

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 March 2012 (29.03.2012)

(10) International Publication Number
WO 2012/038480 A3

PCT

(51) International Patent Classification:

A01N 63/02 (2006.01) *A01N 51/00* (2006.01)
A01N 43/40 (2006.01) *A01P 5/00* (2006.01)
A01N 37/46 (2006.01) *A01N 25/00* (2006.01)

(21) International Application Number:

PCT/EP2011/066453

(22) International Filing Date:

21 September 2011 (21.09.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/385,247	22 September 2010 (22.09.2010)	US
10193328.1	1 December 2010 (01.12.2010)	EP
61/418,520	1 December 2010 (01.12.2010)	US
10193341.4	1 December 2010 (01.12.2010)	EP
61/419,433	3 December 2010 (03.12.2010)	US

(71) Applicant (for all designated States except US): **BAYER CROPSCIENCE AG** [DE/DE]; Alfred-Nobel-Str. 50, 40789 Monheim (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ANDERSCH, Wolfram** [DE/DE]; Schlodderdicher Weg 77, 51469 Bergisch Gladbach (DE). **RIGGS, Jennifer** [US/US]; 2521-101 Gordon Glen Court, Raleigh, North Carolina 27671 (US). **POUTRE, Candace** [US/US]; 644 Abeyance Rd, Moncure, North Carolina 27559 (US). **DESAI, Nalini** [US/US]; 100 Arcadia Lane, Chapel Hill, North Carolina 27514 (US). **STRIEGEL, Bill** [US/US]; 1206 Bluff Oak Dr., Cary, North Carolina 27519 (US). **BUGG, Kevin** [US/US]; 2016 Osbourne Court, Raleigh, North Carolina 27604 (US). **RINIKER, Steven** [US/US]; 6212 Crayford Dr., Raleigh, North Carolina 27604 (US). **RUSSEL, Carrie** [US/US]; 714 Park Ridge Rd #A6, Durham, NC 27713 (US). **THISSEN DAUM, Julia** [US/US]; 1204 Anora Dr., Apex, NC 27502 (US).

(74) Common Representative: **BAYER CROPSCIENCE AG**;

Business Planning and Administration, Law and Patents, Patents and Licensing, Building 6100, Alfred-Nobel-Str. 50, 40789 Monheim (DE).

(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, CL, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available):

ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

18 May 2012

(54) Title: USE OF BIOLOGICAL OR CHEMICAL CONTROL AGENTS FOR CONTROLLING INSECTS AND NEMATODES IN RESISTANT CROPS

(57) Abstract: The present invention relates generally to the use of biological or chemical control agents with for controlling insects and nematodes and to methods particularly useful for combating insects or nematodes and/or increasing crop yield in plants that are at least partially resistant to one or more parasitic nematodes or insects.



WO 2012/038480 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/066453

A. CLASSIFICATION OF SUBJECT MATTER

INV. A01N63/02 A01N43/40 A01N37/46 A01N51/00 A01P5/00
ADD. A01N25/00

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)

A01N

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)

EP0-Internal, 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	WO 2010/030554 A1 (BAYER CROPSOURCE LP [US]; RIGGS JENNIFER [US]) 18 March 2010 (2010-03-18)	1-4,6-8, 10,11
Y	paragraphs [0001], [0005] - [0007], [0010], [0011], [0015], [0017] - [0018], [0021], [0033], [0034]; examples 1-3,10,11	5,9, 12-17,19
X,P	----- WO 2010/108616 A1 (BAYER CROPSOURCE AG [DE]; ANDERSCH WOLFRAM [DE]; HUNGENBERG HEIKE [DE]) 30 September 2010 (2010-09-30)	1-6,8, 10,11
Y,P	page 1, line 29 - page 2, line 22 page 3, line 27 - page 4, line 5 page 7, lines 8-11 page 14, lines 10-24 page 18, line 21 - page 19, line 16 page 23, lines 1-25 ----- -/--	7,9, 12-17,19



Further documents are listed in the continuation of Box C.



