct including a nucleotide sequence including least two of phytoalexin deficient 4 (PAD4) gene, lesion simulating disease 1 (LSD1) gene, and enhanced disease susceptibility 1 (EDS1) gene and a method of regulating growth and increasing biomass production in the plant by over expressing or attenuating the expression of at least two of PAD4 gene, LSD1 gene, and EDS1 gene in the plant is provided. The transgenic plant exhibits increased biomass, increased stress tolerance, efficient growth development, greater fruit or seed yield, and/or efficient use of water or early appearance of fruit or seed than a non-transgenic plant that does not overexpress or attenuate at least two of PAD4 LSD1, and EDS1 genes, when the transgenic plant and the non-transgenic plant are cultivated under identical growth conditions and identical stress conditions.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 C12N C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO-Internal, WPI Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2009/114733 A2 (CERES INC [US]; ZHOU FASONG [US]; PICCOLO KERSTIN [US]; SOSA JULISSA []) 17 September 2009 (2009-09-17) abstract paragraph [0026] paragraph [0029] paragraph [0093] paragraph [0111] paragraph [0158] paragraph [0213] - paragraph [0224] example 8 sequences 315, 316, 354, 355 ----- -/--	1-11, 13-20

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Mundel, Christophe
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>HUANG XIAOZHEN ET AL: "The Arabidopsis LSD1 gene plays an important role in the regulation of low temperature-dependent cell death", NEW PHYTOLOGIST, vol. 187, no. 2, 2010, pages 301-312, XP002699917, ISSN: 0028-646X abstract page 302, left-hand column, line 30 - line 39 page 308, left-hand column, line 4 - line 7 page 308, right-hand column, line 14 - page 309, left-hand column, line 15 page 310, right-hand column, line 30 - line 45</p> <p style="text-align: center;">-----</p>	1-11, 13-20
X	<p>P. MUHLENBOCK ET AL: "Lysigenous Aerenchyma Formation in Arabidopsis Is Controlled by LESION SIMULATING DISEASE1", THE PLANT CELL ONLINE, vol. 19, no. 11, 16 November 2007 (2007-11-16), pages 3819-3830, XP055069037, ISSN: 1040-4651, DOI: 10.1105/tpc.106.048843 cited in the application abstract page 3820, left-hand column, line 56 - line 58 page 3826, right-hand column, line 9 - line 15 page 3827, left-hand column, line 12 - line 23</p> <p style="text-align: center;">-----</p>	1-11, 13-20
Y	<p>MUHLENBOCK PER ET AL: "Chloroplast Signaling and LESION SIMULATING DISEASE1 Regulate Crosstalk between Light Acclimation and Immunity in Arabidopsis", PLANT CELL, vol. 20, no. 9, September 2008 (2008-09), pages 2339-2356, XP002699918, ISSN: 1040-4651 cited in the application abstract page 2340, left-hand column, line 19 - line 34 page 2352, left-hand column, line 49 - line 54</p> <p style="text-align: center;">-----</p>	1-11, 13-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009114733 A2	17-09-2009	US 2011119785 A1 WO 2009114733 A2	19-05-2011 17-09-2009
