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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(88) Date of publication of the international search report:
12 March 2009

(54) Title: PLANTS HAVING INCREASED YIELD-RELATED TRAITS AND A METHOD FOR MAKING THE SAME

(57) Abstract: The present invention relates generally to the field of molecular biology and concerns a method for increasing various plant yield-related traits by modulating expression in a plant of a nucleic acid sequence encoding a yield increasing polypeptide selected from the group consisting of: an AT-hook motif nuclear localized 19/20 (AHL19/20), a GRP (Growth Regulating Protein) (wherein said GRP polypeptide is a metallothionein 2a (MT2a) polypeptide), an alanine aminotransferase (AAT)-like polypeptide, and an alanine aminotransferase (AAT) polypeptide. The present invention also concerns plants having modulating expression of a nucleic acid sequence encoding a yield increasing polypeptide selected from the group consisting of: an AT-hook motif nuclear localized 19/20 (AHL19/20), a GRP (Growth Regulating Protein) (wherein said GRP polypeptide is a metallothionein 2a (MT2a) polypeptide), an alanine aminotransferase (AAT)-like polypeptide, and an alanine aminotransferase (AAT) polypeptide which plants have increased yield-related traits relative to control plants. The invention also provides constructs useful in the methods of the invention.

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. C12N15/82 C07K14/415

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 practical, search terms used)
EPO-Internal, BIOSIS, EMBASE, Sequence Search, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/097638 A1 (JIANG CAI-ZHONG [US] ET AL) 5 May 2005 (2005-05-05) cited in the application see whole document and in particular paragraphs [0052], [0127-0132], [0276-0280] and [0396]	1-26
X	WO 2007/028165 A (MENDEL BIOTECHNOLOGY INC [US]; GUTTERSON NEAL I [US]; RATCLIFFE OLIVER) 8 March 2007 (2007-03-08) see paragraphs [1905]-[1910]	1-26

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 November 2008	21/01/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Ury, Alain

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/059515

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	VAN CAMP W: "Yield enhancement genes: seeds for growth" CURRENT OPINION IN BIOTECHNOLOGY, LONDON, GB, vol. 16, no. 2, 1 April 2005 (2005-04-01), pages 147-153, XP004849204 ISSN: 0958-1669 the whole document	1-26
A	SATORU FUJIMOTO ET AL: "Identification of a novel plant MAR DNA binding protein localized on chromosomal surfaces" PLANT MOLECULAR BIOLOGY, KLUWER ACADEMIC PUBLISHERS, DORDRECHT, NL, vol. 56, no. 2, 1 September 2004 (2004-09-01), pages 225-239, XP019262564 ISSN: 1573-5028 cited in the application	1-26
A	US 2003/217383 A1 (REUBER T LYNNE [US] ET AL REUBER T L [US] ET AL REUBER T LYNNE [US] ET) 20 November 2003 (2003-11-20)	1-26
A	WO 2007/064724 A (CROPDESIGN NV [BE]; FRANKARD VALERIE [BE]; REUZEAU CHRISTOPHE [FR]; SA) 7 June 2007 (2007-06-07)	1-26

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2008/059515

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

see annex

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,5,8,10,15-26 (part.) and 2-4, 6-7,9,11-14 (entire)

   Method for increasing seed yield-related traits in plants involving AHL19/10 polypeptide and related subject-matter.

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2. claims: 1,5,8,10,15-26 (part.)

   Method for increasing seed yield-related traits in plants involving GRP/MT2a polypeptide and related subject-matter.

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3. claims: 1,5,8,10,15-26 (part.)

   Method for increasing seed yield-related traits in plants involving AAT-like polypeptide and related subject-matter.

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4. claims: 1,5,8,10,15-26 (part.)

   Method for increasing seed yield-related traits in plants involving AAT polypeptide and related subject-matter.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2008/059515

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005097638 A1	05-05-2005	NONE	
WO 2007028165 A	08-03-2007	CA 2620912 A1	08-03-2007
		EP 1928226 A2	11-06-2008
US 2003217383 A1	20-11-2003	US 2003226173 A1	04-12-2003
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		AU 2006320596 A1	07-06-2007
		CA 2631779 A1	07-06-2007
		EP 1954805 A2	13-08-2008