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

11 January 2012

Date of mailing of the international search report

29/03/2012

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

Klaver, Jos

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/066453

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/124707 A2 (BAYER CROPSCIENCE AG [DE]; ANDERSCH WOLFRAM [DE]; EVANS PAUL HAWEN [DE] 15 October 2009 (2009-10-15)	1-4,6,8, 10,11
Y	page 1, paragraph 1 page 2, lines 15-26 page 3, line 21 - page 4, line 13 page 11, lines 17-25 page 12, line 2 page 15, lines 9-21 page 23, lines 1-28	5,7,9, 12-17,19
Y	----- WO 2006/089733 A2 (SYNGENTA PARTICIPATIONS AG [CH]; LONG DAVID [US]) 31 August 2006 (2006-08-31) page 1, lines 3-5,19-22 page 2, lines 15-31 page 5, lines 9-19,25-29 page 6, lines 3-6 examples 1,2	4,10-14, 16,17,19
X	----- US 6 406 690 B1 (PELEG ITZHAK [IL] ET AL) 18 June 2002 (2002-06-18) cited in the application	2
Y	column 2, lines 1-15,43-52 column 3, lines 10-14 column 4, lines 51-67 column 6, lines 18-67	7,10-14, 16,17,19
Y	----- EP 2 039 772 A2 (BAYER CROPSCIENCE AG [DE]) 25 March 2009 (2009-03-25) paragraphs [0001], [0006] - [0007], [0014] - [0015], [0025] - [0026], [0045], [0047], [0090], [0138] Table C: No. C-3	4-6, 10-17,19
Y	----- EP 2 132 987 A1 (NIHON NOHYAKU CO LTD [JP]) 16 December 2009 (2009-12-16) cited in the application paragraphs [0001], [0005], [0010], [0021], [0023] Table 1: compound 7	4-6, 10-17,19
Y	----- US 2010/004176 A1 (SAMPSON KIMBERLY S [US] ET AL) 7 January 2010 (2010-01-07) cited in the application paragraphs [0005], [0022], [0067], [0142], [0146], [0148]; examples 1,9	9,12-14, 17
Y	----- US 2010/005543 A1 (SAMPSON KIMBERLY S [US] ET AL) 7 January 2010 (2010-01-07) cited in the application paragraphs [0003], [0005], [0011], [0016], [0086], [0088], [0092], [0133]; examples 2,5; tables 2,3	9,12-14, 17
	----- -/--	

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/066453

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2007/147029 A2 (ATHENIX CORP [US]; CAROZZI NADINE [US]; DUCK NICHOLAS [US]; KAHN THEOD) 21 December 2007 (2007-12-21) cited in the application page 4, lines 2-14 page 6, lines 6-18 page 26, lines 12-26 page 27, line 19 - page 28, line 3 examples 5-7, 13; table 4 -----	9, 12-14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2011/066453

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 all searchable 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 report covers 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.:

1-11(completely); 12-17, 19(partially)

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: 1-11(completely); 12-17, 19(partially)

- Use of a biological control agent of Group B consisting of *Bacillus* spp. and *Metarhizium anisopliae* (preferably *Bacillus firmus* CNCM I-1582) for controlling nematodes in increasing crop yield of a plant which is resistant to nematodes (preferably genetically engineered plants containing genes Axmi031 or Axn02), optionally in combination with fluopyram.
- Method for treating plant seed comprising one or more of transgenes of Group NG, preferably sequences encoding Axmi 031, Axn2 or Axmi 205, by applying a composition comprising biological control agent of Group B (preferably *Bacillus firmus* CNCM I-1582, optionally in combination with fluopyram).

