Title: COMPOSITIONS AND METHODS FOR CONTROLLING HEAD BLIGHT DISEASE

Abstract: Compositions comprising microbiological strains and cultures and methods of use thereof are provided herein. Certain strains, cultures, and compositions thereof are useful for the control of head blight disease, for example, of various crop plants. Biological control compositions, and methods of use thereof to prevent, inhibit or treat the development of plant pathogens or disease and for preserving plant yield, are also provided.
**INTERNATIONAL SEARCH REPORT**

**International application No.**
PCT/US 2012/48012

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**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(8) - C12 N 1/20; A01 N 63/02 (201 2.01 )
USPC - 435/252. 1, 504/1 17

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)

USPC: 435/252.1 , 504/1 17

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

USPC: 435/252.1, 245; 504/1 17, 116.1

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Electronic data bases: PubWEST (USPT, EPAB, JPAB, PGBP); Google Scholar; GenCore sequence search (NT)

Search terms: plant disease, head blight disease, Fusarium head blight (FHB), Fusarium graminearum, suppressive, antagonistic, Bacillus sp., Mycosphaerella sp., Microbacterium sp., Variovorax sp. coated seeds, spraying, wheat, barley, corn

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 2002/01 19124 A1 (da LUZ et al.) 29 August 2002 (29.08.2002). Especially para [0004], [0018], [0026], [0032], [0035], [0050], [0051].</td>
<td>1, 4-19, 21-23</td>
</tr>
<tr>
<td>Y</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>X</td>
<td>US 2003/0165470 A1 (SCHISLER et al.) 4 September 2003 (04.09.2003). Especially [0010], [0013], [0021], [0022], [0030], [0038].</td>
<td>1, 4, 16-19</td>
</tr>
</tbody>
</table>

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Further documents are listed in the continuation of Box C.

- 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 application or patent 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 (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
  - "Z" document member of the same patent family

**Date of the actual completion of the international search**

26 October 2012 (26.10.2012)

**Date of mailing of the international search report**

19 NOV 2012

**Name and mailing address of the ISA/US**

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

**Facsimile No.** 571-273-3201

**Authorized officer:** Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/2.10 (second sheet) (July 2009)
1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of a sequence listing filed or furnished:
   a. (means)
      - [ ] on paper
      - [x] in electronic form
   b. (time)
      - [ ] in the international application as filed
      - [ ] together with the international application in electronic form
      - [x] subsequently to this Authority for the purposes of search

2. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:
   GenCore ver 6.4.1 SEQ ID NOs: 1,4,6,8,10-13