2. claims: 18(completely); 12-14, 16, 17, 19(partially)

Method for treating plant seed comprising one or more of transgenes of Group NG, preferably sequences encoding Axmi 031, Axn2 or Axmi 205, by applying a composition comprising a chemical control agent selected from Group IP, preferably clothianidin or thiamethoxam

3. claims: 12-14, 16, 19(all partially)

Method for treating plant seed comprising one or more of transgenes of Group NG, preferably sequences encoding Axmi 031, Axn2 or Axmi 205, by applying a composition comprising a chemical control agent selected from Group FP

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2011/066453

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010030554 A1	18-03-2010	AR 073550 A1 AU 2009292009 A1 CA 2736111 A1 CN 102209786 A EP 2321418 A1 JP 2012502100 A KR 20110058878 A US 2011154544 A1 WO 2010030554 A1	17-11-2010 18-03-2010 18-03-2010 05-10-2011 18-05-2011 26-01-2012 01-06-2011 23-06-2011 18-03-2010
WO 2010108616 A1	30-09-2010	AR 076138 A1 EP 2410852 A1 MA 33139 B1 US 2010249193 A1 WO 2010108616 A1	18-05-2011 01-02-2012 01-03-2012 30-09-2010 30-09-2010
WO 2009124707 A2	15-10-2009	AR 071832 A1 AU 2009235695 A1 CA 2720554 A1 CN 102065697 A CO 6300910 A2 EA 201001608 A1 EC SP10010525 A EP 2259685 A2 JP 2011519824 A KR 20100134095 A TW 201002208 A US 2011110906 A1 WO 2009124707 A2	21-07-2010 15-10-2009 15-10-2009 18-05-2011 21-07-2011 30-06-2011 30-11-2010 15-12-2010 14-07-2011 22-12-2010 16-01-2010 12-05-2011 15-10-2009
WO 2006089733 A2	31-08-2006	AR 053022 A1 AT 544341 T AU 2006218063 A1 BR PI0607259 A2 CA 2599446 A1 CN 101128111 A CN 101911875 A EA 200701614 A1 EP 1850662 A2 EP 2269450 A2 JP 2008531512 A KR 20080019198 A MA 29241 B1 NZ 560411 A US 2009054234 A1 WO 2006089733 A2 ZA 200706426 A	18-04-2007 15-02-2012 31-08-2006 25-08-2009 31-08-2006 20-02-2008 15-12-2010 28-02-2008 07-11-2007 05-01-2011 14-08-2008 03-03-2008 01-02-2008 26-06-2009 26-02-2009 31-08-2006 30-07-2008
US 6406690 B1	18-06-2002	NONE	
EP 2039772 A2	25-03-2009	NONE	
EP 2132987 A1	16-12-2009	CA 2682156 A1 CN 101686679 A EP 2132987 A1 KR 20090115762 A RU 2009136178 A US 2010048647 A1	23-10-2008 31-03-2010 16-12-2009 05-11-2009 10-04-2011 25-02-2010

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2011/066453

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		WO 2008126922 A1	23-10-2008

US 2010004176 A1	07-01-2010	AR 072680 A1	15-09-2010
		AU 2009266906 A1	07-01-2010
		CA 2728622 A1	07-01-2010
		CN 102076709 A	25-05-2011
		CO 6341638 A2	21-11-2011
		EA 201071323 A1	30-06-2011
		EP 2297190 A2	23-03-2011
		JP 2011526791 A	20-10-2011
		PE 03102011 A1	29-05-2011
		US 2010004176 A1	07-01-2010
		WO 2010003065 A2	07-01-2010

US 2010005543 A1	07-01-2010	AR 072316 A1	18-08-2010
		AU 2009262153 A1	30-12-2009
		CA 2729294 A1	30-12-2009
		CN 102066408 A	18-05-2011
		CO 6351796 A2	20-12-2011
		EA 201071312 A1	30-06-2011
		EP 2297189 A2	23-03-2011
		JP 2011526150 A	06-10-2011
		PE 05672011 A1	31-08-2011
		US 2010005543 A1	07-01-2010
		WO 2009158470 A2	30-12-2009

WO 2007147029 A2	21-12-2007	AR 061467 A1	27-08-2008
		AU 2007260716 A1	21-12-2007
		CN 101501066 A	05-08-2009
		EP 2032598 A2	11-03-2009
		NZ 573398 A	25-11-2011
		US 2007294787 A1	20-12-2007
		US 2009181116 A1	16-07-2009
		WO 2007147029 A2	21-12-2007
